

9 June 1968
Richard L. Wales
BYE-57540-68

~~SECRET~~

HANDLE VIA BYEMAN

CONTROL SYSTEM

PROPOSED CONSOLE CONCEPT
FOR DATA ACQUISITION SYSTEM

PROJECT EARP

The layouts and illustrations in this report are not meant to be used as design criteria for a console since much of the equipment considered will be obsolete by the time a console gets to the drawing board. The intention is that the concepts as they apply to our present equipment can be related to the future system.

The control functions and monitor points suggested in this report have been arrived at by observation of field usage, and reflect areas considered critical in our present system. Since operational inconvenience is often the cause of errors, functional grouping of controls and monitor points so that they are readily accessible to the console operator has been considered quite heavily.

Probably the most obvious advantage to having a central console is that one supervisory type operator can observe, and in some instances control functions throughout the entire data acquisition and recording operation. This should certainly increase the quality of our FM and digital recordings.

An opportunity that we should not overlook when designing a central console is that we can greatly simplify many of our operations. Any simplification should also increase our output yield.

Simplification is accomplished in two ways:

1. Many functions presently handled by separate data acquisition operators can be combined into a single function controlled at the console by a supervisory type operator. Combining controls may also permit interlocks that could inhibit some erroneous situations.
2. The present controls and monitors are generally positioned on each piece of equipment. The nomenclature on these controls and monitors relates to the function performed within the equipment. This may or may not be meaningful in terms of the entire system. When combining these functionally independent controls and monitors into a console, a nomenclature should be chosen that applies to the function performed within the system.

~~SECRET~~

HANDLE VIA BYEMAN

CONTROL SYSTEM

PROJECT EARP

NRL B-0031-68

PAGE 1 of 4
COPY 1 of 2

HANDLE VIA BYEMAN

BYE-57540-68

~~PROJECT EARPOP~~
CONTROL SYSTEM

The attached illustrations represent a proposed console for our present complex of equipment. Most of the units in figure 1 are equipments as they exist, and no further comments will be made about them.

A few items have been changed based on recent discussions about equipment that is definitely scheduled for installation in the near future. In view of the Az/El antenna scheduled for the interrogation posit shortly, an antenna control system identical to the Az/El control system used with the present data posets was inserted in the console. A six channel chart recorder (Brush model 2300 or equivalent) replaces the two channel recorder presently in use.

Implementation of many of the proposed schemes has not been investigated. The console concept is the cantral theme.

The following panels and units ahve been added to, or changed within our present system: (Refer to Table 1 for symbol identification.)

Interrogation Control Console. (Figure 2)

The Command System portion of the Interrogation Control Console is used to select and activate the proper Programmed Tone Generator. The RESET, STEP, XMIT, START AND ZERO push button switches parallel the respective functions in the Programmed Tone Generator selected. A GROUP monitor point has been added. This is a two-digit decimal readout controlled by a coded entry placed in some presently unused channel of the card. This readout is also dependent on which Programmed Tone Generator has been selected.

The DECODER RESET switch parallels the same function in the Decoder unit. The READOUT SELECTOR switch controls the discriminators. Switch nomenclature pertains to the payload being monitored.

The Receiver section contains a RECEIVER SELECTOR switch and indicators plus an AUDIO monitor position. The Transmitter section has a TRANSMITTER SELECTOR switch and indicators plus a power OUTPUT meter.

An ANTENNA POLARITY control and CONNECT/DISCONNECT switch are provided. In the DISCONNECT position, the selected transmitter would feed a dummy load.

