

NATIONAL RADIO ASTRONOMY OBSERVATORY
Charlottesville, Virginia

May 2, 1985

TO: VLBA Electronics Group
FROM: Dick Thompson
SUBJECT: Meeting on Front-End Interface, April 30, 1985
ATTENDEES: Balister, Campbell, D'Addario, Dill, Koski,
Napier, Norrod, Schlecht, Thompson, Weber,
Weinreb.

As described in VLBA Electronics Memo No. 41, a tentative decision was made in early April that the front end monitor and control interface unit should be located in a demountable, shielded box on each front end. Electronics memoranda 42 and 43 introduced further ideas, and a meeting was held on April 30 to review the decision. Discussion ranged widely and some points covered are outlined below.

Some form of local control is desirable so that the state of the cryogenics can be determined when the station computer is down.

The local monitor and control must be visible and accessible to a person working on a front end, and indicators on modules in a rack on the lower vertex room floor would not fulfill this requirement.

Although voltages can be monitored at the test points on the cards in the front-end cage, it would be much more convenient to have a small unit that plugs into the front end or the interface unit and contains a DVM and a switch to select all commonly required voltages. The same box should allow local control of command functions. A long umbilical cord from this unit to a rack is undesirable.

The possibility of locating the interface on the wall of the feed cone just below the front end was discussed as a means of keeping space clear around the most crowded, high frequency front ends.

Larry D'Addario presented the case for inclusion of the interface boards in a shielded section of the front-end card cage. This would simplify the interconnections to the front end, and would require replacing cards, rather than a complete

interface unit, in case of failure of the interface. Disadvantages of this scheme are that the front end design is less easily adaptable to another antenna or array with a different monitor and control system. More seriously, the problem of shielding the digital interface circuitry to prevent interference becomes part of the front-end design rather than just the design of a demountable module.

Advantages of locating the interface unit on the front end are:

- (a) Long cables to a rack are eliminated, and hence additional monitor and control functions are more easily implemented.
- (b) The front end identification can be encoded digitally, rather than as an analog voltage.
- (c) There should be no difference in ground potential between the front end and the interface, so the cheaper single-ended multiplexer interface can be used.
- (d) If the front end is removed for servicing the interface can conveniently remain with it and the two can be adjusted together in the lab.
- (e) A local monitor and control box can plug into the interface unit for use in servicing and will not need a long umbilical cord.

Advantages of locating the interface in a rack are:

- (a) The RFI shielding problem may be simplified.
- (b) There is no increase in the size or weight of the front end units.
- (c) Power supply wiring to the interface modules is simplified.
- (d) It would be possible to use one interface board for several front ends.

In my judgement, and I believe that of the majority of the people at the meeting, the advantages of locating the interfaces at the front ends outweigh those of locating them in a rack. Certainly, no serious objection to location on the front end was identified. The earlier decision to locate the interface units in demountable boxes located on the front ends therefore still stands.