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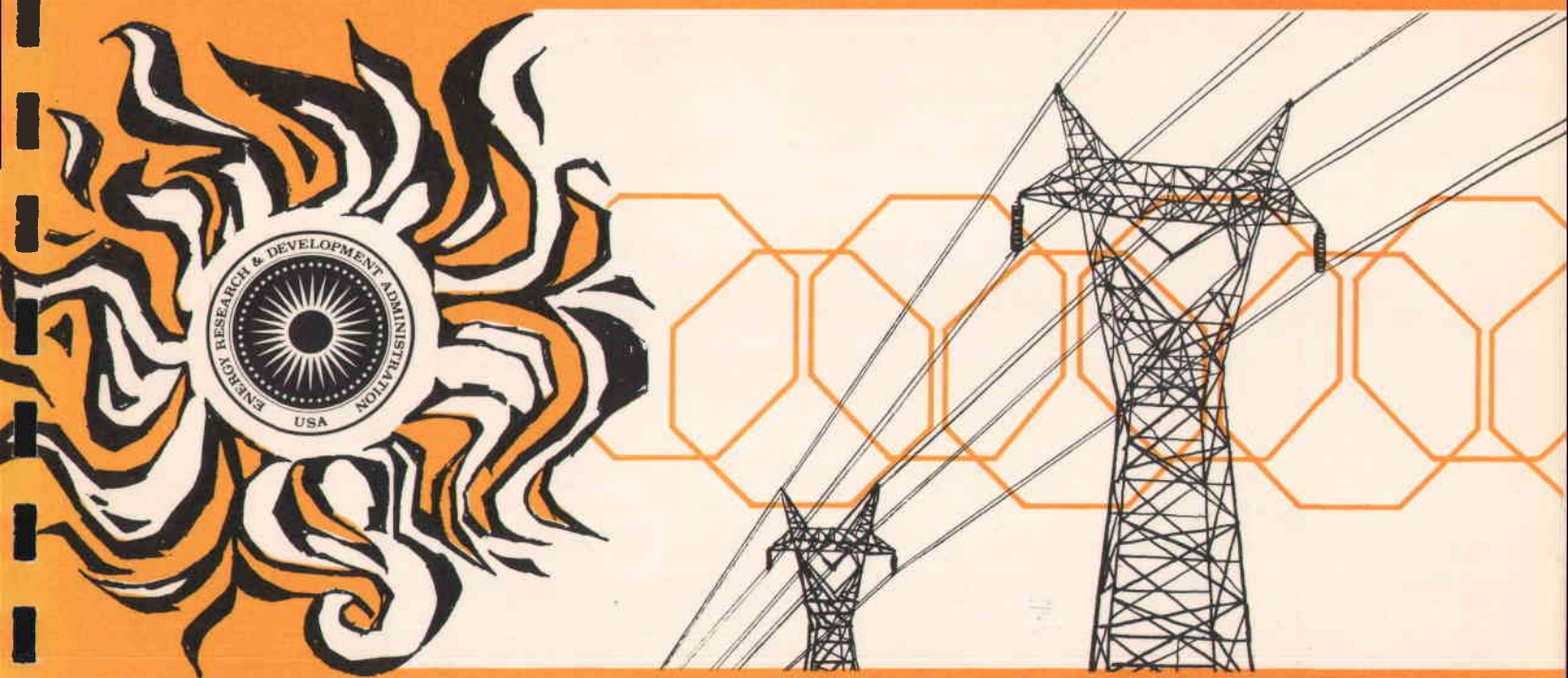

SOLAR CENTRAL RECEIVER PROTOTYPE HELIOSTAT CDRL ITEM B.d

Final Technical Report VOLUME II

MCDONNELL DOUGLAS ASTRONAUTICS COMPANY

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SOLAR CENTRAL RECEIVER
PROTOTYPE HELIOSTAT CDRL ITEM B.d

Final Technical Report
Volume II

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PREFACE

This report was prepared under DOE contract EG-77-C-03-1605. It presents the results of a 9-month study to define a low-cost approach to the production, installation, and operation of heliostats. The guidance and support of the program manager, R. W. Hughey, and the technical assistance of C. J. Pignolet and C. L. Marvis of the Sandia Laboratories were of immeasurable benefit in the conduct of this study and we wish to acknowledge their contributions.

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VOLUME II

Section 7

PERFORMANCE ANALYSES

MDAC has evaluated the performance of heliostats located in the reference positions as defined in Specification 001. In addition, MDAC has selected a point in the field which is representative of the best heliostat performance and estimated the average performance of the field. Results of these analyses are presented in this section.

7.1 FIELD LOCATIONS FOR HELIOSTAT EVALUATION

Three specific field locations for which heliostat performance is to be evaluated were given in Specification 001. These locations are shown in Figure 7-1. MDAC evaluations of these heliostat locations indicated that they are among the worst in the field because of relatively poor cosine angles or remoteness from the receiver. To balance out the indications of heliostat performance, MDAC added location D (550 m due north of the tower) as representative of the best overall performance. In addition, an estimate of the performance of the average heliostat was included.

Figure 7-1 also shows both the collector field boundaries and the locations of the slip planes defined in Section 6. The collector field is laid out in a radial staggered array. Heliostats are aligned along rays from the tower. Alternate rays are occupied in alternate circles centering on the tower. When the azimuthal spacing exceeds 2.2 times the reflective unit width, a radial gap is left, and the azimuthal spacing is reset to 1.8 times width. The radial gap is called a slip plane. In the prototype heliostat field layout, the slip plane also contains a circumferential access road.

7.2 PERFORMANCE RESULTS

Figures 7-2 through 7-5 show the instantaneous power incident on the receiver for heliostats in locations A through D. Separate curves are shown for

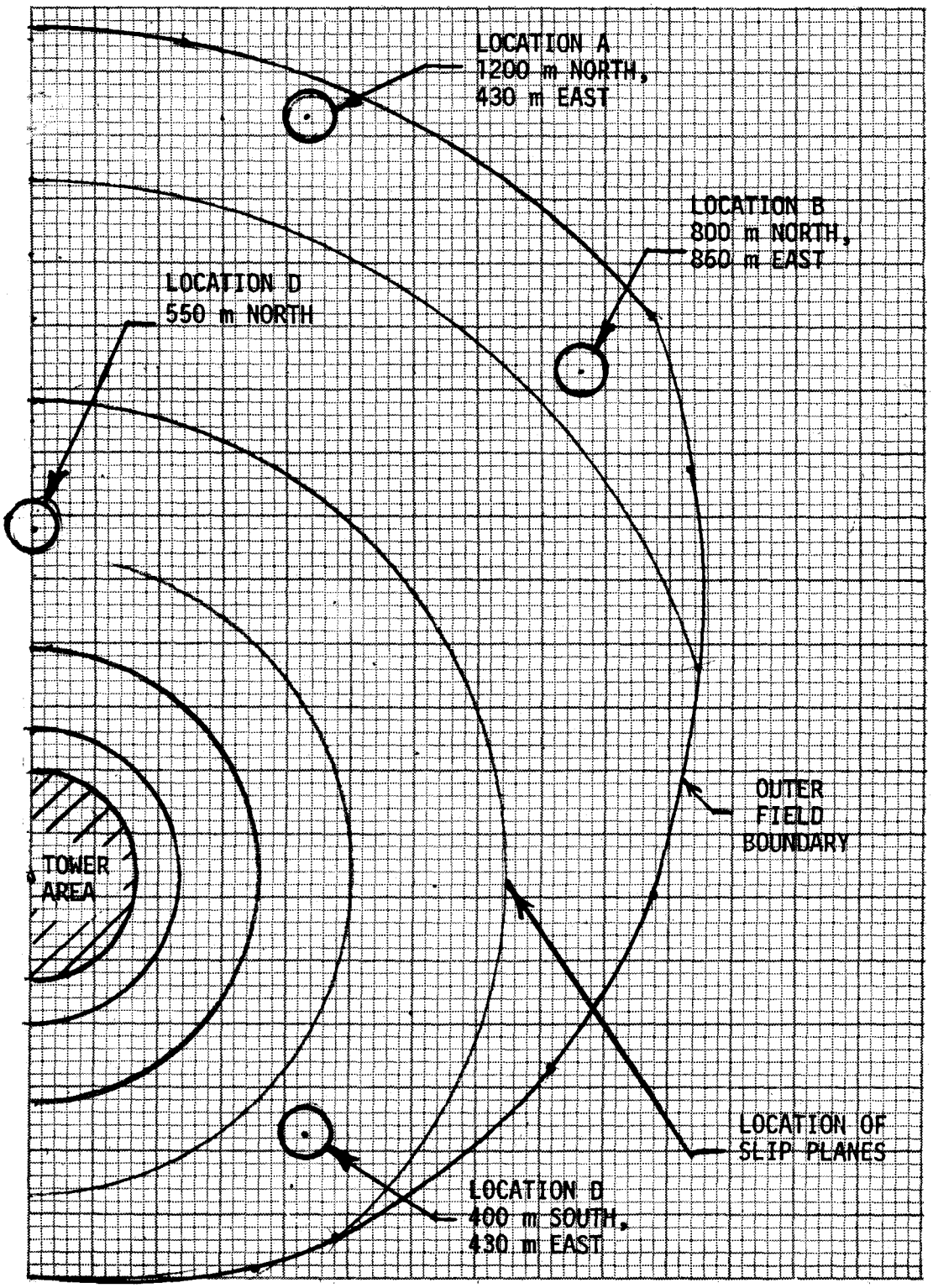

Figure 7-1. Heliostat Evaluation Locations

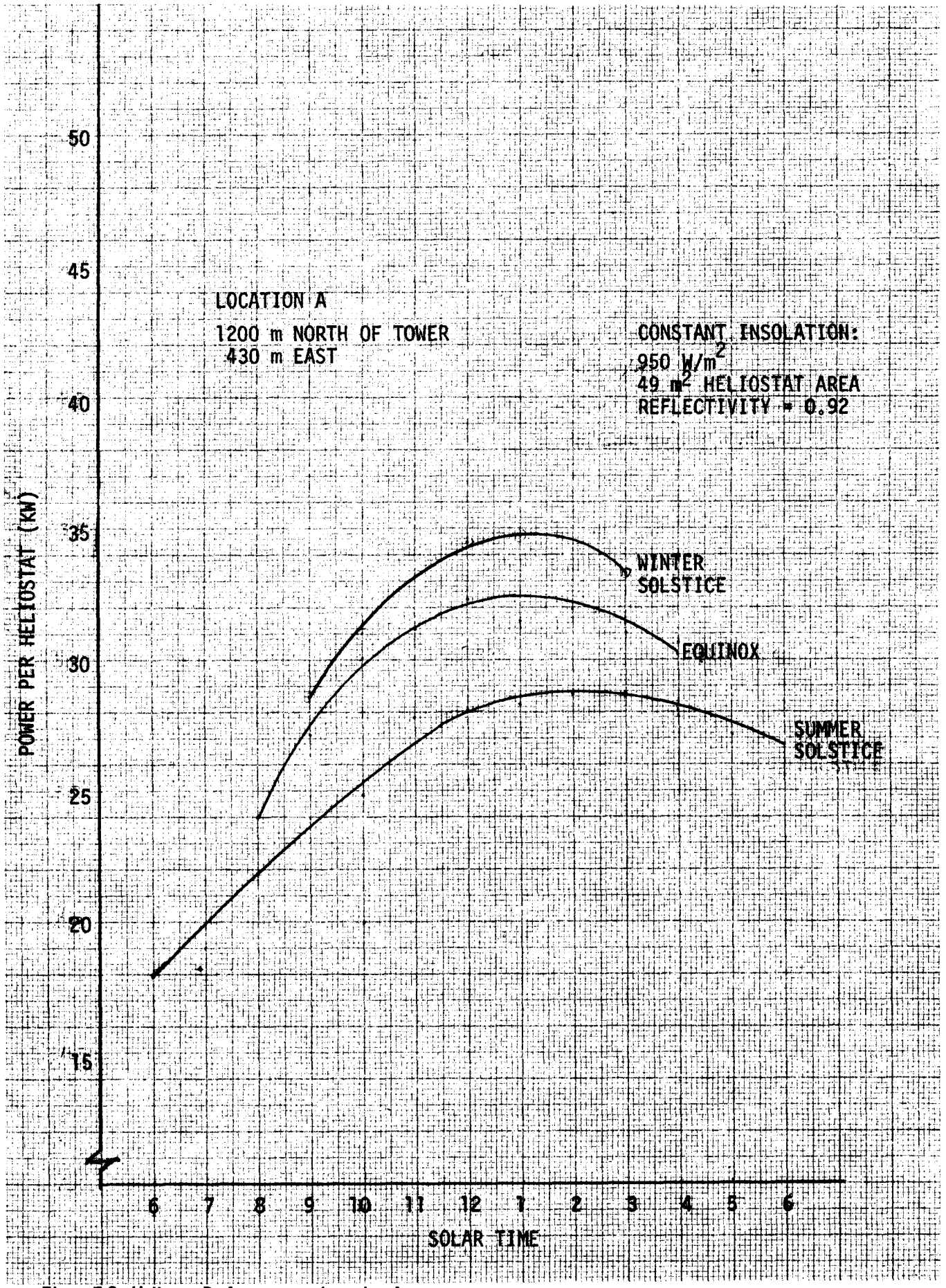

Figure 7-2. Heliostat Performance at Location A

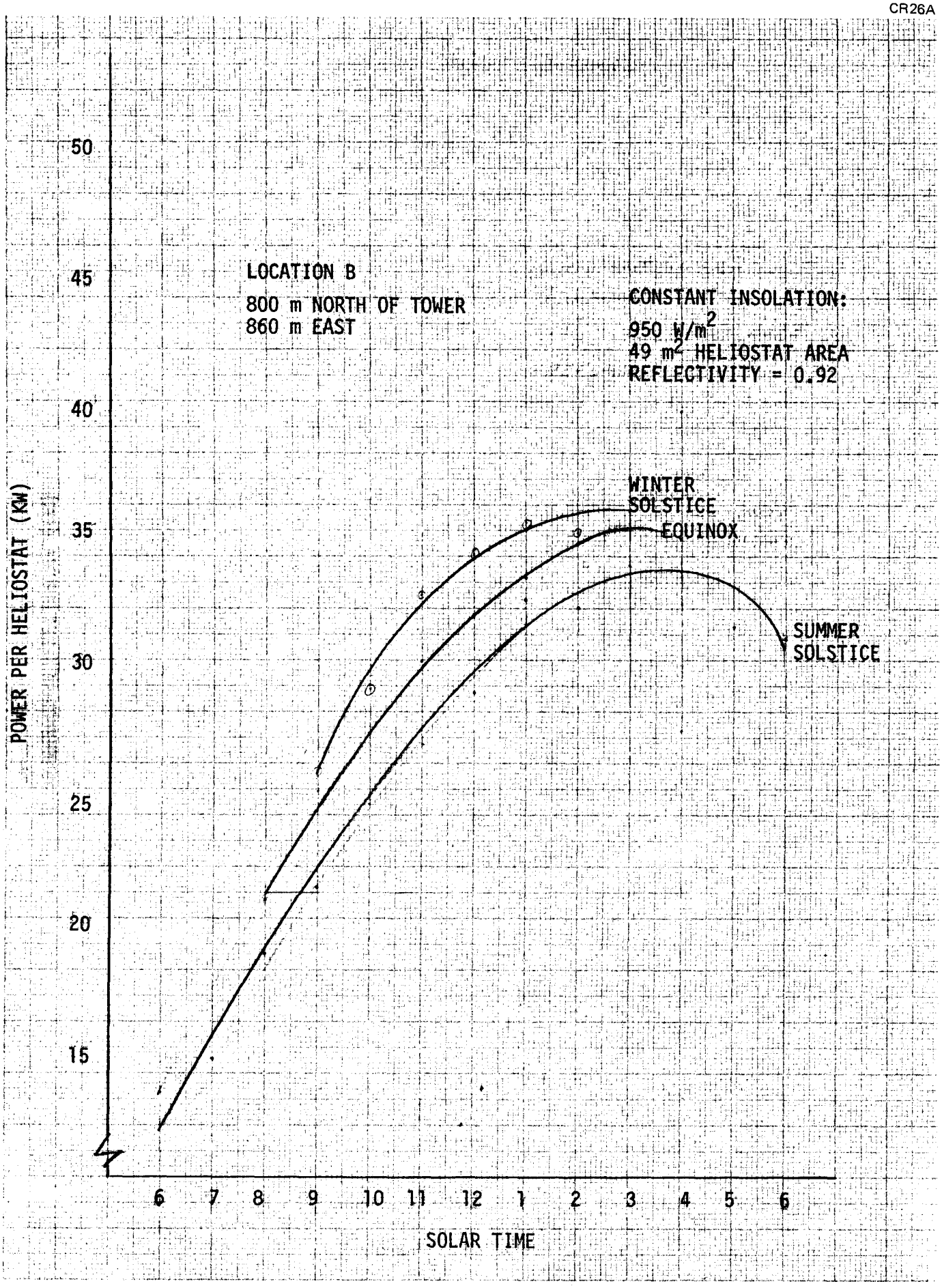

Figure 7-3. Heliostat Performance at Location B

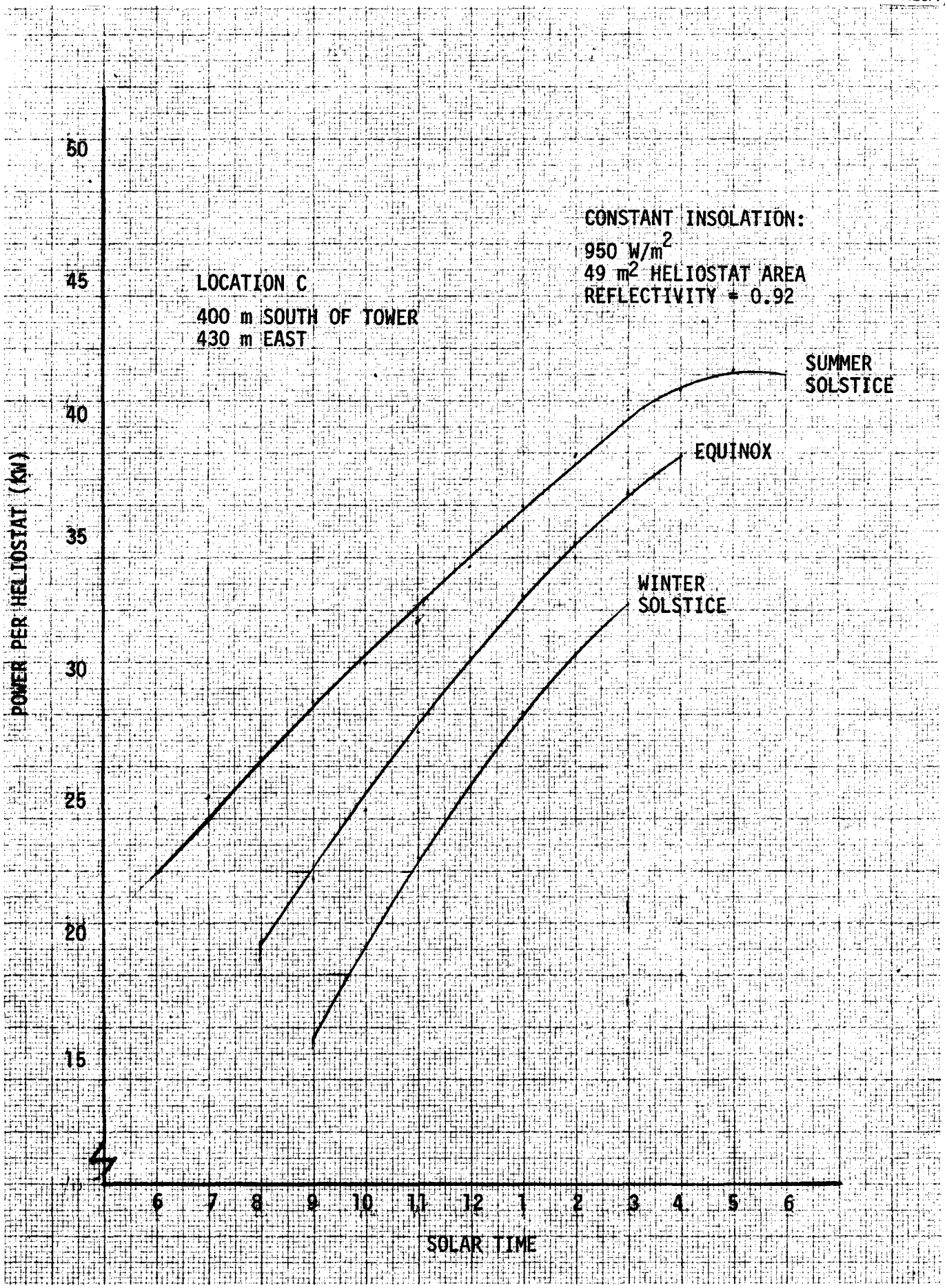

Figure 7-4. Heliostat Performance at Location C

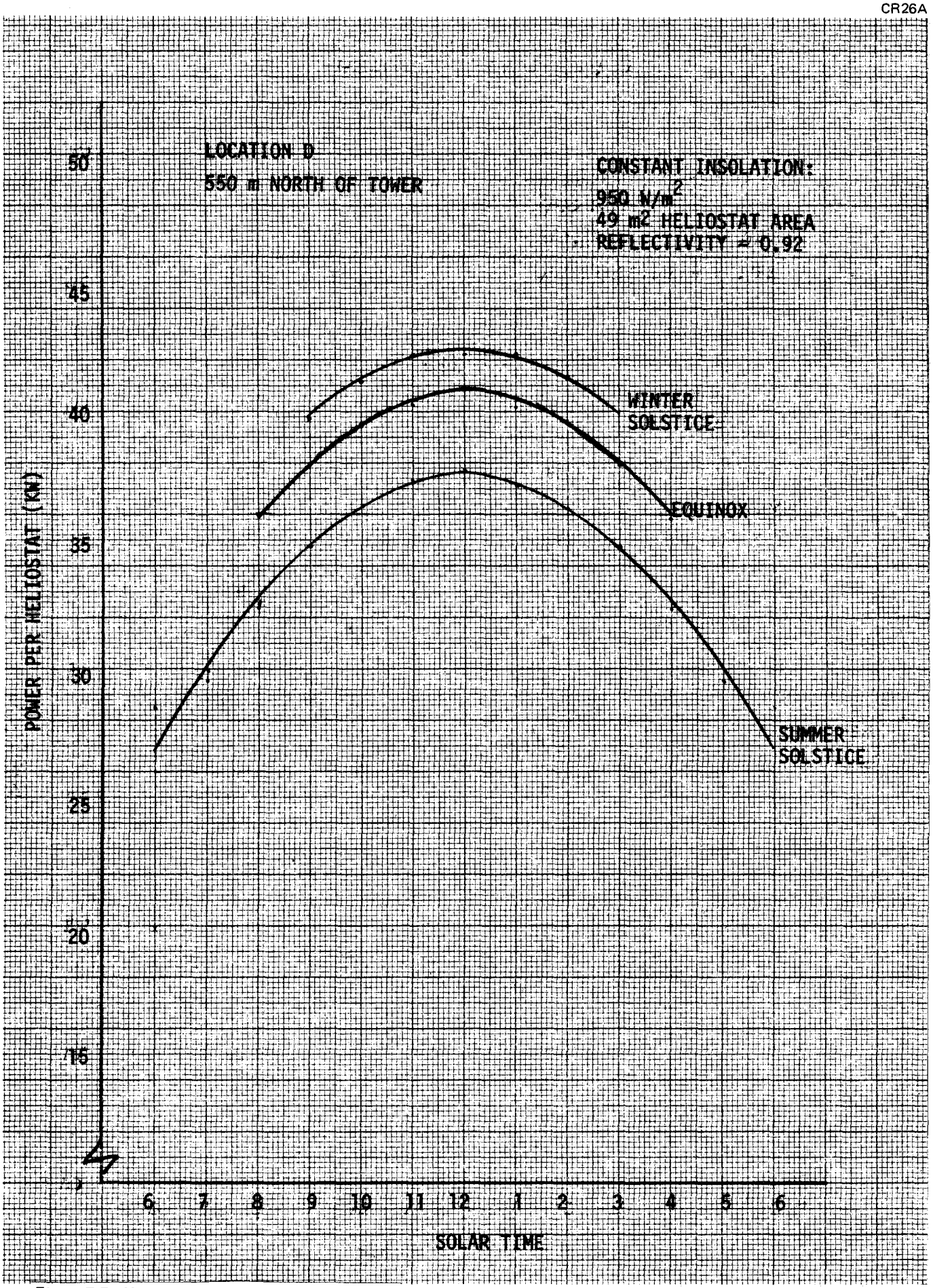

Figure 7-5. Heliostat Performance at Location D

summer solstice, winter solstice, and equinox. The power curves were calculated by MDAC computer program CONCEN. The insolation was assumed to be 950 W/m^2, the heliostat area 49 m^2, and the reflectivity 0.92.

Location A, Figure 7-2, shows, as expected, a distinct improvement in performance at winter solstice. This improvement is due to the better cosine factor when the sun elevation angle is lower. Peak power is about 34.8 kW.

Location B, Figure 7-3, exhibits substantially higher peak power than location A for all seasons, because of the shorter slant range and higher interception factor at the receiver. The peak power of 35.8 kW is still at winter solstice. Peak power at equinox and summer solstice are proportionally larger, as compared to location A, because the sun is at a lower elevation angle when aligned with the tower.

Location C, Figure 7-4, shows a reversal of the previous patterns, with peak power accruing at summer solstice. The cosine and interception factors at peak power are still higher, and the power level is about 41 kW. Power throughout the remainder of the year is reduced because of lower cosine factors.

Location D, Figure 7-5, shows the performance of the best heliostat. Cosine and interception factors at the peak power time (winter solstice) are essentially unity. The power peaks at 42.4 kW. Summer solstice power suffers from a lower cosine factor, but still peaks at 37.7 kW.

The average power for the collector field was estimated from annual statistics on previous field layouts. Results are shown in Figure 7-6. Average field power is seen to peak at about 35 kW during equinox. The summer peak is essentially the same at 34.8 kW. Winter solstice is down only marginally at 33.8 kW. These figures tend to indicate that calculations based on Locations A, B, and C will not represent the field as a whole. Note also that the average field power at the start and end of the "day" is down from the peak value by only 7 to 21 percent, indicating that the period of operation may be significantly too short.

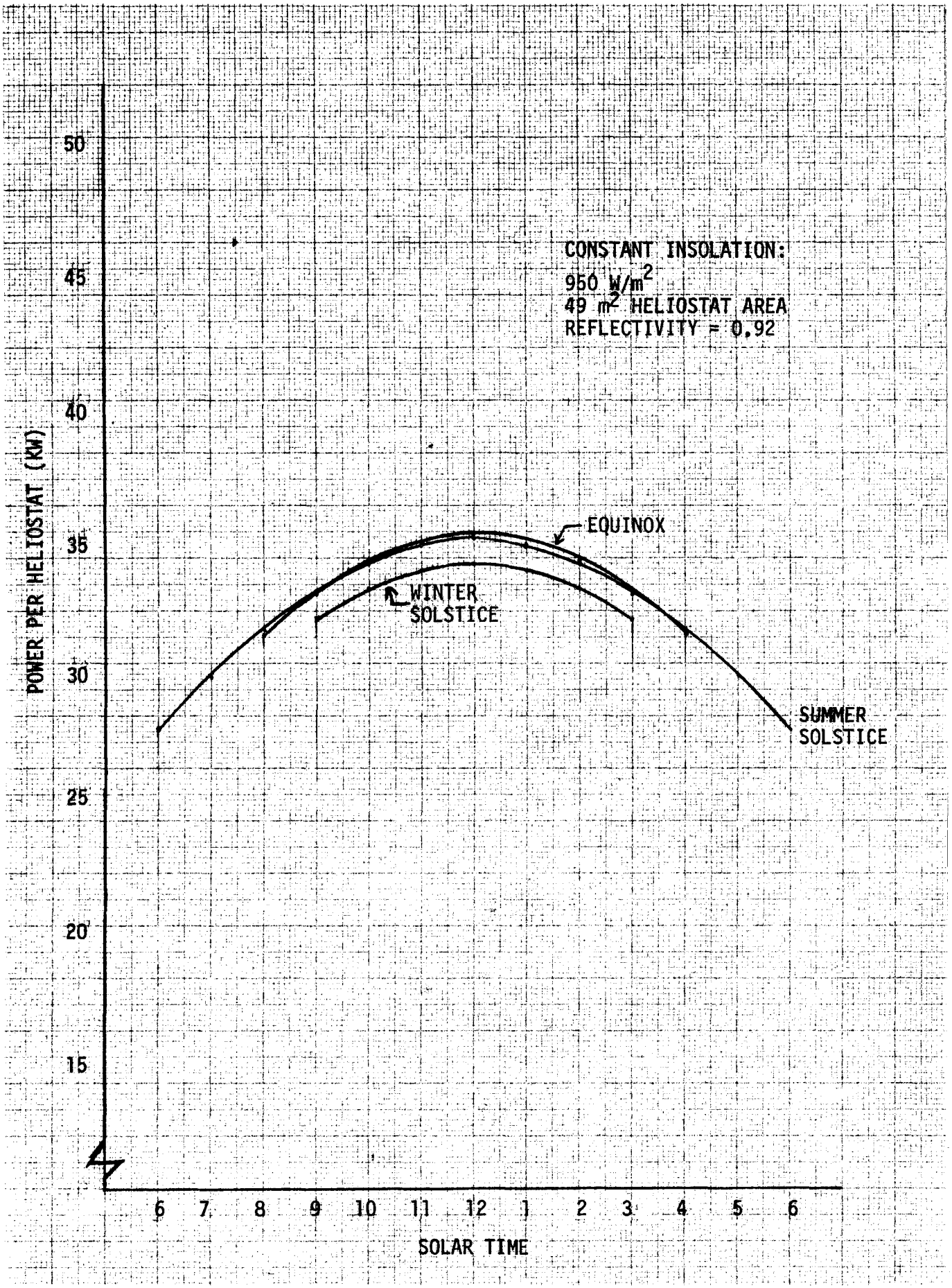

Figure 7-6. Average Heliostat Performance

Table 7-1 summarizes the heliostat performance results. The table clearly shows that the average daily energy is distinctly better than that for locations A, B, and C.

It may also be interesting to note that the average heliostat produces approximately 56 KWH/day, or about 18.5 MWHe/year (330 days/year basis at 20 percent conversion). If one assumes an 18 percent levelized fixed-charge rate, the value of the annual energy collected from an average heliostat can be capitalized as about equal to the value of 100 MWHe (18.5 MWH/year divided by 0.18). The collector cost is about 80 percent of the combined cost of the collector and receiver subsystem. Hence, the heliostat value is about equivalent to 80 MWHe. At $\$65/m^2$, the cost of the heliostat becomes about 40 mils/KWH. In equivalent thermal energy, the cost is about $2.33/MBtu, the approximate current price of imported oil.

Table 7-1

HELIOSTAT PERFORMANCE RESULTS

DAILY ENERGY (KWH/HELIOSTAT)	HELIOSTAT LOCATION				FIELD AVERAGE
	A	B	C	D	
SUMMER	310.2	323.3	399.5	406.5	385.0
SOLSTICE	244.1	242.0	235.1	312.8	268.4
WINTER	229.0	197.0	147.5	249.7	197.4
AVERAGE	256.9	251.1	229.3	320.5	279.8

Section 8

CRITICAL R&D AREAS

During the course of the Prototype Heliostat Phase I study, five areas were identified in which further research and development may lead to substantial additional cost reductions. These areas are discussed in this section, together with the cost reduction potential estimated for each area.

8.1 ELIMINATE INVERTED STOWAGE REQUIREMENT

Eliminating the requirement for inverted stowage is estimated to reduce the equivalent heliostat cost approximately $10/m^2.

Inverted stowage is desirable to prevent sunlight reflected from the mirrors from forming regions of concentrated sunlight in the air space above the collector field or adjacent to the field. MDAC believes that excessive concentrations of sunlight can also be prevented by careful control of the heliostats during the transition between stowage and on target orientations. However, the control algorithms become much more complicated. Executing the movement between stowage and on target will probably require more elapsed time for portions of the field because of the varying rates of motion of the beams from heliostats at varying distances from points of potential beam convergence.

The increase in time will be partially, if not fully, counteracted by the fact that the angular rotation required of the heliostat to achieve stowage will be less for face up stowage. Maximum rotations for face-up stowage range from 0 to about 75 degrees, while rotations for face down stowage range from 105 to 180 degrees.

The normal stowage position for heliostats in either case is with the reflector vertical. Hence, face up stowage would only be used when the wind is expected to rise above an established minimum threshold. The wind speed for face up stowage would be somewhat site dependent and probably set by the speed at

which blowing sand may be expected, about 15 m/sec. Hence, the frequency of face-up stowage will be low, especially the frequency for which significant direct beam sunlight is present.

If the requirement for inverted stowage were deleted, heliostat costs would be reduced by:

1) Eliminating the stowage actuator, drag link, and associated support points and bushings.

2) Filling in the slot between reflector panels, thereby increasing the effective reflector area by about 10 percent.

8.2 WIND LOADS MANAGEMENT

Wind loads on the heliostat have been taken to be those for an isolated heliostat in an undisturbed free stream. Preliminary results of wind tunnel tests indicate that the wind loads in a collector field with wind control fences surrounding the field will be reduced by at least 40 percent. The cost reductions which might result from designing to the reduced wind loads are estimated at about $\$5/m^2$.

The cost reductions might be achieved by further increases in reflective unit area per heliostat or by reduced material gages and drive unit component sizes. A comprehensive analysis would be required to select the better approach.

Before any design modifications can be recommended, it will be necessary to define new design wind load requirements. MDAC recommends the following steps:

1) Completion of the analysis of existing wind tunnel data.

2) Potential additional wind tunnel tests to complete the data base.

3) Analysis of data taken by MDAC during the heliostat array tests at Naval Weapons Center (Phase I Pilot Plant Collector SRE).

4) Instrumentation of heliostats at STTF, data collection and analyses, and correlation to wind tunnel tests to verify scalability relationships.

5) Translation of wind load data to heliostat design requirements.

8.3 DELETION OF POWER AND COMMUNICATIONS WIRING

The power and communications wiring to the heliostats may be deleted by appropriate modifications to the design. An estimated $\$3/m^2$ savings would result.

Power for operating the heliostat would be generated on the heliostat by a small photovoltaic array. Energy for operation at night would be stored in a battery, also located on the heliostat.

Communication with the heliostat would be by FM or similar means. The choice of means and the associated cost will be greatly affected by the required data rate. The cost savings to the heliostat is probably only valid if the return data communication from the heliostat to the master control can be eliminated or simplified to the point that only single, binary data bits are required, i.e., yes/no answers to interrogation.

The modifications to the heliostat design are rather simple. The controller already possess the capability to operate with only mode commands and time checks from master control. Addition of a data receiver and transmitter interface, the photovoltaic power supply, and storage battery are required. Also, the motors and motor controllers must be altered to be consistent with the DC power available from the photovoltaic array and battery.

8.4 ALTERNATIVE MOTOR/DRIVE UNIT CONCEPTS

Several changes or modifications to the drive motors and the azimuth drive unit may, in aggregate, lead to an additional $\$2/m^2$ cost reduction.

A syncronous motor concept appears to offer the potential of a 50 percent reduction in motor cost. This concept is proprietary to the vendor and may not be discussed here. The motor controller would require a major redesign, and controller costs might increase as a result. However, a net savings should still result.

A wave generator concept for the Harmonic drive which is able to be adjusted upon assembly to provide the required preload will reduce the cost of the wave generator. Several concepts seem feasible, but extensive analyses and tests are required to determine which, if any, are feasible.

MDAC has also considered several alternative approaches for both the elevation and azimuth drive units which were out of the scope of the Prototype Heliostat Contract. Further analyses and tests will be required to determine the most promising concepts and evaluate the performance and cost savings which may result.

8.5 FREQUENCY AND EFFICACY OF MIRROR CLEANING

MDAC has defined equipment and methods for mirror cleaning which lead to a very low cost. These methods were described in Section 5 of this report. No effort was included to optimize the frequency of washing as this frequency is dependent on site and local meteorology.

Additionally, the efficacy of the baseline washing technique might be improved by better washing solutions or modifications to the methods. Improvements in average reflectivity equivalent to $\$1\text{-}2/m^2$ might be realized by improved washing.

MDAC recommends that further study be done on washing solutions, methods, and frequency, in order to ascertain which combinations offer the most cost-effective mirror performance.

Section 9

COST ANALYSIS

This section contains the results of the Prototype Heliostat cost analysis for annual production rates of 25,000 units, 250,000 units, and 1 million units along with an analysis for a Pilot Plant production of 2,500 heliostats. The analysis has covered both heliostat investment cost and annual operations and maintenance cost. After an overview of costing results, this section presents details on costs, scenarios, and the costing methods for each production rate. Also, the special costing cases of non-inverting heliostats and use of mil standard versus commercial electronic components are addressed. Cost work sheets are included in Appendix H.

9.1 COST OVERVIEW

Pilot Plant and Commercial Plant costs are based on the design protrayed in Figure 9-1 as supported by the technical descriptions and programmatics provided in Sections 1 through 8 of this report. Generally, the costs that are presented will show a significant reduction over the Nth Commercial Plant Heliostat costs presented in Volume 7 of the May 1977 Pilot Plant Preliminary Design Review (PDR) document. The projected reduction is encouraging and supports the feasibility of the DOE goal of 72 dollars per square meter reflectivity. The following overview summarizes cost projection at the various studied production rates, provides a comparison between current and prior cost projections, and touches on the basic scenarios and costing approaches used in developing the projections.

9.1.1 Costing Results

Summarized costing results for the studied production rates are shown below in terms of first half of 1978 dollars per square meter, reflectivity ($/m^{2}R):

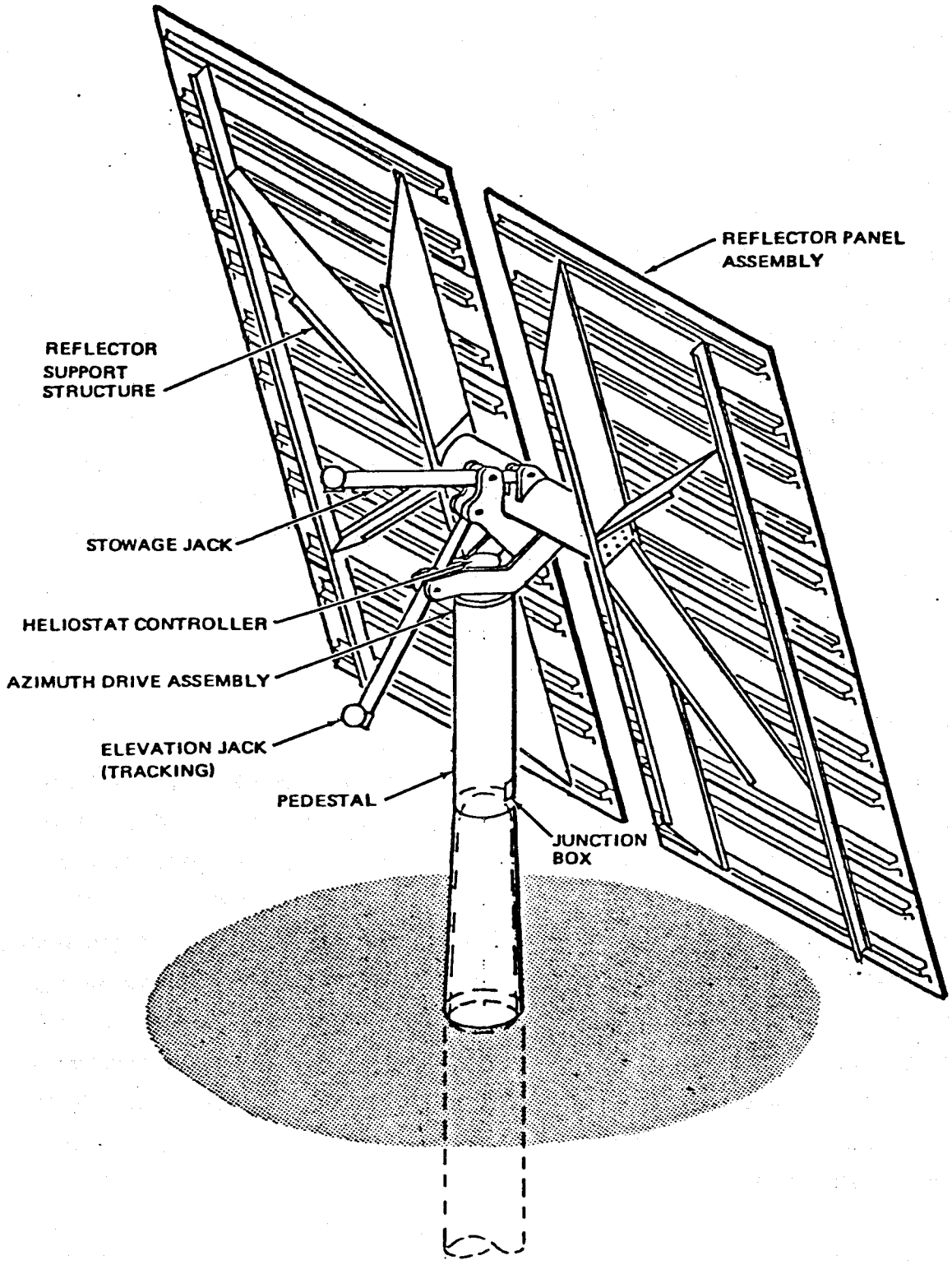

Figure 9-1. Baseline Heliostat

COST ELEMENT	AVERAGE $/m^{2}R 2500 (PILOT)	25K/ YEAR	250K/ YEAR	1 MIL/ YEAR
Non-Recurring	$ 36	-	-	-
Heliostat Investment	$193	$72	$59	$55
Visibility	-	7	5	5
Total w/Visibility	$193	$79	$64	$60
Maintenance Equipment	$ 4	$ 1	$ 1	$ 1
O&M - 1ST Year	$ 1	$ 1	$ 1	$ 1
- Next 29 Years	$ 22	$19	$19	$19
Memo: Reflectivity	.92	.92	.94	.95

These results indicate that the $72/m^{2}R goal is feasible at the lower production rate of 25,000 heliostats per year, and that it is very probable that the goal would be underrun at higher production rates. Visibility, which is intended to cover design and estimating unknowns, has been listed separately for the higher production rates because of the propensity for compensating "breakthroughs" to occur that support the eventual realization of feasible cost targets. Indeed, a non-inverting heliostat design would cause a $10/m^{2}R reduction in cost. Also, it is possible that some of the plans projected for the 250,000 units per year scenario could be incorporated at lower production rates causing a savings. The reflectivity shown above has been varied with production rate to indicate the probability that improved glass transmisivity will become economically available as the required daily tonnage of glass increases.

9.1.2 Reductions in Cost

Table 9-1 provides a breakdown of the average costs per heliostat that support the above projections. As might be expected, large cost reductions are

Table 9-1

PROTOTYPE HELIOSTAT COST COMPARISON

Cost Element	1978 Dollars Per Heliostat (49.05 m^2) 2,500 Units	25,000 Per Year	250K Per Year	1 Million Per Year
Heliostat Investment				
Reflective Unit	$2,163	$ 883	$ 778	$ 743
Drive Unit	3,666	1,306	1,002	953
Control/Instrumentation	823	114	83	72
Foundation/Site Preparation	786	609	548	525
Heliostat Support Structure	328	136	125	119
Field Assembly & Checkout	472	193	172	167
Sustaining Engineering	466	-	-	-
Subtotal	$8,703	$3,241	$2,708	$2,579
Initial Spares	11	2	2	2
Total	$8,713	$3,242	$2,710	$2,581
Visibility	-	304	251	238
Maintenance Equipment				
Handling Equipment	$ 53	$ 8	$ 8	$ 8
Test Vans	91	18	18	18
Washing Equipment	50	12	12	12
Total	$ 194	$ 38	$ 38	$ 38
Operations and Maintenance				
Spares	$ 6.10	$ 1.80	$ 1.40	$ 1.30
Repair Parts	6.70	1.90	1.50	1.40
Other	8.30	8.60	8.60	8.60
Corrective Maintenance	36.30	36.30	36.30	36.30
Scheduled Maintenance	6.70	6.40	6.40	6.40
	$64.10	$55.00	$54.20	$54.00
Follow-On	$35.00	$30.00	$30.00	$30.00
Non-Recurring				
Engineering	$112			
Manufacturing and Other	132			
Total	$244			

projected between the initial pilot production and the higher production rates. These reductions range from 86 percent for electronics to 23 percent for the foundations and average 63 percent. This is justified by the elimination of sustaining engineering, the advantages of volume procurement, and the ability to effectively employ capital equipment leverage. Once rate production at 25,000 units per year is achieved, cost reduction is not as dramatic but still significantly averages 16 percent between 25,000 and 250,000 units per year and an additional 5 percent in going to 1 million units produced per year. These cost reductions are supported by potential weight and part reductions, further automation (robotics), improved production flows, and improved supplier control. Further cost depth and cost justification is provided in the subsections for each production volume scenario and by the cost work sheets.

Table 9-2 shows a comparison between the cost data shown in the May 1977 PDR report and the current cost projection status. The adjusted PDR cost reflects improved PDR commercial design/cost visibility. The PDR commercial cost projections did not include scrap and rework, so this cost has been treated in sum in Table 9-2 for comparison purposes. Lower costs are shown for all elements except for foundation and site preparation. However, the more costly foundation allows important cost reductions in other areas by supporting a larger heliostat and a much simplified field assembly and checkout procedure. The latter shows the most dramatic cost reduction which is due to reduced and more automatic checkout procedures, to the reduced number of field assemblies, and to special installation equipment. The next largest reduction has been in the drive unit which has been simplified in a number of areas including the housing, the bearings, the Jackscrews, and various azimuth, components. Reductions in other element costs, as with the drive, reflect many small improvements that accumulate to significant reductions in total.

An interesting point is that at the time of PDR, the projection of $\$89/m^2$ ($\$8.31/ft^2$) for the Nth Plant may have been considered by some as a high risk estimate because visibility and scrap and rework factors had not been applied. However, "Prototype" projections, even when such factors are included, are still 20 percent lower than the PDR projections. The PDR stressed that

Table 9-2
COMPARISON WITH PDR RESULTS

Element	PDR $/m^2 (1977 $)	Prototype $/m^2 (1978 $)
Reflector Unit	$18.87	$17.15
Drive Unit	34.61	25.36
Control and Instrumentation	4.62	2.20
Foundation and Site	8.86	11.83
Heliostat Support	3.43	2.65
Field Assembly and Checkout	17.01	3.74
Site Plant Activation	2.00	--
Subtotal	$89.40	$62.93
Scrap and Rework	-0-	3.15
Total Investment	$89.40	$66.08
Annual Operations		
First Year		$1.00M
Average	$1.53M	$0.54M

projected Nth plant costs represented a specific design/production scenario and that TBD (at that time) evolution in design or production scenarios justified assuming that the PDR cost of $89/m^2 was a reasonable projection. Similar arguments concerning design/production plan evolution are also appropriate in support of the belief that $72/m^{2}R is obtainable at the 25,000 heliostats per year rate.

9.1.3 Basic Scenarios

As indicated, the prototype heliostat projections are based on a specific set of cost driving ground rules and assumptions, design characteristics,

and production scenarios. Although covered in detail in previous sections of this report, a summary of the major drivers is useful in understanding costing results.

9.1.3.1 Major Costing Ground Rules

The costs that are presented assume the following major financial ground rules.

1) First half 1978 dollars -- no escalation.

2) Eight percent fee applied to each CBS line item.

3) Interest during construction (IDC) not costed.

4) No state sales tax applied due to uncertainty of state and potential tax rulings.

5) Special collector production profit center.

6) Minimal manufacturing support practice. No analysis except as purchased from the outside.

7) Overhead and fringe benefits applied as a factor on direct labor only.

8) Cost projected as that typical of the 10th year of operation of production facilities at the studied production rates (except Pilot).

9) Vendor quotes and production facility manning baseline at 25,000 heliostats per year.

10) Assumed utility operations hourly labor rate ($15) -- actual not known.

11) Commercial grade (non-mil standard) electronic components.

12) Scrap and rework, machine downtime, labor efficiency, operations refix factors, and first year failure rate factors applicable.

13) Cost reduction curves applied where specific cost difference from the 25,000 per year baseline are not identified.

These ground rules apply generally except that for the 2,500 unit Pilot production scenario, an existing profit center and standard support practices are assumed, and vendor quote from the Pilot Plant PDR have been applied where appropriate.

Figure 9-2 illustrates another important aspect of the costing ground rules. The figure shows the assumptions concerning the evolution from low to high production rates. As approximately indicated, the projected costs represent the average cost for the first 2,500 units, unit number 350 thousand, unit 3.5 million, and the 15 millionth unit for the Pilot production, 25,000 per year, 250,000 per year, and one million per year rates, respectively. These production points were selected as representative of one of possibly several logical production volume progressions. Perhaps of greatest interest is that this schedule assumes that the first production facility (25,000/year) goes into operation after 100,000 heliostats have been produced in other facilities. This starting point could have just as easily been assumed to be, say, unit 38 thousand, which would cause a small (approximately 3 percent) increase in average unit cost for the 25,000/year rate.

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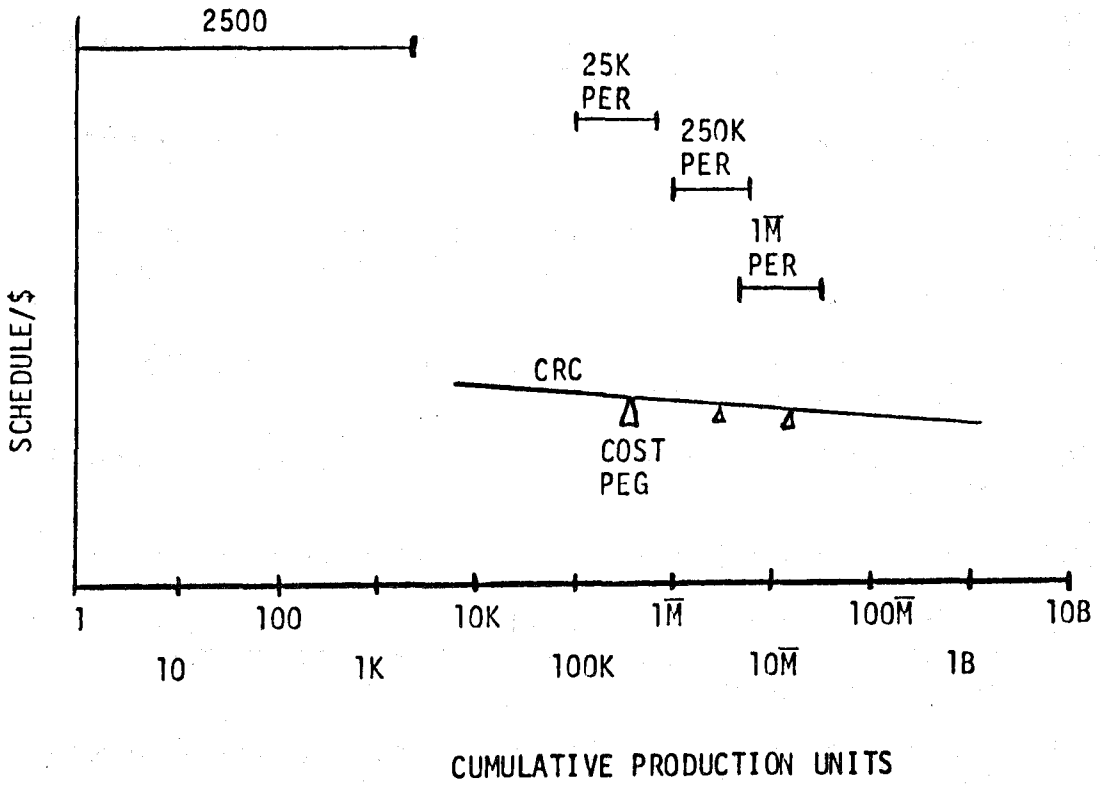

Figure 9-2. High Volume Costs – CRC Basis

9.1.3.2 Technical Characteristics

Table 9-3 summarizes the technical characteristics of the selected design. Key top level cost drivers include the enlarged reflector area (49 m^2) that has been divided into two main panels for ease of transport and installation; inverting stowage which is accomplished with a second screwjack and other, additional, hardware; the Harmonic azimuth drive; and the factory integrated drive/pedestal/electronics assembly which may be checked and calibrated in the factory. Other important drivers include the deep pile foundation which features a 1.22 meter above grade tapered pipe interface extension; the use of a weldment versus a casting for the drive housing; and the stringer/semi-radial beam mirror backing structure configuration. Except for inversion, these design characteristics generally have allowed a simplified production scenario as well as purchased part and material economics.

9.1.3.3 Baseline Scenarios

Main features of the baseline production/installation scenario are listed below.

