

VLA/VLBA

NEWSLETTER

From the World's Premier Centimeter Wave Radio Synthesis Telescopes

AROUND THE VLA

Phillip Sanchez and Joe Rodriguez have been hired to fill the open Antenna Mechanic positions. Jeremy Martinez is coming back to take Phillip's place on Track Crew.

Tony Perreault transferred from VLA Operations to VLBA Operations in Socorro.

Promotions: In ES Division, Chester Moeller to Ant Mech II. Johnny Gonzalez and Ellison Thompson to BGU, Steve Tenorio to Sr. Tech, Shane Baca to HVAC/Plumbing Mech. II, Garry Morris to Tech Spec III. Congratulations to all!

20 years ago this month, first fringes were found on Antenna 21 and Antennas 18 and 19 were declared operational.

Hein Hvatum spent a few days in the area recently and visited the site and AOC. He was program manager for electronics development during VLA construction.

Gene Cole spoke to the Socorro Rotary Club about plans for Habitat for Humanity. [See Gene for more info.]

Tom Henderson from the NMSU will be filling in for Garry Morris in the Machine Shop for a couple of months. Welcome, Tom!

Tiffany Tadano is helping the Warehouse with inventory and Consuelo Montoya with data entry for the new MainSaver program. Both are high school students, Tiffany in Socorro and Consuelo in Magdalena. They are working at the site for 5 weeks as part of the City of Socorro SYEP.

By the way, Gustaaf Van Moorsel reports that ES Division has 1344 entries in MainSaver as of June 28th. Electronics has 922 and Computer Div 374.

Employees who passed the Class "A" CDL exam are: Antonio Guerrero from the Auto Shop, Joel Domschot from the Warehouse, Joe Sanchez, Kee Apachito & Fernando Torres all from the Track Crew. Their coach/trainer for CDL exam preparation was

Paul Savedra. Congratulations to all!

The PRA picnic was well-attended with lots of good eats. Thanks to PRA Board Members, especially Rob Long, Peggy Perley, and Julie Euart, for making it all happen.

Ronnie Baca reports that the NRAO men's softball team is playing and winning, congratulations!

Exploder-type e-mail addresses like "nmstaff" should be used for official use only and then sparingly.

To find someone at the site, try paging. If no response, call AOC reception at 7000. If you are at the AOC or a VLBA site, call the AOC Reception Desk at x7000 for help in locating persons at the VLA. Avoid calling the Array Operator.

COOL GADGETS

We are researching antenna metrology systems that are needed to set the VLBA main dish panels to the accuracy required for the new W Band (86 GHz). Kevin Adams of Leica instruments will demonstrate the Leica computerized theodolite system for setting antenna panels at the VLA site on July 13 at 11:00 am. This system costs less than half of the photogrammetry system demonstrated last November (see Newsletter, Vol 2, No. 12) and is expected to be as accurate, but is thought to require more effort.

Kevin will also demonstrate a laser tracker system that can follow a hand held retro-reflector and measure its 3 dimensional coordinates in real time with an accuracy of a few thousandths of an inch. Anyone who is interested is welcome to attend this demonstration.

J. Thunborg

AAB NEWS

Thanks to everyone who applied for the Antenna Mechanics positions. Joe Rodriguez and Phillip Sanchez were chosen for the vacant positions. Every one of the temps who applied

MAY WEATHER DATA

High: 19th & 21st @ 81°

Low: 2nd @ 27°

Total rain: 0.47"

Day w/ most rain: 24th w/ 0.27"

would have been a good addition to the Antenna Mechanics. Unfortunately, we only had two positions to fill. Everyone should be encouraged to keep up the good work and be on the lookout for any future openings.

In preparation for the azimuth bearing change, the Weld Shop added reinforcing web stiffeners, walkways, and handrails to the antenna support structure. However, the bearing change, scheduled for August, has been delayed until next year in order to decrease the budget.

Shane Baca constructed a pump and manifold system for the Antenna Painters which supplies water to all three water blasters at the same time. The Auto Shop is modifying one of the 5000 gallon tankers for use with the system. The pump will draw water from the large tank, reducing the time spent traveling to the site for water.

The Antenna Painters completed Antenna 4 and started on Antenna 19 on June 28th. It has been a learning experience for everybody involved. Progress was slow the first six weeks because of bad weather. We expect to paint the next antenna in six weeks if the weather co-operates.

R. Molina

MISSILES

The squiggly contrail leading up from the north end of WSMR early one morning in June signaled the launch of another HERA missile. HERA rockets are used as targets for the THAAD anti-missile missile. What was significant about this shot was that it marked the first time a THAAD actually contacted its target. We can now expect more firings across the VLA from Ft. Wingate to WSMR, and booster drops in the drop zone to the west, north, and east of the north arm, once the danger of forest fire is past. WSMR officials assure us that there is no danger to the VLA. Firings are usually scheduled for 6 a.m. when no one is out on the north arm. The THAAD missile is part of the Ballistic Missile Defense Operation.

