

National Radio Astronomy Observatory

Charlottesville, Virginia

August 19, 1983

To: VLBA Members

From: S. Weinreb

Subject: Synopsis of VLBA Electronics Meeting of August 17, 1983

Attendees: J. Payne, A. Moffet, J. Campbell, D. Weber, B. Brundage, R. Fisher, A. Rogers, J. Carter, L. D'Addario, C. Walker and S. Weinreb.

Synopsis of Agenda Items

1) IF/LO Block Diagram Change

(From triple-conversion to double-conversion with 0.5-1 GHz IF and four 2-16 GHz local oscillators) - This change was generally endorsed by the group as making the system simpler and more easily maintained. Some comments:

- a) The cost and complexity of a low phase noise 0.5-1 GHz synthesizer may be higher than for the 0.1-0.5 GHz synthesizer. This is a design problem which needs early investigation. Increasing the tuning step from 10 kHz to 20 kHz would ease the problem; the Scientific Committee should be asked about this.
- b) There is concern about the reliability and cost of the switching matrices, diode or mechanical, needed for both IF and LO. This also needs early investigation.
- c) In order to allow observations of two bands over 500 MHz apart with the same polarization, two first LO's and mixers must be allowed on front-ends with over 500 MHz instantaneous bandwidth (8.0-8.8 GHz, 10.2-11.2 GHz, and 14.4-15.4 GHz).

2) System Layout

The module approach of the VLA, with an improved coaxial connector or SMA connectors, is favored. The front-ends will have some circuitry mounted directly on the dewar but will probably also have a service module per front-end. There will probably be one rack in the vertex room in a non-critical location and two data acquisition racks, an LO/timing rack, and the hydrogen maser in the control room. Electronics requirements need to be incorporated in the control building plans.

