NRAO NEWSLETTER

1987 October 1 No. 33

VLBA

SELECTED VLBA ITEMS

"First light" was observed with the Pie Town antenna in September, using a prime focus feed at 327 and 610 MHz, observing Virgo A. The effort at Pie Town is now shifting from "outfitting" to being a test-bed for the extensive task of site/system level hardware and software debugging. A few current examples are signal path noise cleanup; debugging of the station control (Motorola VME) computer's software, including its interfaces with the new VLBA data recorders and the MicroVAX array control computer. A near term next goal for Pie Town is participation in the 327 MHz NUG run on November 18. Use of the antenna at frequencies of 1.5, 2.3, 4.8, 8.0, 10.7, 15, and 23 GHz awaits installation of the subreflector, which is currently scheduled for January.

Solutions to some significant design problems with the sub-reflector focus rotation mounts are still being pursued, with some of the changes being made at the VLA to FRM No. 2. After further tests, such as for low temperature operation, it is scheduled for installation at Pie Town in January. Implementing all desired changes in succeeding mounts, however, will likely involve some delay in full operation for the Kitt Peak site.

At the Kitt Peak site, antenna erection is almost complete. Outfitting with electronics and cryogenics by NRAO staff is scheduled to start in November. Site and building are complete at Los Alamos and antenna erection is approximately one-third complete. Construction activity continues at the Fort Davis, TX, North Liberty, IA, and Brewster, WA sites. A site in Hawaii has now been chosen and negotiations for its acquisition are underway.

Hydrogen masers No. 1 and No. 2 from Sigma Tau Standards, Inc., were received at the VLA in September. Initial tests indicate satisfactory oscillation, but stability of one of the frequency multipliers is still under study. One of two future masers will also undergo tests at JPL's new test facility shortly.

The first of the new Data Recorders and Formatters has been completed, and is scheduled to be shipped by Haystack OBservatory in early October to the VLA for further testing and integration with the station control computer. These recorders will have, among other features, significantly enhanced unattended recording time over those currently used for VLBI, while maintaining compatibility with them.

Ken Stetten

12-Meter

HOLOGRAPHIC AND MECHANICAL MAPS

We have completed both holographic and mechanical maps of the 12-meter surface this summer. The mechanical maps, performed with the help of John Findlay, showed that the dish has not changed significantly in over two years. A preliminary analysis of the holographic maps suggests that the dish efficiency might be improved through either surface resetting or subreflector shaping. Anthony Lasenby (Cambridge University) is assisting us in the detailed analysis of the holographic data. We have tentatively scheduled a surface resetting for early November. We will make a final decision on our course of action within the next few weeks.

D. T. Emerson and P. R. Jewell

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SUMMER SHUTDOWN REPORT

The annual 12-meter summer shutdown was concluded on September 23, and scheduled observations have resumed. Nearly all items on our shutdown agenda (see the last Newsletter) were successfully completed, including:

1. The New Computer Room. Both the control and analysis computers and the synthesizers were moved into this room. The move creates much needed rack space in the control room, reduces annoying fan noise there, and leaves us in a position to expand and modify the telescope computer systems. In addition to the control room, observers have new work stations in a small room adjacent to the control room and in a separate room east of the new computer room.

2. Replacement of Control Computers. The old PDP 11/40 control computer was replaced by a PDP 11/44. The 11/44 runs the same control system as the 11/40, but observers will notice considerably faster operation for certain tasks such as program loading. In addition, the staff has improved the protocol of the data link between the control and analysis computers in an effort to make the system more robust.

D. T. Emerson and P. R. Jewell

PREVIEW OF COMING ATTRACTIONS

The 12-meter staff has several major development projects in progress. Although we expect many of these projects to be completed in prototype form sometime this observing season, please do not request the equipment or techniques in observing proposals until we formally announce them through the Newsletter or other mailings.

1. Eight beam 230-GHz Receiver. This receiver is nearly finished and has been tested on the telescope in a four-beam prototype form. The receiver is configured as a 2 x 4 array and is equipped with a beam rotator to track parallactic angle. We also plan software to regrid the data for parallactic angle rotation.

2. Optics Modifications. We are modifying the central tertiary optics to contain a hot load, cold load, and a path-length modulator (corner cube). This optics assembly will be common to receivers in any of the four bays.

