JANUARY 1981

NATIONAL RADIO ASTRONOMY OBSERVATORY

NOVEMBER PROGRESS REPORT

VLA PROGRAM

January 12, 1981

NATIONAL RADIO ASTRONOMY OBSERVATORY

MONTHLY PROGRESS REPORT

VLA PROGRAM

NOVEMBER 1980

SYSTEMS INTEGRATION DIVISION

The array was scheduled for 44 percent of the time; 30 percent went to astronomical programs and the remaining 14 percent west to tests. The average downtime for the month was approximately 5.0 percent.

The number of antennas used for astronomical observations reached a maximum of 25. Antenna 6 was returned to operation and antenna 3 removed from observing for overhaul during November. Antennas 2, 3, and 4 are unavailable for observations. The test array consists of 11, 17 and 21.

The longest astronomically useable baseline is approximately 35 km.

ELECTRONICS DIVISION

To improve system availability, off-hour coverage during observing periods to maintain the array was started with the first observing period this month. This off-hour coverage runs from 0830 hours to 2400 hours 7 days a week. To further this off-hour coverage, technical cross training sessions between the various groups has been initiated.

In the Front End Area, the room temperature Fet Amplifiers in Antenna 24 have been replaced with cooled paramp and Gas Fet Amplifier.

In the Monitor and Control Area a design has been started for refurbishing and interfacing a David W. Mann Star Plate Measuring Engine to an LSI/11 mini-computer.

COMPUTER DIVISION

To facilitate the detection of bad data points, the LISTER program has been augmented to allow data to be elected by u and v in three different modes.

The integration of the output from the correlators is now performed in the Array Processor rather than in CORA/CORBIN as part of the standard observing system. This will allow the testing of the next stage of the SORTER/GRIDDER system, in which the data is formed into u-v "boxes" to allow later retrieval by the PDP 11/70 (SORTER).

In an effort to ease the troubles of spectral line data reduction, we have begun the process of adding radial velocity information into the standard database structure.

In order to ease the bookkeeping for the observer who needs to make many maps from one observing run, a unified map naming convertion has been adopted for all maps on the DEC-10 and the PDP 11/70 (MAPPER).

ANTENNA DIVISION

Antenna Moves

None

Transporters

Transporter No. 2, truck rotation problem correction is still underway. Machined parts for the rotation spacer have been received and will be installed during December.

Van Turntable

All fabrication and pre-assembly is complete, and final assembly will commence when a new Van is received.

Focusing Feed Mounts

Parts removed from Antenna No. 5 FFM were badly damaged which required sending parts to Gaddis Company of Albuquerque for remachining.

Major Overhaul

Work is progressing on Antenna No. 5.

SITE AND WYE DIVISION

Waveguide Installation

Installed approximately 1,140 feet of waveguide and completed trenching on East arm. It is expected that all waveguide runs will be completed during December.

Phase V Construction

Overall completion of the total contract is 99.8%. All Track and Fence work are 100% complete, with only reworking Highway 60 road crossing remaining. All materials are on hand and rework is scheduled to commence the first week in December.

ELECTRIC POWER DISTRIBUTION

During a Power Outage after the array was moved to the "A" configuration in October it was found that the two emergency generators would not synchronize to accept the full emergency load. A study of the cause of this failure has been started.

Waveguide Cathodic Protection

Measurements necessary for the design are being taken.

Wavequide Protection Coating

Discussions are continuing with National Pipe Coating Company toward reception of the cost of adding additional sleeves at joints where plastic coating has shifted.

Project Management

New Mexico Gross Receipts Tax - to our knowledge the appeal has not been scheduled for hearing before the Tenth District U.S. Court of Apppeals in Denver.

