



NRAO NEWSLETTER

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GREEN BANK

THE GREEN BANK TELESCOPE

The Green Bank Telescope reached a major milestone during the week of June 23, 1997, when the telescope's backup structure (BUS) was completed. The assembly on the ground of the 100 meter diameter BUS took two years, during which time the 7,652 members of the BUS were erected and welded on 17 main temporary supports and 110 shoring towers. After the BUS was completed, a survey of 400 points was taken. Then the shoring towers were disconnected from the structure allowing it to rest on only the 17 supports, in effect "turning on" gravity. A second survey of the 400 points was made to measure the effect of gravity on the shape of the BUS. Although the survey results are not complete at the time of this writing, initial results lead us to expect that all the measurements will be within the acceptable range.

Almost all of the effort on the construction site currently is directed toward preparing the R1 module for lifting out of the center portion of the BUS and onto the antenna box structure.

This makes it possible to install a large guy derrick in the hole in the BUS left the R1 module. This derrick will be used to pick the BUS modules from the left half of the structure and lift them into the air where they will be transferred overhead to the main derrick which will then place the modules on the box structure. The modules on the right half of the structure will be lifted directly by the main derrick. Altogether, there are 22 modules in the BUS.

In addition, the horizontal feed arm is now complete, and the walkway to the vertical feed arm elevator platform is in place. Wiring to the elevation drives is almost complete. Servo testing of the upper feed arm is currently on hold awaiting the return of the subreflector actuator motors sent out for repair.

Current photo of the construction is shown on page 2.

