

**4700 NEW TIES INSTALLED!  
TRACK CREW, YOU DID IT!!**

# VLA/VLBA NEWSLETTER

From the World's Premier Centimeter Wave Radio Synthesis Telescopes

## AROUND THE VLA

We have two new SYEP students - Rebekah Claussen and Jenn Hartley. They have been doing a great job helping out in lots of different areas.

Adrian Morris has completed his co-op work plan for this summer, and returned to school.

## STAMPEDE!

Cows broke through the gate into the landfill area during a weekend in July in a wonderful contrast to all the high tech problems at the VLA. The janitor/guard on duty, Manuel Montoya, was worried that the calves would fall into the garbage pit, and chased cows around in the fenced area for 2 hours before returning all the animals to their rightful pasture. Manuel says it was worse when they got into the sewage lagoon.

The landfill is operated for NRAO use only by Godin Otero and Pete Zamora. Please use the recycle bins at the site for cans, paper, and cardboard, so that unnecessary waste as well as cows are kept out of the pit.

C. Janes

## CLASSES

Eastern New Mexico University (ENMU) will be offering vocational classes again this fall on the New Mexico Tech campus in Socorro. Courses planned cover automotive technology, heavy equipment, nursing, child development, culinary arts, banking, teacher's assistant training, and electronics repair. For more information about the program, contact Clint Janes. UNM and NM Tech will also be offering night classes in Socorro. A Tech schedule is available at the Control Building lobby. For information about NRAO's tuition reimbursement program and training programs, talk to your supervisor.

C. Janes

## DECISION DRIVING

Time to recall the 5-step pattern which will improve your Decision Driving performance:

1. Expand your look-ahead capacity.
2. Size up the whole scene.
3. Signal your intentions early.
4. Plan an escape route.
5. Take Decisive action.

We are having less accidents this year, keep up the good work!

C. Janes

## PAINTING

After a late start due to budgetary concerns, Ben Otero and a crew of two temporary workers have painted the quad legs on two VLA antenna. The crew expects to paint legs on 5 more antenna by the end of September. This will complete painting of all the VLA antenna quad legs.

The quad legs are being painted with Siloxane which the paint crew started using in 1994. Siloxane is made by Ameron and is a one coat system. Data from Ameron claim excellent UV properties and durability, surpassing the Polyurethane system. All the structural parts of the antenna are now painted with Siloxane. Siloxane costs \$110/gallon but we hope to recover this cost in the future by extending the time between painting cycles. Non structural areas (such as walkways, vertex and pedestal rooms, and areas out of the direct sun) are painted with Amerlock 400 and top coated with Diamond Vogel 100% Acrylic Latex.

We are also starting to use Siloxane for touch up painting at the VLBA sites (except St. Croix and Hancock). Some touch up painting was completed at Kitt Peak in 1995. It seems to be holding up well, with no signs of delamination. Touch up painting is also in process at North Liberty.

G. Stanzione

## MMA - A VERY HIGH PLACE

ES Division Employees may be called on to visit the MMA site in Chile once that project gets going. On March 5, NRAO invited Carl Gilmore, Medical Director of the Taos Ski Patrol, to do a presentation on Acute Mountain Sickness (AMS). Those in attendance learned how AMS can be a life-threatening problem at the 16,000 feet proposed MMA site in Chile. The major problem of working at such a high altitude is the very low partial pressure of oxygen at that elevation. High altitude conditions cause your body functions to act differently to compensate for the low oxygen levels. AMS affects the brain, heart, lungs, kidneys, bowels, eyes, skin, joints, and even sleeping patterns. However, there are remedies to combat these conditions. The primary solution is being prepared. At the meeting, Peter Napier explained that all NRAO personnel sent to work at the MMA site are required to receive AMS training. The training includes a video of Mr. Gilmore's informative program along with other materials and demonstration equipment.

G. Cole

## CROSSTIES

This year Administrative Services has changed NRAO's method of disposal of our used railroad ties. In the past a "Request for Bid" was requested from the community at large provided the bid was not from an employee of NRAO. This year NRAO is donating our used ties to governmental units within the Socorro Area. One thousand ties will be donated to Bosque del Apache, one thousand ties to Bureau of Land Management, one thousand ties to the State Forestry Dept and one thousand ties to New Mexico Tech. The BLM ties are being used

on a project employing the summer youth in landscaping the various public schools including the new Parkside School in the City of Socorro.

It is intended that we continue to dispose of our surplus used ties via the same method in the years to come to reduce the costs of operating of the various governmental units.

J. Dowling

## SITE & WYE NEWS

The Track Crew has replaced approximately 4700 ties and will now switch to leveling. All new ties have been gaged and spiked. Ties supply had become critical because the vendor had only delivered 800 of the 2500 ordered. But Bertha "built a fire" under the vendor, and the ties were received in time.

