NRAO NEWSLETTER

1983 June 1 No. 12

VLA

VLA CONFIGURATIONS 1983 - 1984

Quarter	Configuration	Proposal Deadline
1983 Q3	D, D/A, A	April 15, 1983
1983 Q4	A, A/B, B	July 15, 1983
1984 Q1	B, B/C ?	October 15, 1983
1984 Q2	B/C, C	January 15, 1984
1984 Q3	C, C/D, D	April 15, 1984

R. D. Ekers

VLA CONFIGURATION DEMANDS

The length of time spent in each VLA configuration is determined by our proposal pressure. There has been a significant trend in the popularity of the different configurations as is indicated in the table which gives the number of proposals and time requested for each configuration for 1981 and 1982. The increased use of the smaller configurations results from the increase in spectral-line work and the appreciation of the importance of brightness sensitivity. Hybrid requests are mainly for the longer north arm for southern objects. The requests for "any" configuration are mainly point source detection, monitoring and absorption experiments. D array is often excluded from "any" because of confusion.

	1981		1982	
Configuration	Hours	Proposals	Hours	Proposals
A (30 km)	2446	144	1517	87
B (9 km)	1787	97	1553	101
C (3 km)	2041	121	2247	125
D (1 km)	609	30	1949	94
Hybrid	134	10	506	19
Any	2324	97	1063	45

R. D. Ekers

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THE VLA SPECTRAL LINE SYSTEM

1. Documentation

Since February the Short Guide has been much expanded. It is suggested that it be used in conjunction with the Observer's Reference Manual. Edition 5.0 was issued on February 9, 1983, edition 5.2 on March 23, 1983. Among other things it now documents MIC files for running the programs SPECTR and EXPVIS on ranges of channels.

A new edition is planned for June 1983.

2. Recent Changes

With the MODCOMP update of May 10, 1983, the number of allowable antennae has been further increased, as listed in the following table:

Number of Spectral Channels	Maximum Number of Antennae
8	All
16	All
32	25
64	18
128	13
256	9

During the same update on-line Hanning smoothing was installed.

New card formats have been defined for the observe files. The old LO and LI cards are split up into LO, FI, and DS cards. This is in preparation for the implementation of on-line Doppler tracking and truly multiple IF modes. The old card formats are still supported. The change will become apparent to the user when the final version of the present program OBSERV goes into the SYS: area on the DEC-10; this will be accompanied by the new edition of the Short Guide.

3. Future Changes

Over the summer we hope to implement on-line application of the system temperature correction for spectral line observations.

Arnold Rots

327 MHz SYSTEM

Three antennas are now outfitted with 327 MHz prototype receivers. Testing has revealed the presence of considerable antenna-generated interference, arising chiefly from electronics located in the B rack. Strong radiation occurs at all multiples of 12.5, 5.0 and 1 MHz, with less strong, but still serious, radiation at most multiples of 100 kHz. Efforts to minimize the effects of this interference are now underway.

Rick Perley

VISITOR CENTER

The Visitor Center at the VLA was dedicated on April 16, 1983, and officially opened to the public. On hand for the ceremony were former Governor Bruce King, AUI President R. E. Hughes, NRAO Director M. S. Roberts, several of the AUI Trustees, representatives of the state and federal governments, plus many of the NRAO staff members who contributed to the development of the Visitor Center.

Visitors to the VLA can now activate a 12-minute slide-show about radio astronomy and the VLA. Nine fixed displays in the exhibit area of the building give more details about astronomy, the history of radio astronomy, how the VLA works, and results from the VLA. Visitors can also take a walking tour which leads them close to an antenna, the antenna assembly building, and along the balcony of the control building.

The Visitor Center is going to be a tremendous asset to NRAO in educating the public about what it is we do out here. I would like to thank all of the many people who contributed time and effort to make this possible.

