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Memorandum M-2170

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Digital Computer Laboratory
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SUBJECT: A PROPOSED READOUT SCHEME

To: W. N. Papian

From: S. Fine

Date: May 18, 1953

Abstract: A good deal of delta and air-flux noise cancellation can be attained during readout by using the $d\Phi/dt$ produced during the fall time of the read gate to cancel that produced during the rise time.

Considerable improvement in magnetic-core memory operation can be achieved by reducing the magnitude of delta and air-flux noise to a minimum value. Significant delta-noise reduction has been effected through the use of the post-write disturb pulse. Further delta-noise reduction, plus air-flux noise reduction, can be attained by the system described below.

If the rise and fall of the read gate are similar in time and shape the $d\Phi/dt$ producing air-flux noise at the start of the read gate will be equal in magnitude and opposite in polarity to that produced at the close of this gate. Assuming that all cores have previously been disturbed by post-write disturbance, the $d\Phi/dt$ for half-selected cores will also be approximately equal in magnitude and opposite in polarity at the start and close of the read gate. By delaying the readout until the rise-time noise is opposite the noise produced during the fall time, the two can be made to cancel through a difference amplifier.

The operation time added to the present read, write, post-write, disturb system is approximately $1/3$ the duration of the read gate.

Signed


S. Fine

Approved


W. N. Papian

SF:jrt