

## NRAO EQUIPMENT AND TIME SCHEDULE - 1958-59

85 FOOT TELESCOPE: IN THE PROCESS OF ERECTION NOW, IT IS EXPECTED TO BE TURNED OVER TO NRAO BY THE END OF OCTOBER. AN INTENSIVE TEST AND CALIBRATION PERIOD WILL FOLLOW. IT IS HOPED THAT THE TELESCOPE WILL BE READY FOR NORMAL, FULL TIME OBSERVING BY JANUARY 1.

DESIGN SPECIFICATIONS (AS YET UNPROVEN) ARE:

EQUATORIAL MOUNT:

FOCAL LENGTH: 36 FEET

SKY COVERAGE: 6<sup>H</sup> EAST TO 6<sup>H</sup> WEST HOUR ANGLES AT ALL DECLINATIONS, EXCEPT WHERE LIMITED BY HORIZON, WHERE SKY COVERAGE IS FROM HORIZON TO HORIZON.

SURFACE: SOLID SURFACE; DEVIATIONS FROM PARABOLOID LESS THAN  $\pm 1/8$  INCH.

POINTING ACCURACY: BETTER THAN TWO MINUTES OF ARC.

SLEW RATES: 20°/MIN. ABOUT EITHER AXIS.

SCAN RATES: .05°/MIN. TO 5°/MIN., ABOUT EITHER AXIS, CONTINUOUSLY VARIABLE; RATE ACCURACY  $\pm 0.1\%$  OF TOP SPEED.

TRACK RATES: SIDEREAL AND SOLAR RATES, SYNCHRONOUS MOTOR DRIVE.

AS AN AID TO PLANNING PROGRAMS, RESULTS OF THE PERFORMANCE TESTS WILL BE SENT, AS SOON AS THEY ARE AVAILABLE, TO EVERYONE INTERESTED.

RECEIVERS: TWO RECEIVERS WILL BE AVAILABLE IMMEDIATELY:

A) TWT RECEIVER - NOISE COMPENSATED DICKE SYSTEM (EWEN-KNIGHT COMPANY)

FREQUENCY: 8000 MC) OTHER FREQUENCIES IN RANGE  
BANDWIDTH: 1000 MC) 7.3-10.3 KMC AND OTHER BAND-  
WIDTHS AVAILABLE BY ARRANGE-  
MENT.

TIME CONSTANTS: 1, 2, 5, 10, 20, 40, 80, 160, 320, 640 SEC.

NOISE FIGURE: 10 DB MAX.

ZERO STABILITY: PROBABLY BETTER THAN 0.1°K/HR.

B) L-BAND RECEIVER - D.C. COMPARISON OR TOTAL POWER (AIL)

FREQUENCY RANGE: 1170 MC - 1430 MC.  
IF FREQUENCY: 33 MC.  
IF BANDWIDTH: 6 MC.  
COMPARISON BANDWIDTH: 1 MC.  
SIGNAL BANDWIDTHS: 30 KC; 200 KC, 1 MC  
TIME CONSTANTS: 1, 5, 20, 60, 180 SEC.  
TOTAL POWER GAIN STABILITY: 0.1% OVER SEVERAL  
HOURS.  
NO PROVISION (AS YET) FOR FREQUENCY SCANNING.

THE ABOVE SPECIFICATIONS, FOR BOTH RECEIVERS, ARE DESIGN SPECIFICATIONS. BOTH RECEIVERS ARE COMPLETED, BUT HAVE NOT YET BEEN FULLY TESTED. PRELIMINARY TESTS INDICATE THAT BOTH RECEIVERS WILL MEET OR EXCEED THE ABOVE SPECIFICATIONS.

- C) A NARROW BANDWIDTH, FREQUENCY SCANNING H-LINE RECEIVER WILL BE OBTAINED AS QUICKLY AS IS FEASIBLE. IT WILL NOT BE AVAILABLE BEFORE NEXT SPRING HOWEVER.

