

RI 306775-53-34
RFP-146

FINANCIAL PROPOSAL
VOLUME II

Cassegrain Feeds for NRAO



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FINANCIAL PROPOSAL

VOLUME II

Cassegrain Feeds for NRAO

For
National Radio Astronomy Observation
Edgemont Road
Charlottesville, Virginia 22901

Attention:
J. Marymor

26 July 1972

This data furnished in response to _____^{RFP-146}_____, shall not be disclosed outside the Government or be duplicated, used or disclosed in whole or in part for any purpose other than to evaluate the proposal, provided that if a contract is awarded to this offeror as a result of or in connection with the submission of such data, the Government shall have the right to duplicate, use, or disclose this data to the extent provided in the contract. This restriction does not limit the right of the Government to use information contained in such data if it is obtained from another source.

INTRODUCTION

General

Radiation, a Division of Harris-Intertype Corporation, submits this Fixed-Price proposal to Associated Universities, Inc., National Radio Astronomy Observatory, Edgemont Road, Charlottesville, Virginia 20991 in response to RFP-146.

Scope of Work

This cost proposal is for material and services necessary to develop Cassegrain Feeds. Three Cassegrain primary feeds must be designed and tested to satisfy particularly stringent requirements. One of these operates at L-Band, another at K-Band. The third is a dual frequency feed that must operate simultaneously in the C and Ku-Bands.

Validity Period

This proposal is valid for a period of ninety (90) days beginning 26 July 1972. Upon expiration of the validity period, Radiation reserves the right to modify this proposal or to extend its validity for an additional period of time.

Basis of Estimates

Labor

Labor estimates are based upon Engineering evaluation of the overall degree of technical difficulty in the development, design, fabrication, and assembly of this system. General similarity and previous experience to products developed by Radiation were weighed with regard as to how much of that general knowledge would be applicable to this program.

Material

Material requirements were established on the basis of Design evaluation of this program. The unit cost was established by the Material Department using the basis of estimate as called out by each line item as indicated on the Material Schedules.

Travel

Travel estimates were determined by functional organizations. The proposed rates for travel are furnished by Radiation Travel Office.

Deltas

Included in this proposal are two delta costs for actual size models of two of the feeds. Delta 1 is an actual size model of the Shorthorn (L-Band) feed and Delta 2 is an actual size model of the Longhorn (Ka-Band) feed. These prices can be found on Page 1 of Exhibit I.

Combined Costs

Included also is a combined cost summary for all five items if purchased as a single procurement. These costs may be found on Page 2 of Exhibit I. These costs do not include the prices of the Deltas mentioned directly above.

Cognizant Government Agencies

Resident Auditor

The Defense Contract Audit Agency (DCAA) maintains an audit staff at the Radiation home office facility.

Address:

Radiation Resident Office
Defense Contract Audit Agency
c/o Radiation
P. O. Box 1510
Melbourne, Florida 32901

Defense Contract Administrative Services

Radiation is under the cognizance of the Defense Contract Administrative Services District, Orlando, Florida.

Address:

Defense Supply Agency
Defense Contract Administrative Services District, Orlando
3555 Maguire Blvd.
Orlando, Florida 32803

Attention: Mr. C. W. Emmons, DCRA-DOCC
Administrative Contracting Officer

TASK	MONTHS					
	1	2	3	4	5	
1. DESIGN BASIC HORN	██████████					
2. DESIGN FREQUENCY SENSITIVE PLATE (FSP)	██████████					
3. DESIGN ORTHOGONAL PLZN TRANSDUCER (LINEAR)	██████████					
4. DSGN ORTHOGONAL PLZN TRANSDUCER (CP)	██████████					
5. FABRICATE HORNS FOR DUAL FREQUENCY ANTENNA		██████████				
6. FABRICATE FSP		██████████				
7. TEST HORNS			██████			
8. TEST FSP			██████			
9. DESIGN REVISION AND RETEST				██████████		
10. ASSEMBLE DUAL FREQUENCY FEED				██████████		
11. TEST DUAL FREQUENCY FEED				██████		
12. FABRICATE FEEDS FOR LOW AND HIGH FREQUENCY FEEDS			██████████			
13. FINAL TESTS					██████	
14. PREPARE ENGRG DRAWINGS				██████████		
15. PREPARE REPORTS		██████	██████	██████	██████	
16. WRITE FINAL REPORT					██████████	

