VLB ARRAY MEMO No. 79

Notes on the Planning Committee Meeting, Feb. 16, 1982

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At the Feb. 16 meeting with the Planning Committee, a number of points were raised on the Array design. These are summarized below together with comments on the action, if any, which is being taken.

1. Record System. Rogers expressed concern that the 16 Mbps VCR system had not been demonstrated and was perhaps as optimistic as the proposed X20 (or even X36) MkIII system. Rogers showed a prototype MkIII moving head stack; JPL has received delivery of their prototype. Both Haystack and Caltech representatives were optimistic that they would be able to meet their performance goals of X12 and X20 respectively. Rogers also pointed out that the proposed VCR system is limited to 50 MHz (100 Mbps) bandwidth, which is about a factor of 2 less than the MkIII system when used in the double bandwidth mode. There was general concern that the Array should not be limited to a bandwidth which is less than that available today (not withstanding that the full time use of 100 MHz bandwidth with the present MkIII system would consume 20,000 lbs of tape per day on a ten-station array).

The proposed VCR system has now been modified in two ways. First, each rack will contain 8 recorders working at a conservative 12.5 Mbps. Second, the Data Digitization Electronics has been modified so that the spare recorder rack at each station may record a second 50 MHz band to give an overall bandwidth of 100 MHz for 24 hours of unattended operation. 48 hours of unattended operation will be possible at the normal 50 MHz bandwidth, provided the spare is operational. 20 recorder racks (plus 2 spares) will be available at the Playback Processor to allow double bandwidth playback from 10 stations in one pass. 14 station double bandwidth operation will require 2 passes through the processor.

2. S/X Band Receivers. There was some question about the need for S/X band systems. Rogers felt it was important for geodetic work, although he agreed that a single polarization system would be adequate. Since there is little cost saving in going to a single channel receiver, and since this would restrict the use of these wavelengths for radio astronomy polarization work as well as leaving the system with no backup receivers at these frequencies, it was decided to retain the dual polarization capability.

3. 325 MHz System. Mutel was unhappy with throwing away 2 db gain by placing the 325 MHz feed at the edge of the subreflector. Surprisingly, there was more discussion about this point than there has been on the same design for the VLA, although in the latter case realization of the system is 5 or more years closer. (There is a moral to this, but I don't know what it is!) No change is being made at present, pending further design work on the VLA system, but it is recognized that, if desired, the feed can be placed on axis by manual intervention. Similarly, the sensitivity increase expected from cooling the 325 and 610 MHz can be deferred, and if it appears cost effective, can be implemented at a later date.

4. Southern Hemisphere Site. Mutel made a convincing case for locating one or more antennas in the southern hemisphere. Easter Island and the Galapagos make a very substantial improvement to the (u,v) coverage at southern declinations, but are clearly difficult and expensive to support. Quito is not quite as good, but the logistics are more straightforward and it gives a reasonably good 2-D beam even at $\delta = -40$. A Quito site was suggested several years ago by Backer, but appeared at that time to be unrealistic. Compared with Easter Island and the Galapagos, it now appears as an attractive compromise. (There is a moral here also.) Mutel will make available the results of his configuration studies for everyone to consider. However, it was agreed at this time not to stress a

southern hemisphere site, but to point out that two of the sites would be remote, i.e. Alaska, Hawaii, Mexico, or South America.

5. Frequency Allocations. Swenson pointed out the problem of the proposed operation outside the allocated radio astronomy bands and the technical as well as political implications. Similar concerns have been raised by Brundage and Pankonin.

C. Moore has summarized the legal status of the various proposed frequency bands (to be distributed) and Thompson is analyzing the extent to which the Array naturally discriminates against artificial interference.

It has been agreed to redefine the frequency bands to be centered in the WARC bands, and to acknowledge that if and when necessary, the reception band can be limited to the assigned radio astronomy bands.

6. What to Call IT. Roberts raised the controversial question of picking a name. He pointed out that some people confuse VLBA with VLA. On the other hand, VLBA has been in use for some years and it is the name used in the Field Committee report in the NSF long range plans. To change now might cost us the advantage of "name recognition". On the other hand, if there is to be a change, now is the time.

Other names which have been suggested are:

Transcontinental Radio Telescope (TRT). This was used in the Caltech Design Report. It has the advantage that it conveys the image of a single instrument rather than a collection of antennas. Should we at least keep the word "Array"? There is no precedent here. We have the VLA, but we also have the Westerbork Synthesis Telescope, the 1-Mile Telescope, and the 5-km Telescope. Also, is Hawaii transcontinental?

Intercontinental Very Long Baseline Array. Is Hawaii Intercontinental? This was used for our 1977 Design Study.

Transcontinental Radio Array (TRA).

U. S. Radio Astronomy Array (USRAA).

North American Array (NAA)

Ultra Large Radio Telescope Array (ULTRA). Contains the word "Telescope as well as "Array" and has a meaningful acronym.

Ultra Large Array (ULA). Natural follower to the VLA and allows for further expansion to space, i.e., (Extremely Large Array - ELA) and to deep space (Super Large Array - SLA).

Global Array. (GA)

Global Radio Telescope. (GRA)

Trans American Radio Array (TARA)

Trans American Radio Telescope (TART)

High Angular Resolution Telescope (HART)

Trans American Telescope (TAT)

Ten Element Trans-American Radio Array (TETRA).

Transcontinental Radio Telescope Array (TRTA)

Global Synthesis Telescope (GST)

Transcontinental Synthesis Telescope (TST)

North American Synthesis Telescope (NAST)

United States Synthesis Telescope (USST)

Transcontinental Synthesis Radio Telescope (TSRT)

Very Long Baseline Transcontinental Array (VLBTA)

Very Long Baseline Transcontental Radio Telescope (VLBTRT)

Please send in your comments or further suggestions. Deadline is March 5. All entries are advisory to the Director, who will make the final decision.

It is encouraging (?) to note that our Canadian colleagues have, after great deliberation, been able to solve a similar controversy (see attached excerpt from the Canadian "CLBA Newsletter).

CLBA Newsletter

"A mari usque ad mare"

The name's not the same

Those of you who have read the book 'Parkinson's Law' will remember Parkinson's description of a typical committee meeting. At that meeting the building of a nuclear power station of $30,000,000 was rubber-stamped in two minutes, but the approval of a $1,000 bicycle shed required three quarters of an hour of discussion because everybody felt that if there was one thing they really knew something about, it was bicycle sheds. We have had a similar problem with the array. The planning and the design study are proceeding rapidly, with consensus being reached on many technical aspects, but just try getting everyone to agree on a name for the beast. Despite a proliferation of suggestions, the only name which did not offend a substantial minority of the Planning Committee was the humble acronym CLBA (for Canadian Long Baseline Array). So there you have it, the lowest common denominator, a true Canadian solution. CLBA was officially adopted as the name by the Planning Committee at its meeting in Quebec City on May 30, at least until such time as a more attractive and acceptable alternative is offered. In French the official name is RIC (for Réseau Interférométrique Canadien). It may come as a surprise to those of you who attended the information meeting at Laval University on May 27 or who have seen other names in the press, but CLBA it is.