FM Recorder Control Console. (Figure 3)

INPUT and OUTPUT jacks are provided so that any data

~~SECRET~~
HANDLE VIA BYEMAN
CONTROL SYSTEM
PROJECT EARPOP

PAGE 2 of 4
copy 1 of 2

~~SECRET~~

BYE-57540-68

HANDLE VIA BYEMAN

CONTROL SYSTEM

- 3 -

PROJECT EARPOP

being recorded on the FM Recorders may be monitored on the RM 561 Oscilloscope immediately above this panel. The MONITOR SELECTOR switch determines which recorder's signals are presented to the jacks and speaker. RUN controls plus RUN/STOP indicators (GREEN/RED respectively) are provided for each of the three FM Recorders.

A speaker control section is provided. This contains a CHANNEL SELECTOR and AUDIO level control.

Digital Acquisition Control Console. (Figure 4)

The Digital Acquisition panel contains controls and monitors for the Data Processing Unit. The STATUS indicators are essentially parallel to the indicators on the present Power Unit. The MODE indicators monitor the Mode Select switch on the Correlator. The CLOCK indicators monitor the Clock Control switch on the Multiplexer.

The control section is used to select those channels being fed to the

The DATA OUTPUT control replaces the Record Stop/Normal switch on the Multiplexer and CTF switch on the Test Unit and Word Assembler.

Digital Recorder Control Console. (Figure 5)

The INPUT section has been laid out based on discussions about a header/trailer data monitoring device that is being considered as an interface unit with an ASR-33. This area deserves much consideration, and I hope to discuss it with those persons concerned if I return in July.

For present considerations, the power switch on the ASR-33 would control the DATA and HEADER/TRAILER indicators. The green DATA lamp is illuminated when the ASR-33 is in the OFF or OFF LINE positions. In the ON LINE position, the red HEADER/TRAILER lamp is illuminated and entries may be made at the ASR-33 keyboard.

The HEADER FULL and TRAILER FULL lamps illuminate only when the exact number of legal characters has been entered for the header and trailer respectively. Only when one of these lamps are illuminated will an interlock be released permitting data to be written by depressing the WRITE HEADER/TRAILER switch. The ~~ILLEGAL~~ CHARACTER lamp

~~SECRET~~

HANDLE VIA BYEMAN

CONTROL SYSTEM

PROJECT EARPOP

PAGE 3 of 4
COPY 1 of 2

~~SECRET~~

BYE-57540-68

HANDLE VIA BYEMAN

- 4 -

CONTROL SYSTEM

PROJECT EARPOP

illuminates and latches anytime an illegal character is entered. This is also used as an interlock on the HEADER FULL and TRAILER FULL indicators. Depressing CLEAR CORE extinguishes the ILLEGAL CHARACTER lamp.

The RECORDER STATUS controls and monitors are paralleled functions from the present BTM-9.

System Calibration Unit. (Figure 6)

The System Calibration Unit is similar to our present unit with some added features. The OUTPUT contains a LEVEL adjust, accurate meter and ANTENNA/COUPLER switch. This unit could then be used to check the digital system periodically. By providing the modulation pulse output to one of the Channel Unit inputs, (accomplished by BIAS TEST ON) mean delay and standard deviation programs could easily be run periodically. The PULSE MONITOR output on the front panel can be used when adjusting mean delay of the receivers.

Data Position Monitors. (Figure 7)

The DATA RECEIVER FREQUENCIES are presented for monitoring purposes by the control console operator. These are essentially parallel to the thumbwheel frequency controls on the data receivers.

~~SECRET~~

HANDLE VIA BYEMAN

CONTROL SYSTEM

PROJECT EARPOP

PAGE 4 of 4
copy 1 of 2

Page Denied

Page Denied

~~SECRET~~

HANDLE VIA BYEMAN

TABLE 1

BYE-57540-68

CONTROL SYSTEM

PROJECT EARPPO

TABLE OF SYMBOLS



DECIMAL READOUT (NIXIE TUBE OR EQUIVALENT)



AMBER LAMP



GREEN LAMP



RED LAMP



ILLUMINATED SWITCH



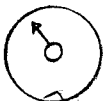
PUSH BUTTON SWITCH



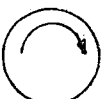
TOGGLE SWITCH



PATCH JACK



ROTARY SWITCH



AMPLITUDE ADJUSTMENT



METER



PHONE JACK



BNC CONNECTOR

~~SECRET~~

HANDLE VIA BYEMAN

CONTROL SYSTEM

PROJECT EARPPO

ENCLOSURE 2 of 8
COPY 1 of 2

DATE
CHKD. BY

Approved for Release: 2024/06/10 C05025993

SHEET NO. OF
JOB NO.