86440-23

Program Schedule

COST SUMMARY

COST ELEMENTS		Short Horn Feed Item 1	Long Horn Feed Item 2	Dual Freq. Feed Item 3	Final Report Item 4	Monthly Prog. Report Item 5	Reference	Actual Size Shorthorn Delta 1	Actual Size Longhorn Delta 2	
1. DIRECT MATERIAL ⁴	a. PURCHASED PARTS ⁵	\$ 725	\$ 575	\$ 730			Schedule A			
	b. SUBCONTRACTED ITEMS ⁶									
	c. OTHER MATERIAL	(1) RAW MATERIAL ⁷								
		(2) STANDARD COMMERCIAL ITEMS ⁸								
(3) INTERDIVISIONAL TRANSFERS (at other than cost) ⁹										
2. MATERIAL OVERHEAD ¹⁰										
3. INTERDIVISIONAL TRANSFERS AT COST ¹¹										
4. DIRECT ENGINEERING LABOR ¹²	9,284	10,254	17,461			Schedule B				
5. ENGINEERING OVERHEAD ¹⁰	12,533	13,843	23,572			Schedule B				
6. DIRECT MANUFACTURING LABOR ¹²										
7. MANUFACTURING OVERHEAD ¹⁰										
8. OTHER COSTS ¹³	480	480	480			Schedule C				
9. SUBTOTALS	\$23,022	\$25,152	\$42,243							
10. GENERAL AND ADMINISTRATIVE EXPENSES ¹⁰	2,463	2,691	4,520			Schedule D				
11. ROYALTIES ¹⁴										
12. FEDERAL EXCISE TAX ¹⁵										
13. SUBTOTALS	\$25,485	\$27,843	\$46,763							
14. PROFIT OR FEE	2,549	2,784	4,676							
15. TOTAL PRICE (Amount)	\$28,034	\$30,627	\$51,439	No Cost	No Cost		\$7,646	\$9,458		

COST SUMMARY
All Items Purchased as Single Procurement

Exhibit 1
Sheet 2 of 2

COST ELEMENTS		Items 1, 2, 3, 4 and 5				
1. DIRECT MATERIAL	a. PURCHASED PARTS⁵	\$ 1,930				
	b. SUBCONTRACTED ITEMS⁶					
	c. OTHER MATERIAL					
	(1) RAW MATERIAL⁷					
	(2) STANDARD COMMERCIAL ITEMS⁸					
	(3) INTERDIVISIONAL TRANSFERS (at other than cost)⁹					
	2. MATERIAL OVERHEAD¹⁰					
	3. INTERDIVISIONAL TRANSFERS AT COST¹¹					
	4. DIRECT ENGINEERING LABOR¹²	23,882				
	5. ENGINEERING OVERHEAD¹⁰	32,241				
	6. DIRECT MANUFACTURING LABOR¹²					
	7. MANUFACTURING OVERHEAD¹⁰					
	8. OTHER COSTS¹³	960				
	9. SUBTOTALS	\$59,013				
	10. GENERAL AND ADMINISTRATIVE EXPENSES¹⁰	6,314				
	11. ROYALTIES¹⁴					
	12. FEDERAL EXCISE TAX¹⁵					
	13. SUBTOTALS	\$65,327				
	14. PROFIT OR FEE	6,533				
	15. TOTAL PRICE (Amount)	\$71,860				

DIRECT LABOR AND OVERHEAD

Item No. 1

Item Title Short Horn Feed

Task Description and Manhours

Design Basic Horn

Design Orthogonal Transducer

Fabricate Model

Test Horn

Final Tests

Engineering Drawings

Design Lens

Fabricate Lens

Schedule B

Page 1 of 5

Labor Category	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	Total Hours	Hourly Rates	Cost
Principal Engineer	20	40				30	10	10			
Senior Engineer	60	40	40	70	40	60	40	40			
Engineer											
Senior Technician	80	120		140	80		80	20			
Technician											
Group Leader											
Senior Assembler											
Assembler											
Project Planner											
Project Clerk											
Machinist	80	40	140					80			
Sheet Metal											
Maintenance											
Draftsman											
Design Draftsman						200		20			
Technical Writer											
Documentation Spec.											
Documentation Clerk											
Inspector											
E/M Inspector											
Quality Specialist											
Total Hours	240	240	180	210	120	290	130	170			
									Total Direct Labor		
									Overhead @		
									Total Direct Labor And Overhead		

