NRAO NM NEWS

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NOTES FROM THE AD

Jim Ulvestad

Most of you are aware that "first fringes" were acquired with the EVLA test antenna, the lucky number 13, in late March 2004. Personnel from every division in VLA/VLBA operations were critical to this achievement. The Electronics and EVLA Computing Divisions carried a heavy load, in designing and prototyping various devices and software and making them work as a system. The Engineering Services Division provided various antenna modifications to systems such as the feed circle and HVAC. Scientific staff provided requirements and testing support. Array Operations provided logistical support throughout implementation of the test antenna. Computing Infrastructure supported the networking to the Master Pad. The Business Division, together with Purchasing and Contracts, procured the necessary hardware in a timely fashion. Human Resources supported a significant number of new hires to get the EVLA work done, and Fiscal paid the bills on time for the many new procurements. Of course, I have left out much of the specific work that was done and probably neglected some group, but I'd like to congratulate everyone on this fine team effort.

Over the past several years, we have been stuffing (literally!) more and more people into the Array Operations Center in Socorro. These are predominantly associated with the ALMA and EVLA construction projects. In late spring and early summer, we expect to provide some relief by moving approximately 20 people into a new building being built by New Mexico Tech, behind the golf course near IRIS/PASSCAL. Having to divide our personnel this way will lead to considerable inconvenience and we have spent a great deal of time discussing how to implement such a move with the minimum harmful effect to the NRAO mission and to the work of the people involved. I expect to hold an all-hands meeting in the AOC, in April or May, to discuss the move and how we will go about carrying it out.

Although we will have some relief from our current overcrowded condition, we will be housing 30-40 more people in the AOC than we did three years ago. During the summer, this puts an increased strain in the building cooling capacity, which can result in an increased failure rate for our chiller equipment. Each person in the building generates heat, as does his/her computing and test equipment. General operational equipment (computing file servers and VLBA tape recorders) also add to the heat load in the building. In order to minimize the probability of significant failures in the AOC cooling system this summer, we are instituting a building energy efficiency committee. The committee will establish recommendations for reducing the electricity consumption and hence the heat load, in the building. Committee members at present are Mark McKinnon, James Robnett, Skip Lagoyda, and myself. Among other things, we aim to establish guidelines for identifying equipment that may be powered down safely when not in use, rather than randomly shutting off items that are not designed for frequent on/off cycles. In the meantime, please start practicing for the summer by turning off lights when your office is not in use and shutting off conference room lights when you are the last person out the door.

WELCOME

Daniel Dillon, EVLA Electronics; James Wenzel, Engineering Services; David DeBonis, Science Software Group and NRAO Summer Students listed below, who will start arriving in late May.

Name	Affiliation	NRAO Advisor/s
Brian Cameron	Caltech	D. Frail
Jana Grcevich	U Wisc./Madison	Y. Shirley
Nicole Gugliucci	Lycoming College	G. Taylor
Kelley Hess	Cornell Univ.	L. Sjouwerman
Chun Ly	U of Arizona	C. Walker
Kirstin Schillemat	Clarkson Univ.	M. Rupem, V. Dhawan, A. Mioduszewski
Anandkumar Shetiya	New Mexico Tech	S. Bhatnagar
Christine Simpson	Wellesley College	M. Claussen
Adrienne Stilp	U Wisc./Madison	S. Myers
Urvashi Rao Venkata	UC San Diego	T. Cornwell
Ben Zeiger	Willamette Univ	S. Chatterjee, W. Brisken

CONGRATULATIONS

Each year, the NRAO recognizes Service Award Recipients at an annual Service Award Banquet.

