

# VLB ARRAY MEMO No. 268

To: VLBA Data Acquisition and Correlator Groups  
From: Martin Ewing  
Re: Minutes of DA & C Meeting 9/13/83

Present: H. Hvatum, J. Benson, R. Escoffier, W. Cannon, A. Yen,  
K. Kellermann, R. LaCasse, A. Whitney, D. Fort

Ewing was substituting for A. Rogers, who was basking somewhere in the South Pacific.

## SIZE OF CORRELATOR

Ewing noted that the "Walker/Bridle" Plan for US/Canadian collaboration called for a large total number of antennas, to wit:

- 10 VLBA basic sites
- 9 Canadian basic antennas
- 4 VLA antennas

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23 antennas, plus possible European/Japanese outriggers.

This puts a rather different cast on the correlator discussions, since we are beginning to talk about a "really big" correlator, 100 Kilolags or more. For the moment, we will continue with the C2S approach; there is no money for anything more. If the antennas go up so much in number, we will simply say that we need to increase the correlator budget. For example, C2F would do it if about \$1M extra were available. This can be handled as a later upgrade, but we must allow hooks for up to 23 or so even in the 10-19 antenna design.

## CASSETTES VS "RECIRCULATING MK III-A"

Ewing also explicitly observed that a tape recording correlator is intrinsically recirculating, since the tapes can be replayed with altered delays and/or field centers (try that at the VLA!). However, there are problems in scheduling the correlator if a significant fraction of observing requires more processing than observing time.

Such problems are overcome for narrowband spectral line work if a longitudinal-type recorder is used. In this case, recording can occur at a slow speed, while playback is at full speed. Several passes are then possible to achieve more frequency resolution. Cassette systems can not be altered more than 10-20%, according to Escoffier; in any case, factors of 2-4 are not available in VCRs.

Thus the Mark III-style recorders offer the possibility of multipass playback for high resolution. Question: Is this capability worth the extra cost (if any)?

Kellermann pointed out the difficulties of this evaluation. There are other ways to get the resolution, such as a hardware recirculating buffer. The two recording schemes have different degrees of reliability (although the sign of the difference is not known -- MSE); operating costs will differ; etc.

Whitney said that playing back faster than recording has been supported at Haystack and has been a concern for the VLBA. Perhaps it should have been stressed more in the Data Acquisition chapter for Vol. III.

#### CANADA

The Canadians were asked for their feelings about the VLBA designs for tape recording and correlation. Are the Canadian requirements met with our proposed systems? Should we consider any changes? In general, they responded that VLBA studies are further ahead than CLBA work, and that there was a sentiment that the VLBA systems would do the right thing for the CLBA, if a collaboration does come about.

#### MK III-A and TAPE RECORDERS

There is to be a NASA evaluation of the high-density Mark III systems on or about Nov. 1 at Haystack. A number of VLBA types indicated an intention or desire to attend: Hvatum, Yen, Ewing.

#### COMPLEXITY

Kellermann and Ewing think there may be too much! We shall be on the lookout for ways to make everything simple. Yen says, reliable, too!

#### MEETINGS

Correlator meetings may be reduced in frequency. Is this agreeable to the group?