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DIRECT LABOR AND OVERHEAD

Item No. 1

Item Title Short Horn Feed

Task Description and Manhours

Test Lens

Schedule B

Page 2 of 5

Labor Category	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	Total Hours	Hourly Rates	Cost
Principal Engineer									110	\$9.14	\$ 1,005
Senior Engineer									390	6.88	2,683
Engineer											
Senior Technician	40								560	4.61	2,582
Technician											
Group Leader											
Senior Assembler											
Assembler											
Project Planner											
Project Clerk											
Machinist									340	5.04	1,714
Sheet Metal											
Maintenance											
Draftsman											
Design Draftsman									220	5.91	1,300
Technical Writer											
Documentation Spec.											
Documentation Clerk											
Inspector											
E/M Inspector											
Quality Specialist											
Total Hours	40								1,620		
									Total Direct Labor		\$ 9,284
									Overhead @135%		12,533
									Total Direct Labor And Overhead		\$21,817

DIRECT LABOR AND OVERHEAD

Item No. 2

Item Title Long Horn Feed

Task Description and Manhours

Design Horn

Design Transducer

Fabricate Model

Test Horn

Final Tests

Engineering Drawings

Schedule B

Page 3 of 5

Labor Category	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	Total Hours	Hourly Rates	Cost
Principal Engineer	30	50				30			110	\$9.14	\$ 1,005
Senior Engineer	135	105	80	105	80	115			620	6.88	4,266
Engineer											
Senior Technician	100	140		140	80				460	4.61	2,121
Technician											
Group Leader											
Senior Assembler											
Assembler											
Project Planner											
Project Clerk											
Machinist	80	40	190						310	5.04	1,562
Sheet Metal											
Maintenance											
Draftsman											
Design Draftsman						220			220	5.91	1,300
Technical Writer											
Documentation Spec.											
Documentation Clerk											
Inspector											
E/M Inspector											
Quality Specialist											
Total Hours	345	335	270	245	160	365			1,720		
									Total Direct Labor		\$10,254
									Overhead @ 135%		13,843
									Total Direct Labor And Overhead		\$24,097

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DIRECT LABOR AND OVERHEAD

Item No. 3

Item Title Dual Frequency Feed

Task Description and Manhours

Design Basic Horn

Design FSP

Design Orthogonal Pol.
Transducer (C.P.)

Fabricate Horns & C.P.
Transducer

Fabricate FSP

Test Horns

Test FSP

Assemble Feed

Schedule B

Page 4 of 5

Labor Category	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	Total Hours	Hourly Rates	Cost
Principal Engineer	20	90	40				20				
Senior Engineer	160	160	60	60	60	50	120	50			
Engineer											
Senior Technician	80	160	160			80	120	60			
Technician											
Group Leader											
Senior Assembler											
Assembler											
Project Planner											
Project Clerk											
Machinist	80	120	40	220	120			80			
Sheet Metal											
Maintenance											
Draftsman											
Design Draftsman											
Technical Writer											
Documentation Spec.											
Documentation Clerk											
Inspector											
E/M Inspector											
Quality Specialist											
Total Hours	340	530	300	280	180	130	260	190			
									Total Direct Labor		
									Overhead @		
									Total Direct Labor And Overhead		

