

NRAO NM NEWS

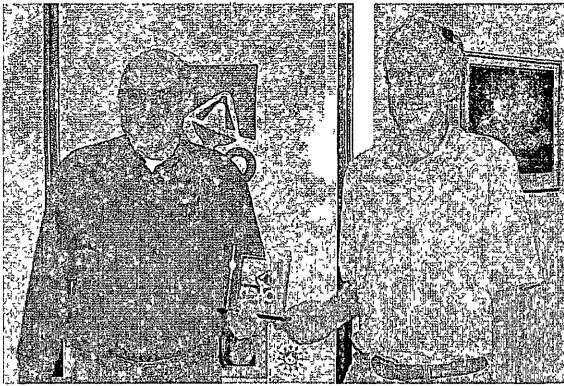
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NOTES FROM THE HEAD

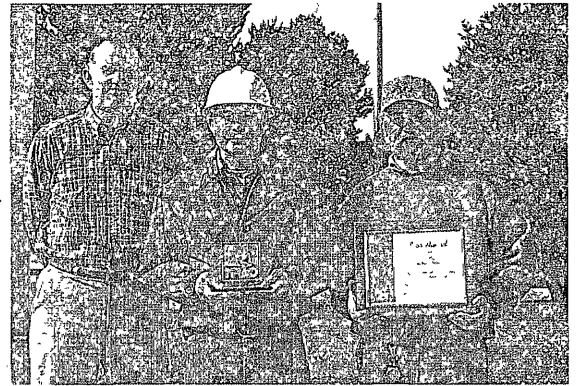
I'd like to take this opportunity to recognize the two NRAO employees in New Mexico who received Distinguished Performance Awards at the end of 2004. The awards, for long-term outstanding service to the Observatory, were awarded to Paul Rhodes and to Ramon Gutierrez at

respective meetings of the Electronics and Engineering Services Divisions during January.

Paul Rhodes started his career at NRAO in the early 1970s, working on the 36-foot telescope on Kitt Peak. There, he played various roles including the Manager of Telescope Operations, and supervised the resurfacing of the 36-foot telescope when it was re-born as the slightly larger 12-meter telescope. Paul moved to New Mexico in the 1980s to take charge of the Field Group for the new VLBA Project. His group outfitted each antenna with



Paul Rhodes with his Distinguished Performance Award from Jim Ulvestad, Assistant Director-Socorro Operations. Photo courtesy of Gayle Rhodes



Mark McKinnon, Deputy Assistant Director-Socorro Operations, Ramon Gutierrez with his Distinguished Performance Award and Charley Chavez holding his Star Award. Photo courtesy of Kelly Gatlin

electronics, and Paul has continued to lead the Field Group and the local technicians who are responsible for each of the 10 remote VLBA antennas. Paul ably heads the most geographically dispersed operation in NRAO, and the continued reliability of the VLBA is a tribute to the efforts of him and the rest of the Field Group.

Ramon Gutierrez has been at NRAO since the late 1970s, working in the Antenna Mechanical Group at the VLA site. Ramon was the leadman for the mechanical outfitting of the 10 VLBA antennas in the late 1980s and early 1990s. He has played a lead role in more than 30 "tiger-team" maintenance visits to VLBA antennas, as well as in the replacement of azimuth bearings on nine VLA antennas, and also has participated in almost every reconfiguration of the VLA for more than 20 years. Currently, Ramon is the Technical Support Supervisor in the Antenna Mechanical Group, and leads that group in modifying the VLA antennas for the EVLA Project.

A past recipient of the Distinguished Performance Award is Eric Greisen, who was the lead designer and is the primary "guru" of the Astronomical Image Processing Software (AIPS). Recently, Eric was named the winner of the 2005 George van Biesbroeck Prize of the American Astronomical Society, an award presented for "long-term extraordinary or unselfish service to astronomy, often beyond the requirements of his or her paid position." (A previous NRAO recipient was Barry Clark in 1991.) The AIPS software has been used by virtually every VLA and VLBA observer to reduce his or her data, and has evolved from the era of Vax and Convex mini-computers to the variety of desktop computers that are now used by astronomers. Over the last 20 years, well over 3000 refereed papers in the astronomical literature, and virtually all of the major scientific results from the VLA and VLBA, have depended on the use of AIPS.

