



AOC NEWS

Vol. 4 - Issue 6 / December, 2002

NOTES FROM THE A.D.

Dr. Fred Lo, the Director of NRAO, will be speaking on the "State of the Observatory" at an observatory-wide meeting at 1 p.m. on Thursday, December 19. This presentation will originate from the AOC auditorium, with video to the conference room at the VLA site and audio to the cafeteria conference room. This meeting will include the presentation of the second annual NRAO Distinguished Performance Awards.

On November 15, both houses of Congress passed the NSF Authorization Act of 2002, which authorizes a 105% increase to the National Science Foundation budget over the next five years, from \$4.8 billion in Fiscal Year 2002 to \$9.7 billion in Fiscal Year 2007. An authorization bill merely permits budgeting the larger amount of money, while the actual federal budget for each year comes out of the appropriations committees and must be passed by Congress and then signed by the President. Still, since the NSF is the agency that funds operations and new projects for NRAO, this authorization generally should be good news for our activities. For more details, see the following electronic links:

<http://www.aip.org/enews/fyi/2002/128.html>

<http://www.aip.org/enews/fyi/2002/131.html>

<http://www.aas.org/policy/AI2002-04.html>

Happy Holidays to all!

Jim Ulvestad

WELCOME ABOARD

Lindsey Davis, ALMA; David Midgett and Larry Brothers, Array Operations; and Doug Tody, Data Management; Terry Bartelt, Electronics; Robert Walker, Eng. Serv.; Jay Apachito, Carl Cano, Wade Dixon, Elias Jojola, Richard Torres and Ray Valenzuela, EVLA.

STAR AWARDS

On November 7, 2002, three Star awards were presented at the All-Hands meeting. Bob McGoldrick (photo not available), received a Star Award for automating the calibration procedure for VLBA tape recorders. When data are written to tape at more than one speed, the change in tape speed causes the tape to shift with respect to the recorder's write head. The shift causes data to be overwritten on a previously recorded track. Some time ago, a manual calibration procedure was developed to minimize the data loss caused by this problem, but the four-hour duration of the manual procedure was so long, that it could only be done once every three months. Since the calibration was done on an infrequent basis, data loss was still a problem. Bob automated the calibration procedure so that no manual intervention is required. The duration of Bob's new procedure is only an hour, and the VLBA Operations group now calibrates the recorders on a routine basis of about once per month. Bob's calibration procedure has improved data quality, improved recorder reliability, and has increased the scientific productivity of VLBA. Way to go Bob!

Mark McKinnon

Two members of Array Operations Division were recipients of Star

Awards. Juan Cordova, VLBA Tape Librarian, received his Star Award for his part in reducing costs associated with shipping VLBA data tapes to the 10 VLBA stations. Following up on suggestions and information provided by Liz Cryer in the Business office, Juan



Juan Cordova



Paul Dyer

experimented with alternate shippers and billing methods and managed to reduce the shipping costs by over \$4000, since July 2002. Additionally, he took over the responsibility of preparing the paperwork for outgoing VLBA tape shipping.

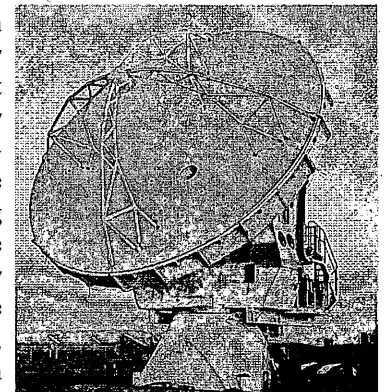
Paul Dyer, VLBA Array Operator, received his Star Award for his work on improving and updating the VLBA display system used to monitor the health of equipment and observations at the sites. For the last 10 years, VLBA operations had been using old IBM XT 80888 computers with the software running off 5¼ inch diskettes (!!) as drivers for critical operations displays. Paul investigated, made recommendations for new hardware, tested, debugged and made the new system operational. These improvements have given VLBA array operators more flexibility with their displays and eliminated a dependency on out-dated equipment.

Thank you, Juan and Paul, for your contributions to improved operations!

Peggy Perley

ALMA UPDATE

The ALMA North American prototype antenna built by VERTEX, is near completion. It is scheduled to be accepted by NRAO, on Dec. 3, 2002. All 264 dish panels are in place and are being coarsely adjusted using Digital photogrammetry. There are 1096 reflective photogrammetry targets on the 12-meter dish. While the dish is at 41 degrees elevation, digital photographs are taken from



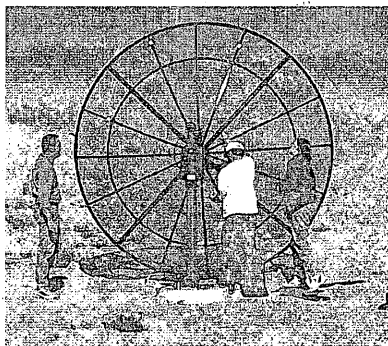
different angles to produce a three dimensional picture of the antenna dish. The three dimensional digital picture can then be used to measure the shape of the dish and adjustments are made to set the panels to less than 100 micron rms (1 micron=1 millionth of a meter). This process is done at night-time because of the temperature stability required for such fine measurement. Over the next few months, the NRAO Antenna Evaluation Group from Tucson will be doing the final panel setting, to the 20 micron rms specification by using a holography system method developed by the ATED (ALMA-Tucson Electronics Division).

The Japanese and European foundations are being installed and their antennas are expected to appear by mid-year 2003!

Lew Serna

I NSTRUCTIONAL INTERFEROMETER IS ON ITS WAY UP!