1) 25,000 units per year
2) 62,500 ft^2 production facility (no site assembly plant)
    - Central, unnamed location -- outside Los Angeles
    - Integrated mirror line and Harmonic drive fabrication
    - Automated assembly/transfer
    - NC machining
3) Low skill labor -- less than 300 factory direct
4) Private fleet transportation
5) Four basic installations -- mechanized using special equipment
    - Foundation
    - Pedestal/drive/electronic unit
    - L&R reflector
    - Power/control distribution
6) One shift plus operation (240 days)

Table 9-3.

TECHNICAL DESCRIPTION - COLLECTOR SUBSYSTEM

• Reflector - 6 laminated reflector mirrors bonded to the reflector support structure.	
• Reflective Surface	787 Kg (1734 lbs)
Reflective Surface Area	49.05 m^2 (528f^2)
Second Surface Mirror	1.5 mm (0.060")
Glass Back Lite	4.8 mm (0.1875")
• Mirror Backing Structure	469 Kg (1034 lbs)
IMBD Cross Beam 14 Gage	173" - 27" Deep
OuTBD Cross Beam 18 Gage	173" - 11" Deep
Diagonal Beam 14 Gage	112" - 26" Deep
Hats 16 Gage	130" - 6"
• Drive - Consists of a rotary azimuth drive, a double jack elevation drive, center main beam, and pedestal.	578 Kg (1273 lbs)
Center Main Beam	122 Kg (268 lbs)
Tube	81" - 16" Dia
Flange	18" Square
Elevation Drive	102 Kg (225 lbs)
Jacks	5 Ton Ball Screw (63 Kg, 139 lbs)
Motor (Two)	1/4 hp; 480 VAC (9.5 Kg, 21 lbs)
Drag Link-Weldment	29.4 Kg (65 lbs)
Azimuth Drive	185 Kg (407 lbs)
Housing-Weldment	108 Kg (238 lbs)
Drive Unit (Retainer)	68 Kg (150 lbs)
Helicon Input	162:1
Harmonic Output	242:1
Final Drive Ratio	39,204:1
Motor	1/2 hp; 480 VAC (8.6 Kg, 19 lbs)
Pedestal	169 Kg (373 lbs)
Power Distribution Equipment & Wiring	4160 VAC, 3 Phase
Step Down Transformers	480 VAC, 3 Phase
Position Indicators	
Incremental Encoder - Motor Turn Feedback	

Table 9-3

TECHNICAL DESCRIPTION - COLLECTOR SUBSYSTEM

- **Control/Instrumentation Equipment**
  - Heliostat Array Controller
    - High Speed Digital Microprocessor
    - Master Control Interface
    - Heliostat Control Interface
  - Data Distribution Interface
    - Digital Microprocessor
    - Communication Interface
  - Heliostat Controller
    - Digital Microprocessor
    - Drive Motor Controller
    - Control Sensors
    - Communication Interface
  - Signal Distribution Equipment
    - Fiber Optic Transmission Cable
- **Foundation**

Concrete	5478 Kg (12076 lbs)
Steel Reinforcement	194 Kg (428 lbs)
Steel Form	34 Kg (75 lbs)

As indicated, the baseline has been oriented to the 25,000 units per year production rate. The main changes associated with higher production include introduction of robotics, improved line flow, integration and/or more direct control of specialized production facilities (e.g., fusion glass/mirror panel production), and increased supplier and services control. Pilot production is assumed accomplished in existing facilities of potential collector manufacturers.

The operations and maintenance scenario calls for the use of conventional handling equipment, mobile test vans, and special mirror washing equipment. In most cases, defective assemblies or components are first removed and replaced with a spare or a previously repaired part and then the defective item repaired or scrapped. The main exceptions occur where certain structural damage may be repaired in place. The preponderance of maintenance actions involve repairs rather than scrapping defective hardware.

9.1.4 Costing Approach

The costing approach has been to develop a data base associated with the 25,000 units per year production rate and then perturb the data base to reflect special circumstances associated with the other production volumes. The 25,000 unit data base has been developed as resource loads for labor where operator and support positions required for each item of production equipment or responsibilities are counted and classified by skill in order to accumulate staffing by CBS. Vendor quotes at ongoing 25,000 units per year requirements were obtained for important cost items and catalogs consulted for common items. Like item costs were employed where certain electronic components have been projected as being available off the shelf at future dates. Appropriate factors have been applied to the data base along with burdened labor rates to arrive at total costs.

Changes to the 25,000 per year data base were accomplished specifically where design or production differences were identified and generally through appropriate changes in factors, labor rates, and overhead rates and through cost reduction curve logic. Examples, of specific changes include potential weight reductions such as for the drive housing, eliminated operator positions due to robotics, and specific unit cost changes reflecting vendor information pertinent to the particular production rate.

Costs not specifically addressed were altered along a cost reduction curve. Each basic cost entry has been "pegged" to a specific point on a cost reduction curve. Where an item cost change associated with a new production rate is identified, the cost is repegged at its new point on the curve and the curve

has no affect. Otherwise, the cost is adjusted in accordance with cost reduction curve logic to a new estimate for the new production rate. Specifics on cost reduction curve logic as well as factors, labor rates, and other cost methodology are treated in more detail in the subsections that follow.

9.2 COSTS FOR 25,000 UNITS

As indicated, the Prototype heliostat cost data developed using the production, installation and operating plans derived for the 25,000 unit per year scenario provide the primary cost standard for comparison with the DOE goals and the baseline for development of costs at the other production rates. For these reasons, costs have been studied in greatest depth for this production rate, and are treated first in order to establish a basis of discussion for the other production rates.

9.2.1 Cost Breakdown by CBS

Tables 9-4 and 9-5 provide a cost breakdown into labor and material for each CBS element. Table 9-4 shows average investment cost per heliostat and dollars per square meter in 1978 dollars. Investment costs are based on approximately the tenth year of plant operation, and include no visibility adjustment. Investment labor is slightly less than 25 percent of the total cost, and well over half of the labor relates to field requirements. The major share of the cost is made up of purchased parts which, by definition, tend to relieve factory labor requirements. Note that costs shown for the power supply/distribution, certain control instrumentation items, miscellaneous equipment, and initial spares have been prorated over all 25,000 heliostats and do not represent the actual unit costs of such items. As with previous estimates, the drive unit is still the outstanding cost, although a large improvement is indicated for the azimuth drive, mainly due to the lightened housing weldment, the "wire race" bearings, the helicon input stage, revised Harmonic component fabrication plans, and several other minor changes.

First year operations and maintenance costs required in operating 18,000 heliostats are shown in Table 9-5 for spares, repair parts, other non-labor, and corrective and scheduled labor. The main inclusions in the other category

Table 9-4 (Sheet 1 of 2)

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR

WBS NUMBER	WBS TITLE	NON-RECUR (THOU)	CAPITAL INVESTMENT LABOR HOURS	CAPITAL INVESTMENT LABOR DOLL	CAPITAL INVESTMENT MATL DOLLAR PUR PT	CAPITAL INVESTMENT MATL DOLLAR RAW MTL	CAPITAL INVESTMENT MATL DOLLAR TOTAL	INVST $/SMR
	GRAND TOTAL-HELIOSTAT	0.	39.3	748.	1923.	570.	3241.	66.08
4410	REFLECTIVE UNIT	0.	4.3	60.	735.	88.	883.	18.00
4411	REFLECTIVE SURFACE	0.	1.3	18.	407.	46.	471.	9.61
4412	MIRROR BACK STRUCT	0.	1.5	22.	328.	13.	363.	7.39
4413	ASSY & BOND	0.	1.5	21.	0.	28.	49.	.99
4420	DRIVE UNIT	0.	7.8	110.	937.	260.	1306.	26.63
4421	AZIMUTH	0.	4.0	56.	141.	156.	354.	7.21
4422	ELEVATION	0.	2.5	36.	482.	103.	621.	12.67
4423	MOTOR TOTAL	0.	0.0	0.	164.	0.	164.	3.34
4424	POS/LIMIT INDICATO	0.	.8	11.	17.	0.	29.	.58
4425	PWR SPLY/DIST	0.	0.0	0.	131.	0.	131.	2.68
4426	ASSY DR/PED/ELECT	0.	.5	7.	1.	0.	8.	.16
4430	CONTROL/INSTRMT EQ	0.	2.4	36.	78.	0.	114.	2.31
4431	SENSOR/CALIB EQUIP	0.	0.0	0.	1.	0.	1.	.02
4432	FIELD CONTROL	0.	.0	0.	1.	0.	1.	.03
4433	CNTRL/SIG EQ	0.	2.4	33.	68.	0.	102.	2.08
44320101	COLLECTOR CONTROL	0.	.1	2.	8.	0.	9.	.19
4440	FOUND/SITE PREP	0.	14.5	336.	172.	102.	609.	12.42
4441	FOUNDATION	0.	10.5	243.	172.	102.	517.	10.54
4442	SITE PREPARATION	0.	4.0	93.	0.	0.	93.	1.89
4450	HELIO SPT ST/PR EN	0.	1.1	15.	1.	121.	136.	2.78
4451	HELIO SUPP STRUCT	0.	1.1	15.	1.	121.	136.	2.78
4452	PROTECTION ENCL	0.	0.0	0.	0.	0.	0.	0.00
4453	LIGHTNING PROT.	0.	0.0	0.	0.	0.	0.	0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR

WBS NUMBER	AND TITLE	NON RECUR (THOU)	CAPITAL INVESTMENT LABOR HOURS	LABOR DOLL	MATL DOLLAR PUR PT	RAW MTL	TOTAL	INVST $/SMR
4460	FIELD ASSY & C/O	0.	9.2	192.	1.	0.	193.	3.93
4461	HELIOSTAT	0.	3.2	74.	0.	0.	74.	1.51
4462	SENSOR/CALIB EQ	0.	.0	0.	0.	0.	0.	.00
4463	ELECTRICAL/DISTRIB	0.	1.8	42.	0.	0.	42.	.85
4464	ALIGN HELIOSTATS	0.	.8	18.	0.	0.	18.	.38
4465	FIELD SUPPORT	0.	1.1	25.	0.	0.	25.	.51
4466	PACK & TRANSP	0.	2.3	33.	1.	0.	33.	.68
4100	SITE,STRU,MISC EQ	0.	.2	3.	34.	1.	38.	.78
4130	MISC.EQUIP	0.	.2	3.	34.	1.	38.	.78
4800	DIST AND INDIR	0.	0.0	0.	2.	0.	2.	.04
4840	INITIAL SPARES	0.	0.0	0.	2.	0.	2.	.04

Table 9-5

FIRST YEAR OPERATIONS

(1978 DOLLARS IN $000)

OPERATIONS AND MAINTENANCE 18000 HELIOSTATS (25K)

WBS NUMBER	WBS NUMBER AND TITLE	OPERATIONS AND MAINTENANCE					
		NON-LABOR			LABOR		
		SPARES	REP PT	OTHER	CORRECT	SCHED	TOTAL
	GRAND TOTAL	32.	35.	154.	653.	116.	991.
4410	REFLECTIVE UNIT	3.	0.	1.	14.	0.	18.
4411	REFLECTIVE SURFACE	3.	0.	1.	12.	0.	16.
4412	MIRROR BACK STRUCT	0.	0.	0.	2.	0.	2.
4420	DRIVE UNIT	15.	20.	4.	416.	0.	454.
4421	AZIMUTH	3.	6.	2.	130.	0.	141.
4422	ELEVATION	2.	4.	1.	34.	0.	41.
4423	MOTOR TOTAL	4.	8.	1.	230.	0.	244.
4425	PWR SPLY/DIST	5.	1.	1.	22.	0.	28.
4430	CONTROL/INSTRMT EQ	14.	15.	8.	222.	0.	260.
4431	SENSOR/CALIB EQUIP	0.	0.	0.	0.	0.	0.
4432	FIELD CONTROL	7.	0.	0.	2.	0.	9.
4433	CNTRL/SIG EQ	8.	15.	8.	220.	0.	251.
4450	HELIO SPT ST/PR EN	0.	0.	0.	1.	0.	1.
4451	HELIO SUPP STRUCT	0.	0.	0.	1.	0.	1.
OM000	O AND M SUMMARY	0.	0.	141.	0.	116.	257.
OM100	OPERATIONS	0.	0.	0.	0.	0.	0.
OM200	MAINT. MATERIAL	0.	0.	141.	0.	0.	141.
OM300	MAINTENANCE LABOR	0.	0.	0.	0.	116.	117.

are transportation, washing solution, lubricants and fuel. Corrective maintenance covers both removal and replacement time and bench labor. Schedule maintenance covers washing 12 times per year and corrosion control. The main difference between first year O&M and ongoing O&M is in the areas of the motors and electronic elements where failures are expected to be 3.3 and 13 times greater in the first year of operations. The results of a cursory analysis to determine whether it may be more economical to employ mil specification parts is inconclusive but has indicated that substantially increased burn-in time at an increase in electronic spare and repair parts cost may be cost-effective. The details of operations costs and the investment costs are provided in the work sheets included in Appendix H.

9.2.2 Summary of Costing Scenario

The costs cover the expenditure of resources associated with the tenth year of operation of a production facility geared to output 25,000 heliostats per year, and operations and maintenance required to employ 18,000 heliostats at a 100 MWe power plant. The production plant is sized to produce this volume on essentially a one shift basis, and covers a 62,500 square foot area. The facility is centrally located in a yet unnamed location outside of Los Angeles for consistency with applied labor rates.

The plant features automated assembly and material transfer, NC machining, automatic electronic component insertion, and wave soldering. The integrated mirror/reflector panel line is of special interest where glass is brought in, cleaned, mirrored, and laminated into mirror modules; prefabricated steel stringers and beams are assembled into a backing structure; and the mirror modules and backing structure are integrated using a bonding material into a "pre-focused" reflector panel which is then loaded in its shipping container. This entire operation is handled on a continuous line using special material transfer equipment. Generally, the plant is designed to reduce both the number of factory laborers (approximately 200 touch) and the skill level.

Currently, a site assembly facility is not planned. Essentially, four basic installations are required--the foundation, the pedestal/drive/electronic

assembly, reflector panels, and power/control distribution equipment. These assemblies are shipped to site using a private truck fleet.

The foundation is designed with a four foot tapered interface above ground level, so that a special piece of equipment may be employed to position and secure the pedestal/drive/electronic assembly within 7.1 minutes with a crew of 3 men. The reflector panels are also installed with a special rig so that when bolted down they are properly aligned relative to the drive. This is accomplished within 17.7 minutes with 6 men. The power/control distribution equipment and foundations are installed with conventional equipment. In the case of the former, only 57 installations are required per field and a small crew can make all 57 installations in approximately 2 weeks. However, the foundation installation scenario could probably be improved with the identification of specially modified equipment since 18,000 foundations per field are required.

The operations and maintenance scenario calls for the use of essentially conventional handling equipment. This equipment include a mobile crane, several pickup trucks, forklifts and a hoisting sling. In addition, a mobile test van and the alignment "cameras" are employed for heliostat calibration operations. Washing of reflective surfaces is accomplished with special wash and rinse trucks. It is apparent that reflector panel and drive failure rates will be too low to justify keeping the special installation equipment at site.

Generally, maintenance actions involve locating the failure, driving to the point of failure, removal of the failed item and replacement with a spare, and return to the maintenance base. At this point, the replaced part is usually repaired and entered into the spares inventory. A small percentage of failed hardware is scrapped and replaced with a new spare. It is assumed that a significant percentage of repairs must be redone because the initial fix does not work. Most heliostat support structure maintenance will be performed in the field and when mirror modules are replaced, they will be refastened with fasteners and shims rather than by bonding.

Scheduled maintenance consists mainly of washing and corrosion control inspection. Painting of galvanized metal other than minor touchups for corrosion control is assumed not required. This basic operations and maintenance scenario applies for all production rates.

9.2.3 Costing Approach

The costing approach employed in developing costs for the 25,000 heliostats per year scenario is based on annual resource loading for labor and, in the main, on vendor information quoted at the level of parts and materials required to support annual factory output. For certain electronic components that currently do not exist, the costs of like components were used based on the projection that demand will cause the required components to be produced in the near future. The balance of material costs (e.g., fasteners) are based on catalog prices, while transportation costs are based on the experience at MDC in Long Beach who operate their own transportation fleet.

Although manhours have been primarily developed through manning of the required factory equipment, direct support hours for planning, sustaining tooling, and product support are currently based on standard factors. Quality control hours are derived by a specially studied factor for the Prototype heliostat. Other areas such as material handling and supervision are covered within the applied burden rates.

Various factors have been applied to the costs derived in the above manner. Material has been factored by visibility, scrap and rework, and fee. Labor hours have been adjusted to reflect scrap and rework, and efficiency. Fee is covered in the labor rate. Applied efficiency factors mainly cover impacts on lapsed time while other efficiencies are implicit in the crew loads. This is most apparent in the field where a crew of 7 may be accomplishing a task, but at any one time only 2 or 3 members may be actually involved. Table 9-6 shows the applied factors.

For the rate of 25,000 units per year, cost reduction curves have been applied only to factory labor. In the 25,000 unit scenario, production is assumed to

Table 9-6

FISCAL GROUND RULES AND ASSUMPTIONS

FEE		8%	
VISIBILITY	LABOR	20%	
	MATERIAL	10%	
SCRAP/REWORK	GENERAL	5%	
	ELECT ASSEMBLY	15%	
EFFICIENCY*	FACTORY (MACHINE PACED)	90%	
	FIELD (ON LAPSED TIME)	67%	
	FIELD SUPPORT	77%	
LABOR RATES	FACTORY	$13.00	EXCLUDING FEE
	FIELD	$21.40	EXCLUDING FEE
	ENGR	$39.00	EXCLUDING FEE
CRC	MATERIAL -- STEEL	98%	350,000 BASIS
	GLASS	98%	350,000 BASIS
	ELECT	92%	350,000 BASIS
	LABOR -- FACTORY	89%	125,000 BASIS
	FIELD	98%	350,000 BASIS

*"WAIT TIME" INEFFICIENCY IMPLICIT IN MANLOAD

commence after 100,000 heliostats have been produced for pilot plants, demonstration plants, and first commercial plants, and to continue out to unit 600,000 for a total of 500,000 heliostats over 20 years. The manloads have been projected as those required at the start of the second year of rate production in the factory, or at unit 125,000. In order to arrive at unit hours in the tenth year of operations, labor has been extended down on 89 percent cost reduction curve from unit number 125,000 to the average hours for units 335,000 to 360,000. This is intended to reflect tooling improvements, more efficient alignment of material flows, and better utilization of manpower as the plant matures.

Operations and maintenance costs are based on both resource loading and direct estimates of hours, unit investment cost for replaced or spared parts, and on quotes or prior study information on operations materials such as washing solution. Spares and repair parts are the product of annual failures (based on failure rates tables), hardware unit costs estimated for investment, and repair or replacement factors. Corrective maintenance is the product of crew size and lapsed time or a direct hour estimate for bench labor, annual failures, repair factors for bench labor, and burdened labor rates. Scheduled maintenance is based on direct estimates or crew size and burdened labor rates, material quotes, and estimated frequencies. Results were factored to consider efficiency, added first year failures or problems, and refix where the first attempt at repair is not successful and must be redone. The applied factors are shown in Table 9-7.

Applied labor and burden rates vary between factory, field, and operations. Factory rates are based on low side National average labor costs and MDAC burden and G&A experience at volume production facilities. Installation rates are based on Riverside, California trade labor and fringe rates adjusted to allocate distributable cost. Both the factory and field rates include an 8 percent fee. The O&M labor rate has been estimated at 15 dollars per hour and does not include fee since the utility presumably would not charge itself a fee.

Table 9-7

O&M LABOR FACTORS

EFFICIENCY	
FIELD	50%
BENCH	85%
WASH & INSPECT	85%
REFIX	
DRIVE & REFLECTOR	1.10
ELECTRONICS	1.25
FIRST YEAR FACTOR	
MOTORS	3.34
ELECTRONICS	13.00
WASH & INSPECT	1.20
OTHER	1.00
LABOR RATE	$15.00
CRC	100%

9.2.4 Cost Detail

The work sheets included in Appendix H provide cost detail at the parts level. The investment sheets show average unit cost for 25,000 heliostats per year while operations show both reference unit costs and the annual costs of operating and maintaining 18,000 heliostats. The adjustment factor shown for operations is the product of efficiency, refix, and the repair or replace factor.

9.3 COSTS FOR 250,000 UNITS

Costs for 250,000 heliostats produced per year have been derived from an adjusted 25,000 units per year data base reflecting certain specifically identified cost changes appropriate to a 250,000 per year production rate.

9.3.1 Cost Breakdown by CBS

Table 9-8 shows the average investment cost per heliostat broken down into labor and material for each CBS element and also shows dollars per square meter in 1978 dollars. Operations and maintenance costs are the same as that projected for 25,000 units per year except that spares and repair parts cost is about 15 percent less due to the reduced investment cost.

9.3.2 Changes in the Costing Scenario

Three main changes have been made in the costing scenario. First, material weights have been reduced to their theoretical minimum for the mirror backing structure and integrated drive unit structure. Second, parts have been eliminated in the drive housing by assuming a welded flexspline/housing assembly, and third, robotics have been appraised capable of eliminating 90 percent of the touch labor positions. However, production plant adjustments necessary to assimilate robotics assume most of the direct support is still required and that additional directs will be required to maintain and provide basic direction to the robots. Also, overhead is assumed constant (i.e., reduced fringe will be balanced by increased equipment cost and fringe rates), so that overhead rates increase, dramatically. Two types of industrial robots were considered: one produced by Unimation, Incorporated which is used in numerous automobile production situations, and a highly flexible robot produced by Cincinnatti Milacron. These machines are capable of performing almost any assembly, machine loading, welding or handling operation. One other change assumed is that foundation installation will become more mechanized. Additional changes such as improved line flow, integration and increased supplier control are considered through the operation of the cost reduction curve.

Table 9-8 (Sheet 1 of 2)

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR

WBS NUMBER	WBS NUMBER AND TITLE	NON RECUR (THOU)	CAPITAL INVESTMENT LABOR HOURS	LABOR DOLL	MATL DOLLAR PUR PT	RAW MTL	TOTAL	INVST $/SMR
	GRAND TOTAL-HELIOSTAT	0.	23.8	638.	1585.	485.	2708.	55.21
4410	REFLECTIVE UNIT	0.	1.4	46.	650.	82.	778.	15.87
4411	REFLECTIVE SURFACE	0.	.4	14.	381.	43.	438.	8.92
4412	MIRROR BACK STRUCT	0.	.5	17.	269.	13.	299.	6.09
4413	ASSY & BOND	0.	.5	16.	0.	26.	42.	.86
4420	DRIVE UNIT	0.	2.8	90.	718.	194.	1002.	20.43
4421	AZIMUTH	0.	1.4	46.	108.	99.	252.	5.14
4422	ELEVATION	0.	.9	30.	314.	95.	440.	8.97
4423	MOTOR TOTAL	0.	0.0	0.	153.	0.	153.	3.12
4424	POS/LIMIT INDICATO	0.	.3	9.	17.	0.	25.	.52
4425	PWR SPLY/DIST	0.	0.0	0.	125.	0.	125.	2.54
4426	ASSY DR/PED/ELECT	0.	.2	5.	1.	0.	6.	.13
4430	CONTROL/INSTRMT EQ	0.	.8	27.	56.	0.	83.	1.70
4431	SENSOR/CALIB EQUIP	0.	0.0	0.	1.	0.	1.	.02
4432	FIELD CONTROL	0.	.0	0.	1.	0.	1.	.02
4433	CNTRL/SIG EQ	0.	.8	26.	52.	0.	78.	1.58
44320101	COLLECTOR CONTROL	0.	.0	1.	2.	0.	4.	.08
4440	FOUND/SITE PREP	0.	10.9	292.	160.	96.	548.	11.16
4441	FOUNDATION	0.	7.9	211.	160.	96.	467.	9.52
4442	SITE PREPARATION	0.	3.0	80.	0.	0.	80.	1.64
4450	HELIO SPT ST/PR EN	0.	.3	11.	1.	113.	125.	2.55
4451	HELIO SUPP STRUCT	0.	.3	11.	1.	113.	125.	2.55
4452	PROTECTION ENCL	0.	0.0	0.	0.	0.	0.	0.00
4453	LIGHTNING PROT.	0.	0.0	0.	0.	0.	0.	0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR

WBS NUMBER	WBS TITLE	NON RECUR (THOU)	CAPITAL INVESTMENT LABOR HOURS	CAPITAL INVESTMENT LABOR DOLL	CAPITAL INVESTMENT MATL DOLLAR PUR PT	CAPITAL INVESTMENT MATL DOLLAR RAW MTL	CAPITAL INVESTMENT TOTAL	INVST $/SMR
4460	FIELD ASSY & C/O	0.	7.5	171.	1.	0.	172.	3.51
4461	HELIOSTAT	0.	2.4	64.	0.	0.	64.	1.31
4462	SENSOR/CALIB EQ	0.	.0	0.	0.	0.	0.	.00
4463	ELECTRICAL/DISTRIB	0.	1.4	36.	0.	0.	36.	.74
4464	ALIGN HELIOSTATS	0.	.6	16.	0.	0.	16.	.33
4465	FIELD SUPPORT	0.	.8	22.	0.	0.	22.	.45
4466	PACK & TRANSP	0.	2.3	33.	1.	0.	33.	.68
4100	SITE,STRU,MISC EQ	0.	.2	3.	34.	1.	38.	.78
4130	MISC.EQUIP	0.	.2	3.	34.	1.	38.	.78
4800	DIST AND INDIR	0.	0.0	0.	2.	0.	2.	.04
4840	INITIAL SPARES	0.	0.0	0.	2.	0.	2.	.04

9.3.3 Costing Approach

The costing approach has been to recost material line items where weight has been adjusted, on a dollar per pound basis. Where parts and assembly requirements have been eliminated, the cost has simply been dropped. Labor has been adjusted by reducing touch to 10 percent of the 25,000 per year requirement and then adding on equal number additional "maintenance" directs for a net touch manning adjustment to 20 percent of the original manning. Direct support has been adjusted to 80 percent of the original manning while the burden and G&A rates were increased in accordance with the constant overhead and the reduced labor base. Both labor and material line items that were changed have been repegged to the 3.5 millionth unit of production. Other line items were adjusted along cost reduction curves to unit 3.5 million. The fully loaded labor rates (without fee) applied for the higher production level is $30.10 in the factory and $24.82 in the field.

9.4 ONE MILLION UNITS PER YEAR

Costs for one million units per year have been developed from the 250,000 unit per year data base.

9.4.1 Cost Breakdown by CBS

Table 9-9 shows the average investment cost per heliostat broken down into labor and material for each CBS element and indicates the dollars per square meter in 1978 dollars. Operations and maintenance costs are the same as that projected for the 25,000 per year scenario, except that spares and repair parts costs are expected to be approximately 20 percent lower than that projected for the baseline operations and maintenance cost.

9.4.2 Changes in the Costing Scenario and Approach

The one million unit per year scenario assumes that production facilities will be further functionally specialized, that the design, materials, and processes will continue to improve, and that great control may be exercised over supply. It also may become feasible to vertically integrate the production of certain basic materials. All such changes have been given effect through adjustments along the cost reduction curve to reflect costs at the 15 millionth unit.

Table 9-9 (Sheet 1 of 2)

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR -- 10TH YEAR

WBS NUMBER	AND TITLE	NON RECUR (THOU)	CAPITAL INVESTMENT LABOR HOURS	LABOR DOLL	MATL DOLLAR PUR PT	RAW MTL	TOTAL	INVST $/SMR
	GRAND TOTAL-HELIOSTAT	0.	22.6	604.	1511.	464.	2579.	52.57
4410	REFLECTIVE UNIT	0.	1.3	42.	623.	78.	743.	15.15
4411	REFLECTIVE SURFACE	0.	.4	13.	365.	41.	419.	8.53
4412	MIRROR BACK STRUCT	0.	.5	15.	258.	12.	285.	5.81
4413	ASSY & BOND	0.	.4	14.	0.	25.	39.	.80
4420	DRIVE UNIT	0.	2.5	81.	685.	186.	953.	19.42
4421	AZIMUTH	0.	1.3	41.	103.	95.	239.	4.87
4422	ELEVATION	0.	.8	27.	301.	91.	420.	8.57
4423	MOTOR TOTAL	0.	0.0	0.	147.	0.	147.	2.99
4424	POS/LIMIT INDICATO	0.	.2	8.	16.	0.	24.	.48
4425	PWR SPLY/DIST	0.	0.0	0.	118.	0.	118.	2.40
4426	ASSY DR/PED/ELECT	0.	.1	5.	1.	0.	6.	.12
4430	CONTROL/INSTRMT EQ	0.	.8	25.	47.	0.	72.	1.47
4431	SENSOR/CALIB EQUIP	0.	0.0	0.	1.	0.	1.	.02
4432	FIELD CONTROL	0.	.0	0.	1.	0.	1.	.02
4433	CNTRL/SIG EQ	0.	.7	23.	44.	0.	67.	1.36
44320101	COLLECTOR CONTROL	0.	.0	1.	2.	0.	3.	.07
4440	FOUND/SITE PREP	0.	10.4	279.	154.	92.	525.	10.70
4441	FOUNDATION	0.	7.5	202.	154.	92.	448.	9.13
4442	SITE PREPARATION	0.	2.9	77.	0.	0.	77.	1.57
4450	HELIO SPT ST/PR EN	0.	.3	10.	1.	108.	119.	2.43
4451	HELIO SUPP STRUCT	0.	.3	10.	1.	108.	119.	2.43
4452	PROTECTION ENCL	0.	0.0	0.	0.	0.	0.	0.00
4453	LIGHTNING PROT.	0.	0.0	0.	0.	0.	0.	0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR -- 10TH YEAR

WBS NUMBER	AND TITLE	NON RECUR (THOU)	CAPITAL INVESTMENT LABOR HOURS	LABOR DOLL	MATL DOLLAR PUR PT	MATL DOLLAR RAW MTL	TOTAL	INVST $/SMR
4460	FIELD ASSY & C/O	0.	7.3	167.	1.	0.	167.	3.41
4461	HELIOSTAT	0.	2.3	62.	0.	0.	62.	1.26
4462	SENSOR/CALIB EQ	0.	.0	0.	0.	0.	0.	.00
4463	ELECTRICAL/DISTRIB	0.	1.3	35.	0.	0.	35.	.71
4464	ALIGN HELIOSTATS	0.	.6	15.	0.	0.	15.	.31
4465	FIELD SUPPORT	0.	.8	22.	0.	0.	22.	.45
4466	PACK & TRANSP	0.	2.3	33.	1.	0.	33.	.68
4100	SITE,STRU,MISC EQ	0.	.2	3.	34.	1.	38.	.78
4130	MISC.EQUIP	0.	.2	3.	34.	1.	38.	.78
4800	DIST AND INDIR	0.	0.0	0.	2.	0.	2.	.04
4840	INITIAL SPARES	0.	0.0	0.	2.	0.	2.	.04

9.5 PILOT PRODUCTION COSTS (2500 UNITS)

Pilot Plant costs have been developed from an adjusted 25,000 unit per year data base reflecting certain specifically identified cost changes appropriate to a 2,500 unit pilot production.

9.5.1 Cost Breakdown by CBS

Tables 9-10 and 9-11 provide a cost breakdown into labor and material for each CBS element. Table 9-10 shows average investment cost per heliostat and dollars per square meter in 1978 dollars. First year Pilot Plant operations and maintenance costs are shown in Table 9-11 and cover the costs of operating 1800 heliostats. In addition, non-recurring costs are shown in Table 9-10 which cover vendor tooling, non-recurring direct support for planning and design and fabrication, hardware design preproduction unit support, and special site activation associated with a Pilot Plant only. One notable change is that in addition to the costs being higher, investment labor is a much higher percentage (43 percent) of the total costs for the pilot plant reflectivity increased lapsed times and manning.

9.5.2 Changes in the Costing Scenario

The major changes in the costing scenario for the 2500 unit production relate to the assumption that the pilot production and installation is a short-term operation that is semi-developmental in nature. However, costing also presumes the project maturity that would be gained through production of the Barstow baseline heliostat, the development phases of the prototype heliostat, and miscellaneous other small production opportunities.

Production is expected to occur in existing general purpose facilities but with lines arranged and tooled to provide a reasonable production flow to the extent justified by the limited volume. A site facility is assumed required in support of the installation procedures which are essentially the same as for the production rates. The required specialized equipment is procured and modified to allow checkout of the installation procedures.

Table 9-10 (Sheet 1 of 2)

PROTOTYPE HELIOSTAT INVESTMENT COST - 2500 UNITS

WBS NUMBER	AND TITLE	+-NON+ RECUR (THOU)	+--LABOR HOURS	CAPITAL INVESTMENT DOLL	MATL DOLLAR PUR PT	RAW MTL	TOTAL	INVST $/SMR
	GRAND TOTAL-HELIOSTAT	4399.	116.0	3697.	4090.	916.	8703.	177.44
4410	REFLECTIVE UNIT	310.	18.1	638.	1366.	158.	2163.	44.09
4411	REFLECTIVE SURFACE	88.	5.5	193.	871.	84.	1148.	23.40
4412	MIRROR BACK STRUCT	124.	6.5	229.	496.	22.	746.	15.21
4413	ASSY & BOND	99.	6.1	217.	0.	52.	269.	5.48
4420	DRIVE UNIT	542.	32.8	1157.	2053.	456.	3666.	74.74
4421	AZIMUTH	280.	16.7	589.	210.	273.	1072.	21.86
4422	ELEVATION	175.	10.7	377.	1105.	183.	1664.	33.93
4423	MOTOR TOTAL	0.	0.0	0.	413.	0.	413.	8.43
4424	POS/LIMIT INDICATO	54.	3.4	119.	28.	0.	147.	3.00
4425	PWR SPLY/DIST	0.	0.0	0.	295.	0.	295.	6.02
4426	ASSY DR/PED/ELECT	33.	2.0	72.	2.	0.	74.	1.51
4430	CONTROL/INSTRMT EQ	171.	10.7	378.	444.	1.	823.	16.77
4431	SENSOR/CALIB EQUIP	0.	0.0	0.	10.	0.	10.	.20
4432	FIELD CONTROL	1.	.1	3.	4.	0.	7.	.14
4433	CNTRL/SIG EQ	161.	10.0	354.	389.	1.	744.	15.17
44320101	COLLECTOR CONTROL	9.	.5	21.	41.	0.	62.	1.26
4440	FOUND/SITE PREP	134.	18.6	430.	225.	131.	786.	16.02
4441	FOUNDATION	122.	13.5	311.	225.	131.	667.	13.60
4442	SITE PREPARATION	12.	5.1	119.	0.	0.	119.	2.42
4450	HELIO SPT ST/PR EN	71.	4.4	157.	1.	170.	328.	6.68
4451	HELIO SUPP STRUCT	71.	4.4	157.	1.	170.	328.	6.68
4452	PROTECTION ENCL	0.	0.0	0.	0.	0.	0.	0.00
4453	LIGHTNING PROT.	0.	0.0	0.	0.	0.	0.	0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 2500 UNITS

WBS NUMBER	AND TITLE	NON RECUR (THOU)	CAPITAL INVESTMENT LABOR HOURS	LABOR DOLL	MATL DOLLAR PUR PT	MATL DOLLAR RAW MTL	TOTAL	INVST $/SMR
4460	FIELD ASSY & C/O	636.	31.5	471.	1.	0.	472.	9.63
4461	HELIOSTAT	593.	10.3	238.	0.	0.	238.	4.85
4462	SENSOR/CALIB EQ	1.	.1	3.	0.	0.	3.	.05
4463	ELECTRICAL/DISTRIB	39.	5.8	134.	0.	0.	134.	2.73
4464	ALIGN HELIOSTATS	3.	2.6	59.	0.	0.	59.	1.21
4465	FIELD SUPPORT	1.	.5	11.	0.	0.	11.	.23
4466	PACK & TRANSP	1.	.8	27.	1.	0.	28.	.56
4470	DESIGN/ENGINEER'G	2534.	0.0	466.	0.	0.	466.	9.50
4471	DESIGN	1274.	0.0	0.	0.	0.	0.	0.00
4472	SUSTAINING ENGR.	580.	11.5	466.	0.	0.	466.	9.50
4473	PRE PROD UNIT	170.	0.0	0.	0.	0.	0.	0.00
4474	SITE ACTIVATION	510.	0.0	0.	0.	0.	0.	0.00
4100	SITE,STRU,MISC EQ	0.	1.0	15.	174.	5.	194.	3.96
4130	MISC.EQUIP	0.	1.0	15.	174.	5.	194.	3.96
4800	DIST AND INDIR	0.	0.0	0.	11.	0.	11.	.23
4840	INITIAL SPARES	0.	0.0	0.	11.	0.	11.	.23

Table 9-11

FIRST YEAR OPERATIONS

(1978 DOLLARS IN $000)

PROTOTYPE HELIOSTAT OPERATIONS AND MAINTENANCE PILOT PLANT- 2500 UNITS

WBS NUMBER	WBS TITLE	OPERATIONS AND MAINTENANCE					
		NON-LABOR			LABOR		
		SPARES	REP PT	OTHER	CORRECT	SCHED	TOTAL
	GRAND TOTAL	11.	12.	15.	65.	12.	116.
4410	REFLECTIVE UNIT	1.	0.	0.	1.	0.	2.
4411	REFLECTIVE SURFACE	1.	0.	0.	1.	0.	2.
4412	MIRROR BACK STRUCT	0.	0.	0.	0.	0.	0.
4420	DRIVE UNIT	4.	4.	0.	42.	0.	50.
4421	AZIMUTH	1.	1.	0.	13.	0.	15.
4422	ELEVATION	0.	1.	0.	3.	0.	5.
4423	MOTOR TOTAL	1.	2.	0.	23.	0.	26.
4425	PWR SPLY/DIST	2.	0.	0.	2.	0.	4.
4430	CONTROL/INSTRMT EQ	7.	8.	1.	22.	0.	38.
4431	SENSOR/CALIB EQUIP	0.	0.	0.	0.	0.	0.
4432	FIELD CONTROL	3.	0.	0.	0.	0.	3.
4433	CNTRL/SIG EQ	4.	8.	1.	22.	0.	35.
4450	HELIO SPT ST/PR EN	0.	0.	0.	0.	0.	0.
4451	HELIO SUPP STRUCT	0.	0.	0.	0.	0.	0.
OM000	O AND M SUMMARY	0.	0.	14.	0.	12.	26.
OM100	OPERATIONS	0.	0.	0.	0.	0.	0.
OM200	MAINT. MATERIAL	0.	0.	14.	0.	0.	14.
OM300	MAINTENANCE LABOR	0.	0.	0.	0.	12.	12.

9.5.3 Costing Approach

The costing approach has been to adjust the 25,000 unit per year data base to incorporate vendor quotes obtained for the PDR Pilot Plant cost projections and other low volume procurement information, as appropriate, and to repeg the costs on the cost reduction curve as the average for the first 2,500 units. Material items not changed, simply have been brought up the cost reduction curve from their 25,000 per year peg point. The 25,000 unit labor basis peg point also has been retained, but the cost reduction curve changed to 87 percent providing a steeper assent along the curve to the pilot production quantity. In addition, labor and material visibility have been incorporated into each CBS line item, and loaded factory labor rates have been increased to $32.70 per hour, without fee, to reflect added indirects expected at the type of production facility described.

Non-recurring costs were based, in great part, on PDR non-recurring data as adjusted for 1 year inflation and on certain vendor tooling expectations. Non-recurring direct support costs for tooling, product support, quality assurance and production planning are developed by factors applied to the recurring touch labor base.

The Operations and Maintenance costing approach is identical to that applied for the 25,000 per year scenario. Differences in cost are caused by the order of magnitude difference in field quantities and the higher hardware costs which impact spares and repair parts cost.

9.6 SPECIAL CASES

Two special cases were examined from a cost point of view. The first involves the cost of inverting the heliostat and the second deals with the use of mil specification versus commercial electronic components.

9.6.1 Inversion Costs

The cost of being able to invert the design baseline manifests in three ways--added azimuth weight, additional elevation drive parts, and lost mirror area less the cost of additional mirror surface area. These costs are shown in

Table 9-12 and are based on the costs as factored for the 25,000 heliostat per year scenario. An additional 0.82 square meter of mirror is lost due to the slot required for inversion. The cost of the mirror includes both the added square footage of the mirror module and added stringer length, both of which are costed on a dollar per area basis. The overall cost per square meter is calculated as the difference in cost per square meter between the inverting heliostat at 49.05 m^2 and the non-inverting heliostat at 49.87 m^2, after adjusting the non-inverting heliostat total cost for net cost difference.

Table 9-12

COST OF INVERTING

Azimuth Housing Weight		$ 0.90
Elevation Drive		
Drag Link	$ 22.56	
Bushing	.50	
Pin	1.50	
Invert Hinge Point	6.00	
Stowage Jack	224.58	
Motor	49.25	
		$304.39
Cost to Invert		$305.29
Lost Mirror Surface		
Cost of Mirror (0.82 m^2)		(49.46)
Equivalent Cost		$210.17
	TOTAL	$466.00
	$/$m^2$	$ 9.50
	$/$m^2$R (0.92)	$ 10.32

9.6.2 Mil Specification Versus Commercial Component Cost

The issue has been raised concerning whether it is better to employ more costly mil specification electronic components or commercial grade electronic components in order to save both first year infant mortality costs as well as follow-on costs. A preliminary analysis uncovered the following:

1) Mil specification components cost 4 to 10 times more than commercial grade parts.
2) Commercial grade parts average 9 to 50 times higher failure rates, depending on grades compared, although information available on this relationship is sketchy.
3) Infant mortality may be cut considerably by increasing burn-in of components at an elevated temperature to 168 hours.
4) High grade commercial parts that have been screened by the vendor to the equivalent of quality level B-2 of the Military Standardization Handbook will cost approximately 1.7 to 2 times more than average grade commercial components, but will support a 22 times better failure rate.

The extra investment cost of using "mil-spec" components could range between 4 and 10 million dollars while the extra cost of failures may run between $160,000 and $890,000 per year. Although tending to support the use of military specification parts, if the extra investment cost were 10 million dollars and the annual savings 890 thousand dollars, then a rate of return that is only 8 percent on top of the inflation rate (e.g., 6 + 8 or 14%) would just allow recovery in 30 years. Since better investment opportunities are not uncommon, this scenario might be rejected.

Item 4, above, suggests a better solution. For approximately 1 million dollars additional investment over an investment in average grade commercial parts, an operating savings of 400 thousand dollars per year might be realized. In this case, the rate of return is 40 percent.

APPENDIX H

COST WORK SHEETS

The material in this appendix contains computer printed cost work sheets. The order in which they are presented is as follows:

- 25,000 Heliostats Per Year (H-4 to H-64)
  - Heliostat Investment (H-4 to H-46)
  - Maintenance Equipment Investment (H-47)
  - Initial Spares Investment (H-48 to H-50)
  - First Year Operations and Maintenance (H-51 to H-64)
- 250,000 Heliostats Per Year Investment (H-65 to H-106)
- 1,000,000 Heliostats Per Year Investment (H-107 to H-148)
- 2,500 Heliostats (H-149 to H-209)
  - Heliostat Investment (H-149 to H-191)
  - Maintenance Equipment Investment (H-192)
  - Initial Spares Investment (H-193 to H-195)
  - First Year Operations and Maintenance (H-196 to H-209)

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PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

REFLECTIVE SURFACE 4411

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
10101. LAMINATE T636 LABOR REQUIRED FOR LAMINATING LINE/ SOURCE: MDL/MDC	LBR	.27 HRS	4.93	1.33	1.00	2.32	1.23	3.80	.08
1010201. FAB T637 LABOR REQUIRED FOR MIRRORING LINE. SOURCE: ADL/MDC	LBR	.81 HRS	4.93	3.99	1.00	2.32	1.23	11.39	.23
1010202. FRONT LITE ID40044-3 .000 X 48 X 132 CORNING FUSION GLASS. SOURCE: CORNING	P P	12.00 UNITS	15.98	191.71	1.00	0.00	0.00	191.71	3.91
1010203. CHEMICALS T638 MIRRORING SOLUTION, SILVER AND COPPER. SOURCE: SOMMER & MAGA IND. (LONGDON, ENG.).	R M	12.00 UNITS	1.50	17.97	1.00	0.00	0.00	17.97	.37
1010204. SETUP T501	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10103. BACK LITE ID40044-5 .188 X 48 X 132 FLOAT GLASS SOURCE: ASG	P P	12.00 UNITS	17.97	215.67	1.00	0.00	0.00	215.67	4.40
10104. ADHESIVE 1XA3504 BOND GLASS SHEETS TOGETHER WITH POLYURETHANE ADHESIVE. WT=2 LB. 3M CORPORATION	R M	12.00 UNITS	2.31	27.78	1.00	0.00	0.00	27.78	.57
10105. SETUP T503	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10120. PLANNING T 1 FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR	.03 HRS	4.93	.16	1.00	2.32	1.23	.46	.01
10121. QUAL & RA IND T 2 FACTOR OF .062 PERCENT X MFG HOURS	LBR	.07 HRS	4.93	.33	1.00	2.32	1.23	.94	.02

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

REFLECTIVE SURFACE 4411

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
10123. TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06	LBR	.07 HRS	4.93	.36	1.00	2.32	1.23	1.03	.02
PERCENT OF THE MFG. HOUR.	R M	1.00 UNITS	.06	.06	1.00	0.00	0.00	.06	.00
10124. PROD SUPPORT T 5									
.042 PERCENT OF MFG + PLAN + TOOL	LBR	.05 HRS	4.93	.22	1.00	2.32	1.23	.64	.01
REFLECTIVE SURFACE 4411								471.	9.61

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

MIRROR BACK STRUCT 4412

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
10201. ASSY SUPPORT STR ID40045 INBOARD, OUTBOARD CROSS BEAM: DIAGONAL BEAMS AND OUTBOARD AND INBOARD ANGLES.	LBR	1.28 HRS	4.93	6.32	1.00	2.32	1.23	18.04	.37
10202. INBOARD CROSS BM ID40045-3 .0785 X 27 X 173 148 LB. EA	P P	2.00 UNITS	43.70	87.40	1.00	0.00	0.00	87.40	1.78
10203. OUTBOARD CROSS BM ID40045-5 .0516 X 11 X 173 44 LB. EA SOURCE: U.S. STEEL	P P	2.00 UNITS	13.02	26.04	1.00	0.00	0.00	26.04	.53
10204. DIAGONAL BEAM/LH ID40045-7 .0785 X 26 X 112 66 LB. EACH	P P	2.00 UNITS	19.20	38.41	1.00	0.00	0.00	38.41	.78
10205. DIAGONAL BEAM/RH ID40045-8 .0785 X 26 X 112 66 LB. EACH	P P	2.00 UNITS	19.20	38.41	1.00	0.00	0.00	38.41	.78
10206. HAT/STRINGER ID40045-9 .0635 (16 GA) X 6.00 IN. X 130 GALV. STEEL SHEET HATS,WT= 14 LB EA. SOURCE: WOODSIDE ENGR. CO.	P P	24.00 UNITS	5.56	133.39	1.00	0.00	0.00	133.39	2.72
10207. OUTBOARD ANGLES ID40045-15 .0516 X 3.5 X 4.5 .23 LB. EACH SOURCE: U.S. STEEL	R M	4.00 UNITS	.07	.27	1.00	0.00	0.00	.27	.01
10208. INBOARD ANGLES ID40045-13 .0516 X 4.0 X 10.50 .61 LB EACH SOURCE: U.S. STEEL	R M	4.00 UNITS	.18	.73	1.00	0.00	0.00	.73	.01
10209. GUSSET ANGLE ID40045-11 .25X8.5X17.50 11 LB. EA. SOURCE: U.S. STEEL	R M	4.00 UNITS	3.11	12.43	1.00	0.00	0.00	12.43	.25
10211. CLINCH NUT S-0420-1-Z SOURCE: S.P.S. CO.	P P	48.00 UNITS	.04	1.90	1.00	0.00	0.00	1.90	.04
10212. BOLT T601 .25 UNC-20 X .75 LONG SAE SOURCE: MCMASSTER	P P	48.00 UNITS	.04	1.85	1.00	0.00	0.00	1.85	.04

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

MIRROR BACK STRUCT 4412

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
10213. WASHER T602									
.25 ID SAE WASHER	P P	48.00 UNITS	.00	.13	1.00	0.00	0.00	.13	.00
SOURCE: MCMASTER									
10220. PLANNING T 1									
FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR	.04 HRS	4.93	.19	1.00	2.32	1.23	.54	.01
10221. QUAL & RA IND T 2									
FACTOR OF .062 PERCENT X MFG HOURS	LBR	.08 HRS	4.93	.39	1.00	2.32	1.23	1.12	.02
10223. TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06	LBR	.09 HRS	4.93	.43	1.00	2.32	1.23	1.23	.03
PERCENT OF THE MFG. HOUR.	R M	1.00 UNITS	.07	.07	1.00	0.00	0.00	.07	.00
10224. PROD SUPPORT T 5									
.042 PERCENT OF MFG + PLAN + TOOL	LBR	.05 HRS	4.93	.27	1.00	2.32	1.23	.76	.02
MIRROR BACK STRUCT 4412								363.	7.39

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

ASSY & BOND 4413

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
10301.									
ASSY & BOND 441301									
BONDS MIRRORS TO BACKING/STRINGERS TO GLASS. .14 GAL. PER PANEL OF 3MEC3532 ADHESIVE (3M CORP) SOURCE: ADL/MDC	LBR	1.21 HRS	4.93	5.98	1.00	2.32	1.23	17.09	.35
10302.									
ADHESIVE 441301									
BONDS MIRRORS TO BACKING/STRINGERS TO GLASS. .14 GAL. PER PANEL OF 3MEC3532 ADHESIVE (3M CORP) SOURCE: ADL/MDC	R M	12.00 UNITS	2.35	28.18	1.00	0.00	0.00	28.18	.57
10303.									
PLANNING T 1									
FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR	.04 HRS	4.93	.18	1.00	2.32	1.23	.51	.01
10304.									
QUAL & RA IND T 2									
FACTOR OF .062 PERCENT X MFG HOURS	LBR	.08 HRS	4.93	.37	1.00	2.32	1.23	1.06	.02
10306.									
TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06	LBR	.08 HRS	4.93	.41	1.00	2.32	1.23	1.16	.02
PERCENT OF THE MFG. HOUR.	R M	1.00 UNITS	.07	.07	1.00	0.00	0.00	.07	.00
10307.									
PROD SUPPORT T 5									
.042 PERCENT OF MFG + PLAN + TOOL	LBR	.05 HRS	4.93	.25	1.00	2.32	1.23	.72	.01
ASSY & BOND 4413								49.	.99

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

AZIMUTH 4421

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
20101.									
ASSEMBLY	ID40065								
DRIVE COMPONENTS ASSEMBLY	LBR	.67 HRS	4.93	3.32	1.00	2.32	1.23	9.49	.19
SOURCE: ADL/MDAC									
2010201.									
HOUSING	ID40038								
WELDMENT HOUSING WT= 348 LB.	LBR	.79 HRS	4.93	3.88	1.00	2.32	1.23	11.08	.23
SOURCE: U.S. STEEL	R M	1.00 UNITS	81.61	81.61	1.00	0.00	0.00	81.61	1.66
2010203.									
BUSHING PIVOT	KJS1616060								
PER SPECIFICATION. PIVOT POINT	P P	2.00 UNITS	.73	1.45	1.00	0.00	0.00	1.45	.03
BUSHING. SOURCE: SARGENT									
201030101.									
MEMBRANE	T607								
10 O.D. X .156 WALL	R M	1.00 UNITS	3.94	3.94	1.00	0.00	0.00	3.94	.08
201030102.									
TUBE	T608								
10 O.D. X .156 WALL X 8 HIGH	R M	1.00 UNITS	10.44	10.44	1.00	0.00	0.00	10.44	.21
MADE OF 4130, 7 TL, SOURCE:U.S.STEEL									
201030103.									
SPLINE	T609								
10 O.D. X .312 WALL X 3 LONG	R M	1.00 UNITS	7.96	7.96	1.00	0.00	0.00	7.96	.16
201030104.									
DOUBLER	T610								
6.50 OD X .375 L.C. STEEL	R M	2.00 UNITS	1.82	3.65	1.00	0.00	0.00	3.65	.07
SOURCE: U.S. STEEL									
201030105.									
ASSEMBLY	T603								
FAB AND ASSY. FLEX SPLINE	LBR	.64 HRS	4.93	3.16	1.00	2.32	1.23	9.02	.18
SOURCE: ADL/MDAC									
201030201.									
PLUG	T605								
7 OD X 1.50 L.C. STEEL	R M	1.00 UNITS	3.38	3.38	1.00	0.00	0.00	3.38	.07
SOURCE: U.S. STEEL									
201030202.									
DRIVE SHAFT	T611								
1.75 OD, .75 ID X 10.75 LONG	R M	1.00 UNITS	1.93	1.93	1.00	0.00	0.00	1.93	.04
L.C. STEEL PIPE. SOURCE: KELLY									
PIPE.									
201030203.									
BEARING	88-2151								
PER SPECIFICATION	P P	1.00 UNITS	75.62	75.62	1.00	0.00	0.00	75.62	1.54
SOURCE: MC GILL MFG. CO.									

