

J Schlemmer

# VLA/VLBA NEWSLETTER

600 NEW TIES INSTALLED,  
4400 TO DO. 60 TRACK CREW!

From the World's Premier Centimeter Wave Radio Synthesis Telescopes

## NEW FACES

The VLA workforce has grown by nine for the summer. There are new faces and some familiar ones. Frank Dobson has returned to the Auto Shop. Joe Sanchez, Lawrence Minitrez are back, but with a different crew than before, and Gilbert Montano is back at the VLA after a few years away. Also on the track crew, for the first time, are Chris Chavez, Maury Modine, Brian Olney, Eddie Savedra, and Kenneth Walker. Welcome!

## A WORD OF THANKS

While two employees at the Servo Shop were traveling and one was taking care of a family member, Steve Tenorio was trying to take care of everything normally taken care of by four others. Steve thanks the Antenna Mechanics for all their help with the encoders and other overhaul tasks during this time

L. Scema

## CONGRATULATIONS!

Congratulations to Tom Baldwin at VLBA Hancock for obtaining a Master Electrician's license.

P. Rhodes

## NEW PHONES

Wow, we have a new phone system! If you didn't take the class or get the printed instruction sheet, there are copies on the Control Building forms rack. If you have questions, or decide you want voice mail after all, or a phone blocked or unblocked, or you don't have a tac number... call Patty or Jo Helen. If they can't answer your questions, they know who to call to find out. They are also the ones to call to report any problems with phones or lines. Thanks to Mark Reynolds and NM Tech ISD for a great job!

A. Patrick

## LEATHERMAN TOOLS

Anyone possessing a damaged Leatherman Tool should notify Bertha Guzman. These tools have a 25 year warranty and may be returned for repair or replacement.

B. Guzman

## VIDEO CAMERA

The Electricians do some potentially extremely hazardous work. For some of the more hazardous and critical work they are recording the procedures on videotape. The idea is to view the tape to review the procedures before commencing work.

This camera was bought with electrical shop funds and we consider it to be an electrical tool. However, we are willing to lend it to other shops for occasional use. To use the camera, you will need to purchase some VHS-C videotape cartridges. You will then need to schedule the use through Jaime. For frequent use, you should consider buying a camera for your shop. Good cameras are reasonably priced (about \$500).

For general site use, there is a 35mm camera and a Polaroid instant camera. These can be checked out from Patty, Jo, or Alison.

B. Broilo

## NEW RAIL GRINDER

On Monday, April 13, Paul Savedra and Richard Murillo left Socorro headed for Pueblo, CO, to pick up a rail grinder that John Dowling located for NRAO. The Fairmont equipment includes a 6 cylinder diesel Caterpillar D398B engine and 611 kw DC electrical generator mounted on a 70 ton car (the big yellow unit near the AAB). A grinder car and a water car for water to cool the grinders are included. The equipment will be used to resurface the head and top of the rail

and to grind the lip. Doing so smooths the rail and makes gauging more accurate. The train can be used later for powering a rail plow and broom and for measuring gauge under load.

Jim Rexrode, Paul and Richard all express their gratitude for the help and courtesy with which they were treated by Barney Arellano and Rick Montoya of the Transportation Technology Center in Pueblo.

P. Lewis

## CONTROL BUILDING MODIFICATIONS

Jo Cason, who has served for several years as "site receptionist" needs a desk for the work she is doing now, so she is going to move into room 103 at the CB. The control console for the old telephone system prevented the move in the past, but now she has just a "Dterm."

To utilize the old receptionist's area effectively, the counter will be removed. The copy machine and fax machine will stay where they are, though a lower table for the fax would be nice. Anybody object to adding some "lobby furniture"?

G. Stanzone

## VLBA ANTENNA MAINTENANCE

The maintenance team upgraded the antenna and control building HVAC systems and performed detailed tests on the Servo and electrical systems at Owens Valley. Also, a worn azimuth wheel bearing was found and replaced.

The team consisted of Steve Aragon, Pat Baca, Tom Frost, Steve Troy, Jon Thunborg, and Pete Ulbricht from Socorro, and the Owens Valley site technicians, Jim Brown and Ray McFarlin.

In addition to routine maintenance and inspections, the team also completed some modifications to make life a little easier for the site technicians. These included adding grease catch trays under the elevation bearings and extending the elevation platform. The current elevation platform design requires that the technicians lean out over the guard rails in order to service the tach generators and brakes located on the elevation drive motors. Aside from being extremely uncomfortable, leaning over the guard rails is also unsafe. Platform extensions designed by Chris Garcia were installed on the antenna. These extensions add two feet of additional walkway to each side of the existing platform, allowing easy access to the elevation drive motors.

