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SEP 13 2001

NATIONAL RADIO ASTRONOMY OBSERVATORY
CHARLES ESTESVILLE, VA

VLA/VLBA

NEWSLETTER

AUGUST WEATHER STATS

| HIGH | LOW |
|---------------------------|-------------------------|
| 87.8° (27 th) | 45° (31 st) |
| Total Precipitation: 4.6" | |

From the World's Premier Centimeter Wave Radio Synthesis Telescopes

AROUND THE VLA

Farewell to Joel Domschot who is leaving us to join the EMS Services for the City of Socorro. Best of luck, Joel!

Many thanks to Dave Alderman for helping out the Servo Group during their recent shortage of manpower. Without Dave's assistance, the antenna's return to the array would have been delayed. Dave helped with the critical mechanical alignment of the "maypole" the azimuth encoder is mounted to. This has also contributed to pointing improvements from past antenna overhauls.

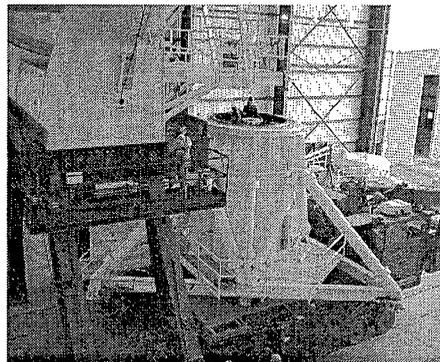
The new kitchen/break room in the Control Building is now in use. Everything is functioning and the break room has been moved out of the mail room. A project affecting the mail room and lobby is ongoing. Even the old library is getting a facelift to add additional office space.

News from the Business Office: A travel expense voucher form is not required in addition to the petty cash voucher form when being reimbursed for incidental travel expenses like personal vehicle mileage to local NRAO facilities or day trips to Albuquerque. As long as sufficient information is shown on the petty cash voucher form describing the reason for the trip, there is no need to attach the travel expense voucher form.

BEARING CHANGE

Antenna #17's bearing was successfully replaced on October 22. This makes the 5th successful bearing change to date. Damaged bearings cause pointing problems on antennas which affect operations, especially at higher frequencies. In 1992 seven antennas were tagged for bearing changes (1,7,16,17,18,23, & 28). Only two remain to be changed (7 & 18). Damaged bearings are believed to have occurred because of inadequate grease or damaged due to the "bearing pocket" being out of tolerance. Since that time we have

stepped up the frequency of greasing and improved our method of greasing. Our new procedures seem to have arrested our bearing problems.



Antenna pedestal being moved out from under the Dish

Once the bearing is removed, the "bearing pocket" is then measured for flatness. The pocket must meet a tolerance of 0.012" deviation maximum in 90 degrees of rotation. If this value is exceeded, the bearing pocket must be machined or shimmed to correct the problem. Antenna 17 measured a 0.020" dip in one quadrant and was consequently shimmed.

Inspection of this bearing revealed a couple of broken spacers and minor damage to the outer race. The bearing will be sent to the manufacturer (Kaydon) to be refurbished and then will be installed on antenna #7 or #18 when their bearing is changed.

Seventeen crew members were used to separate the yoke from the pedestal room section on this antenna. The separation crew is made up of Engineers, Electricians, Servo Techs, Antenna Mechanics and Transporter Operators. Much preparation prior to the actual separation takes place and many groups are involved with the bearing change, mainly in ES Division but other divisions are involved as well. All the power, signal cables and waveguide that run through the Yoke have to be removed along with several heavy brackets. Careful azimuth indexing for relocating the azimuth position is required. Bolt removal and other bearing

preparations are necessary for easy extraction of the bearing. Of course this is only half of the story since at least as much effort is required to mate the antenna again.

The photographs of the azimuth bearing replacement are now on-line at: <http://www.aoc.nrao.edu/vla/html/work/azbear.html>. This is a link off of the VLA General Public page (http://www.aoc.nrao.edu/vla/html/vla_home/genpublic.html under "What's New").

Buen Jale!

Low Serina

SITE & WYE NEWS

The Track Crew has completed tamping the east arm ties. All the old ties have been bundled and strapped and most have been hauled into the site. They are in the process of building crossing planks for replacing the State Road 52 crossing. The planned detour for the crossing work is under construction and the replacement rail panels have been built. Asphalt mix and traffic control equipment have been ordered. All necessary approvals from NMSHTD have been received.

The Carpentry Shop has installed cabinets in the new kitchen/break area in the Control Building and will soon build the new office supply storage closet. This shop is also in the process of building the new HAZ-MAT containment area. Much work still ahead at the AOC and CB for office space, CB stairway, and Visitor Center.

The Grounds Crew is fast approaching completion of the "long line potential" measurements. They have been completed on the east and west arms, and the crew is now working on the north arm.

The Auto Shop has had to set aside the conversion of the 5000 gal water tanker to a concrete mixer. The engine stand for overhauling engines is being designed and built at this time. Broken buses have eaten

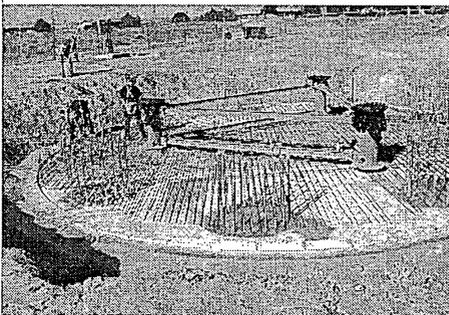
our lunch and are working on our dinner!! One end of the rail plow had to be re-manufactured due to damage. All but one dump truck are operational.