~~SECRET~~
HANDLE VIA BYEMAN
CONTROL SYSTEM
PROJECT EARP

13 1/2 - 57540-68

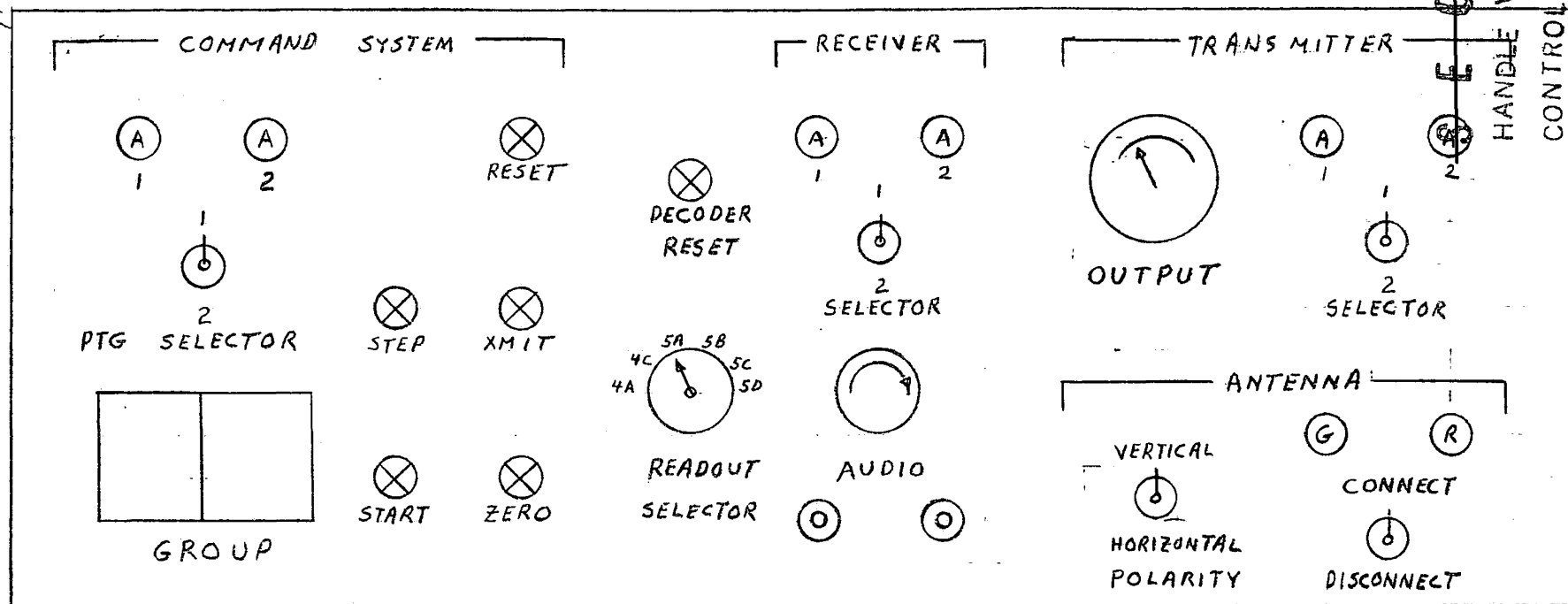


FIGURE 2

INTERROGATION CONTROL CONSOLE

7 JUNE 1968 R.L.W.

PROJECT EARP
3 of 5
copy
1 of 2

Copy
F 2
EARS
P.P.P.
of 2

~~SECRET~~
HANDLE VIA BYEMAN
CONTROL SYSTEM

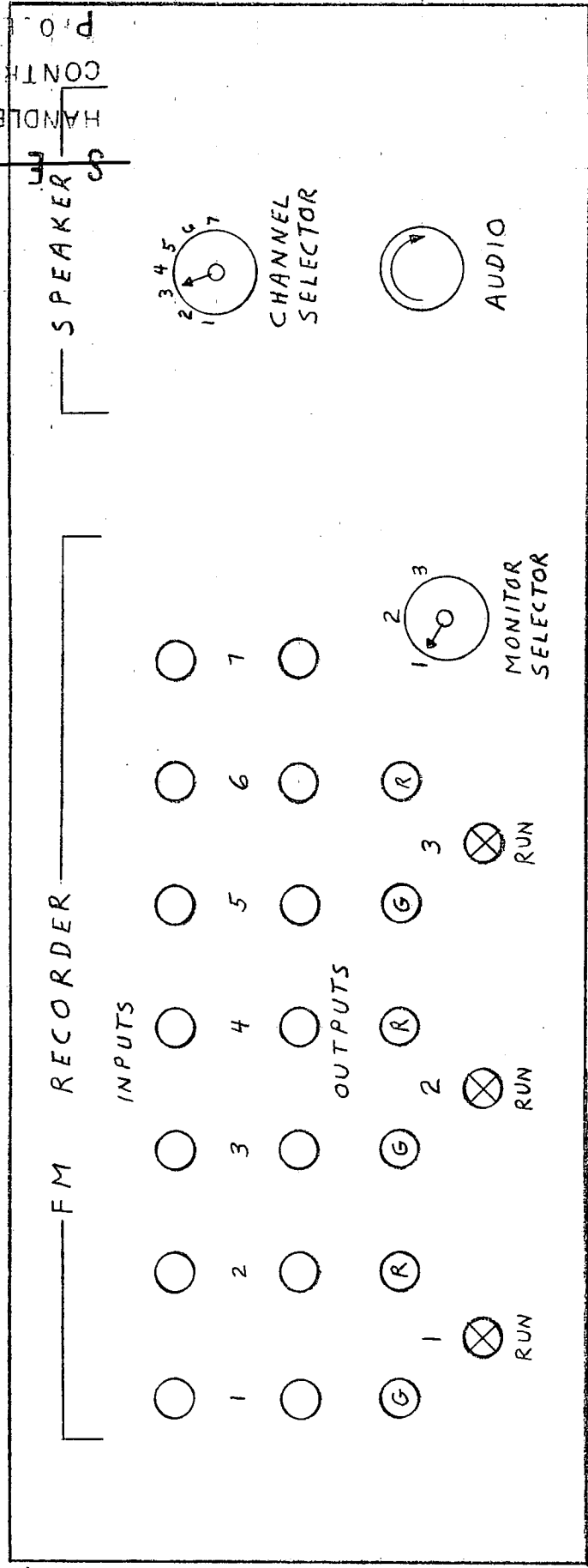


FIGURE 3
FM RECORDER CONTROL CONSOLE
7 June 1968 R.L.W.

BYE-57540-68

~~SECRET~~
HANDLE VIA BYEMAN
CONTROL SYSTEM
PROJECT EARP

BY _____ DATE _____
CHKD. BY _____ DATE _____
SUBJECT _____
SHEET NO. _____ OF _____
JOB NO. _____

DATE

DATE

CHKD. BY

~~SECRET~~

HANDLE VIA BYEMAN

CONTROL SYSTEM

PROJECT EARP

BVE-57544-2-8'