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

AZIMUTH 4421

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
201030204. FABRICATION	T653									
FAB AND ASSY. WAVE GENERATOR		LBR	.54 HRS	4.93	2.66	1.00	2.32	1.23	7.59	.15
SOURCE: ADL/MDAC										
20104. BEARING TURRET	BB-2149									
PER SPECIFICATION.		P P	1.00 UNITS	20.78	20.78	1.00	0.00	0.00	20.78	.42
SOURCE: MC GILL MFG. CO.										
2010601. RETAINER-OUTER	IT49852-1									
19.625 OD X 15.1875 ID X 1.25 LG.		LBR	.02 HRS	4.93	.08	1.00	2.32	1.23	.24	.00
L.C. STEEL. WT = 29.28		R M	1.00 UNITS	6.87	6.87	1.00	0.00	0.00	6.87	.14
SOURCE: U.S. STEEL										
2010602. NUT	T640									
1/2 I.D.		P P	8.00 UNITS	.14	1.09	1.00	0.00	0.00	1.09	.02
SOURCE: MCMASTER										
2010603. BOLTS	T510									
1/2 X 3, GLASS 5		P P	8.00 UNITS	.45	3.63	1.00	0.00	0.00	3.63	.07
SOURCE: MC MASTER										
2010604. WASHER	T511									
1/2 ID.		P P	8.00 UNITS	.00	.03	1.00	0.00	0.00	.03	.00
SOURCE: MC MASTER										
2010701. PAN-OIL	T513									
1500 X .125 L.C. STEEL WT = 6.25		P P	1.00 UNITS	1.85	1.85	1.00	0.00	0.00	1.85	.04
SOURCE: U.S. STEEL										
2010703. SCREW	T515									
1/2 LONG FLAT HEAD		P P	8.00 UNITS	.00	.03	1.00	0.00	0.00	.03	.00
SOURCE: MC MASTER										
2010801. CIRCULAR SPLINE	T 36									
15 OD X 10 ID X 2.75 LG		LBR	.51 HRS	4.93	2.49	1.00	2.32	1.23	7.12	.15
LC STEEL SHEET. WT = 73 LB.		R M	1.00 UNITS	33.09	33.09	1.00	0.00	0.00	33.09	.67
SOURCE: LINCOLN FOUNDRY										
2010803. BOLTS	T516									
1/2 X 2 CLASS 5		P P	8.00 UNITS	.31	2.45	1.00	0.00	0.00	2.45	.05
SOURCE: MC MASTER										

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

AZIMUTH 4421

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2010804. WASHER 1/2 ID SOURCE: MC MASTER T520	T517	P P	8.00 UNITS	.00	.03	1.00	0.00	0.00	.03	.00
2010901. HELICON PER SPECIFICATION SOURCE: SPIROID	RMJ22178	LBR	.13 HRS	4.93	.66	1.00	2.32	1.23	1.89	.04
		R M	1.00 UNITS	2.01	2.01	1.00	0.00	0.00	2.01	.04
201090101. PINION PER SPECIFICATION. SOURCE: SPIROID	T519	P P	1.00 UNITS	3.40	3.40	1.00	0.00	0.00	3.40	.07
201090102. RING-PINION-RET 2.75 O.D. SOURCE: MC MASTER	T520	P P	1.00 UNITS	.36	.36	1.00	0.00	0.00	.36	.01
201090103. SHIM-GEAR 1.50 O.D./1.125 ID SOURCE: MC MASTER	T521	P P	1.00 UNITS	.06	.06	1.00	0.00	0.00	.06	.00
201090104. KEY-GEAR 1 LONG X 1/4 WIDE SOURCE: MC MASTER	NAS558-808-8	P P	1.00 UNITS	.22	.22	1.00	0.00	0.00	.22	.00
201090105. NUT GEAR AFBMA STANDARD W-05 SOURCE: MC MASTER	T522	P P	1.00 UNITS	1.04	1.04	1.00	0.00	0.00	1.04	.02
201090106. WASHER GEAR AFBMA STANDARD W-05 SOURCE: MC MASTER	T523	P P	1.00 UNITS	.15	.15	1.00	0.00	0.00	.15	.00
201090107. BEARING DRIVE SHAFT BEARING PER SPECIFICATION.	67046NR1641DC	P P	1.00 UNITS	3.97	3.97	1.00	0.00	0.00	3.97	.08
201090108. RING-BEARING-RET DRIVE SHAFT BEARING RETAINER PER SPECIFICATION.	MS16625-1200	P P	1.00 UNITS	.36	.36	1.00	0.00	0.00	.36	.01

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

AZIMUTH 4421

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2011001. BOLTS HLT-116-16-20 PER SPECIFICATION. SOURCE: LAWRENCE ENGINEERING	P P	12.00 UNITS	.34	4.08	1.00	0.00	0.00	4.08	.08
2011002. NUT HLT-73PB-16 PER SPECIFICATION SOURCE: LAWRENCE ENGINEERING 5644	P P	12.00 UNITS	1.70	20.42	1.00	0.00	0.00	20.42	.42
2011201. TUBE-ELEC.WIRE T643 .688 OD X .063 WALL X 13 LONG, L.C. STEEL. SOURCE: KELLY PIPE.	P P	1.00 UNITS	.16	.16	1.00	0.00	0.00	.16	.00
2011202. CLAMP-WIRE TUBE 5644 SOURCE: MC MASTER	P P	1.00 UNITS	.23	.23	1.00	0.00	0.00	.23	.00
2011301. COVER T646 9 DIA. X .125 AND 8 DIA. X .125 L.C. STEEL SHEET.	LBR	.00 HRS	4.93	.00	1.00	2.32	1.23	.01	.00
	R M	1.00 UNITS	1.17	1.17	1.00	0.00	0.00	1.17	.02
2011302. SCREW T613 AFFIX COVER TO DRIVE HOUSING. SOURCE: MC MASTER	P P	4.00 UNITS	.00	.01	1.00	0.00	0.00	.01	.00
2011303. GROMMET T526 HOLDS WIRE AND SEALS GEN HOUSING COMPARTMENT. SOURCE: MC MASTER	P P	1.00 UNITS	.06	.06	1.00	0.00	0.00	.06	.00
20114. PLANNING T 1 FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR	.10 HRS	4.93	.49	1.00	2.32	1.23	1.39	.03
20115. Q & RA-IND T 2 FACTOR OF .062 PERCENT X MFG HOURS	LBR	.20 HRS	4.93	1.01	1.00	2.32	1.23	2.88	.06
20117. TOOLING MATERIAL T 4 $.70 PER TOOLING HOURS PLUS .06 PERCENT OF THE MFG. HOUR.	LBR	.22 HRS	4.93	1.11	1.00	2.32	1.23	3.16	.06
	R M	1.00 UNITS	.18	.18	1.00	0.00	0.00	.18	.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

AZIMUTH 4421

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
20118. PRODUCTION SUPT. T 5 .042 PERCENT OF MFG + PLAN + TOOL LBR	.14 HRS	4.93	.68	1.00	2.32	1.23	1.95	.04
AZIMUTH 4421							354.	7.21

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

ELEVATION 4422

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS C&C	OVERHEAD	G&A	TOTAL	$/SM
2020101. WELDMENT	T 50									
DRAG LINK WT= 65 LB.		LBR	.52 HRS	4.93	2.56	1.00	2.32	1.23	7.30	.15
SOURCE: U.S. STEEL		R M	1.00 UNITS	15.26	15.26	1.00	0.00	0.00	15.26	.31
2020103. BUSHING	KJS1616060									
PER SPECIFICATION. PIVOT POINT BUSHING. SOURCE: SARGENT		P P	2.00 UNITS	.25	.50	1.00	0.00	0.00	.50	.01
2020104. SHIM	T 41									
PIVOT POINT SHIM RESTRICTS MOVEMENT. SOURCE: MC MASTER		R M	4.00 UNITS	.34	1.36	1.00	0.00	0.00	1.36	.03
2020105. BOLT	T528									
3/4 DIA X 5 LONG SOURCE: MC MASTER		P P	2.00 UNITS	2.26	4.51	1.00	0.00	0.00	4.51	.09
2020106. SEAL-DUST	T529									
SOURCE: MC MASTER		P P	2.00 UNITS	.06	.11	1.00	0.00	0.00	.11	.00
2020107. THRUST BRG	KTM-1622060									
PER SPECIFICATION. SOURCE: SARGENT		P P	4.00 UNITS	.20	.82	1.00	0.00	0.00	.82	.02
2020108. NUT	T530									
.75 I.D. SOURCE: MC MASTER		P P	2.00 UNITS	.35	.70	1.00	0.00	0.00	.70	.01
2020109. BUSHING-CLAMP UP	T531									
.75 DIA. X 5 LONG, CLASS 8		P P	2.00 UNITS	1.93	3.86	1.00	0.00	0.00	3.86	.08
2020110. BOLT-ROD END	T532									
.75 DIA X 3.25 LONG, CLASS 8 SOURCE: MC MASTER		P P	2.00 UNITS	1.20	2.40	1.00	0.00	0.00	2.40	.05
2020111. NUT-ROD END	T533									
.75 I.D. SOURCE: MC MASTER		P P	2.00 UNITS	.35	.70	1.00	0.00	0.00	.70	.01
2020112. BUSHING	T534									
CLAMP UP SOURCE: MC MASTER		P P	2.00 UNITS	.25	.50	1.00	0.00	0.00	.50	.01

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

ELEVATION 4422

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2020113. SHIM ROD END SOURCE: MC MASTER	T535	P P	4.00 UNITS	.34	1.36	1.00	0.00	0.00	1.36	.03
2020114. SEAL-DUST ROD END SOURCE: MC MASTER	T536	P P	4.00 UNITS	.06	.23	1.00	0.00	0.00	.23	.00
20202. JACK SCREW 5 TON, 6 INCH RAISE, .85 INCH X 2 INCH X 22 INCH. WT=80.4 LB. DUFF NORTON	T 52	P P	2.00 UNITS	224.58	449.16	1.00	0.00	0.00	449.16	9.16
2020301. TUBE 16 IN. OD X .105 IN WALL X 81 IN. LONG. LC STEEL PIPE 124 LB. SOURCE: KELLY PIPE	ID40042-3	R M	1.00 UNITS	43.76	43.76	1.00	0.00	0.00	43.76	.89
2020302. TAB ACTUATOR .5 X 10 X 10 LC STEEL WT=5.73 LB SOURCE: U.S. STEEL	ID40042-5	LBR R M	.13 HRS 2.00 UNITS	4.93 3.21	.64 6.42	1.00 1.00	2.32 0.00	1.23 0.00	1.82 6.42	.04 .13
2020303. TAB HINGE .5 X 9 X 9 LC STEEL WT=5 LB. SOURCE: U.S. STEEL	ID40042-9	LBR R M	.02 HRS 4.00 UNITS	4.93 2.60	.11 10.39	1.00 1.00	2.32 0.00	1.23 0.00	.31 10.39	.01 .21
2020304. FLANGE .625 X 18.00 X 18.00 LOW CARBON STEEL PLATE SOURCE: U.S. STEEL	ID40042-7	LBR R M	.23 HRS 2.00 UNITS	4.93 13.00	1.12 26.00	1.00 1.00	2.32 0.00	1.23 0.00	3.20 26.00	.07 .53
2020305. ASSEMBLY SUPPORTS REFLECTOR AND TIES ELEVATIONAL AZIMUTH DRIVE TOGETHER. WT=193 LBS. SOURCE: ADL/MDC	ID40042	LBR	1.21 HRS	4.93	5.98	1.00	2.32	1.23	17.09	.35
2020401. BUSHING PER SPECIFICATION SOURCE: SARGENT	KJS-1616060	P P	4.00 UNITS	.20	.82	1.00	0.00	0.00	.82	.02
2020402. SHAFT PIVOT SHAFT.	T647	P P	4.00 UNITS	4.03	16.11	1.00	0.00	0.00	16.11	.33

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

ELEVATION 4422

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2020403. SEAL-DUST	KTM-1622060								
PER SPECIFICATION.	P P	4.00 UNITS	.06	.23	1.00	0.00	0.00	.23	.00
SOURCE: SARGENT									
2020404. WASHER	AN-960-416L								
SOURCE: LAWRENCE ENGINEERING	P P	4.00 UNITS	.07	.27	1.00	0.00	0.00	.27	.01
20209. PLANNING	T 1								
FACTOR OF 10 PERCENT X MFG HOURS	LBR	.06 HRS	4.93	.31	1.00	2.32	1.23	.89	.02
DIST. .03 TO LABOR AND .07 TO NON-RECURRING.									
20210. Q & RA IND	T 2								
FACTOR OF .062 PERCENT X MFG HOURS	LBR	.13 HRS	4.93	.65.	1.00	2.32	1.23	1.84	.04
20212. TOOLING MATERIAL	T 4								
$.70 PER TOOLING HOURS PLUS .06	LBR	.14 HRS	4.93	.71.	1.00	2.32	1.23	2.02	.04
PERCENT OF THE MFG. HOUR.	R M	1.00 UNITS	.11	.11	1.00	0.00	0.00	.11	.00
20213. PRODUCTION SUPT	T 5								
.042 PERCENT OF MFG + PLAN + TOOL	LBR	.09 HRS	4.93	.44.	1.00	2.32	1.23	1.25	.03
ELEVATION 4422								621.	12.67

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

MOTOR TOTAL 4423

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2030101. BOLTS 1/4 DIA. X 1 LONG, CLASS 2 SOURCE: MC MASTER	T538	P P	4.00 UNITS	.06	.23	1.00	0.00	0.00	.23	.00
2030102. WASHER 1/4 DIA. SOURCE: MC MASTER	T539	P P	1.00 UNITS	.03	.03	1.00	0.00	0.00	.03	.00
2030103. AZIMUTH MOTOR	T667	P P	1.00 UNITS	64.89	64.89	1.00	0.00	0.00	64.89	1.32
2030201. BOLT/NUT 1/4 DIA. X 1 LONG, CLASS 2 SOURCE: MC MASTER	T541	P P	4.00 UNITS	.36	1.45	1.00	0.00	0.00	1.45	.03
2030202. WASHER 1/4 DIA. SOURCE: MC MASTER	T542	P P	4.00 UNITS	.03	.14	1.00	0.00	0.00	.14	.00
2030203. TRKING MOTOR 1/4 HP, 24V, THREE PHASE WITH A NENA "C" CURVE SOURCE: W.C. PEART CO.	T665	P P	1.00 UNITS	47.66	47.66	1.00	0.00	0.00	47.66	.97
2030301. BOLT/NUT 1/4 X 1 LONG, CLASS 2 SOURCE: MC MASTER	T544	P P	4.00 UNITS	.36	1.45	1.00	0.00	0.00	1.45	.03
2030302. WASHER 1/4 DIA. SOURCE: MC MASTER	T545	P P	4.00 UNITS	.03	.14	1.00	0.00	0.00	.14	.00
2030303. STOWAGE MOTOR 1/4 HP, 240V, THREE PHASE WITH	T666	P P	1.00 UNITS	47.66	47.66	1.00	0.00	0.00	47.66	.97
MOTOR TOTAL	4423								164.	3.34

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

POS/LIMIT INDICATO 4424

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
20401. ASSEMBLY OF ELECTRONIC SOURCE: ADL	T614	LBR	.66 HRS	4.93	3.26	1.00	2.32	1.23	9.32	.19
2040201. HALL EFFECT SENSOR SOURCE: MICRO SWITCH	T616	P P	2.00 UNITS	1.82	3.64	1.00	0.00	0.00	3.64	.07
2040202. LINE DRIVER SOURCE: FAIRCHILD	9614	P P	3.00 UNITS	.76	2.27	1.00	0.00	0.00	2.27	.05
2040203. FERROUS METAL DISC SOURCE: MDAC	T618	P P	3.00 UNITS	1.13	3.40	1.00	0.00	0.00	3.40	.07
2040301. DUEL DIFF LINE REC SOURCE: FAIRCHILD	9615	P P	1.00 UNITS	.87	.87	1.00	0.00	0.00	.87	.02
2040302. OPT.ISOL. TRIACS PER SPECIFICATION SOURCE: MOTOROLA	Q2T3244	P P P	4.00 UNITS	1.08	4.31	1.00	0.00	0.00	4.31	.09
2040303. RESISTOR PER SPECIFICATION SOURCE: RCA	11 Z 13	P P P	4.00 UNITS	.12	.50	1.00	0.00	0.00	.50	.01
2040304. CAPACITOR PER SPECIFICATION SOURCE: RCA	0.1MF1400V	P P P	4.00 UNITS	.11	.45	1.00	0.00	0.00	.45	.01
2040305. PRINTED CIRCUIT BD 6 IN. X 6 IN. TWO SIDE EPOXY GLASS, COPPER CIRCUITRY, WITH THRU PLATED HOLES. .02 SOURCE: MDAC	T107	P P	1.00 UNITS	.82	.82	1.00	0.00	0.00	.82	.02
2040306. COVER PER SPECIFICATION SOURCE: MDAC	T226	P P P	1.00 UNITS	1.02	1.02	1.00	0.00	0.00	1.02	.02
20405. PLANNING FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	T 1	LBR	.02 HRS	4.93	.10	1.00	2.32	1.23	.28	.01

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

POS/LIMIT INDICATO 4424

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
20406.									
Q & RA IND T 2									
FACTOR OF .062 PERCENT X MFG HOURS	LBR	.04 HRS	4.93	.20	1.00	2.32	1.23	.58	.01
20408.									
TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06	LBR	.05 HRS	4.93	.22	1.00	2.32	1.23	.63	.01
PERCENT OF THE MFG. HOUR.	R M	1.00 UNITS	.04	.04	1.00	0.00	0.00	.04	.00
20409.									
PRODUCTION SUPPT. T 5									
.042 PERCENT OF MFG + PLAN + TOOL	LBR	.03 HRS	4.93	.14	1.00	2.32	1.23	.39	.01
POS/LIMIT INDICATO 4424								29.	.58

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PWR SPLY/DIST 4425

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2050201. FEEDER CABLE CLX 3, NO. 4 AWG,5KV,COPPER CABLE/GALITEP 2000, WITH ALUMINUM SHEATH AND PVC JACKETS SUITABLE FOR DIRECT BURIAL. SOURCE: OKONITE	P	1.00 UNITS	7.76	7.76	1.00	0.00	0.00	7.76	.16
2050202. TRANSFORMER 225T(19)H PER SPECIFICATIONS. SOURCE: SQUARE D	P P	1.00 UNITS	18.10	18.10	1.00	0.00	0.00	18.10	.37
2050203. DIST PANEL SQ.D-H-4172-4M 480V THREE PHASE WITH 100 AMP C/B. SOURCE: SQUARE D	P P	1.00 UNITS	1.87	1.87	1.00	0.00	0.00	1.87	.04
2050204. BRANCH CIR BKR SQD NO.FA-34040 480V, 3 POLE, 40 AMP SOURCE: SQUARE D	P P	15.00 UNITS	.23	3.47	1.00	0.00	0.00	3.47	.07
2050205. BRANCH CIR CABLE CLX-ALS 3, NO.8 AWG,600V,COPPER CABLE/GALITEP 2000 WITH ALUMINUM SHEATH AND PVC JACKET, SUITABLE FOR DIRECT BURIAL. SOURCE: OKONITE	P	1.00 UNITS	48.37	48.37	1.00	0.00	0.00	48.37	.99
2050206. PLANNING T 1 FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR ERR	0.00 HRS 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00
2050207. Q & RA - IND T 2 FACTOR OF .062 PERCENT X MFG HOURS	LBR ERR	0.00 HRS 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00
2050208. TOOLING MATERIAL T 4 $.70 PER TOOLING HOURS PLUS .06 PERCENT OF THE MFG. HOUR.	LBR ERR R M	0.00 HRS 0.00 0.00 UNITS	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00
2050209. PRODUCTION SUPT. T 5 .042 PERCENT OF MFG + PLAN + TOOL + Q & RA (DIRECT & IND.)	LBR ERR	0.00 HRS 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

PWR SPLY/DIST 4425

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2050301. WIRE	CLX-16									
3 NO. 16 AWG WITH OPTICAL FIBER SOURCE: OKONITE		P P	1.00 UNITS	8.17	8.17	1.00	0.00	0.00	8.17	.17
2050302. CIR BKR/HOLDER	T663									
480V, 15 AMP, 3 PHASE C/B PLUS HOLDER. SOURCE: SQUARE D		P P	1.00 UNITS	37.33	37.33	1.00	0.00	0.00	37.33	.76
2050303. CONNECTORS	T664									
OPTICAL FIBER COUPLINGS.		P P	2.00 UNITS	3.17	6.35	1.00	0.00	0.00	6.35	.13
PWR SPLY/DIST	4425								131.	2.68

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

ASSY DR/PED/ELECT 4426 T

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
20601.									
ASSY DR/PED/ELECT 4426	T								
DRIVE AND PEDESTAL LABOR REQUIRED	LBR	.40 HRS	4.93	1.99	1.00	2.32	1.23	5.70	.12
ASSEMBLY OF MAIN BEAM, JACKS,	P P	1.00 UNITS	1.13	1.13	1.00	0.00	0.00	1.13	.02
DRAG LINK, AZIMUTH DRIVE, PEDESTAL AND ELECTRIC.									
SOURCE: ADL/MDAC									
20604.									
PLANNING T 1									
FACTOR OF 10 PERCENT X MFG HOURS	LBR	.01 HRS	4.93	.06	1.00	2.32	1.23	.17	.00
DIST. .03 TO LABOR AND .07 TO NON-RECURRING.									
20605.									
QUAL & RA IND T 2									
FACTOR OF .062 PERCENT X MFG HOURS	LBR	.03 HRS	4.93	.12	1.00	2.32	1.23	.35	.01
20607.									
TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06	LBR	.03 HRS	4.93	.14	1.00	2.32	1.23	.39	.01
PERCENT OF THE MFG. HOUR.	R M	1.00 UNITS	.02	.02	1.00	0.00	0.00	.02	.00
20608.									
PROD SUPPORT T 5									
.042 PERCENT OF MFG + PLAN + TOOL	LBR	.02 HRS	4.93	.08	1.00	2.32	1.23	.24	.00
ASSY DR/PED/ELECT 4426	T							8.	.16

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

SENSOR/CALIB EQUIP 4431

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
3010201. CAMERA	TN2200									
SOURCE: GENERAL ELECTRIC		P P	1.00 UNITS	.79	.79	1.00	0.00	0.00	.79	.02
3010202. CAMERA LENS	T648	P P	1.00 UNITS	.04	.04	1.00	0.00	0.00	.04	.00
3010203. TRIPOD 6 FT HIGH	T649									
SOURCE: MDAC		P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
3010204. COOLER-HEATER	T650									
SOURCE: MDAC		P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
3010205. ELECTRONICS	T651									
CAMERA ELECTRONICS										
SOURCE: MDAC		P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
3010206. CABLE	CLX-16									
3 NO. 16 AWG WITH OPTICAL FIBER										
SOURCE: OKONITE		P P	1.00 UNITS	.01	.01	1.00	0.00	0.00	.01	.00
30105. PLANNING	T 1									
FACTOR OF 10 PERCENT X MFG HOURS		LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DIST. .03 TO LABOR AND		ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
.07 TO NON-RECURRING.										
30106. Q & RA IND	T 2									
FACTOR OF .062 PERCENT X MFG HOURS		LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30107. TOOLINGG MATERIAL	T 4									
$.70 PER TOOLING HOURS PLUS .06		LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PERCENT OF THE MFG. HOUR.		ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		R M	0.00 UNITS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30108. PRODUCTION SUPT.	T 5									
.042 PERCENT OF MFG + PLAN + TOOL		LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
+ Q & RA (DIRECT & IND.)		ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SENSOR/CALIB EQUIP 4431									1.	.02

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

FIELD CONTROL 4432

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
30201. ASSEMBLY DDI COMPONENT ASSEMBLY	T620	LBR	.02 HRS	4.93	.09	1.00	2.32	1.23	.25	.01
3020201. TWO SIDED PWB SOURCE: MDAC	44320201	P P	2.00 UNITS	.00	.01	1.00	0.00	0.00	.01	.00
3020202. CONNECTOR 24 PIN SOURCE: AMP INC.	T652	P P	2.00 UNITS	.00	.01	1.00	0.00	0.00	.01	.00
3020203. LED PER SPECIFICATION SOURCE: RCA	SG1010	P P	10.00 UNITS	.00	.03	1.00	0.00	0.00	.03	.00
3020204. OPT TRANSCEIVER COMMUNICATION WITH HELIOSTAT ARRAY CONTROLLER SOURCE: TI	T622	P P	2.00 UNITS	.05	.10	1.00	0.00	0.00	.10	.00
3020205. MICRO-COMPUTER SIMILAR TO NAT'L SEMI 8748 SOURCE: NATL SEMICONDUCTOR	T623	P P	2.00 UNITS	.05	.10	1.00	0.00	0.00	.10	.00
3020206. OPT TRANSCEIVER COMMUNICATION WITH HELIOSTAT CONTROLLER. SOURCE: TI	T624	P P	8.00 UNITS	.04	.33	1.00	0.00	0.00	.33	.01
3020207. RELAY 4 PDT (5V) SOURCE: POTTER BRUMFIELD	T660	P P	8.00 UNITS	.01	.08	1.00	0.00	0.00	.08	.00
3020208. CERAMIC CAPS 0.1 MF .50V SOURCE: BELL	T626	P P	8.00 UNITS	.00	.01	1.00	0.00	0.00	.01	.00
3020209. MODULAR PWR-SUPPLY PV SOURCE: LAMBELA	T627	P P	2.00 UNITS	.14	.29	1.00	0.00	0.00	.29	.01
3020210. FOAM PADS ATTACH FOAM CUSHIONS TO TOP OF BOX.	T628	P P	2.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

FIELD CONTROL 4432

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
3020211. PHOTO DETECTOR OPTICAL FIBER SOURCE: I.T.	T629	P P	2.00 UNITS	.02	.03	1.00	0.00	0.00	.03	.00
3020212. PHOTO TRANSISTORS OPTICAL FIBER. SOURCE: I.T.	T630	P P	8.00 UNITS	.00	.02	1.00	0.00	0.00	.02	.00
3020213. BOX ONE PIECE MOLDED PLASTIC BOX WITH ATTACHED COVER. SOURCE: NEWPORT PLASTIC	T631	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
3020214. CONNECTOR 36 COND NO. 24 AWG FLAT WIRE AND CONNECTORS. SOURCE: AMP INC.	T231	P P	2.00 UNITS	.00	.01	1.00	0.00	0.00	.01	.00
30215. PLANNING FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	T 1	LBR	.00 HRS	4.93	.00	1.00	2.32	1.23	.01	.00
30216. Q & RA - IND FACTOR OF .062 PERCENT X MFG HOURS	T 2	LBR	.00 HRS	4.93	.01	1.00	2.32	1.23	.02	.00
30218. TOOLING MATERIAL $.70 PER TOOLING HOURS PLUS .06 PERCENT OF THE MFG. HOUR.	T 4	LBR	.00 HRS	4.93	.01	1.00	2.32	1.23	.02	.00
		R M	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
30219. PROD SUPPORT .042 PERCENT OF MFG + PLAN + TOOL	T 5	LBR	.00 HRS	4.93	.00	1.00	2.32	1.23	.01	.00
FIELD CONTROL	4432								1.	.03

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

CNTRL/SIG EQ 4433

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
30301. ASSEMBLY TOTAL COMPONENTS	T201	LBR	1.98 HRS	4.93	9.75	1.00	2.32	1.23	27.84	.57
3030201. PRINTED CIRCUIT BD 4 IN X 5 IN TWO SIDED EPOXY GLASS COPPER CIRCUITRY WITH THRU PLATED HOLES. .02 SOURCE: MDAC	T100	T P P	1.00 UNITS	.82	.82	1.00	0.00	0.00	.82	.02
3030203. CONNECTOR 24 PIN SOURCE: AMP INC.	T652	P P	1.00 UNITS	1.14	1.14	1.00	0.00	0.00	1.14	.02
3030204. MU.COMPUTER SIMILAR TO NAT'L SEMI 8748 SOURCE: NATL SEMICONDUCTOR	T623	P P	1.00 UNITS	13.62	13.62	1.00	0.00	0.00	13.62	.28
3030205. QUAD.DIFF. LINE DR MOTOR DRIVER INTERFACE SIMILAR TO NAT'L SEMI. DS1688	T656	P P	2.00 UNITS	.79	1.59	1.00	0.00	0.00	1.59	.03
3030206. QUAD.DIFF. LINE RE ENCODER INTERFACE SIMILAR TO NAT'L SEMI. DS1689	T657	P P	2.00 UNITS	.79	1.59	1.00	0.00	0.00	1.59	.03
3030207. HEX D-FLIP FLOP ENCODER INTERFACE SOURCE: T.I.	T658	P P	3.00 UNITS	.57	1.70	1.00	0.00	0.00	1.70	.03
3030208. CAPACITOR 0.1 MF .50V SOURCE: BELL	T026	P P	3.00 UNITS	.16	.49	1.00	0.00	0.00	.49	.01
3030209. POWER SUPPLY PER SPECIFICATION SOURCE: SEMICONDUCTOR CIR.,INC	3425-0000	P P P	1.00 UNITS	45.40	45.40	1.00	0.00	0.00	45.40	.93
3030210. BOX ONE PIECE MOLDED PLASTIC BOX WITH ATTACHED COVER. SOURCE: NEWPORT PLASTIC	T631	P P	1.00 UNITS	1.02	1.02	1.00	0.00	0.00	1.02	.02

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

CNTRL/SIG EQ 4433

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
3030211. CONNECTOR 24 PIN FEMALE SOURCE: AMP INC.	T662	P P	1.00 UNITS	1.14	1.14	1.00	0.00	0.00	1.14	.02
30312. PLANNING FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	T 1	LBR	.06 HRS	4.93	.29	1.00	2.32	1.23	.84	.02
30313. Q & RA - IND FACTOR OF .062 PERCENT X MFG HOURS	T 2	LBR	.12 HRS	4.93	.60	1.00	2.32	1.23	1.73	.04
30315. TOOLING MATERIAL $.70 PER TOOLING HOURS PLUS .06 PERCENT OF THE MFG. HOUR.	T 4	LBR	.13 HRS	4.93	.66	1.00	2.32	1.23	1.89	.04
		R M	1.00 UNITS	.11	.11	1.00	0.00	0.00	.11	.00
30316. PROD. SUPPORT .042 PERCENT OF MFG + PLAN + TOOL	T 5	LBR	.08 HRS	4.93	.41	1.00	2.32	1.23	1.17	.02
CNTRL/SIG EQ	4433								102.	2.08

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

COLLECTOR CONTROL 44320101

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SMR
30401. CPU SM30JJALA COLLECTOR CONTROL CPU'S WITH 32KB OF MOS. MEMORY.	P P	2.00 UNITS	1.50	3.01	1.00	0.00	0.00	3.01	.06
30402. LINE INTERFACE DL11-WB SERIAL LINE INTERFACES TOO MCS, BEAM CHARACTERIZATION SYSTEM AND DATA ACQUISITION SYSTEM TO 9600 BAUD	P P	6.00 UNITS	.10	.61	1.00	0.00	0.00	.61	.01
30403. WATCH DOG TIMER KW11-W COMPUTER RESETABLE CLOCK SOURCE: DEC	P P	2.00 UNITS	.07	.14	1.00	0.00	0.00	.14	.00
30404. UNIBUS LINK DA11 HIGHSPEED PARALLEL COMMUNICATION INTERFACE. SOURCE: DEC	P P	1.00 UNITS	.41	.41	1.00	0.00	0.00	.41	.01
30405. FIELD INTERFACE DZ11-E A SYNCHRONOUS 16 LINE MULTIPLEXOR TRANSMISSION TO 9600 BAUD TO FIELD CONTROLLERS	P P	2.00 UNITS	.20	.40	1.00	0.00	0.00	.40	.01
30406. STORAGE MSH J6	P P	6.00 UNITS	.35	2.08	1.00	0.00	0.00	2.08	.04
30407. FORTRAN IV PLUS QP100-CE HIGH LEVEL ENGLISH CONVERSION LANGUAGE COMPILER.	P P	2.00 UNITS	.13	.26	1.00	0.00	0.00	.26	.01
30408. WWV TIME TONE REC T632 UNIVERSALL TIME TONE SAV	P P	2.00 UNITS	.24	.47	1.00	0.00	0.00	.47	.01
30409. TIME CODE GEN T033 IRIG B BCD OUTPUT (DAY, MONTH, HOUR, MINUTE, SECOND)	P P	2.00 UNITS	.09	.19	1.00	0.00	0.00	.19	.00
30412. COLLECTOR CONTROL 44320101 TOTAL - HELIOSTAT CONTROLLER	LBR	.04 HRS	13.66	.57	1.00	2.32	1.23	1.64	.03

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

COLLECTOR CONTROL 44320101

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
30414.										
Q & RA - IND T 2										
FACTOR OF .062 PERCENT X MFG HOURS	LBR	.00	HRS	4.93	.01	1.00	2.32	1.23	.04	.00
30415.										
TOOLING MATERIAL T 4										
$.70 PER TOOLING HOURS PLUS .06	LBR	.00	HRS	4.93	.01	1.00	2.32	1.23	.04	.00
PERCENT OF THE MFG. HOUR.	R M	1.00	UNITS	.00	.00	1.00	0.00	0.00	.00	.00
30416.										
PRODUCTION SUPT. T 5										
.042 PERCENT OF MFG + PLAN + TOOL + Q & RA (DIRECT & IND.)	LBR	.00	HRS	4.93	.01	1.00	2.32	1.23	.02	.00
30417.										
PLANNING T 1										
FACTOR OF 10 PERCENT X MFG HOURS	LBR	.00	HRS	4.93	.01	1.00	2.32	1.23	.02	.00
COLLECTOR CONTROL 44320101									9.	.19

FOUNDATION 4441

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
4010101. FORM, POUR/FINISH 444111									
LABOR TO POSITION TAPERED PIPE, POUR CONCRETE AND VIBRATE. 5 CREWS (25 WEEK BASE) EACH: 5 LABORERS (INCL. LEAD) SOURCE: STEARNS-ROGER	LBR	2.50 HRS	13.61	34.04	1.00	1.70	1.00	57.86	1.18
4010102. CAGES 444112									
LABOR TO SET UP AND PLACE CAGES IN AUGERED HOLE. 5 CREWS (25 WEEK BASE) EACH: 2 RODMEN 2 IRONWORKERS SOURCE: STEARNS-ROGER	LBR	2.00 HRS	13.61	27.23	1.00	1.70	1.00	46.29	.94
4010103. EQUIP OPER & DRIVR 444113									
EQUIPMENT OPERATORS AND TRUCK DRIVERS USED IN SUPPORT OF FOUNDATION INSTALLATION. 5 CREWS (25 WEEK BASE) EACH: 1 HYDRAULIC CRANE OPERATOR 1 OILER 3 TRUCK DRIVERS SOURCE: STEARNS-ROGER	LBR	2.50 HRS	13.61	34.04	1.00	1.70	1.00	57.86	1.18
40102. CONCRETE 44412									
3.0 CUBIC YARDS OF CONCRETE PRICED AT $37 PER YARD INCLUDING COST OF MATERIALS, MIXING AND DELIVERY TO FOUNDATIONS POSITION. SOURCE: STEARNS-ROGER	P P	1.00 UNITS	131.90	131.90	1.00	0.00	0.00	131.90	2.69
40103. CAGES 44413									
428.2 LBS. OF REBAR PRICED AT $.20 PER LB. AND LABOR TO PRE-FABRICATE REBAR CAGES. 5 CREWS (25 WEEK BASE) EACH: 2 RODMEN 3 LABORERS (INCLUDING LEAD) 1 HYDRAULIC CRANE OPERATOR 1 TRUCK DRIVER SOURCE: STEARNS-ROGER	LBR	3.50 HRS	13.61	47.65	1.00	1.70	1.00	81.01	1.65
	R M	1.00 UNITS	102.19	102.19	1.00	0.00	0.00	102.19	2.08
40104. TAPERED PIPE 44414									
98.25 LBS PRICED AT $.31 PER LB DELIVERED. BASED ON U.S. STEEL PRICE INFORMATION.	P P	1.00 UNITS	35.16	35.16	1.00	0.00	0.00	35.16	.72

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

FOUNDATION 4441

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
40105. BRACING	44415								
BRACING - - 50 SETS AT $200 EACH	P P	1.00 UNITS	4.54	4.54	1.00	0.00	0.00	4.54	.09
FOUNDATION	4441							517.	10.54

×1.1

$570 foundation
+100 drill + ream
+145 pedestal
$815

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

SITE PREPARATION 4442

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
40201. SURVEY 44421									
5 SURVEY CREWS (25 WEEK BASE) 2 SURVEYORS	LBR	1.00 HRS	13.61	13.61	1.00	1.70	1.00	23.14	.47
SOURCE: STEARNS-ROGER									
40202. DRILLING 44422									
DRILLING OPERATIONS, USING DRILL	LBR	3.00 HRS	13.61	40.84	1.00	1.70	1.00	69.43	1.42
SITE PREPARATION 4442								93.	1.89

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

HELIO SUPP STRUCT 4451

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
50101.									
ASSEMBLY T455									
ASSEMBLY PROCESS OF PEDESTAL COMPONENTS.	LBR	.88 HRS	4.93	4.32.	1.00	2.32	1.23	12.34	.25
5010201.									
TUBE ID40046-3									
24 OD X .105 WALL X 123 LONG LC STEEL, WT=276 LBS. SOURCE: KELLY PIPE	R M	1.00 UNITS	96.89	96.89	1.00	0.00	0.00	96.89	1.98
5010202.									
CAP ID40046-5									
.375 X 30 X 30, LC STEEL PLATE WT=75 LB. SOURCE: U.S. STEEL	R M	1.00 UNITS	22.75	22.75	1.00	0.00	0.00	22.75	.46
5010203.									
COVER ID40046-7									
.0396 X 10 X 10 L.C. STEEL WT=4 LB. SOURCE: U.S. STEEL	R M	1.00 UNITS	.94	.94	1.00	0.00	0.00	.94	.02
5010204.									
J BOX ID40046-9	P P	1.00 UNITS	.85	.85	1.00	0.00	0.00	.85	.02
50114.									
PLANNING T 1									
FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR	.03 HRS	4.93	.13	1.00	2.32	1.23	.37	.01
50115.									
QUAL & RA IND T 2									
FACTOR OF .062 PERCENT X MFG HOURS	LBR	.05 HRS	4.93	.27	1.00	2.32	1.23	.77	.02
50117.									
TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06	LBR	.06 HRS	4.93	.29	1.00	2.32	1.23	.84	.02
PERCENT OF THE MFG. HOUR.	R M	1.00 UNITS	.05	.05	1.00	0.00	0.00	.05	.00
50118.									
PROD SUPPORT T 5									
.042 PERCENT OF MFG + PLAN + TOOL	LBR	.04 HRS	4.93	.18	1.00	2.32	1.23	.52	.01
HELIO SUPP STRUCT 4451								136.	2.78

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

PROTECTION ENCL 4452

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL $/SM
PROTECTION ENCL 4452							0. 0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

LIGHTNING PROT. 4453

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL $/SM
LIGHTNING PROT. 4453							0. 0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

HELIOSTAT 4461

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
7010201. DRIVE/PED/ELTRONC 446121									
REMOVE 803 LBS. DPE UNIT FROM FLAT BED, PLACE OVER TAPERED FOUNDATION PROTRUSION AND VIBRATE USING GROVE (MODEL 36) HYDRAULICS, DIESEL, CRANE MODIFIED TO ADD MANIPULATION. 2 CREWS (26.625 WK BASE) EACH: 1 EQUIPMENT OPERATOR 1 MILLWRIGHT 1 LABORER	LBR	.53 HRS	13.61	7.25	1.00	1.70	1.00	12.32	.25
7010202. REFLECTOR PANELS 446122									
USE YALE MODEL G3 P-150,DIESEL, 240 IN. HIGH LIFT FORK TRUCK TO REMO PANEL CONTAINERS AND PLACE ON DROTT 1000 SERIES B, DIESEL 4 WHEEL STEERING TRAVELIFT, MODIFIED TO ADD 2 CRANE/MANIPULATORS. 5 CREWS (26.625 WK BASE) EACH: 1 FORKLIFT OPERATOR 1 TRAVELIFT OPERATOR 2 MILLWRIGHTS 2 LABORERS	LBR	2.66 HRS	13.61	36.25	1.00	1.70	1.00	61.62	1.26
7010203. OIL - DRIVE S.A.3. 30	P P	2.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
HELIOSTAT 4461								74.	1.51

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

SENSOR/CALIB EQ 4462

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
70202. INSTALL 44621										
USE STANDARD ELECTRICIAN TOOLS TO INSTALL DIGITAL EYE UNITS 1 CREW (1 WK.BASE) EACH: 1 ELECTRICIAN EFFORT IS CONCURRENT AND IN ASSOCIATION WITH CALIBRATION. 8.3 UNITS (6/FIELD).	LBR	.00	HRS	13.61	.04	1.00	1.70	1.00	.07	.00
70203. CALIBRATE 44622										
ONE VOLT-OHM METER AND ONE	LBR	.00	HRS	13.61	.04	1.00	1.70	1.00	.07	.00
SENSOR/CALIB EQ 4462									0.	.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

ELECTRICAL/DISTRIB 4403

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
70302. INSTAL CABLE 44631 EMPLOY VIBRATORY, DIESEL, PLOW TO BURY ONE POWER/FIBEROPTICS CABLE. 3 CREWS (26.625 WK. BASE) EACH: 1 CABLE PLOW OPERATOR 2 LABORERS	LBR	1.07	HRS	13.61	14.50	1.00	1.70	1.00	24.65	.50
70303. PWR TR/DISTRIB PNL 44632 INSTALL POWER TRANSFORMER/ DISBRIBUTION PANELS USING 1 TRUCK AND 1 FORKLIFT. 1 CREW (2 WK BASE) EACH: 1 TRUCK DRIVER 1 FORKLIFT OPERATOR 1 MILLWRIGHT 2 LABORERS	LBR	.03	HRS	13.61	.35	1.00	1.70	1.00	.59	.01
70304. CONN,C/O&CLOSE OUT 44633 USE 1 SPECIAL TEST SET AND	LBR	.71	HRS	13.61	9.67	1.00	1.70	1.00	16.43	.33
ELECTRICAL/DISTRIB 4463									42.	.85

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

ALIGN HELIOSTATS 4464

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
ALIGN HELIOSTATS 4464							0.	0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

FIELD SUPPORT 4465

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
70501. INSTALLATION MGMT 44651 OVERALL MANAGEMENT OF FIELD EFFORT. 1 FIELD MANAGER (28.46 WK BASE).	LBR	.11	HRS	13.61	1.45	1.00	1.70	1.00	2.47	.05
7050201. SUPERVISION 44652-1 1 LOGISTICS SUPERVISOR (28.46 WK BASE).	LBR	.11	HRS	13.61	1.45	1.00	1.70	1.00	2.47	.05
7050202. RECORDS 44652-2 KEEP ACCOUNTABLE RECORDS FOR FIELD MATERIALS, COMPLETIONS TO SPEC., RECORDS, ETC. 1 RECORDS CLERK (28.46 WK BASE).	LBR	.11	HRS	13.61	1.45	1.00	1.70	1.00	2.47	.05
7050203. FIELD COORDINATION 44652-3 COORDINATE MATERIAL HANDLING, MOVEMENT AND SCHEDULES. 4 FIELD COORDINATORS (28.46 WK BASE)	LBR	.43	HRS	13.61	5.82	1.00	1.70	1.00	9.89	.20
7050204. PERSONNEL 44652-4 KEEPS PERSONNEL FILES, ADMINISTERS HOUSING AND BENEFITS FOR FIELD PERSONNEL, TIME RECORDS, ETC. 1 PERSONNEL CLERK (28.64 WK BASE).	LBR	.11	HRS	13.61	1.45	1.00	1.70	1.00	2.47	.05
70503. QUALITY CONTROL 44653 OVERSEE AND ASSURE QUALITY OF INSTALLATIONS THROUGH FIELD INSPECTION, PRACTICES REVIEW, AND DECREPANT MATERIAL, FAILURE AND CORRECTIVE ACTION REPORTS. 1 QUAL. ASSUR. REP. (26.625 WK BASE).	LBR	.08	HRS	13.61	1.05	1.00	1.70	1.00	1.78	.04
70504. FIELD ENGINEERING 44654 PROVIDE ENGINEERING SUPPORT DURING	LBR	.15	HRS	13.61	2.09	1.00	1.70	1.00	3.56	.07
FIELD SUPPORT 4465									25.	.51

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

PACK & TRANSP 4466

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
7060101. DRIVE 44661-1 SPECIALIZED TRAILER BED WITH RACK ON ONE SIDE FOR PEDESTAL, DRIVE, SHORT MAIN BEAM ASSEMBLY TO LEAN AGAINST; AND WITH 4 BY 4'S ATTACHED TO FLOOR FOR BRACING. QTY PER TRAILER BED = 12. REUSABLE SPECIALIZED TRAILER BEDS; MINIMUM QUANTITY NEEDED FOR 1 WEEK; 42.	P P	1.00 UNITS	.19	.19	1.00	0.00	0.00	.19	.00
7060102. REFLECTOR 44661-2 SPECIALIZED PALLET FOR HOLDING REFLECTOR PANELS (ALREADY ATTACHED TO MIRROR BACKING STRUCTURE) IN AN UPRIGHT POSITION, EACH BRACED ON A BOX STRUCTURE WHICH IS MOUNTED ON TH PALLET. CUSHIONED HOLDOWN ASSEMBLY KEEPS THE TOPS OF THE PANELS SECURE. QTY PER PALLET = 4 PANELS. REUSABLE PALLETS; MINIMUM QTY. NEEDED FOR 1 WEEK= 250	P P	1.00 UNITS	.39	.39	1.00	0.00	0.00	.39	.01
7060103. DISTRUB ELECT 44661-3 TRANSFORMERS STRAPPED TO REUSABLE PALLETS.	P P	1.00 UNITS	.04	.04	1.00	0.00	0.00	.04	.00
7060201. DRIVE 44662-1 SPECIALIZED TRAILER BEDS REMAIN AT SITE UNTIL UNLOADED (1 WEEK'S INSTALLATION SUPPLY) ONE TRAILER, IS PULLED BY ONE TRUCK CAB. WEIGHT PER DRIVE ASSEMBLY = 1450 LBS 12 DRIVE ASSEMBLIES PER TRAILER BED 17,400 LBS. WEIGHT OF MODIFICATION TO TRAILER BED = 700 LBS. TOTAL WEIGHT OF ASSEMBLIES AND MOD. = 18,100 LBS.	LBR	.33 HRS	4.93	1.63	1.00	2.32	1.23	4.67	.10
7060202. REFLECTOR 44662-2 ONE LOWBOY PULLED BY ONE TRUCK CAB, ONE PALLET PER LOWBOY, PALLET LIFTED FROM LOWBOY WITH FORKTRUCK. QTY: 4 PANELS WITH BACKING STRUCTUR PALLET. WEIGHT: 1374 LBS. EACH X 4 5496 LBS. PLUS WT.. OF PALLET.	LBR	1.99 HRS	4.93	9.80	1.00	2.32	1.23	28.00	.57

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

PACK & TRANSP 4466

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
70o0203. DISTRIB ELECT TRANSFORMER WEIGHT:	44662-3 2600 LBS.	LBR .00	HRS	4.93	.01	1.00	2.32	1.23	.02	.00
PACK & TRANSP	4466								33.	.68

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

DESIGN 4471

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	F A C T O R S CRC	OVERHEAD	G&A	TOTAL	$/SM
DESIGN	4471							0.	0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10th YEAR 08.31.55. DATE 05/23/78

SUSTAINING ENGR. 4472

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL $/SM
SUSTAINING ENGR. 4472							0. 0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

PRE PROD UNIT 4473

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
PRE PROD UNIT 4473							0.	0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 25000 UNITS PER YEAR - 10TH YEAR 08.31.55. DATE 05/23/78

SITE ACTIVATION 4474 T

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL $/SM	
SITE ACTIVATION	4474	T							0.	0.00

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PROTOTYPE HELIOSTAT INVESTMENT COST- 25000 UNITS PER YEAR- 10TH YEAR 15.54.35. DATE 05/24/78

COLLECTOR 41311

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
MOBILE CRANE ROADRUNNER 4 FT WIDE, 8 FT HIGH BOOM TIP 36 FT ABOVE GROUND AT CLOSEST RADIUS CAPACITY: 10,000 LBS.	ME-1 P P	1.39 UNITS	1.85	2.57	1.00	0.00	0.00	2.57	.05
PICKUP TRUCK 3/4 TON LOW PRESSURE TIRES	ME-2 P P	1.39 UNITS	2.53	3.51	1.00	0.00	0.00	3.51	.07
FORKLIFT JOHN DEERE AND CO. MODEL JD 380 WITH 7 FT. 8 IN MAST LIFTING CAPACITY: 4000 LBS.	ME-3 P P	1.39 UNITS	1.60	2.22	1.00	0.00	0.00	2.22	.05
HOISTING SLING STANDARD SLING TO BE ATTACHED TO MOBILE CRANE	ME-4 LBR	.01 HRS	4.93	.02	1.00	2.32	1.23	.07	.00
	P P	1.39 UNITS	.04	.06	1.00	0.00	0.00	.06	.00
	R M	1.39 UNITS	.01	.01	1.00	0.00	0.00	.01	.00
VAN DODGE,, CHEV, FORD,, OR GMC W/AUX. AIR AND AC POWER GENERATOR (240V, 75 AMPS) WITH WINDOWS ALL AROUND LOW PRESSURE TIRES, 4 WHEEL DRIVE.	ME-51 P P	1.39 UNITS	2.08	2.88	1.00	0.00	0.00	2.88	.06
EQUIPT. PRINTER, TAPE READER, CRT SCREEN, KEYBOARD, RECORDERS, MEASUREMENT EQ.	ME-52 LBR	.21 HRS	4.93	1.02	1.00	2.32	1.23	2.90	.06
	P P	1.39 UNITS	8.19	11.38	1.00	0.00	0.00	11.38	.23
	R M	1.39 UNITS	.75	1.04	1.00	0.00	0.00	1.04	.02
WASHING EQUIP. TWO TRUCKS IN TANDEM, ONE TO WASH WITH CB120D SOLUTION, ONE ONE TO RINSE WITH DEIONIZED WATER.	ME-6 P P	1.39 UNITS	8.48	11.79	1.00	0.00	0.00	11.79	.24
COLLECTOR 41311								38.	.78

PROTOTYPE HELIOSTAT INVESTMENT COST- 25000 UNITS PER YEAR- 10TH YEAR 15.54.35. DATE 05/24/78

INITIAL SPARES 4840

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
REFLECTIVE SURFACE 4841011									
BECAUSE ALL MODULES ARE DISCARDED	P P	1.39 UNITS	.00	.01	1.00	0.00	0.00	.01	.00
UPON FAILURE, A ONE YEAR SUPPLY	P P	1.39 UNITS	.10	.15	1.00	0.00	0.00	.15	.00
PLUS A 30-DAY CONTINGENCY SUPPLY	P P	1.39 UNITS	.01	.02	1.00	0.00	0.00	.02	.00
ARE REQUIRED..									
AZIMUTH 4841021									
BECAUSE AZIMUTH DRIVES ARE REPAIRED	P P	1.39 UNITS	.04	.06	1.00	0.00	0.00	.06	.00
ON SITE, A 30 DAY CONTINGENCY	P P	1.39 UNITS	.10	.14	1.00	0.00	0.00	.14	.00
PLUS A FIVE DAY PIPE LINE QUANTITY	P P	1.39 UNITS	.11	.16	1.00	0.00	0.00	.16	.00
ARE REQUIRED.									
JACK SCREW 484102221									
BECAUSE JACK SCREWS ARE REPAIRED	P P	1.39 UNITS	.15	.21	1.00	0.00	0.00	.21	.00
ON SITE, A 30 DAY CONTINGENCY PLUS									
A 5 DAY PIPE LINE QUANTITY									
ARE REQUIRED.									
JACK SCREW 484102221									
BECAUSE JACK SCREWS ARE REPAIRED	P P	1.39 UNITS	.02	.02	1.00	0.00	0.00	.02	.00
ON SITE, A 30 DAY CONTINGENCY PLUS									
A 5 DAY PIPE LINE QUANTITY									
ARE REQUIRED.									
AZIMUTH MOTOR 48410231									
BECAUSE AZIMUTH MOTORS ARE REPAIRED	P P	1.39 UNITS	.05	.07	1.00	0.00	0.00	.07	.00
ON SITE, A 30 DAY CONTINGENCY PLUS A									
5 DAY PIPE LINE QUANTITY									
ARE REQUIRED.									
TRKING MOTOR 48410232									
SAME AS AZIMUTH MOTOR.	P P	1.39 UNITS	.04	.05	1.00	0.00	0.00	.05	.00
STOWAGE MOTOR 48410233									
SAME AS AZIMUTH AND TRACKING	P P	1.39 UNITS	.00	.01	1.00	0.00	0.00	.01	.00
MOTORS.									
TRANSFORMER 484102522									
BECAUSE TRANSFORMERS ARE REPAIRED	P P	1.39 UNITS	.46	.64	1.00	0.00	0.00	.64	.01
OFF SITE, A 30 DAY CONTINGENCY									
PLUS A 5 DAY PIPE LINE QUANTITY									
ARE REQUIRED.									
BRANCH CIR BKR 484102524									
BECAUSE ALL ARE SPARED, AND NONE	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
REPAIRED, ONLY A 30 DAY CONTINGENCY									
IS REQUIRED.									
COOLER-HEATER 484103124									
BECAUSE THE FAILURE RATE IS SO LOW	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
AND THE NUMBER PER FIELD IS SO LOW,									
ONLY THE PIPE LINE QTY IS REQUIRED.									

