

VLA/VLBA NEWSLETTER

From the World's Premier Centimeter Wave Radio Synthesis Telescopes

AROUND THE VLA

October 23 was the last day for most of our summer temporary workers and our annual "End of the Summer" party. The temps were honored for their contributions to the successful completion of many projects this summer. They were presented with pictures pertaining to their area of work. Four who began the summer as temps have been hired for regular positions: Gilbert Montano for the Antenna Mechanics; Johnny Gonzales for the Grounds Crew; and, Chad Jones and Ellison Thompson for the Track Crew.

The gas pumps seem to be working after replacement of the card reader and several PC cards; thanks to Michael Zamora for getting all this done. Jim Rexrode installed a hinged cover over the card reader to help keep out dust and rain.

Kelly Gatlin has a really nice write-up in the November issue of "Steppin' Out" about his photography work. In fact, Kelly is featured on the front page. A budding photographer is Dusti Cason who won a First Place at the Socorro County Fair for her series of pictures of an antenna move. Dusti's work is currently on display in the Control Building lobby.

SNOW DAYS

On snowy days, call 835-7100 for a recorded message available by 6:30 a.m. to warn of late bus schedules. Clint Janes will call Rudy Latasa, Pat Lewis, Ramon Molina, and Alison Patrick by 7:00 a.m. if there will be a delayed departure. Rudy, Pat and Ramon will get the word out to the Magdalena folks and Alison will notify Datil people, so be sure that one of the callers for your area has your correct telephone number.

A. Patrick

PAGING AT THE VLA

Paging the VLA via 835-7199 from "outside," for example from a VLBA site, hasn't worked very well in practice. The pages are sometimes weak and unintelligible. VLBA site techs and others calling in from outside NM Tech are advised to call AOC reception at 835-7000 to make a page.

C. Janes

NEW OVERHAUL CYCLE

That's right! We are about to begin our fifth generation of VLA antenna overhauls. Since 1980 we have performed 103 overhauls. Earlier overhauls involved primarily mechanical, structural and servo maintenance. During the first cycle, a major upgrade to the FR mount was added. In 1985 the JPL/Voyager project began and put importance on upgrading electronic, front end and cryogenic equipment. We were talking serious deadlines between 1986-89. Following these efforts the overhaul took on a major upgrade of electrical wiring that completed in September 1995. Now nearing its end, the present overhaul combined tasks typical of previous overhaul generations, but also included important Cryo, HVAC and welding modifications.

The new cycle will initiate the completion of Q-band receiver retrofits. (Whew!! Relief is in sight for those involved with antenna moves.) The level of work includes feedcone segments, receiver retrofits, relocating azimuth limit switches, and a host of other ongoing changes. There may even be a need to rebuild an FR mount or two. This new overhaul also allows for changes to come with the proposed VLA Upgrade Project. There is a hitch. All the added work is likely to lengthen the present overhaul period by seven to 10 days. For those of you eager to start the new cycle, it begins with #18, our next overhaul antenna.

G. Cole

LPS

Jaime Montero and Ed Gray have made several improvements to the lightning protection system at the site this year, mainly at the Control Building. This is in response to a damaging lightning strike in 1997. Since the beginning of the year, the two electricians have installed protective circuits for the electric power, improved the grounding of the CB aerial protective system, and chased down a number of ground loops. In addition, Mark Reynolds of NM Tech installed improved lightning protection for the telephone system in April when the new switchboard went in.

How is the VLA waveguide protected from lightning? A zinc ribbon pair was installed just below the ground above the waveguide during initial construction. The zinc served for passive cathodic protection as well as for lightning protection (VLA Electronics Memo 232), but the cathodic protection function was replaced years ago. Although lightning is unlikely to damage the waveguide, the Grounds Crew, lead by Godin Otero, will inspect the entire zinc ribbon system this winter and fix breaks. Since the cathodic protection function of the zinc is no longer important from A7 in, the zinc system will be replaced by No. 2 steel cable in this area where the zinc ribbon has eroded away.

C. Janes

TRACK NEWS

The Track Crew was expanded from four to six to address clusters of bad ties scattered across the array (see VLA Test Memo #214). During the summer, the expanded crew of regular employees and temporaries will work on the repair and leveling of a single section of track. The smaller crew of six will fix clusters during the winter.

P. Lewis

THREE ANTENNA RULE BYPASSED

For the Cs configuration starting November 16, Antenna 15 at N1 will be designated "critical," according to Michael Rupen in the NRAO October Newsletter. If an antenna is critical, then someone must be called in to fix it when it fails, even if no other antennas are down. Also, maintenance on the critical antenna must be deferred insofar as possible. In the event the observer does not designate Cs configuration in his OBSERVE file, Antenna 2 at N8 and Antenna 3 at N12 will be designated critical instead of N1. The three antenna rule will continue to apply to all other antennas.