Personnel

The personnel changes as of November 30, 1980 are as follows:

Division	Budgeted 12/31/80 Level	10/31/80 Level	Additions	Reductions	11/30/80 Level
Site & Wye	10	9	1	0	10
Antenna Division	17	17	0	0	17
Electronics	45	42	0	0	42*
Site Management	6	5	0	0	5
Computer Division	15	16	0	0	16
Operations Div.	12	13	0	0	13
Project Mgmt.	26	24	0	0	24*
TOTAL	131	126	1	0	127

*Does not include one part-time employee.

VLA PROGRAM

MAJOR SUBCONTRACTS AND PURCHASE ORDERS PLACED

NUMBER P.O. SUBCONTRACT	VENDOR	ITEM DESCRIPTION	DATE PLACED	DOLLAR AMOUNT	DELIVERY DATE	CURRENT STATUS - ALL FIRM FIXED PRICE CONTRACTS EXCEPT WHERE NOTED
P.O. S-07990	AIL Division Cutler-Hammer	Parametric Amplifiers	9/21/78	$ 212,800	Complete by 1/21/80	11½ sets received.
P.O. S-08329	Contact Systems, Inc.	Various Wiring Modules	10/31/78 1/19/79	30,486		On schedule. NRAO owes them additional components for assembly.
VLA-345 Amendment	G. C. Dean	Labor Hour (Waveguide Installation)	3/19/79	335,000	Two years completing 2/28/81	
VLA-346	Wm. A. Smith Contracting Co., Inc.	Phase V Construction	4/26/79	2,820,000	Sept., 1980	Complete, final amendment pending.
P.O. S-09849	BWH/CVA Joint Ventures	A/E Service Phase V	5/16/79	39,000	Dec., 1980	Complete, final amendment pending
P.O. S-11638	DEC	Computer Maintenance	2/13/80	90,024	CY '80	Monthly expenditure rate estimated at $7,500
P.O. S-11481	Century Data Systems	Disk Drives	2/15/80	64,078		Completed Nov. 4, 1980.
P.O. S-11478	Digital Equipment Corp.	Computer Systems	2/27/80	74,635	Feb. '81	

NATIONAL RADIO ASTRONOMY OBSERVATORY

VERY LARGE ARRAY

STATUS AS OF NOVEMBER 30, 1980

TOTAL PROGRAM

PROGRAM NUMBER	DESCRIPTION	ALLOCATION	EXPENDED MONTHLY	TOTAL EXPENDED	TRANSFER TO FIXED ASSETS	BALANCE CONSTRUCT. IN PROGRESS	TOTAL COMMITTED	TOTAL EXPENDED & COMMITTED	NET BALANCE
11000	SITE AND WYE	26,667,703	45,630	26,366,633	24,432,379	1,934,254	111,603	26,478,236	189,467
12000	ANTENNA	22,742,286	6,805	22,618,075	22,468,531	149,544	96,789	22,714,864	27,422
13000	ELECTRONICS	17,875,084	40,872	17,492,472	16,734,707	757,765	165,829	17,658,301	216,783
14000	COMPUTER	6,486,066	70,286	4,990,310	4,618,552	371,758	1,250,955	6,241,265	244,801
16000	SYSTEMS INTEGRATION	201,022	---	201,022	201,022	---	---	201,022	---
17000	PROGRAM MANAGEMENT	2,090,732	9,479	1,989,820	1,891,810	98,010	8,306	1,998,126	92,606
18000	COMMON COST	2,089,296	29,333	2,031,475	1,699,307	332,168	11,357	2,042,832	46,464
19000	CONTINGENCY/RESERVE	100,000	---	---	---	---	---	---	100,000
	SUB TOTAL	78,252,189	202,405	75,689,807	72,046,308	3,643,499	1,644,839	77,334,646	917,543
30000	RETIREMENTS	(67,979)	---	(67,979)	(67,979)	---	---	(67,979)	---
	TOTAL PROGRAM	78,184,210	202,405	75,621,828	71,978,329	3,643,499	1,644,839	77,266,667	917,543

Note: Project allocation excludes $325,811 withheld and paid directly to other agencies by the NSF in prior years.
Project allocation includes $4,500,000 for CY-1980 Funding.

