

Memorandum M-2136

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Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge, Massachusetts

SUBJECT: MEMORY TEST COMPUTER MARGINAL CHECKING SYSTEM

To: MTC Engineers

From: Robert vonBuelow

Date: May 8, 1953

Abstract: Marginal checking is performed in MTC by inserting an additional power supply in series with the line which is to be checked. This power supply is variable about zero, thus permitting either a positive or negative excursion of the net voltage on the tested line.

The programs used at this time will not be discussed in this Memorandum.

General

Lines which are to be marginal checked are brought out to a switch panel on the console through fuses in the power supply racks. This panel contains seven rows of double pole, double throw toggle switches. There are seventeen switches in each row. The first switch (called Selector Switch in SB-53242) is used to determine that the left or right pole of the remaining sixteen switches is used. Each of these remaining sixteen switches applies a voltage to an individual line in MTC. If the switches are up (to the right, in SB-53242), voltage is applied through the marginal checking supply. If the switches are down, voltage is applied directly.

Since various voltages are involved in marginal checking, care must be taken to prevent putting a voltage on the wrong line. This is affected by the five position ganged switch shown across the top of SB-53242. When this switch is in position 1, the marginal checking supply (amplidyne output) is disconnected from all computer lines by sections 1 and 2. The remaining sections of the switch, when in position 1, apply the proper voltage to all toggle switches.

When in position 2, 3, or 4, sections 1 and 2 of this same switch connect the amplidyne in series with the appropriate DC supply (or ground) and thence to the lines to be marginal checked. Sections 3, 4, and 5 open the direct line to the marginal check voltages, thus preventing short circuit of the amplidyne.

A zero-center voltmeter is always across the output of the amplidyne. Another rotary switch permits choosing full scale ranges of 10 volts, 50 volts, or 100 volts.

The toggle switch on the marginal checking control panel applies voltage to the pilot light on the same panel and to the relay which starts the amplidyne. This circuit is considered below.

The potentiometer on the panel controls the output of the amplidyne, variable from -100 to +100 volts.

Amplidyne Controls

SA-54479 shows the amplidyne connections in the basement. The toggle switch in the 115 volts AC line is left in the ON position except for maintenance. When the ON-OFF switch in the Marginal Check Control Panel (SB-53242) is closed, the relay is energized. Its contacts close to apply -15 volts to the generator field and to start the AC motor of the amplidyne.

Two banks of electrolytic capacitors of 10,000 mfd each are mounted back to back and put across the amplidyne output for filtering purposes.

