VLBA Electronics Memo No. 110

November 8, 1988

To: VLBA Electronics Group

From: Dick Thompson

Attendees: Bagri, Beale, Brundage, Campbell, Crady, Lilie, Morris, Norrod, Rogers, Schlecht, Simon, Stetten, Thompson, Wireman.

Subject: VLBA Electronics Division Meeting, November 3, 1988

Much of the meeting was devoted to a review of estimated costs for the remainder of the year, and some details of plans for 1989 construction.

Test equipment: We will procure a sweeper plug-in for 10-2400 MHz for testing of front ends and converter modules in Charlottesville. Erich Schlecht is also looking into test equipment required for checkout of DARs, particularly the baseband converter modules.

Feeds: no further expenditures on materials for feeds are expected this year.

Front Ends: Remaining procurements for the 1988 build program involve only some components for units 3 - 6 of the 23 GHz front ends. Front ends through serial no. 7 have been completed for 4.8 GHz, and are in final stages of construction for 1.5 GHz. The two 8.4 GHz front ends scheduled for this year have also been completed. For next year we expect to modify the existing construction plan to include four 1.5 GHz front ends, but no 4.8 GHz front ends. This will enable us to finish up all the 1.5 GHz units, and there are sufficient 4.8 GHz units in hand to cover outfitting through next year. Thus for 1989 four model 350- and 10 model 22 refrigerators will be required. It is hoped to be able to place an order for these refrigerators before the end of 1988. A prototype front end for 43 GHz will be constructed during 1989. This will use HEMT amplifiers, a prototype of which has recently been completed by S. Weinreb's group. This amplifier has 24 dB gain, 50 K noise temperature, and 1 GHz bandwidth.

2 - 16 GHz Synthesizer Modules: Units through serial no. 22 are included in the build for 1988. Next year we plan to make 12 units which will complete the required construction. This is an increase from 6 units in the plan for next year, and will be made possible by advanced ordering of $40 k worth of parts from 1988 funds.

Bins: A total of 50 bins will cover construction for the next year. It is hoped to place an order for them before the end of the month. The order will be divided equally between the Electronics and Data Recording (DAR) budgets.

Other Items: There are no plans to purchase another timing receiver before the end of the year, but I hope to be able to adjust the allocations in the 1989 electronics budget to include one. Purchasing for modules for the remainder of the year will mainly be in the area of L.O. Reference Distribution and Converter Modules.

The first pair of ambient-temperature post amplifiers for the 23 GHz front ends were received from Miteq this week. Acceptance test show noise figure less than 4½ dB and gain greater than 10 dB over the 21.7-24.1 GHz band. These amplifiers will be installed on serial 2 front end and further test will be made during this month.

During the October Electronics Meeting, Bill Brundage noted that the current experience with model 22 refrigerators is about one failure per week with 26 units operating. This is mainly due to first stage seals, and there are also some problems with valves. It is suggested that rather than returning the complete front end for service when a refrigerator fails, the refrigerator displacer and crosshead assembly should be replaced at the site, and only that portion returned for maintenance. If spare refrigerator parts are kept on hand at the stations, some increase in the number of spares will be required.