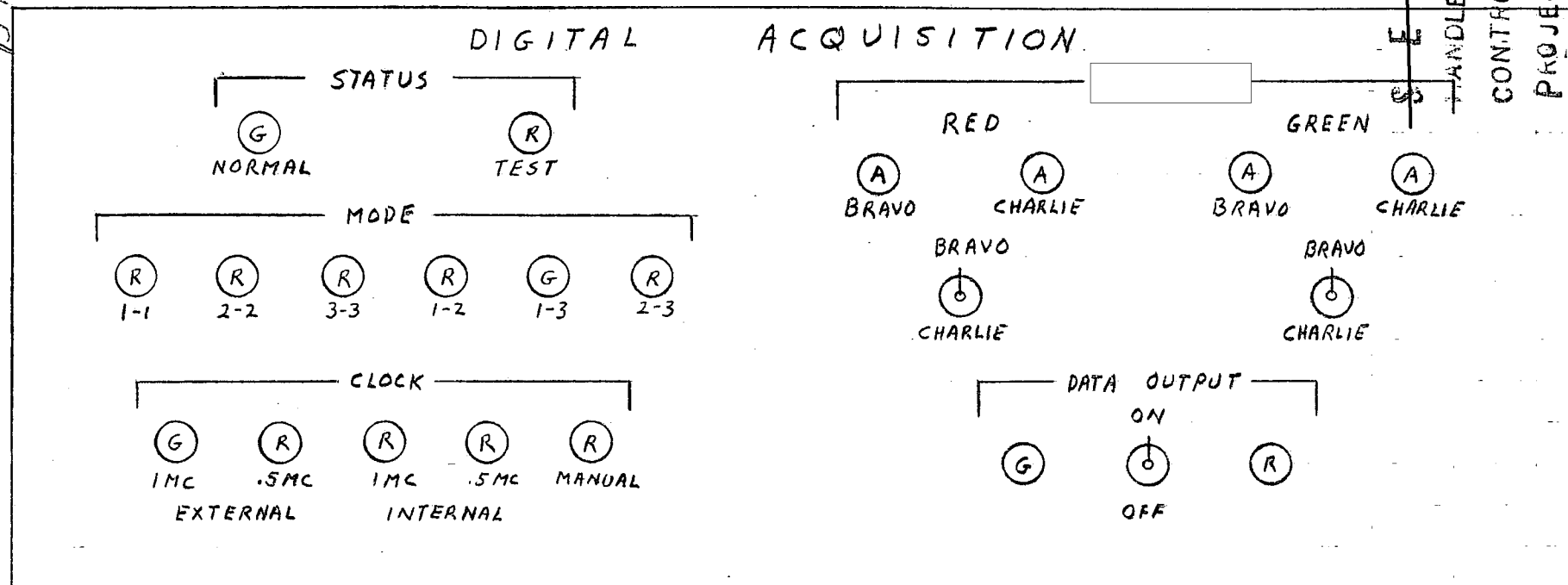


FIGURE 4

DIGITAL ACQUISITION CONTROL CONSOLE

7 JUNE 1968

R.L.W.

