NRAO NEWSLETTER

1988 July 1 No. 36

VLBA

SELECTED ITEMS

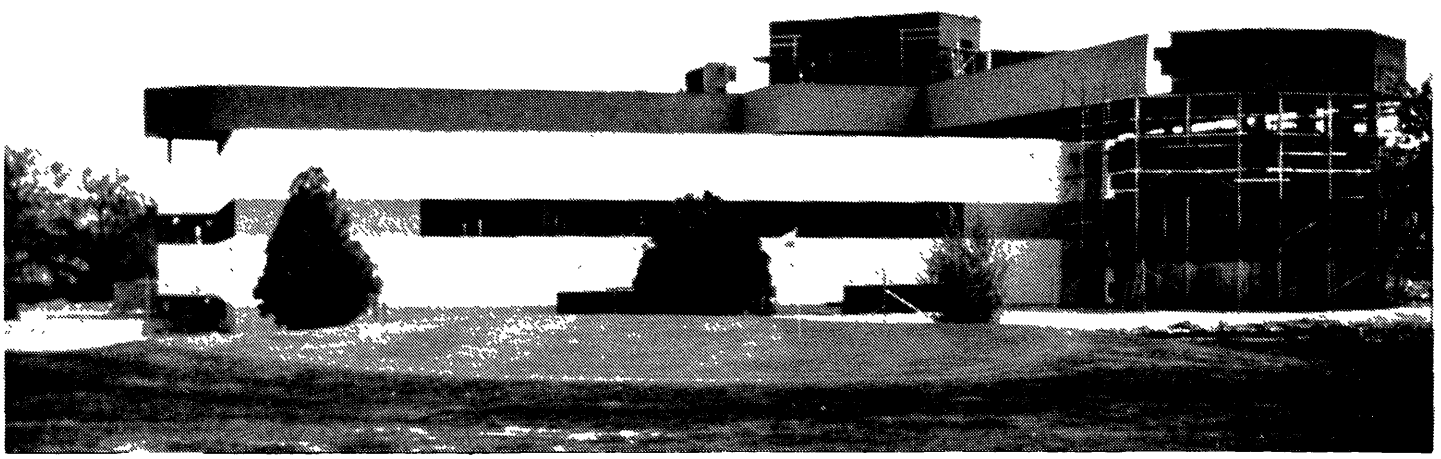
The first Pie Town (VLBA recorder) VLA (MK III) fringes were obtained on 1 June on the Haystack correlator. The recordings were made 17 May observing 3C 84 at 4.8 GHz. The first VLBA subreflector, and its focus/rotation mount, were installed at Pie Town in mid April, allowing observations with seven receivers covering the 1.5, 2.3, 4.8, 8.4, 10.7, 15, and 23 GHz bands.

Preliminary single dish observations have been made at Pie Town at nine frequency bands between 327 MHz and 23 GHz. The system temperatures and efficiencies are in rough agreement with expected values. More careful evaluation is scheduled for the coming months, including the obtaining of holographic images of the antenna surfaces.

The Kitt Peak station should receive its subreflector, focus/rotation mount, remaining initial front ends and feeds, and data recording system in early fall. Cryogenic and electronic outfitting are underway at Los Alamos. At Fort Davis, antenna erection is almost complete. Antenna erection is underway at North Liberty. The Brewster site is ready for the antenna contractor's erection crew. Antenna foundation and control building construction proceeds at Owens Valley. Pre-construction activities continue for the St. Croix, Mauna Kea, and Hancock, NH sites.

Shown in the photograph is the almost completed Array Operations Center, located on the campus of the New Mexico Institute of Mining and Technology in Socorro, NM. Occupancy is expected in late fall. This structure provides approximately 60,000 square feet of research, computer, electronics, auditorium and office space for visiting and staff scientists using the VLA and VLBA, and most of the operating, design, and construction staff for both arrays. Space is provided for processing the data and images from both arrays. The AOC building will also contain the VLBA Array Control Center; the VLBA Correlator and associated playback drives; VLBA station tape control and shipping; and station electronics maintenance facilities.