On Saturday, Nov. 16, 2002, NRAO and New Mexico Tech volunteers began assembling the dishes for the NRAO/NMT Instructional Interferometer (N^2I^2), at the Etsorn Campus Observatory. The 2-element interferometer is the Masters degree project of Danielle Lucero, under the advisement of Lisa Young. Danielle, Dan Klinglesmith, Mike Revnell, Jim Muehlberg, and Lisa Foley put together the two 10' dishes and erected them on their mounts. The power cable is in place and the conduits for the communications cables have been laid. The next step will be to construct waterproof boxes for the electronics for each dish and to attach the feeds. Telephone and Internet service is being run to the control building. Danielle hopes to have the all the hardware in place and operational, by early 2003.



Jim Muehlberg, Mike Revnell and Danielle Lucero

Robyn Harrison

D ECEMBER SKIES

December will be a month with plenty of planetary action for the unaided eye observer. By the end of the month both Venus and Mars will rise almost four hours before sunup and Venus begins the month shining at an almost unbelievable magnitude of -4.7. It should not be hard to find Venus in the early morning hours! Neither should Mars because, for the entire month, Venus and Mars will not be separated by more than five degrees!

Jupiter rises soon after 9:30 p.m., at the beginning of the month and two hours earlier by month's end shining at a respectable magnitude of -2.5. Tiny Mercury will appear in the southwestern sky during dusk for the second half of the month. On Dec. 24, it will be at its brightest and just one day later will be at its maximum elongation from the Sun, setting about 90 minutes after sunset.

The real planetary star will be the ringed planet Saturn. Saturn will be at opposition to the Sun on the night of Dec. 16-17, and will be visible from dusk to dawn. It will also be at its biggest and brightest of the year. During this and next year, Saturn's position and ring tilt will afford the best viewing of the planet for the next three decades! If that wasn't enough, those of you with small telescopes will be in for a special New Years Eve treat. At that time Saturn will only be 19 seconds away from the famous Crab Nebula in Taurus. That is just the warm up because on the night of Jan. 4-5, 2003, Saturn will actually transit the nebula!

The nearly full Moon will be within 3-degrees of Saturn on Dec. 18, the waning crescent Moon will be in conjunction with Venus and Mars on Dec. 1, and again on Dec. 30. On Dec. 4, the new Moon will provide a solar eclipse for parts of Africa and Australia. First quarter is on Dec. 11, full Moon on Dec. 19, and last quarter is on Dec. 26.

If the Leonids left you wanting more, you might be able to satisfy that craving on the night of Dec. 13-14, which will be the peak of the Geminid meteor shower. The slow, bright and graceful Geminids can produce as many as 75 meteors per hour. The best viewing this year will be after 2:00 a.m., on Dec. 14, when the moon sets. Dress warmly!

This month I will invite you to visit the web site of the "International Dark Sky Association" <http://www.darksky.org/~ida/index.html>. If you love our dark New Mexico Skies and want to help preserve them, this is a great place to start.

Finally, on Friday, Dec. 6, there will be a star party at the Etsorn Campus Observatory beginning at 7:00 p.m.. All are invited. Clear Skies & Happy Holidays!

Jon Spargo, NM Tech Astronomy Club

N NRAO HOSTS THE 18TH ANNUAL NEW MEXICO SYMPOSIUM

Dark skies and remote sites have attracted world-class astronomical facilities to the Southwest and supported a wide range of research since the mid-1900s. Our achievements span areas in both science and technology including optical and radio interferometry, and research in solar physics, planetary science, star and galaxy formation, and the creation and evolution of our universe. To support the network of technical and scientific research in the Southwest and encourage interdisciplinary discussions, NRAO sponsored the 18th Annual New Mexico Symposium on Friday, November 1, 2002, at the NRAO Array Operations Center in Socorro, NM. The symposium was a huge success, filling the auditorium to full capacity. More than 120 astronomers, astrophysicists, engineers and educators from 13 institutions in New Mexico, Colorado and California attended the symposium. Reporters from the Albuquerque Journal, Albuquerque Tribune, and El Defensor Chieftain also attended the symposium and wrote articles about the event.

Twenty talks and 30 posters were presented on a range of topics including "Water on Mars", "Astrobiology: Bacterial Survivability in Collisional Events", "A New Look at Our Partner Galaxy (M31/Andromeda)", "Monitoring RFI in New Mexico", "The Summer Science Program Opens on the New Mexico Campus", and "The Challenge of Public Outreach...at Radio Wavelengths." Prof. Shri Kulkarni, ended the symposium with a bang and presented the 2002 annual Jansky Lecture titled "The Brightest Explosions in the Universe."

We would like to particularly thank all the people who helped out at the event. From setting up chairs and posters stands, arranging the video links, providing computers and accounts, coordinating travel arrangements, to downloading powerpoint presentations at the very last minute - the whole thing went smoothly! We received many comments from our visitors that the organization and setup was well done. We couldn't have done it without your help. Thank You All!

Debra Shepherd and Terry Romero

C HRISTMAS IS JUST AROUND THE CORNER....

Just in time for Christmas, the VLA giftshop (Tami and Robyn's metal cabinet!) has a new t-shirt for sale. You can see a real one in the display cases at the AOC or the VLA. Price for employees is \$12.00.

Meanwhile, Charlottesville is having a fire sale. Sale items can be found at <http://www.aoc.nrao.edu/~rharris0> Click on **cvmerch** to view. Sizes and styles are limited. To order, contact Mary Mayo: mmayo@nrao.edu

Reminder: NRAO Holiday Parties Children's party - 7 December; Adult party - 14 December; Tickets available from Emma Baca at the VLA Site and Mary Ellen Chavez at the AOC.