From: VAX3::RICK 29-AUG-1985 12:38
To: CVAX::BRIDLE
Subj: 327 MHz

I have a fabulous map of NGC6251 at 327MHz. The dynamic range is approximately 100. The jet is certainly present, and brightest (50" beam) at the far end (meaning, the region of the rebrightening, 3' from the core). The extended region did not show up, this is due to two things, 1) A lack of short spacings (the current distribution has the antennas rather spread around), 2) The visibilities on the two shortest spacings were very peculiar, and may have been badly affected by cross-talk.

The most striking feature are the background sources - about 40 of them. The rms noise, after 6 to 7 hours observing with 8 antennas, comes out to 13 mJy. I also made Q and U maps, both are blank, with the noise at 7 mJy. There are some low-level coherent errors, but the good news is that sources in the edge of the beam do not appear highly polarized. Not polarized at all, in fact.

In think the 327 MHz system is ready for real observing.

Oh yes, the phase stability was astounding - zero phase drift, about 3 degrees rms fluctuation.

From: VAX3::RICK 12-MAR-1986 17:50
To: CVAX::BRIDLE
Subj: RE: Cover

Crush the rumors! The observed rms noise, on 20 sec integrations, 3MHz, in 'A' array, is generally better than .5 Jy. In the last 'A' array, I made a Q and U map, using the few available antennas then available, using 6 antennas, on a 2 Jy source, and 21 minutes integration time. The rms noise, in Stokes 'Q', was 15 mJy/beam, in good agreement with the baseline-based noise quoted above.

Now, it is true that the maps made recently are not thermal limited. For 'D' array, the reason is, I think, obvious - antenna cross-talk, and self-generated interference. In 'A' array, the jury is still out. We have in hand a 1000:1 map of 3C84, and of 3C273. The problem may be u-v coverage, closure-errors, background sources, etc.

So, I think the noise is as advertised, but the dynamic range limitation may often be more important. MOre on the latter to come!

From: VAX3::RICK 14-MAY-1986 17:11
To: CVAX::BRIDLE
Subj: 327 MHz calibration

Now that I'm in write-mode, here's the poop on calibration at P-band. I have done a number of tests, and the bottom line is that P-band calibration is a 'piece of cake'.

Although there are only about 30 'good' calibrations at 327 MHz in the entire sky visible to the VLA, there is no need to use 'good' calibrators. (Good calibrators are those with less than 10% closure errors). What is required is merely an 'adequate' calibrator - one in which the closure errors are less than, say, 50%. Since there are about 2 - 6 Jy in the FOV of the instrument at any time, all one needs is an unresolved source with flux density greater than about 4 Jy. Now, tests show that about 1/3 to 1/2 of all sources in the 4 - 10 Jy range are suitable for calibration purposes for the 'A' configuration. Combining with number counts gives 170 sources per steradian adequate for calibration, or, about 1 for ever 4.3 deg of angle. Thus, within 2 primary beams of any given position lies an adequate calibrator. All we have to do is find them.

But, and adequate calibrator is not a good calibrator. But, within each and every P-band primary field lies at least one 2 Jy source. Believe it or not, this ALONE provides an adequate calibrator (I've done two rather hefty, independent tests of this statement). The improvement required for good imaging is done through self-calibration. Here's the scheme:

1) Observe in spectral line mode, channel width no more than 400 kHz, with 10 sec FILLER. Place the phase center on the closest 2-Jy source whose structure is known, at least roughly.

2) Calibrate the amplitudes with the nearest GOOD calibrator (i.e. > 10 Jy, unresolved). On a good day (of which there have been many, lately), one can try to calibrate the phases too.

3) Calibrate on your local calibrator through, say, 5 min vector solutions from ANTSOL.

4) Go to you nearest AIPS terminal. Use one of you channels for further processing. (i.e., one of the spectral line channels). Use the primary beam. Use MX to image these objects (they should all show up).

5) Use the CLEAN components from the 16 fields to self-cal all the data. Repeat steps 4 and 5 until convergence achieved.

6) Combine all the channel data through DBCON. Make your final 16 (or more) images.

See how easy it is? Any questions?

From: CVAX::BRIDLE "Alan Bridle" 16-MAY-1986 09:01
To: VAX3::RICK,BRIDLE
Subj: RE: 327 MHz calibration

What do you do in sky areas not covered by the Texas/B3 people ?

How about people who want polarization ?

Any extrapolation of this to 75 MHz ?