NATIONAL RADIO ASTRONOMY OBSERVATORY

VERY LARGE ARRAY

STATUS AS OF NOVEMBER 30, 1980

CY - 80

PROGRAM NUMBER	DESCRIPTION	ALLOCATION	EXPENDED MONTHLY	TOTAL EXPENDED	TRANSFER TO FIXED ASSETS	BALANCE CONSTRUCT. IN PROGRESS	TOTAL COMMITTED	TOTAL EXPENDED & COMMITTED	NET BALANCE
11000	SITE/WYE	2,109,777	45,630	1,808,708	1,766	1,806,942	111,603	1,920,311	189,466
12000	ANTENNA	274,389	6,805	150,184	640	149,544	96,789	246,973	27,416
13000	ELECTRONICS	1,140,464	40,872	757,853	88	757,765	165,829	923,682	216,782
14000	COMPUTER	1,867,513	70,286	371,758	---	371,758	1,250,955	1,622,713	244,800
17000	PROGRAM MANAGEMENT	198,923	9,479	98,010	---	98,010	8,306	106,316	92,607
18000	COMMON COST	389,988	29,333	332,168	---	332,168	11,357	343,525	46,463
19000	CONTINGENCY	100,000	---	---	---	---	---	---	100,000
	TOTAL PROGRAM	6,081,054	202,405	3,518,681	2,494	3,516,187	1,644,839	5,163,520	917,534

Note: Project allocation for CY-80 consists of $4,500,000 in new funding plus $1,581,054 in prior year funds re-allocated in CY-1980,

NATIONAL RADIO ASTRONOMY OBSERVATORY
VLA PROGRAM

FINANCIAL STATUS REPORT
(in thousands)

As of: November 30, 1980

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Item	Program Ceiling	(A) Allocation to Date (C)			Un-Allocated Balance	Outlook (B)			Notes
		Allocated	Expended and Committed	Allocated Balance		Estimate to Complete	Estimate Total	(Over) Under Ceiling	
Site and Wye	27,860	26,961	26,771	190	899	190	26,961	899	
Antennas	20,400	22,742	22,715	27	(2,342)	27	22,742	(2,342)	
Electronics	17,000	17,891	17,674	217	(891)	217	17,891	(891)	
Computer	4,850	6,486	6,241	245	(1,636)	245	6,486	(1,636)	
Systems Integration	400	201	201	-	199	-	201	199	
Program Management	2,650	2,108	2,015	93	542	93	2,108	542	
Common Cost	-	2,089	2,043	46	(2,089)	46	2,089	(2,089)	
Subtotal	73,160	78,478	77,660	818	(5,318)	818	78,478	(5,318)	
Contingency	2,840	100	-	100	2,740	100	100	2,740	
TOTAL	76,000	78,578	77,660	918	(2,578)	918	78,578	(2,578)	

NOTES: (A) Includes $293K for site acquisition, $15.7K for ECAC Study, and $17.1K for NSF Ad Hoc Advisory Panel. Allocated and Expended includes $68K in assets which were retired in prior years.

(B) Estimate to complete is as of October, 1980.

(C) Includes $4,500K in CY-80 Funding.

NOV • 80

At the conclusion of the VLA Dedication Ceremony: Dr. Frank Press, Science Advisor to the President; Govenor Bruce King of New Mexico; Dr. Gerald Tape, President of Associated Universities Inc; and John Lancaster, Manager of VLA Construction Program.

NOV 80

At the conclusion of the VLA Dedication Ceremony: Dr. Morton Roberts, Directory NRAO; Dr. Lewis M. Branscomb, Chairman of the National Science Board; Dr. Frank Press, Science Advisor to the President; Dr. Dr. Francis S. Johnson, Assistant Director, AAEO, NSF; Dr. John B. Slaughter, Director of NSF; and New Mexico Governor Bruce King (back to camera)