

VLA/VLBA NEWSLETTER

WEATHER STATS		
	HIGH	LOW
Jan	58.6° (8th)	-2.4° (2nd)
Feb	68.2° (23rd)	-4.5° (*1st)
Total Precipitation: .33"		

From the World's Premier Centimeter Wave Radio Synthesis Telescopes

AROUND THE VLA

Welcome aboard Kelly Greene and Andy Vaiza, Antenna Mechanics.

Melcolm Peralta and Adrian Zamora successfully completed a Welding Certification class in January at Mesaland Community College in Tucumcari.

In February, Paul Savedra, Adrian Pino, and Gerald O'Connell attended the 30th Annual Quality Concrete School in Las Cruces.

Farewell to Mike Bradford, VLA Operator, who is off to become a Solar Observer at Sunspot, NM, looking forward to the end of shift work and two hours' driving every day. He says he will be walking to work!

NOTES FROM THE A. D.

Many of you have heard pieces of the story about the federal budget request for Fiscal Year 2003 (FY03) and its possible impact on NRAO. The FY03 request sent to Congress for the National Science Foundation, which funds NRAO, generally contained a cut of about 2%-3% for all of the physical sciences, including such disciplines as physics, chemistry, and astronomy. As part of this general trend, the request for NRAO operations was approximately \$800,000 below the funding level for FY02; a separate item was a large increase for ALMA, to about \$30 million, for the beginning of construction.

There have been statements by various congressional representatives that the proposed general cut for the physical sciences is not acceptable, and that Congress should increase the funding above the request level as they did in FY02. However, since this is not guaranteed, NRAO took the prudent step of temporarily freezing open positions in operations during February,

while assessing the impact of the requested budget for FY03. This assessment now is largely complete, and recruiting continues for most positions, which will be released on an individual basis as appropriate candidates are found. A few open positions will remain unfilled for a longer time, in order to create a financial cushion for FY03.

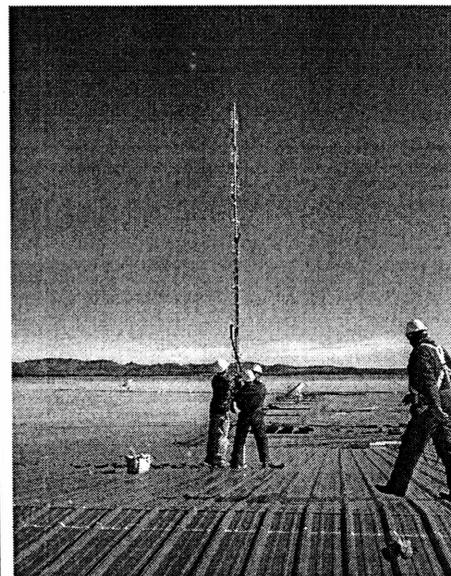
As employees located in NRAO-New Mexico will have noticed, the AOC and the VLA site are becoming progressively more crowded due to the new projects that we have undertaken, such as ALMA, EVLA, and Data Management. In order to plan for our future work environment, I asked Mark McKinnon to lead a committee to study the overall space requirements for NRAO-New Mexico over the next 10 years. Along with Mark, the committee included Skip Lagoyda from the Business Division, James Robnett from the Computer Division, Terry Romero from the A.D.'s staff, and Pat Lewis from Engineering Services. A detailed assessment of our space needs, and recommendations for addressing these needs in both the short-term and the long-term have been produced as part of the committee's final report. The report is too lengthy to summarize here, but its Executive Summary can be found on the AD web site at <http://www.aoc.nrao.edu/AOC/AD/space.html>.

J. Ulvestad

SPACE NEEDLE

Those of you with sharp eyes have probably seen the new antenna on top of the AAB. This is for the new UHF radio system. Ramon Molina, Ramon Gutierrez, Adrian Zamora, Glenn Mauger and Bob Broilo waited for a break in the wind and put it up last Thursday.

We tested it on Monday with low power handheld radios and we were able to talk to Clifford on HWY60 at the National Guard armory in Socorro! Bob Broilo became "Base Station Bob" while Jon Spargo and Glenn



Installation of the Antenna for the New Radio System

Mauger formed a posse called "Mauger's Marauders." Mauger's Marauders cruised around the VLA site to test the radiation pattern of the new antenna. The handhelds worked everywhere on the site and almost all the way down HWY60 to Socorro. When Glenn gets the rest of the equipment and connects it up we will start training and distributing the new stuff.

B. Broilo

POINTED QUESTIONS ABOUT ANTENNA 1

Antenna 1 was the very first antenna built. It doesn't work with the newest receiver, Q-band or 40 - 50 GHz. And that's a big problem. Ramon Gutierrez reports that reference marks on other antennas used for alignment are not present on Antenna 1. In addition, the subreflector on Antenna 1 is an early version with a large center hole. As a result, the

alignment fixture inserted in the subreflector hole on other antennas doesn't work on Antenna 1.

Tests by Chris Carilli show just enough faint signal at Q-band on Antenna 1 that we believe the problem is alignment. Specifically, there is signal off to the edge of where it is supposed to be called "coma lobe." Coma lobe is caused by a misalignment.

A few weeks ago the Antenna Mechanics translated the subreflector to one side in an attempt to reduce the coma lobe at Q-band. The coma was reduced, but then coma lobe began to appear at K-band, or 21 - 26b GHz. Up until the subreflector was moved, K-band operated normally.