KEN STETTEN



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Green Bank

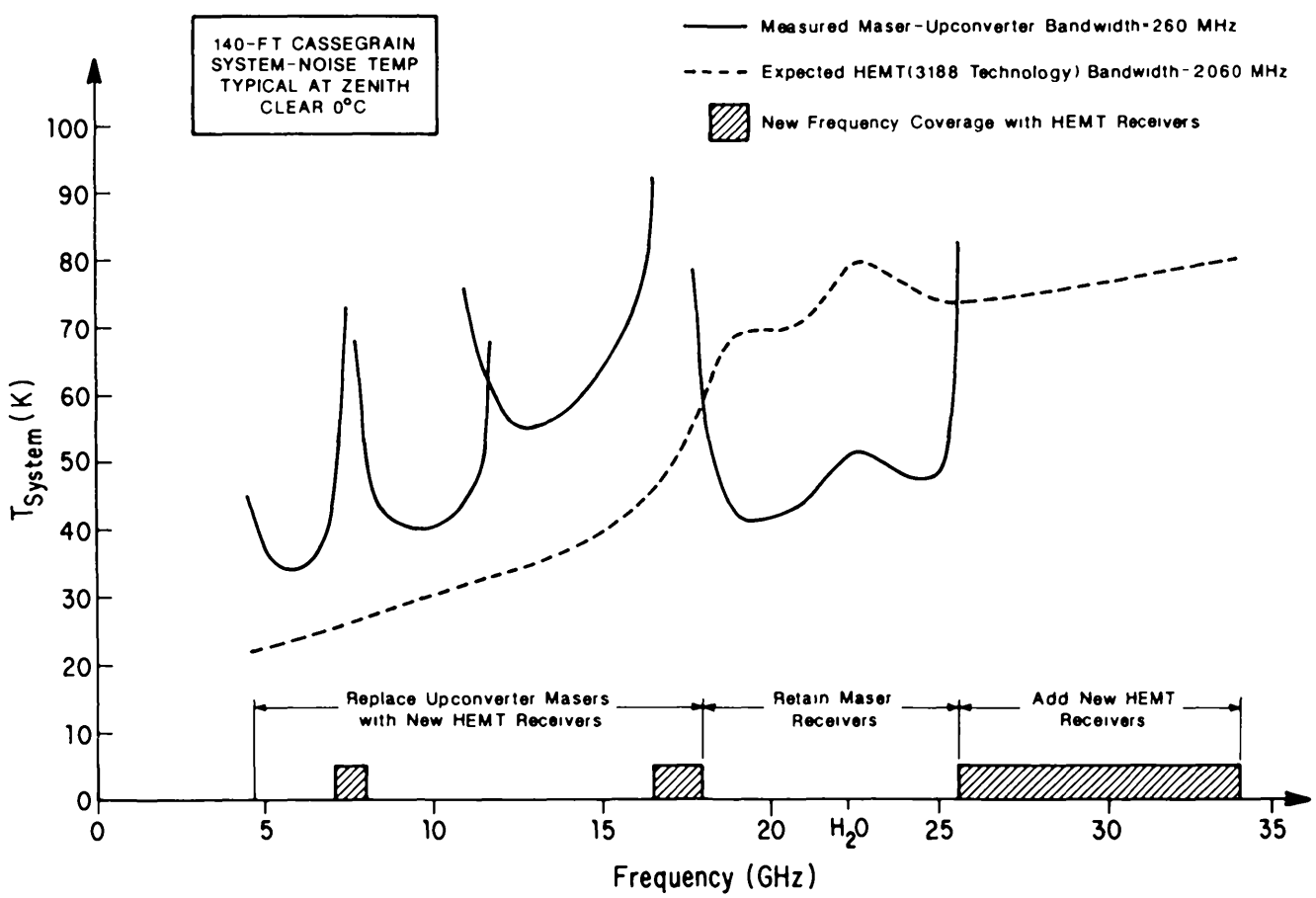
CASSEGRAIN RECEIVERS FOR THE 140-FT TELESCOPE

Gravitational deformations of the 140-ft telescope reflecting surface have been largely compensated with a dynamic controlled shaping and positioning of the Cassegrain subreflector. Together with a more accurately adjusted surface, the result is a substantial improvement in high frequency performance over a wide range of pointing directions Extrapolations indicate an increase in the high frequency limit of the telescope from 25 GHz to about 34 GHz. A test receiver is now under construction to better determine this frequency.

Recent advances in transistor technology and circuit development show that amplifiers using cooled HEMT's (high electron mobility transistors) can be successfully used to at least 60 GHz. We intend to build new Cassegrain receivers using these devices for the 25 to 34 GHz range and to incorporate, in the same receivers, additional HEMT amplifiers to replace the currently used 5 to 16 GHz upconverters. We expect more uniform gain and noise *vs* frequency using transistor amplifiers as well as better stability and reliability. The 18 and 25 GHz maser receivers will not be altered and will continue to be used where maser performance is superior. Noise performance *vs* frequency is shown below.

Two independent systems will be built to receive orthogonal polarizations. We also retain the ability to simultaneously receive any combination of frequencies in the beam splitter range of 7 to 34 GHz.