S.C. Smith

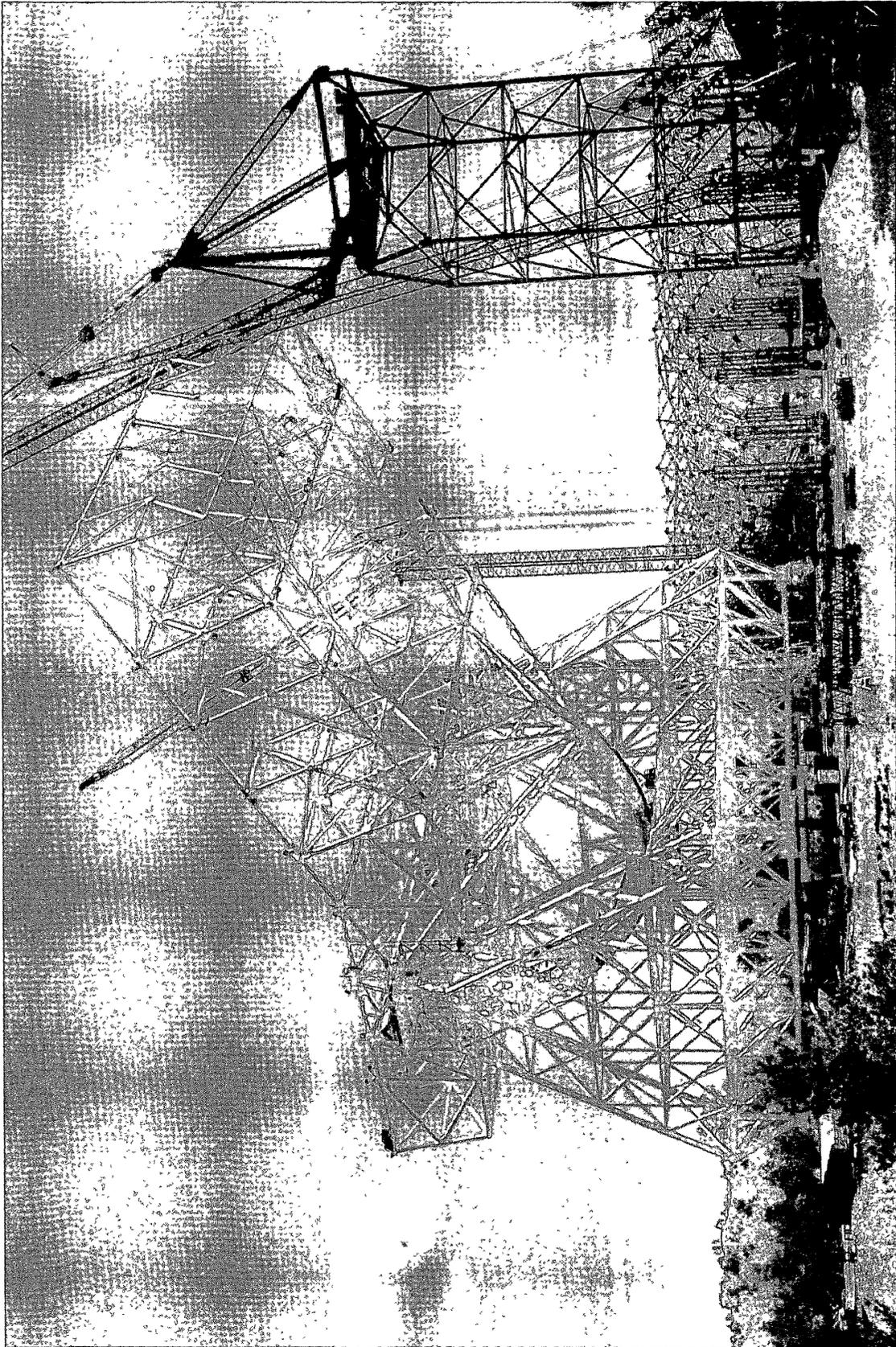
140 FOOT AVAILABILITY IN 1998

Because of the recent change in the projected completion date of the GBT from spring 1998 to the very end of that year, the Users Committee during their June meeting urged NRAO to continue to operate the 140 Foot Telescope as a user facility in 1998. We are currently reviewing the options and expect that the telescope can be made available for visitor's experiments during much of that year, although it may be necessary to make some restrictions on the use of specific receivers and back-ends.

The 140 Foot is thus once again open for new telescope proposals. However, the "final" call for proposals earlier this

year resulted in a demand which outstripped the available telescope time by a factor of about 2.5. The Telescope is fully subscribed for the remainder of 1997. A deadline of 3 November 1997 has been established for receipt of proposals for observations in the first half of 1998. There will be another deadline in the spring of 1998 for receipt of proposals for observations in the second half of 1998. Further information will be given in the next Newsletter and on the WWW. As always, proposals to make time-critical observations can be submitted at any time.

F.J. Lockman



CONSTRUCTION PROGRESS OF THE GREEN BANK TELESCOPE (GBT)

VLBA/VLBI

SPACE VLBI: FIRST "HALCA" FRINGES AND IMAGES

The VLBA correlator detected its first Space VLBI fringes, to the VSOP mission's HALCA spacecraft, on 97/6/12, exactly four months after launch. These observations of the active galactic nucleus 1519-273 at 1.656 GHz were made on 97/5/22, the first attempt at ground-space interferometry using VLBA-format recordings since the spacecraft's lengthy eclipse period in April and the subsequent reconditioning of the power system. Previous tests planned for April, mentioned in NRAO Newsletter No. 71, had been hastily advanced so as to be observed before the eclipse shutdown, but failed to yield fringes.

The HALCA data in which we detected fringes were recorded at the NRAO OVLBI Earth Station in Green Bank, and received at the AOC on 5/27. A tape recorded for this observation at the Usuda tracking station, and tapes recorded at the Green Bank and Goldstone tracking stations in other test runs, were received subsequently.

For sixteen days, no fringes were detected in any of these tracking passes. Although extensive tests, reported in several previous NRAO Newsletters, had verified nearly all aspects of the correlator's Space VLBI capabilities, we disabled all of the functions except the spacecraft orbit, to ensure they were not somehow preventing detection of fringes. We could operate in this simplified mode in a few carefully selected cases, but still detected no fringes.

The most likely remaining cause appeared to be overall time-setting errors, at all of the tracking stations. Timing in Space VLBI is more difficult than in even the earliest ground-based VLBI observations, where one could – and the pioneers of this technique did, sometimes at great effort – bring an atomic clock along to establish the local time to sufficient accuracy. In Space VLBI, it is only possible to compute the time on the spacecraft, combining the propagation time to the tracking station with an additional instrumental component, potentially quite large, which depends on the details of all the equipment along the signal path. Some of the conceivable errors in determining this additional offset are much larger than any practical wide delay search in the correlator. Thus, it is essential that the tracking stations

determine the offset extremely accurately.

