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NATIONAL RESEARCH COUNCIL OF CANADA
RADIO AND ELECTRICAL ENGINEERING DIVISION

PROGRESS REPORT
ON
CB AND MZPI RADAR EQUIPMENTS
APRIL - JUNE 1950

Declassified to:
OPEN
Authority: *[Signature]*
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OTTAWA

JULY 1950

NRC # 35369

The National Research Council of Canada
Radio and Electrical Engineering Division

PROGRESS REPORT

on

CB and MZPI RADAR EQUIPMENTS

April-June, 1950

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COUNTER-BOMBARDMENT RADAR EQUIPMENT

Purpose

The purpose of this equipment is to locate mortars, within any ten-degree sector, out to a range of at least 5,000 yards. For all other purposes for which this radar may be useful, a maximum range of 25,000 yards will be available.

Status at the end of March, 1950

The block diagram on the following page indicates the status of the project on March 31, 1950.

Progress during April-June, 1950

R-F Head

(a) Blanking and Anti-clutter Circuits

It has been decided to employ video blanking as a means of distinguishing between echoes received on the upper or lower beam. The long time constants required for effective decoupling, and the lack of free control electrodes in the i-f strip preclude effective i-f blanking. Accordingly, a small sub-chassis has been built to contain a two-stage blanked video amplifier, a video cathode follower, and a blanking pulse amplifier. As an additional facility, the input video time constant may be reduced to 0.1 microsecond when it is necessary to break up long signals which may "clutter" the trace.

(b) Pulse Transformer

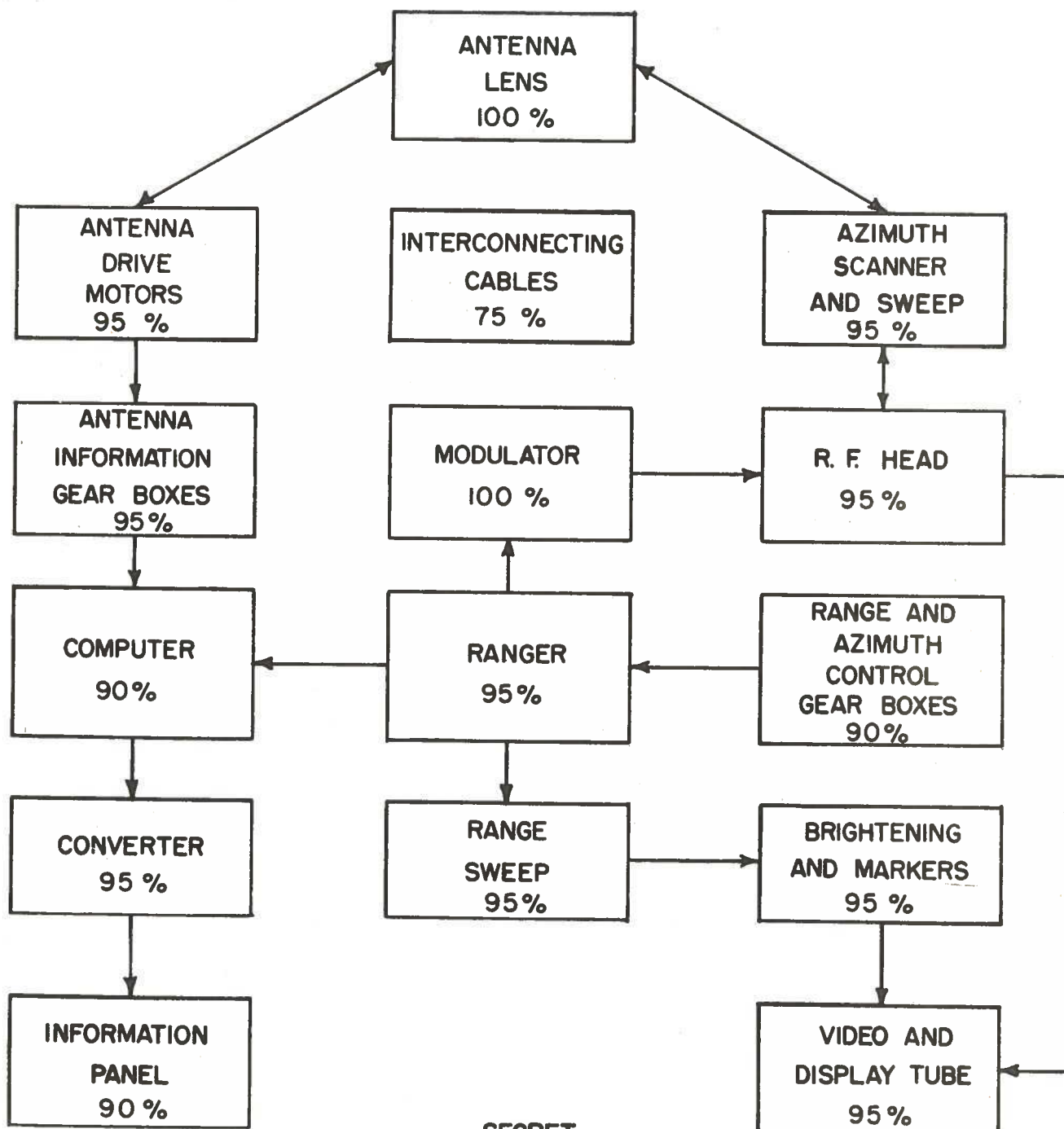
The new commercial pulse transformer has been found unsuitable and the NRC-designed unit will be retained.