CHARLES J. BROCKWAY



SPECTRAL PROCESSOR CONSTRUCTION STATUS

Hardware integration for half of the spectral processor is scheduled to begin about September 30. All of the boards, except the accumulator, have been constructed and tested at full clock rate. The accumulator will be finished by September. Communication interfaces between the MassComp and the rack controller and the rack controller and the hardware need to be completed before plugging everything into the racks for the start of system debugging.

Because of tight budgets we had planned to put only half of the hardware on line at the telescope before purchasing the remainder of the hardware. We now have enough money to buy all of the parts this year, but the plan of bringing up half of the system for telescope use still looks like a good idea since we can debug all of the boards as a system before committing to wire wrapping the second set of boards. Half of the system will have 1024 channels with a bandwidth of 40 MHz. Eight IF's can be handled by half of the system, but we may not have all of the IF drawers constructed for the first observations. First tests at the telescope will be in early 1989, and the second half of the system should be ready six months later. About four to six weeks will be required for addition of the new hardware, with the spectral processor out of service.

We have not, yet, been able to meet the 40 dB sideband rejection specs on the single-sideband, baseband convertors. The present versions are better than 30 dB over most of the passband and in no case worse than 25 dB. This is quite adequate for accurate spectra, but it will not give as much interference rejection as we would ultimately like. The current design still has room for improvement, but rather than delay construction of the IF drawers we will incorporate the present convertors and come back to them for improvements next year. Everything else in the IF drawers has been prototyped and looks good.

Software for the MassComp and the rack controller (an AT&T 6300) is progressing reasonably well. By far the largest portion of the software has to deal with converting user commands into bits set on the hardware board. The spectral processor will be controllable from either the telescope control computer or the spectral processor MassComp keyboard. In routine observations the telescope control computer will issue setup commands in the same way that the telescope position is currently controlled. MassComp keyboard command entry will permit stand-alone operation for diagnostics and experimentation when the telescope control computer is otherwise occupied. A limited hybrid control will allow a few parameters to be controlled at the spectral processor while the basic observing sequence comes from the telescope control computer. This hybrid mode will provide for some interactive adjustment of pulsar parameters to align data windows with pulse phase or to improve pulse tracking or dedispersion. We plan to concentrate on getting the basic observing configurations operating conveniently before adding the more complex interactive features. A lot of observer feedback will be required to guide the software development, so we anticipate continued software work through all of next year.

Comments are always welcome. If you would like to participate in the first few months of shakedown on the telescope with a regular observing program, please let George Seielstad know. We will probably start with basic spectral line observations and work into the more complex accumulation modes.

J. R. FISHER

MULTIBEAM CONTINUUM RECEIVERS

Green Bank now supports two multibeam continuum receivers (the 11 cm, 3-feed and the 21 cm, 4-feed receivers). Each of these uses uncooled FET amplifiers that were purchased a few years ago. By replacing these amplifiers with current technology HEMT amplifiers we would reduce the system temperatures by probably a factor of two (currently 100 and 130 K for the 11 cm and 21 cm receivers, respectively).

I would welcome comments from interested parties as to whether this effort would be worthwhile for current or possible future use of these receivers.

ROGER D. NORROD

9-CM RECEIVER

The 9-cm receiver is the only receiver at Green Bank still containing parametric amplifiers. Several years ago GaAs FET amplifiers were constructed for replacing the paramps, but because of manpower shortages and higher priorities, they were never installed. I would like some user feedback as to whether retrofitting the receiver is still worthwhile.

The frequency range covered by this receiver is also covered by the 2-5 GHz receiver, with half the system noise. However, the 9-cm receiver incorporates cooled ferrite switches that allow beam or load switching for continuum observations.

Users who would like to see this receiver retained and retrofitted should contact me during the next couple of months. If we do not get a response from users, we will remove this receiver from the active list so that we can concentrate our limited resources on other equipment.

ROGER D. NORROD

EDUCATION PROGRAMS AT NRAO GREEN BANK

In May, the staff of NRAO-Green Bank hosted 26 college teachers for a 2½ day "Short Course" on radio astronomy. The sponsoring organization was the Chautauqua Program, under whose auspices teachers at primarily teaching institutions can be introduced to frontier research. Colleges represented spanned the eastern half of the continent from Florida to the Canadian border.

The busy half-week included engineering demonstrations and lectures, science lectures, use of a 40-ft transit telescope, a thorough site tour, video presentations, and informal discussions between NRAO staff and program participants. One of the best features of the program is the way teachers with particular interests make contact with staff members having the appropriate skill.