~~SECRET~~
HANDLE VIA BYEMAN
CONTROL SYSTEM
PROJECT EARP
ENCLOSURE of 8
copy 1 of 2

DATE

DATE

CHKD. BY

~~SECRET~~HANDLE VIA BYEMAN
CONTROL SYSTEM
PROJECT EARPOP

BYE-57540-68

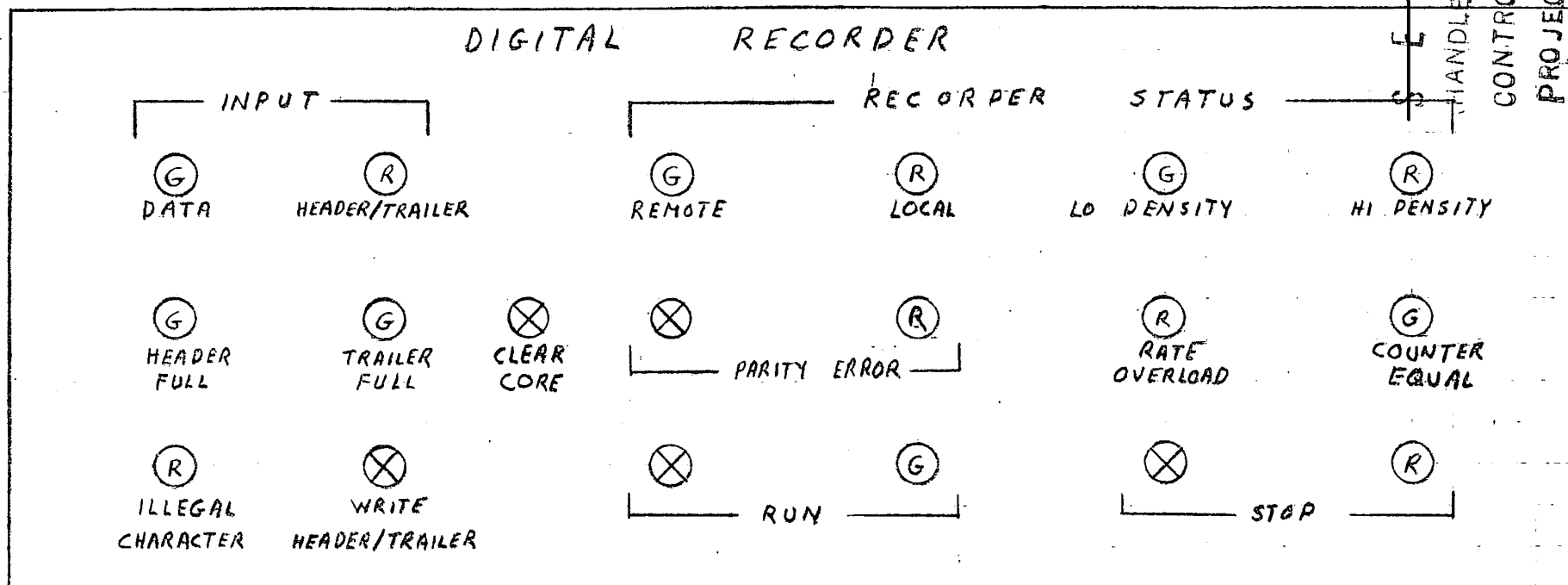


FIGURE 5

DIGITAL RECORDER CONTROL CONSOLE

7 JUNE 1968

R.L.W.