Congratulations to Paul, Ramon, and Eric on their well-deserved awards, and for their long-term dedication to NRAO and to the scientists who use our telescopes.

Jim Ulvestad

STAR AWARD

Congratulations to Charley Chavez, who received a Star Award (see photo at the top right) for his leadership role in assembling the EVLA warehouse. The 50 foot x 100 foot steel warehouse was needed to store the raw materials for EVLA antenna overhauls. Although he had never supervised the construction of a building of this type or size, Charley readily accepted the challenge of its assembly. Charley taught himself how to assemble the building and then trained VLA site employees how to do it. Under Charley's supervision, the building was assembled on schedule and without an accident. It is estimated that the EVLA project saved about \$30K in subcontract labor costs by assembling the building in-house.

Mark McKinnon



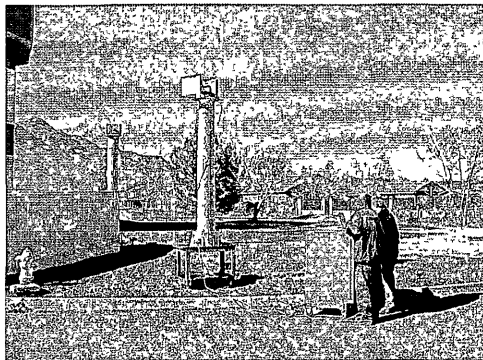
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WELCOME

Stephen Steele, Array & Corr Ops.; Larry Gacanich, Business Div. Tanner Oakes, DSAA, Co-op; Benny Ramer, Kenny Santillanes, Tommy Trujillo, Dominic Zamora, Engineering Services.

EVLA OUTDOOR ANTENNA TEST RANGE PROJECT

The EVLA requires a reliable Outdoor Antenna Test Range to test the numerous antenna feeds that will be fabricated over the duration of the project. The results of the test range will be used to monitor the quality of the corrugated feed horns provided by various production facilities. The first plan required sending a statistical sampling of the



Test Equipment Proof-of-Concept Testing

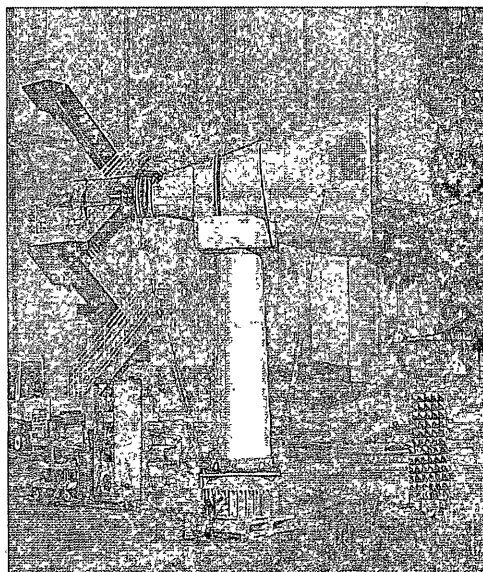
new feed horns to an outside testing facility to measure the radiation patterns. This plan proved to be impractical as shipping costs and testing fees would exceed \$100,000.

The second plan collects the same data but the testing is performed locally at a joint New Mexico Tech

NRAO facility. Building a joint facility reduces the cost to NRAO while still providing the needed quality data. A candidate location near the campus observatory has been chosen.

The test equipment proof-of-concept tests have been performed using a pair of horn antennas covering the 1.0 – 2.5 and 2.0 – 5.0 GHz bands. The photo shows the test setup behind the AOC Shipping/Receiving Dock.

The final facility will elevate the antenna-under-test and source approximately fourteen feet above ground level. To reduce interference of the tower, the antenna under test will be supported by a 2ft. x 2ft. x 12ft. column of high-density polystyrene foam. The photo shows a typical elevated technique. The test antennas will be lifted by crane to the top of the column.



