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VLA/VLBA NEWSLETTER

From the World's Premier Centimeter Wave Radio Synthesis Telescopes

AROUND THE VLA

Michael Zamora and Dorothy Gutierrez welcomed baby daughter Adrianna Marie on November 21.

Welcome to Diane Foster, our new array operator.

Thanks to the Carpenter Shop and all those in Site & Wye who have been temporarily assigned to the Shop for a host of projects including revisions at the AOC in Socorro, the partition between Servo and the Auto Shops to keep fumes out of the electronics work area, and the SLOB roof.

So long to Alfred Torres who helped on these projects and a long list of others during his temporary assignment.

The new break room for the array operators is a testament to the trade skills available at the VLA. The carpentry, drywall work, painting, electrical wiring, and plumbing were all done by site tradesmen.

A surprise inspection of the dump by the State of New Mexico turned up "no violations." Congratulations to Godin Otero who prepared the hole and the janitors who screen what goes into it.

NRAO employee identification cards are available at the CB for travelers to use in obtaining corporate discounts. See Patty or Jo.

Make plans now to attend the NMPRA Christmas party on Saturday, December 12th. Good eats, good music, you'll enjoy!

Plans are being made now for site employees to attend the 10th anniversary of the AOC dedication in Socorro. Transportation will be provided back to Magdalena. The Array Operations Center on the New Mexico Tech campus opened in December 1988; until then almost all VLA employees worked at the VLA site.

The fiber optic computer communication link now extends to the Phase Interferometer shack on the east arm (Feb '97 newsletter) and to the RFI Monitor shack next to VSQ #3 (Aug. '97 newsletter), thanks to work by Godin Otero, the electricians, and others. The computer group will be doing the final hookup and checkout soon. While the road behind the CB was dug open, the crews installed extra conduit for use by the MMA or other future projects in accessing the CB. To make room for the new conduit, the motor generator set and the old UPS, neither of which has been used in years, were removed and taken to the boneyard for disposal.

Gene Cole is going to tie together scheduling for the Machine Shop and Welding Shop to help smooth the installation of K and Q band feeds and receivers on all the VLA antennas. Both shops expect to be very busy for the next three years on installation of the very important high frequency receivers.

A newly released Project List For ES Division will help order priorities and budget planning for 1999. Make sure work that you see needs to be done is either on the Project List or in MAINT.

Richard Murillo and Paul Savedra took a 2000 gal water tank truck to Green Bank and traded for two dump trucks. The Track Crew will need the extra trucks once they start repairing rail further out from Wye center.

If you want to see a first class rail crossing installation, visit the new crossing on Route 166 next to the AAB. Buen jale, Track Crew!

Watch the Albuquerque Tribune for a series on astronomy in New Mexico. Miller Goss will have an article on December 3 on the VLA and its future. The following day Dave Finley will write about the future of astronomy in New Mexico.

TOOL CARE

ES division provides each individual with the necessary tools to accomplish their work. In addition replacements are ordered when a tool is worn out, broken, or lost. Tools that are worn are hazardous, tools that are broken or lost cause increased downtime and disruption of work etc...

In an effort to keep employees outfitted with necessary tools to perform their jobs safely and without disruption, each supervisor and leadman came up with a plan for tool care for their group. Each shop's tool use is somewhat unique and required different tool plans or procedures for care.

Their plans included a tool inventory, who is responsible for what tools, procedures to identify lost or damaged tools and getting them re-ordered, procedures to secure tools while still having them available in an emergency or when the person responsible is absent. Tool inventories will be updated annually.

L. Serna

GOT A GRIPE OR A SUGGESTION?

The first stop should be your leadman and/or supervisor. Not satisfied? Talk to the Deputy Division Head or Division Head; or if you are not comfortable doing so about a personal issue, talk to the Ombuds person for the VLA Site, Patty Lindsey. The Human Resources representative, Allen Lewis, may also be able to help.

Another possibility for issues that effect a group of employees is to contact the Employee Committee. Site representatives to the Committee are Ben Otero, Lew Serna, Melcolm Peralta, and Patty Lindsey.

C. Janes

PHOTOGRAMMETRY

You may know that the antenna mechanics working in conjunction with the scientists have improved VLA observing at high frequencies (K and Q bands) by adjusting the surfaces of the antennas to make them more efficient. The process by which the measurement of the antenna surface is measured is called "holography". Unfortunately, holography won't work with the VLBA; the antennas are too far apart. So how can the VLBA antennas be measured, and then adjusted, in order to improve the efficiency at high frequencies?

Bryan Butler proposes the use of a digital camera arrangement called photogrammetry (VLBA Test Memo No. 57). With this technique, targets are affixed to the antenna surface and a computer does some complicated geometry on digital images of the surface taken at different angles. The result is a topographical map of the surface, which can then be used to indicate which adjustments to the antennas will make them more efficient at high frequency.