This year the guests of honor are:

10 Years.: Shane Baca, Bob Broilo, Gayle Rhodes, Bruce Rowen, Greg Taylor, Michael Torres, Jim Ulvestad

20 Yrs.: Jon Romney, John Sanchez

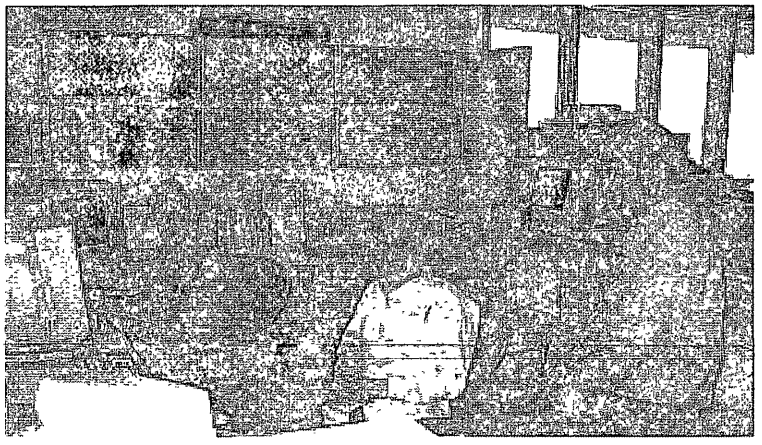
30 Yrs.: Frazer Owen, James Rexrode, Dick Sramek

EVLA FIRST FRINGES

The EVLA finally has first fringes with antenna 13! This was a long and painful process. We made just about every error possible in the process, mostly done by us software and system guys - the hardware actually works more or less as expected. The list of errors is:

1. The position of the X band feed has changed. When calculating the change in focus, we put the change in with the wrong sign.
2. A software bug was triggered when source positions are expressed as degrees and decimal (as we were using for the sun) instead of degrees, minutes, and seconds, caused positions to be truncated to the even degree.

3. The coupler on the elevation encoder was loose, making pointing erratic.
4. We did not take account of the delays in the digital transmission system and signal reconstitution system.
5. We had the controls set wrong for the signal reconstitution system, so that the sideband was reversed much of the time.
6. The fringe rotator for antenna 13 is putting in phase jumps.
7. The polarization was connected backwards. We were sort of prepared for a couple of things to be wrong, but the large collection was more than we imagined, leading to two weeks of struggling to identify one problem after another. But we can now claim **VICTORY** and hope for smoother sailing on through the rest of the EVLA project!



From left: Barry Clark, Ken Sowinski, Jim Jackson and Mike Revnell enjoy the moment after getting the first interferometer fringes, using the EVLA Test Antenna, March 24, 2004.

Credit NRAO/AUI/NSF, Craig Walker

Thanks to the many hardware people who patiently stood around ready to help us while we struggled to understand why things weren't working, especially Mike Revnell, Jim Jackson, Jim Muehlberg, Terry Cotter, and Bob Broilo. And, we received additional software or operational help from Pete Whiteis, Rich Moeser, Pat Van Buskirk, Mark Claussen, Rob Long and a number of VLA operators. And we ruefully acknowledge that over the two weeks it took to work our way through these problems, we have sorely tried the patience of many people beyond those listed here.

For more details go to: http://www.nrao.edu/pr/2004/evla/

Barry Clark and Ken Sowinski

What's Up at the VLA

Well, it seems like the end of an era! The Fiber Cable Installation Crew has completed its task (ahead of schedule and below budget!) and has disbanded. One employee left a few weeks before completion (went to work for Walmart), another resigned a few days before completion, two were transferred to the Carpentry Shop for more EVLA work, one was hired to work at the AAB and one was laid off. This Crew received a Star Award for their accomplishments!

The Track Crew came up with an idea to build a track intersection timber with concrete. They designed one with help from an engineer. They poured two timbers and installed them at the Master Pad intersection where they will be monitored to see how they function.

The Carpentry Shop has been busy pouring concrete. Two slabs were poured just outside the Machine Shop for keeping metal off the ground. Another was poured in the Carpentry lean-to which will now be shared with the Machine Shop for keeping some of their items out of the rain. The Carpentry Shop is also gearing up to complete the antenna pedestal work platforms. In addition, they have built shipping crates and even some fancy display boards for Safety Sullivan!