DATE

DATE

CHKD. BY

~~SECRET~~

HANDLE VIA BYEMAN

CONTROL SYSTEM

PROJECT EARPOR

BYE-57540-68

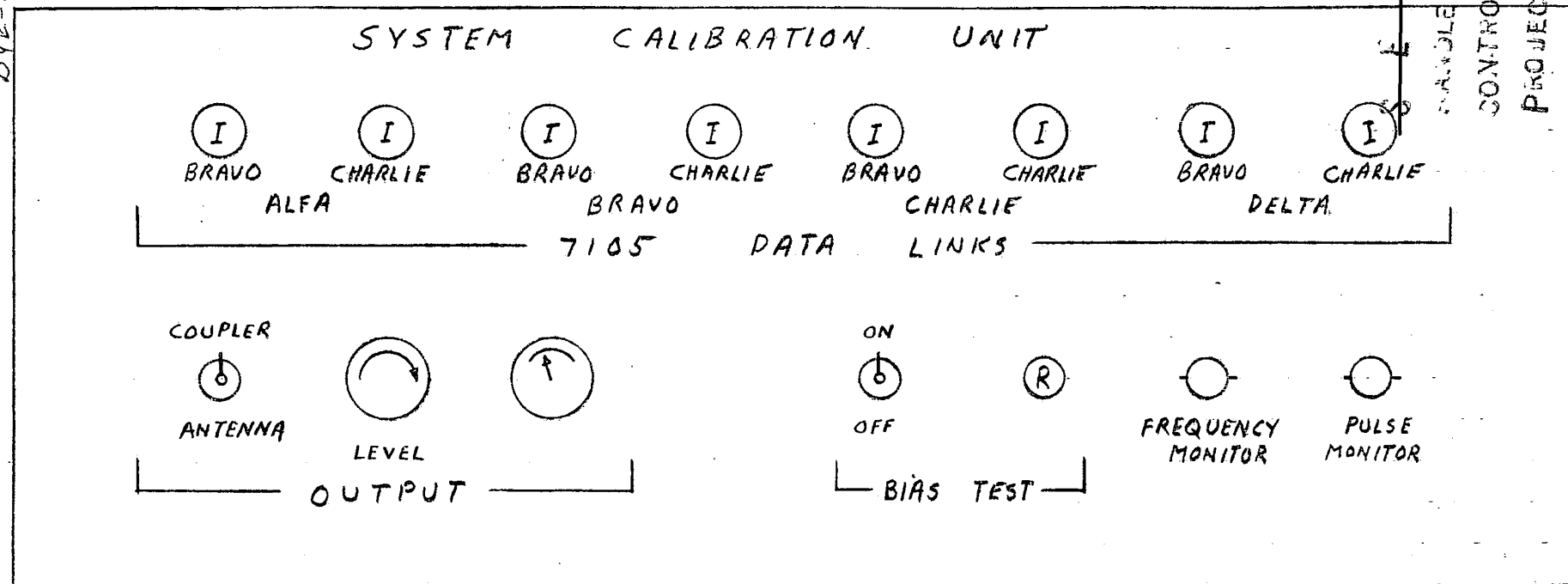


FIGURE 6

SYSTEM CALIBRATION UNIT

7 JUNE 1968

R.L.W.

BY DATE

CHKD. BY DATE

~~SECRET~~

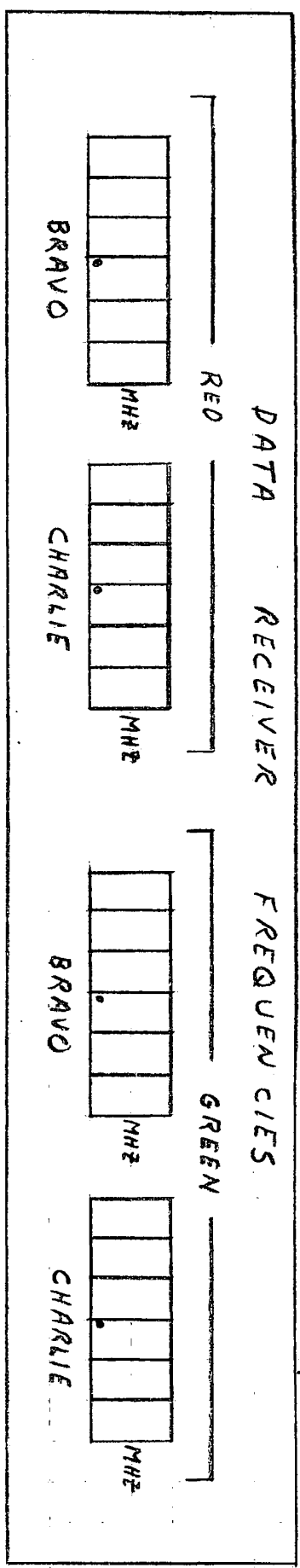
HANDLE VIA BYEMAN
CONTROL SYSTEM
PROJECT EARPOP

JOB NO.

BYE-57540-68

DATA POSITION MONITOR
7 JUNE 1968 R.L.W.

FIGURE 7



~~SECRET~~

HANDLE VIA BYEMAN
CONTROL SYSTEM
PROJECT EARPOP

ENCLOSURE 8 of 8
copy 1 of 2