Cs is C configuration with an antenna moved from midway along the north arm (N10) into a central location (N1) normally used for D configuration only. The name Cs or C-short comes from having the short spacings between this and the other close-in antennas. These short spacings make the array more sensitive to large (extended) faint objects while maintaining the higher resolution of the C configuration. With Cs, some observations that required observing time in both C and D can be done in just the one configuration. Cs has become so popular with observers that it now replaces C entirely. For more information, see VLA Scientific Memo 175 by Michael Rupen, 18 September 1998. Mike will give a Science Talk on configurations at the VLA in January.

C. Janes

BUMP-BUMP-BUMP

No, we are not talking about "things that go bump in the night." We are talking about the addition to the driveway between Tech Services and the Servo Shop: a bump. It is about four feet wide and, we hope, high enough to keep people who walk between the two buildings from walking across icy puddles, slipping and falling in cold weather. It should also help in rainy weather to keep feet and ankles drier by giving people a place to walk where there aren't any puddles. A big "Thank You" to Dean and his crew for their efforts.

A. Patrick

BNSF VISIT

On September 14 the Track Crew visited Burlington Northern Santa Fe (BNSF) rail yard in Mountainair, New Mexico. The purpose of the trip was to give our Track Crew an opportunity to see how a major rail company maintains their track. Our guide was J.R. Chavez, Assistant Roadmaster for BNSF. He was very knowledgeable and has worked 25 years in track maintenance. J.R. really stressed safety during the time he talked to our crew. It was clearly evident that they had very strict rules and all followed them.

We were shown new trackage assembled for installation. Standard rail for main line track is 136 lb. (we use 90 lb.) which sets on 7"x 9" ties. All ties are hard wood (we use pine). They use a combination of concrete and wood ties at crossings and switch areas, and spring clip system for holding the rail in place rather than spikes. Double shouldered tie plates are fastened to the tie with lag screws and the spring clip is fastened to the plate. Sections of track are assembled in varying lengths and they are moved around with large front end loaders. One thing that becomes immediately apparent is the availability of heavy equipment to maintain their trackage.

Next, we visited a production tie gang working on a passing track. They were replacing random ties marked by an inspector. The section was two to three miles long and a sight to see. The crew consisted of about 37 persons and 20 pieces of equipment. The foreman indicated their tie installation production rate ranged from 1700-2700 per 8 hour day. This averages .28 min/tie to .18 min./tie installed. That is removing the old tie, collecting tie plates, spikes, inserting the new tie, tamping, placing the tie plate, spiking, setting the rail anchors, spiking and dressing (replacing ballast).

One thing that J.R. stressed was that on big jobs, such as we saw, they are indeed very automated. However, when their crews go out to work on small repair jobs, they do it exactly as we do, that is to say manually. Because of that, he talked about crew leadership and harmony. As a result of our visit, BNSF has sent us a copy of their engineering manual which covers aspects of track repair and maintenance. We have also been given the name of the person at BNSF in charge of disposing of their used track maintenance equipment. They also sent along information on how they fix or replace highway grade crossings.

G. Stanzione/J. Spargo

VLA UPGRADE

There are "hopeful signs" and "warranted optimism" about the VLA upgrade according to Miller Goss in comments to an upgrade study group October 29. Miller pointed out that a driving force for the upgrade is use of the VLA at higher frequencies (K and Q band). Successful use of the VLA at K and Q band is a direct result of good pointing accuracy and panel adjustments, both attributes contributed to by site personnel.

The three highest priority big ticket items for the upgrade are the 1) correlator replacement, 2) the Modcomp and on-line software replacement, and 3) waveguide replacement with fiber optics. Although the A+ configuration is high priority, the expense of the additional antennas required for A+ forces consideration of items 1 - 3 first. The E (tight-in) configuration and low frequency (<1 GHz) observations have been bumped to second priority.

Some upgrade work like the new K and Q band feeds and receivers is already proceeding. Rather than wait for the fiber optics, a redesign of the LO/IF system to send five times as much data through the existing waveguide could begin soon, thus extending the use of the waveguide several years into the next century. Fiber optics will provide for 20 times as much data as now. Construction of the new correlator could parallel construction of the MMA correlator, meaning the first part of the new correlator system could be ready as early as 2004. Rick Perley points out that with fiber optics communication, the new correlator could be situated in Socorro.

C. Janes

NEW TRACK TOOL

We hear about the high tech thingamajigs at the VLA, but sometimes the solution is straightforward. Pat Trujillo devised a heavy metal "tooth" for the skid loader that the Track Crew uses to clean out along the rail at crossings. The crossings have to be cleaned periodically to avoid derailment. Before the tooth, the rocks and other debris had to be removed with a shovel which took a lot longer.

C. Janes