The program was rated extremely successful by the participants, and NRAO-Green Bank has been asked to repeat it next year.

Also in May, two undergraduate students from Bates College spent several weeks in Green Bank with their advisor, Prof. Eric Wolman. Eric had been a half-year visitor in Green Bank during a sabbatical leave, and had learned his way around the site. Hence he was able to introduce the students to the use of the Little Big Horn and the 40-ft telescope. The specific project was to measure the absolute flux density of Cassiopeia A. The last published measurement, by John Findlay, is now several years old; the source appears to have declined since then.

The potential for more educational programs of this type, or of a different but related slant, is very high. Please contact the Site Director if you have a program that could take advantage of Green Bank's unique resources.

We now have the good fortune of having an Education Officer, Dr. David Westpfahl, who joined us in June from the Dominion Astrophysical Observatory. Dave's first task will be to help organize the two sessions for high school science teachers that we are conducting in July and August 1988. But he looks forward to expanding our role in this vitally necessary function of science education.

G. A. SEIELSTAD

FOOD FOR THE SOUL

One of NRAO-Green Bank's more literate telescope users has pointed out to me the curious selection of books in the Residence Hall Lounge. I confess that it is certainly an eclectic collection.

This same literateur set the example for solving the problem: he donated several books of his own to the collection. Residents will now find a few books younger than 50 years.

Please do your colleagues a favor. Donate that book you bought at the airport and read on the way to Green Bank. Then the next time the television screen is pure snow, and it is both too late to walk to the beaver dam but too early to go to bed, you will thank your considerate colleagues for their donations. Please note, however, that they would like the opportunity to thank you.

GEORGE A. SEIELSTAD

SOCIETY OF AMATEUR RADIO ASTRONOMERS

The Society of Amateur Radio Astronomers (SARA met in Green Bank for their fourth consecutive year June 13-15. They toured the Observatory in depth, heard several talks by NRAO technical and scientific personnel, and conducted their own business meetings.

The enthusiasm of the members of this Society is contagious. Green Bank has assumed the proportions of their Mecca. Those of us fortunate to earn a living by practicing radio astronomy (albeit a modest one) should be inspired by these people whose sole reward is sheer fun.

A special presentation was made by President Jeffrey M. Lichtman on behalf of SARA to Becky Warner and Richard Fleming for their extraordinary logistical assistance over the years.

G. A. SEIELSTAD

12-Meter

AVAILABILITY OF THE 230 GHz, 8-FEED SYSTEM AND HYBRID SPECTROMETER

We anticipate the 230 GHz, 8-feed system and the matching hybrid spectrometer will be available for observers at the 12-m telescope in the quarter beginning January 1989. Proposals to use the system then, either in spectral line or continuum mode, should be received by the normal October 1st deadline. As a brief reminder, the hybrid spectrometer has a total of 1536 channels, which can be split betweem 1, 2, 4, or 8 receivers. For the 8-feed system, each receiver will then have 192 spectral channels, with a maximum bandwidth on each receiver of 300 MHz. For a dual-channel receiver, the full 600 MHz bandwidth is available. The 8 feeds of the 230 GHz system are arranged in a 4 by 2 array, with a spacing of approximately 85 arc sec; the array will be able to track parallactic angle.

D. T. EMERSON, J. M. PAYNE, P. R. JEWELL

NEW ANALYSIS ROUTINES FOR SPECTRAL LINE MAPPING

A new mapping facility geared toward spectral line position versus position maps has been added to the analysis program, LINE. Using a simple command, MSAVE, the observer first writes his processed mapping scans to a special data file. He can then use the command GRID to build a two-dimensional rectangular grid of data points. The observer can control the construction of the grid with a number of input parameters, including the map center, the map border, and the X and Y cell sizes. The observer has several choices of what quantity to map: integrated line intensity, line amplitude, a single channel amplitude, or the RMS of the scan. The scans to go into the map can be selected by scan number range or by source name. The command MAP will contour the data and label the axes. This new facility supercedes the old technique of building artificial spectral scans containing the data from mapping rows.

E. B. STOBIE

1988 SUMMER SHUTDOWN AGENDA

The annual summer shutdown at the 12-m telescope will begin on July 11 and will extend until mid-September. Here are some of the projects on the agenda for the summer.

Holography. Summer shutdown will begin with a four-day holography session. Our goal during this session is to obtain a high resolution map showing small scale surface deviations as well as the large scale deformations that are responsible for astigmatism. The data will be analyzed by Charles Mayer and John Davis of the University of Texas who will produce the next generation error-correcting subreflector. As reported in the last Newsletter, the first generation correcting subreflector produced a dramatic improvement in antenna efficiency at 345 GHz. We expect the next subreflector to be even better.