Typical Elevated Antenna Under Test

The source antenna will be mounted on a telescoping tower.

The design of a support structure to mount the foam column on top of the Azimuth Positioner is underway. This unique test facility, scheduled for completion in 2005, will be a useful tool to support the EVLA project. It will also provide a hands-on laboratory experience for electrical engineering students at New Mexico Tech.

Troy Jensen

SERVO UPGRADES

Several initiatives to improve the VLA and VLBA servo equipment have paid off in a big way. Two most significant improvements include the VLA Encoder upgrade and the VLBA Digital Tachometer upgrade.

Both of these are in-house designed and built.

The encoder upgrade on the VLA antennas virtually eliminated the 1.3-degree oscillations and improved the PN3db periodic error to better than one arc second. Consequently, with this modification, we now have improved antenna pointing and a significant decrease in antenna down time. Encoder production began in the latter part of April-2001, and the final installation was completed in October-2004.

The VLBA Digital Tachometer upgrade replaces a troublesome analog tachometer which was originally used on the servo motors. The analog tachometer used brushes which introduced noise spikes into the servo system. The noise causes the servo amplifiers to blow fuses, especially during times when the utility power is bad. The new Digital Tachometers are brushless and provide a clean signal at all times. The prototype was tested at the Hancock, New Hampshire site after which a couple of changes/improvements were made. The production version was then installed at the Pie Town station in December of 2003, and shortly thereafter, in January 2004, a second system was installed at Hancock for further testing. Since then, antennas at Fort Davis, Owens Valley and Brewster have been outfitted. This year (FY 2005) the plan is to install the Tachometer upgrade at the St. Croix, Los Alamos and Kitt Peak VLBA sites. The remaining two, Mauna Kea and North Liberty, will be done in FY2006.

In both cases, a notable decrease in failures is evident. ES and Electronic Divisions' personnel have worked together to make these improvements a success: Buen Jale!

Lew Serna

COMPANY VEHICLES GUIDELINES

NRAO has three groups of vehicles at its disposal for official business use: a) NSF owned, b) AUI owned and, c) GSA leased.

In the case of all groups, users are expected to do a minimal safety check before operating the vehicle such as inspecting the tires for proper inflation. Users are also responsible for maintaining proper fuel levels, removing trash from the vehicles and securing the vehicles when parking. Cargo is not to be left in open vehicles while parked in public lots (that includes the AOC).

The NSF owned vehicles are primarily based at the VLA site and maintained by their assigned groups and the VLA auto shop. Users should contact their supervisor or a VLA auto shop mechanic when they notice a mechanical problem with the vehicle.

The AUI vehicles and GSA vehicles are used by visitors and employees. None are assigned to any certain group; therefore, they are used by a wide variety of drivers. These vehicles are maintained in commercial shops. Contacts for issues regarding these vehicles are Christine Wingenter and Clifford Serna. Users are responsible for fueling the vehicles. At that time, one should check the fluid levels under the hood.

Fueling the vehicle for the next user is expected when the fuel level falls below half full. All vehicles should be fueled at the VLA site whenever possible. GSA vehicles have credit cards for fueling in the key case. Use only regular unleaded fuel and return the receipt to Clifford.

AUI vehicles may be fueled locally at Premier Foods, 202 California, by charging the fuel on open account and bringing a copy of the receipt to Christine, or else paying elsewhere and requesting reimbursement.

All vehicle users should contact the appropriate individual mentioned above in the event of damage to the vehicle, including glass and tires, so it may be repaired. If you are involved in an accident in any company vehicle, contact the proper authorities and then the NRAO business office, so the incident can be reported to the owner of the vehicle.

Many people use these vehicles and they are in great demand. We will provide vehicles that are well maintained and safe to drive. We need your help in order to accomplish this goal.

Skip Lagoyda

Note: The article on "March 2005 Skies," will be posted on bulletin boards at the AOC, AOC West and VLA Site.