3. Schottky Receiver Upgrades. We plan to modify the 1 mm receiver to contain dual polarization mixer pairs covering the 270-300 GHz band and the 330 - 360 GHz band. The existing two mixer pairs in the receiver cover 200 - 240 GHz and 240 - 270 GHz. Thus, this single receiver box will give nearly complete coverage of the atmospheric windows between 200 and 360 GHz. To switch from one mixer pair to another requires the rotation of a diplexer assembly, which takes about a half hour. On a longer time scale, we plan SIS receivers covering these frequency ranges.

4. Control System Upgrades. We are gradually modernizing the telescope control system by offloading certain tasks to dedicated microprocessors. The communication links will be via IEEE 488 busses or RS 232C lines. In the short term, we expect to have telescope synthesizers controlled through the 488 bus. In addition, we are developing a link between the control computer and an IBM PC to pass source catalogs. In the longer term (1-1.5 years), we hope to have all (fast) real time tasks offloaded to microprocessors. Once the control computer is serving merely as a host to micros, we can easily replace its high level functions with a more modern system. We are conducting this upgrade program in such a way as to produce little or no disruption to normal telescope observing.

5. Hybrid Spectrometer. As discussed in previous Newsletters, we expect to have the hybrid spectrometer completed and at the telescope by the early spring of next year. We plan to run the hybrid spectrometer in parallel with the existing filter banks until the new system is fully debugged and has all the capabilities of the existing system.

D. T. Emerson, P. R. Jewell, and J. M. Payne

VLA

VLA CONFIGURATION SCHEDULE

I. Schedule of Reconfiguration Dates in 1987

From	To	Starting Date	Completion Date
A	A/B	October 12, 1987	October 23, 1987
A/B	B	November 9, 1987	November 13, 1987

II. Summary 1987/88

Quarter	Configuration	Antennas Available*			Proposal Deadline
		327 MHz	8.4 GHz	23 GHz	
1987 Q4	A, A/B, B	22	13	9	June 15, 1987
1988 Q1+	B, B/C, C	22	15	12	September 15, 1987
1988 Q2	C, C/D, D	22	17	15	December 15, 1987
1988 Q3	D, D→A	27	20	18	March 15, 1988
1988 Q4	A	27	25	21	June 15, 1988

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, National Radio Astronomy Observatory, P.O. Box 0, Socorro, New Mexico 87801, Telephone: (505) 772-4240.

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

+The new VLA on-line system will be turned on on January 12, 1988. See other Newsletter items for details.

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 with one inner W arm antenna moved further out to minimize shadowing.

Ron Ekers

ARRAY OPERATIONS CENTER

Construction of the new Array Operations Center in Socorro started in early August 1987. Excavation and foundation work is underway. The bids for construction came sufficiently low that we were able to include most of the building alternates, including the auditorium, the west office wing extension, and finishing otherwise shelled space. The contractor estimates that construction will take about ten months.

Allowing for unexpected delays, we are planning for a move into Socorro starting August 1, 1988. Details for the transition are still very undecided, so now would be a good time for any comments on what kind of facilities VLA and VLBA users would like in Socorro and at the VLA site. Send comments to me or to Ron Ekers.

Dick Sramek

THE INSTALLATION OF THE NEW VLA ON-LINE SYSTEM

There will be a hiatus in VLA observing from December 28, 1987, to January 11, 1988, to remove the old Modcomp system and install the new in its place. It is intended that for some weeks prior to this the new control system will be in use, while the old is still in place as a security measure.

The new system will initially require the same Observe file format as the old and will have almost the same functional behavior as the old. The major differences are outlined as follows:

1. There will be a new archive tape format; this is to allow for all the spectral line data and correlator modes and to take advantage of 6250 bpi tapes, which will be the archive output medium. Useful ancilliary information that was not present in the old system, such as total phase and delay, and antenna positions, will also be provided on the new archive tape.

2. An Antsol, based on the DEC-10 ANTSOL algorithm, will be applied by the on-line system to all calibrator data. This will allow for better real-time monitoring of array behavior and can also be used for phased-array observations. It will work on "channel zero" of spectral line observations as well as on continuum data. A side-effect of this is that pointing and delays may be checked in spectral line as well as continuum modes.

3. The new on-line system will no longer impose a limit on the maximum baseline-channel product; for narrow bandwidths, 512 channels will be available on all 351 baselines with 20 seconds integration. Because of the limited post processing resources, the scheduling committee will continue to impose limits on the use of the spectral line capability.

