

VLBA ACQUISITION MEMO #387

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To: VLBA Data Acquisition Group
From: Hans F. Hinteregger
Subject: Minutes of VLBA Recorder Telecon held 15 February 1995

Attendees:	<u>NRAO</u>	<u>Haystack</u>
	C. Bignell	J. Romney
	J. Campbell	C. Walker
	B. Clark	R. Weimer
	G. Peck	

- (1) Erratic Unload Problem: Local or remote unload commands now have about 10% probability of failing to slow down the tape before it runs off the take-up reel. This behavior has been noticed since a firmware fix to prevent loss of vacuum on turn-around was installed. The cause of this (apparently new) problem is still completely unclear.
- (2) RS232 Communication Problem: George Peck is investigating an intermittent problem which results in loss of ability to communicate via the front panel RS-232 port. He will use an RS-232 bus analyzer and send the results to Roger Cappallo for analysis.
- (3) Pushbutton Interface: Erratic false pushbutton commands have been observed, apparently due to the wires acting as antennas. Filters for these lines are being tried and may soon result in an official modification.
- (4) Capstan, Brush Noise: Hans Hinteregger traced one source of high-level impulsive interference to brush noise from the capstan. This source of noise can be observed with a scope monitoring the current-sense resistor of the capstan servo. The maximum level of this kind of noise from a capstan is not now specified and the observed levels vary widely from one capstan to the next and with commutator wear. The noise is clearly brush noise with a 17 pulse per rotation histogram corresponding to the 17 commutator segments. The main coupling mechanism to the heads appears to be as described in Alan Rogers' e-mail message. Capacitive coupling from motor shaft to the somewhat conductive tape backcoat is through a dielectric layer (the tape-bearing layer on the shaft), which is much thicker for the polyurethane-impregnated ceramic version, than for the older thin solid polyurethane-coated aluminum version. The newer version, in other words, should provide better decoupling.

Feedthrough filters on the power leads to the motors may also help. Metrum is sending samples they have used on some versions of their machines. If these help they can easily be retrofitted to both capstan and reel motors.

A reworked capstan has been received from Metrum with a new part number, and a very accurate (.25 um) tape bearing diameter measurement on its label. The groove area is only about half that requested, however, perhaps due to an oversight. A quote for this kind of rework to replace the tape-bearing layer with the specified deeply grooved ceramic is outstanding.

- (5) Formatter problem: A false formatter error indication (used to resynchronize the formatter) has been tracked down and is being fixed by George Peck.
- (6) Tapes, Reels, Bands, Shippers: About 200 new tapes (3M & Sony) and reels are being added to the system. George Peck will update the reel spec memo. NRAO is working on a fix for the 3M "blue" box. Hans Hinteregger questioned this approach. A new reel band with a latch that cannot "crash" into the plastic box was recommended. Some operations people don't like dealing with a cardboard box in addition to the plastic container, though much can be said in its favor. Hans Hinteregger recommended use of the extremely reliable Fuji "green" box, as is, since there is no evidence that tape is damaged when the pack is deformed by mechanical shock. Fuji may also have an equally rugged box for 2"-wide tape which matches the "blue" box form-factor. The most conservative solution is two or more green boxes in a cardboard box altogether too heavy to be tossed. A less expensive lightweight solution should be tried in which each banded reel is surrounded by foam and several of these in turn by an expendable (easy to seal and unseal) cardboard box.