

## SUMMARY OF DESIGN REVIEW MEETING

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Here is a brief summary of the topics considered at the Design Review Meeting, which was held in Charlottesville on Jan 31 and Feb 1, 1984. This summary emphasizes those items on which there was some sort of decision, and reflects some of my own biases. Many things are omitted.

CONFIGURATION - requires only a final decision on whether Puerto Rico is acceptable; available evidence indicates yes.

COMPATIBILITY - (a) MkIII: will not constrain the design of VLBA recording or correlator, except to ensure that compatible sampling rates are available. If VLBA playback machines do not accept MkIII tapes, compatibility can be obtained by building a few MkIII playback units; however, none are in VLBA budget. (b) VLA: to run NM VLBA stations into VLA correlator, special IF/digitizing rack may be needed at NM stations. To run VLA antenna(s) into VLBA correlator, special IF and VLBA digitizing/recording is needed at VLA. Neither special equipment is in VLBA budget. Thus, combined operation with MkIII and VLA is allowed for but not included in the VLBA project.

BUILDINGS - Development of final floor plans awaits input from various groups.

ANTENNAS - Design is about ready for issuance of RFP.

RECEIVERS - Optics design is in progress; some tradeoffs were taken in subreflector design; all feeds (including options) will fit, but not too easily. Front end development has been started for 3.6 cm and will soon start for 20 cm; a schedule that fits comfortably with the antenna schedule exists.

LOCAL OSCILLATORS - The tuning flexibility looks OK except perhaps at 3.6 cm; there, we should try to cover the whole band without splitting it between polarizations.

I.F. PROCESSING - We will limit the maximum bandwidth per baseband channel to 8 MHz [major decision!!]; this is driven primarily by correlator implementation simplifications. The minimum channel bandwidth (.125 MHz), number of separately tunable converters (16), and total number of channels (32, USB&LSB) remain the same. Each channel will provide switching for a special, external filter.

DIGITIZATION - We'll investigate building variable phase samplers, so that the "fractional bit shift" correction will be unnecessary. The headers will not replace samples.

RECORDING - Presently, both cassette and longitudinal systems appear feasible, but experimentation is continuing.

CORRELATOR - The initial dump rate has been specified as 160/sec; this is not needed for bit-shift correction, even without variable phase sampling, and reducing it will drastically reduce microcomputing requirements. Fringe rotation could be implemented in an SSB manner, which would cut the correlator proper in half; consequences of this will be studied, and perhaps the method will be adopted. Fringe rotation in a station LO would simplify the correlator still further, but might limit astronomy. A spec is needed on the extraction of phase cal tones, including whether it needs to be done at the correlator at all.

MONITOR AND CONTROL - The station bus concept appears OK, but various objections were raised about the standard interface design. Unfortunately, the suggestions for changes conflict with each other. An attempt will still be made to find a useful compromise, but it may turn out that several special interfaces are needed. Choices of computers (station and central) have not yet been made. For communication, a multi-drop, polled protocol is preferred; this would accomodate either telephone line or satellite transmission.

POST PROCESSING - is already in good shape, by virtue of AIPS. Some details of the interface to the correlator need working out. One uncertainty is what fraction of the post processing will be done at NRAO and what fraction at users' institutions.