The first goal after the new system is installed is to make available a reasonable subset of the full correlator flexibility. We intend by April 1, 1988, to have available the multiple IF correlator modes as well as the full polarization modes. Note that "full polarization" means all Stokes' parameters for either AC or BD IFs, but not both pairs. We intend to allow multiple spectral line subarrays, but may initially restrict them all to the same bandwidth. It is not our intent, in the foreseeable future, to allow simultaneous line and continuum observing.

Some of our longer term goals are better on-line data flagging, calibration application to non-calibrators, and attempts to ease some of the pain of solar observing. The VLA on-line system will continue to improve and evolve; suggestions, complaints and comments are always welcome. To a large extent priorities are governed by the wishes of the community of users.

G. Hunt and K. Sowinski

ISU (IMAGE STORAGE UNIT) - NEW CONTROL PANEL

Arnold Rots and Phil Dooley have recently finished a new control panel for the ISU on the OUTBAX computer. Arnold completed this project shortly before his departure for Bangalore, India in the summer of 1987, where he will spend a year working with the radio astronomers at the Tata Institute. The new panel has essentially the functions of the previous version and more. Despite its daunting appearance, the control panel is quite easy to use. For most users no documentation is required. (We are naturally working on a document, however.) It is possible to manipulate images loaded into the TV image display (IIS) from AIPS using the control panel (in place of the track ball) or to store images into the ISU itself. As an example the movie mode to display images in rapid (about two per second) succession is quite simple. Other features include blinking of up to four images, split screen, zooming, scrolling and intensity-hue, etc. It is an easy matter to load the TV image display from one of the 500 plus stored images in the ISU. To load a data cube into the ISU from the PIPELINE, the task "TVLOD" in the PIPELINE display system running in the OUTBAX is used. There is no equivalent task in AIPS, but one can load single images manually after running, e.g., "TVALL." If a user comes with a FITS tape from elsewhere, the method to get data into the ISU is via the task "FITS" in the PIPELINE and then "TVLOD."

W. M. Goss

PIPELINE USE POLICY

With the increased data flow for line work in 1988 using the new MODCOMP on-line system, it will be necessary to re-think the policy for the use of the PIPELINE. Based on our experience during the C and D array in 1987, we estimate that we can handle an average increase of at most a factor two. This average is for the entire year and does not include the peak periods during the C and D array (times of increased line observations). Since most line observers will want to increase their data through-put by factors of 4-8, it will be necessary for many users to process their data outside the Dec-10/PIPELINE using the AIPS calibration and mapping software. With the anticipated new MODCOMP system coming into use at the beginning of the second quarter of 1988, we plan to schedule the PIPELINE on an ad-hoc basis depending on the demands at the VLA. Based on our successful experience this past year, we will allocate the PIPELINE to only one major user at a time and for periods of 24 hours per group. The schedule will be made on a first come basis and will be drawn up every two to three days. The users will be required to delete a large fraction of their uv-data and to back-up maps after each session.

W. M. Goss

NRAO SYNTHESIS IMAGING WORKSHOP, 1988

NRAO is planning a third Synthesis Imaging Workshop, tentatively scheduled for June 1988, in Socorro, New Mexico. We are contemplating changes in organization from prior workshops, so that the first three days would concentrate on "ground-level" lectures, especially suitable for students unfamiliar with the concepts and jargon of modern radio interferometry. The last two or three days would concentrate on advanced topics and current problems in radio interferometry and related disciplines. A weekend would separate the two halves of the meeting. Comments and suggestions are welcome.

Rick Perley

VLA CONFIGURATION HISTORY

Some users have expressed an interest in the VLA configuration history in conjunction with the general archival system we now maintain for all VLA observations. Here it is.

Configuration	Begin Date	End Date	Year
C	07/10/80	10/13/80	1980
C → A	10/13/80	10/22/80	
A	10/22/80	04/27/81	1980/81
A/B	04/27/81	05/06/81	1981
B	05/06/81	08/17/81	
B → D	08/17/81	08/20/81	
B/D	08/20/81	08/31/81	
B → D	08/31/81	09/01/81	
D	09/01/81	10/05/81	
D → C	10/05/81	10/06/81	
C/D	10/06/81	10/13/81	
D → C	10/13/81	10/15/81	
C	10/15/81	01/25/82	1981/82
C → A	01/25/82	02/10/82	1982
A	02/10/82	06/28/82	
A → B	06/28/82	07/15/82	
B	07/15/82	10/25/82	
B → D	10/25/82	11/03/82	
D	11/03/82	01/05/83	1982/83