The Green Bank tracking station became the first to do so, suggesting a new timing offset to be searched. This led immediately to detection of fringes, first in the observation described above, and within days in three other test runs for which Green Bank tracking passes were available.

Once having detected fringes, we proceeded immediately to correlate the entire tracking pass in which fringes to HALCA were first discovered. This pass includes only the phased VLA on the ground for the first two hours, which is then joined by the VLBA for a final hour. Despite this relatively sparse coverage, the combined data set was adequate to image the source, which had been selected for this fringe search from a set expected to be extremely compact and relatively strong. The observations indeed yielded an unresolved image of about 2.3 by 0.7 milliarcsec, with peak-to-sidelobe dynamic range of about 100 – the first image achieved by the VSOP mission. Such a point image is a strong verification that the entire Space VLBI system is functioning correctly.

With the new timing offset, we have also been able to correlate the entire Green Bank tracking pass in each of seven VSOP in-orbit tests observed through the end of June. One of these, with about 2.5 hours of Halca-VLBA baselines, has already yielded an image of 1156+295, showing a typical VLBI core-jet structure. A VLBA-only image from the same data reveals only a slightly extended single component. Another Halca observation of the same source four days later, involving six telescopes of the European VLBI Network in addition to the VLBA, nicely complements the (u,v) coverage from the original session, so that we anticipate being able to produce a high-quality image despite the limited Halca tracking available with only one tracking station.

Notes added in proof: On 97/7/8, the VLBA correlator detected its first fringes to Halca via the Goldstone tracking station. On 7/9, we detected the VSOP mission's first fringes at 5 GHz, also via Goldstone, and on 7/10 our first fringes via the Usuda tracking station, again at 5 GHz.

J.D. Romney

A VLBI PUBLICATION SPEED RECORD

The gamma-ray burst source GRB 970508 was detected 8 May 1997 by the Italian-Dutch satellite BeppoSAX. Within days, a sub-mJy radio counterpart to GRB 970508 was detected with the VLA and shown to have a continuum spectrum rising with increasing frequency (Frail et al., 15 May 1997, IAUC 6662).

This was the first detection of a radio counterpart to a gamma-ray burst. On 15 May, Frail et al. submitted a Target-of-Opportunity VLBA proposal to improve size, position, and proper motion constraints on this radio counterpart. Their VLBI monitoring epochs began 16 May

with an array consisting of the VLBA, the phased VLA, and Effelsberg, although later epochs did not involve Effelsberg. All monitoring epochs employed phase referencing, and were rapidly and ably observed by telescope staff and correlated in Socorro. However, the second VLBI epoch, involving just the VLBA, was especially noteworthy: that project was observed

17 May and led to a sub-mJy detection that was *published one week later* by Taylor et al. (24 May 1997, IAUC 6670). Surely this is a speed record for a VLBI publication! Congratulations to all VLBA staff involved and to the Taylor et al. team.

J.M. Wrobel

VLBI NETWORK CALL FOR PROPOSALS

Proposals for VLBI Global Network observing are handled by the NRAO. Global network sessions currently planned are:

Date	Bands	Proposals Due
08 Sep to 01 Oct 1997	1.3 cm, 6 cm, 18 cm, 3.6/13 cm	03 Feb 1997
03 Nov to 27 Nov 1997	1.3 cm, 6 cm, 18 cm, 3.6/13 cm	02 Jun 1997
10 Feb to 06 Mar 1998	1.3 cm, 6 cm, 18 cm, other?	01 Oct 1997
20 May to 08 Jun 1998	1.3 cm, 6 cm, 18 cm, other?	01 Oct 1997
07 Sep to 02 Oct 1998	1.3 cm, 6 cm, 18 cm, other?	02 Feb 1998
10 Nov to 04 Dec 1998	1.3 cm, 6 cm, 18 cm, other?	01 Jun 1998

It is expected that European VLBI observing during the next year will be dominated by observations with the VSOP satellite.