Hybrid Spectrometer Preparations. The major project for the summer is preparation for the installation of the Hybrid Spectrometer, which is planned for early October. The spectrometer must be interfaced to both the control computer, which coordinates data taking, and to the analysis computer, which will record the data. The spectral line analysis program (LINE) must be modified to accept the large data arrays of the hybrid spectrometer (1536 channels).

Telescope Pointing Improvements. A number of projects are underway to improve the pointing accuracy of the telescope and thereby improve high frequency observing performance. These projects include the installation of feed leg insulation and air circulation blowers, a laser measurement system to monitor the displacement of the prime focus relative to the dish vertex, on-line weather instrumentation to aid in refraction computation, and an improved system for measuring the temperature of numerous critical points on the dish. In addition, an optical pointing telescope under development for some time will be completed.

Several other projects will be undertaken, including the replacement of the service platforms on the telescope, the installation of a central calibrating hot load, and the improvement and expansion of observer work areas at the telescope.

P. R. JEWELL

A REMINDER ABOUT 12-M PROPOSAL DEADLINES

About two years ago, we changed the 12-m scheduling system from four periods to three periods per year, and at the same time changed the proposal deadlines. This was widely advertised at the time, but some confusion over the deadlines still exists. This is probably the result of the information on outdated proposal cover sheets that are still in circulation. Our present proposal deadlines are listed below and a current cover sheet is attached to this Newsletter.

12-m Proposal Deadlines

Deadline	Scheduling Period
January 1	April 1 to mid-July
July 1	mid-September to December 31
October 1	January 1 to March 31

P. R. JEWELL

National Radio Astronomy Observatory
12-Meter Telescope/Arizona Operations
Observing Application
Cover Sheet

NRAO USE ONLY

Received:

SEND TO: Director, NRAO, Edgemont Road, Charlottesville, VA. 22903-2475
DEADLINES: 1st of Jan, July, Oct for the Spring, Fall, and Winter Periods, respectively.

1 Date:

2 Title of Proposal:

3 Authors	Institution	Who Will Observe?	Grad Student?	Observations for PhD Thesis?	Anticipated PhD Year

4 Contact Author for Scheduling

Name/Address

5 Telephones:

Office:

Home:

6 Scientific Category: ☐ atmospheric, ☐ planetary, ☐ solar, ☐ stellar, ☐ galactic, ☐ extragalactic

7 Mode: ☐ spectra, ☐ continuum, ☐ other (specify):

8 Receiver:

9 Ancillary Equipment:

10 Filters: ☐ Expander, ☐ 30-kHz, ☐ 100-kHz, ☐ 250-kHz, ☐ 500-kHz Units ☐☐ (1 2) 1-MHz Units ☐☐ (1 2) 2-MHz

11 Frequencies (include test lines):

12 Special Software? (describe on separate sheet)

13 Special Hardware? (describe on separate sheet)

14 Sessions/Days Requested:

15 LST Range:

16 Possible conflict with Sun? (time of year to avoid)

17 Abstract (do not write outside this space):

Please attach a summary (of less than 1000 words) which contains the following information:

1) Scientific justification; 2) Observing strategy; 3) **Source list with coordinates**

After your proposal is scheduled, the contents of this cover sheet become public information (supporting documents are for referees only).

For Internal Use Only:

REVISED 11/86

VLA

VLA CONFIGURATION SCHEDULE

I. Schedule of Reconfiguration Dates

From	To	Starting Date	Completion Date
C/D	D	June 27, 1988	July 1, 1988
D	A	October 3, 1988	October 28, 1988
A	A/B	February 6, 1989	February 17, 1989
A/B	B	March 6, 1989	March 10, 1989

II. Summary 1988/89

		Antenna Available*			
Period	Configuration	327 MHz	8.4 GHz	23 GHz	Proposed Deadline
1988 Q3	D	21	23	18	March 15, 1988
1988 O,N,D,J	D->A,A	23	26	21	June 15, 1988
1989 F,M,A,M	A/B,B,B/C	27	27	24	October 15, 1988
1989 J,J,A,S	C,C/D	27	27	27	February 15, 1989
1989 O,N,D	D	27	27	27	June 15, 1989
1990 J,F,M,A	D->A,A	27	27	27	October 15, 1989

* All 27 antennas are available at 1.4, 5, and 15 GHz. At 23 GHz the number given is the number of antennas with new receivers, approximately three times more sensitive than current ones.