PROTOTYPE HELIOSTAT INVESTMENT COST- 25000 UNITS PER YEAR- 10TH YEAR 15.54.35. DATE 05/24/78

INITIAL SPARES 4840

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
DATA DIST.INT 48410322									
BECAUSE THE DDI IS ALWAYS SPARED	P P	1.39 UNITS	.01	.01	1.00	0.00	0.00	.01	.00
AND NEVER REPAIRED, A 30 DAY	P P	1.39 UNITS	.03	.04	1.00	0.00	0.00	.04	.00
CONTINGENCY PLUS PIPE LINE QUANTITY	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
ARE REQUIRED.									
CNTRL/SIG EQ 4841033									
BECAUSE THE CONTROL/SIG.EQ. ARE	P P	1.39 UNITS	.02	.03	1.00	0.00	0.00	.03	.00
REPAIRED OFF SITE, A 30 DAY CON-	P P	1.39 UNITS	.04	.06	1.00	0.00	0.00	.06	.00
TINGENCY PLUS A 30 DAY PIPE LINE	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
QUANTITY ARE REQUIRED.									
REFLECTIVE SURFACE 4841111									
REFLECTIVE SURFACE WITH HAT SECTIONS	P P	1.39 UNITS	.04	.05	1.00	0.00	0.00	.05	.00
TRANSPORTED ON REUSABLE A-FRAME	P P	1.39 UNITS	.01	.01	1.00	0.00	0.00	.01	.00
MOUNTED ON TRUCK									
10 4X11 MODULES PER TRUCKLOAD									
MIRROR BACK STRUCT 4841112									
NO INITIAL SPRS REQUIRED	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
AZIMUTH 4841121									
5.80/CWT TRANSPORTED IN COVERED WOOD	P P	1.39 UNITS	.04	.05	1.00	0.00	0.00	.05	.00
SKIDS	P P	1.39 UNITS	.01	.01	1.00	0.00	0.00	.01	.00
JACK SCREW 484112221									
5.80/CWT STRAPPED TO PALLET	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.39 UNITS	.01	.01	1.00	0.00	0.00	.01	.00
JACK SCREW 484112222									
5.80/CWT STRAPPED TO PALLET	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
AZIMUTH MOTOR 48411231									
6.44/CWT SHIPPED IN CARDBOARD BOX	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.39 UNITS	.00	.01	1.00	0.00	0.00	.01	.00
TRKING MOTOR 48411232									
6.44/CWT SHIPPED IN CARDBOARD BOX	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.39 UNITS	.00	.01	1.00	0.00	0.00	.01	.00
STOWAGE MOTOR 48411233									
6.44/CWT SHIPPED IN CARDBOARD BOX	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
FEEDER CABLE 484112521									
NO INITIAL SPARES REQUIRED	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
TRANSFORMER 484112522									
6.44/CWT STRAPPED TO PALLET	P P	1.39 UNITS	.01	.02	1.00	0.00	0.00	.02	.00
	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00

PROTOTYPE HELIOSTAT INVESTMENT COST- 25000 UNITS PER YEAR- 10TH YEAR 15.54.35. DATE 05/24/78

INITIAL SPARES 4840

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
DIST PANEL 484112523									
NO INITIAL SPARES REQUIRED	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
BRANCH CIR BKR 484112524									
6.44/CWT SHIPPED IN WOOD BOX	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
BRANCH CIR CABLE 484112525									
NO INITIAL SPARES REQUIRED	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
WIRE 484112531									
NO INITIAL SPARES REQUIRED	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
CIR BKR/HOLDER 484112532									
NO INITIAL SPARES REQUIRED	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
CAMERA 484113121									
6.44/CWT SHIPPED IN FIBRE BOARD BOX	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
COOLER-HEATER 484113124									
6.44/CWT SHIPPED IN FIBRE BOARD BOX	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
DATA DIST.INT 48411322									
6.44/CWT SHIPPED IN CARDBRD CONTAINER	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
CNTRL/SIG EQ 4841133									
6.44/CWT SHIPPED IN CARDBRD BOX	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
HELIO.SUPP STRUCT 4841151									
NO INITIAL SPARED REQUIRED	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
INITIAL SPARES 4840								2. .04	
# INITIAL SPARES 4840								2. 0.00	

OPERATIONS AND MAINTENANCE 18000 HELIOSTATS (25K) 09.10.38. DATE 05/25/78

SPARES

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS ADJ	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SMR
REFLECTIVE SURFACE 4411 PANELS R/R WITH A MOBILE CRANE AND SLING, DISCARDED UPON FAILURE, FAILURE RATE/YR/1 PANEL .0003287 ALWAYS SPARED (HOWEVER, MINOR CRACKS COULD BE REPAIRED BY ADHESIVE BOND) WOOD CRATE SHIPPING 9.12/CWT	N/L	71.00 FAIL	39.19	2782.66	1.11	0.00	0.00	3074.84	.00
AZIMUTH 4421 COMPLETE ASSEMBLY R/R UPON FAILURE BENCH REPR: REPLACE DEFECTIVE GEAR TRAIN COMPONENTS, LUBRICATE HARMONIC DR SECTION WITH HEAVY DUTY OIL, PACK GEAR WITH GREASE. FAILURE RATE: .00972 SPARES TRANSPORTED IN COVERED WOODEN SKID.CWT/5.80 5 PERCENT OF FAILURES ARE SPARED	N/L	174.96 FAIL	350.60	61340.32	.06	0.00	0.00	3373.72	.00
JACK SCREW 442201 JACK ASSEMBLY R/R UPON COMPONENT FAILURE, BENCH REPR: REPLACEMENT OF DEFECTIVE COMPONENTS. FAILURE RATE:.009 SPARES STRAPPED TO PALLET CWT/5.80 5 PERCENT OF FAILURES ARE SPARED	N/L	162.00 FAIL	225.40	36514.26	.06	0.00	0.00	2008.28	.00
JACK SCREW 442202 SAME AS ABOVE EXCEPT THAT FAILURE RATE IS .000444 BECAUSE THIS JACK SCREW IS UTILIZED FEWER HRS/YR	N/L	7.99 FAIL	225.40	1801.37	.06	0.00	0.00	99.08	.00
AZIMUTH MOTOR T537 DRIVE MOTOR ASSEMBLY R/R UPON COMPONENT FAILURE, BENCH REPR: REPLACE INCREMENTAL ENCODER,DR.ELECTRONICS,MOTOR COMPONENTS. FAILURE RATE:.011167 SHIPPED IN CARDBD.BOX CWT/6.44 5 PERCENT OF FAILURES SPARED	N/L	671.36 FAIL	65.39	43898.16	.06	0.00	0.00	2414.40	.00
TRKING MOTOR T540 SAME AS AZIMUTH MOTOR	N/L	673.34 FAIL	49.43	33282.78	.06	0.00	0.00	1830.55	.00
STOWAGE MOTOR T543 SAME AS AZIMUTH MOTOR EXCEPT THAT FAILURE RATE IS .000556 BECAUSE IT IS UTILIZED FEWER HOURS/YR.	N/L	33.43 FAIL	49.43	1652.25	.06	0.00	0.00	90.87	.00
TRANSFORMER 225T(19)H TRANSFORMER R/R FOR INTERNAL ELECT. FAILURE WITH A FORKLIFT OR MOBILE CRANE AND SLING. FAILURE RATE:.00702 SHIP BY STRAPPING TO PALLET 6.44/CWT REPR OFF SITE 25 PERCENT ARE SPARED	N/L	1.34 FAIL	5732.00	7660.63	.28	0.00	0.00	2114.33	.00

OPERATIONS AND MAINTENANCE 18000 HELIOSTATS (25K) 09.10.38. DATE 05/25/78

SPARES

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS ADJ	OVERHEAD	G&A	TOTAL	$/SM
BRANCH CIR BKR SQD NO.FA-34040									
ALL BRANCH CIR BKR SPARED FAILURE RATE: .0033 SHIPPED IN FIBRE BOARD BOX 6.44/CWT	N/L	2.69 FAIL	73.24	196.74	.95	0.00	0.00	187.30	.00
CIR BKR/HOLDER T663									
ALL CIRCUIT BKRS SPARED FAILURE RATE: .0033 SHIPPED IN FIBRE BD. BOX 6.44/CWT ASSUMES SHIPMENT IN ECONOMIC QUANTITY	N/L	59.40 FAIL	37.32	2216.69	1.25	0.00	0.00	2766.43	.00
COOLER-HEATER T650									
COOLER-HEATER R/R, NEVER REPAIRED. SHIPPED IN FIBRE BOARD BOX CWT/6.44 FAILURE RATE: .00333	N/L	.02 FAIL	24.99	.50	1.25	0.00	0.00	.62	.00
DATA DIST.INT 443202									
DDI CIRCUIT CARDS REPLACED UPON FAILURE ALWAYS SPARED: REPLACE DEFECTIVE COMPONENTS DETECTED BY MOBILE TEST VAN AND BY DETECTION OF SOFTWARE BUGS. FAILURE RATE: .017544 SHIP IN CARDBOARD CONTAINER 6.44/CWT	N/L	13.00 FAIL	403.84	5247.14	1.25	0.00	0.00	6548.44	.00
	N/L	0.00 FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CNTRL/SIG EQ 4433									
CIRCUIT BOARD R/R UPON FAILURE DETECTED BY MOBILE TEST VAN AND OPERATIONAL INDICATIONS AND SOFTWARE BUGS BENCH REPR : REPLACEMENT OF DEFECTIVE COMPONENTS FAILURE RATE: .00544 SHIP IN CARDBRD BX CWT/6.44 5 PERCENT SPARED 95 PERCENT REPAIRED OFF SITE	N/L	1272.96 FAIL	98.59	125506.66	.06	0.00	0.00	7906.92	.00
	N/L	0.00 FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SPARES								32416.	.02

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REPAIR PTS

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS ADJ	OVERHEAD	G&A	TOTAL	$/SM
MIRROR BACK STRUCT 4412 STRUCT ALWAYS REPR IN PLACE, NEVER SPARED FAILURE RATE/1: .001 REPAIR PARTS SHIPPED IN CARDBOARD BOX CWT/4.36	N/L	18.00 FAIL	7.22	129.98	1.11	0.00	0.00	143.62	.00
AZIMUTH 4421 COMPLETE ASSEMBLY R/R UPON FAILURE BENCH REPR: REPLACE DEFECTIVE GEAR TRAIN COMPONENTS, LUBRICATE HARMONIC DR SECTION WITH HEAVY DUTY OIL, PACK GEAR WITH GREASE. FAILURE RATE: .00972 SPARES TRANSPORTED IN COVERED WOODEN SKID.CWT/5.80 5 PERCENT OF FAILURES ARE SPARED	N/L	174.96 FAIL	34.93	6110.78	1.05	0.00	0.00	6416.32	.01
JACK SCREW 442201 JACK ASSEMBLY R/R UPON COMPONENT FAILURE, BENCH REPR: REPLACEMENT OF DEFECTIVE COMPONENTS. FAILURE RATE:.009 SPARES STRAPPED TO PALLET CWT/5.80 5 PERCENT OF FAILURES ARE SPARED	N/L	162.00 FAIL	22.46	3638.20	1.05	0.00	0.00	3820.11	.00
JACK SCREW 442202 SAME AS ABOVE EXCEPT THAT FAILURE RATE IS .000444 BECAUSE THIS JACK SCREW IS UTILIZED FEWER HRS/YR	N/L	7.99 FAIL	22.46	179.48	1.05	0.00	0.00	188.46	.00
AZIMUTH MOTOR T537 DRIVE MOTOR ASSEMBLY R/R UPON COMPONENT FAILURE, BENCH REPR: REPLACE INCREMENTAL ENCODER,DR.ELECTRONICS,MOTOR COMPONENTS. FAILURE RATE:.011167 SHIPPED IN CARDBD.BOX CWT/6.44 5 PERCENT OF FAILURES SPARED	N/L	671.36 FAIL	6.51	4373.91	1.05	0.00	0.00	4592.61	.00
TRKING MOTOR T540 SAME AS AZIMUTH MOTOR	N/L	673.34 FAIL	4.92	3316.22	1.05	0.00	0.00	3482.03	.00
STOWAGE MOTOR T543 SAME AS AZIMUTH MOTOR EXCEPT THAT FAILURE RATE IS .000556 BECAUSE IT IS UTILIZED FEWER HOURS/YR.	N/L	33.43 FAIL	4.92	164.63	1.05	0.00	0.00	172.86	.00
FEEDER CABLE CLX ALL FIELD POWER DATA CABLES REPR IN PLACE BY STANDARD ELECT. METHODS INCLUDING REPLACEMENT OF TERMINALS AND CONNECTORS. FAILURE RATE: .0007199 SHIPPED IN FIBRE BOARD BOX 6.44/CWT	N/L	.04 FAIL	245.57	9.80	1.25	0.00	0.00	12.23	.00

REPAIR PTS

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS ADJ	OVERHEAD	G&A	TOTAL	$/SM
TRANSFORMER 225T(19)H TRANSFORMER R/R FOR INTERNAL ELECT. FAILURE WITH A FORKLIFT OR MOBILE CRANE AND SLING. FAILURE RATE:.00702 SHIP BY STRAPPING TO PALLET 6.44/CWT REPR OFF SITE 25 PERCENT ARE SPARED	N/L	1.34 FAIL	572.79	765.51	.83	0.00	0.00	634.61	.00
DIST PANEL SQ.D-H-4172-4N ALL DIST PANELS REPR IN PLACE FAILURE RATE:.049332 SHIPPED IN WOOD BOX 6.44/CWT	N/L	2.81 FAIL	59.18	166.40	1.25	0.00	0.00	207.67	.00
BRANCH CIR CABLE CLX-ALS ALL HELIOSTAT CABLES REPR IN PLACE FAILURE RATE: .000367 REPR PARTS SHIPPING: 6.44/CWT ASSUMES SHIPMENT IN ECONOMIC QUANTITY	N/L	6.61 FAIL	4.84	31.95	1.25	0.00	0.00	39.88	.00
WIRE CLX-16 ALL WIRE REPR IN PLACE BY STANDARD ELECTN METHODS FAILURE RATE=.002 FOR THE SUMATION OF THE 5 WIRES WITHIN THE PEDESTAL PARTS SHIPPED IN FIBRE BD.BOX 6.44/CWT ASSUMES SHIPMENT IN ECONOMIC QUANTITY	N/L	36.00 FAIL	.82	29.41	1.25	0.00	0.00	36.71	.00
CAMERA TN2200 CAMERA R/R, ALL REPAIRED OFF SITE SHIPPED IN FIBRE BOARD BOX CWT/6.44 FAILURE RATE: .01	N/L	.06 FAIL	246.88	14.81	1.11	0.00	0.00	16.37	.00
	N/L	0.00 FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CNTRL/SIG EQ 4433 CIRCUIT BOARD R/R UPON FAILURE DETECTED BY MOBILE TEST VAN AND OPERATIONAL INDICATIONS AND SOFTWARE BUGS BENCH REPR : REPLACEMENT OF DEFECTIVE COMPONENTS FAILURE RATE: .00544 SHIP IN CARDBRD BX CWT/6.44 5 PERCENT SPARED 95 PERCENT REPAIRED OFF SITE	N/L	1272.96 FAIL	9.95	12670.02	1.19	0.00	0.00	15026.64	.00
	N/L	0.00 FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HELIO SUPP STRUCT 4451 ALL PEDESTALS REPR IN PLACE USING STANDARD STRUCTURAL REPAIR PROCESSES FAILURE RATE: .001 REPAIR PARTS SHIPPED AT 4.36/CWT ASSUMES SHIPMENT IN ECONOMIC QTYS	N/L	18.00 FAIL	2.70	48.65	1.11	0.00	0.00	53.75	.00

OPERATIONS AND MAINTENANCE 18000 HELIOSTATS (25K) 09.14.11. DATE 05/25/78

REPAIR PTS

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS ADJ	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
	N/L	0.00 FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00

REPAIR PTS 34844. .02

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OPERATIONS AND MAINTENANCE 18000 HELIOSTATS (25K) 09.18.35. DATE 05/25/78

OTHER

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS ADJ	OVERHEAD	G&A	TOTAL	$/SM
REFLECTIVE SURFACE 4411									
PANELS R/R WITH A MOBILE CRANE AND	N/L	71.00 FAIL	12.82	909.90	1.11	0.00	0.00	1005.44	.00
SLING, DISCARDED UPON FAILURE,	N/L	71.00 FAIL	1.68	119.28	1.11	0.00	0.00	131.80	.00
ALWAYS SPARED (HOWEVER, MINOR CRACKS COULD BE REPAIRED BY ADHESIVE BOND)									
WOOD CRATE SHIPPING 9.12/CWT									
MIRROR BACK STRUCT 4412									
STRUCT ALWAYS REPR IN PLACE, NEVER	N/L	18.00 FAIL	.29	5.26	.95	0.00	0.00	5.01	.00
SPARED FAILURE RATE/I: .001	N/L	18.00 FAIL	.13	2.25	.95	0.00	0.00	2.14	.00
CWT/4.36									
AZIMUTH 4421									
COMPLETE ASSEMBLY R/R UPON FAILURE	N/L	174.96 FAIL	51.04	8929.96	.06	0.00	0.00	493.38	.00
BENCH REPR: REPLACE DEFECTIVE GEAR	N/L	174.96 FAIL	10.00	1749.60	.06	0.00	0.00	96.67	.00
TRAIN COMPONENTS, LUBRICATE HARMONIC DR	N/L	174.96 FAIL	5.10	893.00	1.05	0.00	0.00	937.42	.00
SECTION WITH HEAVY DUTY OIL, PACK GEAR	N/L	174.96 FAIL	1.00	174.96	1.05	0.00	0.00	183.66	.00
FAILURE RATE: .00972 SPARES TRANS-PORTED IN COVERED WOODEN SKID.CWT/5.80									
5 PERCENT OF FAILURES ARE SPARED									
JACK SCREW 442201									
JACK ASSEMBLY R/R UPON COMPONENT FAIL-	N/L	162.00 FAIL	4.64	751.68	.06	0.00	0.00	41.53	.00
URE, BENCH REPR: REPLACEMENT OF DE-	N/L	162.00 FAIL	15.00	2430.00	.06	0.00	0.00	134.26	.00
FECTIVE COMPONENTS. FAILURE RATE:.009	N/L	162.00 FAIL	.46	75.17	1.05	0.00	0.00	78.91	.00
SPARES STRAPPED TO PALLET CWT/5.80	N/L	162.00 FAIL	1.50	243.00	1.05	0.00	0.00	255.09	.00
JACK SCREW 442202									
SAME AS ABOVE EXCEPT THAT FAILURE RATE	N/L	7.99 FAIL	4.64	37.08	.06	0.00	0.00	2.05	.00
IS .000444 BECAUSE THIS JACK SCREW IS	N/L	7.99 FAIL	15.00	119.88	.06	0.00	0.00	6.62	.00
UTILIZED FEWER HRS/YR	N/L	7.99 FAIL	.46	3.71	1.05	0.00	0.00	3.89	.00
	N/L	7.99 FAIL	1.50	11.99	1.05	0.00	0.00	12.58	.00
AZIMUTH MOTOR T537									
DRIVE MOTOR ASSEMBLY R/R UPON COMPON-	N/L	671.36 FAIL	1.09	735.00	.06	0.00	0.00	40.61	.00
ENT FAILURE, BENCH REPR: REPLACE INCRE-	N/L	671.36 FAIL	5.00	3356.80	.06	0.00	0.00	185.46	.00
MENTAL ENCODER,DR.ELECTRONICS,MOTOR	N/L	671.36 FAIL	.11	73.50	1.05	0.00	0.00	77.16	.00
COMPONENTS. FAILURE RATE:.011167	N/L	671.36 FAIL	.50	335.68	1.05	0.00	0.00	352.38	.00
5 PERCENT OF FAILURES SPARED									

OPERATIONS AND MAINTENANCE 18000 HELIOSTATS (25K) 09.18.35. DATE 05/25/78

OTHER

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS ADJ	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
TRKING MOTOR T540									
SAME AS AZIMUTH MOTOR	N/L	673.34 FAIL	1.09	737.18	.06	0.00	0.00	40.73	.00
	N/L	673.34 FAIL	5.00	3366.72	.06	0.00	0.00	186.01	.00
	N/L	673.34 FAIL	.11	73.72	1.05	0.00	0.00	77.39	.00
	N/L	673.34 FAIL	.50	336.67	1.05	0.00	0.00	353.42	.00
STOWAGE MOTOR T543									
SAME AS AZIMUTH MOTOR EXCEPT THAT FAIL-	N/L	33.43 FAIL	1.09	36.00	.06	0.00	0.00	2.02	.00
URE RATE IS .000556 BECAUSE IT IS	N/L	33.43 FAIL	5.00	167.13	.06	0.00	0.00	9.23	.00
UTILIZED FEWER HOURS/YR.	N/L	33.43 FAIL	.11	3.66	1.05	0.00	0.00	3.84	.00
	N/L	33.43 FAIL	.50	16.71	1.05	0.00	0.00	17.54	.00
FEEDER CABLE CLX									
ALL FIELD POWER DATA CABLES REPR IN	N/L	.04 FAIL	7.33	.29	.95	0.00	0.00	.28	.00
PLACE BY STANDARD ELECT. METHODS IN-	N/L	.04 FAIL	.63	.02	.95	0.00	0.00	.02	.00
CONNECTORS. FAILURE RATE: .0007199									
SHIPPED IN FIBRE BOARD BOX 6.44/CWT									
TRANSFORMER 225T(19)H									
TRANSFORMER R/R FOR INTERNAL ELECT.	N/L	1.34 FAIL	167.44	223.78	.28	0.00	0.00	61.82	.00
FAILURE WITH A FORKLIFT OR MOBILE CRANE	N/L	1.34 FAIL	10.00	13.36	.28	0.00	0.00	3.69	.00
AND SLING. FAILURE RATE:.00702 SHIP BY	N/L	1.34 FAIL	334.88	447.56	.83	0.00	0.00	370.91	.00
STRAPPING TO PALLET 6.44/CWT	N/L	1.34 FAIL	10.00	13.36	.83	0.00	0.00	11.08	.00
DIST PANEL SQ.D-H-4172-4N									
ALL DIST PANELS REPR IN PLACE	N/L	2.81 FAIL	.64	1.81	.95	0.00	0.00	1.72	.00
FAILURE RATE:.049332 SHIPPED IN WOOD	N/L	0.00 FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BRANCH CIR BKR SQD NO.FA-34040									
ALL BRANCH CIR BKR SPARED	N/L	2.69 FAIL	.19	.52	.95	0.00	0.00	.49	.00
FAILURE RATE: .0033	N/L	2.69 FAIL	5.00	13.43	.95	0.00	0.00	12.79	.00
BRANCH CIR CABLE CLX-ALS									
ALL HELIOSTAT CABLES REPR IN PLACE	N/L	6.61 FAIL	.12	.77	.95	0.00	0.00	.73	.00
FAILURE RATE: .000367	N/L	6.61 FAIL	.63	4.13	.95	0.00	0.00	3.93	.00
ASSUMES SHIPMENT IN ECONOMIC QUANTITY									

OPERATIONS AND MAINTENANCE 18000 HELIOSTATS (25K) 09.18.35. DATE 05/25/78

OTHER

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS ADJ	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
WIRE CLX-16									
ALL WIRE REPR IN PLACE BY STANDARD ELECTN	N/L	30.00 FAIL	.12	4.17	.95	0.00	0.00	3.97	.00
METHODS	N/L	36.00 FAIL	.63	22.50	.95	0.00	0.00	21.42	.00
THE 5 WIRES WITHIN THE PEDESTAL									
PARTS SHIPPED IN FIBRE BD.BOX 6.44/CWT									
ASSUMES SHIPMENT IN ECONOMIC QUANTITY									
CIR BKR/HOLDER T663									
ALL CIRCUIT BKRS SPARED	N/L	59.40 FAIL	.02	1.15	.95	0.00	0.00	1.09	.00
FAILURE RATE: .0033	N/L	59.40 FAIL	.50	29.70	.95	0.00	0.00	28.27	.00
ASSUMES SHIPMENT IN ECONOMIC QUANTITY									
CAMERA TN2200									
CAMERA R/R, ALL REPAIRED OFF SITE	N/L	.06 FAIL	3.86	.23	.95	0.00	0.00	.22	.00
SHIPPED IN FIBRE BOARD BOX CWT/6.44	N/L	.06 FAIL	5.00	.30	.95	0.00	0.00	.29	.00
COOLER-HEATER T650									
COOLER-HEATER R/R, NEVER REPAIRED.	N/L	.02 FAIL	.19	.00	1.25	0.00	0.00	.00	.00
SHIPPED IN FIBRE BOARD BOX CWT/6.44	N/L	.02 FAIL	5.00	.10	1.25	0.00	0.00	.12	.00
DATA DIST.INT 443202									
DDI CIRCUIT CARDS REPLACED UPON FAILURE	N/L	13.00 FAIL	.13	1.67	1.25	0.00	0.00	2.09	.00
ALWAYS SPARED: REPLACE DEFECTIVE COM-	N/L	13.00 FAIL	5.00	65.00	1.25	0.00	0.00	81.12	.00
AND BY DETECTION OF SOFTWARE BUGS.									
FAILURE RATE: .017544									
SHIP IN CARDBOARD CONTAINER 6.44/CWT									
	N/L	0.00 FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CNTRL/SIG EQ 4433									
CIRCUIT BOARD R/R UPON FAILURE DETECTED	N/L	1272.96 FAIL	.13	163.96	.06	0.00	0.00	10.23	.00
BY MOBILE TEST VAN AND OPERATIONAL IN-	N/L	1272.96 FAIL	5.00	6304.80	.06	0.00	0.00	397.16	.00
DICATIONS AND SOFTWARE BUGS	N/L	1272.96 FAIL	.03	32.79	1.19	0.00	0.00	38.88	.00
BENCH REPR : REPLACEMENT OF DEFECT-	N/L	1272.96 FAIL	5.00	6304.80	1.19	0.00	0.00	7546.11	.00
SHIP IN CARDBRD BX CWT/6.44									
5 PERCENT SPARED									
95 PERCENT REPAIRED OFF SITE									

OPERATIONS AND MAINTENANCE 18000 HELIOSTATS (25K) 09.18.35. DATE 05/25/78

OTHER

DESCRIPTION		QTY/HRS/ ANN.	FAIL	REF UNIT COST	SUB TOTAL	FACTORS ADJ	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
	N/L	0.00	FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HELIO SUPP STRUCT 4451										
ALL PEDESTALS REPR IN PLACE USING STAND-	N/L	18.00	FAIL	.55	9.81	1.11	0.00	0.00	10.84	.00
ARD STRUCTURAL REPAIR PROCESSES	N/L	0.00	FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REPAIR PARTS SHIPPED AT 4.36/CWT										
ASSUMES SHIPMENT IN ECONOMIC QTYS										
WASHING SOLUTION OM231										
MC GEAN CHEM.CO,DOWNY,CA.	N/L	17280.00	FAIL	3.25	56160.00	1.00	0.00	0.00	56160.00	.80
USED IN 5 PERCENT SOLUTION										
DEIONIZED RNSE WAT OM232										
ARROWHEAD WATER	N/L	********	FAIL	.05	63180.00	1.00	0.00	0.00	63180.00	.01
FUEL OM233										
FUEL FOR WASH TRUCKS,PICK-UP TRUCKS,	N/L	38232.00	FAIL	.56	21409.92	1.00	0.00	0.00	21409.92	.14
LUBRICANT OM234										
OIL FOR AZIMUTH DRIVE	N/L	180.00	FAIL	.31	56.25	1.00	0.00	0.00	56.25	.01
SOURCE: DAC, LONG BEACH										
	N/L	0.00	FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	N/L	0.00	FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OTHER 154152. .95

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CORRECT

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS ADJ	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
REFLECTIVE SURFACE 4411										
PANELS R/R WITH A MOBILE CRANE AND SLING, DISCARDED UPON FAILURE,	LBR	355.00	HRS	15.00	5324.94	2.21	1.00	1.00	11757.47	.01
ALWAYS SPARED (HOWEVER, MINOR CRACKS COULD BE REPAIRED BY ADHESIVE BOND)	LBR	0.00	HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WOOD CRATE SHIPPING 9.12/CWT										
MIRROR BACK STRUCT 4412										
STRUCT ALWAYS REPR IN PLACE, NEVER REPAIR PARTS SHIPPED IN CARDBOARD BOX CWT/4.36	LBR	54.00	HRS	15.11	815.94	2.21	1.00	1.00	1801.60	.00
AZIMUTH 4421										
COMPLETE ASSEMBLY R/R UPON FAILURE	LBR	3359.23	HRS	15.00	50388.48	2.21	1.00	1.00	111257.76	.13
BENCH REPR: REPLACE DEFECTIVE GEAR	LBR	938.22	HRS	15.11	14176.55	1.30	1.00	1.00	18372.81	.02
SECTION WITH HEAVY DUTY OIL, PACK GEAR WITH GREASE.										
FAILURE RATE: .00972 SPARES TRANS- PORTED IN COVERED WOODEN SKID.CWT/5.80										
5 PERCENT OF FAILURES ARE SPARED										
JACK SCREW 442201										
JACK ASSEMBLY R/R UPON COMPONENT FAIL-	LBR	712.80	HRS	15.00	10692.00	2.21	1.00	1.00	23607.94	.03
URE, BENCH REPR: REPLACEMENT OF DE-	LBR	473.85	HRS	15.11	7159.87	1.30	1.00	1.00	9279.20	.01
SPARES STRAPPED TO PALLET CWT/5.80										
5 PERCENT OF FAILURES ARE SPARED										
JACK SCREW 442202										
SAME AS ABOVE EXCEPT THAT FAILURE RATE	LBR	35.16	HRS	15.00	527.47	2.21	1.00	1.00	1164.66	.00
IS .000444 BECAUSE THIS JACK SCREW IS	LBR	.07	HRS	15.11	1.13	1.62	1.00	1.00	1.83	.00
AZIMUTH MOTOR T537										
DRIVE MOTOR ASSEMBLY R/R UPON COMPON-	LBR	2282.62	HRS	15.00	34239.36	2.21	1.00	1.00	75600.51	.03
ENT FAILURE, BENCH REPR: REPLACE INCRE-	LBR	1636.44	HRS	15.11	24726.61	1.30	1.00	1.00	32045.69	.01
COMPONENTS. FAILURE RATE:.011167										
SHIPPED IN CARDBD.BOX CWT/6.44										
5 PERCENT OF FAILURES SPARED										
TRKING MOTOR T540										
SAME AS AZIMUTH MOTOR	LBR	2558.71	HRS	15.00	38380.61	2.21	1.00	1.00	84744.38	.03
	LBR	1641.28	HRS	15.11	24799.68	1.30	1.00	1.00	32140.39	.01

OPERATIONS AND MAINTENANCE 18000 HELIOSTATS (25K) 09.22.13. DATE 05/25/78

CORRECT

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS ADJ	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
STOWAGE MOTOR T543										
SAME AS AZIMUTH MOTOR EXCEPT THAT FAIL- URE RATE IS .000556 BECAUSE IT IS	LBR	127.02	HRS	15.00	1905.32	2.21	1.00	1.00	4206.95	.00
	LBR	81.48	HRS	15.11	1231.13	1.30	1.00	1.00	1595.54	.00
FEEDER CABLE CLX										
ALL FIELD POWER DATA CABLES REPR IN CLUDING REPLACEMENT OF TERMINALS AND CONNECTORS. FAILURE RATE: .0007199 SHIPPED IN FIBRE BOARD BOX 6.44/CWT	LBR	.28	HRS	15.11	4.22	2.50	1.00	1.00	10.53	.00
TRANSFORMER 225T(19)H										
TRANSFORMER R/R FOR INTERNAL ELECT.	LBR	11.23	HRS	15.00	168.39	2.21	1.00	1.00	371.82	.00
FAILURE WITH A FORKLIFT OR MOBILE CRANE	LBR	11.69	HRS	15.11	176.70	1.30	1.00	1.00	229.00	.00
STRAPPING TO PALLET 6.44/CWT										
REPR OFF SITE 25 PERCENT ARE SPARED										
DIST PANEL SQ.D-H-4172-4N										
ALL DIST PANELS REPR IN PLACE	LBR	9.00	HRS	15.11	135.96	2.21	1.00	1.00	300.20	.00
BOX 6.44/CWT										
BRANCH CIR BKR SQD NO.FA-34040										
ALL BRANCH CIR BKR SPARED	LBR	8.60	HRS	15.00	128.94	2.50	1.00	1.00	321.83	.00
FAILURE RATE: .0033	LBR	8.60	HRS	15.11	129.88	2.50	1.00	1.00	324.19	.00
BRANCH CIR CABLE CLX-ALS										
ALL HELIOSTAT CABLES REPR IN PLACE	LBR	23.78	HRS	15.11	359.34	2.50	1.00	1.00	896.91	.00
REPR PARTS SHIPPING: 6.44/CWT										
ASSUMES SHIPMENT IN ECONOMIC QUANTITY										
WIRE CLX-16										
ALL WIRE REPR IN PLACE BY STANDARD ELECT	LBR	129.60	HRS	15.11	1958.26	2.50	1.00	1.00	4887.81	.01
FAILURE RATE=.002 FOR THE SUMATION OF THE 5 WIRES WITHIN THE PEDESTAL										
PARTS SHIPPED IN FIBRE BD.BOX 6.44/CWT										
ASSUMES SHIPMENT IN ECONOMIC QUANTITY										
CIR BKR/HOLDER T663										
ALL CIRCUIT BKRS SPARED	LBR	190.08	HRS	15.00	2851.20	2.50	1.00	1.00	7116.60	.01
FAILURE RATE: .0033	LBR	190.08	HRS	15.11	2872.11	2.50	1.00	1.00	7168.78	.01
ASSUMES SHIPMENT IN ECONOMIC QUANTITY										

CORRECT

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS ADJ	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
CAMERA TN2200										
CAMERA R/R, ALL REPAIRED OFF SITE	LBR	.18	HRS	15.00	2.70	2.21	1.00	1.00	5.96	.00
SHIPPED IN FIBRE BOARD BOX CWT/6.44	LBR	.18	HRS	15.11	2.72	1.30	1.00	1.00	3.52	.00
COOLER-HEATER T650										
COOLER-HEATER R/R, NEVER REPAIRED.	LBR	.06	HRS	15.00	.90	2.21	1.00	1.00	1.99	.00
SHIPPED IN FIBRE BOARD BOX CWT/6.44	LBR	.03	HRS	15.11	.45	2.21	1.00	1.00	1.00	.00
DATA DIST.INT 443202										
DDI CIRCUIT CARDS REPLACED UPON FAILURE	LBR	41.60	HRS	15.00	624.00	2.50	1.00	1.00	1557.52	.00
ALWAYS SPARED: REPLACE DEFECTIVE COM-	LBR	22.75	HRS	15.11	343.76	2.50	1.00	1.00	858.01	.00
AND BY DETECTION OF SOFTWARE BUGS.										
FAILURE RATE: .017544										
SHIP IN CARDBOARD CONTAINER 6.44/CWT										
	LBR	0.00	HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CNTRL/SIG EQ 4433										
CIRCUIT BOARD R/R UPON FAILURE DETECTED	LBR	3309.70	HRS	15.00	49645.44	2.50	1.00	1.00	123915.02	.01
BY MOBILE TEST VAN AND OPERATIONAL IN-	LBR	4343.98	HRS	15.11	05637.48	1.46	1.00	1.00	96093.27	.01
BENCH REPR : REPLACEMENT OF DEFECT-										
IVE COMPONENTS FAILURE RATE: .00544										
SHIP IN CARDBRD BX CWT/6.44										
5 PERCENT SPARED										
95 PERCENT REPAIRED OFF SITE										
	LBR	0.00	HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HELIO SUPP STRUCT 4451										
ALL PEDESTALS REPR IN PLACE USING STAND-	LBR	36.00	HRS	15.11	543.96	2.21	1.00	1.00	1201.06	.00
FAILURE RATE: .001										
REPAIR PARTS SHIPPED AT 4.36/CWT										
ASSUMES SHIPMENT IN ECONOMIC QTYS										
CORRECTIVE MAINT. OM320										
ALLOCATED ABOVE	LBR	12.00	HRS	15.00	180.00	1.00	1.00	1.00	180.00	.00
VARIES BETWEEN LABOR ON SITE (ON LINE										
OR BENCH REPAIR) AND OFF SITE										
EFFECIENCY FACTOR OF ON LINE IS 2										
EFFECIENCY FACTOR OF BENCH REPR 1.176										

OPERATIONS AND MAINTENANCE 18000 HELIOSTATS (25K) 09.22.13. DATE 05/25/78

CORRECT

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS ADJ	OVERHEAD	G&A	TOTAL	$/SM
	LBR	0.00	HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	LBR	0.00	HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00

CORRECT

653022. .32

#

OPERATIONS AND MAINTENANCE 18000 HELIOSTATS (25K) 09.24.58. DATE 05/25/78

SCHED

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS ADJ	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
WASHING LABOR OM311									
TRUCK DRIVERS,ONLY,REQUIRED 1 FOR WASH SOLUTION TRUCK 1 FOR DEIONIZED RNSE WATER TRUCK	LBR	5184.00 HRS	15.00	77760.00	1.17	1.00	1.00	90979.20	.09
CORROSION CONTRL OM312									
INCLUDE: VERIFY THAT GREASE AND OIL SEALS ARE NOT LEAKING	LBR	1447.20 HRS	15.00	21708.00	1.17	1.00	1.00	25398.36	.02
	LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SCHED 116378. .11

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

REFLECTIVE SURFACE 4411

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
10101. LAMINATE T636 LABOR REQUIRED FOR LAMINATING LINE/ SOURCE: MDL/MDC	LBR	.06 HRS	4.93	.29	1.00	4.99	1.32	1.94	.04
1010201. FAB T637 LABOR REQUIRED FOR MIRRORING LINE. SOURCE: ADL/MDC	LBR	.18 HRS	4.93	.88	1.00	4.99	1.32	5.81	.12
1010202. FRONT LITE ID40044-3 .060 X 48 X 132 CORNING FUSION GLASS. SOURCE: CORNING	P P	12.00 UNITS	14.93	179.17	1.00	0.00	0.00	179.17	3.65
1010203. CHEMICALS T638 MIRRORING SOLUTION, SILVER AND COPPER. SOURCE: SOMMER & MAGA IND. (LONGDON, ENG.).	R M	12.00 UNITS	1.40	16.80	1.00	0.00	0.00	16.80	.34
1010204. SETUP T501	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10103. BACK LITE ID40044-5 .188 X 48 X 132 FLOAT GLASS SOURCE: ASG	P P	12.00 UNITS	16.80	201.57	1.00	0.00	0.00	201.57	4.11
10104. ADHESIVE IXA3504 BOND GLASS SHEETS TOGETHER WITH POLYURETHANE ADHESIVE. WT=2 LB. 3M CORPORATION	R M	12.00 UNITS	2.16	25.96	1.00	0.00	0.00	25.96	.53
10105. SETUP T503	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10120. PLANNING T 1 FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR	.03 HRS	4.93	.14	1.00	4.99	1.32	.93	.02
10121. QUAL & RA IND T 2 FACTOR OF .062 PERCENT X MFG HOURS	LBR	.06 HRS	4.93	.29	1.00	4.99	1.32	1.92	.04

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

REFLECTIVE SURFACE 4411

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
10123. TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06	LBR	.06 HRS	4.93	.32	1.00	4.99	1.32	2.11	.04
PERCENT OF THE MFG. HOUR.	R M	1.00 UNITS	.05	.05	1.00	0.00	0.00	.05	.00
10124. PROD SUPPORT T 5									
.042 PERCENT OF MFG + PLAN + TOOL	LBR	.04 HRS	4.93	.20	1.00	4.99	1.32	1.30	.03
REFLECTIVE SURFACE 4411								438.	8.92

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

MIRROR BACK STRUCT 4412

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
10201. ASSY SUPPORT STR ID40045 INBOARD, OUTBOARD CROSS BEAM: DIAGONAL BEAMS AND OUTBOARD AND INBOARD ANGLES.	LBR	.28 HRS	4.93	1.40	1.00	4.99	1.32	9.19	.19
10202. INBOARD CROSS BM ID40045-3 .0785 X 27 X 173 104 LB. EA.	P P	2.00 UNITS	30.58	61.17	1.00	0.00	0.00	61.17	1.25
10203. OUTBOARD CROSS BM ID40045-5 .0516 X 11 X 173 44 LB. EA SOURCE: U.S. STEEL	P P	2.00 UNITS	13.02	26.04	1.00	0.00	0.00	26.04	.53
10204. DIAGONAL BEAM/LH ID40045-7 .0785 X 26 X 112 46 LB. EACH	P P	2.00 UNITS	13.44	26.88	1.00	0.00	0.00	26.88	.55
10205. DIAGONAL BEAM/RH ID40045-8 .0785 X 26 X 112 46 LB. EACH	P P	2.00 UNITS	13.44	26.88	1.00	0.00	0.00	26.88	.55
10206. HAT/STRINGER ID40045-9 .0635 (16 GA) X 6.00 IN. X 130 GALV. STEEL SHEET HATS,WT= 14 LB EA. SOURCE: WOODSIDE ENGR. CO.	P P	24.00 UNITS	5.20	124.71	1.00	0.00	0.00	124.71	2.54
10207. OUTBOARD ANGLES ID40045-15 .0516 X 3.5 X 4.5 .23 LB. EACH SOURCE: U.S. STEEL	R M	4.00 UNITS	.06	.25	1.00	0.00	0.00	.25	.01
10208. INBOARD ANGLES ID40045-13 .0516 X 4.0 X 10.50 .61 LB EACH SOURCE: U.S. STEEL	R M	4.00 UNITS	.17	.68	1.00	0.00	0.00	.68	.01
10209. GUSSET ANGLE ID40045-11 .25X8.5X17.50 11 LB. EA. SOURCE: U.S. STEEL	R M	4.00 UNITS	2.91	11.62	1.00	0.00	0.00	11.62	.24
10211. CLINCH NUT S-0420-1-Z SOURCE: S.P.S. CO.	P P	48.00 UNITS	.04	1.78	1.00	0.00	0.00	1.78	.04
10212. BOLT T601 .25 UNC-20 X .75 LONG SAE SOURCE: MCMASSTER	P P	48.00 UNITS	.04	1.73	1.00	0.00	0.00	1.73	.04

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

MIRROR BACK STRUCT 4412

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
10213. WASHER T602									
.25 ID SAE WASHER	P P	48.00 UNITS	.00	.12	1.00	0.00	0.00	.12	.00
SOURCE: MCMASTER									
10220. PLANNING T 1									
FACTOR OF 10 PERCENT X MFG HOURS	LBR	.03 HRS	4.93	.17	1.00	4.99	1.32	1.10	.02
DIST. .03 TO LABOR AND .07 TO NON-RECURRING.									
10221. QUAL & RA IND T 2									
FACTOR OF .062 PERCENT X MFG HOURS	LBR	.07 HRS	4.93	.35	1.00	4.99	1.32	2.28	.05
10223. TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06	LBR	.08 HRS	4.93	.38	1.00	4.99	1.32	2.50	.05
PERCENT OF THE MFG. HOUR.	R M	1.00 UNITS	.06	.06	1.00	0.00	0.00	.06	.00
10224. PROD SUPPORT T 5									
.042 PERCENT OF MFG + PLAN + TOOL	LBR	.05 HRS	4.93	.23	1.00	4.99	1.32	1.54	.03
MIRROR BACK STRUCT 4412								299.	6.09

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

ASSY & BOND 4413

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
10301.									
ASSY & BOND 441301									
BONDS MIRRORS TO BACKING/STRINGERS TO GLASS. .14 GAL. PER PANEL OF 3MEC3532 ADHESIVE (3M CORP) SOURCE: ADL/MDC	LBR	.27 HRS	4.93	1.32	1.00	4.99	1.32	8.71	.18
10302.									
ADHESIVE 441301									
BONDS MIRRORS TO BACKING/STRINGERS TO GLASS. .14 GAL. PER PANEL OF 3MEC3532 ADHESIVE (3M CORP) SOURCE: ADL/MDC	R M	12.00 UNITS	2.20	26.34	1.00	0.00	0.00	26.34	.54
10303.									
PLANNING T 1									
FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR	.03 HRS	4.93	.16	1.00	4.99	1.32	1.05	.02
10304.									
QUAL & RA IND T 2									
FACTOR OF .062 PERCENT X MFG HOURS	LBR	.07 HRS	4.93	.33	1.00	4.99	1.32	2.16	.04
10306.									
TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06	LBR	.07 HRS	4.93	.36	1.00	4.99	1.32	2.37	.05
PERCENT OF THE MFG. HOUR.	R M	1.00 UNITS	.06	.06	1.00	0.00	0.00	.06	.00
10307.									
PROD SUPPORT T 5									
.042 PERCENT OF MFG + PLAN + TOOL	LBR	.05 HRS	4.93	.22	1.00	4.99	1.32	1.46	.03
ASSY & BOND 4413								42.	.86

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

AZIMUTH 4421

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
20101.									
ASSEMBLY	ID40065								
DRIVE COMPONENTS ASSEMBLY	LBR	.15 HRS	4.93	.73	1.00	4.99	1.32	4.84	.10
SOURCE: ADL/MDAC									
2010201.									
HOUSING	ID40038								
WELDMENT HOUSING WT=160 LB.	LBR	.17 HRS	4.93	.86	1.00	4.99	1.32	5.65	.12
SOURCE: U.S. STEEL	R M	1.00 UNITS	32.64	32.64	1.00	0.00	0.00	32.64	.67
2010203.									
BUSHING PIVOT	KJS1616060								
PER SPECIFICATION. PIVOT POINT BUSHING. SOURCE: SARGENT	P P	2.00 UNITS	.68	1.36	1.00	0.00	0.00	1.36	.03
201030101.									
MEMBRANE	T607								
10 O.D. X .156 WALL	R M	1.00 UNITS	3.68	3.68	1.00	0.00	0.00	3.68	.08
201030102.									
TUBE	T608								
10 O.D. X .156 WALL X 8 HIGH MADE OF 4130, 7 TL, SOURCE:U.S.STEEL	R M	1.00 UNITS	9.76	9.76	1.00	0.00	0.00	9.76	.20
201030103.									
SPLINE	T609								
10 O.D. X .312 WALL X 3 LONG	R M	1.00 UNITS	7.44	7.44	1.00	0.00	0.00	7.44	.15
201030105.									
ASSEMBLY	T603								
FAB AND ASSY. FLEX SPLINE	LBR	.14 HRS	4.93	.70	1.00	4.99	1.32	4.60	.09
SOURCE: ADL/MDAC									
201030201.									
PLUG	T605								
7 OD X 1.50 L.C. STEEL	R M	1.00 UNITS	3.16	3.16	1.00	0.00	0.00	3.16	.06
SOURCE: U.S. STEEL									
201030202.									
DRIVE SHAFT	T611								
1.75 OD, .75 ID X 10.75 LONG L.C. STEEL PIPE. SOURCE: KELLY PIPE.	R M	1.00 UNITS	1.80	1.80	1.00	0.00	0.00	1.80	.04
201030203.									
BEARING	BB-2151								
PER SPECIFICATION	P P	1.00 UNITS	70.70	70.70	1.00	0.00	0.00	70.70	1.44
SOURCE: MC GILL MFG. CO.									
201030204.									
FABRICATION	T653								
FAB AND ASSY. WAVE GENERATOR	LBR	.12 HRS	4.93	.59	1.00	4.99	1.32	3.87	.08
SOURCE: ADL/MDAC									

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

AZIMUTH 4421

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
20104. BEARING TURRET PER SPECIFICATION. SOURCE: MC GILL MFG. CO.	BB-2149	P P	1.00 UNITS	19.43	19.43	1.00	0.00	0.00	19.43	.40
2010601. RETAINER-OUTER 19.625 OD X 15.1875 ID X 1.25 LG. L.C. STEEL. WT = 29.28 SOURCE: U.S. STEEL	IT49852-1	LBR R M	.01 HRS 1.00 UNITS	4.93 6.43	.06 6.43	1.00 1.00	4.99 0.00	1.32 0.00	.38 6.43	.01 .13
2010602. NUT 1/2 I.D. SOURCE: MCMASTER	T640	P P	8.00 UNITS	.13	1.02	1.00	0.00	0.00	1.02	.02
2010603. BOLTS 1/2 X 3, GLASS 5 SOURCE: MC MASTER	T510	P P	8.00 UNITS	.42	3.39	1.00	0.00	0.00	3.39	.07
2010604. WASHER 1/2 ID. SOURCE: MC MASTER	T511	P P	8.00 UNITS	.00	.03	1.00	0.00	0.00	.03	.00
2010801. CIRCULAR SPLINE 15 OD X 10 ID X 2.75 LG LC STEEL SHEET. WT = 73 LB. SOURCE: LINCOLN FOUNDRY	T 36	LBR R M	.11 HRS 1.00 UNITS	4.93 30.93	.55 30.93	1.00 1.00	4.99 0.00	1.32 0.00	3.63 30.93	.07 .63
2010803. BOLTS 1/2 X 2 CLASS 5 SOURCE: MC MASTER	T516	P P	8.00 UNITS	.29	2.29	1.00	0.00	0.00	2.29	.05
2010804. WASHER 1/2 ID SOURCE: MC MASTER T520	T517	P P	8.00 UNITS	.00	.03	1.00	0.00	0.00	.03	.00
2010901. HELICON PER SPECIFICATION SOURCE: SPIROID	RMJ22178	LBR R M	.07 HRS 1.00 UNITS	4.93 1.88	.35 1.88	1.00 1.00	4.99 0.00	1.32 0.00	2.33 1.88	.05 .04
201090101. PINION PER SPECIFICATION. SOURCE: SPIROID	T519	P P	1.00 UNITS	3.18	3.18	1.00	0.00	0.00	3.18	.06

AZIMUTH 4421

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
201090102. RING-PINION-WET 2.75 O.D. SOURCE: MC MASTER	T520	P P	1.00 UNITS	.34	.34	1.00	0.00	0.00	.34	.01
201090103. SHIM-GEAR 1.50 O.D./1.125 ID SOURCE: MC MASTER	T521	P P	1.00 UNITS	.05	.05	1.00	0.00	0.00	.05	.00
201090104. KEY-GEAR 1 LONG X 1/4 WIDE SOURCE: MC MASTER	NAS558-808-8	P P	1.00 UNITS	.20	.20	1.00	0.00	0.00	.20	.00
201090105. NUT GEAR AFBMA STANDARD W-05 SOURCE: MC MASTER	T522	P P	1.00 UNITS	.98	.98	1.00	0.00	0.00	.98	.02
201090106. WASHER GEAR AFBMA STANDARD W-05 SOURCE: MC MASTER	T523	P P	1.00 UNITS	.14	.14	1.00	0.00	0.00	.14	.00
201090107. BEARING DRIVE SHAFT BEARING PER SPECIFICATION.	67046NR1641DC	P P	1.00 UNITS	3.71	3.71	1.00	0.00	0.00	3.71	.08
201090108. RING-BEARING-RET DRIVE SHAFT BEARING PER SPECIFICATION.	MS16625-1200 RETAINER	P P	1.00 UNITS	.34	.34	1.00	0.00	0.00	.34	.01
2011201. TUBE-ELEC.WIRE .688 OD X .063 WALL X 13 LONG, L.C. STEEL. SOURCE: KELLY PIPE.	T643	P P	1.00 UNITS	.15	.15	1.00	0.00	0.00	.15	.00
2011202. CLAMP-WIRE TUBE SOURCE: MC MASTER	5644	P P	1.00 UNITS	.21	.21	1.00	0.00	0.00	.21	.00
2011301. COVER 9 DIA. X .125 AND 8 DIA. X .125 L.C. STEEL SHEET.	T646	LBR	.00 HRS	4.93	.00	1.00	4.99	1.32	.02	.00
		R M	1.00 UNITS	1.09	1.09	1.00	0.00	0.00	1.09	.02
2011302. SCREW AFFIX COVER TO DRIVE HOUSING. SOURCE: MC MASTER	T613	P P	4.00 UNITS	.00	.01	1.00	0.00	0.00	.01	.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

