

VLBA ACQUISITION MEMO #210

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To: VLBA Data Recording Group
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Subject: Tests of the VLBA Read/Write Interface

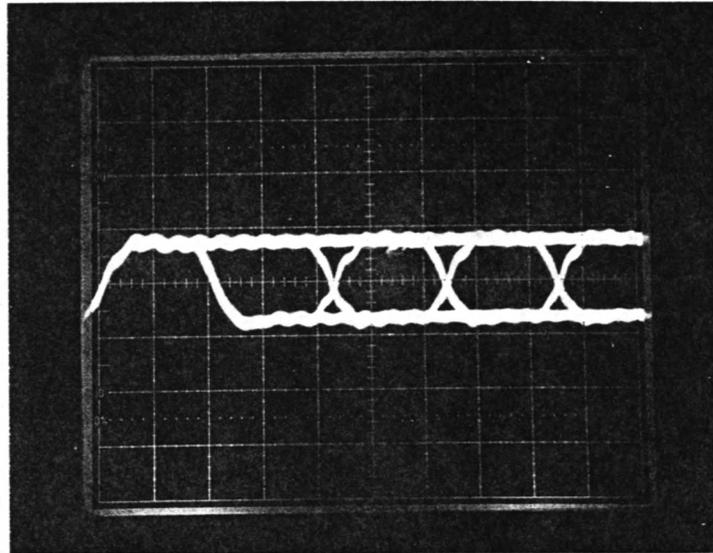
In order to verify the quality of recordings made with the VLBA recorder, several tests have been made on the interface. While the VLBA recorders give satisfactory error rates there has been some concern that recordings made with a VLBA recorder might be inferior or different from those made with a Mark IIIA recorder. The VLBA recorder uses the same heads for both reading and writing and the interface might compromise the write performance. We have recently measured some of the write circuit characteristics as follows:

	<u>VLBA</u>	<u>MKIII A</u>
Head current reversal risetime (to 80% max)	60ns	30ns
Asymmetry (difference in zero crossing time)	7ns	<5ns
Cross-talk Current	30%	25%

The cross-talk current was measured by recording independent on odd tracks and observing the level of cross-talk recorded on the even tracks. Independent signals are used because the worst cross-talk occurs when the signals in adjacent heads are in phase. Independent random signals will be in phase some of the time. The cross-talk given in the above table is estimated from the ratio of record current needed to just record to that needed to just record cross-talk. The head current waveform is shown in Figure 1 and was made with a current probe in series with a head coil in a special set-up. Measurements of current as the record wires enter the headblock assembly provided an unduly pessimistic picture of the head current risetime and symmetry.

While the VLBA write characteristics are somewhat compromised by the read function we could not find any significant difference in error rates of tapes recorded with the same record current on the VLBA and MKIII A record interfaces. The onset of cross-talk occurs at a lower record current in the VLBA recorder and care should be taken not to use too high a record current. [For Fuji H621 the optimum record current is about 7 ma p-p.] The 60ns risetime of the record current is adequate for 9 Mb/s/track sample rate ("double" speed) but may not support higher rates.

13 July 90 10 ma/div



D03 100 ns/div MVOLT 3 9999 NewHead

Figure 1. Head current in new head (Serial D03) measured with current probe. 4.5 Mb/s (2 MHz Bw) signal from MKIII formatter. Scales are 100 ns/div and 10 ma/div. Maximum available record current on VLBA REC #3 (mvolt 3 9999).