Display Unit

The wiring of the new A-B scope has been completed. The redesigned optical filter holder has not been received from the shop. It will support a transparent screen on which targets may be marked and which may be cleared by pulling in a clean section from an attached spool.

STATUS OF CB RADAR PROJECT AT THE END OF MARCH, 1950

The degree of completion of each unit of the Field Trials Model is indicated approximately as a percentage.



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The new Metalized Screen Type-5RP7A tube has been ordered but has not yet been received. With this tube no final anode connection ring is required; consequently, the diameter of the mount will be reduced and the insulating boot will not be necessary.

Ranger and Range Sweep

All seven sub-units have been wired and several have received laboratory tests. These, together with the control panel for the r-f head and the sweep control panel, are mounted in two cabinets.

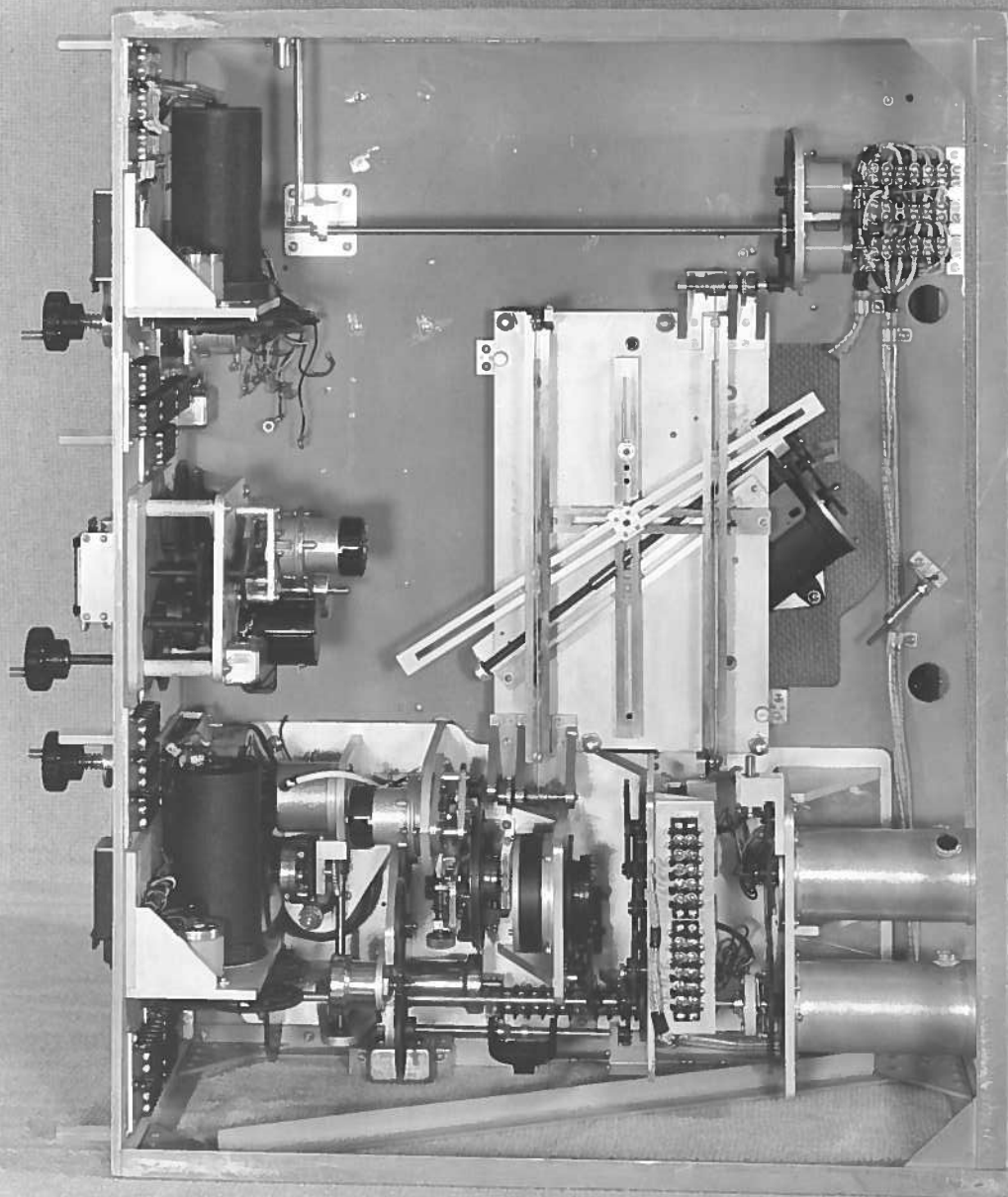
Inter-chassis wiring has been completed and final testing has commenced.

Computer

The mechanical components were received from the shops and the wiring has been completed. The unit is now being set up for laboratory test.