DIRECT LABOR AND OVERHEAD

Item No. 3

Item Title Dual Frequency Feed

Task Description and Manhours

Test Feed

Final Tests

Engineering Drawings

Schedule B

Page 5 of 5

Labor Category	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	Total Hours	Hourly Rates	Cost
Principal Engineer			30						200	\$9.14	\$ 1,828
Senior Engineer	140	20	60						940	6.88	6,467
Engineer											
Senior Technician	240	40							940	4.61	4,333
Technician											
Group Leader											
Senior Assembler											
Assembler											
Project Planner											
Project Clerk											
Machinist									660	5.04	3,326
Sheet Metal											
Maintenance											
Draftsman											
Design Draftsman			255						255	5.91	1,507
Technical Writer											
Documentation Spec.											
Documentation Clerk											
Inspector											
E/M Inspector											
Quality Specialist											
Total Hours	380	60	345						2,995		
									Total Direct Labor		\$17,461
									Overhead @135%		23,572
									Total Direct Labor And Overhead		\$41,033

TRAVEL

SCHEDULE C

SHEET 1 OF 3

ITEM 1 TITLE Short Horn Feed

DESCRIPTION		PURPOSE OF TRIP	NO. OF PERS.	NO. OF TRIPS	TOTAL NO. M/T'S	RATE PER TRIP	TOTAL TRANS COST	CAR RENTAL			LIVING EXPENSE			TOTAL TRAVEL & LIVING
								NO. CAR DAYS	RATE PER DAY	AMOUNT	NO. MAN DAYS	RATE PER DAY	AMOUNT	
FROM	TO													
Melbourne, Fla.	Charlottesville, Va.	Customer Liaison	2	1	2	\$172	\$344	2	\$18	\$36	4	\$25	\$100	\$480
		TOTAL TRANSPORTATION					\$344		+	\$36				\$380
		TOTAL SUBSISTENCE										\$100	100	
		TOTAL TRAVEL (TRANSPORTATION + SUBSISTENCE)											\$480	

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TRAVEL

SCHEDULE C
SHEET 2 OF 3

ITEM 2 TITLE Long Horn Feed

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DESCRIPTION		PURPOSE OF TRIP	NO. OF PERS.	NO. OF TRIPS	TOTAL NO. M/T'S	RATE PER TRIP	TOTAL TRANS COST	CAR RENTAL			LIVING EXPENSE			TOTAL TRAVEL & LIVING
								NO. CAR DAYS	RATE PER DAY	AMOUNT	NO. MAN DAYS	RATE PER DAY	AMOUNT	
FROM	TO													
Melbourne, Fla.	Charlottesville, Va.	Customer Liaison	2	1	2	\$172	\$344	2	\$18	\$36	4	\$25	\$100	\$480
		TOTAL TRANSPORTATION						\$344	+	\$36				\$380
		TOTAL SUBSISTENCE											\$100	100
		TOTAL TRAVEL (TRANSPORTATION + SUBSISTENCE)											\$480	

TRAVEL

SCHEDULE C

SHEET 3 OF 3

ITEM 3 TITLE Dual Frequency Feed

DESCRIPTION		PURPOSE OF TRIP	NO. OF PERS.	NO. OF TRIPS	TOTAL NO. M/T'S	RATE PER TRIP	TOTAL TRANS COST	CAR RENTAL			LIVING EXPENSE			TOTAL TRAVEL & LIVING
								NO. CAR DAYS	RATE PER DAY	AMOUNT	NO. MAN DAYS	RATE PER DAY	AMOUNT	
FROM	TO													
Melbourne, Fla.	Charlottesville, Va.	Customer Liaison	2	1	2	\$172	\$344	2	\$18	\$36	4	\$25	\$100	\$480
		TOTAL TRANSPORTATION					\$344		+	\$36				\$380
		TOTAL SUBSISTENCE											\$100	100
		TOTAL TRAVEL (TRANSPORTATION + SUBSISTENCE)												\$480

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Direct Labor Rates

Radiation Division proposal labor rates are determined by taking the actual average direct labor rates by labor category as of 1 August 1972, projecting a 1% increase per quarter to account for normal salary adjustments, and incorporating these various rates into a "Radiation Division Proposal Bid Rates" table. This table is submitted to, reviewed by, and on file with the Resident DCAA Auditor.

Rate table selection is based upon the estimated midpoint of man-hours expended.

