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

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To: Jay W. Forrester

From: Division 6 Staff

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SECTION I - CAPE COD SYSTEM

1.1 Group 61

1.10 General

(R.J. Horn, Jr.) (CONFIDENTIAL)

For the benefit of both Group 61 and Group 22, various radar operating modes were analyzed by a program which gives the number of radar returns in range increments of 5 miles; at the same time photographs of the data were taken in the mapping room.

With the exception of the one at Martha's Vineyard, all the radars whose data are available for introduction into Whirlwind have been calibrated at least once. It is now planned to use the experience gained thus far to enable more accurate calibrations to be programmed.

A series of lectures and tests for Air Force personnel in the Track-While-Scan Section has proved very useful and uncovered areas in which more training was needed.

Work on the 1954 Cape Cod System progresses, with specific proposals now being made for many functions.

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1.3 Group 65

1.31 Activities of Group 65

(P. Youtz) (UNCLASSIFIED)

More attention than usual was directed to the reliable receiver-tube program this past period. One day was spent with the IBM Tube Group at Endicott, New York, discussing the tubes to be used in the display system. Four days were spent with the IBM Tube Group at Poughkeepsie, New York, on the general problems of the reliable receiver-tube program. We were able to discuss our problems with representatives from Sylvania, GE, and Tung-Sol. Also, a visit was made to Edgerton, Germeshausen and Grier, Boston, Mass., to discuss methods of marginal checking of the 2D21 and XD-1.

However, most of the effort of the Group continues to be expended on problems concerning the 19-inch Charactron and the 5-inch Typotron tubes. Two electron guns were received from Hughes Aircraft for electron-optical studies using the shadowgraph principle. These tubes are undergoing evaluation and analysis by F. A. Rodgers and P. C. Tandy.

A trip is planned for the week of 12 April to Convair and Hughes Aircraft. F. A. Rodgers, T. F. Clough, and I are making this trip to more carefully evaluate their construction facilities and processing techniques. C. L. Corderman will join us later in the week to discuss the electron optics of the two tubes.

J. A. Klein and J. S. Palermo are continuing their studies of phosphor aluminizing and nonreflective coatings. Special emphasis was placed this period on the nonreflective coatings.

G. C. Sponsler completed his electron-trajectory studies temporarily at the MIT Dynamics and Control Laboratory.

1.33 Research and Development

(J. S. Palermo) (UNCLASSIFIED)

During this past period J. Klein of Group 25 and I visited the American Optical Company in Southbridge, Mass., for the purpose of discussing the techniques and characteristics of AO-131 and AO-157C-50 nonreflective coatings. Coatings produced at American Optical have an overall reflectivity of about 0.3 per cent for white light and about 0.1 per cent per surface for the optimum wavelength.

CX-68, -69, and -70 were prepared this week for vacuum-tube laboratory processing. The first of this series will be given to the Test Group for evaluation during the next period.

1.33 Research and Development (Continued)

(J. S. Palermo) (UNCLASSIFIED) (Continued)

The mechanical tilt table for the liquid settling of luminescent screens is also expected from our Machine Shop during the next period. At this time tubes with aluminized luminescent screens will be prepared for processing and testing.

(P. C. Tandy) (UNCLASSIFIED)

During the past two weeks I have made several tests on Charactron and Typotron tubes.

A test on a modified Typotron tube, which had two flood guns, determined that a flood gun designed by F. H. Caswell would operate in a Typotron tube and give the desired screen coverage. The gun designed by Caswell had a different grid-drive characteristic than the other gun which was of the Hughes design. The cutoff of both guns was the same.

A test on a Charactron tube with a square aperture mounted in Grid 2, slightly behind the top aperture, demonstrated that an electron beam with square cross section could be obtained in the matrix plane.

Tests on Hughes Charactron guns will continue.