Dick Sramek

VLA PROPOSAL INFLUX

As an exercise in the sociology of astronomers, we thought we'd show you how the number of VLA proposals that we receive varies as a function of time reckoned with respect to deadline dates. The performance between the deadlines January 15, 1983 and April 15, 1983, is typical:

Time Interval			No. of Proposals Received
January 15, 1983*	-	March 11, 1983	0
March 11, 1983	-	March 18, 1983	6
March 18, 1983	-	March 25, 1983	6
March 25, 1983	-	April 1, 1983	7
April 1, 1983	-	April 8, 1983	14
April 8, 1983	-	April 15, 1983*	91
April 15, 1983*	-	April 22, 1983	15

*deadline date

The point we wish to make should be clear. Are you part of the herd? Or: Wait until NRAO selects you to be a referee!

R. J. Havlen and the Editor

VLA TAPE LIBRARY CHANGES

Because of a critical storage space problem in the VLA tape vault, we have recently made several changes to the VLA tape library. First, we have created a new tape series--the "A" series marked with yellow labels--to contain only on-line (ModComp) observation and monitor data. Old "V" series tapes containing on-line data have been renumbered in the new "A" series and the "V" numbers have been re-cycled. The tapes themselves have not been copied, nor have the old observing logs been changed, so users seeking old data will have to consult a tape cross-reference list to obtain the new number for their old tape. This means that "A" series tapes, and only "A" series tapes, contain on-line data, and that "A" series tapes must not be used for other purposes.

Second, we have added another tape storage unit; in fact, it is the old computer/visitor center trailer which has been moved to the back of the control building and refurbished. All old tapes--those accessed very infrequently--will be stored in the trailer which will be kept locked. Users requiring access to tapes stored in the trailer should contact the computer operations group to arrange for retrieval of their tapes. We expect to be able to keep about the latest six months of on-line tapes in the control building tape vault; the rest will be archived in the trailer.

Don Retallack

Green Bank

Q-BAND (43 GHz) MASER

In February 1983, Gerry McCulloch arrived from CSIRO Radiophysics Lab in Sydney, Australia, to spend three months with us. He brought with him the Q-band maser which Craig Moore had built some 18 months previously during his visit to Australia. The visit was to enable Gerry, with Craig's help and guidance, to do the final trimming and tuning to the amplifier.

The result is an amplifier which has been tested between 42.2 GHz and 43.4 GHz. It has a gain of between 20 and 33 dB, an instantaneous bandwidth of 30 to 100 MHz, and a typical maser plus standard gain horn noise figure of 28 K. When it returns home, the amplifier will be integrated into a radiometer to be used on the Parkes 64-meter reflector. During this work, the electronics division received a Hughes solid state pump source for Q-band masers having a tuning range in excess of 2 GHz at 88 GHz, with a typical output power of 150 mW.

Gerry McCulloch

GREEN BANK TELESCOPE BACKLOG

As of May 1, 1983, the lag time between proposal and scheduling on the Green Bank telescopes was running about seven months for the 140-foot and about nine months for the 300-foot. Attempts to schedule the telescopes in the most efficient manner make the delay time vary a great deal. The winter months are in great demand at both telescopes because of less interference at low frequencies and favorable atmospheric conditions. The proposal pressure is greatest for the 0.3-1 GHz and 21-cm line systems on the 300-foot and the highest frequency systems on the 140-foot.

Martha Haynes

GREEN BANK OBSERVING APPLICATION COVER SHEET

In an attempt to streamline both the technical review and the statistical bookkeeping, we have devised a cover sheet which should be used in the future when proposals are submitted for use of the 140-foot or 300-foot telescopes. A copy of this cover sheet is included with the Newsletter. You may Xerox the master for repeated usage.

The cover sheet explains the additional information required in the proposal. Please note that, as is the case for VLA proposals, the cover sheet is made public once the observations are scheduled. This cover sheet is obviously designed for proposals for the 140-foot and 300-foot telescopes only.

Martha Haynes

JANSKY WORKSHOP ON SERENDIPITOUS DISCOVERIES IN RADIO ASTRONOMY

About 100 people, including 27 members of Karl Jansky's family, gathered in Green Bank from May 4-6 to celebrate the 50th anniversary of Jansky's announcement of his detection of cosmic radio waves. A highlight of the meeting was a slide presentation by Karl Jansky's son, David, outlining the life and career of his father, followed by Al Beck, a retired Bell Labs engineer, colleague and friend of Karl Jansky, who also related their early experiences together. Beck was originally responsible for the design of the horn reflector antenna later used by Penzias and Wilson in the second well-known Bell Labs serendipitous discovery.