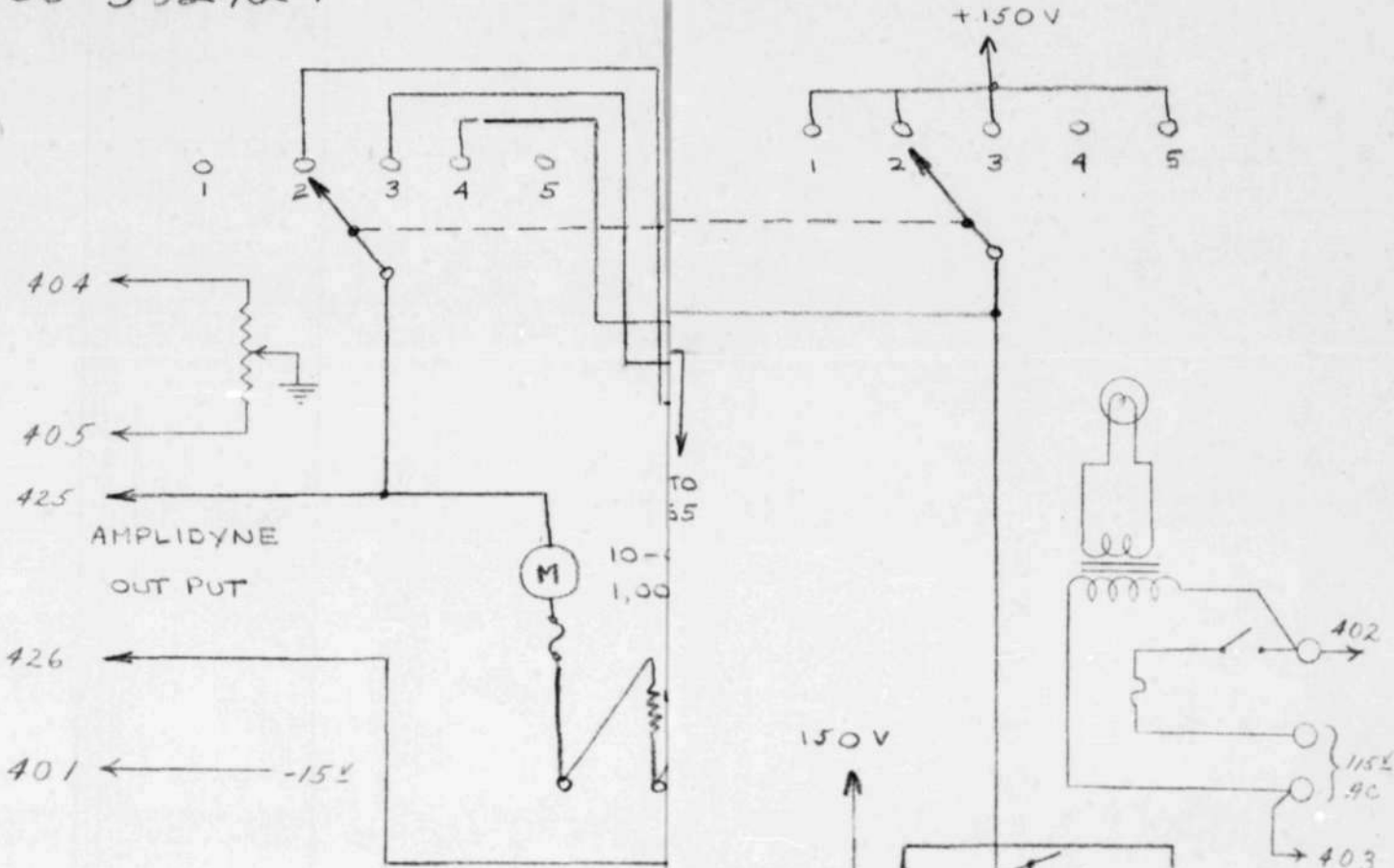
Signed R. von Buelow
R. vonBuelow

Approved K. H. Olsen
K. H. Olsen

RvB:jrt

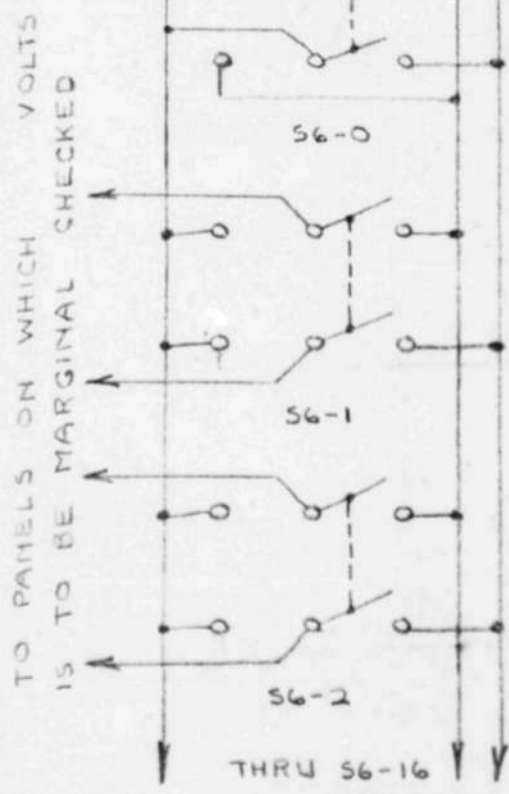
Attached drawings: SB-53242
SA-54479

SB-53242-1



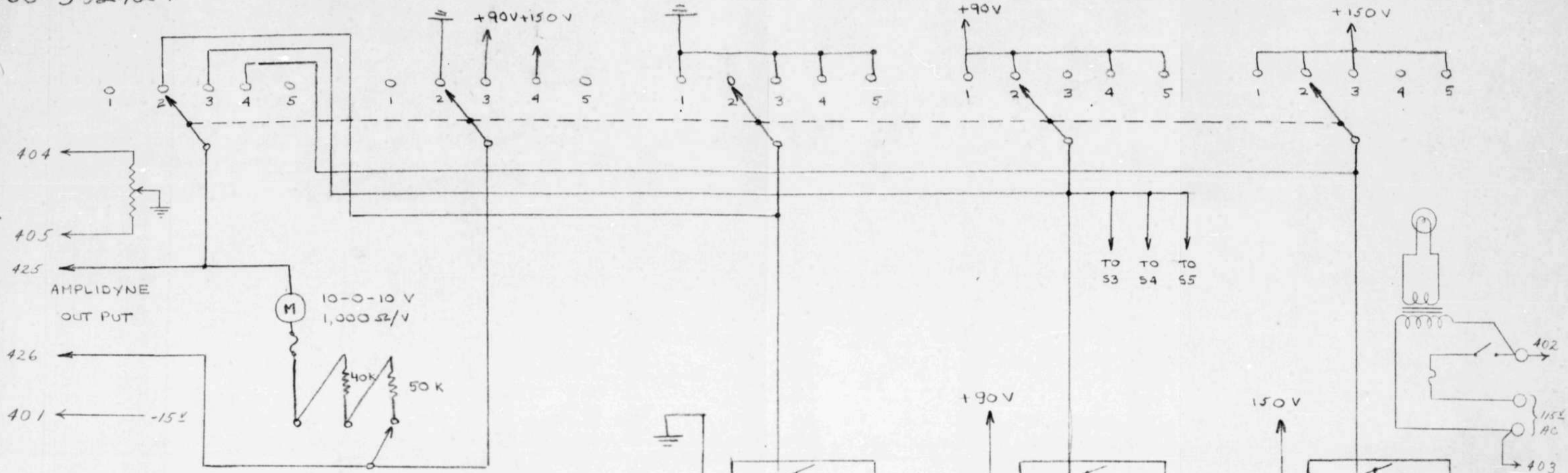
- FOR GANGED SWITCH:
- POSITION # 1 - OFF
 - " # 2 - M.C. GND. VOLTAGE
 - " # 3 - M.C. +90 VOLTS
 - " # 4 - M.C. +150 VOLTS
 - " # 5 - —

