NATIONAL RADIO ASTRONOMY OBSERVATORY

LONG RANGE PROGRAM ESTIMATES CY 1980-1984

The Long Range Plan for this period will have three principal elements:

1) Continued operation of the 140-foot and 300-foot telescopes in Green Bank, and the 36-foot telescope at Kitt Peak. In support of these telescopes an active program of receiver development will lead to radiometers with very low system temperatures that cover the range 1-25 GHz, for Green Bank, and improved radiometers, especially at 150 and 230 GHz, for Tucson.

2) Completion of the VLA construction, followed by full operation of the array. The construction phase will be completed by 1981, and the array will from then on be fully operational as a national facility. A program of design and development of other observing equipment will be started, in order to increase the capabilities of the VLA, and to ensure that the VLA electronics can take advantages of new technical advances.

3) The construction and operation of a 25 m telescope for millimeter wavelengths. The detailed design of this telescope which will provide U.S. radio astronomers with a large aperture at very high frequencies, will begin in 1980. The construction can be completed in two to three years, depending on the rate of funding, and the telescope can begin its role as a user facility in 1984.

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NATIONAL RADIO ASTRONOMY OBSERVATORY

Long Range Plan
CY 1981-CY 1984
(in millions of dollars)

	1978	1979	1980	1981	1982	1983	1984
CONTINUING OPERATIONS							
Research Support	1.16	1.19	1.29	1.50	1.74	2.00	2.75
Technical Support and Development	1.98	2.04	2.28	3.14	3.62	3.42	3.70
Green Bank Operations	2.76	2.79	2.91	3.02	3.14	3.27	3.37
Tucson Operations	0.81	0.91	0.97	1.08	1.16	1.24	1.32
VLA Operations	1.23	2.40	3.40	4.50	4.82	5.41	6.06
General & Administration	1.17	1.22	1.30	1.44	1.54	1.68	1.80
Non-Expendable Equipment	1.08	0.75	0.85	1.90	2.00	2.14	2.29
Subtotal	10.19	11.30	13.00	16.58	18.02	19.16	20.79
NEW OPERATIONS							
25-m Millimeter Wave Telescope	-	-	-	-	-	1.20	2.32
FACILITY DEVELOPMENT							
VLA Construction	12.50	12.20	4.70	-	-	-	-
25-m Millimeter Wave Telescope Project	-	-	1.60	8.05	6.40	3.04	-
Subtotal	12.50	12.20	6.30	8.05	6.40	3.04	-
TOTAL NRAO	22.69	23.50	19.30	24.63	24.42	23.40	23.11

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NOTES TO THE TABLE

RESEARCH SUPPORT: The levels shown provide for an increase of approximately 15 scientists by the end of 1984, enabling an acceptable level of staff support of the VLA and the 25 m telescope.

TECHNICAL SUPPORT AND DEVELOPMENT: This group will increase by 7 persons during the planning period. Beginning in 1981, an additional $400 k has been added for computer rental, enabling the replacement of the current IBM 360/65 by a more powerful machine which will be capable of processing the large amounts of data produced by the VLA spectral line system. Emphasis in CY 1981 and CY 1982 will also be placed on the development of high frequency radiometers for use with the new 25 m millimeter wavelength telescope.

GREEN BANK OPERATIONS: The increases shown arise entirely from allowance for inflation.

TUCSON OPERATIONS: The operations of this telescope will require an additional two persons during the planning period.

VLA OPERATIONS: The VLA will become fully operational in 1981, with a staff currently estimated to be approximately 100 persons.

GENERAL AND ADMINISTRATION: The levels shown provide for an increase of 3 persons by 1984.

NON-EXPENDABLE EQUIPMENT: This item will be increased by $1 M in 1981 and subsequent years, to enable the development of new instrumentation for the VLA.

VLA CONSTRUCTION: The construction of the array will be completed in 1981.

THE 25 m TELESCOPE PROJECT: Detailed design of this telescope will begin in 1980. With a three year funding schedule, the telescope will be finished in 1983, and operations money will be required in that year.