It is recommended that proposers use a standard cover sheet for their VLBI proposals. Fill-in-the-blanks TeX files are available by anonymous ftp from ftp.cv.nrao.edu, directory proposal or via the VLBA home page on the WWW. Printed forms, for filling in by typewriter, are available on request from Betty Trujillo, AOC, Socorro.

Any proposal requesting NRAO antennas and antennas from two or more institutions in the European VLBI network constitutes a Global proposal. Global proposals *must* reach *both* Network's Schedulers on or before the proposal deadline date; allow sufficient of time for mailing. In general, fax submissions of global proposals will not be accepted. Proposals requesting use of the Socorro correlator must be sent to NRAO even if they do not request the use of NRAO antennas; proposals for the use of the Bonn correlator must be sent to the MPIfR if they do not request the use of any EVN antennas. For Global proposals, or those to the EVN alone, send proposals to:

R. Schwartz
Max Planck Institut fur Radioastronomie
Auf dem Hugel 69
D 53121 Bonn
Germany

For proposals to the VLBA, or Global proposals, send proposals to:

Director
National Radio Astronomy Observatory
520 Edgemont Road
Charlottesville, VA 22903-2475
USA.

Proposals may also be submitted electronically, in Adobe Postscript format, to proposevn@hp.mpifr-bonn.mpg.de or propsoc@nrao.edu, respectively. Care should be taken to ensure that the Postscript files request the proper paper size.

B.G. Clark

REQUEST FOR VLBA IMAGES

The NRAO is seeking images made using the VLBA. We anticipate a variety of uses for such images, including incorporation in a WWW "picture gallery," public-education efforts, an informational slide set, and possibly, in a new NRAO CD-ROM of radio images.

Images are sought on the basis of visual appeal and scientific significance. While striking visual impact helps for public-education and media purposes, we also want images that illustrate important scientific advances as well as those that

show a variety of astronomical phenomena as seen with VLBI resolution. We prefer images in the form of FITS or PostScript files. For caption information, please give either a brief description or a reference to a published description.

For information, and to arrange a file transfer, contact Dave Finley at the AOC ((505) 835-7302 or dfinley@nrao.edu).

D.G. Finley

VLA

VLA CONFIGURATION SCHEDULE

Configuration	Starting Date	Ending Date	Proposal Deadline
C	27 Jun 1997	22 Sep 1997	3 Feb 1997
DnC	3 Oct 1997	20 Oct 1997	2 Jun 1997
D	24 Oct 1997	12 Jan 1998	2 Jun 1997
A	30 Jan 1998	18 May 1998	1 Oct 1997
BnA	29 May 1998	15 Jun 1998	2 Feb 1998
B	19 Jun 1998	14 Sep 1998	2 Feb 1998
CnB	25 Sep 1998	12 Oct 1998	1 Jun 1998

The maximum antenna separations for the four VLA configurations are: A-36 km, B-11 km, C-3 km, D-1 km. The BnA, CnB, and DnC configurations are the hybrid

configurations with the long north arm, which produce a round beam for southern sources (south of about -15 degrees declination).

Approximate Long-Term Schedule

	Q1	Q2	Q3	Q4
1997	B	B,C	C	D
1998	A	A,B	B	C
1999	D	D,A	A,B	B
2000	C	C,D	D	A
2001	B	B,C	C,D	D

Observers should note that some types of observations are significantly more difficult in daytime than at nighttime. These include observations at 327 MHz (solar and other interference; disturbed ionosphere, especially at dawn), line observations at 18 and 21 cm (solar interference), polarization measurements at L band (uncertainty in ionospheric rotation measure), and observations at 2 cm and shorter wavelengths in B and A configurations (tropospheric phase variations, especially in summer). They should defer such observations for a configuration cycle to avoid such problems. In 1997, the D configuration daytime will be about 16^h RA and in 1998 the A configuration daytime will be about 0^h RA.

