

Interoffice

National Radio Astronomy Observatory
Charlottesville, Virginia

August 13, 1982

To: VLBA Electronics Group

VLB ARRAY MEMO No. 113

From: M. Balister

Subject: Minutes of VLBA Electronics Group Meeting

A meeting of the VLBA Electronics Group was held on Wednesday, 11 August 1982. Persons present:

M. Balister
B. Brundage
R. Escoffier
H. Hvatum
R. Lacasse
C. Moore
D. Thompson
S. Weinreb

Dick Thompson and Bill Brundage are new members of the committee.

The major conclusions of the first meeting (June 4, 1982) were summarized:

1. A recommendation by Peter Napier that some considerable time be spent studying and optimizing the antenna/feed RF characteristics in advance of detailed antenna design so that RF problem areas affecting mechanical design can be resolved early.
2. Hein put in a request for a block diagram of the electronics with more detail than in the currently existing ones in the proposal.

Following the review of the first meeting, Dick Thompson stated that we should make sure that we build a receiving system with sufficient flexibility in frequency control so that we could match our observing windows to the frequencies allocated to Radio Astronomy within the U.S. A problem exists at the VLA, for example, observing within the entire protected band of 15.35 GHz to 15.4 GHz with a 50 MHz bandwidth due to too coarse an L.O. frequency control.

It was proposed that Dick Thompson and Bill Brundage keep an eye on the configuration group's site study with an eye on potential interference problems to elements of the array.

There was some discussion about the 5-6 GHz amplifier requirement. Sandy Weinreb pointed out that although he is currently working on the problem of broad banding, cooled GASFET amplifiers, it is not an easy task to build an amplifier covering this wide a band without compromising the performance at one or other of the prime observing frequencies. He would like some indication of where the compromise should be; how critical is the 6 GHz performance?

Mike Balister stated that, in general, the electronics are in a pretty good state. NRAO is currently developing receivers very similar to some of the receivers proposed. For example, we are building a 1.3-1.8 GHz cooled FET (with a cooled orthomode transition) receiver which is identical to that proposed for the VLBA. The least well developed is the maser for 43 GHz. Although our current design works well, we have not been able to find a cheap reliable pump providing 200 mW at 90 GHz. The SIS devices are attractive from the standpoint of only needing 50 μ w of L.O. power, but the group currently feels the maser to be more practical and to provide better receiver sensitivity.

Some discussion was held on the desirability of having monthly meetings and it was felt (except by Hein) that, at the moment, a three-month interval would be sufficient for the next one. Consequently, our next meeting will be on Wednesday, 10 November 1982, 1330 EST.

Distribution:

VLBA Electronics Group - B. Brundage
R. Escoffier
R. Lacasse
C. Moore
P. Napier
D. Thompson
S. Weinreb

Other VLBA Planning Groups
VLBA Proposal Group