AZIMUTH 4421

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
2011303. GROMMET	T526									
HOLDS WIRE AND SEALS HOUSING COMPARTMENT. SOURCE: MC MASTER	GEN	P P	1.00 UNITS	.05	.05	1.00	0.00	0.00	.05	.00
20114. PLANNING	T 1									
FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR		.09 HRS	4.93	.46	1.00	4.99	1.32	3.04	.06
20115. Q & RA-IND	T 2									
FACTOR OF .062 PERCENT X MFG HOURS	LBR		.19 HRS	4.93	.95	1.00	4.99	1.32	6.28	.13
20117. TOOLING MATERIAL	T 4									
$.70 PER TOOLING HOURS PLUS .06	LBR		.21 HRS	4.93	1.05	1.00	4.99	1.32	6.89	.14
PERCENT OF THE MFG. HOUR.	R M		1.00 UNITS	.17	.17	1.00	0.00	0.00	.17	.00
20118. PRODUCTION SUPT.	T 5									
.042 PERCENT OF MFG + PLAN + TOOL	LBR		.13 HRS	4.93	.65	1.00	4.99	1.32	4.25	.09
AZIMUTH	4421								252.	5.14

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

ELEVATION 4422

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2020101. WELDMENT	T 50									
DRAG LINK WT=03 LB.		LBR	.11 HRS	4.93	.56	1.00	4.99	1.32	3.72	.08
SOURCE: U.S. STEEL		R M	1.00 UNITS	12.97	12.97	1.00	0.00	0.00	12.97	.26
2020103. BUSHING	KJS1616060									
PER SPECIFICATION. PIVOT POINT BUSHING. SOURCE: SARGENT		P P	2.00 UNITS	.23	.47	1.00	0.00	0.00	.47	.01
2020104. SHIM	T 41									
PIVOT POINT SHIM RESTRICTS MOVEMENT. SOURCE: MC MASTER		R M	4.00 UNITS	.32	1.27	1.00	0.00	0.00	1.27	.03
2020105. BOLT	T528									
3/4 DIA X 5 LONG SOURCE: MC MASTER		P P	2.00 UNITS	2.11	4.22	1.00	0.00	0.00	4.22	.09
2020106. SEAL-DUST	T529									
SOURCE: MC MASTER		P P	2.00 UNITS	.05	.11	1.00	0.00	0.00	.11	.00
2020107. THRUST BRG	KTM-1622060									
PER SPECIFICATION. SOURCE: SARGENT		P P	4.00 UNITS	.19	.76	1.00	0.00	0.00	.76	.02
2020108. NUT	T530									
.75 I.D. SOURCE: MC MASTER		P P	2.00 UNITS	.33	.66	1.00	0.00	0.00	.66	.01
2020109. BUSHING-CLAMP UP	T531									
.75 DIA. X 5 LONG, CLASS 8		P P	2.00 UNITS	1.80	3.61	1.00	0.00	0.00	3.61	.07
2020110. BOLT-ROD END	T532									
.75 DIA X 3.25 LONG, CLASS 8 SOURCE: MC MASTER		P P	2.00 UNITS	1.12	2.25	1.00	0.00	0.00	2.25	.05
2020111. NUT-ROD END	T533									
.75 I.D. SOURCE: MC MASTER		P P	2.00 UNITS	.33	.66	1.00	0.00	0.00	.66	.01
2020112. BUSHING	T534									
CLAMP UP SOURCE: MC MASTER		P P	2.00 UNITS	.23	.47	1.00	0.00	0.00	.47	.01

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

ELEVATION 4422

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2020113. SHIM ROD END	T535									
SOURCE: MC MASTER		P P	4.00 UNITS	.32	1.27	1.00	0.00	0.00	1.27	.03
2020114. SEAL-DUST ROD END	T536									
SOURCE: MC MASTER		P P	4.00 UNITS	.05	.21	1.00	0.00	0.00	.21	.00
20202. JACK SCREW	T 52									
5 TON, 6 INCH RAISE, .85 INCH X 2 INCH X 22 INCH. WT=80.4 LB. DUFF NORTON		P P	2.00 UNITS	141.75	283.51	1.00	0.00	0.00	283.51	5.78
2020301. TUBE	ID40042-3									
16 IN. OD X .105 IN WALL X 81 IN. LONG. LC STEEL PIPE 124 LB.		R M	1.00 UNITS	40.91	40.91	1.00	0.00	0.00	40.91	.83
SOURCE: KELLY PIPE										
2020302. TAB ACTUATOR	ID40042-5									
.5 X 10 X 10 LC STEEL WT=5.73 LB		LBR	.07 HRS	4.93	.34	1.00	4.99	1.32	2.25	.05
SOURCE: U.S. STEEL		R M	2.00 UNITS	3.00	6.00	1.00	0.00	0.00	6.00	.12
2020303. TAB HINGE	ID40042-9									
.5 X 9 X 9 LC STEEL WT=5 LB.		LBR	.01 HRS	4.93	.07	1.00	4.99	1.32	.48	.01
SOURCE: U.S. STEEL		R M	4.00 UNITS	2.43	9.71	1.00	0.00	0.00	9.71	.20
2020304. FLANGE	ID40042-7									
.625 X 18.00 X 18.00		LBR	.05 HRS	4.93	.25	1.00	4.99	1.32	1.63	.03
LOW CARBON STEEL PLATE		R M	2.00 UNITS	12.15	24.30	1.00	0.00	0.00	24.30	.50
SOURCE: U.S. STEEL										
2020305. ASSEMBLY	ID40042									
SUPPORTS REFLECTOR AND TIES ELEVATIONAL AZIMUTH DRIVE TOGETHER. WT=193 LBS.		LBR	.27 HRS	4.93	1.32	1.00	4.99	1.32	8.71	.18
SOURCE: ADL/MDC										
2020401. BUSHING	KJS-1616060									
PER SPECIFICATION		P P	4.00 UNITS	.19	.76	1.00	0.00	0.00	.76	.02
SOURCE: SARGENT										
2020402. SHAFT	T647									
PIVOT SHAFT.		P P	4.00 UNITS	3.76	15.06	1.00	0.00	0.00	15.06	.31

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

ELEVATION 4422

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2020403. SEAL-DUST	KTM-1622060									
PER SPECIFICATION.		P P	4.00 UNITS	.05	.21	1.00	0.00	0.00	.21	.00
SOURCE: SARGENT										
2020404. WASHER	AN-960-416L									
SOURCE: LAWRENCE ENGINEERING		P P	4.00 UNITS	.06	.25	1.00	0.00	0.00	.25	.01
20209. PLANNING	T 1									
FACTOR OF 10 PERCENT X MFG HOURS		LBR	.06 HRS	4.93	.31	1.00	4.99	1.32	2.01	.04
DIST. .03 TO LABOR AND .07 TO NON-RECURRING.										
20210. Q & RA IND	T 2									
FACTOR OF .062 PERCENT X MFG HOURS		LBR	.13 HRS	4.93	.63	1.00	4.99	1.32	4.16	.08
20212. TOOLING MATERIAL	T 4									
$.70 PER TOOLING HOURS PLUS .06		LBR	.14 HRS	4.93	.69	1.00	4.99	1.32	4.57	.09
PERCENT OF THE MFG. HOUR.		R M	1.00 UNITS	.11	.11	1.00	0.00	0.00	.11	.00
20213. PRODUCTION SUPT	T 5									
.042 PERCENT OF MFG + PLAN + TOOL		LBR	.09 HRS	4.93	.43	1.00	4.99	1.32	2.82	.06
ELEVATION	4422								440.	8.97

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

MOTOR TOTAL 4423

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2030101. BOLTS 1/4 DIA. X 1 LONG, CLASS 2 SOURCE: MC MASTER	T538	P P	4.00 UNITS	.05	.21	1.00	0.00	0.00	.21	.00
2030102. WASHER 1/4 DIA. SOURCE: MC MASTER	T539	P P	1.00 UNITS	.03	.03	1.00	0.00	0.00	.03	.00
2030103. AZIMUTH MOTOR	T667	P P	1.00 UNITS	60.67	60.67	1.00	0.00	0.00	60.67	1.24
2030201. BOLT/NUT 1/4 DIA. X 1 LONG, CLASS 2 SOURCE: MC MASTER	T541	P P	4.00 UNITS	.34	1.36	1.00	0.00	0.00	1.36	.03
2030202. WASHER 1/4 DIA. SOURCE: MC MASTER	T542	P P	4.00 UNITS	.03	.13	1.00	0.00	0.00	.13	.00
2030203. TRKING MOTOR 1/4 HP, 24V, THREE PHASE WITH A NENA "C" CURVE SOURCE: W.C. PEART CO.	T665	P P	1.00 UNITS	44.56	44.56	1.00	0.00	0.00	44.56	.91
2030301. BOLT/NUT 1/4 X 1 LONG, CLASS 2 SOURCE: MC MASTER	T544	P P	4.00 UNITS	.34	1.36	1.00	0.00	0.00	1.36	.03
2030302. WASHER 1/4 DIA. SOURCE: MC MASTER	T545	P P	4.00 UNITS	.03	.13	1.00	0.00	0.00	.13	.00
2030303. STOWAGE MOTOR 1/4 HP, 240V, THREE PHASE WITH	T666	P P	1.00 UNITS	44.56	44.56	1.00	0.00	0.00	44.56	.91
MOTOR TOTAL	4423								153.	3.12

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

POS/LIMIT INDICATO 4424

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
20401. ASSEMBLY OF ELECTRONIC SOURCE: ADL	T614	LBR	.15 HRS	4.93	.72	1.00	4.99	1.32	4.75	.10
2040201. HALL EFFECT SENSOR SOURCE: MICRO SWITCH	T616	P P	2.00 UNITS	1.85	3.71	1.00	0.00	0.00	3.71	.08
2040202. LINE DRIVER SOURCE: FAIRCHILD	9614	P P	3.00 UNITS	.77	2.31	1.00	0.00	0.00	2.31	.05
2040203. FERROUS METAL DISC SOURCE: MDAC	T618	P P	3.00 UNITS	1.06	3.18	1.00	0.00	0.00	3.18	.06
2040301. DUEL DIFF LINE REC SOURCE: FAIRCHILD	9615	P P	1.00 UNITS	.82	.82	1.00	0.00	0.00	.82	.02
2040302. OPT.ISOL. TRIACS PER SPECIFICATION SOURCE: MOTOROLA	Q2T3244	P P	4.00 UNITS	1.01	4.03	1.00	0.00	0.00	4.03	.08
2040303. RESISTOR PER SPECIFICATION SOURCE: RCA	11 Z 13	P P	4.00 UNITS	.12	.47	1.00	0.00	0.00	.47	.01
2040304. CAPACITOR PER SPECIFICATION SOURCE: RCA	0.1MF1400V	P P	4.00 UNITS	.11	.42	1.00	0.00	0.00	.42	.01
2040305. PRINTED CIRCUIT BD 6 IN. X 6 IN. TWO SIDE EPOXY GLASS, COPPER CIRCUITRY, WITH THRU PLATED HOLES. .02 SOURCE: MDAC	T107	P P	1.00 UNITS	.76	.76	1.00	0.00	0.00	.76	.02
2040306. COVER PER SPECIFICATION SOURCE: MDAC	T226	P P	1.00 UNITS	.95	.95	1.00	0.00	0.00	.95	.02
20405. PLANNING FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	T 1	LBR	.02 HRS	4.93	.09	1.00	4.99	1.32	.57	.01

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

POS/LIMIT INDICATO 4424

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
20406.									
Q & RA IND T 2									
FACTOR OF .062 PERCENT X MFG HOURS	LBR	.04 HRS	4.93	.18	1.00	4.99	1.32	1.18	.02
20408.									
TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06	LBR	.04 HRS	4.93	.20	1.00	4.99	1.32	1.29	.03
PERCENT OF THE MFG. HOUR.	R M	1.00 UNITS	.03	.03	1.00	0.00	0.00	.03	.00
20409.									
PRODUCTION SUPPT. T 5									
.042 PERCENT OF MFG + PLAN + TOOL	LBR	.02 HRS	4.93	.12	1.00	4.99	1.32	.80	.02
POS/LIMIT INDICATO 4424								25.	.52

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

PWR SPLY/DIST 4425

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2050201. FEEDER CABLE CLX									
3, NO. 4 AWG,5KV,COPPER CABLE/GALITEP 2000, WITH ALUMINUM SHEATH AND PVC JACKETS SUITABLE FOR DIRECT BURIAL. SOURCE: OKONITE	P	1.00 UNITS	7.26	7.26	1.00	0.00	0.00	7.26	.15
2050202. TRANSFORMER 225T(19)H									
PER SPECIFICATIONS. SOURCE: SQUARE D	P P	1.00 UNITS	13.73	13.73	1.00	0.00	0.00	13.73	.28
2050203. DIST PANEL SQ.D-H-4172-4M									
480V THREE PHASE WITH 100 AMP C/B. SOURCE: SQUARE D	P P	1.00 UNITS	1.42	1.42	1.00	0.00	0.00	1.42	.03
2050204. BRANCH CIR BKR SQD NO.FA-34040									
480V, 3 POLE, 40 AMP SOURCE: SQUARE D	P P	15.00 UNITS	.18	2.63	1.00	0.00	0.00	2.63	.05
2050205. BRANCH CIR CABLE CLX-ALS									
3, NO.8 AWG,600V,COPPER CABLE/GALITEP 2000 WITH ALUMINUM SHEATH AND PVC JACKET, SUITABLE FOR DIRECT BURIAL. SOURCE: OKONITE	P	1.00 UNITS	45.22	45.22	1.00	0.00	0.00	45.22	.92
2050206. PLANNING T 1									
FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2050207. Q & RA - IND T 2									
FACTOR OF .002 PERCENT X MFG HOURS	LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2050208. TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06 PERCENT OF THE MFG. HOUR.	LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	R M	0.00 UNITS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2050209. PRODUCTION SUPT. T 5									
.042 PERCENT OF MFG + PLAN + TOOL + Q & RA (DIRECT & IND.)	LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.20.08. DATE 05/24/78

PWR SPLY/DIST 4425

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2050301. WIRE 3 NO. 16 AWG WITH OPTICAL FIBER SOURCE: OKONITE	CLX-16	P P	1.00 UNITS	8.59	8.59	1.00	0.00	0.00	8.59	.18
2050302. CIR BKR/HOLDER 480V, 15 AMP, 3 PHASE HOLDER. SOURCE: SQUARE D	T663 C/B PLUS	P P	1.00 UNITS	39.28	39.28	1.00	0.00	0.00	39.28	.80
2050303. CONNECTORS OPTICAL FIBER COUPLINGS.	T664	P P	2.00 UNITS	3.34	6.68	1.00	0.00	0.00	6.68	.14
PWR SPLY/DIST	4425								125.	2.54

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

ASSY DR/PED/ELECT 4426 T

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
20601.									
ASSY DR/PED/ELECT 4426	T								
DRIVE AND PEDESTAL LABOR REQUIRED	LBR	.09 HRS	4.93	.44	1.00	4.99	1.32	2.90	.06
ASSEMBLY OF MAIN BEAM, JACKS,	P P	1.00 UNITS	1.06	1.06	1.00	0.00	0.00	1.06	.02
DRAG LINK, AZIMUTH DRIVE, PEDESTAL AND ELECTRIC.									
SOURCE: ADL/MDAC									
20604.									
PLANNING T 1									
FACTOR OF 10 PERCENT X MFG HOURS	LBR	.01 HRS	4.93	.05	1.00	4.99	1.32	.35	.01
DIST. .03 TO LABOR AND .07 TO NON-RECURRING.									
20605.									
QUAL & RA IND T 2									
FACTOR OF .062 PERCENT X MFG HOURS	LBR	.02 HRS	4.93	.11	1.00	4.99	1.32	.72	.01
20607.									
TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06	LBR	.02 HRS	4.93	.12	1.00	4.99	1.32	.79	.02
PERCENT OF THE MFG. HOUR.	R M	1.00 UNITS	.02	.02	1.00	0.00	0.00	.02	.00
20608.									
PROD SUPPORT T 5									
.042 PERCENT OF MFG + PLAN + TOOL	LBR	.02 HRS	4.93	.07	1.00	4.99	1.32	.49	.01
ASSY DR/PED/ELECT 4426	T							6.	.13

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

SENSOR/CALIB EQUIP 4431

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
3010201. CAMERA	TN2200									
SOURCE: GENERAL ELECTRIC		P P	1.00 UNITS	.79	.79	1.00	0.00	0.00	.79	.02
3010202. CAMERA LENS	T648	P P	1.00 UNITS	.04	.04	1.00	0.00	0.00	.04	.00
3010203. TRIPOD	T649									
6 FT HIGH SOURCE: MDAC		P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
3010204. COOLER-HEATER	T650									
SOURCE: MDAC		P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
3010205. ELECTRONICS	T651									
CAMERA ELECTRONICS SOURCE: MDAC		P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
3010206. CABLE	CLX-16									
3 NO. 16 AWG WITH OPTICAL FIBER SOURCE: OKONITE		P P	1.00 UNITS	.01	.01	1.00	0.00	0.00	.01	.00
30105. PLANNING	T 1									
FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.		LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30106. Q & RA IND	T 2									
FACTOR OF .062 PERCENT X MFG HOURS		LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30107. TOOLINGG MATERIAL	T 4									
$.70 PER TOOLING HOURS PLUS .06 PERCENT OF THE MFG. HOUR.		LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		R M	0.00 UNITS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30108. PRODUCTION SUPT.	T 5									
.042 PERCENT OF MFG + PLAN + TOOL + Q & RA (DIRECT & IND.)		LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SENSOR/CALIB EQUIP 4431									1.	.02

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

FIELD CONTROL 4432

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
30201. ASSEMBLY	T620									
DDI COMPONENT ASSEMBLY		LBR	.01 HRS	4.93	.03	1.00	4.99	1.32	.17	.00
3020201. TWO SIDED PWB	44320201									
SOURCE: MDAC		P P	2.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
3020202. CONNECTOR	T652									
24 PIN		P P	2.00 UNITS	.00	.01	1.00	0.00	0.00	.01	.00
SOURCE: AMP INC.										
3020203. LED	SG1010									
PER SPECIFICATION		P P	10.00 UNITS	.00	.02	1.00	0.00	0.00	.02	.00
SOURCE: RCA										
3020204. OPT TRANSCEIVER	T622									
COMMUNICATION WITH HELIOSTAT ARRAY CONTROLLER		P P	2.00 UNITS	.04	.07	1.00	0.00	0.00	.07	.00
SOURCE: TI										
3020205. MICRO-COMPUTER	T623									
SIMILAR TO NAT'L SEMI 8748		P P	2.00 UNITS	.04	.07	1.00	0.00	0.00	.07	.00
SOURCE: NATL SEMICONDUCTOR										
3020206. OPT TRANSCEIVER	T624									
COMMUNICATION WITH HELIOSTAT CONTROLLER.		P P	8.00 UNITS	.03	.25	1.00	0.00	0.00	.25	.01
SOURCE: TI										
3020207. RELAY	T660									
4 PDT (5V)		P P	8.00 UNITS	.01	.06	1.00	0.00	0.00	.06	.00
SOURCE: POTTER BRUMFIELD										
3020208. CERAMIC CAPS	T626									
0.1 MF .50V		P P	8.00 UNITS	.00	.01	1.00	0.00	0.00	.01	.00
SOURCE: BELL										
3020209. MODULAR PWR-SUPPLY	T627									
PV SOURCE: LAMBELA		P P	2.00 UNITS	.11	.22	1.00	0.00	0.00	.22	.00
3020210. FOAM PADS	T628									
ATTACH FOAM CUSHIONS TO TOP OF BOX.		P P	2.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00

PHOTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

FIELD CONTROL 4432

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	TOTAL $/SM
3020211. PHOTO DETECTOR	T629									
OPTICAL FIBER		P P	2.00 UNITS	.01	.03	1.00	0.00	0.00	.03	.00
SOURCE: I.T.										
3020212. PHOTO TRANSISTORS	T630									
OPTICAL FIBER.		P P	8.00 UNITS	.00	.01	1.00	0.00	0.00	.01	.00
SOURCE: I.T.										
3020213. BOX	T631									
ONE PIECE MOLDED PLASTIC BOX WITH ATTACHED COVER.		P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
SOURCE: NEWPORT PLASTIC										
3020214. CONNECTOR	T231									
36 COND NO. 24 AWG FLAT WIRE AND CONNECTORS.		P P	2.00 UNITS	.00	.01	1.00	0.00	0.00	.01	.00
SOURCE: AMP INC.										
30215. PLANNING	T 1									
FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.		LBR	.00 HRS	4.93	.00	1.00	4.99	1.32	.02	.00
30216. Q & RA - IND	T 2									
FACTOR OF .062 PERCENT X MFG HOURS		LBR	.00 HRS	4.93	.01	1.00	4.99	1.32	.04	.00
30218. TOOLING MATERIAL	T 4									
$.70 PER TOOLING HOURS PLUS .06		LBR	.00 HRS	4.93	.01	1.00	4.99	1.32	.05	.00
PERCENT OF THE MFG. HOUR.		R M	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
30219. PROD SUPPORT	T 5									
.042 PERCENT OF MFG + PLAN + TOOL		LBR	.00 HRS	4.93	.00	1.00	4.99	1.32	.03	.00
FIELD CONTROL	4432								1.	.02

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

CNTRL/SIG EQ 4433

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
30301. ASSEMBLY TOTAL COMPONENTS	T201	LBR	.44 HRS	4.93	2.15	1.00	4.99	1.32	14.19	.29
3030201. PRINTED CIRCUIT BD 4 IN X 5 IN TWO SIDED COPPER CIRCUITRY WITH HOLES. .02 SOURCE: MDAC	T100 EPOXY GLASS THRU PLATED	T P P	1.00 UNITS	.62	.62	1.00	0.00	0.00	.62	.01
3030203. CONNECTOR 24 PIN SOURCE: AMP INC.	T652	P P	1.00 UNITS	.86	.86	1.00	0.00	0.00	.86	.02
3030204. MU.COMPUTER SIMILAR TO NAT'L SEMI 8748 SOURCE: NATL SEMICONDUCTOR	T623	P P	1.00 UNITS	10.32	10.32	1.00	0.00	0.00	10.32	.21
3030205. QUAD.DIFF. LINE DR MOTOR DRIVER INTERFACE SIMILAR TO NAT'L SEMI. DS1688	T656	P P	2.00 UNITS	.60	1.20	1.00	0.00	0.00	1.20	.02
3030206. QUAD.DIFF. LINE RE ENCODER INTERFACE SIMILAR TO NAT'L SEMI. DS1689	T657	P P	2.00 UNITS	.60	1.20	1.00	0.00	0.00	1.20	.02
3030207. HEX D-FLIP FLOP ENCODER INTERFACE SOURCE: T.I.	T658	P P	3.00 UNITS	.43	1.29	1.00	0.00	0.00	1.29	.03
3030208. CAPACITOR 0.1 MF .50V SOURCE: BELL	T626	P P	3.00 UNITS	.12	.37	1.00	0.00	0.00	.37	.01
3030209. POWER SUPPLY PER SPECIFICATION SOURCE: SEMICONDUCTOR CIR.,INC	3425-0000	P P P	1.00 UNITS	34.39	34.39	1.00	0.00	0.00	34.39	.70
3030210. BOX ONE PIECE MOLDED PLASTIC BOX WITH ATTACHED COVER. SOURCE: NEWPORT PLASTIC	T631	P P	1.00 UNITS	.77	.77	1.00	0.00	0.00	.77	.02

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

CNTRL/SIG EQ 4433

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
3030211. CONNECTOR T662									
24 PIN FEMALE	P P	1.00 UNITS	.86	.86	1.00	0.00	0.00	.86	.02
SOURCE: AMP INC.									
30312. PLANNING T 1									
FACTOR OF 10 PERCENT X MFG HOURS	LBR	.05 HRS	4.93	.26	1.00	4.99	1.32	1.70	.03
DIST. .03 TO LABOR AND .07 TO NON-RECURRING.									
30313. Q & RA - IND T 2									
FACTOR OF .062 PERCENT X MFG HOURS	LBR	.11 HRS	4.93	.53	1.00	4.99	1.32	3.52	.07
30315. TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06	LBR	.12 HRS	4.93	.59	1.00	4.99	1.32	3.86	.08
PERCENT OF THE MFG. HOUR.	R M	1.00 UNITS	.09	.09	1.00	0.00	0.00	.09	.00
30316. PROD. SUPPORT T 5									
.042 PERCENT OF MFG + PLAN + TOOL	LBR	.07 HRS	4.93	.36	1.00	4.99	1.32	2.38	.05
CNTRL/SIG EQ 4433								78.	1.58

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

COLLECTOR CONTROL 44320101

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
30401. CPU	SM30JJALA								
COLLECTOR CONTROL CPU'S WITH 32KB OF MOS. MEMORY.	P P	2.00 UNITS	.57	1.13	1.00	0.00	0.00	1.13	.02
30402. LINE INTERFACE	DL11-WB								
SERIAL LINE INTERFACES TOO MCS, BEAM CHARACTERIZATION SYSTEM AND DATA ACQUISITION SYSTEM TO 9600 BAUD	P P	6.00 UNITS	.01	.08	1.00	0.00	0.00	.08	.00
30403. WATCH DOG TIMER	KW11-W								
COMPUTER RESETABLE CLOCK SOURCE: DEC	P P	2.00 UNITS	.03	.05	1.00	0.00	0.00	.05	.00
30404. UNIBUS LINK	DA11								
HIGHSPEED PARALLEL COMMUNICATION INTERFACE. SOURCE: DEC	P P	1.00 UNITS	.41	.41	1.00	0.00	0.00	.41	.01
30405. FIELD INTERFACE	DZ11-E								
A SYNCHRONOUS 16 LINE MULTIPLEXOR TRANSMISSION TO 9600 BAUD TO FIELD CONTROLLERS	P P	2.00 UNITS	.08	.15	1.00	0.00	0.00	.15	.00
30406. STORAGE	MSH J6								
	P P	6.00 UNITS	.04	.27	1.00	0.00	0.00	.27	.01
30407. FORTRAN IV PLUS	QP100-CE								
HIGH LEVEL ENGLISH CONVERSION LANGUAGE COMPILER.	P P	2.00 UNITS	.05	.10	1.00	0.00	0.00	.10	.00
30408. WWV TIME TONE REC	T632								
UNIVERSALL TIME TONE SAV	P P	2.00 UNITS	.09	.18	1.00	0.00	0.00	.18	.00
30409. TIME CODE GEN	T633								
IRIG B BCD OUTPUT (DAY, MONTH, HOUR, MINUTE, SECOND)	P P	2.00 UNITS	.04	.07	1.00	0.00	0.00	.07	.00
30412. COLLECTOR CONTROL	44320101								
TOTAL - HELIOSTAT CONTROLLER	LBR	.02 HRS	5.92	.12	1.00	4.99	1.32	.82	.02

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

COLLECTOR CONTROL 44320101

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
30414. Q & RA - IND T 2										
FACTOR OF .062 PERCENT X MFG HOURS	LBR	.01	HRS	4.93	.03	1.00	4.99	1.32	.17	.00
30415. TOOLING MATERIAL T 4										
$.70 PER TOOLING HOURS PLUS .06	LBR	.01	HRS	4.93	.03	1.00	4.99	1.32	.19	.00
PERCENT OF THE MFG. HOUR.	R M	1.00	UNITS	.00	.00	1.00	0.00	0.00	.00	.00
30416. PRODUCTION SUPT. T 5										
.042 PERCENT OF MFG + PLAN + TOOL + Q & RA (DIRECT & IND.)	LBR	.00	HRS	4.93	.02	1.00	4.99	1.32	.11	.00
30417. PLANNING T 1										
FACTOR OF 10 PERCENT X MFG HOURS	LBR	.00	HRS	4.93	.01	1.00	4.99	1.32	.08	.00
COLLECTOR CONTROL 44320101									4.	.08

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

FOUNDATION 4441

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
4010101. FORM, POUR/FINISH 444111										
LABOR TO POSITION TAPERED PIPE, POUR CONCRETE AND VIBRATE. 5 CREWS (25 WEEK BASE) EACH: 5 LABORERS (INCL. LEAD) SOURCE: STEARNS-ROGER	LBR	1.88	HRS	13.61	25.52	1.00	1.97	1.00	50.27	1.02
4010102. CAGES 444112										
LABOR TO SET UP AND PLACE CAGES IN AUGERED HOLE. 5 CREWS (25 WEEK BASE) EACH: 2 RODMEN 2 IRONWORKERS SOURCE: STEARNS-ROGER	LBR	1.50	HRS	13.61	20.41	1.00	1.97	1.00	40.22	.82
4010103. EQUIP OPER & DRIVR 444113										
EQUIPMENT OPERATORS AND TRUCK DRIVERS USED IN SUPPORT OF FOUNDATION INSTALLATION. 5 CREWS (25 WEEK BASE) EACH: 1 HYDRAULIC CRANE OPERATOR 1 OILER 3 TRUCK DRIVERS SOURCE: STEARNS-ROGER	LBR	1.88	HRS	13.61	25.52	1.00	1.97	1.00	50.27	1.02
40102. CONCRETE 44412										
3.0 CUBIC YARDS OF CONCRETE PRICED AT $37 PER YARD INCLUDING COST OF MATERIALS, MIXING AND DELIVERY TO FOUNDATIONS POSITION. SOURCE: STEARNS-ROGER	P P	1.00	UNITS	123.31	123.31	1.00	0.00	0.00	123.31	2.51
40103. CAGES 44413										
428.2 LBS. OF REBAR PRICED AT $.20 PER LB. AND LABOR TO PREFABRICATE REBAR CAGES. 5 CREWS (25 WEEK BASE) EACH: 2 RODMEN 3 LABORERS (INCLUDING LEAD) 1 HYDRAULIC CRANE OPERATOR 1 TRUCK DRIVER SOURCE: STEARNS-ROGER	LBR	2.63	HRS	13.61	35.72	1.00	1.97	1.00	70.38	1.43
	R M	1.00	UNITS	95.54	95.54	1.00	0.00	0.00	95.54	1.95
40104. TAPERED PIPE 44414										
98.25 LBS PRICED AT $.31 PER LB DELIVERED. BASED ON U.S. STEEL PRICE INFORMATION.	P P	1.00	UNITS	32.87	32.87	1.00	0.00	0.00	32.87	.67

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

FOUNDATION 4441

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
40105. BRACING	44415								
BRACING - - 50 SETS AT $200 EACH	P P	1.00 UNITS	4.24	4.24	1.00	0.00	0.00	4.24	.09
FOUNDATION	4441							467.	9.52

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

SITE PREPARATION 4442

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
40201. SURVEY 44421										
5 SURVEY CREWS (25 WEEK BASE) 2 SURVEYORS	LBR	.75	HRS	13.61	10.21	1.00	1.97	1.00	20.11	.41
SOURCE: STEARNS-ROGER										
40202. DRILLING 44422										
DRILLING OPERATIONS, USING DRILL	LBR	2.25	HRS	13.61	30.62	1.00	1.97	1.00	60.32	1.23
SITE PREPARATION 4442									80.	1.64

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

HELIO SUPP STRUCT 4451

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
50101.									
ASSEMBLY T455									
ASSEMBLY PROCESS OF PEDESTAL COMPONENTS.	LBR	.19 HRS	4.93	.96	1.00	4.99	1.32	6.29	.13
5010201.									
TUBE ID40046-3									
24 OD X .105 WALL X 123 LONG LC STEEL, WT=276 LBS. SOURCE: KELLY PIPE	R M	1.00 UNITS	90.58	90.58	1.00	0.00	0.00	90.58	1.85
5010202.									
CAP ID40046-5									
.375 X 30 X 30, LC STEEL PLATE WT=75 LB. SOURCE: U.S. STEEL	R M	1.00 UNITS	21.27	21.27	1.00	0.00	0.00	21.27	.43
5010203.									
COVER ID40046-7									
.0396 X 10 X 10 L.C. STEEL WT=4 LB. SOURCE: U.S. STEEL	R M	1.00 UNITS	.88	.88	1.00	0.00	0.00	.88	.02
5010204.									
J BOX ID40046-9									
	P P	1.00 UNITS	.80	.80	1.00	0.00	0.00	.80	.02
50114.									
PLANNING T 1									
FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR	.02 HRS	4.93	.11	1.00	4.99	1.32	.75	.02
50115.									
QUAL & RA IND T 2									
FACTOR OF .062 PERCENT X MFG HOURS	LBR	.05 HRS	4.93	.24	1.00	4.99	1.32	1.56	.03
50117.									
TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06	LBR	.05 HRS	4.93	.26	1.00	4.99	1.32	1.71	.03
PERCENT OF THE MFG. HOUR.	R M	1.00 UNITS	.04	.04	1.00	0.00	0.00	.04	.00
50118.									
PROD SUPPORT T 5									
.042 PERCENT OF MFG + PLAN + TOOL	LBR	.03 HRS	4.93	.16	1.00	4.99	1.32	1.06	.02
HELIO SUPP STRUCT 4451								125.	2.55

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

PROTECTION ENCL 4452

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL $/SM
PROTECTION ENCL 4452							0. 0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

LIGHTNING PROT. 4453

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
LIGHTNING PROT. 4453							0.	0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

HELIOSTAT 4461

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
7010201. DRIVE/PED/ELTRONC 446121									
REMOVE 803 LBS. DPE UNIT FROM FLAT BED, PLACE OVER TAPERED FOUNDATION PROTRUSION AND VIBRATE USING GROVE (MODEL 30) HYDRAULICS, DIESEL, CRANE MODIFIED TO ADD MANIPULATION. 2 CREWS (26.625 WK BASE) EACH: 1 EQUIPMENT OPERATOR 1 MILLWRIGHT 1 LABORER	LBR	.40 HRS	13.61	5.43	1.00	1.97	1.00	10.71	.22
7010202. REFLECTOR PANELS 446122									
USE YALE MODEL G3 P-150,DIESEL, 240 IN. HIGH LIFT FORK TRUCK TO REMO PANEL CONTAINERS AND PLACE ON DROTT 1000 SERIES B, DIESEL 4 WHEEL STEERING TRAVELIFT, MODIFIED TO ADD 2 CRANE/MANIPULATORS. 5 CREWS (26.625 WK BASE) EACH: 1 FORKLIFT OPERATOR 1 TRAVELIFT OPERATOR 2 MILLWRIGHTS 2 LABORERS	LBR	2.00 HRS	13.61	27.17	1.00	1.97	1.00	53.53	1.09
7010203. OIL - DRIVE S.A.3. 30	P P	2.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
HELIOSTAT 4461								64.	1.31

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

SENSOR/CALIB EQ 4462

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
70202. INSTALL 44621 USE STANDARD ELECTRICIAN TOOLS TO INSTALL DIGITAL EYE UNITS 1 CREW (1 WK.BASE) EACH: 1 ELECTRICIAN EFFORT IS CONCURRENT AND IN ASSOCIATION WITH CALIBRATION. 8.3 UNITS (6/FIELD).	LBR	.00 HRS	13.61	.06	1.00	1.97	1.00	.12	.00
70203. CALIBRATE 44622 ONE VOLT-OHM METER AND ONE	LBR	.00 HRS	13.61	.06	1.00	1.97	1.00	.12	.00
SENSOR/CALIB EQ 4462								0.	.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

ELECTRICAL/DISTRIB 4463

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
70302. INSTAL CABLE 44631 EMPLOY VIBRATORY, DIESEL, PLOW TO BURY ONE POWER/FIBEROPTICS CABLE. 3 CREWS (26.625 WK. BASE) EACH: 1 CABLE PLOW OPERATOR 2 LABORERS	LBR	.80	HRS	13.61	10.87	1.00	1.97	1.00	21.41	.44
70303. PWR TR/DISTRIB PNL 44632 INSTALL POWER TRANSFORMER/ DISBRIBUTION PANELS USING 1 TRUCK AND 1 FORKLIFT. 1 CREW (2 WK BASE) EACH: 1 TRUCK DRIVER 1 FORKLIFT OPERATOR 1 MILLWRIGHT 2 LABORERS	LBR	.02	HRS	13.61	.31	1.00	1.97	1.00	.62	.01
70304. CONN,C/O&CLOSE OUT 44633 USE 1 SPECIAL TEST SET AND	LBR	.53	HRS	13.61	7.25	1.00	1.97	1.00	14.28	.29
ELECTRICAL/DISTRIB 4463									36.	.74

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

ALIGN HELIOSTATS 4464

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
ALIGN HELIOSTATS 4464							0.	0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

FIELD SUPPORT 4465

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
70501. INSTALLATION MGMT 44651										
OVERALL MANAGEMENT OF FIELD EFFORT. 1 FIELD MANAGER (28.46 WK BASE).	LBR	.13	HRS	13.61	1.73	1.00	1.97	1.00	3.41	.07
7050201. SUPERVISION 44652-1										
1 LOGISTICS SUPERVISOR (28.46 WK BASE).	LBR	.13	HRS	13.61	1.73	1.00	1.97	1.00	3.41	.07
7050202. RECORDS 44652-2										
KEEP ACCOUNTABLE RECORDS FOR FIELD MATERIALS, COMPLETIONS TO SPEC., RECORDS, ETC. 1 RECORDS CLERK (28.46 WK BASE).	LBR	.06	HRS	13.61	.86	1.00	1.97	1.00	1.70	.03
7050203. FIELD COORDINATION 44652-3										
COORDINATE MATERIAL HANDLING, MOVEMENT AND SCHEDULES. 4 FIELD COORDINATORS (28.46 WK BASE)	LBR	.25	HRS	13.61	3.46	1.00	1.97	1.00	6.82	.14
7050204. PERSONNEL 44652-4										
KEEPS PERSONNEL FILES, ADMINISTERS HOUSING AND BENEFITS FOR FIELD PERSONNEL, TIME RECORDS, ETC. 1 PERSONNEL CLERK (28.64 WK BASE).	LBR	.06	HRS	13.61	.86	1.00	1.97	1.00	1.70	.03
70503. QUALITY CONTROL 44653										
OVERSEE AND ASSURE QUALITY OF INSTALLATIONS THROUGH FIELD INSPECTION, PRACTICES REVIEW, AND DECREPANT MATERIAL, FAILURE AND CORRECTIVE ACTION REPORTS. 1 QUAL. ASSUR. REP. (26.625 WK BASE).	LBR	.09	HRS	13.61	1.25	1.00	1.97	1.00	2.45	.05
70504. FIELD ENGINEERING 44654										
PROVIDE ENGINEERING SUPPORT DURING	LBR	.09	HRS	13.61	1.25	1.00	1.97	1.00	2.45	.05
FIELD SUPPORT 4465									22.	.45

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

PACK & TRANSP 4406

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
7060101. DRIVE 44661-1 SPECIALIZED TRAILER BED WITH RACK ON ONE SIDE FOR PEDESTAL, DRIVE, SHORT MAIN BEAM ASSEMBLY TO LEAN AGAINST; AND WITH 4 BY 4'S ATTACHED TO FLOOR FOR BRACING. QTY PER TRAILER BED = 12. REUSABLE SPECIALIZED TRAILER BEDS; MINIMUM QUANTITY NEEDED FOR 1 WEEK: 42.	P P	1.00 UNITS	.19	.19	1.00	0.00	0.00	.19	.00
7060102. REFLECTOR 44661-2 SPECIALIZED PALLET FOR HOLDING REFLECTOR PANELS (ALREADY ATTACHED TO MIRROR BACKING STRUCTURE) IN AN UPRIGHT POSITION, EACH BRACED ON A BOX STRUCTURE WHICH IS MOUNTED ON TH PALLET. CUSHIONED HOLDOWN ASSEMBLY KEEPS THE TOPS OF THE PANELS SECURE. QTY PER PALLET = 4 PANELS. REUSABLE PALLETS; MINIMUM QTY. NEEDED FOR 1 WEEK= 250	P P	1.00 UNITS	.39	.39	1.00	0.00	0.00	.39	.01
7060103. DISTRUB ELECT 44661-3 TRANSFORMERS STRAPPED TO REUSABLE PALLETS.	P P	1.00 UNITS	.04	.04	1.00	0.00	0.00	.04	.00
7060201. DRIVE 44662-1 SPECIALIZED TRAILER BEDS REMAIN AT SITE UNTIL UNLOADED (1 WEEK'S INSTALLATION SUPPLY) ONE TRAILER, IS PULLED BY ONE TRUCK CAB. WEIGHT PER DRIVE ASSEMBLY = 1450 LBS 12 DRIVE ASSEMBLIES PER TRAILER BED 17,400 LBS. WEIGHT OF MODIFICATION TO TRAILER BED = 700 LBS. TOTAL WEIGHT OF ASSEMBLIES AND MOD. = 18,100 LBS.	LBR	.33 HRS	2.14	.71	1.00	4.99	1.32	4.67	.10
7060202. REFLECTOR 44662-2 ONE LOWBOY PULLED BY ONE TRUCK CAB, ONE PALLET PER LOWBOY, PALLET LIFTED FROM LOWBOY WITH FORKTRUCK. QTY: 4 PANELS WITH BACKING STRUCTUR PALLET. WEIGHT: 1374 LBS. EACH X 4 5496 LBS. PLUS WT.. OF PALLET.	LBR	1.99 HRS	2.14	4.25	1.00	4.99	1.32	27.99	.57

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

PACK & TRANSP 4466

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
7060203. DISTRIB ELECT TRANSFORMER WEIGHT:	44662-3 2600 LBS.	LBR	.00 HRS	2.14	.00	1.00	4.99	1.32	.02	.00
PACK & TRANSP	4466								33.	.68

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

DESIGN 4471

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CHC	OVERHEAD	G&A	TOTAL	$/SM
DESIGN 4471							0.	0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

SUSTAINING ENGR. 4472

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
SUSTAINING ENGR. 4472							0.	0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

PRE PROD UNIT 4473

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
PRE PROD UNIT 4473							0.	0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 250000 UNITS PER YEAR - 10TH YEAR 08.26.08. DATE 05/24/78

SITE ACTIVATION 4474 T

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	F A C T O R S CRC	OVERHEAD	G&A	TOTAL	$/SM
SITE ACTIVATION	4474	T								
#L									0.	0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR -- 10TH YEAR 09.24.14. DATE 05/24/78

REFLECTIVE SURFACE 4411

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
10101. LAMINATE T636 LABOR REQUIRED FOR LAMINATING LINE/ SOURCE: MDL/MDC	LBR	.05 HRS	4.90	.26	1.00	4.99	1.33	1.74	.04
1010201. FAB T637 LABOR REQUIRED FOR MIRRORING LINE. SOURCE: ADL/MDC	LBR	.16 HRS	4.90	.79	1.00	4.99	1.33	5.21	.11
1010202. FRONT LITE ID40044-3 .060 X 48 X 132 CORNING FUSION GLASS. SOURCE: CORNING	P P	12.00 UNITS	14.31	171.73	1.00	0.00	0.00	171.73	3.50
1010203. CHEMICALS T638 MIRRORING SOLUTION, SILVER AND COPPER. SOURCE: SOMMER & MAGA IND. (LONGDON, ENG.).	R M	12.00 UNITS	1.34	16.10	1.00	0.00	0.00	16.10	.33
1010204. SETUP T501	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10103. BACK LITE ID40044-5 .188 X 48 X 132 FLOAT GLASS SOURCE: ASG	P P	12.00 UNITS	16.10	193.19	1.00	0.00	0.00	193.19	3.94
10104. ADHESIVE 1XA3504 BOND GLASS SHEETS TOGETHER WITH POLYURETHANE ADHESIVE. WT=2 LB. 3M CORPORATION	R M	12.00 UNITS	2.07	24.88	1.00	0.00	0.00	24.88	.51
10105. SETUP T503	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10120. PLANNING T 1 FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR	.03 HRS	4.90	.13	1.00	4.99	1.33	.83	.02
10121. QUAL & RA IND T 2 FACTOR OF .062 PERCENT X MFG HOURS	LBR	.05 HRS	4.90	.26	1.00	4.99	1.33	1.72	.04

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

REFLECTIVE SURFACE 4411

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
10123.									
TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06	LBR	.06 HRS	4.90	.28	1.00	4.99	1.33	1.89	.04
PERCENT OF THE MFG. HOUR.	R M	1.00 UNITS	.05	.05	1.00	0.00	0.00	.05	.00
10124.									
PROD SUPPORT T 5									
.042 PERCENT OF MFG + PLAN + TOOL	LBR	.04 HRS	4.90	.18	1.00	4.99	1.33	1.17	.02
REFLECTIVE SURFACE 4411								419.	8.53

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

MIRROR BACK STRUCT 4412

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
10201. ASSY SUPPORT STR ID40045 INBOARD, OUTBOARD CROSS BEAM; DIAGONAL BEAMS AND OUTBOARD AND INBOARD ANGLES.	LBR	.25 HRS	4.90	1.24	1.00	4.99	1.33	8.25	.17
10202. INBOARD CROSS BM ID40045-3 .0785 X 27 X 173 104 LB. EA.	P P	2.00 UNITS	29.31	58.63	1.00	0.00	0.00	58.63	1.20
10203. OUTBOARD CROSS BM ID40045-5 .0516 X 11 X 173 44 LB. EA SOURCE: U.S. STEEL	P P	2.00 UNITS	12.48	24.96	1.00	0.00	0.00	24.96	.51
10204. DIAGONAL BEAM/LH ID40045-7 .0785 X 26 X 112 46 LB. EACH	P P	2.00 UNITS	12.88	25.76	1.00	0.00	0.00	25.76	.53
10205. DIAGONAL BEAM/RH ID40045-8 .0785 X 26 X 112 46 LB. EACH	P P	2.00 UNITS	12.88	25.76	1.00	0.00	0.00	25.76	.53
10206. HAT/STRINGER ID40045-9 .0635 (16 GA) X 6.00 IN. X 130 GALV. STEEL SHEET HATS,WT= 14 LB EA. SOURCE: WOODSIDE ENGR. CO.	P P	24.00 UNITS	4.98	119.52	1.00	0.00	0.00	119.52	2.44
10207. OUTBOARD ANGLES ID40045-15 .0516 X 3.5 X 4.5 .23 LB. EACH SOURCE: U.S. STEEL	R M	4.00 UNITS	.06	.24	1.00	0.00	0.00	.24	.00
10208. INBOARD ANGLES ID40045-13 .0516 X 4.0 X 10.50 .61 LB EACH SOURCE: U.S. STEEL	R M	4.00 UNITS	.16	.65	1.00	0.00	0.00	.65	.01
10209. GUSSET ANGLE ID40045-11 .25X8.5X17.50 11 LB. EA. SOURCE: U.S. STEEL	R M	4.00 UNITS	2.78	11.14	1.00	0.00	0.00	11.14	.23
10211. CLINCH NUT S-0420-1-Z SOURCE: S.P.S. CO.	P P	48.00 UNITS	.04	1.71	1.00	0.00	0.00	1.71	.03
10212. BOLT T601 .25 UNC-20 X .75 LONG SAE SOURCE: MCMASSTER	P P	48.00 UNITS	.03	1.66	1.00	0.00	0.00	1.66	.03

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

MIRROR BACK STRUCT 4412

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
10213. WASHER T602									
.25 ID SAE WASHER	P P	48.00 UNITS	.00	.12	1.00	0.00	0.00	.12	.00
SOURCE: MCMASTER									
10220. PLANNING T 1									
FACTOR OF 10 PERCENT X MFG HOURS	LBR	.03 HRS	4.90	.15	1.00	4.99	1.33	.99	.02
DIST. .03 TO LABOR AND .07 TO NON-RECURRING.									
10221. QUAL & RA IND T 2									
FACTOR OF .062 PERCENT X MFG HOURS	LBR	.06 HRS	4.90	.31	1.00	4.99	1.33	2.05	.04
10223. TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06	LBR	.07 HRS	4.90	.34	1.00	4.99	1.33	2.25	.05
PERCENT OF THE MFG. HOUR.	R M	1.00 UNITS	.05	.05	1.00	0.00	0.00	.05	.00
10224. PROD SUPPORT T 5									
.042 PERCENT OF MFG + PLAN + TOOL	LBR	.04 HRS	4.90	.21	1.00	4.99	1.33	1.39	.03
MIRROR BACK STRUCT 4412								285.	5.81

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR -- 10TH YEAR 09.24.14. DATE 05/24/78

ASSY & BOND 4413

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
10301.									
ASSY & BOND 441301									
BONDS MIRRORS TO BACKING/STRINGERS TO GLASS. .14 GAL. PER PANEL OF 3MEC3532 ADHESIVE (3M CORP) SOURCE: ADL/MDC	LBR	.24 HRS	4.90	1.18	1.00	4.99	1.33	7.82	.16
10302.									
ADHESIVE 441301									
BONDS MIRRORS TO BACKING/STRINGERS TO GLASS. .14 GAL. PER PANEL OF 3MEC3532 ADHESIVE (3M CORP) SOURCE: ADL/MDC	R M	12.00 UNITS	2.10	25.25	1.00	0.00	0.00	25.25	.51
10303.									
PLANNING T 1									
FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR	.03 HRS	4.90	.14	1.00	4.99	1.33	.94	.02
10304.									
QUAL & RA IND T 2									
FACTOR OF .062 PERCENT X MFG HOURS	LBR	.06 HRS	4.90	.29	1.00	4.99	1.33	1.94	.04
10306.									
TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06	LBR	.07 HRS	4.90	.32	1.00	4.99	1.33	2.13	.04
PERCENT OF THE MFG. HOUR.	R M	1.00 UNITS	.05	.05	1.00	0.00	0.00	.05	.00
10307.									
PROD SUPPORT T 5									
.042 PERCENT OF MFG + PLAN + TOOL	LBR	.04 HRS	4.90	.20	1.00	4.99	1.33	1.31	.03
ASSY & BOND 4413								39.	.80

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

AZIMUTH 4421

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
20101. ASSEMBLY ID40065									
DRIVE COMPONENTS ASSEMBLY	LBR	.13 HRS	4.90	.65	1.00	4.99	1.33	4.34	.09
SOURCE: ADL/MDAC									
2010201. HOUSING ID40038									
WELDMENT HOUSING WT=160 LB.	LBR	.16 HRS	4.90	.76	1.00	4.99	1.33	5.07	.10
SOURCE: U.S. STEEL	R M	1.00 UNITS	31.28	31.28	1.00	0.00	0.00	31.28	.64
2010203. BUSHING PIVOT KJS1616060									
PER SPECIFICATION. PIVOT POINT BUSHING. SOURCE: SARGENT	P P	2.00 UNITS	.65	1.30	1.00	0.00	0.00	1.30	.03
201030101. MEMBRANE T607									
10 O.D. X .156 WALL	R M	1.00 UNITS	3.53	3.53	1.00	0.00	0.00	3.53	.07
201030102. TUBE T608									
10 O.D. X .156 WALL X 8 HIGH MADE OF 4130, 7 TL, SOURCE:U.S.STEEL	R M	1.00 UNITS	9.35	9.35	1.00	0.00	0.00	9.35	.19
201030103. SPLINE T609									
10 O.D. X .312 WALL X 3 LONG	R M	1.00 UNITS	7.13	7.13	1.00	0.00	0.00	7.13	.15
201030105. ASSEMBLY T603									
FAB AND ASSY. FLEX SPLINE	LBR	.13 HRS	4.90	.62	1.00	4.99	1.33	4.13	.08
SOURCE: ADL/MDAC									
201030201. PLUG T605									
7 OD X 1.50 L.C. STEEL	R M	1.00 UNITS	3.03	3.03	1.00	0.00	0.00	3.03	.06
SOURCE: U.S. STEEL									
201030202. DRIVE SHAFT T611									
1.75 OD, .75 ID X 10.75 LONG L.C. STEEL PIPE. SOURCE: KELLY PIPE.	R M	1.00 UNITS	1.73	1.73	1.00	0.00	0.00	1.73	.04
201030203. BEARING BB-2151									
PER SPECIFICATION	P P	1.00 UNITS	67.76	67.76	1.00	0.00	0.00	67.76	1.38
SOURCE: MC GILL MFG. CO.									
201030204. FABRICATION T653									
FAB AND ASSY. WAVE GENERATOR	LBR	.11 HRS	4.90	.52	1.00	4.99	1.33	3.48	.07
SOURCE: ADL/MDAC									

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

AZIMUTH 4421

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
20104.										
BEARING TURRET	BB-2149									
PER SPECIFICATION.		P P	1.00 UNITS	18.62	18.62	1.00	0.00	0.00	18.62	.38
SOURCE: MC GILL MFG. CO.										
2010601.										
RETAINER-OUTER	IT49852-1									
19.625 OD X 15.1875 ID X 1.25 LG.		LBR	.01 HRS	4.90	.04	1.00	4.99	1.33	.30	.01
L.C. STEEL. WT = 29.28		R M	1.00 UNITS	6.16	6.16	1.00	0.00	0.00	6.16	.13
SOURCE: U.S. STEEL										
2010602.										
NUT	T640									
1/2 I.D.		P P	8.00 UNITS	.12	.94	1.00	0.00	0.00	.94	.02
SOURCE: MCMASTER										
2010603.										
BOLTS	T510									
1/2 X 3, GLASS 5		P P	8.00 UNITS	.39	3.12	1.00	0.00	0.00	3.12	.06
SOURCE: MC MASTER										
2010604.										
WASHER	T511									
1/2 ID.		P P	8.00 UNITS	.00	.02	1.00	0.00	0.00	.02	.00
SOURCE: MC MASTER										
2010801.										
CIRCULAR SPLINE	T 36									
15 OD X 10 ID X 2.75 LG		LBR	.10 HRS	4.90	.49	1.00	4.99	1.33	3.26	.07
LC STEEL SHEET. WT = 73 LB.		R M	1.00 UNITS	29.65	29.65	1.00	0.00	0.00	29.65	.60
SOURCE: LINCOLN FOUNDRY										
2010803.										
BOLTS	T516									
1/2 X 2 CLASS 5		P P	8.00 UNITS	.26	2.10	1.00	0.00	0.00	2.10	.04
SOURCE: MC MASTER										
2010804.										
WASHER	T517									
1/2 ID		P P	8.00 UNITS	.00	.02	1.00	0.00	0.00	.02	.00
SOURCE: MC MASTER										
T520										
2010901.										
HELICON	RMJ22178									
PER SPECIFICATION		LBR	.07 HRS	4.90	.34	1.00	4.99	1.33	2.23	.05
SOURCE: SPIROID		R M	1.00 UNITS	1.80	1.80	1.00	0.00	0.00	1.80	.04
20109010I.										
PINION	T519									
PER SPECIFICATION.		P P	1.00 UNITS	3.05	3.05	1.00	0.00	0.00	3.05	.06
SOURCE: SPIROID										