Time will be allocated for the VLBA on intervals approximately corresponding to the VLA configurations, from those proposals in hand at the corresponding VLA proposal deadline. The first observations with the VLBA and the HALCA long-baseline interferometry satellite were done in

May, and increasing amounts of observing time will be devoted to this through the summer, approaching a long term average of about 30 percent of VLBA observations devoted to space VLBI.

Any proposal requesting NRAO antennas and antennas from two or more institutions affiliated with the European VLBI network is a Global proposal, and must be sent to the EVN scheduler as well as to the NRAO. VLBA proposals requesting only one EVN antenna, or requesting unaffiliated antennas, are handled on a bilateral basis; the proposal should be sent both to NRAO and to the operating institution of the other antenna requested. Coordination of observations with non-NRAO antennas, other than members of the EVN and the DSN, is the responsibility of the proposer.

B.G. Clark

AOC COMPUTING STATUS

Three new SGI workstations have been installed at the AOC. One, an Origin 200, is a fast four-processor server, the other two are lower level front-end machines. This set-up is intended exclusively to handle extremely time-consuming space VLBI projects. The most recent AIPS "DDT" test on the fast server led to a record AIPS mark of 14.1 per processor. Perhaps even more impressive is that four AIPS DDT tests run in parallel on this machine (one for each processor) resulted in an AIPS mark of 12.5 per processor, an effective AIPS mark of 50 for the complete machine!

Installation of a dedicated SPARCstation IPC as our WWW and anonymous ftp server is imminent. We urge users to access these sites using the generic "www.nrao.edu" and "ftp.aoc.nrao.edu" addresses, which will make the actual switch transparent.

Local computer support at the AOC received a boost when we hired two new people: Tom Wilson will be responsible for further developing our Web site, for supporting visitors and staff in areas related to non-NRAO software systems (IRAF, IDL, TeX, etc.), and in lending programming support to projects such as the VLA archive project. Victor Kiff joins the systems support staff. His arrival enables us to streamline contact between users and system staff. We have devoted one office to user support and have introduced a generic "nmhelpdesk" account for visitors and staff to receive prompt help.

G.A. van Moorsel

NRAO 1998 SYNTHESIS IMAGING SUMMER SCHOOL

Planning for the Sixth VLA/VLBA Summer School in Synthesis Imaging is underway. The summer school will be hosted by NRAO and New Mexico Tech in mid-June of 1998 in Socorro, New Mexico. An announcement, complete with a preliminary list of lectures and registration information will be made in the latter part of this year.

The school will entail a week of lectures on aperture synthesis theory and techniques at a level appropriate for graduate students in astrophysics. Practical tutorials demonstrating data

collection, calibration, and imaging of both VLA and VLBA data will be given.

There will be a nominal registration fee, sufficient to cover only the cost of the meeting. Our budget is unable to provide financial support for attendees. Lodging for participants will be at local motels.

G.B. Taylor, C. Carilli, & T. Hankins

12 METER

12 METER TELESCOPE PARTICIPATION IN THE MARS PATHFINDER AND GLOBAL SURVEYOR MISSIONS

During the next three months, two scientific spacecraft will intercept Mars. The first will be the Mars Pathfinder, which is a land mission designed to study surface conditions, such as surface mineralogy, elemental composition, and meteorological conditions. Mars Pathfinder is scheduled to land on the Martian surface on July 4, 1997. The second mission is the Mars Global Surveyor (MGS). MGS, which is scheduled to encounter Mars in mid-September 1997, is an orbiter mission which will conduct, among other things, the first global mapping of the surface mineralogy and elevations, magnetic field measurements, and high/medium resolution imaging. Observations done with the 12 Meter will provide atmospheric sounding measurements of the Martian atmosphere during the descent of these two spacecraft. A research team led by Todd Clancy of the Space Science Institute will use the 12 Meter to

monitor the CO absorption signature from the Martian atmosphere to measure the day-side atmospheric density profile. This information will be used to monitor the distribution of clouds and dust in the Martian atmosphere (which affects solar power generation by the Mars Pathfinder). Atmospheric density profile information is much more critical to the MGS mission since it uses the upper atmosphere to aerobrake and circularize its entry orbit. Since Martian dust storms increase the atmospheric density at the MGS aerobraking altitude by a factor of ten in a matter of days, regular monitoring by the 12 Meter Telescope will provide fundamental measurements which will help insure the success of these missions.