D → C	01/05/83	01/06/83	1983
C/D	01/06/83	01/18/83	
D → C	01/18/83	01/19/83	
C	01/19/83	05/16/83	
C → D	05/16/83	05/19/83	
C/D	05/19/83	05/31/83	
C → D	05/31/83	06/03/83	
D	06/03/83	07/25/83	
D → A	07/25/83	08/05/83	
A	08/05/83	11/28/83	
A → B	11/28/83	12/07/83	
A/B	12/07/83	12/19/83	
A → B	12/19/83	12/30/83	
B	12/30/83	02/27/84	1983/84
B → C	02/27/84	02/29/84	1984
B/C	02/29/84	04/03/84	
B → C	04/03/84	04/04/84	
C	04/04/84	06/25/84	
C → D	06/25/84	06/27/84	
C/D	06/27/84	07/23/84	
C → D	07/23/84	07/24/84	
D	07/24/84	10/29/84	
D → A	10/29/84	11/09/84	
A	11/09/84	03/11/85	1984/85
A → B	03/11/85	03/22/85	1985
A/B	03/22/85	04/08/85	
A → B	04/08/85	04/10/85	
B	04/10/85	06/10/85	
B → C	06/10/85	06/21/85	
B/C	06/21/85	07/08/85	
B → C	07/08/85	07/12/85	
C	07/12/85	09/30/85	
C → D	09/30/85	10/16/85	
C/D	10/16/85	11/04/85	
C → D	11/04/85	11/04/85	
D	11/04/85	02/03/86	1985/86
D → A	02/03/86	02/21/86	1986
A	02/21/86	06/09/86	
A → B	06/09/86	06/20/86	
A/B	06/20/86	07/08/86	
A → B	07/08/86	07/10/86	
B	07/10/86	09/15/86	
B → C	09/15/86	09/26/86	
B/C	09/26/86	10/20/86	
B → C	10/20/86	10/21/86	
C	10/21/86	01/20/87	1986/87
C → D	01/20/87	01/23/87	1987
C/D	01/23/87	02/23/87	
C → D	02/23/87	02/27/87	
D	02/27/87	06/09/87	
D → A	06/09/87	06/23/87	
A	06/23/87		

NOTE: A → B indicates movement of antennas from A to B configuration, A/B indicates north arm in A configuration and east + west arms in B configuration. Contact Alison Patrick for future updates.

