VLB ARRAY MEMO No. 310

NATIONAL RADIO ASTRONOMY OBSERVATORY
Charlottesville, Virginia 22903

VLBA Electronics Memo No. 8

January 24, 1984

MEMORANDUM:

TO: VLBA Members

FROM: M. Balister

SUBJECT: Minutes of the VLBA Electronics Group Meeting on January 19, 1984

Attendees: Weinreb, Moffet, Norrod, D'Addario, Napier, Thompson, Brundage, Bradley, Mauzy and Balister.

Napier reported on his work on VLA/VLBA low frequency prime focus feeds. The plan is to use the subreflector as ground plane and the feeds will be left in situ during Cassegrain observations. He pointed out that the proposed crossed dipole feeds would not cover the full 10% bandwidth that is the current VLBA objective at 327 MHz and 610 MHz.

Weinreb reported on the current receiver development/construction plans. The receivers have been put in groups for planning purposes and are as follows:

Group A	1.5, 5, 15 GHz
Group B	327, 610 MHz
Group C	2.2, 8.8 GHz
Group D	22, 43 GHz
Group E	6, 10.7 GHz

Groups A and B will be available as soon as the first antennas are ready for electronics; Group C will follow closely and Group D will be somewhat later due to current uncertainty of our plans. Group E are receivers that will be delayed until the end of the project but probably built if funds allow.

There was some discussion on calibration signal level and timing. There was agreement that a timing signal around 20 Hz would be suitable. The calibration signal level needs further discussion and some thought on how antenna performance will be evaluated and also how routine pointing will be handled. The input calibration coupler will be 30 dB on all receivers resulting in a maximum calibration signal of 100K when using a solid-state noise source.

Due to the lower reliability of 4K, closed-cycle cryogenic systems when compared with 20K systems, it was suggested that if masers are used at 22 and 43 GHz that they not be combined on a single refrigerator. Weinreb proposed they be built as preamps for 20K HEMT systems so that they could be removed for servicing. The group was not entirely in favor of this suggestion because of output/input transition problems. A study will be made to see if a low gain maser/HEMT combination could be cooled reliably by a 4K system based on a Model 22 refrigerator.