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR -- 10TH YEAR 09.24.14. DATE 05/24/78

AZIMUTH 4421

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
201090102. RING-PINION-RET	T520									
2.75 O.D. SOURCE: MC MASTER		P P	1.00 UNITS	.33	.33	1.00	0.00	0.00	.33	.01
201090103. SHIM-GEAR	T521									
1.50 O.D./1.125 ID SOURCE: MC MASTER		P P	1.00 UNITS	.05	.05	1.00	0.00	0.00	.05	.00
201090104. KEY-GEAR	NAS558-808-8									
1 LONG X 1/4 WIDE SOURCE: MC MASTER		P P	1.00 UNITS	.19	.19	1.00	0.00	0.00	.19	.00
201090105. NUT GEAR	T522									
AFBMA STANDARD W-05 SOURCE: MC MASTER		P P	1.00 UNITS	.94	.94	1.00	0.00	0.00	.94	.02
201090106. WASHER GEAR	T523									
AFBMA STANDARD W-05 SOURCE: MC MASTER		P P	1.00 UNITS	.13	.13	1.00	0.00	0.00	.13	.00
201090107. BEARING	67046NR1641DC									
DRIVE SHAFT BEARING PER SPECIFICATION.		P P	1.00 UNITS	3.56	3.56	1.00	0.00	0.00	3.56	.07
201090108. RING-BEARING-RET	MS16625-1200									
DRIVE SHAFT BEARING PER SPECIFICATION.	RETAINER	P P	1.00 UNITS	.33	.33	1.00	0.00	0.00	.33	.01
2011201. TUBE-ELEC.WIRE	T643									
.688 OD X .063 WALL X 13 LONG, L.C. STEEL. SOURCE: KELLY PIPE.		P P	1.00 UNITS	.14	.14	1.00	0.00	0.00	.14	.00
2011202. CLAMP-WIRE TUBE	5644									
SOURCE: MC MASTER		P P	1.00 UNITS	.20	.20	1.00	0.00	0.00	.20	.00
2011301. COVER	T646									
9 DIA. X .125 AND 8 DIA. X .125 L.C. STEEL SHEET.		LBR	.00 HRS	4.90	.00	1.00	4.99	1.33	.02	.00
		R M	1.00 UNITS	1.05	1.05	1.00	0.00	0.00	1.05	.02
2011302. SCREW	T613									
AFFIX COVER TO DRIVE HOUSING. SOURCE: MC MASTER		P P	4.00 UNITS	.00	.01	1.00	0.00	0.00	.01	.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR -- 10TH YEAR 09.24.14. DATE 05/24/78

AZIMUTH 4421

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2011303. GROMMET T526 HOLDS WIRE AND SEALS GEN HOUSING COMPARTMENT. SOURCE: MC MASTER	P P	1.00 UNITS	.05	.05	1.00	0.00	0.00	.05	.00
20114. PLANNING T 1 FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR	.08 HRS	4.90	.41	1.00	4.99	1.33	2.74	.06
20115. Q & RA-IND T 2 FACTOR OF .062 PERCENT X MFG HOURS	LBR	.17 HRS	4.90	.85	1.00	4.99	1.33	5.66	.12
20117. TOOLING MATERIAL T 4 $.70 PER TOOLING HOURS PLUS .06	LBR	.19 HRS	4.90	.94	1.00	4.99	1.33	6.21	.13
PERCENT OF THE MFG. HOUR.	R M	1.00 UNITS	.15	.15	1.00	0.00	0.00	.15	.00
20118. PRODUCTION SUPT. T 5 .042 PERCENT OF MFG + PLAN + TOOL	LBR	.12 HRS	4.90	.58	1.00	4.99	1.33	3.83	.08
AZIMUTH 4421								239.	4.87

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

ELEVATION 4422

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2020101. WELDMENT	T 50								
DRAG LINK WT=63 LB.	LBR	.10 HRS	4.90	.50	1.00	4.99	1.33	3.34	.07
SOURCE: U.S. STEEL	R M	1.00 UNITS	12.43	12.43	1.00	0.00	0.00	12.43	.25
2020103. BUSHING	KJS1616060								
PER SPECIFICATION. PIVOT POINT BUSHING. SOURCE: SARGENT	P P	2.00 UNITS	.22	.45	1.00	0.00	0.00	.45	.01
2020104. SHIM	T 41								
PIVOT POINT SHIM RESTRICTS MOVEMENT. SOURCE: MC MASTER	R M	4.00 UNITS	.30	1.22	1.00	0.00	0.00	1.22	.02
2020105. BOLT	T528								
3/4 DIA X 5 LONG SOURCE: MC MASTER	P P	2.00 UNITS	2.02	4.05	1.00	0.00	0.00	4.05	.08
2020106. SEAL-DUST	T529								
SOURCE: MC MASTER	P P	2.00 UNITS	.05	.10	1.00	0.00	0.00	.10	.00
2020107. THRUST BRG	KTM-1622060								
PER SPECIFICATION. SOURCE: SARGENT	P P	4.00 UNITS	.18	.73	1.00	0.00	0.00	.73	.01
2020108. NUT	T530								
.75 I.D. SOURCE: MC MASTER	P P	2.00 UNITS	.32	.63	1.00	0.00	0.00	.63	.01
2020109. BUSHING-CLAMP UP	T531								
.75 DIA. X 5 LONG, CLASS 8	P P	2.00 UNITS	1.73	3.46	1.00	0.00	0.00	3.46	.07
2020110. BOLT-ROD END	T532								
.75 DIA X 3.25 LONG, CLASS 8 SOURCE: MC MASTER	P P	2.00 UNITS	1.08	2.15	1.00	0.00	0.00	2.15	.04
2020111. NUT-ROD END	T533								
.75 I.D. SOURCE: MC MASTER	P P	2.00 UNITS	.32	.63	1.00	0.00	0.00	.63	.01
2020112. BUSHING	T534								
CLAMP UP SOURCE: MC MASTER	P P	2.00 UNITS	.22	.45	1.00	0.00	0.00	.45	.01

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR -- 10TH YEAR 09.24.14. DATE 05/24/78

ELEVATION 4422

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2020113. SHIM ROD END	T535									
SOURCE: MC MASTER		P P	4.00 UNITS	.30	1.22	1.00	0.00	0.00	1.22	.02
2020114. SEAL-DUST ROD END	T536									
SOURCE: MC MASTER		P P	4.00 UNITS	.05	.20	1.00	0.00	0.00	.20	.00
20202. JACK SCREW	T 52									
5 TON, 6 INCH RAISE, .85 INCH X 2 INCH X 22 INCH. WT=80.4 LB. DUFF NORTON		P P	2.00 UNITS	135.86	271.73	1.00	0.00	0.00	271.73	5.54
2020301. TUBE	ID40042-3									
16 IN. OD X .105 IN WALL X 81 IN. LONG. LC STEEL PIPE 124 LB. SOURCE: KELLY PIPE		R M	1.00 UNITS	39.21	39.21	1.00	0.00	0.00	39.21	.80
2020302. TAB ACTUATOR	ID40042-5									
.5 X 10 X 10 LC STEEL WT=5.73 LB		LBR	.07 HRS	4.90	.33	1.00	4.99	1.33	2.16	.04
SOURCE: U.S. STEEL		R M	2.00 UNITS	2.88	5.75	1.00	0.00	0.00	5.75	.12
2020303. TAB HINGE	ID40042-9									
.5 X 9 X 9 LC STEEL WT=5 LB.		LBR	.01 HRS	4.90	.06	1.00	4.99	1.33	.38	.01
SOURCE: U.S. STEEL		R M	4.00 UNITS	2.33	9.31	1.00	0.00	0.00	9.31	.19
2020304. FLANGE	ID40042-7									
.625 X 18.00 X 18.00		LBR	.05 HRS	4.90	.22	1.00	4.99	1.33	1.46	.03
LOW CARBON STEEL PLATE		R M	2.00 UNITS	11.65	23.30	1.00	0.00	0.00	23.30	.47
SOURCE: U.S. STEEL										
2020305. ASSEMBLY	ID40042									
SUPPORTS REFLECTOR AND TIES ELEVATIONAL AZIMUTH DRIVE TOGETHER. WT=193 LBS.		LBR	.24 HRS	4.90	1.18	1.00	4.99	1.33	7.82	.16
SOURCE: ADL/MDC										
2020401. BUSHING	KJS-1616060									
PER SPECIFICATION		P P	4.00 UNITS	.18	.73	1.00	0.00	0.00	.73	.01
SOURCE: SARGENT										
2020402. SHAFT	T647									
PIVOT SHAFT.		P P	4.00 UNITS	3.61	14.43	1.00	0.00	0.00	14.43	.29

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

ELEVATION 4422

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2020403. SEAL-DUST PER SPECIFICATION. SOURCE: SARGENT	KTM-1622060	P P	4.00 UNITS	.05	.20	1.00	0.00	0.00	.20	.00
2020404. WASHER SOURCE: LAWRENCE ENGINEERING	AN-960-416L	P P	4.00 UNITS	.06	.24	1.00	0.00	0.00	.24	.00
20209. PLANNING	T 1									
FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.		LBR	.06 HRS	4.90	.27	1.00	4.99	1.33	1.82	.04
20210. Q & RA IND	T 2									
FACTOR OF .062 PERCENT X MFG HOURS		LBR	.12 HRS	4.90	.57	1.00	4.99	1.33	3.76	.08
20212. TOOLING MATERIAL	T 4									
$.70 PER TOOLING HOURS PLUS .06 PERCENT OF THE MFG. HOUR.		LBR	.13 HRS	4.90	.62	1.00	4.99	1.33	4.12	.08
		R M	1.00 UNITS	.10	.10	1.00	0.00	0.00	.10	.00
20213. PRODUCTION SUPT	T 5									
.042 PERCENT OF MFG + PLAN + TOOL		LBR	.08 HRS	4.90	.38	1.00	4.99	1.33	2.55	.05
ELEVATION	4422								420.	8.57

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

MOTOR TOTAL 4423

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2030101. BOLTS 1/4 DIA. X 1 LONG, CLASS 2 SOURCE: MC MASTER	T538	P P	4.00 UNITS	.05	.20	1.00	0.00	0.00	.20	.00
2030102. WASHER 1/4 DIA. SOURCE: MC MASTER	T539	P P	1.00 UNITS	.03	.03	1.00	0.00	0.00	.03	.00
2030103. AZIMUTH MOTOR	T667	P P	1.00 UNITS	58.15	58.15	1.00	0.00	0.00	58.15	1.19
2030201. BOLT/NUT 1/4 DIA. X 1 LONG, CLASS 2 SOURCE: MC MASTER	T541	P P	4.00 UNITS	.33	1.30	1.00	0.00	0.00	1.30	.03
2030202. WASHER 1/4 DIA. SOURCE: MC MASTER	T542	P P	4.00 UNITS	.03	.12	1.00	0.00	0.00	.12	.00
2030203. TRKING MOTOR 1/4 HP, 24V, THREE PHASE WITH A NENA "C" CURVE SOURCE: W.C. PEART CO.	T665	P P	1.00 UNITS	42.71	42.71	1.00	0.00	0.00	42.71	.87
2030301. BOLT/NUT 1/4 X 1 LONG, CLASS 2 SOURCE: MC MASTER	T544	P P	4.00 UNITS	.33	1.30	1.00	0.00	0.00	1.30	.03
2030302. WASHER 1/4 DIA. SOURCE: MC MASTER	T545	P P	4.00 UNITS	.03	.12	1.00	0.00	0.00	.12	.00
2030303. STOWAGE MOTOR 1/4 HP, 240V, THREE PHASE WITH	T666	P P	1.00 UNITS	42.71	42.71	1.00	0.00	0.00	42.71	.87
MOTOR TOTAL	4423								147.	2.99

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

POS/LIMIT INDICATO 4424

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
20401. ASSEMBLY OF ELECTRONIC SOURCE: ADL	T614	LBR	.13 HRS	4.90	.64	1.00	4.99	1.33	4.27	.09
2040201. HALL EFFECT SENSOR SOURCE: MICRO SWITCH	T616	P P	2.00 UNITS	1.78	3.55	1.00	0.00	0.00	3.55	.07
2040202. LINE DRIVER SOURCE: FAIRCHILD	9614	P P	3.00 UNITS	.74	2.22	1.00	0.00	0.00	2.22	.05
2040203. FERROUS METAL DISC SOURCE: MDAC	T618	P P	3.00 UNITS	1.02	3.05	1.00	0.00	0.00	3.05	.06
2040301. DUEL DIFF LINE REC SOURCE: FAIRCHILD	9615	P P	1.00 UNITS	.78	.78	1.00	0.00	0.00	.78	.02
2040302. OPT.ISOL. TRIACS PER SPECIFICATION SOURCE: MOTOROLA	Q2T3244	P P P	4.00 UNITS	.97	3.86	1.00	0.00	0.00	3.86	.08
2040303. RESISTOR PER SPECIFICATION SOURCE: RCA	11 Z 13	P P P	4.00 UNITS	.11	.45	1.00	0.00	0.00	.45	.01
2040304. CAPACITOR PER SPECIFICATION SOURCE: RCA	0.1MF1400V	P P P	4.00 UNITS	.10	.41	1.00	0.00	0.00	.41	.01
2040305. PRINTED CIRCUIT BD 6 IN. X 6 IN. TWO SIDE EPOXY GLASS, COPPER CIRCUITRY, WITH THRU PLATED HOLES. .02 SOURCE: MDAC	T107	P P	1.00 UNITS	.73	.73	1.00	0.00	0.00	.73	.01
2040306. COVER PER SPECIFICATION SOURCE: MDAC	T226	P P P	1.00 UNITS	.91	.91	1.00	0.00	0.00	.91	.02
20405. PLANNING FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	T 1	LBR	.02 HRS	4.90	.08	1.00	4.99	1.33	.51	.01

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

POS/LIMIT INDICATO 4424

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
20406.										
Q & RA IND T 2										
FACTOR OF .062 PERCENT X MFG HOURS	LBR	.03	HRS	4.90	.16	1.00	4.99	1.33	1.06	.02
20408.										
TOOLING MATERIAL T 4										
$.70 PER TOOLING HOURS PLUS .06	LBR	.04	HRS	4.90	.17	1.00	4.99	1.33	1.16	.02
PERCENT OF THE MFG. HOUR.	R M	1.00	UNITS	.03	.03	1.00	0.00	0.00	.03	.00
20409.										
PRODUCTION SUPPT. T 5										
.042 PERCENT OF MFG + PLAN + TOOL	LBR	.02	HRS	4.90	.11	1.00	4.99	1.33	.72	.01
POS/LIMIT INDICATO 4424									24.	.48

PWR SPLY/DIST 4425

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2050201. FEEDER CABLE CLX									
3, NO. 4 AWG,5KV,COPPER CABLE/GALITEP 2000, WITH ALUMINUM SHEATH AND PVC JACKETS SUITABLE FOR DIRECT BURIAL. SOURCE: OKONITE	P	1.00 UNITS	6.96	6.96	1.00	0.00	0.00	6.96	.14
2050202. TRANSFORMER 225T(19)H									
PER SPECIFICATIONS. SOURCE: SQUARE D	P P	1.00 UNITS	11.53	11.53	1.00	0.00	0.00	11.53	.23
2050203. DIST PANEL SQ.D-H-4172-4M									
480V THREE PHASE WITH 100 AMP C/B. SOURCE: SQUARE D	P P	1.00 UNITS	1.19	1.19	1.00	0.00	0.00	1.19	.02
2050204. BRANCH CIR BKR SQD NO.FA-34040									
480V, 3 POLE, 40 AMP SOURCE: SQUARE D	P P	15.00 UNITS	.15	2.21	1.00	0.00	0.00	2.21	.05
2050205. BRANCH CIR CABLE CLX-ALS									
3, NO.8 AWG,600V,COPPER CABLE/GALITEP 2000 WITH ALUMINUM SHEATH AND PVC JACKET, SUITABLE FOR DIRECT BURIAL. SOURCE: OKONITE	P	1.00 UNITS	43.34	43.34	1.00	0.00	0.00	43.34	.88
2050206. PLANNING T 1									
FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2050207. Q & RA - IND T 2									
FACTOR OF .062 PERCENT X MFG HOURS	LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2050208. TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06 PERCENT OF THE MFG. HOUR.	LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	R M	0.00 UNITS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2050209. PRODUCTION SUPT. T 5									
.042 PERCENT OF MFG + PLAN + TOOL + Q & RA (DIRECT & IND.)	LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

PWR SPLY/DIST 4425

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2050301. WIRE CLX-16 3 NO. 16 AWG WITH OPTICAL FIBER SOURCE: OKONITE		P P	1.00 UNITS	8.23	8.23	1.00	0.00	0.00	8.23	.17
2050302. CIR BKR/HOLDER T663 480V, 15 AMP, 3 PHASE C/B PLUS HOLDER. SOURCE: SQUARE D		P P	1.00 UNITS	37.64	37.64	1.00	0.00	0.00	37.64	.77
2050303. CONNECTORS T664 OPTICAL FIBER COUPLINGS.		P P	2.00 UNITS	3.20	6.40	1.00	0.00	0.00	6.40	.13
PWR SPLY/DIST 4425									118.	2.40

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

ASSY DR/PED/ELECT 4426 T

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
20601.									
ASSY DR/PED/ELECT 4426 T									
DRIVE AND PEDESTAL LABOR REQUIRED	LBR	.08 HRS	4.90	.39	1.00	4.99	1.33	2.61	.05
ASSEMBLY OF MAIN BEAM, JACKS, DRAG LINK, AZIMUTH DRIVE, PEDESTAL AND ELECTRIC.	P P	1.00 UNITS	1.02	1.02	1.00	0.00	0.00	1.02	.02
SOURCE: ADL/MDAC									
20604.									
PLANNING T 1									
FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR	.01 HRS	4.90	.05	1.00	4.99	1.33	.31	.01
20605.									
QUAL & RA IND T 2									
FACTOR OF .062 PERCENT X MFG HOURS	LBR	.02 HRS	4.90	.10	1.00	4.99	1.33	.65	.01
20607.									
TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06 PERCENT OF THE MFG. HOUR.	LBR	.02 HRS	4.90	.11	1.00	4.99	1.33	.71	.01
	R M	1.00 UNITS	.02	.02	1.00	0.00	0.00	.02	.00
20608.									
PROD SUPPORT T 5									
.042 PERCENT OF MFG + PLAN + TOOL	LBR	.01 HRS	4.90	.07	1.00	4.99	1.33	.44	.01
ASSY DR/PED/ELECT 4426 T								6.	.12

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

SENSOR/CALIB EQUIP 4431

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
3010201. CAMERA	TN2200								
SOURCE: GENERAL ELECTRIC	P P	1.00 UNITS	.79	.79	1.00	0.00	0.00	.79	.02
3010202. CAMERA LENS	T648								
	P P	1.00 UNITS	.04	.04	1.00	0.00	0.00	.04	.00
3010203. TRIPOD	T649								
6 FT HIGH	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
SOURCE: MDAC									
3010204. COOLER-HEATER	T650								
SOURCE: MDAC	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
3010205. ELECTRONICS	T651								
CAMERA ELECTRONICS	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
SOURCE: MDAC									
3010206. CABLE	CLX-16								
3 NO. 16 AWG WITH OPTICAL FIBER	P P	1.00 UNITS	.01	.01	1.00	0.00	0.00	.01	.00
SOURCE: OKONITE									
30105. PLANNING	T 1								
FACTOR OF 10 PERCENT X MFG HOURS	LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DIST. .03 TO LABOR AND	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
.07 TO NON-RECURRING.									
30106. Q & RA IND	T 2								
FACTOR OF .062 PERCENT X MFG HOURS	LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30107. TOOLINGG MATERIAL	T 4								
$.70 PER TOOLING HOURS PLUS .06	LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PERCENT OF THE MFG. HOUR.	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	R M	0.00 UNITS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30108. PRODUCTION SUPT.	T 5								
.042 PERCENT OF MFG + PLAN + TOOL	LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
+ Q & RA (DIRECT & IND.)	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SENSOR/CALIB EQUIP 4431								1.	.02

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

FIELD CONTROL 4432

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
30201. ASSEMBLY DDI COMPONENT ASSEMBLY	T620	LBR	.00 HRS	4.90	.02	1.00	4.99	1.33	.15	.00
3020201. TWO SIDED PWB SOURCE: MDAC	44320201	P P	2.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
3020202. CONNECTOR 24 PIN SOURCE: AMP INC.	T652	P P	2.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
3020203. LED PER SPECIFICATION SOURCE: RCA	SG1010	P P	10.00 UNITS	.00	.02	1.00	0.00	0.00	.02	.00
3020204. OPT TRANSCEIVER COMMUNICATION WITH HELIOSTAT ARRAY CONTROLLER SOURCE: TI	T622	P P	2.00 UNITS	.03	.06	1.00	0.00	0.00	.06	.00
3020205. MICRO-COMPUTER SIMILAR TO NAT'L SEMI 8748 SOURCE: NATL SEMICONDUCTOR	T623	P P	2.00 UNITS	.03	.06	1.00	0.00	0.00	.06	.00
3020206. OPT TRANSCEIVER COMMUNICATION WITH HELIOSTAT CONTROLLER. SOURCE: TI	T624	P P	8.00 UNITS	.03	.21	1.00	0.00	0.00	.21	.00
3020207. RELAY 4 PDT (5V) SOURCE: POTTER BRUMFIELD	T660	P P	8.00 UNITS	.01	.05	1.00	0.00	0.00	.05	.00
3020208. CERAMIC CAPS 0.1 MF .50V SOURCE: BELL	T626	P P	8.00 UNITS	.00	.01	1.00	0.00	0.00	.01	.00
3020209. MODULAR PWR-SUPPLY PV SOURCE: LAMBELA	T627	P P	2.00 UNITS	.09	.18	1.00	0.00	0.00	.18	.00
3020210. FOAM PADS ATTACH FOAM CUSHIONS TO TOP OF BOX.	T628	P P	2.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

FIELD CONTROL 4432

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
3020211. PHOTO DETECTOR T629 OPTICAL FIBER SOURCE: I.T.	P P	2.00 UNITS	.01	.02	1.00	0.00	0.00	.02	.00
3020212. PHOTO TRANSISTORS T630 OPTICAL FIBER. SOURCE: I.T.	P P	8.00 UNITS	.00	.01	1.00	0.00	0.00	.01	.00
3020213. BOX T631 ONE PIECE MOLDED PLASTIC BOX WITH ATTACHED COVER. SOURCE: NEWPORT PLASTIC	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
3020214. CONNECTOR T231 36 COND NO. 24 AWG FLAT WIRE AND CONNECTORS. SOURCE: AMP INC.	P P	2.00 UNITS	.00	.01	1.00	0.00	0.00	.01	.00
30215. PLANNING T 1 FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR	.00 HRS	4.90	.00	1.00	4.99	1.33	.02	.00
30216. Q & RA - IND T 2 FACTOR OF .062 PERCENT X MFG HOURS	LBR	.00 HRS	4.90	.01	1.00	4.99	1.33	.04	.00
30218. TOOLING MATERIAL T 4 $.70 PER TOOLING HOURS PLUS .06 PERCENT OF THE MFG. HOUR.	LBR R M	.00 HRS 1.00 UNITS	4.90 .00	.01 .00	1.00 1.00	4.99 0.00	1.33 0.00	.04 .00	.00 .00
30219. PROD SUPPORT T 5 .042 PERCENT OF MFG + PLAN + TOOL	LBR	.00 HRS	4.90	.00	1.00	4.99	1.33	.03	.00
FIELD CONTROL 4432								1.	.02

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

CNTRL/SIG EQ 4433

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
30301. ASSEMBLY TOTAL COMPONENTS	T201	LBR	.39 HRS	4.90	1.92	1.00	4.99	1.33	12.74	.26
3030201. PRINTED CIRCUIT BD 4 IN X 5 IN TWO SIDED EPOXY GLASS COPPER CIRCUITRY WITH THRU PLATED HOLES. .02 SOURCE: MDAC	T100	T P P	1.00 UNITS	.52	.52	1.00	0.00	0.00	.52	.01
3030203. CONNECTOR 24 PIN SOURCE: AMP INC.	T652	P P	1.00 UNITS	.72	.72	1.00	0.00	0.00	.72	.01
3030204. MU.COMPUTER SIMILAR TO NAT'L SEMI 8748 SOURCE: NATL SEMICONDUCTOR	T623	P P	1.00 UNITS	8.66	8.66	1.00	0.00	0.00	8.66	.18
3030205. QUAD.DIFF. LINE DR MOTOR DRIVER INTERFACE SIMILAR TO NAT'L SEMI. DS1688	T656	P P	2.00 UNITS	.51	1.01	1.00	0.00	0.00	1.01	.02
3030206. QUAD.DIFF. LINE RE ENCODER INTERFACE SIMILAR TO NAT'L SEMI. DS1689	T657	P P	2.00 UNITS	.51	1.01	1.00	0.00	0.00	1.01	.02
3030207. HEX D-FLIP FLOP ENCODER INTERFACE SOURCE: T.I.	T658	P P	3.00 UNITS	.36	1.08	1.00	0.00	0.00	1.08	.02
3030208. CAPACITOR 0.1 MF .50V SOURCE: BELL	T626	P P	3.00 UNITS	.10	.31	1.00	0.00	0.00	.31	.01
3030209. POWER SUPPLY PER SPECIFICATION SOURCE: SEMICONDUCTOR CIR.,INC	3425-0000	P P P	1.00 UNITS	28.86	28.86	1.00	0.00	0.00	28.86	.59
3030210. BOX ONE PIECE MOLDED PLASTIC BOX WITH ATTACHED COVER. SOURCE: NEWPORT PLASTIC	T631	P P	1.00 UNITS	.65	.65	1.00	0.00	0.00	.65	.01

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

CNTRL/SIG EQ 4433

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
3030211. CONNECTOR T662										
24 PIN FEMALE	P P		1.00 UNITS	.72	.72	1.00	0.00	0.00	.72	.01
SOURCE: AMP INC.										
30312. PLANNING T 1										
FACTOR OF 10 PERCENT X MFG HOURS	LBR		.05 HRS	4.90	.23	1.00	4.99	1.33	1.53	.03
DIST. .03 TO LABOR AND .07 TO NON-RECURRING.										
30313. Q & RA - IND T 2										
FACTOR OF .062 PERCENT X MFG HOURS	LBR		.10 HRS	4.90	.48	1.00	4.99	1.33	3.16	.06
30315. TOOLING MATERIAL T 4										
$.70 PER TOOLING HOURS PLUS .06	LBR		.11 HRS	4.90	.52	1.00	4.99	1.33	3.47	.07
PERCENT OF THE MFG. HOUR.	R M		1.00 UNITS	.08	.08	1.00	0.00	0.00	.08	.00
30310. PROD. SUPPORT T 5										
.042 PERCENT OF MFG + PLAN + TOOL	LBR		.07 HRS	4.90	.32	1.00	4.99	1.33	2.14	.04
CNTRL/SIG EQ 4433									67.	1.36

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR -- 10TH YEAR 09.24.14. DATE 05/24/78

COLLECTOR CONTROL 44320101

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
30401.									
CPU	SM30JJALA								
COLLECTOR CONTROL CPU'S WITH 32KB OF MOS. MEMORY.	P P	2.00 UNITS	.48	.95	1.00	0.00	0.00	.95	.02
30402.									
LINE INTERFACE	DL11-WB								
SERIAL LINE INTERFACES TO MCS, BEAM CHARACTERIZATION SYSTEM AND DATA ACQUISITION SYSTEM TO 9600 BAUD	P P	6.00 UNITS	.01	.07	1.00	0.00	0.00	.07	.00
30403.									
WATCH DOG TIMER	KW11-W								
COMPUTER RESETABLE CLOCK SOURCE: DEC	P P	2.00 UNITS	.02	.04	1.00	0.00	0.00	.04	.00
30404.									
UNIBUS LINK	DA11								
HIGHSPEED PARALLEL COMMUNICATION INTERFACE. SOURCE: DEC	P P	1.00 UNITS	.41	.41	1.00	0.00	0.00	.41	.01
30405.									
FIELD INTERFACE	DZ11-E								
A SYNCHRONOUS 16 LINE MULTIPLEXOR TRANSMISSION TO 9600 BAUD TO FIELD CONTROLLERS	P P	2.00 UNITS	.06	.13	1.00	0.00	0.00	.13	.00
30406.									
STORAGE	MSH J6								
	P P	6.00 UNITS	.04	.23	1.00	0.00	0.00	.23	.00
30407.									
FORTRAN IV PLUS	QP100-CE								
HIGH LEVEL ENGLISH CONVERSION LANGUAGE COMPILER.	P P	2.00 UNITS	.04	.08	1.00	0.00	0.00	.08	.00
30408.									
WWV TIME TONE REC	T632								
UNIVERSALL TIME TONE SAV	P P	2.00 UNITS	.07	.15	1.00	0.00	0.00	.15	.00
30409.									
TIME CODE GEN	T633								
IRIG B BCD OUTPUT (DAY, MONTH, HOUR, MINUTE, SECOND)	P P	2.00 UNITS	.03	.06	1.00	0.00	0.00	.06	.00
30412.									
COLLECTOR CONTROL	44320101								
TOTAL - HELIOSTAT CONTROLLER	LBR	.02 HRS	5.88	.12	1.00	4.99	1.33	.82	.02

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

COLLECTOR CONTROL 44320101

DESCRIPTION		QTY/HRS/ ANN.	FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
30414. Q & RA - IND T 2 FACTOR OF .062 PERCENT X MFG HOURS	LBR	.01	HRS	4.90	.03	1.00	4.99	1.33	.17	.00
30415. TOOLING MATERIAL T 4 $.70 PER TOOLING HOURS PLUS .06	LBR	.01	HRS	4.90	.03	1.00	4.99	1.33	.19	.00
PERCENT OF THE MFG. HOUR.	R M	1.00	UNITS	.00	.00	1.00	0.00	0.00	.00	.00
30416. PRODUCTION SUPT. T 5 .042 PERCENT OF MFG + PLAN + TOOL + Q & RA (DIRECT & IND.)	LBR	.00	HRS	4.90	.02	1.00	4.99	1.33	.11	.00
30417. PLANNING T 1 FACTOR OF 10 PERCENT X MFG HOURS	LBR	.00	HRS	4.90	.01	1.00	4.99	1.33	.08	.00
COLLECTOR CONTROL 44320101									3.	.07

FOUNDATION 4441

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
4010101. FORM, POUR/FINISH 444111 LABOR TO POSITION TAPERED PIPE, POUR CONCRETE AND VIBRATE. 5 CREWS (25 WEEK BASE) EACH: 5 LABORERS (INCL. LEAD) SOURCE: STEARNS-ROGER	LBR	1.80 HRS	13.61	24.46	1.00	1.97	1.00	48.18	.98
4010102. CAGES 444112 LABOR TO SET UP AND PLACE CAGES IN AUGERED HOLE. 5 CREWS (25 WEEK BASE) EACH: 2 RODMEN 2 IRONWORKERS SOURCE: STEARNS-ROGER	LBR	1.44 HRS	13.61	19.57	1.00	1.97	1.00	38.55	.79
4010103. EQUIP OPER & DRIVR 444113 EQUIPMENT OPERATORS AND TRUCK DRIVERS USED IN SUPPORT OF FOUNDATION INSTALLATION. 5 CREWS (25 WEEK BASE) EACH: 1 HYDRAULIC CRANE OPERATOR 1 OILER 3 TRUCK DRIVERS SOURCE: STEARNS-ROGER	LBR	1.80 HRS	13.61	24.46	1.00	1.97	1.00	48.18	.98
40102. CONCRETE 44412 3.0 CUBIC YARDS OF CONCRETE PRICED AT $37 PER YARD INCLUDING COST OF MATERIALS, MIXING AND DELIVERY TO FOUNDATIONS POSITION. SOURCE: STEARNS-ROGER	P P	1.00 UNITS	118.19	118.19	1.00	0.00	0.00	118.19	2.41
40103. CAGES 44413 428.2 LBS. OF REBAR PRICED AT $.20 PER LB. AND LABOR TO PREFABRICATE REBAR CAGES. 5 CREWS (25 WEEK BASE) EACH: 2 RODMEN 3 LABORERS (INCLUDING LEAD) 1 HYDRAULIC CRANE OPERATOR 1 TRUCK DRIVER SOURCE: STEARNS-ROGER	LBR R M	2.52 HRS 1.00 UNITS	13.61 91.57	34.24 91.57	1.00 1.00	1.97 0.00	1.00 0.00	67.45 91.57	1.38 1.87
40104. TAPERED PIPE 44414 98.25 LBS PRICED AT $.31 PER LB DELIVERED. BASED ON U.S. STEEL PRICE INFORMATION.	P P	1.00 UNITS	31.51	31.51	1.00	0.00	0.00	31.51	.64

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR -- 10TH YEAR 09.24.14. DATE 05/24/78

FOUNDATION 4441

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
40105. BRACING	44415									
BRACING - - 50 SETS AT $200 EACH		P P	1.00 UNITS	4.07	4.07	1.00	0.00	0.00	4.07	.08
FOUNDATION	4441								448.	9.13

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

SITE PREPARATION 4442

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
40201. SURVEY 44421									
5 SURVEY CREWS (25 WEEK BASE) 2 SURVEYORS	LBR	.72 HRS	13.61	9.78	1.00	1.97	1.00	19.27	.39
SOURCE: STEARNS-ROGER									
40202. DRILLING 44422									
DRILLING OPERATIONS, USING DRILL	LBR	2.16 HRS	13.61	29.35	1.00	1.97	1.00	57.82	1.18
SITE PREPARATION 4442								77.	1.57

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

HELIO SUPP STRUCT 4451

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
50101.									
ASSEMBLY T455									
ASSEMBLY PROCESS OF PEDESTAL COMPONENTS.	LBR	.17 HRS	4.90	.85	1.00	4.99	1.33	5.65	.12
5010201.									
TUBE ID40046-3									
24 OD X .105 WALL X 123 LONG LC STEEL, WT=276 LBS. SOURCE: KELLY PIPE	R M	1.00 UNITS	86.82	86.82	1.00	0.00	0.00	86.82	1.77
5010202.									
CAP ID40046-5									
.375 X 30 X 30, LC STEEL PLATE WT=75 LB. SOURCE: U.S. STEEL	R M	1.00 UNITS	20.39	20.39	1.00	0.00	0.00	20.39	.42
5010203.									
COVER ID40046-7									
.0396 X 10 X 10 L.C. STEEL WT=4 LB. SOURCE: U.S. STEEL	R M	1.00 UNITS	.84	.84	1.00	0.00	0.00	.84	.02
5010204.									
J BOX ID40046-9	P P	1.00 UNITS	.76	.76	1.00	0.00	0.00	.76	.02
50114.									
PLANNING T 1									
FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR	.02 HRS	4.90	.10	1.00	4.99	1.33	.68	.01
50115.									
QUAL & RA IND T 2									
FACTOR OF .062 PERCENT X MFG HOURS	LBR	.04 HRS	4.90	.21	1.00	4.99	1.33	1.40	.03
50117.									
TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06	LBR	.05 HRS	4.90	.23	1.00	4.99	1.33	1.54	.03
PERCENT OF THE MFG. HOUR.	R M	1.00 UNITS	.04	.04	1.00	0.00	0.00	.04	.00
50118.									
PROD SUPPORT T 5									
.042 PERCENT OF MFG + PLAN + TOOL	LBR	.03 HRS	4.90	.14	1.00	4.99	1.33	.95	.02
HELIO SUPP STRUCT 4451								119.	2.43

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

PROTECTION ENCL 4452

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
PROTECTION ENCL 4452							0.	0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR -- 10TH YEAR 09.24.14. DATE 05/24/78

LIGHTNING PROT. 4453

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL $/SM
LIGHTNING PROT. 4453							0. 0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR -- 10TH YEAR 09.24.14. DATE 05/24/78

HELIOSTAT 4461

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
7010201. DRIVE/PED/ELTRONC 446121 REMOVE 803 LBS. DPE UNIT FROM FLAT BED, PLACE OVER TAPERED FOUNDATION PROTRUSION AND VIBRATE USING GROVE (MODEL 36) HYDRAULICS, DIESEL, CRANE MODIFIED TO ADD MANIPULATION. 2 CREWS (26.625 WK BASE) EACH: 1 EQUIPMENT OPERATOR 1 MILLWRIGHT 1 LABORER	LBR	.38	HRS	13.61	5.21	1.00	1.97	1.00	10.26	.21
7010202. REFLECTOR PANELS 446122 USE YALE MODEL G3 P-150,DIESEL, 240 IN. HIGH LIFT FORK TRUCK TO REMO PANEL CONTAINERS AND PLACE ON DROTT 1000 SERIES B, DIESEL 4 WHEEL STEERING TRAVELIFT, MODIFIED TO ADD 2 CRANE/MANIPULATORS. 5 CREWS (26.625 WK BASE) EACH: 1 FORKLIFT OPERATOR 1 TRAVELIFT OPERATOR 2 MILLWRIGHTS 2 LABORERS	LBR	1.91	HRS	13.61	26.04	1.00	1.97	1.00	51.31	1.05
7010203. OIL - DRIVE S.A.3. 30	P P	2.00	UNITS	.00	.00	1.00	0.00	0.00	.00	.00
HELIOSTAT 4461									62.	1.26

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR -- 10TH YEAR 09.24.14. DATE 05/24/78

SENSOR/CALIB EQ 4462

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
70202. INSTALL	44621									
USE STANDARD ELECTRICIAN TOOLS TO INSTALL DIGITAL EYE UNITS 1 CREW (1 MK.BASE) EACH: 1 ELECTRICIAN EFFORT IS CONCURRENT AND IN ASSOCIATION WITH CALIBRATION. 8.3 UNITS (6/FIELD).	LBR	.00	HRS	13.61	.06	1.00	1.97	1.00	.12	.00
70203. CALIBRATE	44622									
ONE VOLT-OHM METER AND ONE	LBR	.00	HRS	13.61	.06	1.00	1.97	1.00	.12	.00
SENSOR/CALIB EQ	4462								0.	.00

ELECTRICAL/DISTRIB 4463

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
70302. INSTAL CABLE 44631 EMPLOY VIBRATORY, DIESEL, PLOW TO BURY ONE POWER/FIBEROPTICS CABLE. 3 CREWS (26.625 WK. BASE) EACH: 1 CABLE PLOW OPERATOR 2 LABORERS	LBR	.77	HRS	13.61	10.42	1.00	1.97	1.00	20.52	.42
70303. PWR TR/DISTRIB PNL 44632 INSTALL POWER TRANSFORMER/ DISBRIBUTION PANELS USING 1 TRUCK AND 1 FORKLIFT. 1 CREW (2 WK BASE) EACH: 1 TRUCK DRIVER 1 FORKLIFT OPERATOR 1 MILLWRIGHT 2 LABORERS	LBR	.02	HRS	13.61	.30	1.00	1.97	1.00	.59	.01
70304. CONN,C/O&CLOSE OUT 44633 USE 1 SPECIAL TEST SET AND	LBR	.51	HRS	13.61	6.95	1.00	1.97	1.00	13.68	.28
ELECTRICAL/DISTRIB 4463									35.	.71

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

ALIGN HELIOSTATS 4464

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
ALIGN HELIOSTATS	4464						0.	0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

FIELD SUPPORT 4465

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
70501. INSTALLATION MGMT 44651 OVERALL MANAGEMENT OF FIELD EFFORT. 1 FIELD MANAGER (28.46 WK BASE).	LBR .13 HRS	13.61	1.73	1.00	1.97	1.00	3.41	.07
7050201. SUPERVISION 44652-1 1 LOGISTICS SUPERVISOR (28.46 WK BASE).	LBR .13 HRS	13.61	1.73	1.00	1.97	1.00	3.41	.07
7050202. RECORDS 44652-2 KEEP ACCOUNTABLE RECORDS FOR FIELD MATERIALS, COMPLETIONS TO SPEC., RECORDS, ETC. 1 RECORDS CLERK (28.46 WK BASE).	LBR .06 HRS	13.61	.86	1.00	1.97	1.00	1.70	.03
7050203. FIELD COORDINATION 44652-3 COORDINATE MATERIAL HANDLING, MOVEMENT AND SCHEDULES. 4 FIELD COORDINATORS (28.46 WK BASE)	LBR .25 HRS	13.61	3.46	1.00	1.97	1.00	6.82	.14
7050204. PERSONNEL 44652-4 KEEPS PERSONNEL FILES, ADMINISTERS HOUSING AND BENEFITS FOR FIELD PERSONNEL, TIME RECORDS, ETC. 1 PERSONNEL CLERK (28.64 WK BASE).	LBR .06 HRS	13.61	.86	1.00	1.97	1.00	1.70	.03
70503. QUALITY CONTROL 44653 OVERSEE AND ASSURE QUALITY OF INSTALLATIONS THROUGH FIELD INSPECTION, PRACTICES REVIEW, AND DECREPANT MATERIAL, FAILURE AND CORRECTIVE ACTION REPORTS. 1 QUAL. ASSUR. REP. (26.625 WK BASE).	LBR .09 HRS	13.61	1.25	1.00	1.97	1.00	2.45	.05
70504. FIELD ENGINEERING 44654 PROVIDE ENGINEERING SUPPORT DURING	LBR .09 HRS	13.61	1.25	1.00	1.97	1.00	2.45	.05
FIELD SUPPORT 4465							22.	.45

PACK & TRANSP 4466

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
7060101. DRIVE 44661-1									
SPECIALIZED TRAILER BED WITH RACK ON ONE SIDE FOR PEDESTAL, DRIVE, SHORT MAIN BEAM ASSEMBLY TO LEAN AGAINST; AND WITH 4 BY 4'S ATTACHED TO FLOOR FOR BRACING. QTY PER TRAILER BED = 12. REUSABLE SPECIALIZED TRAILER BEDS; MINIMUM QUANTITY NEEDED FOR 1 WEEK: 42.	P P	1.00 UNITS	.19	.19	1.00	0.00	0.00	.19	.00
7060102. REFLECTOR 44661-2									
SPECIALIZED PALLET FOR HOLDING REFLECTOR PANELS (ALREADY ATTACHED TO MIRROR BACKING STRUCTURE) IN AN UPRIGHT POSITION, EACH BRACED ON A BOX STRUCTURE WHICH IS MOUNTED ON TH PALLET. CUSHIONED HOLDOWN ASSEMBLY KEEPS THE TOPS OF THE PANELS SECURE. QTY PER PALLET = 4 PANELS. REUSABLE PALLETS: MINIMUM QTY. NEEDED FOR 1 WEEK= 250	P P	1.00 UNITS	.39	.39	1.00	0.00	0.00	.39	.01
7060103. DISTRUB ELECT 44661-3									
TRANSFORMERS STRAPPED TO REUSABLE PALLETS.	P P	1.00 UNITS	.04	.04	1.00	0.00	0.00	.04	.00
7060201. DRIVE 44662-1									
SPECIALIZED TRAILER BEDS REMAIN AT SITE UNTIL UNLOADED (1 WEEK'S INSTALLATION SUPPLY) ONE TRAILER, IS PULLED BY ONE TRUCK CAB. WEIGHT PER DRIVE ASSEMBLY = 1450 LBS 12 DRIVE ASSEMBLIES PER TRAILER BED 17,400 LBS. WEIGHT OF MODIFICATION TO TRAILER BED = 700 LBS. TOTAL WEIGHT OF ASSEMBLIES AND MOD. = 18,100 LBS.	LBR	.33 HRS	2.12	.70	1.00	4.99	1.33	4.67	.10
7060202. REFLECTOR 44662-2									
ONE LOWBOY PULLED BY ONE TRUCK CAB, ONE PALLET PER LOWBOY, PALLET LIFTED FROM LOWBOY WITH FORKTRUCK. QTY: 4 PANELS WITH BACKING STRUCTUR PALLET. WEIGHT: 1374 LBS. EACH X 4 5496 LBS. PLUS WT.. OF PALLET.	LBR	1.99 HRS	2.12	4.22	1.00	4.99	1.33	27.99	.57

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

PACK & TRANSP 4466

DESCRIPTION			QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
7060203. DISTRIB ELECT TRANSFORMER WEIGHT:	44662-3 2600 LBS.	LBR	.00	HRS	2.12	.00	1.00	4.99	1.33	.02	.00
PACK & TRANSP	4466									33.	.68

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

DESIGN 4471

	DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL $/SM
1	DESIGN 4471							0. 0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

SUSTAINING ENGR. 4472

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL $/SM
SUSTAINING ENGR. 4472							0. 0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR -- 10TH YEAR 09.24.14. DATE 05/24/78

PRE PROD UNIT 4473

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
PRE PROD UNIT	4473						0.	0.00

PROTOTYPE HELIOSTAT INVESTMENT COST - 1000000 UNITS PER YEAR — 10TH YEAR 09.24.14. DATE 05/24/78

SITE ACTIVATION 4474 T

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
SITE ACTIVATION	4474 T							0.	0.00

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

REFLECTIVE SURFACE 4411

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
10101.										
LAMINATE	T630									
LABOR REQUIRED FOR LAMINATING LINE/ SOURCE: MDL/MDC	LBR	1.13	HRS	9.26	10.44	1.00	2.63	1.45	39.83	.81
1010201.										
FAB	T637									
LABOR REQUIRED FOR MIRRORING LINE. SOURCE: ADL/MDC	LBR	3.39	HRS	9.26	31.34	1.00	2.63	1.45	119.50	2.44
1010202.										
FRONT LITE	ID40044-3									
.060 X 48 X 132 CORNING FUSION GLASS. SOURCE: CORNING	P P	12.00	UNITS	35.83	429.96	1.00	0.00	0.00	429.96	8.77
1010203.										
CHEMICALS	T638									
MIRRORING SOLUTION, SILVER AND COPPER. SOURCE: SOMMER & MAGA IND. (LONGDON, ENG.).	R M	12.00	UNITS	2.76	33.06	1.00	0.00	0.00	33.06	.67
1010204.										
SETUP	T501									
	ERR	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
10103.										
BACK LITE	ID40044-5									
.188 X 48 X 132 FLOAT GLASS SOURCE: ASG	P P	12.00	UNITS	36.74	440.86	1.00	0.00	0.00	440.86	8.99
10104.										
ADHESIVE	IXA3504									
BOND GLASS SHEETS TOGETHER WITH POLYURETHANE ADHESIVE. WT=2 LB. 3M CORPORATION	R M	12.00	UNITS	4.26	51.10	1.00	0.00	0.00	51.10	1.04
10105.										
SETUP	T503									
	ERR	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
10120.										
PLANNING	T 1									
FACTOR OF 10 PERCENT X MFG HOURS	N R	0.00		0.00	11.15	0.00	0.00	0.00	11.15	.23
DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR	.14	HRS	9.26	1.25	1.00	2.63	1.45	4.78	.10
10121.										
QUAL & RA IND	T 2									
FACTOR OF .062 PERCENT X MFG HOURS	N R	0.00		0.00	6.05	0.00	0.00	0.00	6.05	.12
	LBR	.28	HRS	9.26	2.59	1.00	2.63	1.45	9.88	.20

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.1o. DATE 05/21/18

REFLECTIVE SURFACE 4411

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
10123. TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .0o PERCENT OF THE MFG. HOUR.	N R	0.00	0.00	16.25	0.00	0.00	0.00	16.25	.33
	LBR	.34 HRS	9.2o	3.13	1.00	2.o3	1.45	11.92	.24
	R M	1.00 UNITS	.29	.29	1.00	0.00	0.00	.29	.01
10124. PROD SUPPORT T 5									
.042 PERCENT OF MFG + PLAN + TOOL + Q & RA (DIRECT & IND.)	N R	0.00	0.00	1.59	0.00	0.00	0.00	1.59	.03
	LBR	.19 HRS	9.2o	1.75	1.00	2.63	1.45	6.69	.14
REFLECTIVE SURFACE 4411								1183.	24.12

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/21/78

MIRROR BACK STRUCT 4412

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CMC	OVERHEAD	G&A	TOTAL	$/SM
10201. ASSY SUPPORT STR ID40045									
INBOARD, OUTBOARD CROSS BEAM:	N R	0.00	0.00	8.00	0.00	0.00	0.00	8.00	.16
DIAGONAL BEAMS AND OUTBOARD	LBR	5.36 HRS	9.26	49.65	1.00	2.63	1.45	189.33	3.86
AND INBOARD ANGLES.									
10202. INBOARD CROSS BM ID40045-3									
.0785 X 27 X 173 148 LB. EA	P P	2.00 UNITS	69.46	138.93	1.00	0.00	0.00	138.93	2.83
10203. OUTBOARD CROSS BM ID40045-5									
.0516 X 11 X 173 44 LB. EA	P P	2.00 UNITS	20.71	41.41	1.00	0.00	0.00	41.41	.84
SOURCE: U.S. STEEL									
10204. DIAGONAL BEAM/LH ID40045-7									
.0785 X 26 X 112 66 LB. EACH	P P	2.00 UNITS	30.52	61.03	1.00	0.00	0.00	61.03	1.24
10205. DIAGONAL BEAM/RH ID40045-8									
.0785 X 26 X 112 66 LB. EACH	P P	2.00 UNITS	30.52	61.03	1.00	0.00	0.00	61.03	1.24
10206. HAT/STRINGER ID40045-9									
.0635 (16 GA) X 6.00 IN. X 130	P P	24.00 UNITS	7.83	187.87	1.00	0.00	0.00	187.87	3.83
GALV. STEEL SHEET HATS,WT= 14 LB EA.									
SOURCE: WOODSIDE ENGR. CO.									
10207. OUTBOARD ANGLES ID40045-15									
.0516 X 3.5 X 4.5 .23 LB. EACH	R M	4.00 UNITS	.11	.43	1.00	0.00	0.00	.43	.01
SOURCE: U.S. STEEL									
10208. INBOARD ANGLES ID40045-13									
.0516 X 4.0 X 10.50 .61 LB EACH	R M	4.00 UNITS	.28	1.12	1.00	0.00	0.00	1.12	.02
SOURCE: U.S. STEEL									
10209. GUSSET ANGLE ID40045-11									
.25X8.5X17.50 11 LB. EA.	R M	4.00 UNITS	4.93	19.72	1.00	0.00	0.00	19.72	.40
SOURCE: U.S. STEEL									
10211. CLINCH NUT S-0420-1-Z									
SOURCE: S.P.S. CO.	P P	48.00 UNITS	.05	2.63	1.00	0.00	0.00	2.63	.05
10212. BOLT T601									
.25 UNC-20 X .75 LONG SAE	P P	48.00 UNITS	.05	2.56	1.00	0.00	0.00	2.56	.05
SOURCE: MCMASSTER									

MIRROR BACK STRUCT 4412

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CHC	OVERHEAD	G&A	TOTAL	$/SM
10213. WASHER T002									
.25 ID SAE WASHER SOURCE: MCMASTER	P P	48.00 UNITS	.00	.18	1.00	0.00	0.00	.18	.00
10220. PLANNING T 1									
FACTOR OF 10 PERCENT X MFG HOURS	N R	0.00	0.00	13.25	0.00	0.00	0.00	13.25	.27
DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR	.1o HRS	9.26	1.49	1.00	2.63	1.45	5.68	.12
10221. QUAL & RA IND T 2									
FACTOR OF .062 PERCENT X MFG HOURS	N R	0.00	0.00	7.19	0.00	0.00	0.00	7.19	.15
	LBR	.33 HRS	9.26	3.08	1.00	2.63	1.45	11.74	.24
10223. TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06	N R	0.00	0.00	19.31	0.00	0.00	0.00	19.31	.39
PERCENT OF THE MFG. HOUR.	LBR	.40 HRS	9.26	3.71	1.00	2.63	1.45	14.16	.29
	R M	1.00 UNITS	.35	.35	1.00	0.00	0.00	.35	.01
10224. PROD SUPPORT T 5									
.042 PERCENT OF MFG + PLAN + TOOL	N R	0.00	0.00	1.89	0.00	0.00	0.00	1.89	.04
+ Q & RA (DIRECT & IND.)	LBR	.23 HRS	9.26	2.09	1.00	2.63	1.45	7.95	.16
MIRROR BACK STRUCT 4412								796.	16.22