Other talks were given by many of the people involved in the early development of radio astronomy or who participated in the major discoveries in our science. In addition, Ron Ekers, Martin Harwit, Bernie Burke, Harry van der Laan, John Broderick, Hanbury-Brown, Geoff Burbidge, and Sir Bernard Lovell debated the methodology of scientific research, particularly as applied to radio astronomy. Predictably, there was no consensus on how to make great discoveries, but a recurring theme in discussing the major discoveries in radio astronomy was that it took "the right person, in the right place, doing the right thing at the right time." Several speakers also noted that it sometimes helped "not to know too much."

As part of the Jansky anniversary celebration, on May 7 and 8 a group of NRAO "hams" used the Jansky antenna in the 21 MHz amateur band to communicate with about 250 other amateur radio stations throughout the world. On May 14 and 15 this same group used the 140-foot antenna to bounce 430 MHz radio signals off the moon and two-way communication was established with about 150 different stations in all continents. This latter program was coordinated by Tom Clark and the Radio Amateur Satellite Corporation. Both of these activities took place under the licensed radio call sign "K8HUH" and generated great interest in radio astronomy throughout the amateur radio community.

The Proceedings of the Jansky Workshop will be published as part of the "Green Bank Workshop" series.

R. Ekers
K. Kellermann

CHAUTAUQUA SHORT COURSE ON THE "RADIO UNIVERSE"

On May 10-12, Green Bank hosted a NSF Chautauqua Program short course for college teachers on "The Radio Universe." The NSF Chautauqua short courses are offered in a variety of disciplines during each academic year and are intended to enable undergraduate teachers in the sciences to keep their teaching up-to-date by arranging for a small group of teachers to meet intensively for several days with scientists involved in ongoing research. The three-day course was arranged in Green Bank at the suggestion of the NSF.

The college teachers came from twenty-eight colleges and universities from across the U.S. The course included lectures by Rick Fisher, Chuck Brockway, Ken Kellermann, Martha Haynes, Bob Brown, Marc Damashek, Harry Payne and Sebastian von Hoerner on a variety of topics covering radio astronomy techniques and the radio view of the universe. To take advantage of the unique location of this course at a telescope site, ample time was scheduled for an in-depth tour of the telescopes led by Fred Crews and Jim Coe, a visit to the electronics lab hosted by Rich Lacasse, and demonstrations of the procedures for pulsar, spectral line and continuum observing at the telescopes. Rick Fisher gave a special lecture on the construction of small radio telescopes, especially for student instruction and use.

A fortuitous unscheduled activity took the group outside on three exceptionally clear nights for observations of comet IRAS-Araki-Alcock.

It was a pleasure for us to be able to host this course, and we hope that it will serve to increase the coverage of radio astronomy in the courses offered by these teachers at their home institutions.

Martha Haynes

In General

COMET IRAS-ARAKI-ALCOCK

No sooner had the last NRAO Newsletter been issued containing a paragraph communicating the NRAO's willingness to respond to targets-of-opportunity than an opportunity presented itself in the form of a comet which would pass closer to the earth than all but one comet in recorded history. Although no results have yet become available, the NRAO telescopes responded to the challenge. Millimeter and centimeter line and continuum observations of the rapidly moving object were attempted with the 12-meter, the 140-foot and the VLA telescopes. At the 12-meter searches for CO, HCN and CS were made with the $\lambda 3$ mm heterodyne receiver and for continuum at $\lambda 1.2$ mm with the ^{3}He bolometer. $\lambda 6$ cm lines of OH were searched at the 140-foot. Continuum at $\lambda 2$ cm was searched at the VLA. These investigations were all conducted between May 4 and May 14, which includes closest Earth approach. As far as is presently known to us, all searches yielded negative results.