J.G. Mangum

MAJOR SUMMER SHUTDOWN PROJECTS AT THE 12 METER TELESCOPE

Since there are no major modifications or repairs that must be done this summer, the 12 Meter will be shutdown for a relatively-brief five weeks. We will follow this with an approximately three week period of system tests before resuming regular observing. During these periods we will complete a number of general repair and maintenance tasks, which include:

(1) Dome inspection and repair.

- (2) Automation enhancements to receiver tuning software.
- (3) Installation of the central cold load calibration system.
- (4) Installation of a new digital phase lock system.
- (5) Improvements to the receiver and IF system to increase continuum sensitivity.

J.G. Mangum & D.T. Emerson

ON-THE-FLY ANALYSIS AT NRAO TUCSON

In order for us to provide assistance with the analysis of OTF data, visiting observers can make arrangements to use the NRAO Tucson downtown computing services for their OTF analysis. Observers who might benefit particularly from the use of the NRAO Tucson computing system are those with limited OTF analysis experience, or those whose home computing resources are strained in handling the quantity and

processing needs of OTF data. In particular, on-site assistance from the 12 Meter scientific staff in the analysis of OTF data may prove helpful. If you are interested in visiting NRAO Tucson to analyze 12 Meter OTF data, contact Jeff Mangum (jmangum@nrao.edu or 520-882-8250 x113).

J.G. Mangum

IN GENERAL

MILLIMETER ARRAY

The process of selecting a site for the MMA was advanced during the last quarter by the review of a draft site selection document by the MMA Development Consortium, the MMA Advisory Committee, and the NRAO Visitors and Users Committees. The draft document recommends the selection of the site we have been studying in the altiplano of northern Chile, and that recommendation has been enthusiastically endorsed by all the committees. The advantages of the site include access to all millimeter and submillimeter observing bands even under median atmospheric conditions, as well as the space to expand to very long baselines and, hence, exceptionally high angular resolution. This high, very dry area of the world is superbly suited to the needs of millimeter and submillimeter astronomy. After incorporation of reviewers comments, the document will be submitted in final form to the NSF with the request that the selection of this site in Chile be approved.

The second significant development of the last quarter was a meeting held in Charlottesville to discuss the feasibility of merging the MMA and the European Large Southern Array (LSA) into a common, joint project. Both projects have been studying potential sites in Chile. Although the projects have somewhat different scientific emphases, it is clear that both projects have requirements for outstanding sites and could realize cost saving were they to share a common site. Could we envision a single array on this common site that would satisfy the scientific goals of both communities? For two days

delegations representing the LSA and the MMA discussed the possibilities.

The two groups agreed that if a common array were to encompass the scientific scope defined by both the LSA and the MMA, it would of necessity be larger than either project alone. Further, it was agreed that there is much to be gained scientifically with such an array. The delegations resolved to form a partnership to explore the union of the two projects. Specifically, the partnership will study the technical, logistical, and operational aspects of a joint project. Of particular importance, the two antenna concepts currently under consideration in the U.S. and Europe will be studied to identify the antenna size and design, or combination of sizes, best able to address the scientific needs of the two communities. Working groups have been organized that utilize the expertise in each community's research institutions and universities to explore the issues associated with a merger of the LSA and MMA. The working groups are to report and a decision taken on proceeding to the next steps toward a joint project by the end of the year. Finally, both delegations recognized the importance of the Japanese plans to build the Large Millimeter/Submillimeter Array (LMSA) and agreed that cooperative activities with the LMSA should and would continue.

R.L. Brown

USERS COMMITTEE MEETS

The NRAO Users Committee met June 5-6 in Tucson, Arizona. The following is a summary of the Committee's report. The full report will be posted to the NRAO home page when it is available.

The Committee expressed its concern that the loss of the Brookhaven National Laboratory operating contract not affect AUI's Cooperative Agreement with the NSF for operation of the NRAO. The Committee strongly endorsed the continued management of the NRAO by AUI.