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.1o. DATE 05/27/78

ASSY & BOND 4413

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CHC	OVERHEAD	G&A	TOTAL	$/SM
10301.										
ASSY & BOND 441301										
BONDS MIRRORS TO BACKING/STRINGERS TO GLASS. .14 GAL. PER PANEL OF 3MEC3532 ADHESIVE (3M CORP) SOURCE: ADL/MDC	LBR	5.08	HRS	9.26	47.00	1.00	2.63	1.45	179.25	3.65
10302.										
ADHESIVE 441301										
BONDS MIRRORS TO BACKING/STRINGERS TO GLASS. .14 GAL. PER PANEL OF 3MEC3532 ADHESIVE (3M CORP) SOURCE: ADL/MDC	R M	12.00	UNITS	4.32	51.85	1.00	0.00	0.00	51.85	1.06
10303.										
PLANNING T 1										
FACTOR OF 10 PERCENT X MFG HOURS	N R	0.00		0.00	12.55	0.00	0.00	0.00	12.55	.26
DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR	.15	HRS	9.26	1.41	1.00	2.63	1.45	5.38	.11
10304.										
QUAL & RA IND T 2										
FACTOR OF .062 PERCENT X MFG HOURS	N R	0.00		0.00	6.81	0.00	0.00	0.00	6.81	.14
	LBR	.31	HRS	9.26	2.91	1.00	2.63	1.45	11.11	.23
10306.										
TOOLING MATERIAL T 4										
$.70 PER TOOLING HOURS PLUS .06 PERCENT OF THE MFG. HOUR.	N R	0.00		0.00	18.28	0.00	0.00	0.00	18.28	.37
	LBR	.38	HRS	9.26	3.52	1.00	2.63	1.45	13.41	.27
	R M	1.00	UNITS	.33	.33	1.00	0.00	0.00	.33	.01
10307.										
PROD SUPPORT T 5										
.042 PERCENT OF MFG + PLAN + TOOL + Q & RA (DIRECT & IND.)	N R	0.00		0.00	1.79	0.00	0.00	0.00	1.79	.04
	LBR	.21	HRS	9.26	1.97	1.00	2.63	1.45	7.53	.15
ASSY & BOND 4413									308.	6.29

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

AZIMUTH 4421

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CHC	OVERHEAD	G&A	TOTAL	$/SM
20101.									
ASSEMBLY	ID40065								
DRIVE COMPONENTS ASSEMBLY	LBR	2.82 HRS	9.26	26.13	1.00	2.63	1.45	99.64	2.03
SOURCE: ADL/MDAC									
2010201.									
HOUSING	ID40038								
WELDMENT HOUSING WT= 348 LB.	N R	0.00	0.00	1.40	0.00	0.00	0.00	1.40	.03
SOURCE: U.S. STEEL	LBR	3.29 HRS	9.26	30.50	1.00	2.63	1.45	116.30	2.37
	R M	1.00 UNITS	159.65	159.65	1.00	0.00	0.00	159.65	3.25
2010203.									
BUSHING PIVOT	KJS1616060								
PER SPECIFICATION. PIVOT POINT BUSHING. SOURCE: SARGENT	P P	2.00 UNITS	1.02	2.04	1.00	0.00	0.00	2.04	.04
201030101.									
MEMBRANE	T607								
10 O.D. X .156 WALL	R M	1.00 UNITS	5.11	5.11	1.00	0.00	0.00	5.11	.10
201030102.									
TUBE	T608								
10 O.D. X .156 WALL X 8 HIGH	R M	1.00 UNITS	13.56	13.56	1.00	0.00	0.00	13.56	.28
MADE OF 4130, 7 TL, SOURCE:U.S.STEEL									
201030103.									
SPLINE	T609								
10 O.D. X .312 WALL X 3 LONG	R M	1.00 UNITS	10.34	10.34	1.00	0.00	0.00	10.34	.21
201030104.									
DOUBLER	T610								
6.50 OD X .375 L.C. STEEL	R M	2.00 UNITS	1.65	3.30	1.00	0.00	0.00	3.30	.07
SOURCE: U.S. STEEL									
201030105.									
ASSEMBLY	T603								
FAB AND ASSY. FLEX SPLINE	N R	0.00	0.00	1.14	0.00	0.00	0.00	1.14	.02
SOURCE: ADL/MDAC	LBR	2.68 HRS	9.26	24.82	1.00	2.63	1.45	94.66	1.93
201030201.									
PLUG	T605								
7 OD X 1.50 L.C. STEEL	R M	1.00 UNITS	4.75	4.75	1.00	0.00	0.00	4.75	.10
SOURCE: U.S. STEEL									
201030202.									
DRIVE SHAFT	T611								
1.75 OD, .75 ID X 10.75 LONG L.C. STEEL PIPE. SOURCE: KELLY PIPE.	R M	1.00 UNITS	2.72	2.72	1.00	0.00	0.00	2.72	.06

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AZIMUTH 4421

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
201030203. BEARING	BB-2151								
PER SPECIFICATION	P P	1.00 UNITS	106.51	106.51	1.00	0.00	0.00	106.51	2.17
SOURCE: MC GILL MFG. CO.									
201030204. FABRICATION	T653								
FAB AND ASSY. WAVE GENERATOR	N R	0.00	0.00	.96	0.00	0.00	0.00	.96	.02
SOURCE: ADL/MDAC	LBR	2.26 HRS	9.26	20.90	1.00	2.63	1.45	79.71	1.63
20104. BEARING TURRET	BB-2149								
PER SPECIFICATION.	P P	1.00 UNITS	39.80	39.80	1.00	0.00	0.00	39.80	.81
SOURCE: MC GILL MFG. CO.									
2010601. RETAINER-OUTER	IT49852-1								
19.025 OD X 15.1875 ID X 1.25 LG.	N R	0.00	0.00	.03	0.00	0.00	0.00	.03	.00
L.C. STEEL. WT = 29.28	LBR	.07 HRS	9.26	.67	1.00	2.63	1.45	2.55	.05
SOURCE: U.S. STEEL	R M	1.00 UNITS	9.84	9.84	1.00	0.00	0.00	9.84	.20
2010602. NUT	T640								
1/2 I.D.	P P	8.00 UNITS	.19	1.53	1.00	0.00	0.00	1.53	.03
SOURCE: MCMASTER									
2010603. BOLTS	T510								
1/2 X 3, GLASS 5	P P	8.00 UNITS	.64	5.11	1.00	0.00	0.00	5.11	.10
SOURCE: MC MASTER									
2010604. WASHER	T511								
1/2 ID.	P P	8.00 UNITS	.00	.04	1.00	0.00	0.00	.04	.00
SOURCE: MC MASTER									
2010701. PAN-OIL	T513								
1500 X .125 L.C. STEEL WT = 6.25	P P	1.00 UNITS	2.60	2.60	1.00	0.00	0.00	2.60	.05
SOURCE: U.S. STEEL									
2010703. SCREW	T515								
1/2 LONG FLAT HEAD	P P	8.00 UNITS	.00	.04	1.00	0.00	0.00	.04	.00
SOURCE: MC MASTER									
2010801. CIRCULAR SPLINE	T 36								
15 OD X 10 ID X 2.75 LG	N R	0.00	0.00	.90	0.00	0.00	0.00	.90	.02
LC STEEL SHEET. WT = 73 LB.	LBR	2.12 HRS	9.26	19.60	1.00	2.63	1.45	74.73	1.52
SOURCE: LINCOLN FOUNDRY	R M	1.00 UNITS	58.61	58.61	1.00	0.00	0.00	58.61	1.19

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AZIMUTH 4421

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2010803. BOLTS	T516									
1/2 X 2 CLASS 5 SOURCE: MC MASTER		P P	8.00 UNITS	.43	3.45	1.00	0.00	0.00	3.45	.07
2010804. WASHER	T517									
1/2 ID SOURCE: MC MASTER T520		P P	8.00 UNITS	.00	.04	1.00	0.00	0.00	.04	.00
2010901. HELICON	RMJ22178									
PER SPECIFICATION SOURCE: SPIROID		N R	0.00	0.00	.24	0.00	0.00	0.00	.24	.00
		LBR	.56 HRS	9.26	5.19	1.00	2.63	1.45	19.81	.40
		R M	1.00 UNITS	2.46	2.46	1.00	0.00	0.00	2.46	.05
201090101. PINION	T519									
PER SPECIFICATION. SOURCE: SPIROID		P P	1.00 UNITS	4.79	4.79	1.00	0.00	0.00	4.79	.10
201090102. RING-PINION-RET	T520									
2.75 O.D. SOURCE: MC MASTER		P P	1.00 UNITS	.51	.51	1.00	0.00	0.00	.51	.01
201090103. SHIM-GEAR	T521									
1.50 O.D./1.125 ID SOURCE: MC MASTER		P P	1.00 UNITS	.08	.08	1.00	0.00	0.00	.08	.00
201090104. KEY-GEAR	NAS558-808-8									
1 LONG X 1/4 WIDE SOURCE: MC MASTER		P P	1.00 UNITS	.30	.30	1.00	0.00	0.00	.30	.01
201090105. NUT GEAR	T522									
AFBMA STANDARD W-05 SOURCE: MC MASTER		P P	1.00 UNITS	1.47	1.47	1.00	0.00	0.00	1.47	.03
201090106. WASHER GEAR	T523									
AFBMA STANDARD W-05 SOURCE: MC MASTER		P P	1.00 UNITS	.21	.21	1.00	0.00	0.00	.21	.00
201090107. BEARING	67046NR1641DC									
DRIVE SHAFT BEARING PER SPECIFICATION.		P P	1.00 UNITS	5.59	5.59	1.00	0.00	0.00	5.59	.11

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AZIMUTH 4421

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
201090108.									
RING-BEARING-RET	MS16625-1200								
DRIVE SHAFT BEARING RETAINER PER SPECIFICATION.	P P	1.00 UNITS	.51	.51	1.00	0.00	0.00	.51	.01
2011001.									
BOLTS	HLT-116-16-20								
PER SPECIFICATION. SOURCE: LAWRENCE ENGINEERING	P P	12.00 UNITS	.48	5.75	1.00	0.00	0.00	5.75	.12
2011002.									
NUT	HLT-73PB-16								
PER SPECIFICATION SOURCE: LAWRENCE ENGINEERING 5044	P P	12.00 UNITS	2.40	28.76	1.00	0.00	0.00	28.76	.59
2011201.									
TUBE-ELEC.WIRE	T643								
.688 OD X .063 WALL X 13 LONG, L.C. STEEL. SOURCE: KELLY PIPE.	P P	1.00 UNITS	.22	.22	1.00	0.00	0.00	.22	.00
2011202.									
CLAMP-WIRE TUBE	5644								
SOURCE: MC MASTER	P P	1.00 UNITS	.32	.32	1.00	0.00	0.00	.32	.01
2011301.									
COVER	T646								
9 DIA. X .125 AND 8 DIA. X .125	N R	0.00	0.00	.00	0.00	0.00	0.00	.00	.00
L.C. STEEL SHEET.	LBR	.00 HRS	9.26	.03	1.00	2.63	1.45	.13	.00
	R M	1.00 UNITS	1.65	1.65	1.00	0.00	0.00	1.65	.03
2011302.									
SCREW	T613								
AFFIX COVER TO DRIVE HOUSING. SOURCE: MC MASTER	P P	4.00 UNITS	.00	.02	1.00	0.00	0.00	.02	.00
2011303.									
GROMMET	T526								
HOLDS WIRE AND SEALS GEN HOUSING COMPARTMENT. SOURCE: MC MASTER	P P	1.00 UNITS	.08	.08	1.00	0.00	0.00	.08	.00
20114.									
PLANNING	T 1								
FACTOR OF 10 PERCENT X MFG HOURS	N R	0.00	0.00	34.12	0.00	0.00	0.00	34.12	.70
DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR	.41 HRS	9.26	3.83	1.00	2.63	1.45	14.62	.30
20115.									
Q & RA-IND	T 2								
FACTOR OF .062 PERCENT X MFG HOURS	N R	0.00	0.00	18.52	0.00	0.00	0.00	18.52	.38
	LBR	.80 HRS	9.26	7.93	1.00	2.63	1.45	30.22	.62

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AZIMUTH 4421

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
20117. TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06 PERCENT OF THE MFG. HOUR.	N R	0.00	0.00	49.72	0.00	0.00	0.00	49.72	1.01
	LBR	1.03 HRS	9.26	9.56	1.00	2.63	1.45	36.47	.74
	R M	1.00 UNITS	.90	.90	1.00	0.00	0.00	.90	.02
20118. PRODUCTION SUPT. T 5									
.042 PERCENT OF MFG + PLAN + TOOL + Q & RA (DIRECT & IND.)	N R	0.00	0.00	4.87	0.00	0.00	0.00	4.87	.10
	LBR	.58 HRS	9.26	5.37	1.00	2.63	1.45	20.47	.42
AZIMUTH 4421								1184.	24.14

ELEVATION 4422

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2020101.										
WELDMENT	T 50									
DRAG LINK WT= 65 LB.		N R	0.00	0.00	.92	0.00	0.00	0.00	.92	.02
SOURCE: U.S. STEEL		LBR	2.17 HRS	9.26	20.09	1.00	2.63	1.45	76.60	1.56
		R M	1.00 UNITS	25.03	25.03	1.00	0.00	0.00	25.03	.51
2020103.										
BUSHING	KJS1o1o060									
PER SPECIFICATION. PIVOT POINT BUSHING. SOURCE: SARGENT		P P	2.00 UNITS	.35	.70	1.00	0.00	0.00	.70	.01
2020104.										
SHIM	T 41									
PIVOT POINT SHIM RESTRICTS MOVEMENT. SOURCE: MC MASTER		R M	4.00 UNITS	.48	1.92	1.00	0.00	0.00	1.92	.04
2020105.										
BOLT	T528									
3/4 DIA X 5 LONG SOURCE: MC MASTER		P P	2.00 UNITS	3.18	6.36	1.00	0.00	0.00	6.36	.13
2020106.										
SEAL-DUST	T529									
SOURCE: MC MASTER		P P	2.00 UNITS	.08	.16	1.00	0.00	0.00	.16	.00
2020107.										
THRUST BRG	KTM-1622060									
PER SPECIFICATION. SOURCE: SARGENT		P P	4.00 UNITS	.29	1.15	1.00	0.00	0.00	1.15	.02
2020108.										
NUT	T530									
.75 I.D. SOURCE: MC MASTER		P P	2.00 UNITS	.50	.99	1.00	0.00	0.00	.99	.02
2020109.										
BUSHING-CLAMP UP	T531									
.75 DIA. X 5 LONG, CLASS 8		P P	2.00 UNITS	2.72	5.43	1.00	0.00	0.00	5.43	.11
2020110.										
BOLT-ROD END	T532									
.75 DIA X 3.25 LONG, CLASS 8 SOURCE: MC MASTER		P P	2.00 UNITS	1.69	3.39	1.00	0.00	0.00	3.39	.07
2020111.										
NUT-ROD END	T533									
.75 I.D. SOURCE: MC MASTER		P P	2.00 UNITS	.50	.99	1.00	0.00	0.00	.99	.02

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.1o. DATE 05/21/78

ELEVATION 4422

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2020112.										
BUSHING	T534									
CLAMP UP		P P	2.00 UNITS	.35	.70	1.00	0.00	0.00	.70	.01
SOURCE: MC MASTER										
2020113.										
SHIM ROD END	T535									
SOURCE: MC MASTER		P P	4.00 UNITS	.48	1.92	1.00	0.00	0.00	1.92	.04
2020114.										
SEAL-DUST ROD END	T536									
SOURCE: MC MASTER		P P	4.00 UNITS	.08	.32	1.00	0.00	0.00	.32	.01
20202.										
JACK SCREW	T 52									
5 TON, 6 INCH RAISE, .85 INCH X 2 INCH X 22 INCH. WT=80.4 LB.		P P	2.00 UNITS	529.02	1058.03	1.00	0.00	0.00	1058.03	21.57
DUFF NORTON										
2020301.										
TUBE	ID40042-3									
16 IN. OD X .105 IN WALL X 81 IN. LONG. LC STEEL PIPE 124 LB.		R M	1.00 UNITS	66.67	66.67	1.00	0.00	0.00	66.67	1.36
SOURCE: KELLY PIPE										
2020302.										
TAB ACTUATOR	ID40042-5									
.5 X 10 X 10 LC STEEL WT=5.73 LB		N R	0.00	0.00	.23	0.00	0.00	0.00	.23	.00
SOURCE: U.S. STEEL		LBR	.54 HRS	9.26	5.02	1.00	2.63	1.45	19.15	.39
		R M	2.00 UNITS	6.63	13.26	1.00	0.00	0.00	13.26	.27
2020303.										
TAB HINGE	ID40042-9									
.5 X 9 X 9 LC STEEL WT=5 LB.		N R	0.00	0.00	.04	0.00	0.00	0.00	.04	.00
SOURCE: U.S. STEEL		LBR	.09 HRS	9.26	.84	1.00	2.63	1.45	3.21	.07
		R M	4.00 UNITS	5.37	21.47	1.00	0.00	0.00	21.47	.44
2020304.										
FLANGE	ID40042-7									
.625 X 18.00 X 18.00		N R	0.00	0.00	.40	0.00	0.00	0.00	.40	.01
LOW CARBON STEEL PLATE		LBR	.95 HRS	9.26	8.80	1.00	2.63	1.45	33.55	.68
SOURCE: U.S. STEEL		R M	2.00 UNITS	26.86	53.73	1.00	0.00	0.00	53.73	1.10
2020305.										
ASSEMBLY	ID40042									
SUPPORTS REFLECTOR AND TIES ELEVATIONAL AZIMUTH DRIVE TOGETHER. WT=193 LBS.		LBR	5.08 HRS	9.26	47.01	1.00	2.63	1.45	179.26	3.65
SOURCE: ADL/MDC										

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

ELEVATION 4422

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2020401.										
BUSHING	KJS-1616060									
PER SPECIFICATION		P P	4.00 UNITS	.29	1.15	1.00	0.00	0.00	1.15	.02
SOURCE: SARGENT										
2020402.										
SHAFT	T647									
PIVOT SHAFT.		P P	4.00 UNITS	5.67	22.69	1.00	0.00	0.00	22.69	.46
2020403.										
SEAL-DUST	KTM-1622060									
PER SPECIFICATION.		P P	4.00 UNITS	.08	.32	1.00	0.00	0.00	.32	.01
SOURCE: SARGENT										
2020404.										
WASHER	AN-960-416L									
SOURCE: LAWRENCE ENGINEERING		P P	4.00 UNITS	.10	.38	1.00	0.00	0.00	.38	.01
20209.										
PLANNING	T 1									
FACTOR OF 10 PERCENT X MFG HOURS		N R	0.00	0.00	21.82	0.00	0.00	0.00	21.82	.44
DIST. .03 TO LABOR AND		LBR	.20 HRS	9.26	2.45	1.00	2.63	1.45	9.35	.19
.07 TO NON-RECURRING.										
20210.										
Q & RA IND	T 2									
FACTOR OF .062 PERCENT X MFG HOURS		N R	0.00	0.00	11.85	0.00	0.00	0.00	11.85	.24
		LBR	.55 HRS	9.26	5.07	1.00	2.63	1.45	19.33	.39
20212.										
TOOLING MATERIAL	T 4									
$.70 PER TOOLING HOURS PLUS .06		N R	0.00	0.00	31.80	0.00	0.00	0.00	31.80	.65
PERCENT OF THE MFG. HOUR.		LBR	.66 HRS	9.26	6.12	1.00	2.63	1.45	23.33	.48
		R M	1.00 UNITS	.58	.58	1.00	0.00	0.00	.58	.01
20213.										
PRODUCTION SUPT	T 5									
.042 PERCENT OF MFG + PLAN + TOOL		N R	0.00	0.00	3.12	0.00	0.00	0.00	3.12	.06
+ Q & RA (DIRECT & IND.)		LBR	.37 HRS	9.26	3.43	1.00	2.63	1.45	13.09	.27
ELEVATION	4422								1734.	35.36

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/21/78

MOTOR TOTAL 4423

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2030101. BOLTS 1/4 DIA. X 1 LONG, CLASS 2 SOURCE: MC MASTER	T538	P P	4.00 UNITS	.08	.32	1.00	0.00	0.00	.32	.01
2030102. WASHER 1/4 DIA. SOURCE: MC MASTER	T539	P P	1.00 UNITS	.05	.05	1.00	0.00	0.00	.05	.00
2030103. AZIMUTH MOTOR	T667	P P	1.00 UNITS	140.63	140.63	1.00	0.00	0.00	140.63	2.87
2030201. BOLT/NUT 1/4 DIA. X 1 LONG, CLASS 2 SOURCE: MC MASTER	T541	P P	4.00 UNITS	.51	2.04	1.00	0.00	0.00	2.04	.04
2030202. WASHER 1/4 DIA. SOURCE: MC MASTER	T542	P P	4.00 UNITS	.05	.19	1.00	0.00	0.00	.19	.00
2030203. TRKING MOTOR 1/4 HP, 24V, THREE PHASE WITH A NENA "C" CURVE SOURCE: W.C. PEART CO.	T665	P P	1.00 UNITS	133.93	133.93	1.00	0.00	0.00	133.93	2.73
2030301. BOLT/NUT 1/4 X 1 LONG, CLASS 2 SOURCE: MC MASTER	T544	P P	4.00 UNITS	.51	2.04	1.00	0.00	0.00	2.04	.04
2030302. WASHER 1/4 DIA. SOURCE: MC MASTER	T545	P P	4.00 UNITS	.05	.19	1.00	0.00	0.00	.19	.00
2030303. STOWAGE MOTOR 1/4 HP, 240V, THREE PHASE WITH	T666	P P	1.00 UNITS	133.93	133.93	1.00	0.00	0.00	133.93	2.73
MOTOR TOTAL	4423								413.	8.43

POS/LIMIT INDICATO 4424

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CHC	OVERHEAD	G&A	TOTAL	$/SM
20401. ASSEMBLY OF ELECTRONIC SOURCE: ADL	T014	LBR	2.78 HRS	9.26	25.74	1.00	2.63	1.45	98.15	2.00
2040201. HALL EFFECT SENSOR SOURCE: MICRO SWITCH	T616	P P	2.00 UNITS	3.34	6.69	1.00	0.00	0.00	6.69	.14
2040202. LINE DRIVER SOURCE: FAIRCHILD	9614	P P	3.00 UNITS	1.39	4.18	1.00	0.00	0.00	4.18	.09
2040203. FERROUS METAL DISC SOURCE: MDAC	T618	P P	3.00 UNITS	2.09	6.26	1.00	0.00	0.00	6.26	.13
2040301. DUEL DIFF LINE REC SOURCE: FAIRCHILD	9615	P P	1.00 UNITS	1.23	1.23	1.00	0.00	0.00	1.23	.03
2040302. OPT.ISOL. TRIACS PER SPECIFICATION SOURCE: MOTOROLA	Q2T3244	P P P	4.00 UNITS	1.52	6.07	1.00	0.00	0.00	6.07	.12
2040303. RESISTOR PER SPECIFICATION SOURCE: RCA	11 Z 13	P P P	4.00 UNITS	.18	.70	1.00	0.00	0.00	.70	.01
2040304. CAPACITOR PER SPECIFICATION SOURCE: RCA	0.1MF1400V	P P P	4.00 UNITS	.16	.64	1.00	0.00	0.00	.64	.01
2040305. PRINTED CIRCUIT BD 6 IN. X 6 IN. TWO SIDE EPOXY GLASS, COPPER CIRCUITRY, WITH THRU PLATED HOLES. .02 SOURCE: MDAC	T107	P P	1.00 UNITS	1.15	1.15	1.00	0.00	0.00	1.15	.02
2040306. COVER PER SPECIFICATION SOURCE: MDAC	T226	P P P	1.00 UNITS	1.44	1.44	1.00	0.00	0.00	1.44	.03
20405. PLANNING FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	T 1	N R LBR	0.00 .08 HRS	0.00 9.26	6.87 .77	0.00 1.00	0.00 2.63	0.00 1.45	6.87 2.94	.14 .06

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

POS/LIMIT INDICATO 4424

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
20406. Q & RA IND T 2									
FACTOR OF .002 PERCENT X MFG HOURS	N R	0.00	0.00	3.73	0.00	0.00	0.00	3.73	.08
	LBR	.17 HRS	9.26	1.60	1.00	2.63	1.45	6.09	.12
20408. TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06	N R	0.00	0.00	10.01	0.00	0.00	0.00	10.01	.20
PERCENT OF THE MFG. HOUR.	LBR	.21 HRS	9.26	1.93	1.00	2.63	1.45	7.34	.15
	R M	1.00 UNITS	.18	.18	1.00	0.00	0.00	.18	.00
20409. PRODUCTION SUPPT. T 5									
.042 PERCENT OF MFG + PLAN + TOOL	N R	0.00	0.00	.98	0.00	0.00	0.00	.98	.02
+ Q & RA (DIRECT & IND.)	LBR	.12 HRS	9.26	1.08	1.00	2.63	1.45	4.12	.08
POS/LIMIT INDICATO 4424								169.	3.44

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.1o. DATE 05/21/78

PWR SPLY/DIST 4425

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CHC	OVERHEAD	G&A	TOTAL	$/SM
2050201. FEEDER CABLE CLX									
3, NO. 4 AWG,5KV,COPPER CABLE/GALITEP 2000, WITH ALUMINUM SHEATH AND PVC JACKETS SUITABLE FOR DIRECT BURIAL. SOURCE: OKONITE	P	1.00 UNITS	10.77	10.77	1.00	0.00	0.00	10.77	.22
2050202. TRANSFORMER 225T(19)H									
PER SPECIFICATIONS. SOURCE: SQUARE D	P P	1.00 UNITS	39.53	39.53	1.00	0.00	0.00	39.53	.81
2050203. DIST PANEL SQ.D-H-4172-4M									
480V THREE PHASE WITH 100 AMP C/B. SOURCE: SQUARE D	P P	1.00 UNITS	4.09	4.09	1.00	0.00	0.00	4.09	.08
2050204. BRANCH CIR BKR SQD NO.FA-34040									
480V, 3 POLE, 40 AMP SOURCE: SQUARE D	P P	15.00 UNITS	.49	7.42	1.00	0.00	0.00	7.42	.15
2050205. BRANCH CIR CABLE CLX-ALS									
3, NO.8 AWG,600V,COPPER CABLE/GALITEP 2000 WITH ALUMINUM SHEATH AND PVC JACKET, SUITABLE FOR DIRECT BURIAL. SOURCE: OKONITE	P	1.00 UNITS	68.13	68.13	1.00	0.00	0.00	68.13	1.39
2050206. PLANNING T 1									
FACTOR OF 10 PERCENT X MFG HOURS	N R	0.00		0.00	0.00	0.00	0.00	0.00	0.00
DIST. .03 TO LABOR AND	LBR	0.00 HRS		0.00	0.00	0.00	0.00	0.00	0.00
.07 TO NON-RECURRING.	ERR	0.00		0.00	0.00	0.00	0.00	0.00	0.00
2050207. Q & RA - IND T 2									
FACTOR OF .062 PERCENT X MFG HOURS	N R	0.00		0.00	0.00	0.00	0.00	0.00	0.00
	LBR	0.00 HRS		0.00	0.00	0.00	0.00	0.00	0.00
	ERR	0.00		0.00	0.00	0.00	0.00	0.00	0.00
2050208. TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06	N R	0.00		0.00	0.00	0.00	0.00	0.00	0.00
PERCENT OF THE MFG. HOUR.	LBR	0.00 HRS		0.00	0.00	0.00	0.00	0.00	0.00
	ERR	0.00		0.00	0.00	0.00	0.00	0.00	0.00
	R M	0.00 UNITS		0.00	0.00	0.00	0.00	0.00	0.00
2050209. PRODUCTION SUPT. T 5									
.042 PERCENT OF MFG + PLAN + TOOL	N R	0.00		0.00	0.00	0.00	0.00	0.00	0.00
+ Q & RA (DIRECT & IND.)	LBR	0.00 HRS		0.00	0.00	0.00	0.00	0.00	0.00
	ERR	0.00		0.00	0.00	0.00	0.00	0.00	0.00

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.1o. DATE 05/27/78

PWR SPLY/DIST 4425

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
2050301. WIRE	CLX-16									
3 NO. 16 AWG WITH OPTICAL FIBER SOURCE: OKONITE		P P	1.00 UNITS	15.03	15.03	1.00	0.00	0.00	15.03	.31
2050302. CIR BKR/HOLDER	T663									
480V, 15 AMP, 3 PHASE C/B PLUS HOLDER. SOURCE: SQUARE D		P P	1.00 UNITS	138.76	138.76	1.00	0.00	0.00	138.76	2.83
2050303. CONNECTORS	T664									
OPTICAL FIBER COUPLINGS.		P P	2.00 UNITS	5.84	11.68	1.00	0.00	0.00	11.68	.24
PWR SPLY/DIST	4425								295.	6.02

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

ASSY DR/PED/ELECT 4426 T

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
20601.									
ASSY DR/PED/ELECT 4426 T									
DRIVE AND PEDESTAL LABOR REQUIRED	LBR	1.69 HRS	9.26	15.68	1.00	2.63	1.45	59.79	1.22
ASSEMBLY OF MAIN BEAM, JACKS, DRAG LINK, AZIMUTH DRIVE, PEDESTAL AND ELECTRIC.	P P	1.00 UNITS	1.60	1.60	1.00	0.00	0.00	1.60	.03
SOURCE: ADL/MDAC									
20604.									
PLANNING T 1									
FACTOR OF 10 PERCENT X MFG HOURS	N R	0.00	0.00	4.18	0.00	0.00	0.00	4.18	.09
DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	LBR	.05 HRS	9.26	.47	1.00	2.63	1.45	1.79	.04
20605.									
QUAL & RA IND T 2									
FACTOR OF .062 PERCENT X MFG HOURS	N R	0.00	0.00	2.27	0.00	0.00	0.00	2.27	.05
	LBR	.11 HRS	9.26	.97	1.00	2.63	1.45	3.71	.08
20607.									
TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06	N R	0.00	0.00	6.10	0.00	0.00	0.00	6.10	.12
PERCENT OF THE MFG. HOUR.	LBR	.13 HRS	9.26	1.17	1.00	2.63	1.45	4.47	.09
	R M	1.00 UNITS	.11	.11	1.00	0.00	0.00	.11	.00
20608.									
PROD SUPPORT T 5									
.042 PERCENT OF MFG + PLAN + TOOL + Q & RA (DIRECT & IND.)	N R	0.00	0.00	.60	0.00	0.00	0.00	.60	.01
	LBR	.07 HRS	9.26	.66	1.00	2.63	1.45	2.51	.05
ASSY DR/PED/ELECT 4426 T								87.	1.78

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

SENSOR/CALIB EQUIP 4431

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
3010201. CAMERA	1N2200								
SOURCE: GENERAL ELECTRIC	P P	1.00 UNITS	9.42	9.42	1.00	0.00	0.00	9.42	.19
3010202. CAMERA LENS	T648								
	P P	1.00 UNITS	.43	.43	1.00	0.00	0.00	.43	.01
3010203. TRIPOD	T649								
0 FT HIGH	P P	1.00 UNITS	.04	.04	1.00	0.00	0.00	.04	.00
SOURCE: MDAC									
3010204. COOLER-HEATER	T650								
SOURCE: MDAC	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
3010205. ELECTRONICS	T651								
CAMERA ELECTRONICS	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
SOURCE: MDAC									
3010206. CABLE	CLX-16								
3 NO. 16 AWG WITH OPTICAL FIBER	P P	1.00 UNITS	.12	.12	1.00	0.00	0.00	.12	.00
SOURCE: OKONITE									
30105. PLANNING	T 1								
FACTOR OF 10 PERCENT X MFG HOURS	N R	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DIST. .03 TO LABOR AND	LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
.07 TO NON-RECURRING.	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30106. Q & RA IND	T 2								
FACTOR OF .062 PERCENT X MFG HOURS	N R	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30107. TOOLINGG MATERIAL	T 4								
$.70 PER TOOLING HOURS PLUS .06	N R	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PERCENT OF THE MFG. HOUR.	LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	R M	0.00 UNITS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30108. PRODUCTION SUPT.	T 5								
.042 PERCENT OF MFG + PLAN + TOOL	N R	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
+ Q & RA (DIRECT & IND.)	LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	ERR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SENSOR/CALIB EQUIP 4431								10.	.20

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

FIELD CONTROL 4432

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
30201. ASSEMBLY	T620								
DDI COMPONENT ASSEMBLY	LBR	.06 HRS	9.26	.59	1.00	2.63	1.45	2.23	.05
3020201. TWO SIDED PWB	44320201								
SOURCE: MDAC	P P	2.00 UNITS	.01	.01	1.00	0.00	0.00	.01	.00
3020202. CONNECTOR	T652								
24 PIN	P P	2.00 UNITS	.01	.02	1.00	0.00	0.00	.02	.00
SOURCE: AMP INC.									
3020203. LED	SG1010								
PER SPECIFICATION	P P	10.00 UNITS	.01	.05	1.00	0.00	0.00	.05	.00
SOURCE: RCA									
3020204. OPT TRANSCEIVER	T622								
COMMUNICATION WITH HELIOSTAT ARRAY CONTROLLER	P P	2.00 UNITS	.10	.21	1.00	0.00	0.00	.21	.00
SOURCE: TI									
3020205. MICRO-COMPUTER	T623								
SIMILAR TO NAT'L SEMI 8748	P P	2.00 UNITS	1.05	2.10	1.00	0.00	0.00	2.10	.04
SOURCE: NATL SEMICONDUCTOR									
3020206. OPT TRANSCEIVER	T624								
COMMUNICATION WITH HELIOSTAT CONTROLLER.	P P	8.00 UNITS	.09	.70	1.00	0.00	0.00	.70	.01
SOURCE: TI									
3020207. RELAY	T660								
4 PDT (5V)	P P	8.00 UNITS	.02	.17	1.00	0.00	0.00	.17	.00
SOURCE: POTTER BRUMFIELD									
3020208. CERAMIC CAPS	T626								
0.1 MF .50V	P P	8.00 UNITS	.00	.03	1.00	0.00	0.00	.03	.00
SOURCE: BELL									
3020209. MODULAR PWR-SUPPLY	T627								
PV SOURCE: LAMBELA	P P	2.00 UNITS	.36	.72	1.00	0.00	0.00	.72	.01
3020210. FOAM PADS	T628								
ATTACH FOAM CUSHIONS TO TOP OF BOX.	P P	2.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

FIELD CONTROL 4432

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
3020211. PHOTO DETECTOR T629									
OPTICAL FIBER SOURCE: I.T.	P P	2.00 UNITS	.04	.07	1.00	0.00	0.00	.07	.00
3020212. PHOTO TRANSISTORS T630									
OPTICAL FIBER. SOURCE: I.T.	P P	8.00 UNITS	.00	.03	1.00	0.00	0.00	.03	.00
3020213. BOX T631									
ONE PIECE MOLDED PLASTIC BOX WITH ATTACHED COVER. SOURCE: NEMPORT PLASTIC	P P	1.00 UNITS	.01	.01	1.00	0.00	0.00	.01	.00
3020214. CONNECTOR T231									
30 COND NO. 24 AWG FLAT WIRE AND CONNECTORS. SOURCE: AMP INC.	P P	2.00 UNITS	.01	.02	1.00	0.00	0.00	.02	.00
30215. PLANNING T 1									
FACTOR OF 10 PERCENT X MFG HOURS DIST. .03 TO LABOR AND .07 TO NON-RECURRING.	N R	0.00	0.00	.16	0.00	0.00	0.00	.16	.00
	LBR	.00 HRS	9.26	.02	1.00	2.63	1.45	.07	.00
30216. Q & RA - IND T 2									
FACTOR OF .062 PERCENT X MFG HOURS	N R	0.00	0.00	.08	0.00	0.00	0.00	.08	.00
	LBR	.00 HRS	9.26	.04	1.00	2.63	1.45	.14	.00
30218. TOOLING MATERIAL T 4									
$.70 PER TOOLING HOURS PLUS .06 PERCENT OF THE MFG. HOUR.	N R	0.00	0.00	.23	0.00	0.00	0.00	.23	.00
	LBR	.00 HRS	9.26	.04	1.00	2.63	1.45	.17	.00
	R M	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
30219. PROD SUPPORT T 5									
.042 PERCENT OF MFG + PLAN + TOOL + Q & RA (DIRECT & IND.)	N R	0.00	0.00	.02	0.00	0.00	0.00	.02	.00
	LBR	.00 HRS	9.26	.02	1.00	2.63	1.45	.09	.00
FIELD CONTROL 4432								7.	.15

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/21/18

CNTRL/SIG EQ 4433

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
30301. ASSEMBLY T201 TOTAL COMPONENTS	LBR	8.30 HRS	9.26	76.87	1.00	2.63	1.45	293.16	5.98
3030201. PRINTED CIRCUIT BD T100 4 IN X 5 IN TWO SIDED EPOXY GLASS COPPER CIRCUITRY WITH THRU PLATED HOLES. .02 SOURCE: MDAC	T P P	1.00 UNITS	1.99	1.99	1.00	0.00	0.00	1.99	.04
3030203. CONNECTOR T652 24 PIN SOURCE: AMP INC.	P P	1.00 UNITS	2.76	2.76	1.00	0.00	0.00	2.76	.06
3030204. MU.COMPUTER T623 SIMILAR TO NAT'L SEMI 8748 SOURCE: NATL SEMICONDUCTOR	P P	1.00 UNITS	332.95	332.95	1.00	0.00	0.00	332.95	6.79
3030205. QUAD.DIFF. LINE DR T656 MOTOR DRIVER INTERFACE SIMILAR TO NAT'L SEMI. DS1688	P P	2.00 UNITS	1.93	3.86	1.00	0.00	0.00	3.86	.08
3030206. QUAD.DIFF. LINE RE T657 ENCODER INTERFACE SIMILAR TO NAT'L SEMI. DS1689	P P	2.00 UNITS	1.93	3.86	1.00	0.00	0.00	3.86	.08
3030207. HEX D-FLIP FLOP T658 ENCODER INTERFACE SOURCE: T.I.	P P	3.00 UNITS	1.38	4.14	1.00	0.00	0.00	4.14	.08
3030208. CAPACITOR T626 0.1 MF .50V SOURCE: BELL	P P	3.00 UNITS	.39	1.18	1.00	0.00	0.00	1.18	.02
3030209. POWER SUPPLY 3425-0000 PER SPECIFICATION SOURCE: SEMICONDUCTOR CIR.,INC	P P	1.00 UNITS	33.29	33.29	1.00	0.00	0.00	33.29	.68
3030210. BOX T631 ONE PIECE MOLDED PLASTIC BOX WITH ATTACHED COVER. SOURCE: NEWPORT PLASTIC	P P	1.00 UNITS	2.48	2.48	1.00	0.00	0.00	2.48	.05

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

CNTRL/SIG EQ 4433

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
3030211.									
CONNECTOR	T662								
24 PIN FEMALE	P P	1.00 UNITS	2.76	2.76	1.00	0.00	0.00	2.76	.06
SOURCE: AMP INC.									
30312.									
PLANNING	T 1								
FACTOR OF 10 PERCENT X MFG HOURS	N R	0.00	0.00	20.52	0.00	0.00	0.00	20.52	.42
DIST. .03 TO LABOR AND	LBR	.25 HRS	9.26	2.31	1.00	2.63	1.45	8.79	.18
.07 TO NON-RECURRING.									
30313.									
Q & RA - IND	T 2								
FACTOR OF .062 PERCENT X MFG HOURS	N R	0.00	0.00	11.14	0.00	0.00	0.00	11.14	.23
	LBR	.51 HRS	9.26	4.77	1.00	2.63	1.45	18.18	.37
30315.									
TOOLING MATERIAL	T 4								
$.70 PER TOOLING HOURS PLUS .06	N R	0.00	0.00	29.90	0.00	0.00	0.00	29.90	.61
PERCENT OF THE MFG. HOUR.	LBR	.62 HRS	9.26	5.75	1.00	2.63	1.45	21.93	.45
	R M	1.00 UNITS	.54	.54	1.00	0.00	0.00	.54	.01
30316.									
PROD. SUPPORT	T 5								
.042 PERCENT OF MFG + PLAN + TOOL	N R	0.00	0.00	2.93	0.00	0.00	0.00	2.93	.06
+ Q & RA (DIRECT & IND.)	LBR	.35 HRS	9.26	3.23.	1.00	2.63	1.45	12.31	.25
CNTRL/SIG EQ	4433							809.	16.49

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/21/78

COLLECTOR CONTROL 44320101

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
30401. CPU	SM30JJALA								
COLLECTOR CONTROL CPU'S WITH 32KB OF MOS. MEMORY.	P P	2.00 UNITS	10.06	20.12	1.00	0.00	0.00	20.12	.41
30402. LINE INTERFACE	DL11-WB								
SERIAL LINE INTERFACES TOO MCS, BEAM CHARACTERIZATION SYSTEM AND DATA ACQUISITION SYSTEM TO 9600 BAUD	P P	6.00 UNITS	.22	1.33	1.00	0.00	0.00	1.33	.03
30403. WATCH DOG TIMER	KW11-W								
COMPUTER RESETABLE CLOCK SOURCE: DEC	P P	2.00 UNITS	.47	.93	1.00	0.00	0.00	.93	.02
30404. UNIBUS LINK	DA11								
HIGHSPEED PARALLEL COMMUNICATION INTERFACE. SOURCE: DEC	P P	1.00 UNITS	4.83	4.83	1.00	0.00	0.00	4.83	.10
30405. FIELD INTERFACE	DZ11-E								
A SYNCHRONOUS 16 LINE MULTIPLEXOR TRANSMISSION TO 9600 BAUD TO FIELD CONTROLLERS	P P	2.00 UNITS	1.35	2.69	1.00	0.00	0.00	2.69	.05
30406. STORAGE	MSH J6								
	P P	6.00 UNITS	.75	4.53	1.00	0.00	0.00	4.53	.09
30407. FORTRAN IV PLUS	QP100-CE								
HIGH LEVEL ENGLISH CONVERSION LANGUAGE COMPILER.	P P	2.00 UNITS	.87	1.75	1.00	0.00	0.00	1.75	.04
30408. WWV TIME TONE REC	T632								
UNIVERSALL TIME TONE SAV	P P	2.00 UNITS	1.59	3.18	1.00	0.00	0.00	3.18	.06
30409. TIME CODE GEN	T633								
IRIG B BCD OUTPUT (DAY, MONTH, HOUR, MINUTE, SECOND)	P P	2.00 UNITS	.64	1.27	1.00	0.00	0.00	1.27	.03
30412. COLLECTOR CONTROL	44320101								
TOTAL - HELIOSTAT CONTROLLER	LBR	.45 HRS	10.23	4.64	1.00	2.63	1.45	17.69	.36

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

COLLECTOR CONTROL 44320101

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
30414.										
Q & RA - IND T 2										
FACTOR OF .062 PERCENT X MFG HOURS	N R	0.00		0.00	.61	0.00	0.00	0.00	.61	.01
	LBR	.03	HRS	9.26	.26	1.00	2.63	1.45	.99	.02
30415.										
TOOLING MATERIAL T 4										
$.70 PER TOOLING HOURS PLUS .06	N R	0.00		0.00	1.63	0.00	0.00	0.00	1.63	.03
PERCENT OF THE MFG. HOUR.	LBR	.03	HRS	9.26	.31	1.00	2.63	1.45	1.20	.02
	R M	1.00	UNITS	.03	.03	1.00	0.00	0.00	.03	.00
30416.										
PRODUCTION SUPT. T 5										
.042 PERCENT OF MFG + PLAN + TOOL	N R	0.00		0.00	.16	0.00	0.00	0.00	.16	.00
+ Q & RA (DIRECT & IND.)	LBR	.02	HRS	9.26	.18	1.00	2.63	1.45	.67	.01
30417.										
PLANNING T 1										
FACTOR OF 10 PERCENT X MFG HOURS	N R	0.00		0.00	1.12	0.00	0.00	0.00	1.12	.02
DIST. .03 TO LABOR AND	LBR	.01	HRS	9.26	.13	1.00	2.63	1.45	.48	.01
COLLECTOR CONTROL 44320101									65.	1.33

FOUNDATION 4441

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
4010101. FORM, POUR/FINISH 444111										
LABOR TO POSITION TAPERED	N R	0.00		0.00	3.00	0.00	0.00	0.00	3.00	.06
PIPE, POUR CONCRETE AND VIBRATE.	LBR	3.20	HRS	13.61	43.61	1.00	1.70	1.00	74.13	1.51
5 CREWS (25 WEEK BASE) EACH:										
5 LABORERS (INCL. LEAD)										
SOURCE: STEARNS-ROGER										
4010102. CAGES 444112										
LABOR TO SET UP AND PLACE CAGES IN	N R	0.00		0.00	2.40	0.00	0.00	0.00	2.40	.05
AUGERED HOLE.	LBR	2.56	HRS	13.61	34.88	1.00	1.70	1.00	59.30	1.21
5 CREWS (25 WEEK BASE) EACH:										
2 RODMEN										
2 IRONWORKERS										
SOURCE: STEARNS-ROGER										
4010103. EQUIP OPER & DRIVR 444113										
EQUIPMENT OPERATORS AND TRUCK	N R	0.00		0.00	39.19	0.00	0.00	0.00	39.19	.80
DRIVERS USED IN SUPPORT OF	LBR	3.20	HRS	13.61	43.61	1.00	1.70	1.00	74.13	1.51
FOUNDATION INSTALLATION.										
5 CREWS (25 WEEK BASE) EACH:										
1 HYDRAULIC CRANE OPERATOR										
1 OILER										
3 TRUCK DRIVERS										
SOURCE: STEARNS-ROGER										
40102. CONCRETE 44412										
3.0 CUBIC YARDS OF CONCRETE	P P	1.00	UNITS	169.02	169.02	1.00	0.00	0.00	169.02	3.45
PRICED AT $37 PER YARD INCLUDING										
COST OF MATERIALS, MIXING AND										
DELIVERY TO FOUNDATIONS POSITION.										
SOURCE: STEARNS-ROGER										
40103. CAGES 44413										
428.2 LBS. OF REBAR PRICED AT	N R	0.00		0.00	4.20	0.00	0.00	0.00	4.20	.09
$.20 PER LB. AND LABOR TO PRE-	LBR	4.48	HRS	13.61	61.05	1.00	1.70	1.00	103.78	2.12
FABRICATE REBAR CAGES.	R M	1.00	UNITS	130.95	130.95	1.00	0.00	0.00	130.95	2.67
5 CREWS (25 WEEK BASE) EACH:										
2 RODMEN										
3 LABORERS (INCLUDING LEAD)										
1 HYDRAULIC CRANE OPERATOR										
1 TRUCK DRIVER										
SOURCE: STEARNS-ROGER										
40104. TAPERED PIPE 44414										
98.25 LBS PRICED AT $.31 PER LB	P P	1.00	UNITS	49.53	49.53	1.00	0.00	0.00	49.53	1.01
DELIVERED. BASED ON U.S. STEEL										
PRICE INFORMATION.										