From: VAX3::RICK 16-MAY-1986 11:58
To: CVAX::BRIDLE
Subj: RE: 327 MHz calibration

1) I have talked to Barry about conducting a survey of our own in areas not covered by B3. On the other hand, there is some sort of Molonglo survey Barry thinks is good down to 5 Jy or so.

2) Polarization is still completely untested, except for a little work done by O'Dea and Barvainis (which they sort of buggered up). Perhaps Peter Dewdney might be interested.

3) Some extrapolation to 75 MHz might be valid. The basic method I outlined in the MAIL message is the same I have proposed for 75 MHz, the only extra complication is the addition of many isoplanatic patches in the antenna beam. In fact, the expressions derived in my monster memo, #146, predict quite will the flux and rms fluctuations that we see at 327 MHz.

From: CVAX::ODEA 16-SEP-1986 17:08
To: BRIDLE,NEIL
Subj: P band observations

It turns out that we have much less than the 18 P band antennas advertized when we submitted our B config. proposal. As of the day of the observations onnly 14 antennas were in fact equiped to work at P band. But ant 25 had been very recently finished and the system files had not been updated. So 2ant 25 was not put in the P band subaray. Ant 3 was out to have the X-band front end installed. Ant 8 and 12 have off axis feeds which have 10 degree pointing offsets. The LP system files should have included a 10 degree collimation correction but they didn't (they do now).

TThe sad conclusion is that we have only 10 working antennas at P band.

From: CVAX::ABRIDLE 16-DEC-1986 10:30
To: RPERLEY,ABRIDLE
Subj: RDE and 327 MHz

For your information:

From: CVAX::ABRIDLE 15-DEC-1986 09:33
To: REKERS,DSRAMEK,ABRIDLE
Subj: 327 MHz

I want to urge you both to restore the 327 MHz completion to priority 1
for VLA electronics RE. There are 3 reasons for this.

1. The project is closer to completion than its competitor (22 GHz upgrade)
and I feel we should give priority to finishing one enhancement array-wide
before diverting funds to another.

2. Observing conditions at 327 MHz will be sensitive to the solar cycle. We
should have as much of the project done as soon as possible in order that
as much science as possible be done before the rise to solar maximum.

3. We need to gain experience with 327 MHz data reduction with the "real"
array in order to assess better how much of a problem 75 MHz will be at
the next solar minimum. This implies that we need to have "serious"
science underway with the 327 MHz system soon in order that a wide range
of projects be scheduled. At present, the VLA scheduling and refereeing
system is deferring some 327 MHz work "until the full array is available."
This is not acceptable if the completion of the full array is also going
to be deferred.

In the current fiscal environment, this argues that 327 MHz should remain at
priority 1, despite what "promises" may have been made to ammonia observers
about 22 GHz.

==========

From: VAX1::REKERS "Ron Ekers" 15-DEC-1986 10:26
To: CVAX::ABRIDLE,REKERS
Subj: RE: 327 MHz

We have also started deferring K band observations (not just promises) because new system is comming. Also as I said in the Council I cant ignore the other operating budget effects. The new K band system is the only thing we are doing which actually decreases operating costs, and we have already stopped repairing failed K band systems.

From: OUTBAX::VAX3::RPERLEY 21-MAR-1988 16:47
To: OUTBAX::CVAX::ABRIDLE
Subj: RE: VLA futures

Not good. We decided (i.e., Paul decided, after talking to me and others) that we should use a good portion of the $100K from NRL to finishing the 327 MHz system. Paul was set to stop 327 at 22 antennas (its current state) indefinitely. So, the remaining monies are enough to build 2 to 3 more receivers plus B-rack shields. The B-rack shield price has doubled since the last four were made - up to $10K each. This is an outrageous price, and it will probably be cheaper to do it ourselves. Jack Campbell is supposed to be looking into this, including getting some shop in Albuquerque to do it. However, knowing the manpower situation, I doubt much is happening. This is the other side of the coin - manpower is so low, and there is so much to do, that little progress can be expected,.

The good news is that Durga seems to have figured out the polarization problems, and now, for the first time, the parallel hands ports contain most of the power. Paul Lillie also thinks he understands the Tsys problem at 75 MHz, and steps are being taken to correct this problem. Thus, the engineering looks pretty complete. All we need is $$ and people.

Will this do?

You may be intererested to know that we are having extraordinary weather out here. Right now, here on the plains, the temperature is 68F, while the dew point is -5F.