VLB ARRAY MEMO No. 590

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VLBA Systems Group Meeting
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A meeting of the Systems Group was held to consider any current system problems. The conclusions of the previous meeting (described in VLBA Memorandum 537) were reviewed. Action items assigned at that time have been addressed in VLBA Memoranda 543, 552, and 584, and VLBA Electronics Memorandum 78. The two main points of new discussion concerned the areas of signal quantization and digital recording.

ADJUSTMENT of QUANTIZATION LEVELS. We plan to operate the VLBA without phase switching, at least initially. The large natural fringe rates on long baselines should provide an acceptable substitute in most cases, but the VLBA configuration includes some short baselines, and an augmented array may even incorporate intra-VLA baselines; both cases may suffer from the effects of quantizer offsets during extended periods of low fringe rates. The non-zero thresholds for four-level quantization seem particularly susceptible to relative offsets. RCW will review the plans for maintaining accuracy and stability in the quantizers, and determine whether these can be expected to meet the criteria for image dynamic range outlined in VLBA Memoranda 388 and 470.

TAPE RECORDING FORMAT. The VLBA recording system incorporates a general, programmable format. This necessitates the inclusion of a programmable synthesizer in the modifications to the Honeywell 96 recorder, in order to accommodate an arbitrary ratio of recorded to data bits. It was realized some time ago that a partial format specification restricting the various data blocks to specific lengths could allow the use of a much simpler and less expensive synthesizer. JDR had volunteered to work with Haystack Observatory personnel -- primarily W. Petrachenko and R. Capallo -- to develop such a partial specification, with an original target date of 1987 January 1. However, such an effort will delay work on more critical aspects of the recording system, and it now appears preferable to concentrate on completing the recorder prototypes as early as possible; the first several DAS's will thus be equipped with programmable synthesizers. Development of the partial format specification will follow the successful demonstration of the recording system, and may indeed benefit from having real equipment available for experimentation.