

Memorandum M-2449

Page 1 of 2

Division 6 - Lincoln Laboratory  
Massachusetts Institute of Technology  
Cambridge 39, Massachusetts

SUBJECT: JOINT MIT-IBM MEETING ON MEMORY-CORE MEASUREMENTS, September 24, 1953

To: Jay W. Forrester

From: David R. Brown

Date: October 2, 1953

Abstract: A Joint MIT-IBM Core Measurement Committee will coordinate core measurement activity at MIT, IBM (High Street and Plant 2), General Ceramics, and RCA Victor. The round robin completed September 24 to calibrate measurement equipment at all test sites will be repeated at the end of October. To provide a frequent check on measurement techniques at the different sites, measured cores will be sent to MIT for verification.

A meeting at IBM, Plant 2, held on the afternoon of September 24, 1953, was attended by J. Goetz, J. Johnson, N. Edwards, J. Crowe, R. West, D. Brown and J. Childress.

Jim Childress discussed the round robin conducted by Ben Gurley and himself at General Ceramics on September 17 and at RCA Victor on September 18 and by himself at High Street on September 23 and at Plant 2 on September 24.

At General Ceramics, good calibration data were obtained using the reference equipment. A significant difference in the response of the scopes used for current calibration was discovered. When the current,  $I_m$ , was set to 0.820 ampere with the General Ceramics equipment, this same current measured 0.79 ampere on the reference equipment. A difference in the response of the scope was also responsible for a difference between the pulse responses measured on General Ceramics equipment and the pulse response measured on the reference equipment. General Ceramics read approximately 15 percent high. Notice that the combination of the two errors, reading both the current and the voltage higher than they actually are, can compensate one another so that errors may not be discovered by the use of reference cores alone.

At RCA Victor excellent agreement with the reference equipment was obtained during the check of the current calibration. A significant difference, however, was noted in the calibration of the RCA Victor scope against the reference scope for determination of the pulse response. The current waveforms at RCA Victor were improved. Two MIT Mod. V core drivers were exchanged for two Codeco Mod. VI core drivers.

At High Street, excellent agreement was obtained in the calibration of the current. In the calibration of the scope for measurement of the pulse response, however, a significant difference appeared due to the difference in the frequency characteristics of the two scopes.

Memorandum M-2449

Page 2 of 2

At Plant 2 good agreement in the calibration of the current was obtained. A significant difference in the calibration for measurement of pulse response was found however.

Gurley and Childress will send detailed reports to each of the four core-testing sites visited.

At the present time, core drivers are disposed of as follows: at General Ceramics 4 Mod. V and 2 Mod. VI, at RCA Victor 4 Mod. V, at Plant 2 2 Mod. V and 2 Mod. VI, at High Street 6 Mod. V and 6 Mod. VI, at MIT 64 Mod. V and 12 Mod. VI. Any improvements or changes in the design of the core drivers should be reported at once to all users.

The quality of the Codeco core drivers should be as good as the MIT core drivers after the Codeco core drivers have received adequate inspection and maintenance.

To correct the current shortage of core drivers at IBM, additional core drivers will be ordered from Codeco.

The amount of preparation and time required for a round robin of the type conducted by Gurley and Childress make it apparent that a round robin of this type should not be attempted each week. Round robins of this type will be planned for the future at approximately monthly intervals. To provide a check for the time between monthly round robins, each core-testing site is asked to send measured cores to Dave Brown at MIT at frequent intervals, perhaps semi-weekly. The data on the check cores sent to MIT should include the peak undisturbed ONE at currents of 0.740, 0.820, and 0.900 ampere. The data should include peaking time, switching time, and the temperature at which the measurements were made. Photographs of the current waveforms would also be desirable.

The round robin scheduled to be made by Bob West during the week of September 28 is cancelled.

IBM should ask General Ceramics to ship all cores made for their order as early as possible so that samples tests can be made at IBM to confirm General Ceramics' yield calculations. Cores from RCA Victor now look very good. Careful measurements of zero, half-selected, and delta voltages will be required before a final evaluation can be made.

The following membership is proposed for the Joint MIT-IBM Core Measurement Committee: D. R. Brown, Chairman, Jim Crowe, Nate Edwards, Jack Goetz, John Johnson, and Joe McCusker. The Committee should coordinate all visits to vendors. Dave Brown's office will act as a coordinating center for visits. Standard data sheets should be prepared. The Committee should hold regular meetings, possibly at biweekly intervals.

DRB/jk

Signed



David R. Brown

cc: Joint MIT-IBM Core Measurement Committee  
R. R. Everett      A. P. Kromer  
N. H. Taylor      W. N. Papian