John Brown, president of Geodetic Services Inc., the world leader in photogrammetry system development, demonstrated the photogrammetry operation at the VLA on November 19th and 20th. Antenna 13 in the AAB was measured in several interesting ways. There to help were Brian Butler, Jon Thunborg, Jim Ruff, Ramon Gutierrez, Ramon Molina, Martin Lopez and Gilbert Montano. Thanks to the hard work of the crew, several critical measurements were performed which are necessary to evaluate the performance of the photogrammetry system. The data are currently being studied to see if the GSI instrument can provide the accuracy needed for the very precise VLBA panel adjustments.

While they were at it, the subreflector on Antenna 13 was measured, as well as the spare VLBA subreflector, which is in the AAB. The subreflector measurement is an attractive feature of the photogrammetry systems since the VLBA subreflectors are suspected to be the cause of a large portion of their inefficiency at high frequency (for example, they have been shown to have significant astigmatism - VLBA Test Memo No. 59). The subreflector on the VLBA Brewster antenna is particularly bad, and may be swapped with the spare, depending on the data resulting from the photogrammetry test.

B. Butler, J. Thunborg

VLBA ON THE WEB

Yes, you can view the North Liberty VLBA site or the Kitt Peak site on the web at: <http://www.nrao.edu/vlba/html/thesites.html/>. Sony SSC-C104 color video cameras with a 1/3 format auto iris varifocal lenses in weatherproof enclosures provide the images. I'm using a "Snappy" image capture module that plugs into a PC parallel port and control software called "K-Snap" to capture automatically the image every 15 minutes and ftp it to Socorro where it is put on the Web. Currently, there is a conflict between Win95, Snappy, and K-Snap that causes a re-load a couple of times a day, but I am working on it. The whole system costs only \$750; additional systems are planned for other VLBA sites.

J. Meadows

SPUR ANCHORS

Last year the Track Crew poured spur anchors at four pads as a test (Newsletter August '97). Spurs are the rail that connects the "main line" to the antenna pads. When a transporter rolls over a spur, the weight lifts the end of the spur and ballast falls under the ties. The spur remains "curled up" after the weight is removed. After awhile the track is too high to provide the "head room" for the transporter to set the antenna on the concrete piers. The anchors are intended to stop the curling.

Well, the anchors worked. We are now planning to anchor all the spurs, starting with the ones most frequently used, at a cost of about \$350 per spur. Now, spurs must be taken up and reset to remove the curl about every four years at a greater cost, especially where costly timbers must be replaced. (VLA Test Memo #215).

P. Lewis

PEP

1998 was a very productive year. Each of us at the site have good reason to look back with pride at all our accomplishments. While looking back, make a list of what you have done and give to your supervisor for use in this year's Performance Evaluation. Supervisors will begin writing '98 appraisals in January.

C. Janes

MMA NEWS

Construction of the \$200,000,000 MMA observatory project is scheduled to begin in 2001, reported Peter Napier during a presentation by NRAO scientists at the VLA site on November 10th. Plans are to construct the first antennas at the VLA for a test. Though the contractor may use part of the AAB for some assembly work, final antenna assembly will have to be "in-place" along the east arm because a transporter for the MMA will not be available until later. The antenna construction will be turnkey by the contractor, but VLA site personnel will most likely be involved in constructing piers, electrical wiring to the antenna site, running fiber cable from the antenna to the CB, and other infrastructure work. Peter is planning the project in an attempt to limit travel to Chile by VLA site personnel for construction or maintenance. Detailed information about the MMA project to include all the memo series are available via the NRAO home page, <http://www.nrao.edu>.

Unlike the VLA which has a 3-antenna rule, each VLBA telescope is critical, reminded Phil Diamond during the same meeting. Diamond, who will leave NRAO soon to become director of the Merlin VLBI project in England, reported first fringes at the new 3 mm wavelength between two VLBA sites on October 28. Jon Thunborg and Ramon Gutierrez installed a 3 mm receiver at Mauna Kea for the test earlier in October. The time available for science on the VLBA is up to 60% this year from 50% last year and the reliability of the array continues to be excellent, thanks in part to the site maintenance team visits.

Dick Sramek says that the new fiber optic link to VLBA Pie Town from the VLA is expected to be operational next year. The link will permit substituting VLBAPT for a VLA antenna, thus doubling the VLA resolution. In answering to questioning, Dick pointed out that taking VLBAPT out of the VLBA array can be avoided effectively by, in turn, substituting a VLA antenna for PT. Convolved perhaps, but the existing VLA correlator can handle such a configuration with minor modification.

C. Janes