The rains that started July 1 have brought lots of green grass and flowers to the VLA, but they have also tested the new north arm drainage. CN7 to CN8 is draining fine with the new trench the Track Crew installed, but the area around CN9 where the trench work has not been done must still be pumped.

The Carpentry Shop has replaced the roof on the SLOB building. The work was done quickly! They have begun prepping the Cafeteria windows for painting. They have also formed where the RFI antenna support platform stands in order to pour concrete to keep the legs from sinking into the sand. Also, they moved the tape storage track and racks in the Control Building to a new location.

The Grounds Crew has been busy digging new pits at our landfill and covering the old trench. By using pits instead of the trenches and by replacing the barbed wire fence with chain link, they have practically eliminated the trash blowing all over the Plains.

The Auto Shop has been very busy. They recently hauled in two 5000 gallon tankers from Tucson DRMO. Dale Webb, of NRAO Tucson, acquired them for us. We also acquired a 40 passenger bus from Bosque del Apache Refuge. The mechanics have a few things to fix before it becomes the replacement for the Bluebird.

P. Lewis

## NEW PHONE SYSTEM

A few reminders on using the new phone system:

Extension #s for NRAO or NMIMT= xxxxx

Long Distance (no block) = 9-1-area code-#

To use with calling code: (See Patty for code card.) 3+1234+code#+9+1+#

(We may call Albuquerque toll free for 12 minutes.)

Local: Datil or Pie Town = 9-772-xxxx

Socorro = 9-835 or 838-xxxx

Emergency = 911 will call VLA Operations and recorder in L. Serna's office

= 9911 will call Datil emergency services

Paging = 7199 - hear bell, double beep,

Dial: 01-CB, 02-TS, 03-AAB, or

00 to page all site

Dial 0 = goes to 7000 (AOC Receptionist)

772-4011 will also go to 7000

Voicemail = 5100, follow instructions

PROGRAMMED BUTTONS ON D-TERM PHONES:

FWD-A = Forward All

S&R = Save and Redial

LND = Last Number Dialed

RECALL = Hangs Up

DND = Do Not Disturb (will not ring)

MIC = Microphone when using speaker

CALL BACK = If # called is busy, depress.

When both lines open, callers phone rings, lift handset, called phone rings.

TRANSFER = To transfer calls, press, dial #, listen for ring, press again to release.

## BREWSTER VLBA MAINT

We finished July 18 with the Brewster Az rail maintenance. We have certainly stabilized the rail, and as a bonus the support has improved the track level by 30-40% in damaged areas. We fixed 25 bolts of grout.

B. Broilo

## TRANSPORTER HISTORY

My job way back when was to oversee E Systems' task of translating our conceptual design of the transporter into working drawings and eventually steel. This type of machine was a first for them and me and a lot of learning on both sides was necessary. Together we managed to put together Transporter #1 and it worked fairly well, but

it did require about a year to get the bugs out. One problem was to address the challenge of making a 90 degree turn onto the spur without the use of prybars, jacks, and sledge hammers. The four trucks form the four corners of a square, which is no problem on the straight track, but there are several curves and this necessitated some adjustment. When negotiating a curve on parallel track, the four truck centers are no longer describing a square, but a trapezoid and this necessitated incorporating a two inch play in the pintle joint where the truck attached to the transporter frame. This was no real problem until the transporter was required to move onto a spur. Now, rotating two of the trucks would find them up to four inches out of position to come down gracefully onto the track. The move crew would have to manhandle the truck to force them into position to align with the track, which presented a second problem. The transporter would occasionally "crab" down the spur and it would be difficult to position the antenna onto the foundation pads. Obviously, a method was needed to return the trucks to their proper location to precisely mate with the spur. Bill Horne solicited E Systems for a design to achieve this end, but was not happy with the multi-thousand dollar price.

Many years before, I had worked for a job shop designing gears and cams and was convinced that a simple cam would solve the problem inexpensively and passively. The simple harmonic cam provides a smoothly accelerating motion to its design location and seemed the ideal solution. I laid out a double harmonic cam, that is two cams spaced to move a follower inward or outward along the orthogonal axis of the cam. This was drawn full size on Mylar and given to Bob Stidstone, who found a vendor with a milling machine with an optical tracer which could reproduce the shape directly from the drawing. He also found a frictionless follower to transfer the motion of the cam to the trucks. Ramon Gutierrez and Nick Montoya had Steve Aragon weld the cam assembly to the truck and the follower assembly to the transporter frame. Now, whenever the truck is turned, the follower passes between the pair of cams and the truck is moved to its center position automatically without any action required by the crew. This device has worked well without any adjustment or maintenance for almost twenty years.

W. delGiudice