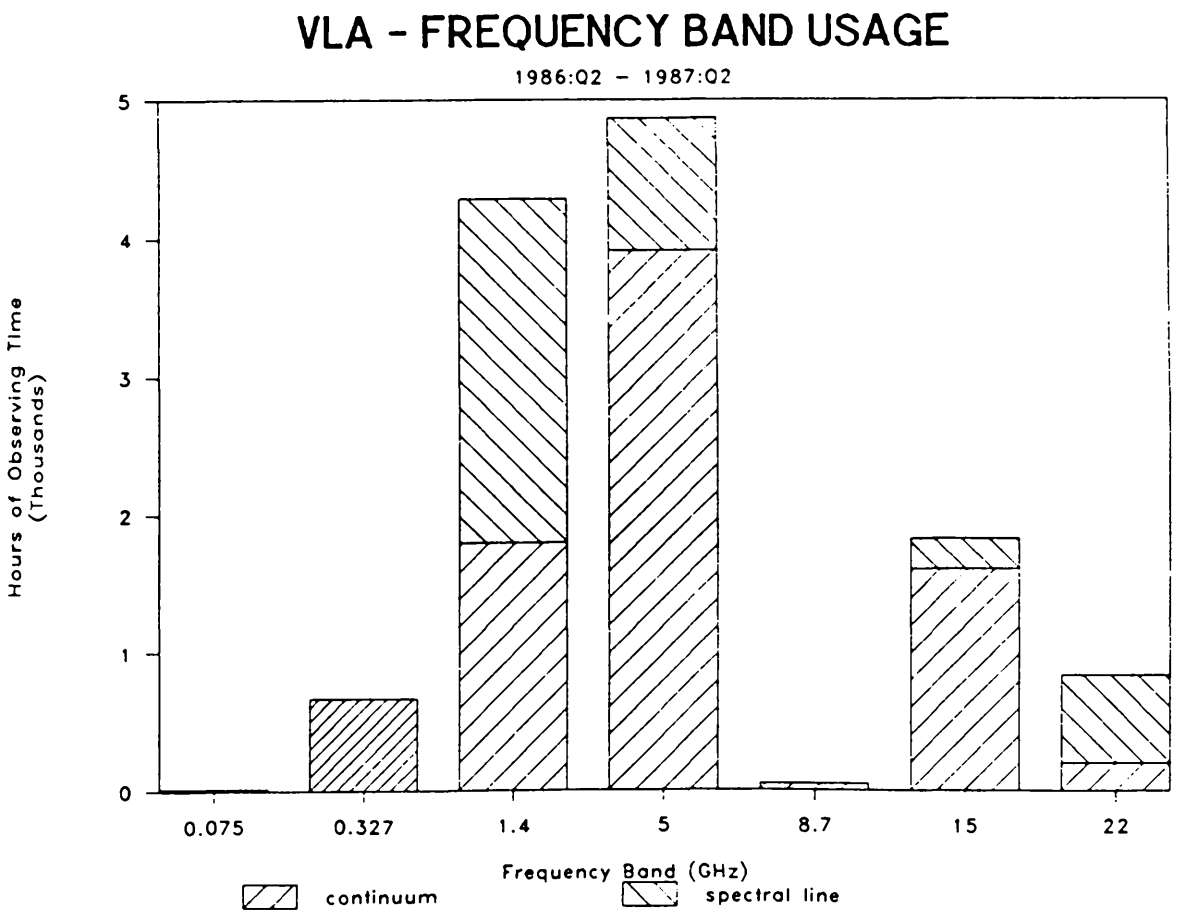
Carl Bignell

DISTRIBUTION OF VLA TIME WITH FREQUENCY BANDS

As a by-product of the preparation of our archive of VLA observations we have accumulated statistics on the observing time spent as a function of observing frequency at the VLA. The figure shows the distribution of observing time in the period from April 1986 to June 1987. This period covers the full range of VLA configurations. The observing times are summed over the seven different VLA receiver systems and are separated into spectral line and continuum (except at 0.327 GHz). Some trends are apparent during the year; as more antennas became available the use of 327 MHz increased rapidly and is probably now used at double the rate indicated in this distribution. At the same time the use of 22-25 GHz decreased, presumably due to the expectation to the new lower noise system. The small amount of time spent at 75 MHz and 8.7 GHz results from early system tests in these bands and does not indicate potential use of these frequencies.

Overall spectral line observations accounted for 37 percent of the VLA observing time in this period.

Ron Ekers



MISSING TABLE IN OSR

In some copies of the Observational Status Report dated March 15, 1987, Table II may be missing. If your copy has Table II it may be missing some of the Greek characters. If your table is missing these characters or if you are missing the table altogether, please contact Alison Patrick at the VLA for a replacement page.

Alison Patrick

VLA ARCHIVE AND CALIBRATOR PROGRAM

A new version (September 21, 1987) of the VLA archive and calibrator source search program for IBM PC's and compatibles is available from Alison Patrick. The VLA archive list contains brief information on all sources observed for more than 60 minutes with the VLA since mid-1981 (4001 entries) and the calibrator list contains the list of calibrators (679 entries) used for VLA observations.

Our list of people requesting this program is growing. If you wish to receive an update (which is usually advisable), please send in your old diskettes to A. Patrick. We will no longer continue to automatically send out updates. Those wishing to receive these diskettes for the first time, just send in your request.

Carl Bignell

Green Bank

25th ANNIVERSARY CELEBRATION FOR 300-FOOT TELESCOPE

Reflection on the 300-foot telescope's first quarter century and preparation for its next were the joint purposes of a series of events in late September at NRAO-Green Bank. On September 22 and 23 students between grades five and college attended Student Open Houses. Approximately 600 toured each day, the great majority from West Virginia, but including classes from Virginia, Maryland, and Pennsylvania.

The Student Open Houses featured 10 stations on the site where teachers trained in the first NRAO-GB/WVU Secondary Science Teachers' Institute joined NRAO staff in presenting talks, demonstrations, or exhibits. All involved were pleased with the large turnout and rewarded by the interest shown. Since science progresses by the steady accumulation of new knowledge--punctuated by occasional quantum leaps--acquired by successive generations, we hope that some student visitors were inspired to succeed the present generation of radio astronomers.

