

# VLA/VLBA NEWSLETTER

From the World's Premier Centimeter Wave Radio Synthesis Telescopes

## PERSONNEL

Nick Montoya will retire on November 11 after 22 years at the VLA. He has been Lead Transporter Operator for many years and has been very instrumental in modifications to the transporters that greatly improved their operation. Now Nick will be able to spend more time with his wife, Rose, and their family, but around here he will be greatly missed.

Ellen sponsored and prepared lunch on October 15 to coincide with the PRA birthday cake. She served Chicken Noodle Soup and her great homemade rolls. Everyone enjoyed gathering in the cafeteria for the lunch and the visit. This month, Ellen plans green chile stew to be served on November 11 in honor of Nick Montoya's last day, sponsored by the ES Division.

Renee Saxton is our newest VLA Operator. She recently graduated from the University of Wyoming. Renee has almost completed her training period and is doing very well at her new job.

Congratulations to Martin Lopez, who will be the new Lead Transporter Operator, effective November 11.

We currently have two open positions, Machinist and Senior Antenna Mechanic. We are hoping to fill the Machinist position in January. The Antenna Mechanic position is to train as a Transporter Operator and Mechanic and will be filled internally.

P. Lindsey

## SCHEDULE CHANGE

The subject of a work schedule change for the site was brought up at the employee committee meeting on October 8. A schedule popular with the majority of site employees based on a poll conducted by Alison Patrick would be 7:30 a.m. to 3:30 p.m. as opposed

to the current 8:30 a.m. to 4:30 p.m. One argument for the change is to facilitate preparation for the 8:30 a.m. MAINT meeting. The matter is being reviewed by NRAO management.

C. Jones

## TRAVELERS

On Monday, October 27, at 6: a.m., Richard Murillo and Paul Savedra left Socorro headed for Greenbank driving a borrowed truck and a bus that now belongs to Greenbank. They were hauling a Case tractor which ES picked up for Greenbank in Idaho Falls last month. And you wonder why they broke down in Arkansas! Oh well, they arrived in Shawnee, Oklahoma, last Monday night and left there early Tuesday. On Tuesday, a little before noon, Rich heard a knock in the MC-9. He called from a rest stop a little west of Ft. Smith, Arkansas, to let us know there might be a problem. Sho' 'nuf, when they pulled in to a weigh station in Ft. Smith, the MC-9 quit. The generator and generator adaptor assembly had "swarmed" (gave up the ghost). After two days of hard work, several new parts and slightly over \$3000, they got back on the road Thursday at about 11:30 a.m. [Late news: they are back with 2 new dump trucks!]

P. Lewis

## MODELING AT THE VLA

As a telescope rotates in elevation, it must deform under the influence of gravity, resulting in serious limitations in astronomical measurements. The VLA Telescope structure was designed so that it will maintain a parabolic surface, with varying focal length at all angles of elevation. This required careful relative proportioning of all the beams in the backup structure.

Several major telescope modifications are being proposed for the VLA Upgrade. In

order to evaluate the effect of these modifications on the structural performance of the antenna, we are developing a computer model of a VLA antenna. This requires that the entire antenna geometry and the structural properties of each beam and plate be calculated and entered in to a computer. A method called Finite Element Analysis (FEA) is then used to divide the structure in to a set of several thousand simultaneous linear equations that describe the behavior of every joint (node) in the structure. The computer can then calculate displacements and stress for any given set of loads on the structure. Recently, Melcolm Peralta, Steve Aragon and Chester Moeller bolted 400 lbs of steel to the apex of Antenna #20. Rick Perley then did holography on this antenna. This was done to see if the FEA model could accurately predict the change in subreflector position and dish shape due to the additional weight. It did.

J. Thumborg

## ANNUAL SYMPOSIUM

On Thursday, October 30, NRAO hosted its 13th annual symposium. Astronomers from throughout the state gathered to present and discuss their various research projects. These ranged from particle physics to extra-galactic astronomy. It might seem these topics are unrelated, but, in fact, they have much in common. For example, gamma ray bursters have been the subject of much attention lately. Gamma rays are photons - a type of sub-atomic "particle". It has been determined by our own Dale Frail, et al, that these bursts of gamma rays are coming from somewhere *outside* the Milky Way. What exactly the source is remains a mystery....maybe next year?

Other topics of discussion included a new look at Earth's magnetic field (it's not what we thought!), a search for planets outside the solar system, and an overview of the VLBI Space Observatory Program (VSOP).

L. Foley

## 1997 PEP

The Performance Evaluation Process for 1997 kicks in December 1, when the new forms will be handed out. We will have until the end of December to turn in the optional self-evaluations. Optional upward appraisals are due in the Personnel Office by January 16, 1998. Evaluation meetings between supervisors and employees begin March 13 and should be completed by March 31. Everything is to be wrapped up by April 15, in time for the Salary Review.