Maximum antenna separation for the four VLA configurations are: A-36 km, B-11 km, C-3 km, D-1 km. Further information is summarized in the "VLA Observational Status Report" available from Alison Patrick, NRAO, P. O. Box O, Socorro, NM 87801, Telephone (505) 772-4240.

III. Approximate Long-Term Schedule

	Q1	Q2	Q3	Q4
1988	B	C	D	A
1989	A+#	B	C*	D
1990	D	A	B	C
1991	C	D	A	B

All antennas equipped for 327 MHz operation.
+ All antennas equipped for 8.4 GHz operation.
* Voyager-Neptune encounter August 24, 1989. Modified C array to minimize shadowing. All antennas equipped for 23 GHz operation.

W. M. GOSS

USER SUPPORT

During the NRAO Users meeting in Tucson some concern was voiced about the quality of the user support at the VLA now and after the move to the Array Operations Center (AOC). We would like to stress once more that the VLA staff will continue to provide user assistance. For this purpose there is an on-duty scientist on site between 8:30 a.m. and 12:00 p.m. seven days a week. Furthermore, any user who needs more assistance for his/her observation, calibration, or reduction can indicate this on his/her observing request sheet: Item 16, Help Required: non (no help needed, experienced observer); consultation (some help); friend (extensive help, e.g., for first-time observer) or staff collaborator.

Similar provisions will be made both in Socorro and at the site this fall when operations has moved to the AOC. Disruptions during and immediately following the move to Socorro will be unavoidable, however.

W. M. GOSS

OUTSTANDING ACCOUNTS

During the past year the number of outstanding, unpaid bills from visiting observers at the VLA has increased. We ask that these be settled as soon as possible. The potential loss of funds to the VLA is a serious concern. Reminder letters were sent in April, and only about 30 percent of those users replied. The bills refer to VLA accommodations, meals, tapes, and telephone calls.

There is an additional problem concerning non-US users. In several cases the amount received is substantially less than the outstanding account. The local bank charges NRAO a service charge for checks issued on a foreign bank.

In the future users on our "black list" will not be permitted to charge further items at the VLA until all outstanding bills are paid. Non-US users will be required to settle their accounts before departure from the VLA with either cash or travellers checks. No tapes will be sent if outstanding accounts remain.

For US users the following procedure will be applied if outstanding accounts exist: The travel reimbursement will be reduced by the outstanding amount or the travel reimbursement will not be paid unless the account is settled.

The Fiscal office in Socorro will ask the user which of these procedures he/she prefers.

W. M. GOSS

SCHEDULING REMINDER

The VLA Scheduling Committee has now adopted the configuration-based scheduling policy that was announced in the 1 January issue of the Newsletter. Proposal due dates now fall at four month intervals, on the 15th of February, June, and October of each year. Proposals submitted before any of the above deadlines will be reviewed during the following two or three months in order to become eligible for the next available configuration. The schedule of deadlines and configurations will continue to be published quarterly in the NRAO Newsletter and in the AAS Newsletter.

Please use the new VLA Observing Application form (or any copies thereof) that is inserted as a page of this Newsletter. The new form incorporates a number of improvements that will help clarify your observing request to the NRAO.

R. J. HAVLEN

VLA OBSERVING APPLICATION

A

rcvd:

DEADLINES: 15th of Feb., June, Oct. for next configuration following review
INSTRUCTIONS: Each numbered item must have an entry or N/A
SEND TO: Director NRAO Edgemont Rd. Charlottesville, VA 22903-2475

(1) Date Prepared:

(2) Title of Proposal:

(3) Authors	Institution	Who will come to VLA ?	For Grad Students Only: Observations for PhD Thesis?	For Grad Students Only: Anticipated PhD Year

(4) Related previous VLA proposal number:

(5) Contact author for scheduling:

Address:

(6) Telephone:

TWX:

E Mail:

(7) Scientific category: ☐planetary, ☐solar, ☐stellar, ☐galactic, ☐extragalactic

(8) Configuration(s)(one per column) (A, B, C, D, A/B, B/C, C/D, Any)					
(9) Wavelength(s) (90, 20, 18, 6, 3.5, 2, 1.3 cm)					
(10) Time requested (hours or days)					

(11) Type of observation: ☐mapping, ☐point source, ☐monitoring, ☐continuum, ☐lin poln, ☐circ poln,
(Check all that apply) ☐spectroscopy, ☐multichannel continuum, ☐solar, ☐VLBI, ☐phased array,
☐pulsar, ☐other _____

(12) ABSTRACT (Do not write outside this space. Please type.):

NRAO use only

(13) Observing style: ☐ Will be present ☐ Will prepare files & come to reduce ☐ Will prepare files & calibrate by modem ☐ Request NRAO to prepare files; will come to reduce ☐ Request NRAO to prepare files & calibrate

(14) Reduction: Number of maps_____ Number of channels_____ Maximum size of maps_____(pixels) Self cal maps_____

(15) Off-site reduction: ☐ none, ☐ post map, ☐ post calibration, ☐ everything.