FEEDS: CONCENTRIC 21-CM AND 3-CM HORN FEEDS, ALREADY AVAILABLE, (JASIK LAB.) WILL BE USED INITIALLY WITH THE 85-FOOT. THE L-BAND HORN HAS VSWR <1.35:1 FROM 1170 MC TO 1450 MC. THE X-BAND HORN HAS VSWR <1.2:1 FROM 7.4 KMC TO 10.3 KMC. SIMULTANEOUS X-BAND AND L-BAND OBSERVATIONS ARE POSSIBLE WITH THESE FEEDS. ADDITIONAL FEEDS MAY BE OBTAINED AS NEEDS ARISE.

DIGITAL OUTPUT SYSTEM: A DIGITAL OUTPUT SYSTEM, WHICH HAS BEEN NAMED DAPTIS, IS BEING BUILT FOR NRAO (CONTROL EQUIPMENT CORP.). THE SYSTEM WILL PRINT OUT ON AN ELECTRIC TYPEWRITER THE INSTANTANEOUS HOUR ANGLE, DECLINATION, AND SIDEREAL TIME, ON COMMAND OR AUTOMATICALLY AT REGULAR INTERVALS. THE SYSTEM USES FARRAND 12" INDUCTOSYNS, AND WILL GIVE POLAR AND DECLINATION SHAFT POSITIONS WITH AN ACCURACY OF A FEW SECONDS OF ARC. ADDITIONAL CIRCUITRY, TO ALLOW THE PRINTING OF FREQUENCY AND RECEIVER OUTPUT, IS BEING DEVELOPED. THE WHOLE SYSTEM SHOULD BE READY BEFORE JANUARY 1.

12-FOOT ANTENNA: A 12-FOOT PARABOLOID, GOOD TO 3-CM WAVELENGTHS, WILL BE READY SHORTLY. IT IS ON AN ALT-AZIMUTH MOUNT. THIS DISH WILL BE USED PRIMARILY FOR EXPERIMENTS ON ANTENNA

FEEDS, FEED SUPPORTS, PATTERNS, SPILLOVER, ETC., BUT COULD BE AVAILABLE FOR OTHER WORK IF THERE IS ANY NEED FOR IT.

CORNER REFLECTOR INTERFEROMETER: THIS CONSISTS OF TWO NON-STEERABLE CORNER REFLECTORS, DESIGNED FOR SOLAR SYSTEM OBSERVATIONS, WITH CHARACTERISTICS:

ANTENNA DIMENSIONS: 35' x 35' x 50'

BASELINE: 2000 FT.

GAIN: APPROXIMATELY 10 DB PER ANTENNA

FREQ. RANGE OF BASIC REFLECTOR: 15-50 MC. (WITH EXTENSION TO 100 MC. IF DESIRED)

ANTENNA BEAM DECLINATION: 0°

BEAM WIDTH: 46°

MISCELLANEOUS: THE OBSERVATORY HAS A GOOD SUPPLY OF TEST EQUIPMENT, AS WELL AS POWER SUPPLIES, RECORDERS, ETC., FOR THE USE OF VISITORS WHO MAY BRING ALL OR PART OF THEIR OWN EQUIPMENT. EVERY EFFORT WILL BE MADE TO ACCOMMODATE VISITORS NEEDS FOR ADDITIONAL EQUIPMENT. BECAUSE OF LIMITATIONS IN BOTH TIME AND MONEY, PLANS SHOULD BE MADE AS FAR IN ADVANCE AS IS POSSIBLE.

REQUESTS FOR ADDITIONAL INFORMATION, OBSERVING TIME ON THE TELESCOPES, ETC., SHOULD BE ADDRESSED TO:

D. S. HEESCHEN  
NATIONAL RADIO ASTRONOMY OBSERVATORY  
P. O. Box 2  
GREEN BANK, WEST VIRGINIA

AS AN ITEM PERHAPS OF INTEREST: CONSTRUCTION OF THE 140-FOOT HAS NOW BEGUN. IT IS HOPED THAT IT WILL BE COMPLETED BY EARLY 1960.