The Auto Shop is busy trying to keep everything running, from dump trucks to fork lifts and track equipment to site vehicles. It is a wonder they get as much done as they do. They only have two bays (only one has a vehicle lift) and one outdoor ramp (for working on the busses). In addition to all this, they are trying to inspect and make necessary repairs to diesel engines we have acquired from surplus for replacements in our aged equipment.

Pat Lewis

More at the VLA

Much is known about the EVLA and with its progress and its successes. So instead of talking about the completion of the EVLA fiber installation (six months ahead of schedule) and the EVLA first interferometric fringes with Antenna 13, I'll briefly let you know about a couple of other behind the scenes accomplishments.

With ES Division's never ending quest to improve and enhance the VLA we have initiated a couple improvements concerning the VLA Transporters and track system.

A transporter's "limp in system" was originally designed to allow an antenna transporter to limp in, to the next empty station in the case of a major hydraulic pump failure, while carrying an antenna. The "limp in system" relies on a much smaller auxiliary electric motor hydraulic pump instead of the three engine driven hydraulic pumps. The old system never worked very well and would fail to climb an incline of any significance. The transporter crew along with Jon Thunborg have successfully redesigned and modified the transporters, enabling them for the first time to actually limp home from anywhere on the array, in the event a hydraulic pump system failure occurs.

The track crew has built prototype concrete timbers to replace wooden timbers which are used at every intersection that accesses an antenna station. There are 74 antenna station intersections used, which include the AAB and Master Pad intersections. The original wooden timber design is a high failure design and timbers and planks are often broken under the weight of a transporter carrying an antenna. It takes a six man crew about two weeks to replace the timbers and planks and to repair an intersection. An intersection requires repairs about every five years. The track crew repairs from 3-5 intersections per year due to broken timbers. Track timbers sell for $300 per timber and planks sell for $67 per plank. There are eight planks and eight timbers per intersection. Planks are half the thickness of a regular RR Tie. The track crew, along with Jon Thunborg have redesigned the intersection with concrete timbers, which can be built at the VLA for about $155/concrete timber plus labor. The longevity of concrete timbers should be at least 10 times that of a wooden timber. The new design also replaces planks with regular RR ties which sell for about $30/RR tie. The new timbers have been tested and work very well. The new design could save about half the cost in material and numerous man-hours in labor.

Lew Serna

NRAO Ombuds Program

The NRAO Ombuds program was designed for the protection and assistance of all NRAO employees. In addition to Human Resources and the Employee Assistance Program, the Ombuds provides another avenue to employees with any type of problem at work. The Ombuds serves as an impartial source of assistance in resolving employee problems, providing advice, assistance, information, or just a sympathetic ear. Anything discussed with an Ombuds remains strictly confidential. The Ombuds can provide assistance for employees when they may not know where else to turn for help. One person at each NRAO site has been selected to be the Ombuds representative. The Ombuds representatives for NRAO-NM are Sheila Reasner at the AOC and Patty Lindsey at the VLA Site.

Patty Lindsey

Safety Corner - Making our work areas safer

Slips and falls could be a workplace hazard but here are some steps that can keep you on your feet.

When someone falls or trips in a work area, we ask, "why?" Many times it can be traced to poor housekeeping. Floors, aisles and walking surfaces should be free of clutter. Put away equipment and supplies as quickly as possible when not in use. Walkways and aisles especially, need to be kept clear and passable. Spills should be cleaned up immediately and trash removed or discarded. Empty boxes that are on the floor should be broken down and removed from the area immediately. A bit of common sense and an ounce of prevention will help minimize slips, trips and fall injuries. We have a duty to warn our fellow employees or visitors of any suspected or potential hazard. For example, if it is raining, don't wait for someone to fall on a slippery floor before a CAUTION sign is put out. Do it before the floor becomes wet and slippery

Other prevention efforts can be as simple as being conscious of your workplace layout. Could someone trip on electrical extension cords or telephone cord? Is the floor free from potential trip-ups like missing or loose tile, uneven or slick surfaces, entry-way mats or torn carpeting? Is there adequate lighting in areas where people will be walking?