C. Janes

## COMMUNICATION WITH OPERATIONS

Charlie Barham, Operator, worked up a communications refresher for employees working at the VLA. He produced reminder sheets for all vehicles equipped with radios. It is required to call the Operator by telephone before leaving the shop, informing him/her of your name, the names of your crew members, where you are going, and what you plan to do there. Upon arriving at the work site, call the operator on the radio, telephone or WyeComm to confirm arrival. When leaving the worksite, call the operator to clear you from the work site. When arriving back at the shop, call the operator to clear you from the array and work site.

P. Lindsey

## VLBA SERVO MOTOR J-BOX MODIFICATIONS

The VLBA PM manual requires the brushes to be inspected every quarter, and this requires that the brushes be physically removed from the motor to be sure that they are free to move inside the brush holders, and have not worn past the indicating lines. During the recent VLBA Site Tech workshop, several people mentioned that it was extremely difficult to access the motor brushes on one side, because the motor J-box partially blocked the access covers. John Wall and Marlin Smith modified one spare VLBA EL motor by moving the J-box over approximately 1 ½ inches away from the access covers. This simple modification should allow easier access to the brush holders and make life easier for the Site Techs while they are performing required maintenance procedures.

The Servo Group is currently evaluating the impact of this mod on motor performance regarding environmental sealing of the J-box, and will decide shortly if all 10 VLBA Sites will be similarly outfitted. If the mod is approved, we will probably start modifying the Sites during the Tiger Team maintenance visits as this would have minimal impact on observing schedules. A job well done for John and Marlin for taking the initiative to do this on their own!

T. Frost

## ANTENNA SAFETY

It has been nearly a year since Antenna 15 got away from us one night and made us all think about antenna safety. Antenna safety is protection of the structure itself from damage. Procedures were improved immediately: insertion of the stow pin is required now when the antenna drives are disabled and the array operator calls someone when the antenna drives fail. After months of study, the following projects have been assigned to improve antenna safety:

- ✓ Installation of signs on the VLA and VLBA drive motor brake releases warning of the consequences of leaving the brakes disengaged.

- ✓ Scheduling the installation of stops on the VLA and VLBA drive motion during retrofits starting in 1998.

- ✓ A study of the VLA and VLBA counterweights. The antennas were supposed to be built counterweight heavy so that the default would be zenith pointing. All antennas measured to date are dish heavy, so we need to decide if it is worth the trouble and expense to add weight to the counterweights.

- ✓ Preparation of help files for VLA and VLBA alarm messages.

- ✓ Preparation of written service procedures for the VLA like the ones already prepared for the VLBA.

All employees are encouraged to watch for and report conditions that threaten equipment safety.

C. Janes

## BONEYARD CLEANUP

Next time you visit the Materials Yard (a.k.a. Boneyard), you won't recognize it. Godin and Pete cleaned out the trash, re-stacked supplies, re-organized major items, and put down rock. The next step is to delineate group areas and mark the areas with the group name so that the Yard stays organized.

C. Janes

## BAD TIES

How many bad ties are on the array? The Track Crew is inspecting each tie one-by-one to find out. As of this writing, the crew has found 6375 broken or rotten ties on a 5 ½ mile stretch on the north arm from DN-9 to AN-6. Extrapolate those numbers to the entire array and there could be over 50,000 bad ties. Typically, only 3500 are replaced each year.

C. Janes

## VLBA SERVO MOTOR BRAKE LOCK-OUT DEVICE

The VLBA Servo drive motors have self-adjusting brakes that compensate for normal friction disc wear, and require minimal maintenance by the Site Techs. During the recent Site Tech Workshop a demonstration was given on how to readjust this feature if it proved necessary in the field. During the demonstration, it became apparent that the potential existed for someone to be seriously injured if the brake mechanism released prematurely while the adjustment was being performed. John Wall and Marlin Smith took the initiative to fabricate a simple device that would effectively "lock-out" the brake mechanism, and prevent an inadvertent release of the stored energy in the brake which amounts to 75 ft/lbs; enough to cause serious injury to anyone's hand if it was in the way.

T. Frost

## POWER PROTECTION

Is your plug strip for your computer or other sensitive equipment rated UL1449? If not, your equipment may not be adequately protected. Replace the strip with a properly rated one from the warehouse.

C. Janes

## DECISION DRIVING

Our auto liability insurer, Liberty Mutual, conducted a Decision Driving Course for NRAO drivers. The program entails using the 5-step pattern which will improve our driving performance and skill. Important points: expand your look-ahead capacity, size up the whole scene, signal your intentions early, plan an escape route, take decisive action.

E. Cole