Direct Labor Rates

<u>Category of Labor</u>	<u>Bid Rates</u>
Principal Engineer	\$9.14
Senior Engineer	6.88
Senior Technician	4.61
Machinist	5.04
Design Draftsman	5.91

Midpoint of effort: January 1973

Period of performance: October 1972 through March 1973



MEMBER OF HARRIS INTERNATIONAL CORPORATION

Schedule D
Sheet 2 of 4
SYSTEMS DIVISION

P. O. Box 37 • Melbourne, Florida 32901 • Phone (305) 727 4000

18 May 1972

Defense Contract Audit Agency
Radiation Incorporated
P.O. Box 1510
Melbourne, Florida 32901

Attention: Mr. R. L. Hess, Resident Auditor

Subject: Labor Bid Rates

Gentlemen:

Attached are revised labor bid rates, effective 18 May 1972, for:

1. Systems Division (excluding Miami and Riverdale)
2. Miami

Your concurrence that these bid rates represent a reasonable projection of the labor rates for the categories listed for the period indicated is requested.

Sincerely yours,

A handwritten signature in cursive script that reads 'A. F. Parrish'.

A. F. Parrish, Manager
Audit Liaison

AFP/sf

Attachments

CONCUR: A handwritten signature in cursive script that reads 'R. L. Hess'.

R. L. Hess, DCAA

5-22-72
Date

Overhead Burden Rate

Radiation has only one burden pool -- a direct labor burden. This pool consists of accounts used to record salaries and wages, fringe benefits, materials, supplies, equipment, utilities, services and other expense of a general nature which cannot readily be associated with specific contracts or identified with end items of production. The pool is broken down into major accounts which consist of various subaccounts. The details of these subaccounts have been provided to the Resident DCAA Auditor.

The formula for the calculation of the overhead rate is:

$$\frac{\text{Overhead Dollars}}{\text{Direct Labor Dollars}} \times 100 = \text{Overhead Rate \%}$$

The overhead rates proposed for FY72 are submitted to and reviewed by the Resident DCAA Auditor. Rates used for years beyond FY72 are based on the FY72 projection with anticipated reduction until such time that approved financial plans are available which warrant a revised projection. The overhead rates used in this proposal are as follows:

<u>Fiscal Year</u>	<u>Radiation Division</u>
1973	135%

General and Administrative Rate

G & A expenses are accumulated in a separate account pool.

Corporate G & A expenses are accumulated for the Corporation as a whole, and are allocated to the Divisions.

A detailed Chart of Accounts is maintained in the Resident DCAA Office. The rates proposed for FY72 are submitted to and reviewed by the Resident DCAA Auditor. Rates used for years beyond FY72 are the same until such time that approved financial plans are available which warrant a revised projection. The G & A rates used in this proposal are as follows:

<u>Fiscal Year</u>	<u>Radiation Division</u>
1973	10.7%



DEFENSE SUPPLY AGENCY
DEFENSE CONTRACT ADMINISTRATION SERVICES DISTRICT, ORLANDO
3555 MAGUIRE BOULEVARD - ORLANDO, FLORIDA 32803

IN REPLY
REFER TO **DCRA-DOCC**

8 July 1971

SUBJECT: Forward Pricing Rates - Fiscal Year 1972

Radiation, Inc.
ATTN: Mr. J. C. Hunt, Director of Operation Analysis
P. O. Box 37
Melbourne, FL 32901

Gentlemen:

Reference is made to our discussion held on 15 June 1971 and to your letter, subject as above, dated 16 June 1971.

Pending processing of a formal forward pricing agreement the following rates will be recognized for Systems Division (Melbourne Only) for forward pricing and Progress Payment Requests for Fiscal Year 1972 and beyond:

Overhead	135.0%
G&A	10.7%

In arriving at the above rates both parties acknowledge a reduction from prior years experience for bid and proposal and IR&D effort. Acceptance of the above rates is not to be construed as a precedent in, nor relief to the contractor from his responsibilities for, negotiation under public law 91-441. However, unless otherwise terminated, the above rates will apply until negotiations are completed with your company under public law 91-441.

4. The above may be amended or cancelled by written notification of either party.

Sincerely,

A handwritten signature in cursive script, reading "Clark W. Emons".

CLARK W. EMONS
Contracting Officer

Copy furnished:
DCAA/Mr. Hess