Each employee is responsible for ensuring that their workspace and common areas such as walkways, aisles, floors and drive-up areas are safe and free from conditions that could cause slips, trips and falls. Report hazards and unsafe conditions so that corrective action can be taken. It is recommended that all personnel conduct frequent, brief surveys of the floors, walkways and drive-up areas, to look for and identify, slip, trip or fall hazards. If someone does slip, trip or fall, report it immediately. Don't worry about whether the incident was minor or makes someone look clumsy. Minor incidents may be clues to larger problems.

See the Site Safety Officers for additional safety training on this topic.

James B. Sullivan
Safety Officer

April Skies

Spring is upon us and it is once again time to "spring forward!" Daylight Savings Time began on Sunday, April 4th.

For most of April our springtime grand parade of planets will continue. I certainly hope you've had a chance to see the all five of the planets, which can be seen with the naked eye, in the early evening sky.

Mercury will still be visible low in the west just after sunset, but only for the first few days of April. Look for it about 28 degrees below Venus. On April the 2nd, brilliant Venus has a rendezvous with the "Seven Sisters," passing within one-half degree of the star Merope in the "Pleiades" cluster.

Mars is still with us but is fading fast. Look for it, early in the month, as a small reddish dot near the "V" of the constellation Taurus (the Bull), also known as the "Hyades Cluster." Not far away, Saturn still shines at magnitude +0.1 in Gemini. Its rings are still nicely tilted and offer great viewing through a small telescope.

Jupiter ends the parade of planets and can still be found in the constellation Leo. While slightly dimmer than Venus, it appears wider and a small telescope should offer good viewing of atmospheric features including the great red spot.

The moon will be full on the 5th, last quarter on the 11th, new on the 19th and first quarter on the 27th. Early morning risers (before dawn) on the 22nd may catch a glimpse of a few meteors as the Lyrid meteor shower peaks this morning.

There will be a star party at the Etscorn Campus Observatory beginning at 8 PM on April 5th. Special guests will be a group of students from Zuni, New Mexico. Special filters will allow you to view the full moon without being blinded! To reach the Campus Observatory, take Canyon Road past the golf course Pro Shop. At the 4-way stop, turn right on Buck Wolfe Drive and follow the signs.

Next month there should be some excitement associated with the appearance of not one, but two comets! Both could wind up being fairly bright naked eye objects. The details of when and where to look for them will be in next month's column.

Jon Spargo, New Mexico Tech Astronomy Club

Array Operations Division Reorganized

The Array Operations Division reorganized and the following changes became effective March 31, 2004. The duties of the VLBA array operations supervisor and the VLBA correlator supervisor have been redistributed. Peggy Perley will assume supervisory responsibilities for the array operators and the correlator, previously headed by David Medcalf and Tom Briscoe, in addition to her duties as Array Operations Division Head. We thank Dave and Tom for carrying out these important supervisory roles for the last several years.

Requests for VLBA test time should be directed to Phillip Hicks. Phillip will manage VLBA dynamic scheduling and continue in his current role processing VLA, EVLA and VLBA maintenance forms. His new title will be Data Quality Analyst.

Pat Van Buskirk will tackle a new role as EVLA/VLA Operations Coordinator, in addition to her database administration and VLA software support. Pat will assume supervisory duties for VLA/EVLA array operations, with the VLA supervisor JC Campbell reporting to her. This change will ensure that VLA/EVLA issues will receive prompt attention, since Peggy will generally be more focused on VLBA concerns.

Peggy Perley