The Committee asked that the policy regarding user-built instrumentation be re-stated to make it clear to all users under which conditions observing equipment custom built by individual users would be maintained by the Observatory and made available to all users.

The Committee strongly endorsed the report of the Bridle Committee on policies regarding large scale observing proposals.

The Observatory was encouraged to continue the tradition of open communications with its user community and to press on with the current effort to improve the availability of documentation, reports, technical memos, manuals, etc., on the WWW.

The Users Committee also wanted to express its strong interest in seeing that NRAO improve its educational outreach activities, i.e., to explain why the science done with radio telescopes is important to society.

Support for the operation of the 12 Meter Telescope is strong. NRAO was encouraged to keep the 12 Meter running until the Millimeter Array (MMA) begins operation or there is general access for U.S. observers to an alternative large aperture single dish millimeter telescope. The Committee asked for a plan to be published that would make clear the future course of operations of the 12 Meter. The Committee was pleased to see progress on receiver systems, even though progress is slow on many projects due to lack of personnel. On-The-Fly mapping was noted as a particularly significant advance in capability, one that should also be implemented on the Green Bank Telescope (GBT). The construction of a new spectrometer was endorsed and the synergy with that for the GBT was noted. Expansion of the time allocated to millimeter wavelength VLBI was strongly encouraged.

The Committee expressed its disappointment in the delays in completing the GBT. At the same time, the Observatory was encouraged to expand the number of scientists in Green Bank, plan for first science by sponsoring a workshop, and continue to test GBT systems and train personnel on the GBT instrumentation mockup to minimize the time required for

telescope commissioning. Concerns over the stability of the fiber optic IF transmission system are fading now that initial tests of a gain control system show it to be successful. NRAO was urged to continue operation of the 140 Foot, with more general observing in addition to the orbiting VLBI support that was planned, until the completion of the GBT.

The Committee noted the usefulness of the Very Large Array (VLA) sky surveys, the new capability the Q-band receiver system has enabled, the project to widen the IF bandpass from 50 to 80 MHz, the prospect of 74 MHz receivers with Naval Research Lab support, and the near-completion of the new archive of all VLA data. They suggested the Socorro on-line reservation system for visitors be implemented at the other sites. The Committee strongly urged that the VLA OBSERVE program be upgraded, as a high priority. The plans to hold an Imaging Synthesis Summer School (17-19 June 1998) were noted with hopes that use of the AIPS++ imaging processing system would be included.

NRAO was encouraged to continue the effort to improve the Very Long Baseline Array (VLBA) operating efficiency. Strong encouragement was given to implementing dynamic scheduling. The switch to using only thin tape for recording data to be correlated with the VLBA correlator was endorsed. The Committee is pleased to see initial progress on the pulsar gating mode, called for implementation of a burst mode, urged that an improved amplitude calibration process be finished soon, and expressed hopes that fringes would be detected in orbiting VLBI (HALCA) data.

The Committee gave a high priority to developing plans for a VLA upgrade, bringing the 1970s era electronics to the level expected in the 21st century, improving the antennas, and adding antennas to fill in the uv-spacings intermediate to those of the VLA and VLBA. Current proposals pending at the NSF to complete the Q-band system and to link the Pie Town VLBA antenna in real time to the VLA were noted with the hope that matching funds and Foundation approval would be forthcoming.

Improvements in computing hardware capability available to users during the past year were noted as well as improvements in networking. NRAO was encouraged to continue to replace aging computers with modern machines. The Committee expressed a willingness to endure the inconvenience that implementation of better computer security measures would impose.

The Committee noted the importance of AIPS and the improvements that have been made in AIPS. Much of the improvements have gone into CPU-heavy tasks such as IMAGR; the Committee would like to see more effort in interactive tasks as well, for example, TVFLAG and LISTR.

The Committee was pleased to hear that an effort is being made to address parallelization of AIPS routines to take advantage of RISC multiprocessor architectures. Strong encouragement was given to developing a plan for merging AIPS and AIPS++.

