

VLA/VLBA NEWSLETTER

From the World's Premier Centimeter Wave Radio Synthesis Telescopes

PERSONNEL

Anybody have electronic technician or machinist friends who want to work at the VLA? Ask them to send their resumes to Judi Lowell. Lisa Foley is taking a position at the AOC, which opens a second Advanced Tech position, and Glenn Mauger plans to retire this summer, which opens a position for a Senior Technician starting March 31.

Andre Baca will be working full time for the month of January on drawing vectorization, then is planning to go on to other things. He has made major progress on the drawing project since he started in May of last year. We expect to be looking for a NMMT student to continue this work.

Optional upward appraisals are due to the Personnel Office on January 16.

SNOW AND COLD

The great snow storm of December 1997 caused two early bus departures and one late arrival. It also caused ice and snow on the VLA antenna panels which disrupted high frequency (K and Q band) observations for nearly three weeks. The cold weather after the storm resulted in a rash of problems with cryogenic compressors and electromechanical problems. Operations reports that five antennas were down after the Christmas shutdown and the number went to nine briefly before Cryo, Servo, and the Antenna Mechanics got everything warmed up and going again. The Track and Grounds Crews dug the Site out from all the snow.

C. Janes

BUSINESS CARDS

Jo Cason has generic NRAO business cards that any site employee can use just by writing in your name. You might want to take some on your next trip or have some available for your next vendor visit.

C. Janes

NSF VISITORS

All of our funding is awarded by the National Science Foundation (NSF). Three of the NSF managers who oversee the awards will visit the VLA Site on January 21. They are Dr. Robert Eisenstein, Assistant Director for Mathematical and Physical Sciences, Dr. Hugh van Horn, Director for the Division of Astronomical Sciences, and Dr. Robert Dickman, Coordinator for the Radio Facilities Unit.

C. Janes

PPO PHYSICALS

According to the new Employee's Handbook, the NRAO medical plan now "pays benefits for one annual physical per person". The copay of \$10 and 10% of lab fees apply, as well other possible charges.

C. Janes

1998 MAINTENANCE SCHEDULE

It looks like another busy year ahead of us. On-going projects such as antenna painting, mainline track leveling and alignment, and the waveguide vault replacements are expected to continue. As will antenna overhauls which includes yet another azimuth bearing exchange scheduled late this summer. The VLBA work plan anticipates visits to OV, LA, and BR to perform Tiger Team maintenance and AZ rail repair (LA and BR). In addition, we have proposed contract painting at SC and HN. We are also supporting the 3mm receiver installation at LA, FD and MK. Other proposed projects include the VLA upgrade, utilization of finite element analysis, VLA communications network, site wide lightning warning system, rebuilding the feedhorn test stand, and other on-going upgrades and retrofits to antennas and facilities around the site. Last, but not least, a series of safety and health awareness sessions are also planned. More details of all these efforts will be issued soon after we have established this year's budget constraints.

G. Cole

K-BAND INSTALLATION

The first new K-Band front end was installed on Antenna 9 in September and the second front end was installed on Antenna 5 in December. The components for the third and fourth front ends have been received from CDL. These front ends will be assembled and tested during the second quarter of 1998. They will be installed during the third quarter of 1998.

Bryan Butler reports that the system temperature for the new K-Band receiver at Antenna 9 is less than 40 K as compared to 120 K or more for the old receivers. Coupled with the increase in frequency range, the new K-Band project promises to greatly enhance high frequency observations at the VLA.

J. Ruff

RADIOS

The Servo Group will be taking over the maintenance responsibilities for the VLA Site radios effective January 5, 1998. These include the radios mounted in vehicles, the VLA base station, and the hand held portables. The Servo Group will be responsible for new installations in vehicles and offices, as well as repair and maintenance activities on all Site radios. These new duties will be delegated to Glenn Mauger, who will be going on part time status this coming May as part of his retirement plans. All personnel are requested to address all radio-related MAINT forms to the Servo Group.

T. Frost

NRAO ANTI-DRUG/ALCOHOL POLICY

All NRAO-NM CDL drivers will begin testing for five drugs: heroin, cocaine, PCP, marijuana, and amphetamines. Testing will be done by an outside testing service for all CDL holders on

January 22. Starting in March, unannounced tests will be conducted monthly for a random selection of drivers. The monthly tests include alcohol as well as drugs. Every driver will be eligible for random selection each month, but not all will be tested. The actual number selected for testing will result in 50% of drivers tested for drugs per year and 25% for alcohol. Drivers with positive tests will be referred for treatment the first time, but will be terminated on the second offense. The testing is required by federal law.

Testing will also be required after an accident involving injury or damage sufficient to require towing or for "probable cause". Supervisors will be trained in January to watch for drug and alcohol abuse and to send drivers for testing when there is probable cause for suspecting abuse. Judi Lowell will serve as manager of the program and Jon Spargo as administrator.