(16) Help required: ☐ none, ☐ consultation, ☐ friend(extensive help), ☐ staff collaborator.

(17) Spectroscopy only:

	line 1	line 2	line 3		line 1	line 2	line 3
transitions to be observed	_____	_____	_____	number of channels (N)	_____	_____	_____
channel bandwidth (KHz)(Δ)	_____	_____	_____	number of antennas	_____	_____	_____
observing frequency (±NΔ/2)	_____	_____	_____	rms noise (natural weighting) after 1 hour (mJy)	_____	_____	_____

(18) Number of sources_____ (If more than 10 sources please attach list. If more than 30 give only selection criteria and LST range(s).)

(19) Name	Epoch 1950☐ 2000☐ RA hh mm	Dec ±xx°.x	Config.	Band (cm)	Band width (MHz)	Total Flux line (Jy)	Total Flux cont. (Jy)	Largest ang. size	Weakest signal (mJy/beam)	Required dynamic range	Possible LST range hh - hh	Time requested

(20) Special hardware, software, or operating reqirements:

(21) Preferred range of dates for scheduling:

(22) Dates which are not acceptable:

(23) Please attach a self-contained Scientific Justification not in excess of 1000 words. (Preprints or reprints are not refereed)

When your proposal is scheduled, the contents of this cover sheet become public information. (Any supporting pages are for refereeing only)

VLA ARCHIVE PROGRAM

A new version (May 27, 1988) of the VLA archive program is available. Some bugs in both the installation procedure and the program have been fixed. For those who wish to access what VLA observations have been made with integration time shorter and longer than 60 minutes, there is now a five diskette version which requires five megabytes of hard disk space. The normal hard disk version (observations with integration times of 60 minutes or more) requires about 2.6 megabytes of disk space. Send your requests to A. Patrick.

R. C. BIGNELL

In General

SPECTRAL LINE DATA REDUCTION ON THE PC

Development of a single-dish, spectral-line data reduction analysis package for the IBM PC has recently been completed. The programs included are fully powered, flexible tools for performing the many tasks necessary to extract astronomical information from emission- and absorption-line data. If there is sufficient demand, the NRAO will, starting in the fall, support general distribution of this software and implement an export capability at its telescopes. The requirements and abilities of this package are summarized below.

In the meantime, beta-testers are needed to help refine the software and its documentation. If you are more than casually interested in this effort, have some familiarity with the PC/MS-DOS operating system, and have access to a suitable computer, I would appreciate hearing from you. Beta-testers will be sent a copy of the manual and runtime code in the expectation that detailed comments on both will be forthcoming. Clearly, this is reasonable and worthwhile only if the testers may process their own spectra. To this end, we will endeavor to convert pre-existing databases for anyone supplying either NRAO datatapes, non-NRAO datatapes accompanied by a sample tape-reading program, or other accessible formats.

If interested, please call H. Liszt at (804) 296-0344 or through BITNET:HLISZT@NRAO.

Hardware Supported/Required

Required

IBM/Clone PC running under PC/MS-Dos 2.x or 3.x;
Hard disk + 1-2 floppy drives;
≥ 512 K memory;
80x87 math co-processor;
Graphics board - CGA, Hercules, AT&T, EGA, MCGA, or VGA.

Highly Desirable: Microsoft-compatible mouse;
Epson-compatible 9-pin dot-matrix printer.

Used if Present: UM-standard Expanded Memory

Software Capabilities

Ancillary Routines: Sorting, logging, listing, tidying, archiving databases. Output in FITS or REFLEX formats.

Main Program: Scans with ≤ 1024 channels;
Unlimited input database size;
Performs smoothing, baselining, re-gridding of spectra, etc.;
Fits gaussian, parabolic, and sinusoidal components;
Assembles/contours position-velocity, position-position maps;
Assembles/slices datacubes;
Driven by menus/mouse selection if desired;
All input prompted if desired;
Macro capabilities;
Undo of previous operations;
Batch and interactive processing modes;
Flexible I/O;
Toggle to DOS;
No memorization required for operation;
User-configured screen, color scheme, keyboard.