The Committee applauded the progress in AIPS++: a limited beta release, implementation of several synthesis imaging tasks, use of AIPS++ as a base for the Parkes multi-beam and telescope control and analysis software. It was suggested that beta tester workshops be held in Socorro to bring together the programmers and expert users. A number of specific items were noted for improvement in the next release. The Committee was excited over the possibility of including in AIPS++ an AIPS wrapper that would allow an AIPS++ user access to the full functionality of classic AIPS. The Committee was disappointed to see that no published scientific paper has yet to appear based on data analysis using AIPS++. It recommended that there be more easily accessed management information, that development of documentation continue, and that documentation be maintained in an easily accessed, web-browsable fully-indexed data base. It was the Committee's stated opinion that user efforts to test AIPS++ should be matched by efforts of the NRAO staff scientists.

The Committee was pleased to see a request for funding of a design and development phase of the MMA in the NSF proposed budget for 1998. The Observatory was urged to follow through with its plans to pursue this development phase with the involvement of the university millimeter astronomy

groups. The recommendation that the MMA be sited in northern Chile was strongly endorsed. The Committee was concerned that the prospects for finding international partners might not be all that good, given economic conditions abroad, and urged the NRAO to approach the NASA Origins program. There is an obvious strong overlap in scientific goals between those of the MMA and Origins. It was hoped that the next Decade Report would highlight the MMA and NRAO was encouraged to hold a science workshop in preparation for the upcoming decade review.

The Committee noted the value of the technology development done in the Central Development Laboratory, a continuing flow of mixers, amplifiers, and other devices that advance the state-of-the-art. Involvement in the MAP project has strained the lab and delayed delivery of devices for other projects, but it was felt the involvement was worthwhile in the return of a better infrastructure for the lab and the development of amplifiers useful to all of radio astronomy.

NRAO was encouraged to continue its efforts in spectrum management. Of particular importance are the tests to be conducted with the Motorola Iridium project. In these matters, the Committee urged the NRAO to interact regularly with other observatories in establishing policy.

Don Backer will chair the Committee for its 1998 meeting.

*R.S. Foster, Chair Users Committee
(Naval Research Laboratory)*

AIPS++ STATUS

AIPS++ continues beta testing. We made one significant release in late February, and plan to follow that with two more releases before a public release scheduled for the end of the year. The next beta release is expected in July and will both address a number of problems with the first release (speed of some of the synthesis software, for example), and add some new functionality (in particular, spectral line synthesis imaging). In the subsequent beta release, due in the fall, we

plan to issue our first trial at a graphical user interface for AIPS++ applications. We will also issue an interactive program for single dish data analysis. We are still interested in volunteers for beta testing. Please contact Tim Cornwell (tcornwel@nrao.edu) if you are interested.

T.J. Cornwell

NRAO JANSKY LECTURE AND SYMPOSIA

In the previous issue we announced that Professor James Peebles of Princeton University is this year's Jansky Lecturer. The topic of his lecture will be announced at a later date. The lecture will be given in Charlottesville October 28, in Socorro October 30, and in Tucson November 1. In Charlottesville, the Jansky Symposium will be held on Monday, October 27 and Tuesday, October 28, in the NRAO Auditorium. A barbeque on the NRAO lawn Tuesday afternoon will precede the Jansky

Lecture that evening. In Socorro, the New Mexico Symposium will be held on Thursday, October 30, the same date as the Jansky Lecture. Astronomical researchers from NRAO and neighboring universities and laboratories are invited to present their research in 10-15 minute talks at these symposia.

E.R. Schulman, J.J. Wiseman, & R.A. Perley

VLA PROJECT HONORED BY NEW MEXICO ENGINEERS

The New Mexico Society of Professional Engineers celebrated its 50th anniversary this year by recognizing outstanding engineering achievements in New Mexico of the past half-century. In an Albuquerque ceremony on June 7, the VLA received Honorable Mention in the Research & Development category. This award recognizes excellence in the wide range of engineering aspects of the VLA's construction, including mechanical design, electronic design, computer design, site

design, site construction, and project management. The award was accepted on behalf of NRAO by retired VLA Program Manager John H. Lancaster, PE. The plaque indicating this award from the engineering society will be displayed at the VLA Visitor Center.

D. G. Finley



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