Richard Murillo and John Wall will leave for Tucson to pick up a crane that was acquired from government surplus.

P. Lewis

ONE MILLION POUNDS OF CONCRETE

Recently you may have seen a lot of construction activity northeast of the Control Building. This is the site where the prototype ALMA antennas will be built and evaluated. Utilities including electricity, phones and a fiber optic link to the Control Building were installed earlier this summer.



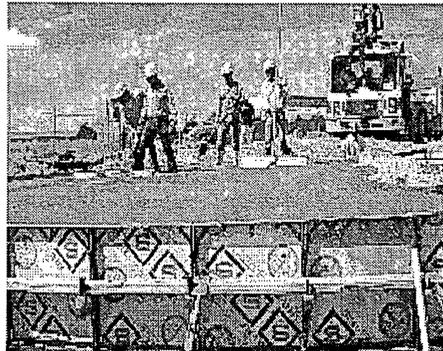
The steel support structure shipped in from Germany. The vertical rebar mark the location of the 28 foot deep concrete caissons.

This past month a contractor (Cone Construction) was on site building the foundation for the first ALMA antenna, which will be constructed by VertexRSI in January 2002. A drilling rig was used to drill 9 4-foot diameter holes 28-foot deep. Rebar was then installed in these holes and then they were filled with concrete to form caissons. The contractor then poured a 4-foot thick by 36-foot diameter concrete slab on top the



The foundation and caissons were laced with massive amounts of rebar.

caissons. Inside this slab were massive amounts of rebar and a steel support/alignment structure, which was built in Germany.



The final pouring of the antenna slab conceals all of the concrete and steel that is buried beneath.

About 300 cubic yards of high strength concrete was used in this foundation. Just how much concrete is 300 yards? Well, lets see, it is about 61,000 gallons and weighs 1.3 million lbs.

J. Thunborg

SEPTEMBER SKIES

On September 22nd, at 5:04 p.m. MDT, the Sun crosses both the celestial and terrestrial equators marking the official beginning of Fall. The months of August and September are also a good time to look for auroras during an active solar year. During this time the sun tips so as to aim its spotted aurora-triggering latitudes farthest towards the Earth. Checking such web sites as www.spaceweather.com and www.sec.noaa.gov/pmap will alert you to events that may produce auroras.

During the month Mars will continue to dominate the southwestern sky in the early evening. On the 24th, both Mars and the Moon are set for a tea party as they will both be very near the lid of the "Teapot" of Sagittarius. If you've ever had trouble finding the Teapot and the galactic center, let Mars and the Moon point the way for you.

Venus now rises between 4 and 5 in the morning and will partner with the waning moon on the 15th to provide a pretty, early morning event. Saturn now rises around midnight and will rise at 10 p.m. by the end of the month. Because of its orientation to the Sun, Saturn now casts its shadow the farthest sideways onto the rings giving a great three dimensional appearance. Throughout the month Jupiter follows Saturn by about two hours providing great late night and early morning planetary viewing.

With the plane of the Milky Way directly overhead the skies abound with deep sky

objects suitable for small telescopes. Look for the "Summer Triangle" to be your guide to the Milky Way. Formed by the stars Vega, Deneb and Altair, the triangle frames the plane of our galaxy. Scanning through the plane of the Milky Way with a small telescope reveals a myriad of stars and really emphasizes the size of our home galaxy. Star clusters and other deep sky objects are so plentiful that you hardly need to consult a sky chart to view many interesting objects.

J. Spargo

BOOT SAVVY

Safety footwear today can be selected to respond to whatever hazards may be present. The range of choices has increased as manufacturers produce hundreds of different types and styles. They are available with a wide variety of protective features, such as puncture, chemical, water, shock, and slip resistance, etc.

Merely having protective footwear isn't enough. How it's worn and maintained can have a major bearing on how well it can protect the wearer against hazards. Footwear's protective qualities may also diminish when it shows signs of wear. Worn out heels and soles on any type of footwear do not provide good traction. Boots that are badly worn don't offer the same ankle support as the firm leather in newer footwear. Damaged or badly worn footwear with the toe cap loose and exposed can fail in an accident.

Keep the following points in mind when selecting footwear:

- ✓ Ask a knowledgeable salesperson's advice about the right type of footwear for your specific work environment.
- ✓ Buy only ANSI approved protective footwear.
- ✓ Don't buy footwear unless you've tried it on.
- ✓ If one foot is slightly larger than the other, select footwear to fit the larger foot.
- ✓ If you'll be wearing heavy socks, or inserting liners, insoles or other supports in your footwear, be sure to try them with the footwear before buying.
- ✓ Remember that toe caps do not stretch – boots that are too tight won't "loosen up."
- ✓ Shop for footwear at the end of the day when your feet are swollen.
- ✓ Boots should fit comfortably but snugly around the heel and ankle area when laced.

G. Morris