On September 25 and 26, approximately 50 visitors and staff joined for a symposium on "The First 9131 Meridian Crossings, 25 Years of Science with the 300-foot Telescope." Speakers discussed the origin of the concept of the 300-foot telescope and its construction, as well as its subsequent technical evolution. Sample highlights of the telescope's scientific contributions were then presented, and the symposium ended with a discussion of the future. Yogi Berra's maxim that "predictions are tough, especially about the future" was dutifully observed. All noted, however, that an instrument completed in 1962 could not have been expected to study pulsars, filaments and voids, or large-scale streaming motions relative to the microwave background because none of these components of the universe was known then. The next 25 years will hold equally as many surprises if the inexhaustible imagination and creativity of the symposium participants was a guide.

On the afternoon of September 26, a celebration attended by approximately 500 guests enjoyed the finest weather West Virginia can offer. Since all activities planned were outdoor events, you can imagine the relief of the local organizers. Speakers who delivered short talks were:

Robert Hughes, President, AUI
Paul Vanden Bout, Director, NRAO
Rep. Alan Mollohan, U.S. House of Rep.
Kurt Riegel, Astronomy Centers Head, NSF
John Findlay, NRAO
George Seielstad, Assistant Director for GB Operations

Following the talks, guests enjoyed a picnic-reception at which the Black Mountain Blue Grass Boys entertained.

A workshop on Astronomical Surveys occurred September 28-30. Again, many years of work on many telescopes were clearly evident.

Several special exhibits from the 300-foot telescope's past were, and are, on display. In addition, Dwayne Schiebel collected material for a time capsule to be buried at the 300-foot telescope and reopened at the 50th anniversary in September 2012.

George A. Seielstad

IMPROVEMENTS IN THE HIGH FREQUENCY PERFORMANCE OF THE 140-FOOT TELESCOPE FOLLOWING SURFACE PANEL ADJUSTMENTS

At various times over the past year we have produced holographic maps of the surface of the 140-foot telescope (see previous Newsletters for details about the method). In late August and early September, we used the holography results to adjust surface panels, something which has not been done since 1972. Approximately one-half of the 228 adjustment screws were moved by at least 0.6 mm; some surface panels were adjusted by over 2 mm.

The accompanying figure shows holography maps made from the telescope's prime focus before and after the adjustments. The rms perpendicular to the aperture plane of the main reflector went from 0.95 ± 0.05 to 0.60 ± 0.05 mm. Holographic maps made from the Cassegrain focus, tried successfully for the first time in September after the panel adjustment, indicate that the total rms of the main reflector plus subreflector went from 1.12 ± 0.05 mm to 0.90 ± 0.05. Initial comparisons between Cassegrain and prime focus maps suggest that the increased rms is due to the small-scale roughness of the surface of the subreflector and not due to errors over any large area of the subreflector. The rms from the Cassegrain data is close to that predicted by combining the rms from the prime focus maps with the mechanically measured rms of the surface of the subreflector.

