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Memorandum M-2007

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Air Traffic Control Project
Servomechanisms Laboratory
Massachusetts Institute of Technology
Cambridge, Massachusetts

SUBJECT: BI-WEEKLY REPORT, June 10, 1949

1.0 GENERAL

(W. G. Welchman)

G. R. Wieser has now started work on Air Traffic Control. He, J. W. Forrester and I went to Watson Laboratories, Red Bank, New Jersey, Monday June 6. We spent most of the day listening to an account of short range radar equipment that is under development for the provision of positional data in connection with the control of aircraft approaching an airport, landing and taxiing. Radar equipment for long range is dealt with by another section that we did not visit. We also discussed development of equipment by which distance and azimuth can be obtained in the aircraft.

It was a very interesting day and we shall clearly want to pay another visit soon. Perhaps the strongest impression left by the discussions is that the equipment under development is designed to assist a human operator to control air traffic. The form in which information is displayed is suitable for the human operator but at first sight it does not appear to be convenient for a computer. This was particularly striking in the case of taxi control on an airport for which the equipment under development will produce a complete picture of the airport on which movements of aircraft will be visible. This is helpful to a human operator who can see the whole picture but the translation of the useful information in the picture to a form suitable for computer storage might be pretty complicated.

Our efforts at present and for some time to come must be directed towards an analysis of the fundamental elements of the problem. Until we have made some progress with this analysis we shall not be in a position to compare the relative usefulness in a fully automatic system of the various possible methods of deriving positional information.

A. J. Perlis has started work on Air Traffic Control and will be joined soon by A. Orden. These two were both working in the mathematical section of Project Whirlwind last summer. D. R. Israel is joining the project on June 13. E. Reich has left and Hildebrandt and Rabinovitz will be leaving soon.

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1.0 GENERAL (continued)

(P. Franklin)

Considered possible subdivisions of the control problem by stages of flight and by functions of parts of the physical system.

(T. W. Hildebrandt)

During the past two weeks I have been investigating techniques of radio-telemetering with a view to their possible application to the air traffic control "private line" problem. The investigation was somewhat hampered by lack of suitable reference material until I was granted permission to make use of the Project Meteor library. I am now writing a short description of telemetering techniques which should be issued early next week.

(P. Rabinowitz)

A prediction program for private line communication was drawn up which uses zero-order prediction and which eliminates "blind spot". This program does not include any regulation of the rotating speed of the antenna.

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