H. S. LISZT

AIPS CONVEX PROCESSING IN CHARLOTTESVILLE

The Charlottesville Convex now has 3.8 million blocks of disk space for AIPS data, and visitors may reserve one disk (with 760,000 blocks) for their exclusive use. Also, there are no formal limits to the amount of AIPS1 time a user may reserve, so very large data reduction problems can be handled in Charlottesville. Visitors desiring large amounts of disk space or large blocks of time should call Jim Condon (804) 296-0332 at least two weeks in advance. Travel for data reduction in Charlottesville is reimbursed according to the standard NRAO formula for observing trips.

J. J. CONDON

FOREIGN TELESCOPE TRAVEL DOLLARS

The NSF-funded program to provide US-based astronomers with air fare support to observe on unique foreign telescopes has been very successful. Major new foreign facilities such as the JCMT 15-m, the IRAM 30-m, and the SEST 15-m telescopes have become available for visitor use during 1987/88, and many US-based astronomers, either singly or in collaboration, have obtained observing time.

The good news is that travel funds have been provided to over 20 observers during the first half of 1988 alone. The bad news is that the 1988 allocation of funds falls far short of the current level of demand, i.e., no more 1988 foreign telescope observing travel can be supported.

Nevertheless, the NRAO is actively seeking additional resources to augment these travel funds in order to meet the expected demand in 1989 and beyond. It is essential that you continue to inform us of your need for these funds despite our temporary inability to fund additional 1988 trips. Please continue to notify the NRAO when you receive foreign telescope observing time and would be eligible for air fare support under this program.

There is hardly a more efficient use of research funds than travel to access large telescopes in an era when not every institution nor even every country can afford the capital investment for telescope construction. The NRAO will continue to provide (and hopefully fund) international, unique, large telescope access programs.

R. J. HAVLEN

THE BANE OF TELEFAX

The NRAO will not send out for review any proposal that is submitted as a telefax copy. Very few of these high tech messages ever get through the phone lines without transmission errors, and it is discourteous, even unfair, to our referees to ask them to review illegible material in spite of its alleged importance.

The only useful purpose served by telefaxed proposals is that it alerts us to your intention of sumitting a bona fide version as soon as possible.

For your own peace of mind and to avoid later embarrassment, please submit your telescope proposals in hard copy before the deadline.

R. J. HAVLEN

USERS COMMITTEE NEWS

The May 23/24 meeting of the NRAO Users Committee in Tucson found the members with more than the usual amount of concern for the NRAO funding situation which has seen four successive years of declining budgets. In spite of the sense of frustration generated by the fiscal climate, however, the meeting provided the traditional forum for both calm discussion and lively debate on the operational activities and priorities of the various Observatory facilities. Listed below, as excerpted from the committee report by the chairman, Tom Bania, are several of the issues and recommendations that highlighted the day and a half meeting:

Green Bank - The Committee encouraged an acceleration of work on the spectral processor and also strongly endorsed activities on the array feed receiver and the 140-ft control system. A master plan for Green Bank software development is needed that, under conditions of limited resources, would emphasize systems to enhance on-site capabilities for the export of data rather than on-site analysis of data.

Central Development Lab - The Committee endorsed NRAO's effort to press ahead with SIS receiver development in pursuit of receiver temperatures less than 100 K for frequencies up to 360 GHz. The HEMT retrofit program at the VLA is commendable.

12-m - The Committee saw array receiver development as the key to the future of the telescope. SIS receiver development should be preferentially implemented at the most important bands (115, 230, and 345 GHz) rather than diluting resources to provide continuous frequency coverage. Continuum projects need faster chopping rates to better eliminate gain fluctuations. Staff priority should be given to regularly scheduled pointing calibrations.

VLA - There was general concern that the failure of the elevation bearing on antenna 17 may be a problem that eventually reappears on other antennas. Continued user access to DEC-10 backup tapes was favored. The pending move to the AOC in Socorro raised concern about continued effective user support at the site and about visitor housing arrangements in Socorro. The Users enthusiastically endorsed the test of a VLBA L-band receiver on the VLA and the potential of halved system temperatures with an L-band HEMT upgrade.

AIPS - Two new programmers to be added to the AIPS group will maintain progress in code development and ensure coordination between the East and West AIPS groups. AIPS enhancements and modifications for single-dish analysis have made good progress.

VLBA - Planning for the operating cost of VLBA was of concern to the Committee. The NRAO is urged to operate VLBA antennas as they come on line as part of the VLBA network.

MMA - Following up the preliminary design report and the results of a science workshop, the Committee recommends that the NRAO create several technical advisory committees, hold an additional science workshop, and move to improve community awareness of the project.

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