At a meeting at the site on March 5, it was decided the first thing to check is subreflector tilt. Rick Perley says he can check for tilt by modifying the holography software. Holography is a technique used at the VLA to measure main panel surfaces very accurately. If we are lucky, the coma at Q-band is the result of tilt. If not, well, we are going to learn a lot more about optical alignment.

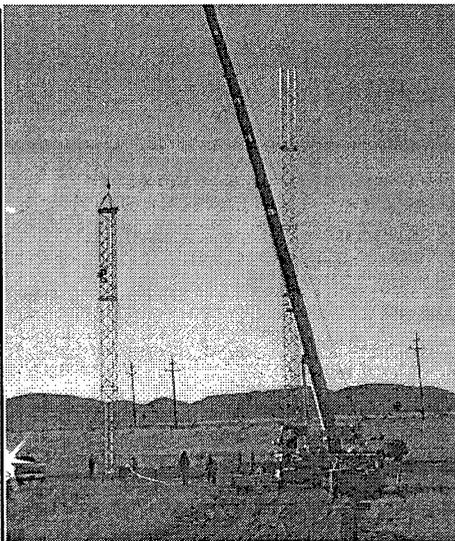
Ramon Gutierrez, Ramon Molina, Jon Thunborg, Walter Brisken, and Ed Szpindor performed many measurements at Antenna 1 that have eliminated the common causes of misalignment.

C. Janes

RADIO STATION KVLA

Construction of the Vertex ALMA prototype antenna will begin at the VLA next month. The surface of the dish on this antenna must be very accurately configured. The dish will be configured roughly using conventional methods and then fined tuned using holography. This holography requires a radio source positioned accurately in the sky.

A 160-foot tower was erected at the site to hold this radio source. Although the radio source is not very heavy, the tower had to be extremely strong because the radio source at the top of the tower could not sway more than 10 mm in a 20 mile per hour wind. Three large concrete anchors were buried around the perimeter of the tower. These anchors were used to secure the guy wires.



**Erection of the ALMA
Holography Tower**

The movement at the top of the tower will be monitored over the next few months to ensure that the tower meets its stiffness specification. A contractor from Albuquerque, Advanced Communications erected the Tower. Ed Gray, Jaime Montero, Johnny Montoya and Godin Otero trenched and installed power lines and fiber optic conduit from the tower to the Control Building.

According to Ken Sowinski the closest VLA antenna would have to point to an elevation of about 5 degrees above the horizon to see the top of the tower. Unfortunately, the VLA antennas were designed to point no lower than 8 degrees above the horizon.

Who will climb the tower? No volunteers have stepped forward as of yet. According to Jeff Kingsley, project manager for the ALMA Antenna design, there are plenty of volunteers in Tucson.

G. Stanzione

MARCH SKIES

If you want to see planets this month all you have to do is follow the moon! Beginning on the 15th the moon will begin its grand parade by passing Venus just above the western horizon just after sunset. Next comes Mars on the 18th, followed by Saturn on the 19th and Jupiter on the 20th.

By late April and May, Mercury will join the planetary lineup and provide a spectacular view of five bright planets in the early evening sky. This will be one of the best planetary alignments for many years.

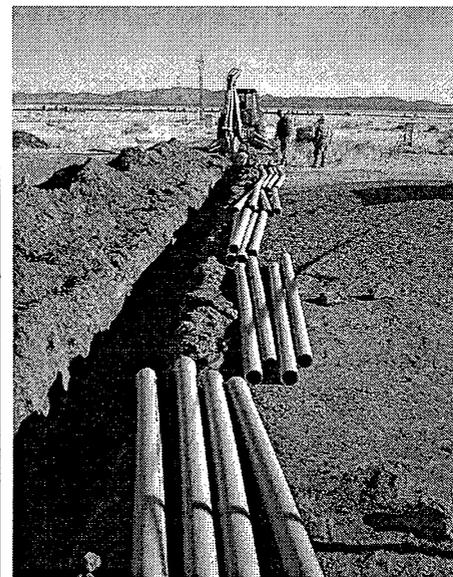
If it's March, it must be Spring! In fact, the equinox will occur on March 20, at 12:16 p.m. local time. The moon reaches last quarter on the 5th, is new on the 13th, reaches first quarter on the 21st and is full on the 28th.

The New Mexico Tech Astronomy Club will be holding star parties at the Etscorn Campus Observatory on Friday, March 1st, and Friday, March 15th. Come join the fun and use the observatory's telescopes to view the planetary line up as well as many other interesting objects. Observing sessions begin at 7:00 p.m. Take Canyon Road to Buck Wolfe Drive, turn right and follow the signs.

J. Spargo

FIRST DIRT!

The "groundbreaking" for EVLA occurred last week as the first ducts for the fancy new fiber cable were buried behind the Control Building. There is so much stuff under the ground here that we have to be very careful with the backhoe. The ground didn't cooperate: it was frozen down about a foot deep. We had to use a 65 pound jackhammer to get through the ice and shovels to avoid damaging anything delicate lurking underground.



A Step Closer for EVLA

Godin Otero, Johnny Gonzales, Ed Gray, Jaime Montero, Shane Baca, and Bob Broilo fought the ice, with special thanks to John Wall for fetching a jackhammer when things started looking tough.

B. Broilo