Congratulations to Chris, who did a banner job designing the platform extensions. They were a perfect match to the existing structure and the clever design allowed them to be prefabricated in the weld shop and then installed on site with minimum effort. This saved us considerable time on location and allowed us to return the antenna to service one full day ahead of schedule.

J. Thunborg

## SUBREFLECTORS

Three of the five refurbished VLBA subreflectors show signs of disrepair. Attention was drawn to the problem last month (see April newsletter) when the refurbished spare at the VLA showed signs of blistering paint. So far the paint on refurbished subreflectors at Los Alamos and North Liberty in addition to the spare show signs of deterioration. The other refurbished subreflectors are at Saint Croix and Pie Town. Because of the problems with the refurbished subreflectors, we are currently not planning to repair the problems with the Mauna Kea subreflector reported on last month until the problems with refurbishment are better understood. This decision may change if the cold load measurements planned by Paul Lilie for MK show a deterioration of signal performance. The Mauna Kea subreflector was never refurbished.

There is a second reason to delay further subreflector refurbishment. Bryan Butler has proposed the use of digital photogrammetry to measure the accuracy of the main VLBA reflectors (see VLBA Test Memo. No. 57). Photogrammetry uses CCD cameras and a computer to make precise geometric calculations on digital images of a surface. Photogrammetry could be used to improve the VLBA subreflectors for more efficient results at the new 3 mm receiver frequency. It is tempting to see if we can combine refurbishment with a re-contour of the subreflectors for 3 mm. We even have the paint booth now to do the work on site!

G. Stanzione & C. Janes

## RECENT VLBA DRY AIR PROBLEMS

The VLBA dry air supply maintains a positive pressure with extremely dry air in the feedhorns. This pressure prevents moisture from collecting which dramatically affects the efficiency of the feeds. The dry air system has been in operation for several years now and some compressors have accumulated enough hours to require the normal periodic rebuild.

Indeed, we are having problems with some of these compressors. The motor fails to start quickly causing the input circuit breaker to the system to trip. We believe that the problem is due to the starting relay wearing out and are working with a compressor in the HVAC shop. The problem is compounded by the thermal input breaker becoming more sensitive every time it trips.

Meanwhile, the number of compressors due for overhaul is increasing and some compressors are not functioning at all. This system is not critical as long as a periodic purge with the compressor or dry nitrogen is performed. We are working to determine the cause of the motor problems and start shipping reliable compressors soon.

B. Broilo

## TUTORIAL VIDEOS

The most recent additions to the VLA video collection are three sets of tutorial videos consisting of three volumes. Volume A is "Basic Computer Literacy" (40 minutes) covering hardware and software for DOS and Windows. Volume B is "Windows 95 - a First Look" (30 minutes) and gives an introduction to Windows. Volume C is called "On-Line Services and the Internet" (30 minutes) and explores the "net" and

what it offers. To check out these or other videos on various topics, for viewing on the TV/VCR monitor in your area, see JoHelen or Patty.

A. Patrick

## KITT PEAK PINTLE BEARING

In January of 1998 broken bolts were found on the top flange of the pintle bearing at Kitt Peak (see newsletter Feb. 1998). The pintle bearing, located at the center of the antenna, fastens the lower center part of the antenna structure to the antenna foundation. Without the pintle bearing, the antenna would fall off the rail when it was rotated. Stresses can be introduced in an unlevel bearing that would cause it to fail prematurely.

A crew of five, John Wall, Ramon Molina, Marlin Smith, Dave Alderman, and Guy Stanzione, visited Kitt Peak in April to level the bearing. They were assisted by Jack Meadows, Ron Bates and Paul Rhodes, who were already present at the site. The plan was to jack the entire antenna up 2" and install shims on the bearing to level it.

As we started to jack the antenna we quickly found out that we could not lift the drive wheels. The jack pressures were reading 10,000 psi+ and nothing was budging. We scratched our heads and someone finally suggested putting a fifth 100 ton jack under one of the drive wheels, along with the already existing 100 ton jack. This helped immediately and allowed us to seesaw from one drive wheel to the other lifting the antenna while keeping the jack pressures under 10,000 psi. Why the jacks did not lift the antenna on the drive side will be reviewed. If the antenna is that much heavier than thought, work on the track and drive wheels could be impacted. With the fifth jack the antenna was raised and set on 2" shim blocks for safety.

Using a jig and HP calculator program designed by Jim Ruff, the crew found that shim stacks as thick as 0.228" were necessary to level the bearing. The amount of the error in the bearing surface raises concern about the state of pintle bearings at other VLBA sites. Finally, the antenna was lowered back in place.

G. Stanzione