R. J. Havlen and the Editor

NRAO USE ONLY

Received:

GREEN BANK
OBSERVING APPLICATION
COVER SHEET

SEND TO: Director NRAO Edgemont Road, Charlottesville, Va. 22901

(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:

Address:

(5) Telephone: or TWX:

(6) Telescope (check one): ☐ 140' ☐ 300'

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

(8) Mode: ☐ line, ☐ continuum, ☐ pulsar, ☐ VLBI, ☐ other (specify):

(9) Receiver: (please consult Front End Box Status Sheet):

(10) Frequency (or range of frequencies) (include test lines):

(11) Sessions/Days Requested:

(12) LST Range:

(13) Abstract (do not write outside this space):

Please attach a summary not to exceed 1000 words which contains the following information:

1) Scientific justification;
2) Observing strategy;
3) Special needs or requirements (hardware and software);
4) Source list with coordinates. In cases where such list exceeds 50 sources, a precise definition of the observational sample may be substituted.

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

INTERNATIONAL HALLEY WATCH: TRIAL RUN

In Newsletter No. 7 we announced that the NRAO will participate in radio astronomical observations of Comet Halley during the 1986 apparition. In order that all observing plans be fully developed and that no unanticipated hitches arise during the observations at the time of encounter, the IHW has decided to have a "trial run" on Comet Crommelin during two periods in February and March of 1984. Proposals are welcomed from investigators who wish to make use of the NRAO facilities during either or both trial periods.

R. J. Havlen

INTERNATIONAL CAMPAIGN TO OBSERVE VARIABLE STARS

The NRAO has recently been notified of a coordinated international effort to observe RS CVn and flare stars simultaneously in the ultraviolet (IUE), optical and radio bands during the periods of October 3-7, 1983, and March 26-30, 1984. Further information about the goals and logistics of the campaign can be obtained by contacting: Marcello Rodono, Institute of Astronomy, University of Catania, Viale A. Doria 6, 95125 Catania, Italy: Telex No. 970359 ASTRCT I. Investigators who wish to participate in this campaign using NRAO facilities should clearly indicate their desire on proposals submitted prior to July 15. Priority during the above time intervals will be granted to meritorious proposals.

R. J. Havlen

NEWLY APPOINTED NRAO POSTDOCS

During the next few months the following scientists will be joining the NRAO staff as Research Associates:

J. Thomas Armstrong	Massachusetts Institute of Technology	Molecular line studies of molecular clouds.
Chris Kotanyi	Groningen University and ESO	Normal and radio galaxies.
Hubert M. Martin	Cambridge University	Dynamics of galactic molecular clouds.
Christopher P. O'Dea	University of Massachusetts	Clusters of galaxies, radio jets, quasars, and active galactic nuclei.

R. J. Havlen

BIBLIOGRAPHY ON THE HISTORY OF RADIO ASTRONOMY

In connection with the Jansky Workshop, the Librarian has prepared a bibliography on the history of radio astronomy, consisting of a short introduction, followed by two arrangements of the same information; the first part being a chronological list of some 325 or so journal articles and books and the second part being the same data arranged alphabetically by first author, with SEE references to secondary authors. Copies of the bibliography are available on request from the Charlottesville library.

Sarah Stevens-Rayburn

YES, WE CARE

In answer to a frequently asked question, yes, the librarian does care about getting preprints of papers going into publications that do not require page charges. All preprints are listed in the biweekly RAPsheets and all published papers (except abstracts) are listed in the annual bibliography of staff and visitor publications. If you haven't alerted us to the existence of a paper by sending a preprint or three, we have a good excuse for leaving it out of the bibliography. In answer to the second most frequently asked question, yes, we do want the NRAO byline to appear in every paper, whether there are page charges or not. If NRAO telescopes were used or you were an NRAO employee, then NRAO support went into the creation of the paper and we want to be acknowledged.

Sarah Stevens-Rayburn

1983 VISITING COMMITTEE MEETING

The annual meeting of the NRAO Visiting Committee took place in Charlottesville March 23, 24, and 25. The Committee will report the results of their deliberations on all aspects of the NRAO operation to the AUI Board of Trustees in June. This year's chairman is Joe Taylor (Princeton). Other members are Ann Boesgaard (Hawaii), Paul Vanden Bout (Texas), Irwin Shapiro (Harvard), Antony Hewish (Cambridge), Paul Richards (UC Berkeley), Ernest Seaquist (Toronto), and Peter Strittmatter (Arizona).

R. J. Havlen and the Editor

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