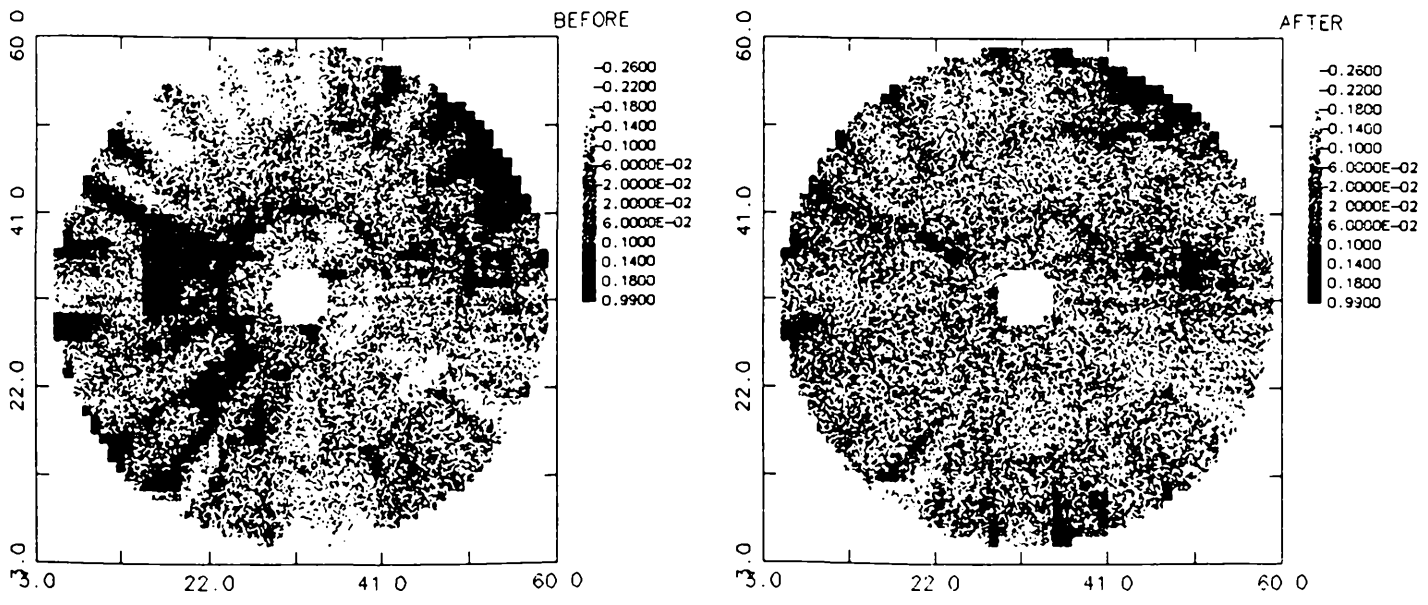
Before and after the adjustment, we made observations at 25 GHz from the Cassegrain focus of various astronomical sources. The aperture efficiency of the telescope, for a declination and hour angle near zero (the position at which we made holography maps and at which our adjustments would contribute most), increased from under 20 percent to 27 percent, close to that predicted from the above Cassegrain rms values. Improvements elsewhere in the sky were less dramatic. Beam maps of point sources also indicate that the telescope now has a cleaner, though different, beam shape. The hour angle dependence on efficiency has not changed significantly.

Since the surface errors in individual panels, as determined by the manufacturer, varies between 0.4 and 0.5 mm, further adjustments of the panels may be fruitless while a new, smoother subreflector could significantly lower the total rms as seen from the Cassegrain focus. For example, if the contribution of the subreflector to the total rms were cut in half, efficiencies at 25 GHz would lie between 35 and 40 percent. We are considering such an upgrade in the subreflector.

I thank all those who have contributed to this extremely successful endeavor, especially K. Borowec, C. Brockway, F. Crews, T. Dunbrack, N. Elias, K. Finkele, R. Fisher, H. Fullbright, R. Norrod, G. Seielstad, S. Srikanth, B. Vance, R. Weimer, E. Wollman, and the telescope operators and mechanics.

Ronald J. Maddalena

140-FT SURFACE ERRORS (CM)



140-FOOT TELESCOPE HARDWARE AND SOFTWARE CHANGES

By October 5, 1987, plans are to replace the green screen, Tektronix 4012, on the Modcomp Analysis system with a Modgraph GX-1000. At the same time, the Versatec printer will be replaced with a QMS Lasergrafix printer. These changes should be transparent to the observer using the system except that the print (hard copy) should be of publishable quality.

An important change has been made in spectral line software. An average over the records for each scan is now weighted by 1/TSYS**2 for each record. Previous to this change, the TSYS for each record was averaged for the scan duration for temperature calculations but no weighting by TSYS was done.

Bob Vance

POPS ON A PC

The spectral-line analysis software (POPS) used at the telescopes in Green Bank can now be run on such personal computers as an IBM PC with a Hercules graphics board or an EGA board, or on an ATT 6300 (or their clones). The PC must have at least 512 kbytes of memory, a math co-processor, a hard disk, and version 3.0 or higher of DOS. Hard copies, though very time-consuming, are possible with IBM or EPSON compatible dot-matrix printers. Users with Hercules boards must purchase the GRAFPLUS software package, available for ~ $50 from Jewell Technologies, in order to produce hard copies.

To get data into the PC, the user must create a KEEP tape of his or her 140-foot or 300-foot data, translate and copy the data onto floppies using the Masscomp computer in the Jansky Lab, copy the Masscomp-style floppy onto IBM-style floppies, and copy the data from these floppies onto the PC's hard disk. (All steps are more easily done than said.) It takes about 30 minutes to get 200 scans into the PC once the KEEP tape has been made. PC POPS can handle up to 512 spectra with 1024 channels.

Since PC POPS is, in almost all respects, identical to the versions found on the Modcomps and Masscomp in Green Bank, a new manual does not have to be written, or, most importantly, read, and the commands and procedures used by observers at the telescope can be used without modifications. I have no plans to install the continuum version of POPS (CONDAR) onto a PC unless there is a large interest by observers.