Drug and alcohol abuse jeopardizes your safety and the safety of your fellow workers. It is prohibited to be under the influence of alcohol or illegal drugs at work, as stated in the Employee's Handbook. In the case of CDL drivers, a breath analysis of 0.02 or higher will result in termination on the second offense. Drivers are told not to intake alcohol from any source - medicine, mouthwash, or drink - less than four hours before reporting to work, the four hour "bottle to throttle" rule. Any evidence of marijuana, cocaine, heroin, PCP, or amphetamines will also result in termination on the second offense.

1. Have you ever felt the need to cutback on your use of alcohol or drugs?
2. Have you been criticized by others for your use of alcohol or drugs?
3. Do you feel guilty about your use of either?
4. Do you feel the need to use either first thing in the morning to steady the nerves or counteract a hangover?

If you think you have a problem, your medical plan can provide help before you jeopardize your employment.

G. Cole

VEHICLE ACCIDENT PROCEDURES

We have two types of vehicles here on the site - GSA and NSF vehicles. NSF vehicles are owned by NRAO and GSA vehicles are leased from the U.S. General Services Administration. In the glove compartment of GSA vehicles is a packet of forms which must be completed for any accident involving a

GSA vehicle. This is a white clasp envelope, approximately 6" wide and 9" long, which contains a four page Accident Report Form. This is in addition to the regular NRAO Accident/Incident Report. This form must be turned in by the working day following an accident. After the form is completed, copies should be attached to all copies of the NRAO Accident/Incident Report, given to your supervisor for signature, the original sent to Skip Lagoyda in the AOC Business Office, with copies to the Safety Officer, nearest Safety Officer, and appropriate Division Head.

A. Patrick

VLBA CONTEMPO UPGRADE

The hydrogen maser engineer, Leon Abeyta, reports improvement of peak-to-peak temperature control of the maser environment at the Kitt Peak, Pie Town, and Fort Davis VLBA sites from 2 - 3 C to < 0.5 C. Where the maser frequency output was degraded because of the wide temperature swings, the stability of the maser frequency output at the modified sites is now improved by a factor of 2, reports Larry Beno, Electronics Division Deputy Head. The improvements are the result of DDC controllers installed on the Contempo HVAC units by Steve Troy. The plan now is to install the Steafa Smart II/DDC controllers for the remaining VLBA Contempo HVAC units during regularly scheduled maintenance visits. By the way, the hydrogen maser is an atomic clock/oscillator critical to time stability of the data.

Steve installed the controllers at Pie Town, Fort Davis, and Kitt Peak in 1997, and has been adjusting operation to match real world conditions. Various problems have been encountered, such as the room temperature in rooms 103 and 104, operation while operating on the emergency generator, and interaction between the temperature and humidity control. The room temperature problem is understood and corrected at Pie Town and Fort Davis, and the humidity/temperature interaction problem is also understood and corrected at Pie Town and Kitt Peak. Operation problems while on emergency power can be corrected by switching to the back-up Contempo which is not DDC controlled. A current concern is over the equipment rack temperatures in rooms 103 and 104 of the station building; the racks contain cabling that is temperature sensitive. Further measurements are planned to determine if the cabling is being kept warm enough. Full details are in a memo to be released soon.

There may be some additional tweaking of DDC

parameters required to meet changing circumstances but very soon the project will be considered complete, and further changes in the DDC parameters or elsewhere in the design will require a change order.

Temperature control for the radio antennas is important for data quality. Until the radio signals are digitized, temperature changes in equipment and signal lines can shift the phase and so distort the data. Because of the success of the DDC controllers in the VLA and VLBA vertex rooms, Jim Ruff and Steve Troy recommended application of the controllers to the station building Contempo HVAC units for room 104 temperature stability. The pre-DDC on/off Contempo controls cause wide swings in the room and rack temperatures.

C. James

VLBA MAINT

[Editor's Note: This article is a new feature to cover maintenance questions and procedures on the VLBA antennas.]

Here is the Mauna Kea site techs' approach to cleaning flow indicators on the VLBA:

1. Reference Q-7 for lockout and shut down procedure.
2. Drain approximately 1 gallon of oil from motor. Place a large oil drip pan under assembly.
3. Remove all compression nuts, loosen large coupling nut and 2 bolts that hold assembly to motor.
4. Install 1/2" brass caps to the male compression fittings and fill manifold with WD40. Let soak for a few minutes; the WD40 will thin out the oil deposits without harming the surface.
5. **Use goggles for this step.** Remove the 1/2" brass cap from tube to be cleaned. With an air gun shoot short bursts of air through the large opening of the manifold. This gives a cavitating action of the bearings in each tube and cleans it out. Some adjustments to the 1/2" brass caps may be needed for proper cavitation.
6. Repeat cleaning action as needed. Install manifold assembly to motor and connect fittings.

To address a related issue on discolored oil:

1. During the gearbox oil change, remove the oil filter canister.
2. Fill the canister with a cleaning solvent and install back over the filter element.
3. Rotate the filter handle and clean the filter element within its own canister.
4. Drain and repeat as needed.

We recommend a change order to install a 1" gate valve in-line before the oil filter to facilitate future cleaning as needed without having to drain all the oil from the gearbox.

Aloha, Tony Sylvester