MARGINAL CHECK CONT
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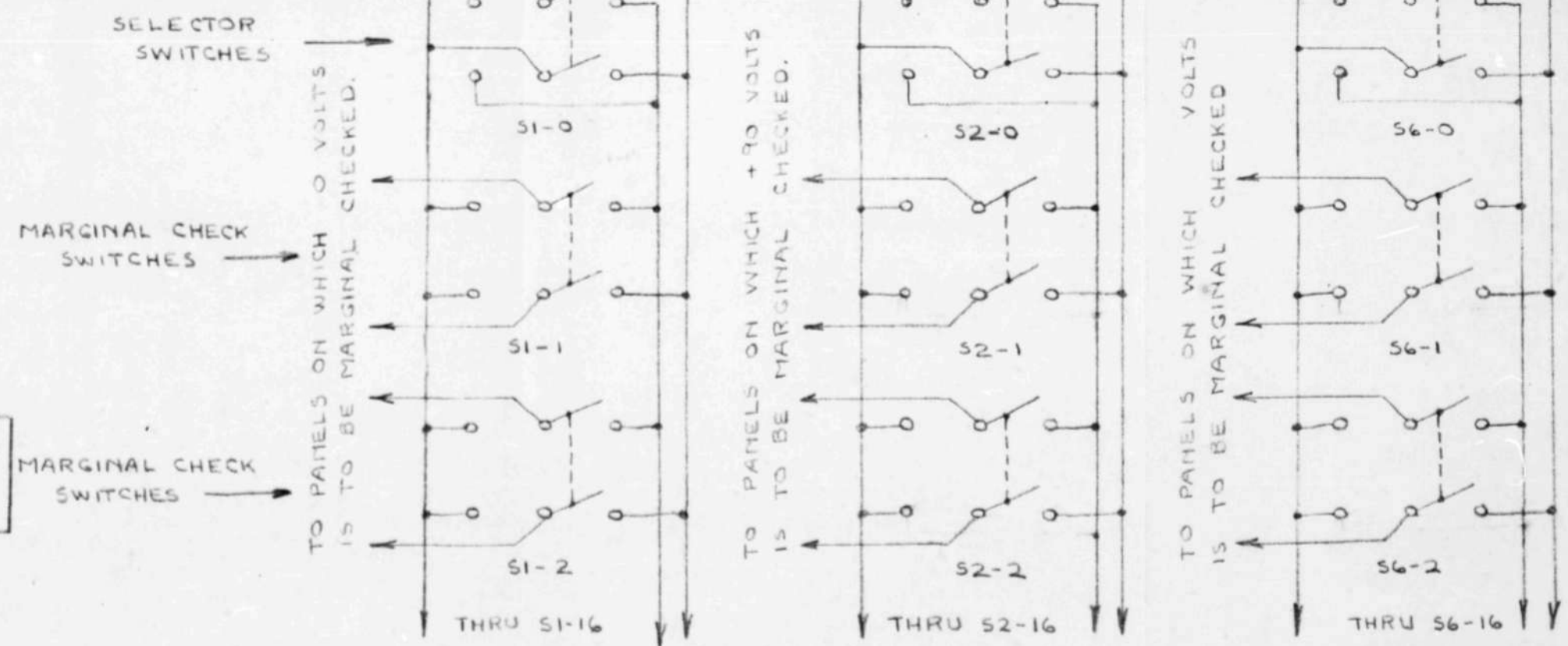
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MARGINAL CHECK CONTROL
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