C. Janes

DIPOLES

The 74 MHZ dipoles were installed again at the end of D configuration using the ropes to pull them in place. The crossed dipoles cause blockage at other frequencies and so will be removed in July. The box dipole idea to replace the crossed dipoles (Newsletter Vol. 2, No 10) demonstrated antenna pattern problems, so at Barry Clark's suggestion, Rick Perley devised another test, to pull the center of the crossed dipole as high as it would go when not in use.

"Pulling up the dipole helps, definitely," reports Rick. "At the higher frequencies, it seems to eliminate the blockage entirely. At L-band, it cuts it about in half. The dipoles add about 1 to 2 degrees in system temperature. Pulling the dipoles up reduces this to about 1 degree -- which is about the limit in accuracy."

R. Perley

THOSE BIRDS!

Walter Dail reports being dive bombed by a raven at one of the telescopes while working on the 74 MHZ dipoles. The bird was probably protecting its nest. Those large nests of jumbled sticks you see in the VLA antenna backup structure belong to ravens, which are the large, black crow-like birds with a strong arched bill.

Chester Moeller says the ravens build their nests deep with a slope on one side so that the eggs won't roll out when the antenna tips down to horizon pointing. Ravens through history have been revered and feared, in part to their sinister appearance but also because of their cleverness.

One question comes up about the site ravens, are they Common Ravens, American Ravens, Chihuahuan Ravens, or White-necked Ravens? Well, Common and American are the same species and Chihuahuan is a new name for White-necked. This writer thinks they are Common because the book says the Chihuahuan is smaller and gathers in enormous flocks of up to 100 birds. Our site ravens are seen singly or in pairs. A distinguishing feature of the Chihuahuan is white underfeathers on the neck which are "sometimes" visible, according to Mary Taylor Gray in *"Watchable Birds of the Southwest."*

C. Janes

FULGURITES ON THE WEST ARM

Godin Otero unearthed several fulgurites along the zinc passive cathodic protection system in sandy areas on the west arm. When lightning passes through sand, the heat fuses the silicon into crusty rock-like channels called fulgurites. The fulgurites demonstrate that the zinc ribbon is being struck by lightning and in the process protecting the waveguide below from lightning strikes.

The bare zinc wires were installed in the 1970's to protect the buried steel waveguide along the arms from corrosion. An impressed current cathodic protection system was installed later, but the zinc is still required as a sacrificial anode from A7 to A9 on all three arms and the fulgurites show that some sort of conductor is needed above the waveguide in all areas for lightning protection. (See Newsletter, Vol. 2, No. 11.)

There are breaks in the passive cathodic protection system that need repairing, concludes Godin Otero, Pat Lewis, and crew after testing the old zinc ribbon system for the past several months. Testing takes a lot of time because the zinc wire has to be disconnected at each manhole and the resistance measured with an ohmmeter. All together several miles of conductor must be replaced.

Further testing of the zinc conductors was suspended so that the Grounds Crew could replace a collapsing manhole; but repair of the passive corrosion/lightning protection system is still planned.

C. Janes

ANTENNA MAINTENANCE IN AMERICAS PARADISE

A VLBA maintenance team recently visited the antenna located at St. Croix, U.S.V.I. The team consisted of Steve Aragon, Ramón Gutierrez, Tommy Montoya, Steve Tenorio, Steve Troy, Jon Thunborg and Pete Ulbricht. The saltwater environment at St. Croix causes severe corrosion on the antenna. Because of this corrosion, several bolts, brackets, bearings and miscellaneous equipment had to be replaced. We also upgraded the antenna and control building HVAC systems and performed detailed tests on the Servo and electrical

systems. The work schedule was very ambitious and required long hours and hard work to accomplish all of the assigned tasks. In spite of this, several team members were able to use their evening hours to snorkel and sample the island rum.

The maintenance team found one of the azimuth drive wheels was making popping sounds and had two bad bearings. The Team did not have the necessary equipment on hand to repair the bearings. Therefore, a maintenance team is being scheduled to return to St. Croix to replace the drive wheel and bearings with a Jim Ruff designed heavy-duty drive wheel assembly. This is a major operation, as it requires jacking up the antenna and removing the drive wheel. The new wheel and drive shaft must be very precisely aligned with the gearbox.

The team working with Vivek Dhawan also repositioned the subreflector in order to improve antenna performance. Vivek would run tests on the antenna at night using Jupiter as a source. From these tests Vivek determines a subreflector offset and tilt that will increase the gain of the antenna. The team members would then reposition the subreflector during the next day in preparation for repeat testing at night.

J. Thunborg

Y2K

Our electric power is generated by Plains Electric Co-op which has taken measures to prevent power outages in January 2000. Just in case, John Dowling checked with our generator fuel supplier. The supplier reports that the fuel comes from a Y2K compliant refinery near Bloomfield, NM. Dial Oil will fill a 25,000 gallon tank at the end of December and promises more fuel will be held in reserve. The generators use 90 gallons per hour.

C. Janes

SPEED LIMIT REDUCTION

The speed limit has been reduced to 35 MPH for westbound traffic between the monument cattle guard and the site. Please be careful and obey all posted speed limits.

G. Cole