

NATIONAL RADIO ASTRONOMY OBSERVATORY
Charlottesville, Virginia
September 5, 1986

(860909)

To: VLBA Electronics Group
From: Dick Thompson
Subject: VLBA Electronics Meeting, September 4, 1986
Attendees: Bagri, Balister, Beno, Bradley, Brundage,
Campbell, Chestnut, Dill, Mauzy, Napier, Oty,
Schlecht, Simon, Thompson, Walter.

Some details of electronics packaging were reviewed. It was decided that in the future no. 4 pan-head screws, with counterbored holes to recess the heads, will be used to attach the side plates on all modules. At the present time this design is used only on shielded modules, and unshielded modules use flathead screws of either no. 4 or no. 6 size, with countersink holes.

In VLA modules, one of the four guide pins of each Amp connector is of the gold plated type, intended to provide a ground connection. Experience has shown that the socket part is fragile, and frequently becomes damaged as modules are plugged in and out. Since it is the usual practice to provide a ground connection through pins in the connector block, grounding through the guide pin is unnecessary. It was decided that the gold plated guide pins will not be used in VLBA construction, and the Amp connectors will be mounted with four guide pins of the cadmium plated steel, or zinc plated brass type. Gold plated types on VLBA equipment built up to this time will be changed out. The Amp part numbers for guide pins are given in Table 1 of VLBA Electronics Memo No. 78.

Serial numbers of VLBA racks will start at 101 to avoid confusion with VLA racks.

In testing the electronics it was found that the cut-out circuits of the 5-volt and 28-volt power supplies were frequently triggered when other modules were inserted or removed from the racks. These power supplies use switching power modules, and inductive filtering had been added (by NRAO) as a precaution against switching noise on the outputs. The power supply drop-outs were caused by the voltage transients induced by the inductance when the load current changed. Investigation showed that satisfactory suppression of switching spikes can be obtained using capacitors, and the inductors have been removed. Erich Schlecht can supply information on the capacitor values.

The first 4.8 GHz front end has been completed at Green Bank, and the measured receiver temperature is 20 K. Tests of the rack-mounted equipment in Charlottesville are progressing on schedule, and it is expected that the racks will be ready for shipment to the VLA site by the week of September 22.

An extra set of hot and cold loads for each front-end frequency will be required at the VLA site for noise-temperature measurement. These will have to be constructed by the appropriate front end groups. Those required for system testing later this year are for 4.8, 10.7 and 15 GHz. There was also some discussion of special equipment, such as signal sources, required for the system tests at the VLA site.