To obtain a copy of the run-time code for PC POPS, those interested should provide me with two (2) blank double-sided, double density 5-1/4" floppies, and their type of PC (IBM Hercules, IBM EGA, or ATT 6300). Documentation on how to install and run the software will be returned with the floppies.

Ronald J. Maddalena

IMPLEMENTATION OF DISTRIBUTED PROCESSING AT GREEN BANK

The earliest sprouts of the Green Bank distributed-processing approach to computing are beginning to appear this autumn in West Virginia. NRAO is currently accepting bids for an optic-fiber based Ethernet to connect the Jansky Lab to all of its major facilities including its three major instruments. Besides purchasing Ethernet controller boards for all four Masscomp mini-computers, we are waiting delivery of a Sun 3/60 work station to be used for analysis at the 300 foot. Since Green Bank has multiple instruments spread over one large site, it is especially suitable for computing solutions utilizing distributed facilities interconnected by a high speed network. This approach will eventually provide observers with immediate access to any of their data they have collected during an observing run--from several days to a few minutes old--from any work station on site. It will allow the user to perform their analysis on work stations they are familiar with while allowing them to take analysis programs, as well as their data, with them to similar machines at their home laboratories. It will provide each observer with unshared power for analysis and it will enable the Observatory to more efficiently configure itself to the observer's special needs and requests.

Mark Clark

In General

JANSKY POSTDOCTORAL FELLOWSHIPS

The National Radio Astronomy Observatory awards postdoctoral Jansky Fellowships which provide outstanding opportunities for research in astrophysics. Jansky Fellows may formulate and carry out investigations either independently or in collaboration with others within the wide framework of interests of the Observatory. A focus on topics in radio astronomy is desirable though not essential. Current areas of research include: cosmology, theoretical and observational studies of radio sources; the interstellar and intergalactic medium; structure and dynamics of galactic and extragalactic sources; physics of HII regions, stars, and solar system objects; and astrometry. The research staff is also heavily involved in instrumentation development and image processing.

Appointments, which are available at any of the NRAO sites, are made for a term of two years and include a vacation allowance, health insurance, moving allowance, and other benefits. They may be renewed for an additional year. Stipends for 1988 will be approximately $24,000. The Fellows must have received the Ph.D. prior to beginning his/her appointment. Preference will be given to recent Ph.D. recipients (i.e., after 1986).

Application may be made to:

Jansky Fellowship Selection Committee
National Radio Astronomy Observatory
Edgemont Road
Charlottesville, VA 22903-2475

The application should include (1) a curriculum vitae, (2) the names and addresses of three references who are familiar with your work, and (3) a brief statement of the type of research activity you might undertake at NRAO.

The application deadline is January 15, 1988.

R. J. Havlen

EXPANDED SUMMER STUDENT PROGRAM

A major portion of the past summer's program of student research assistantships at the NRAO was sponsored by an NSF REU grant (Research Experiences for Undergraduates). During the summer of 1988 we hope to obtain REU funding at a slightly higher level, and we again anticipate a successful program.

Under REU funding guidelines some restrictions on student eligibility apply. The majority of the assistantships will be offered to undergraduate students, who are currently enrolled in U.S. undergraduate institutions and who will not receive their degrees before or during the summer of 1988. Only a limited number of assistantships will be available for graduate students or students from non-U.S. institutions. Graduate student applicants must not have completed more than two years of graduate school.

Flyers describing the program and application forms will soon be mailed to hundreds of institutions. The application deadline will be February 1, 1988. Please encourage your talented students in astronomy, physics, computer science, and electronics engineering to apply.

R. J. Havlen

PAGE CHARGE SUPPORT

The NRAO continues to provide up to 50 percent of the cost of publishing the scientific results obtained by U.S.-based visiting observers with one of the NRAO telescopes. In circumstances involving page charge cost sharing among several institutions or when foreign authors participate, the details of NRAO's financial responsibility should be discussed in advance with the NRAO librarian, Ellen Bouton, (804) 296-0254 as soon as you have submitted the required four copies of the preprint to her office. At that time we would also like to be informed of any special requirements that might significantly affect the cost of publication (e.g., color plates). Neither your institution nor the NRAO appreciates last-minute unpleasant financial surprises.

R. J. Havlen

EDITOR NRAO NEWSLETTER
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