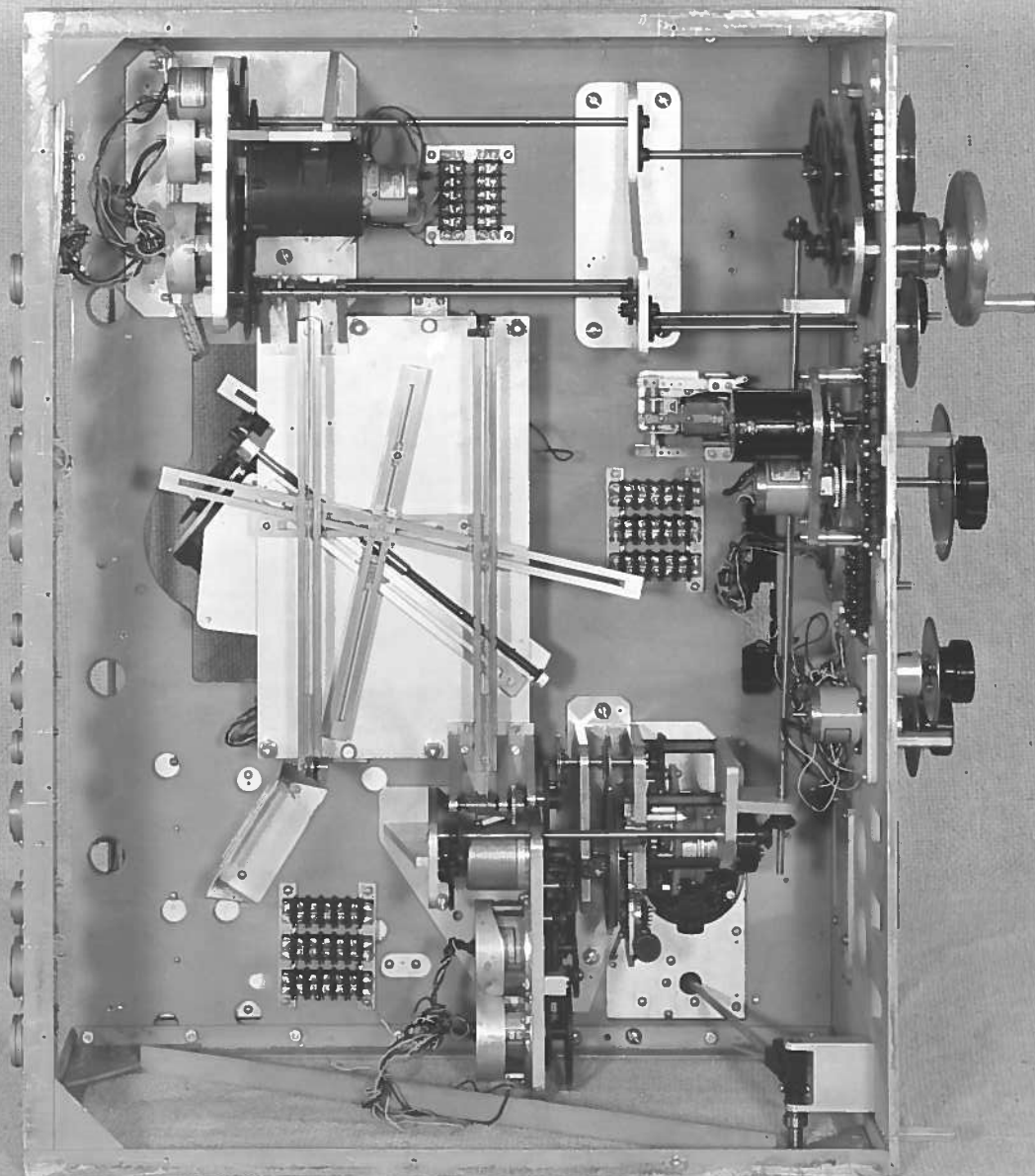
Preliminary photographs of the partially assembled computer are included in this report. The graphical computer mentioned in the previous report has not yet been received from the shops. The bomb velocity computer is now being fabricated.

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COMPUTING CONTROLLER
TOP VIEW SHOWING RANGE CONTROL AND COMPUTING SECTION BEFORE WIRING

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COMPUTING CONTROLLER

BOTTOM VIEW SHOWING AZIMUTH CONTROL AND COMPUTING SECTION BEFORE WIRING

- 3 -

MICROWAVE ZONE POSITION INDICATOR, Mk.II(Modified A.A. No.4, Mk.6)

Noise figure measurements on the MZPI receiver, using the new preamplifier, and the Admiralty Type-980 receiver, were completed. The results were published in Report ERA-186.

After completion of these measurements the components of the MZPI Radar were assembled, and the entire system was prepared for flight trials using the new preamplifier, rotating coupler, and antenna. With these components installed, a test will be made, using various types of aircraft flying at different altitudes. These tests will determine whether or not the expected improvement of 23 per cent in range will result from the use of the new preamplifier, and will provide a final check on the performance of the antenna and rotating coupler.

A new duplexer will be required because of the proposed increase in the power of the MZPI Radar to 2.5 megawatts. Preliminary consideration has been given to the design of this device and some components have been ordered.

ERA-185

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