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

FOUNDATION 4441

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
40105. BRACING	44415								
BRACING - - 50 SETS AT $200 EACH	P P	1.00 UNITS	6.39	6.39	1.00	0.00	0.00	6.39	.13
FOUNDATION	4441							710.	14.60

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

SITE PREPARATION 4442

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
40201.										
SURVEY	44421									
5 SURVEY CREWS (25 WEEK BASE)	N R	0.00		0.00	1.20	0.00	0.00	0.00	1.20	.02
2 SURVEYORS	LBR	1.28	HRS	13.61	17.44	1.00	1.70	1.00	29.65	.60
SOURCE: STEARNS-ROGER										
40202.										
DRILLING	44422									
DRILLING OPERATIONS, USING DRILL	N R	0.00		0.00	3.60	0.00	0.00	0.00	3.60	.07
RIG AND AUGERS.	LBR	3.84	HRS	13.61	52.33	1.00	1.70	1.00	88.96	1.81
SITE PREPARATION	4442								123.	2.52

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

HELIO SUPP STRUCT 4451

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
50101.										
ASSEMBLY	T455									
ASSEMBLY PROCESS OF PEDESTAL COMPONENTS.		LBR	3.67 HRS	9.26	33.97	1.00	2.63	1.45	129.54	2.04
5010201.										
TUBE	ID40046-3									
24 OD X .105 WALL X 123 LONG LC STEEL, WT=276 LBS. SOURCE: KELLY PIPE		R M	1.00 UNITS	136.47	136.47	1.00	0.00	0.00	136.47	2.78
5010202.										
CAP	ID40046-5									
.375 X 30 X 30, LC STEEL PLATE WT=75 LB. SOURCE: U.S. STEEL		R M	1.00 UNITS	32.05	32.05	1.00	0.00	0.00	32.05	.65
5010203.										
COVER	ID40046-7									
.0396 X 10 X 10 L.C. STEEL WT=4 LB. SOURCE: U.S. STEEL		R M	1.00 UNITS	1.33	1.33	1.00	0.00	0.00	1.33	.03
5010204.										
J BOX	ID40046-9									
		P P	1.00 UNITS	1.20	1.20	1.00	0.00	0.00	1.20	.02
50114.										
PLANNING	T 1									
FACTOR OF 10 PERCENT X MFG HOURS		N R	0.00	0.00	9.07	0.00	0.00	0.00	9.07	.18
DIST. .03 TO LABOR AND .07 TO NON-RECURRING.		LBR	.11 HRS	9.26	1.02	1.00	2.63	1.45	3.89	.08
50115.										
QUAL & RA IND	T 2									
FACTOR OF .002 PERCENT X MFG HOURS		N R	0.00	0.00	4.92	0.00	0.00	0.00	4.92	.10
		LBR	.23 HRS	9.26	2.11	1.00	2.63	1.45	8.03	.16
50117.										
TOOLING MATERIAL	T 4									
$.70 PER TOOLING HOURS PLUS .06 PERCENT OF THE MFG. HOUR.		N R	0.00	0.00	13.21	0.00	0.00	0.00	13.21	.27
		LBR	.27 HRS	9.26	2.54	1.00	2.63	1.45	9.69	.20
		R M	1.00 UNITS	.24	.24	1.00	0.00	0.00	.24	.00
50118.										
PROD SUPPORT	T 5									
.042 PERCENT OF MFG + PLAN + TOOL + Q & RA (DIRECT & IND.)		N R	0.00	0.00	1.30	0.00	0.00	0.00	1.30	.03
		LBR	.15 HRS	9.26	1.43	1.00	2.63	1.45	5.44	.11
HELIO SUPP STRUCT	4451								356.	7.27

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

PROTECTION ENCL 4452

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
PROTECTION ENCL 4452							0.	0.00

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.1o. DATE 05/21/78

LIGHTNING PROT. 4453

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
LIGHTNING PROT. 4453							0.	0.00

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

HELIOSTAT 4461

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
7010201. DRIVE/PED/ELTRONC 446121										
REMOVE 803 LBS. DPE UNIT FROM FLAT BED, PLACE OVER TAPERED FOUNDATION PROTRUSION AND VIBRATE USING GROVE (MODEL 30) HYDRAULICS, DIESEL, CRANE MODIFIED TO ADD MANIPULATION. 2 CREWS (20.625 WK BASE) EACH: 1 EQUIPMENT OPERATOR 1 MILLWRIGHT 1 LABORER	N R	0.00		0.00	59.95	0.00	0.00	0.00	59.95	1.22
	LBR	1.71	HRS	13.61	23.30	1.00	1.70	1.00	39.61	.81
7010202. REFLECTOR PANELS 446122										
USE YALE MODEL G3 P-150,DIESEL, 240 IN. HIGH LIFT FORK TRUCK TO REMOVE PANEL CONTAINERS AND PLACE ON DROTT 1000 SERIES B, DIESEL 4 WHEEL STEERING TRAVELIFT, MODIFIED TO ADD 2 CRANE/MANIPULATORS. 5 CREWS (20.625 WK BASE) EACH: 1 FORKLIFT OPERATOR 1 TRAVELIFT OPERATOR 2 MILLWRIGHTS 2 LABORERS	N R	0.00		0.00	177.12	0.00	0.00	0.00	177.12	3.61
	LBR	8.50	HRS	13.61	116.50	1.00	1.70	1.00	198.05	4.04
7010203. OIL - DRIVE S.A.3. 30										
	P P	2.00	UNITS	.00	.00	1.00	0.00	0.00	.00	.00
HELIOSTAT 4461									475.	9.68

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

SENSOR/CALIB EQ 4402

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
70202.									
INSTALL	44621								
USE STANDARD ELECTRICIAN TOOLS TO	N R	0.00	0.00	.12	0.00	0.00	0.00	.12	.00
INSTALL DIGITAL EYE UNITS	LBR	.06 HRS	13.61	.76	1.00	1.70	1.00	1.29	.03
1 CREW (1 MK.BASE) EACH:									
1 ELECTRICIAN									
EFFORT IS CONCURRENT AND IN									
ASSOCIATION WITH CALIBRATION.									
8.3 UNITS (6/FIELD).									
70203.									
CALIBRATE	44622								
ONE VOLT-OHM METER AND ONE	N R	0.00	0.00	.12	0.00	0.00	0.00	.12	.00
OCCILLOSCOPE TO CALIBRATE DIGITAL	LBR	.06 HRS	13.61	.76	1.00	1.70	1.00	1.29	.03
SENSOR/CALIB EQ	4462							3.	.06

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

ELECTRICAL/DISTRIB 4463

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
70302. INSTAL CABLE 44631										
EMPLOY VIBRATORY, DIESEL, PLOW TO	N R	0.00		0.00	13.99	0.00	0.00	0.00	13.99	.29
BURY ONE POWER/FIBEROPTICS CABLE.	LBR	3.42	HRS	13.61	46.60	1.00	1.70	1.00	79.22	1.62
3 CREWS (26.625 WK. BASE) EACH:										
1 CABLE PLOW OPERATOR										
2 LABORERS										
70303. PWR TR/DISTRIB PNL 44632										
INSTALL POWER TRANSFORMER/	N R	0.00		0.00	.60	0.00	0.00	0.00	.60	.01
DISBRIBUTION PANELS USING	LBR	.07	HRS	13.61	.96	1.00	1.70	1.00	1.63	.03
1 TRUCK AND 1 FORKLIFT.										
1 CREW (2 WK BASE) EACH:										
1 TRUCK DRIVER										
1 FORKLIFT OPERATOR										
1 MILLWRIGHT										
2 LABORERS										
70304. CONN,C/O&CLOSE OUT 44633										
USE 1 SPECIAL TEST SET AND	N R	0.00		0.00	.96	0.00	0.00	0.00	.96	.02
STANDARD ELECTRICIAN TOOLS TO	LBR	2.28	HRS	13.61	31.07	1.00	1.70	1.00	52.81	1.08
ELECTRICAL/DISTRIB 4463									149.	3.04

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.1o. DATE 05/27/78

ALIGN HELIOSTATS 4404

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
ALIGN HELIOSTATS 4464							0.	0.00

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

FIELD SUPPORT 4405

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
70501.										
INSTALLATION MGMT 44651										
OVERALL MANAGEMENT OF FIELD EFFORT.	N R	0.00		0.00	.12	0.00	0.00	0.00	.12	.00
1 FIELD MANAGER (28.46 WK BASE).	LBR	.05	HRS	13.61	.65	1.00	1.70	1.00	1.10	.02
7050201.										
SUPERVISION 44652-1										
1 LOGISTICS SUPERVISOR	N R	0.00		0.00	.12	0.00	0.00	0.00	.12	.00
(28.46 WK BASE).	LBR	.05	HRS	13.61	.65	1.00	1.70	1.00	1.10	.02
7050202.										
RECORDS 44652-2										
KEEP ACCOUNTABLE RECORDS FOR FIELD MATERIALS, COMPLETIONS TO SPEC., RECORDS, ETC.	LBR	.05	HRS	13.61	.65	1.00	1.70	1.00	1.10	.02
1 RECORDS CLERK (28.46 WK BASE).										
7050203.										
FIELD COORDINATION 44652-3										
COORDINATE MATERIAL HANDLING, MOVEMENT AND SCHEDULES.	LBR	.19	HRS	13.61	2.60	1.00	1.70	1.00	4.42	.09
4 FIELD COORDINATORS (28.46 WK BASE)										
7050204.										
PERSONNEL 44652-4										
KEEPS PERSONNEL FILES, ADMINISTERS HOUSING AND BENEFITS FOR FIELD PERSONNEL, TIME RECORDS, ETC.	LBR	.05	HRS	13.61	.65	1.00	1.70	1.00	1.10	.02
1 PERSONNEL CLERK (28.64 WK BASE).										
70503.										
QUALITY CONTROL 44653										
OVERSEE AND ASSURE QUALITY OF INSTALLATIONS THROUGH FIELD INSPECTION, PRACTICES REVIEW, AND DECREPANT MATERIAL, FAILURE AND CORRECTIVE ACTION REPORTS.	LBR	.03	HRS	13.61	.47	1.00	1.70	1.00	.79	.02
1 QUAL. ASSUR. REP. (26.625 WK BASE).										
70504.										
FIELD ENGINEERING 44654										
PROVIDE ENGINEERING SUPPORT DURING	LBR	.07	HRS	13.61	.93	1.00	1.70	1.00	1.59	.03
FIELD SUPPORT 4465									11.	.23

PACK & TRANSP 4400

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
7060101. DRIVE 44661-1									
SPECIALIZED TRAILER BED WITH RACK ON ONE SIDE FOR PEDESTAL, DRIVE, SHORT MAIN BEAM ASSEMBLY TO LEAN AGAINST; AND WITH 4 BY 4'S ATTACHED TO FLOOR FOR BRACING. QTY PER TRAILER BED = 12. REUSABLE SPECIALIZED TRAILER BEDS; MINIMUM QUANTITY NEEDED FOR 1 WEEK; 42.	P P	1.00 UNITS	.20	.20	1.00	0.00	0.00	.20	.00
7060102. REFLECTOR 44661-2									
SPECIALIZED PALLET FOR HOLDING REFLECTOR PANELS (ALREADY ATTACHED TO MIRROR BACKING STRUCTURE) IN AN UPRIGHT POSITION, EACH BRACED ON A BOX STRUCTURE WHICH IS MOUNTED ON TH PALLET. CUSHIONED HOLDOWN ASSEMBLY KEEPS THE TOPS OF THE PANELS SECURE. QTY PER PALLET = 4 PANELS. REUSABLE PALLETS; MINIMUM QTY. NEEDED FOR 1 WEEK= 250	P P	1.00 UNITS	.42	.42	1.00	0.00	0.00	.42	.01
7060103. DISTRUB ELECT 44661-3									
TRANSFORMERS STRAPPED TO REUSABLE PALLETS.	P P	1.00 UNITS	.05	.05	1.00	0.00	0.00	.05	.00
7060201. DRIVE 44662-1									
SPECIALIZED TRAILER BEDS REMAIN AT SITE UNTIL UNLOADED (1 WEEK'S INSTALLATION SUPPLY) ONE TRAILER, IS PULLED BY ONE TRUCK CAB. WEIGHT PER DRIVE ASSEMBLY = 1450 LBS 12 DRIVE ASSEMBLIES PER TRAILER BED 17,400 LBS. WEIGHT OF MODIFICATION TO TRAILER BED = 700 LBS. TOTAL WEIGHT OF ASSEMBLIES AND MOD. = 18,100 LBS.	N R LBR	0.00 .11 HRS	0.00 9.26	.04 1.01	0.00 1.00	0.00 2.63	0.00 1.45	.04 3.84	.00 .08
7060202. REFLECTOR 44662-2									
ONE LOWBOY PULLED BY ONE TRUCK CAB, ONE PALLET PER LOWBOY, PALLET LIFTEDLBR FROM LOWBOY WITH FORKTRUCK. QTY: 4 PANELS WITH BACKING STRUCTUR PALLET. WEIGHT: 1374 LBS. EACH X 4 5490 LBS. PLUS WT.. OF PALLET.	N R LBR	0.00 .65 HRS	0.00 9.26	.22 6.04	0.00 1.00	0.00 2.63	0.00 1.45	.22 23.04	.00 .47

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.1o. DATE 05/27/78

PACK & TRANSP 4466

DESCRIPTION			QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
70o0203. DISTRIB ELECT	44662-3										
TRANSFORMER WEIGHT:	2600 LBS.	N R	0.00		0.00	.06	0.00	0.00	0.00	.06	.00
MAXIMUM OF 9 TRANSFORMERS/TRAILER		LBR	.00	HRS	9.26	.01	1.00	2.63	1.45	.05	.00
PACK & TRANSP	4466									28.	.57

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

DESIGN 4471

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
80101. REFLECTIVE UNIT DESIGN	447101	N R	0.00	0.00	55.20	0.00	0.00	0.00	55.20	1.13
80102. DRIVE UNIT PROD DWGS, RELEASE PROCEDURES FOR ASSY, ADJUSTMENT, RUN-IN, ACCEPTANCE TESTING AND MAINTENANCE OF DRIVE UNIT.	447102	N R	0.00	0.00	80.00	0.00	0.00	0.00	80.00	1.63
80103. SENSOR/CAL EQ. DESIGN	447103	N R	0.00	0.00	80.40	0.00	0.00	0.00	80.40	1.64
80104. CONTROL EQUIP. DESIGN.	447104	N R	0.00	0.00	284.00	0.00	0.00	0.00	284.00	5.79
80105. FND/SITE PREP DESIGN	447105	N R	0.00	0.00	10.00	0.00	0.00	0.00	10.00	.20
DESIGN	4471								510.	10.39

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

SUSTAINING ENGR. 4472

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
SUSTAINING ENGR. 4472							0.	0.00

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

PRE PROD UNIT 4473

DESCRIPTION	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	FACTORS OVERHEAD	FACTORS G&A	TOTAL	TOTAL $/SM
PRE PROD UNIT 4473							0.	0.00

MCDONNELL DOUGLAS

AVERAGE PROTOTYPE HELIOSTAT COST - PILOT PLANT (2500 UNITS) 1978 DOLLARS 10.05.16. DATE 05/27/78

SITE ACTIVATION 4474 T

DESCRIPTION			QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CHC	OVERHEAD	G&A	TOTAL	$/SM
SITE ACTIVATION	4474	T							0.	0.00

H-191

AVERAGE PROTOTYPE HELIOSTAT COST- PILOT PLANT (2500 UNITS) 1978 DOLLARS 11.43.44. DATE 05/27/78

COLLECTOR 41311

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
MOBILE CRANE ME-1									
ROADRUNNER	P P	1.39 UNITS	18.46	25.65	1.00	0.00	0.00	25.65	.52
4 FT WIDE, 8 FT HIGH BOOM TIP 30 FT ABOVE GROUND AT CLOSEST RADIUS CAPACITY: 10,000 LBS.									
PICKUP TRUCK ME-2									
3/4 TON LOW PRESSURE TIRES	P P	1.39 UNITS	11.29	15.70	1.00	0.00	0.00	15.70	.32
FORKLIFT ME-3									
JOHN DEERE AND CO. MODEL JD 380 WITH 7 FT. 8 IN MAST LIFTING CAPACITY: 4000 LBS.	P P	1.39 UNITS	7.98	11.09	1.00	0.00	0.00	11.09	.23
HOISTING SLING ME-4									
STANDARD SLING TO BE	LBR	.02 HRS	3.69	.06	1.00	2.63	1.45	.24	.00
ATTACHED TO MOBILE CRANE	P P	1.39 UNITS	.13	.19	1.00	0.00	0.00	.19	.00
	R M	1.39 UNITS	.02	.03	1.00	0.00	0.00	.03	.00
VAN ME-51									
DODGE,, CHEV, FORD,, OR GMC W/AUX. AIR AND AC POWER GENERATOR (240V, 75 AMPS) WITH WINDOWS ALL AROUND LOW PRESSURE TIRES, 4 WHEEL DRIVE.	P P	1.39 UNITS	10.38	14.42	1.00	0.00	0.00	14.42	.29
EQUIPT. ME-52									
PRINTER, TAPE READER, CRT SCREEN,	LBR	1.03 HRS	3.69	3.80	1.00	2.63	1.45	14.48	.30
KEYBOARD,RECORDERS, MEASUREMENT EQ.	P P	1.39 UNITS	40.93	56.90	1.00	0.00	0.00	56.90	1.16
	R M	1.39 UNITS	3.73	5.19	1.00	0.00	0.00	5.19	.11
WASHING EQUIP. ME-6									
TWO TRUCKS IN TANDEM, ONE TO WASH WITH CB120D SOLUTION, ONE ONE TO RINSE WITH DEIONIZED WATER.	P P	1.39 UNITS	36.28	50.43	1.00	0.00	0.00	50.43	1.03
COLLECTOR 41311								194.	3.96

AVERAGE PROTOTYPE HELIOSTAT COST- PILOT PLANT (2500 UNITS) 1978 DOLLARS 11.43.44. DATE 05/27/78

INITIAL SPARES 4840

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
REFLECTIVE SURFACE 4841011									
BECAUSE ALL MODULES ARE DISCARDED	P P	1.39 UNITS	.02	.03	1.00	0.00	0.00	.03	.00
UPON FAILURE, A ONE YEAR SUPPLY	P P	1.39 UNITS	.23	.32	1.00	0.00	0.00	.32	.01
PLUS A 30-DAY CONTINGENCY SUPPLY	P P	1.39 UNITS	.02	.03	1.00	0.00	0.00	.03	.00
ARE REQUIRED.									
AZIMUTH 4841021									
BECAUSE AZIMUTH DRIVES ARE REPAIRED	P P	1.39 UNITS	.19	.26	1.00	0.00	0.00	.26	.01
ON SITE, A 30 DAY CONTINGENCY	P P	1.39 UNITS	.17	.23	1.00	0.00	0.00	.23	.00
PLUS A FIVE DAY PIPE LINE QUANTITY	P P	1.39 UNITS	.22	.30	1.00	0.00	0.00	.30	.01
ARE REQUIRED.									
JACK SCREW 484102221									
BECAUSE JACK SCREWS ARE REPAIRED	P P	1.39 UNITS	.42	.59	1.00	0.00	0.00	.59	.01
ON SITE, A 30 DAY CONTINGENCY PLUS									
A 5 DAY PIPE LINE QUANTITY									
ARE REQUIRED.									
JACK SCREW 484102221									
BECAUSE JACK SCREWS ARE REPAIRED	P P	1.39 UNITS	.21	.29	1.00	0.00	0.00	.29	.01
ON SITE, A 30 DAY CONTINGENCY PLUS									
A 5 DAY PIPE LINE QUANTITY									
ARE REQUIRED.									
AZIMUTH MOTOR 48410231									
BECAUSE AZIMUTH MOTORS ARE REPAIRED	P P	1.39 UNITS	.11	.16	1.00	0.00	0.00	.16	.00
ON SITE, A 30 DAY CONTINGENCY PLUS A									
5 DAY PIPE LINE QUANTITY									
ARE REQUIRED.									
TRKING MOTOR 48410232									
SAME AS AZIMUTH MOTOR.	P P	1.39 UNITS	.11	.15	1.00	0.00	0.00	.15	.00
STOWAGE MOTOR 48410233									
SAME AS AZIMUTH AND TRACKING	P P	1.39 UNITS	.05	.08	1.00	0.00	0.00	.08	.00
MOTORS.									
TRANSFORMER 484102522									
BECAUSE TRANSFORMERS ARE REPAIRED	P P	1.39 UNITS	4.94	6.87	1.00	0.00	0.00	6.87	.14
OFF SITE, A 30 DAY CONTINGENCY									
PLUS A 5 DAY PIPE LINE QUANTITY									
ARE REQUIRED.									
BRANCH CIR BKR 484102524									
BECAUSE ALL ARE SPARED, AND NONE	P P	1.39 UNITS	.06	.09	1.00	0.00	0.00	.09	.00
REPAIRED, ONLY A 30 DAY CONTINGENCY									
IS REQUIRED.									
COOLER-HEATER 484103124									
BECAUSE THE FAILURE RATE IS SO LOW	P P	1.39 UNITS	.01	.01	1.00	0.00	0.00	.01	.00
AND THE NUMBER PER FIELD IS SO LOW,									
ONLY THE PIPE LINE QTY IS REQUIRED.									

AVERAGE PROTOTYPE HELIOSTAT COST- PILOT PLANT (2500 UNITS) 1978 DOLLARS 11.43.44. DATE 05/27/78

INITIAL SPARES 4840

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
DATA DIST.INT 48410322									
BECAUSE THE DDI IS ALWAYS SPARED	P P	1.39 UNITS	.14	.20	1.00	0.00	0.00	.20	.00
AND NEVER REPAIRED, A 30 DAY	P P	1.39 UNITS	.52	.72	1.00	0.00	0.00	.72	.01
CONTINGENCY PLUS PIPE LINE QUANTITY	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
ARE REQUIRED.									
CNTRL/SIG EQ 4841033									
BECAUSE THE CONTROL/SIG.EQ. ARE	P P	1.39 UNITS	.11	.16	1.00	0.00	0.00	.16	.00
REPAIRED OFF SITE, A 30 DAY CON-	P P	1.39 UNITS	.31	.43	1.00	0.00	0.00	.43	.01
TINGENCY PLUS A 30 DAY PIPE LINE	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
QUANTITY ARE REQUIRED.									
REFLECTIVE SURFACE 4841111									
REFLECTIVE SURFACE WITH HAT SECTIONS	P P	1.39 UNITS	.04	.06	1.00	0.00	0.00	.06	.00
TRANSPORTED ON REUSABLE A-FRAME	P P	1.39 UNITS	.01	.01	1.00	0.00	0.00	.01	.00
MOUNTED ON TRUCK									
10 4X11 MODULES PER TRUCKLOAD									
MIRROR BACK STRUCT 4841112									
NO INITIAL SPRS REQUIRED	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
AZIMUTH 4841121									
5.80/CWT TRANSPORTED IN COVERED WOOD	P P	1.39 UNITS	.04	.06	1.00	0.00	0.00	.06	.00
SKIDS	P P	1.39 UNITS	.01	.01	1.00	0.00	0.00	.01	.00
JACK SCREW 484112221									
5.80/CWT STRAPPED TO PALLET	P P	1.39 UNITS	.00	.01	1.00	0.00	0.00	.01	.00
	P P	1.39 UNITS	.01	.02	1.00	0.00	0.00	.02	.00
JACK SCREW 484112222									
5.80/CWT STRAPPED TO PALLET	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.39 UNITS	.01	.01	1.00	0.00	0.00	.01	.00
AZIMUTH MOTOR 48411231									
6.44/CWT SHIPPED IN CARDBOARD BOX	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.39 UNITS	.00	.01	1.00	0.00	0.00	.01	.00
TRKING MOTOR 48411232									
6.44/CWT SHIPPED IN CARDBOARD BOX	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.39 UNITS	.00	.01	1.00	0.00	0.00	.01	.00
STOWAGE MOTOR 48411233									
6.44/CWT SHIPPED IN CARDBOARD BOX	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
FEEDER CABLE 484112521									
NO INITIAL SPARES REQUIRED	P P	1.00 UNITS	.03	.03	1.00	0.00	0.00	.03	.00
TRANSFORMER 484112522									
6.44/CWT STRAPPED TO PALLET	P P	1.39 UNITS	.07	.09	1.00	0.00	0.00	.09	.00
	P P	1.39 UNITS	.00	.01	1.00	0.00	0.00	.01	.00

AVERAGE PROTOTYPE HELIOSTAT COST- PILOT PLANT (2500 UNITS) 1978 DOLLARS 11.43.44. DATE 05/21/78

INITIAL SPARES 4840

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS CRC	OVERHEAD	G&A	TOTAL	$/SM
DIST PANEL 484112523									
NO INITIAL SPARES REQUIRED	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
BRANCH CIR BKR 484112524									
6.44/CWT SHIPPED IN WOOD BOX	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
BRANCH CIR CABLE 484112525									
NO INITIAL SPARES REQUIRED	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
WIRE 484112531									
NO INITIAL SPARES REQUIRED	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
CIR BKR/HOLDER 484112532									
NO INITIAL SPARES REQUIRED	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.00 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
CAMERA 484113121									
6.44/CWT SHIPPED IN FIBRE BOARD BOX	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
COOLER-HEATER 484113124									
6.44/CWT SHIPPED IN FIBRE BOARD BOX	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
DATA DIST.INT 48411322									
0.44/CWT SHIPPED IN CARDBRD CONTAINER	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
CNTRL/SIG EQ 4841133									
6.44/CWT SHIPPED IN CARDBRD BOX	P P	1.39 UNITS	.00	.00	1.00	0.00	0.00	.00	.00
	P P	1.39 UNITS	.00	.01	1.00	0.00	0.00	.01	.00
HELIO SUPP STRUCT 4841151									
NO INITIAL SPARED REQUIRED	P P	1.00 UNITS	.01	.01	1.00	0.00	0.00	.01	.00
INITIAL SPARES 4840								11. .23	
INITIAL SPARES 4840								11. 0.00	

PROTOTYPE HELIOSTAT OPERATIONS AND MAINTENANCE PILOT PLANT- 2500 UNITS 11.51.03. DATE 05/21/18

SPARES

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS ADJ	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
REFLECTIVE SURFACE 4411 PANELS R/R WITH A MOBILE CRANE AND SLING, DISCARDED UPON FAILURE, FAILURE RATE/YR/1 PANEL .0003287 ALWAYS SPARED (HOWEVER, MINOR CRACKS COULD BE REPAIRED BY ADHESIVE BOND) WOOD CRATE SHIPPING 9.12/CWT	N/L	7.10 FAIL	85.57	607.57	1.11	0.00	0.00	671.37	.01
AZIMUTH 4421 COMPLETE ASSEMBLY R/R UPON FAILURE BENCH REPR: REPLACE DEFECTIVE GEAR TRAIN COMPONENTS, LUBRICATE HARMONIC DR SECTION WITH HEAVY DUTY OIL, PACK GEAR WITH GREASE. FAILURE RATE: .00972 SPARES TRANSPORTED IN COVERED WOODEN SKID.CWT/5.80 5 PERCENT OF FAILURES ARE SPARED	N/L	17.50 FAIL	702.36	12288.42	.06	0.00	0.00	675.86	.01
JACK SCREW 442201 JACK ASSEMBLY R/R UPON COMPONENT FAILURE, BENCH REPR: REPLACEMENT OF DEFECTIVE COMPONENTS. FAILURE RATE:.009 SPARES STRAPPED TO PALLET CWT/5.80 5 PERCENT OF FAILURES ARE SPARED	N/L	16.20 FAIL	530.94	8601.29	.06	0.00	0.00	473.07	.01
JACK SCREW 442202 SAME AS ABOVE EXCEPT THAT FAILURE RATE IS .000444 BECAUSE THIS JACK SCREW IS UTILIZED FEWER HRS/YR	N/L	.80 FAIL	530.94	424.33	.06	0.00	0.00	23.34	.00
AZIMUTH MOTOR T537 DRIVE MOTOR ASSEMBLY R/R UPON COMPONENT FAILURE, BENCH REPR: REPLACE INCREMENTAL ENCODER,DR.ELECTRONICS,MOTOR COMPONENTS. FAILURE RATE:.011167 SHIPPED IN CARDBD.BOX CWT/6.44 5 PERCENT OF FAILURES SPARED	N/L	67.14 FAIL	141.51	9500.60	.06	0.00	0.00	522.53	.00
TRKING MOTOR T540 SAME AS AZIMUTH MOTOR	N/L	67.33 FAIL	136.67	9202.27	.06	0.00	0.00	506.12	.00
STOWAGE MOTOR T543 SAME AS AZIMUTH MOTOR EXCEPT THAT FAILURE RATE IS .000556 BECAUSE IT IS UTILIZED FEWER HOURS/YR.	N/L	3.34 FAIL	136.67	456.83	.06	0.00	0.00	25.13	.00
TRANSFORMER 225T(19)H TRANSFORMER R/R FOR INTERNAL ELECT. FAILURE WITH A FORKLIFT OR MOBILE CRANE AND SLING. FAILURE RATE:.00702 SHIP BY STRAPPING TO PALLET 6.44/CWT REPR OFF SITE 25 PERCENT ARE SPARED	N/L	.14 FAIL	12302.08	1739.11	.28	0.00	0.00	479.99	.00

SPARES

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS ADJ	OVERHEAD	G&A	TOTAL	$/SM
BRANCH CIR BKR SOD NO.FA-34040 ALL BRANCH CIR BKR SPARED FAILURE RATE: .0033 SHIPPED IN FIBRE BOARD BOX 6.44/CWT	N/L	.27 FAIL	154.64	41.85	.95	0.00	0.00	39.84	.00
CIR BKR/HOLDER T663 ALL CIRCUIT BKRS SPARED FAILURE RATE: .0033 SHIPPED IN FIBRE BD. BOX 6.44/CWT ASSUMES SHIPMENT IN ECONOMIC QUANTITY	N/L	5.94 FAIL	138.72	823.97	1.25	0.00	0.00	1028.31	.01
COOLER-HEATER T650 COOLER-HEATER R/R, NEVER REPAIRED. SHIPPED IN FIBRE BOARD BOX CWT/6.44 FAILURE RATE: .00333	N/L	.02 FAIL	24.99	.50	1.25	0.00	0.00	.62	.00
DATA DIST.INT 443202 DDI CIRCUIT CARDS REPLACED UPON FAILURE ALWAYS SPARED: REPLACE DEFECTIVE COMPONENTS DETECTED BY MOBILE TEST VAN AND BY DETECTION OF SOFTWARE BUGS. FAILURE RATE: .017544 SHIP IN CARDBOARD CONTAINER 6.44/CWT	N/L	1.37 FAIL	1619.10	2214.52	1.25	0.00	0.00	2763.72	.00
	N/L	0.00 FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CNTRL/SIG EQ 4433 CIRCUIT BOARD R/R UPON FAILURE DETECTED BY MOBILE TEST VAN AND OPERATIONAL INDICATIONS AND SOFTWARE BUGS BENCH REPR : REPLACEMENT OF DEFECTIVE COMPONENTS FAILURE RATE: .00544 SHIP IN CARDBRD BX CWT/6.44 5 PERCENT SPARED 95 PERCENT REPAIRED OFF SITE	N/L	127.30 FAIL	515.36	65603.57	.06	0.00	0.00	4133.03	.00
	N/L	0.00 FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SPARES 11343. .04

PROTOTYPE HELIOSTAT OPERATIONS AND MAINTENANCE PILOT PLANT- 2500 UNITS 11.54.25. DATE 05/21/18

REPAIR PTS

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS ADJ	OVERHEAD	G&A	TOTAL	$/SM
MIRROR BACK STRUCT 4412 STRUCT ALWAYS REPR IN PLACE, NEVER SPARED FAILURE RATE/I: .001 REPAIR PARTS SHIPPED IN CARDBOARD BOX CWT/4.30	N/L	1.80 FAIL	12.03	21.65	1.11	0.00	0.00	23.93	.00
AZIMUTH 4421 COMPLETE ASSEMBLY R/R UPON FAILURE BENCH REPR: REPLACE DEFECTIVE GEAR TRAIN COMPONENTS, LUBRICATE HARMONIC DR SECTION WITH HEAVY DUTY OIL, PACK GEAR WITH GREASE. FAILURE RATE: .00972 SPARES TRANSPORTED IN COVERED WOODEN SKID.CWT/5.80 5 PERCENT OF FAILURES ARE SPARED	N/L	17.50 FAIL	69.96	1223.96	1.05	0.00	0.00	1285.16	.01
JACK SCREW 442201 JACK ASSEMBLY R/R UPON COMPONENT FAILURE, BENCH REPR: REPLACEMENT OF DEFECTIVE COMPONENTS. FAILURE RATE:.009 SPARES STRAPPED TO PALLET CWT/5.80 5 PERCENT OF FAILURES ARE SPARED	N/L	16.20 FAIL	52.90	857.01	1.05	0.00	0.00	899.86	.01
JACK SCREW 442202 SAME AS ABOVE EXCEPT THAT FAILURE RATE IS .000444 BECAUSE THIS JACK SCREW IS UTILIZED FEWER HRS/YR	N/L	.80 FAIL	52.90	42.28	1.05	0.00	0.00	44.39	.00
AZIMUTH MOTOR T537 DRIVE MOTOR ASSEMBLY R/R UPON COMPONENT FAILURE, BENCH REPR: REPLACE INCREMENTAL ENCODER,DR.ELECTRONICS,MOTOR COMPONENTS. FAILURE RATE:.011167 SHIPPED IN CARDBD.BOX CWT/6.44 5 PERCENT OF FAILURES SPARED	N/L	67.14 FAIL	14.10	946.62	1.05	0.00	0.00	993.95	.00
TRKING MOTOR T540 SAME AS AZIMUTH MOTOR	N/L	67.33 FAIL	13.62	916.89	1.05	0.00	0.00	962.74	.00
STOWAGE MOTOR T543 SAME AS AZIMUTH MOTOR EXCEPT THAT FAILURE RATE IS .000556 BECAUSE IT IS UTILIZED FEWER HOURS/YR.	N/L	3.34 FAIL	13.62	45.52	1.05	0.00	0.00	47.79	.00
FEEDER CABLE CLX ALL FIELD POWER DATA CABLES REPR IN PLACE BY STANDARD ELECT. METHODS INCLUDING REPLACEMENT OF TERMINALS AND CONNECTORS. FAILURE RATE: .0007199 SHIPPED IN FIBRE BOARD BOX 6.44/CWT	N/L	.00 FAIL	336.56	1.41	1.25	0.00	0.00	1.76	.00

REPAIR PTS

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS ADJ	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
TRANSFORMER 225T(19)H TRANSFORMER R/R FOR INTERNAL ELECT. FAILURE WITH A FORKLIFT OR MOBILE CRANE AND SLING. FAILURE RATE=.00702 SHIP BY STRAPPING TO PALLET 6.44/CWT REPR OFF SITE 25 PERCENT ARE SPARED	N/L	.14 FAIL	1235.31	173.78	.83	0.00	0.00	144.07	.00
DIST PANEL SQ.D-H-4172-4N ALL DIST PANELS REPR IN PLACE FAILURE RATE=.049332 SHIPPED IN WOOD BOX 6.44/CWT	N/L	.30 FAIL	127.81	37.83	1.25	0.00	0.00	47.21	.00
BRANCH CIR CABLE CLX-ALS ALL HELIOSTAT CABLES REPR IN PLACE FAILURE RATE= .000367 REPR PARTS SHIPPING= 6.44/CWT ASSUMES SHIPMENT IN ECONOMIC QUANTITY	N/L	.66 FAIL	6.81	4.50	1.25	0.00	0.00	5.62	.00
WIRE CLX-16 ALL WIRE REPR IN PLACE BY STANDARD ELECTN METHODS FAILURE RATE=.002 FOR THE SUMATION OF THE 5 WIRES WITHIN THE PEDESTAL PARTS SHIPPED IN FIBRE BD.BOX 6.44/CWT ASSUMES SHIPMENT IN ECONOMIC QUANTITY	N/L	3.60 FAIL	1.50	5.41	1.25	0.00	0.00	6.75	.00
CAMERA TN2200 CAMERA R/R, ALL REPAIRED OFF SITE SHIPPED IN FIBRE BOARD BOX CWT/6.44 FAILURE RATE= .01	N/L	.06 FAIL	294.37	17.66	1.11	0.00	0.00	19.52	.00
	N/L	0.00 FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CNTRL/SIG EQ 4433 CIRCUIT BOARD R/R UPON FAILURE DETECTED BY MOBILE TEST VAN AND OPERATIONAL INDICATIONS AND SOFTWARE BUGS BENCH REPR = REPLACEMENT OF DEFECTIVE COMPONENTS FAILURE RATE= .00544 SHIP IN CARDBRD BX CWT/6.44 5 PERCENT SPARED 95 PERCENT REPAIRED OFF SITE	N/L	127.30 FAIL	52.03	6622.88	1.19	0.00	0.00	7854.73	.01
	N/L	0.00 FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HELIO SUPP STRUCT 4451 ALL PEDESTALS REPR IN PLACE USING STAND AND STRUCTURAL REPAIR PROCESSES FAILURE RATE= .001 REPAIR PARTS SHIPPED AT 4.36/CWT ASSUMES SHIPMENT IN ECONOMIC QTYS	N/L	1.80 FAIL	4.58	8.24	1.11	0.00	0.00	9.11	.00

PROTOTYPE HELIOSTAT OPERATIONS AND MAINTENANCE PILOT PLANT- 2500 UNITS 11.54.25. DATE 05/21/78

REPAIR PTS

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS ADJ	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
	N/L	0.00 FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00

REPAIR PTS 12347. .04

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DESCRIPTION	OTHER	QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS ADJ	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
REFLECTIVE SURFACE 4411									
PANELS R/R WITH A MOBILE CRANE AND	N/L	7.10 FAIL	12.82	90.99	1.11	0.00	0.00	100.54	.00
SLING, DISCARDED UPON FAILURE,	N/L	7.10 FAIL	1.68	11.93	1.11	0.00	0.00	13.18	.00
ALWAYS SPARED (HOWEVER, MINOR CRACKS COULD BE REPAIRED BY ADHESIVE BOND) WOOD CRATE SHIPPING 9.12/CWT									
MIRROR BACK STRUCT 4412									
STRUCT ALWAYS REPR IN PLACE, NEVER	N/L	1.80 FAIL	.29	.53	.95	0.00	0.00	.50	.00
SPARED FAILURE RATE/H .001 CWT/4.36	N/L	1.80 FAIL	.13	.23	.95	0.00	0.00	.21	.00
AZIMUTH 4421									
COMPLETE ASSEMBLY R/R UPON FAILURE	N/L	17.50 FAIL	51.04	893.00	.06	0.00	0.00	49.34	.00
BENCH REPR: REPLACE DEFECTIVE GEAR	N/L	17.50 FAIL	10.00	174.96	.06	0.00	0.00	9.67	.00
TRAIN COMPONENTS, LUBRICATE HARMONIC DR	N/L	17.50 FAIL	5.10	89.30	1.05	0.00	0.00	93.74	.00
SECTION WITH HEAVY DUTY OIL, PACK GEAR	N/L	17.50 FAIL	1.00	17.50	1.05	0.00	0.00	18.37	.00
FAILURE RATE: .00972 SPARES TRANS-PORTED IN COVERED WOODEN SKID.CWT/5.80 5 PERCENT OF FAILURES ARE SPARED									
JACK SCREW 442201									
JACK ASSEMBLY R/R UPON COMPONENT FAIL-	N/L	16.20 FAIL	4.64	75.17	.06	0.00	0.00	4.15	.00
URE, BENCH REPR: REPLACEMENT OF DE-	N/L	16.20 FAIL	15.00	243.00	.06	0.00	0.00	13.43	.00
FECTIVE COMPONENTS. FAILURE RATE:.009	N/L	16.20 FAIL	.46	7.52	1.05	0.00	0.00	7.89	.00
SPARES STRAPPED TO PALLET CWT/5.80	N/L	16.20 FAIL	1.50	24.30	1.05	0.00	0.00	25.51	.00
JACK SCREW 442202									
SAME AS ABOVE EXCEPT THAT FAILURE RATE	N/L	.80 FAIL	4.64	3.71	.06	0.00	0.00	.20	.00
IS .000444 BECAUSE THIS JACK SCREW IS	N/L	.80 FAIL	15.00	11.99	.06	0.00	0.00	.66	.00
UTILIZED FEWER HRS/YR	N/L	.80 FAIL	.46	.37	1.05	0.00	0.00	.39	.00
	N/L	.80 FAIL	1.50	1.20	1.05	0.00	0.00	1.26	.00
AZIMUTH MOTOR T537									
DRIVE MOTOR ASSEMBLY R/R UPON COMPON-	N/L	67.14 FAIL	1.09	73.50	.06	0.00	0.00	4.06	.00
ENT FAILURE, BENCH REPR: REPLACE INCRE-	N/L	67.14 FAIL	5.00	335.68	.06	0.00	0.00	18.55	.00
MENTAL ENCODER,DR.ELECTRONICS,MOTOR	N/L	67.14 FAIL	.11	7.35	1.05	0.00	0.00	7.72	.00
COMPONENTS. FAILURE RATE:.011167 5 PERCENT OF FAILURES SPARED	N/L	67.14 FAIL	.50	33.57	1.05	0.00	0.00	35.24	.00

OTHER

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS ADJ	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
TRKING MOTOR T540									
SAME AS AZIMUTH MOTOR	N/L	67.33 FAIL	1.09	73.72	.06	0.00	0.00	4.07	.00
	N/L	67.33 FAIL	5.00	336.67	.06	0.00	0.00	18.60	.00
	N/L	67.33 FAIL	.11	7.37	1.05	0.00	0.00	7.74	.00
	N/L	67.33 FAIL	.50	33.67	1.05	0.00	0.00	35.34	.00
STOWAGE MOTOR T543									
SAME AS AZIMUTH MOTOR EXCEPT THAT FAIL-	N/L	3.34 FAIL	1.09	3.66	.06	0.00	0.00	.20	.00
URE RATE IS .000556 BECAUSE IT IS	N/L	3.34 FAIL	5.00	16.71	.06	0.00	0.00	.92	.00
UTILIZED FEWER HOURS/YR.	N/L	3.34 FAIL	.11	.37	1.05	0.00	0.00	.38	.00
	N/L	3.34 FAIL	.50	1.67	1.05	0.00	0.00	1.75	.00
FEEDER CABLE CLX									
ALL FIELD POWER DATA CABLES REPR IN	N/L	.00 FAIL	7.33	.03	.95	0.00	0.00	.03	.00
PLACE BY STANDARD ELECT. METHODS IN-	N/L	.00 FAIL	.63	.00	.95	0.00	0.00	.00	.00
CONNECTORS. FAILURE RATE: .0007199									
SHIPPED IN FIBRE BOARD BOX 6.44/CWT									
TRANSFORMER 225T(19)H									
TRANSFORMER R/R FOR INTERNAL ELECT.	N/L	.14 FAIL	167.44	23.56	.28	0.00	0.00	6.51	.00
FAILURE WITH A FORKLIFT OR MOBILE CRANE	N/L	.14 FAIL	10.00	1.41	.28	0.00	0.00	.39	.00
AND SLING. FAILURE RATE:.00702 SHIP BY	N/L	.14 FAIL	334.88	47.11	.83	0.00	0.00	39.04	.00
STRAPPING TO PALLET 6.44/CWT	N/L	.14 FAIL	10.00	1.41	.83	0.00	0.00	1.17	.00
DIST PANEL SQ.D-H-4172-4N									
ALL DIST PANELS REPR IN PLACE	N/L	.30 FAIL	.64	.19	.95	0.00	0.00	.18	.00
FAILURE RATE:.049332 SHIPPED IN WOOD	N/L	0.00 FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BRANCH CIR BKR SQD NO.FA-34040									
ALL BRANCH CIR BKR SPARED	N/L	.27 FAIL	.19	.05	.95	0.00	0.00	.05	.00
FAILURE RATE: .0033	N/L	.27 FAIL	5.00	1.35	.95	0.00	0.00	1.29	.00
BRANCH CIR CABLE CLX-ALS									
ALL HELIOSTAT CABLES REPR IN PLACE	N/L	.66 FAIL	.12	.08	.95	0.00	0.00	.07	.00
FAILURE RATE: .000367	N/L	.66 FAIL	.63	.41	.95	0.00	0.00	.39	.00
ASSUMES SHIPMENT IN ECONOMIC QUANTITY									

OTHER

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS ADJ	OVERHEAD	G&A	TOTAL	$/SM
WIRE CLX-16									
ALL WIRE REPR IN PLACE BY STANDARD ELECT	N/L	3.60 FAIL	.12	.42	.95	0.00	0.00	.40	.00
METHODS	N/L	3.60 FAIL	.63	2.25	.95	0.00	0.00	2.14	.00
THE 5 WIRES WITHIN THE PEDESTAL									
PARTS SHIPPED IN FIBRE BD.BOX 6.44/CWT									
ASSUMES SHIPMENT IN ECONOMIC QUANTITY									
CIR BKR/HOLDER T603									
ALL CIRCUIT BKRS SPARED	N/L	5.94 FAIL	.02	.11	.95	0.00	0.00	.11	.00
FAILURE RATE: .0033	N/L	5.94 FAIL	.50	2.97	.95	0.00	0.00	2.83	.00
ASSUMES SHIPMENT IN ECONOMIC QUANTITY									
CAMERA TN2200									
CAMERA R/R, ALL REPAIRED OFF SITE	N/L	.06 FAIL	3.86	.23	.95	0.00	0.00	.22	.00
SHIPPED IN FIBRE BOARD BOX CWT/6.44	N/L	.06 FAIL	5.00	.30	.95	0.00	0.00	.29	.00
COOLER-HEATER T650									
COOLER-HEATER R/R, NEVER REPAIRED.	N/L	.02 FAIL	.19	.00	1.25	0.00	0.00	.00	.00
SHIPPED IN FIBRE BOARD BOX CWT/6.44	N/L	.02 FAIL	5.00	.10	1.25	0.00	0.00	.12	.00
DATA DIST.INT 443202									
DDI CIRCUIT CARDS REPLACED UPON FAILURE	N/L	1.37 FAIL	.13	.18	1.25	0.00	0.00	.22	.00
ALWAYS SPARED: REPLACE DEFECTIVE COM-	N/L	1.37 FAIL	5.00	6.84	1.25	0.00	0.00	8.54	.00
AND BY DETECTION OF SOFTWARE BUGS.									
FAILURE RATE: .017544									
SHIP IN CARDBOARD CONTAINER 6.44/CWT									
	N/L	0.00 FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CNTRL/SIG EQ 4433									
CIRCUIT BOARD R/R UPON FAILURE DETECTED	N/L	127.30 FAIL	.13	16.40	.06	0.00	0.00	1.02	.00
BY MOBILE TEST VAN AND OPERATIONAL IN-	N/L	127.30 FAIL	5.00	636.48	.06	0.00	0.00	39.72	.00
DICATIONS AND SOFTWARE BUGS	N/L	127.30 FAIL	.03	3.28	1.19	0.00	0.00	3.89	.00
BENCH REPR : REPLACEMENT OF DEFECT-	N/L	127.30 FAIL	5.00	636.48	1.19	0.00	0.00	754.61	.00
SHIP IN CARDBRD BX CWT/6.44									
5 PERCENT SPARED									
95 PERCENT REPAIRED OFF SITE									

PROTOTYPE HELIOSTAT OPERATIONS AND MAINTENANCE PILOT PLANT- 2500 UNITS 11.5o.48. DATE 05/27/78

OTHER

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS ADJ	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
	N/L	0.00 FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HELIO SUPP STRUCT 4451									
ALL PEDESTALS REPR IN PLACE USING STAND-	N/L	1.80 FAIL	.55	.98	1.11	0.00	0.00	1.08	.00
AND STRUCTURAL REPAIR PROCESSES	N/L	0.00 FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REPAIR PARTS SHIPPED AT 4.36/CWT									
ASSUMES SHIPMENT IN ECONOMIC QTYS									
WASHING SOLUTION OM231									
MC GEAN CHEM.CO,DOWNY,CA.	N/L	1728.00 FAIL	3.25	5616.00	1.00	0.00	0.00	5616.00	.80
USED IN 5 PERCENT SOLUTION									
DEIONIZED RNSE WAT OM232									
ARROWHEAD WATER	N/L	140400.00 FAIL	.05	6318.00	1.00	0.00	0.00	6318.00	.01
FUEL OM233									
FUEL FOR WASH TRUCKS,PICK-UP TRUCKS,	N/L	3823.20 FAIL	.56	2140.99	1.00	0.00	0.00	2140.99	.14
LUBRICANT OM234									
OIL FOR AZIMUTH DRIVE	N/L	18.00 FAIL	.31	5.63	1.00	0.00	0.00	5.63	.01
SOURCE: DAC, LONG BEACH									
	N/L	0.00 FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	N/L	0.00 FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OTHER 15419. .95

CORRECT

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS ADJ	OVERHEAD	G&A	TOTAL	$/SM
REFLECTIVE SURFACE 4411										
PANELS R/R WITH A MOBILE CRANE AND SLING, DISCARDED UPON FAILURE, ALWAYS SPARED (HOWEVER, MINOR CRACKS COULD BE REPAIRED BY ADHESIVE BOND) WOOD CRATE SHIPPING 9.12/CWT	LBR	35.50	HRS	15.00	532.49	2.21	1.00	1.00	1175.75	.01
	LBR	0.00	HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MIRROR BACK STRUCT 4412										
STRUCT ALWAYS REPR IN PLACE, NEVER REPAIR PARTS SHIPPED IN CARDBOARD BOX CWT/4.36	LBR	5.40	HRS	15.11	81.59	2.21	1.00	1.00	180.16	.00
AZIMUTH 4421										
COMPLETE ASSEMBLY R/R UPON FAILURE	LBR	335.92	HRS	15.00	5038.85	2.21	1.00	1.00	11125.78	.13
BENCH REPR: REPLACE DEFECTIVE GEAR SECTION WITH HEAVY DUTY OIL, PACK GEAR WITH GREASE. FAILURE RATE: .00972 SPARES TRANSPORTED IN COVERED WOODEN SKID.CWT/5.80 5 PERCENT OF FAILURES ARE SPARED	LBR	93.82	HRS	15.11	1417.65	1.30	1.00	1.00	1837.28	.02
JACK SCREW 442201										
JACK ASSEMBLY R/R UPON COMPONENT FAILURE, BENCH REPR: REPLACEMENT OF DE- SPARES STRAPPED TO PALLET CWT/5.80 5 PERCENT OF FAILURES ARE SPARED	LBR	71.28	HRS	15.00	1069.20	2.21	1.00	1.00	2360.79	.03
	LBR	47.39	HRS	15.11	715.99	1.30	1.00	1.00	927.92	.01
JACK SCREW 442202										
SAME AS ABOVE EXCEPT THAT FAILURE RATE IS .000444 BECAUSE THIS JACK SCREW IS	LBR	3.52	HRS	15.00	52.75	2.21	1.00	1.00	116.47	.00
	LBR	.18	HRS	15.11	2.66	1.62	1.00	1.00	4.30	.00
AZIMUTH MOTOR T537										
DRIVE MOTOR ASSEMBLY R/R UPON COMPON- ENT FAILURE, BENCH REPR: REPLACE INCRE- COMPONENTS. FAILURE RATE:.011167 SHIPPED IN CARDBD.BOX CWT/6.44 5 PERCENT OF FAILURES SPARED	LBR	228.26	HRS	15.00	3423.94	2.21	1.00	1.00	7560.05	.03
	LBR	163.04	HRS	15.11	2472.66	1.30	1.00	1.00	3204.57	.01
TRKING MOTOR T540										
SAME AS AZIMUTH MOTOR	LBR	255.87	HRS	15.00	3838.06	2.21	1.00	1.00	8474.44	.03
	LBR	164.13	HRS	15.11	2479.97	1.30	1.00	1.00	3214.04	.01

PROTOTYPE HELIOSTAT OPERATIONS AND MAINTENANCE PILOT PLANT- 2500 UNITS 11.59.53. DATE 05/27/78

CORRECT

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS ADJ	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
STOWAGE MOTOR T543										
SAME AS AZIMUTH MOTOR EXCEPT THAT FAIL-	LBR	12.70	HRS	15.00	190.53	2.21	1.00	1.00	420.70	.00
URE RATE IS .000556 BECAUSE IT IS	LBR	8.15	HRS	15.11	123.11	1.30	1.00	1.00	159.55	.00
FEEDER CABLE CLX										
ALL FIELD POWER DATA CABLES REPR IN	LBR	.03	HRS	15.11	.44	2.50	1.00	1.00	1.11	.00
CLUDING REPLACEMENT OF TERMINALS AND										
CONNECTORS. FAILURE RATE: .0007199										
SHIPPED IN FIBRE BOARD BOX 6.44/CWT										
TRANSFORMER 225T(19)H										
TRANSFORMER R/R FOR INTERNAL ELECT.	LBR	1.18	HRS	15.00	17.73	2.21	1.00	1.00	39.14	.00
FAILURE WITH A FORKLIFT OR MOBILE CRANE	LBR	1.23	HRS	15.11	18.60	1.30	1.00	1.00	24.11	.00
STRAPPING TO PALLET 6.44/CWT										
REPR OFF SITE 25 PERCENT ARE SPARED										
DIST PANEL SQ.D-H-4172-4N										
ALL DIST PANELS REPR IN PLACE	LBR	.95	HRS	15.11	14.31	2.21	1.00	1.00	31.60	.00
BOX 6.44/CWT										
BRANCH CIR BKR SQD NO.FA-34040										
ALL BRANCH CIR BKR SPARED	LBR	.87	HRS	15.00	12.99	2.50	1.00	1.00	32.42	.00
FAILURE RATE: .0033	LBR	.87	HRS	15.11	13.08	2.50	1.00	1.00	32.66	.00
BRANCH CIR CABLE CLX-ALS										
ALL HELIOSTAT CABLES REPR IN PLACE	LBR	2.38	HRS	15.11	35.93	2.50	1.00	1.00	89.69	.00
REPR PARTS SHIPPING: 6.44/CWT										
ASSUMES SHIPMENT IN ECONOMIC QUANTITY										
WIRE CLX-16										
ALL WIRE REPR IN PLACE BY STANDARD ELECT	LBR	12.96	HRS	15.11	195.83	2.50	1.00	1.00	488.78	.01
FAILURE RATE=.002 FOR THE SUMATION OF										
THE 5 WIRES WITHIN THE PEDESTAL										
PARTS SHIPPED IN FIBRE BD.BOX 6.44/CWT										
ASSUMES SHIPMENT IN ECONOMIC QUANTITY										
CIR BKR/HOLDER T663										
ALL CIRCUIT BKRS SPARED	LBR	19.01	HRS	15.00	285.12	2.50	1.00	1.00	711.66	.01
FAILURE RATE: .0033	LBR	19.01	HRS	15.11	287.21	2.50	1.00	1.00	716.88	.01
ASSUMES SHIPMENT IN ECONOMIC QUANTITY										

CORRECT

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS ADJ	OVERHEAD	G&A	TOTAL	$/SM
CAMERA TN2200										
CAMERA R/R, ALL REPAIRED OFF SITE	LBR	.18	HRS	15.00	2.70	2.21	1.00	1.00	5.96	.00
SHIPPED IN FIBRE BOARD BOX CWT/6.44	LBR	.18	HRS	15.11	2.72	1.30	1.00	1.00	3.52	.00
COOLER-HEATER T650										
COOLER-HEATER R/R, NEVER REPAIRED.	LBR	.06	HRS	15.00	.90	2.21	1.00	1.00	1.99	.00
SHIPPED IN FIBRE BOARD BOX CWT/6.44	LBR	.03	HRS	15.11	.45	2.21	1.00	1.00	1.00	.00
DATA DIST.INT 443202										
DDI CIRCUIT CARDS REPLACED UPON FAILURE	LBR	4.38	HRS	15.00	65.68	2.50	1.00	1.00	163.95	.00
ALWAYS SPARED: REPLACE DEFECTIVE COM-	LBR	2.39	HRS	15.11	36.18	2.50	1.00	1.00	90.32	.00
AND BY DETECTION OF SOFTWARE BUGS.										
FAILURE RATE: .017544										
SHIP IN CARDBOARD CONTAINER 6.44/CWT										
	LBR	0.00	HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CNTRL/SIG EQ 4433										
CIRCUIT BOARD R/R UPON FAILURE DETECTED	LBR	330.97	HRS	15.00	4964.54	2.50	1.00	1.00	12391.50	.01
BY MOBILE TEST VAN AND OPERATIONAL IN-	LBR	434.40	HRS	15.11	6563.75	1.46	1.00	1.00	9609.33	.01
BENCH REPR : REPLACEMENT OF DEFECT-										
IVE COMPONENTS FAILURE RATE: .00544										
SHIP IN CARDBRD BX CWT/6.44										
5 PERCENT SPARED										
95 PERCENT REPAIRED OFF SITE										
	LBR	0.00	HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HELIO SUPP STRUCT 4451										
ALL PEDESTALS REPR IN PLACE USING STAND-	LBR	3.60	HRS	15.11	54.40	2.21	1.00	1.00	120.11	.00
FAILURE RATE: .001										
REPAIR PARTS SHIPPED AT 4.36/CWT										
ASSUMES SHIPMENT IN ECONOMIC QTYS										
CORRECTIVE MAINT. OM320										
ALLOCATED ABOVE	LBR	12.00	HRS	15.00	180.00	1.00	1.00	1.00	180.00	.00
VARIES BETWEEN LABOR ON SITE (ON LINE										
OR BENCH REPAIR) AND OFF SITE										
EFFECIENCY FACTOR OF ON LINE IS 2										
EFFECIENCY FACTOR OF BENCH REPR 1.176										

PROTOTYPE HELIOSTAT OPERATIONS AND MAINTENANCE PILOT PLANT- 2500 UNITS 11.59.53. DATE 05/27/78

CORRECT

DESCRIPTION		QTY/HRS/ ANN. FAIL		REF UNIT COST	SUB TOTAL	FACTORS ADJ	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
	LBR	0.00	HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	LBR	0.00	HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00

CORRECT . 65498. .33

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PROTOTYPE HELIOSTAT OPERATIONS AND MAINTENANCE PILOT PLANT- 2500 UNITS 12.02.04. DATE 05/27/78

SCHED

DESCRIPTION		QTY/HRS/ ANN. FAIL	REF UNIT COST	SUB TOTAL	FACTORS ADJ	FACTORS OVERHEAD	FACTORS G&A	TOTAL	$/SM
WASHING LABOR OM311 TRUCK DRIVERS,ONLY,REQUIRED 1 FOR WASH SOLUTION TRUCK 1 FOR DEIONIZED RNSE WATER TRUCK	LBR	518.40 HRS	15.00	7770.00	1.17	1.00	1.00	9097.92	.09
CORROSION CONTRL OM312 INCLUDE: VERIFY THAT GREASE AND OIL SEALS ARE NOT LEAKING	LBR	144.72 HRS	15.00	2170.80	1.17	1.00	1.00	2539.84	.02
	LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	LBR	0.00 HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SCHED 11638. .11

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MCDONNELL DOUGLAS ASTRONAUTICS COMPANY

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