



**Aerospace  
Systems Division**

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Brief Description of the  
PSE Sensor Exciter

NO.

ATM-648

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The following ATM has been prepared to provide a short description and discussion of the Passive Seismic Sensor Exciter Unit used with the Passive Seismic Experiment during system testing.

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Passive Seismic Sensor Exciter Unit.

Reference: Figure 1, Figure 2, and Table 1.

The Sensor Exciter unit is designed to provide the means for stimulation of the Passive Seismic Experiment during ALSEP System test via the P.S. Sensor unit. The sensor exciter is normally controlled by the ALSEP system test set. The System test set can automatically or manually provide the commands listed in Table 1 to the sensor exciter command shift register via the input buffer gate circuits. When the command is to be executed, the test program sends an enable signal to the sensor exciter logic circuits causing the command to be processed. The logic operation within the sensor exciter is generally conventional resulting in the activation of some relay driver. Depending on the command, signals are routed into the SP IN line, or into the modulator where the selected signal modulates the 3KHZ signal from the Sensor 3KHZ oscillator.

The modulator output is applied to a gain controlled buffer amplifier. The gain is controlled to provide a high (H) or low (L) level signal. Outputs of the modulator are routed logically to the L.P.X, Y or Z output line for stimulation of the L.P. channels during end-to-end tests.

The Sensor exciter provides an uncage lock-out jumper wire. This wire is a permanent feature of this design that provides a path for -12VDC generated in the PSE to the uncaging actuator located in the sensor caging mechanism. This feature permits the ALSEP system test set to generate the uncage command during system test.

The Sensor Exciter has a manual command control section (switches on the front panel) that allow setting up all commands. This capability permits check-out of the unit as well as another mode of operational flexibility.

The sensor exciter mates to the P.S. Sensor so that meaningful check-out of all of the electronics located within the sensor can take place. Signal injection generally follows the L.P. Preamplifiers that are connected directly to the L.P. Capacitor plates. This input point is the closest point that can be driven by an external signal and still not reduce the measurement capability of the long-period channel.



List of Command Patterns for PSE Sensor Exciter

COMMAND	$2^4$	$2^3$	$2^2$	$2^1$	$2^0$
0 Master Clear	0	0	0	0	0
1 LPX-H	0	0	0	0	1
2 LPY-H	0	0	0	1	0
3 LPZ-H	0	0	0	1	1
4 LPXY-H	0	0	1	0	0
5 LPXZ-H	0	0	1	0	1
6 LPYZ-H	0	0	1	1	0
7 LPXYZ-H	0	0	1	1	1
8 XY-CAL	0	1	0	0	0
9 Z-CAL	0	1	0	0	1
10 SP-CAL	0	1	0	1	0
11 Uncage	0	1	0	1	1
12 SP-H	0	1	1	0	0
13 Carrier Sig-H	0	1	1	0	1
17 LPX-L	1	0	0	0	1
18 LPY-L	1	0	0	1	0
19 LPZ-L	1	0	0	1	1
20 LPXY-L	1	0	1	0	0
21 LPXZ-L	1	0	1	0	1
22 LPYZ-L	1	0	1	1	0
23 LPXYZ-L	1	0	1	1	1
24 SP-L	1	1	0	0	0
25 Carrier Sig-L	1	1	0	0	1

Table 1 List of Command Patterns

H - High Level

L - Low Level

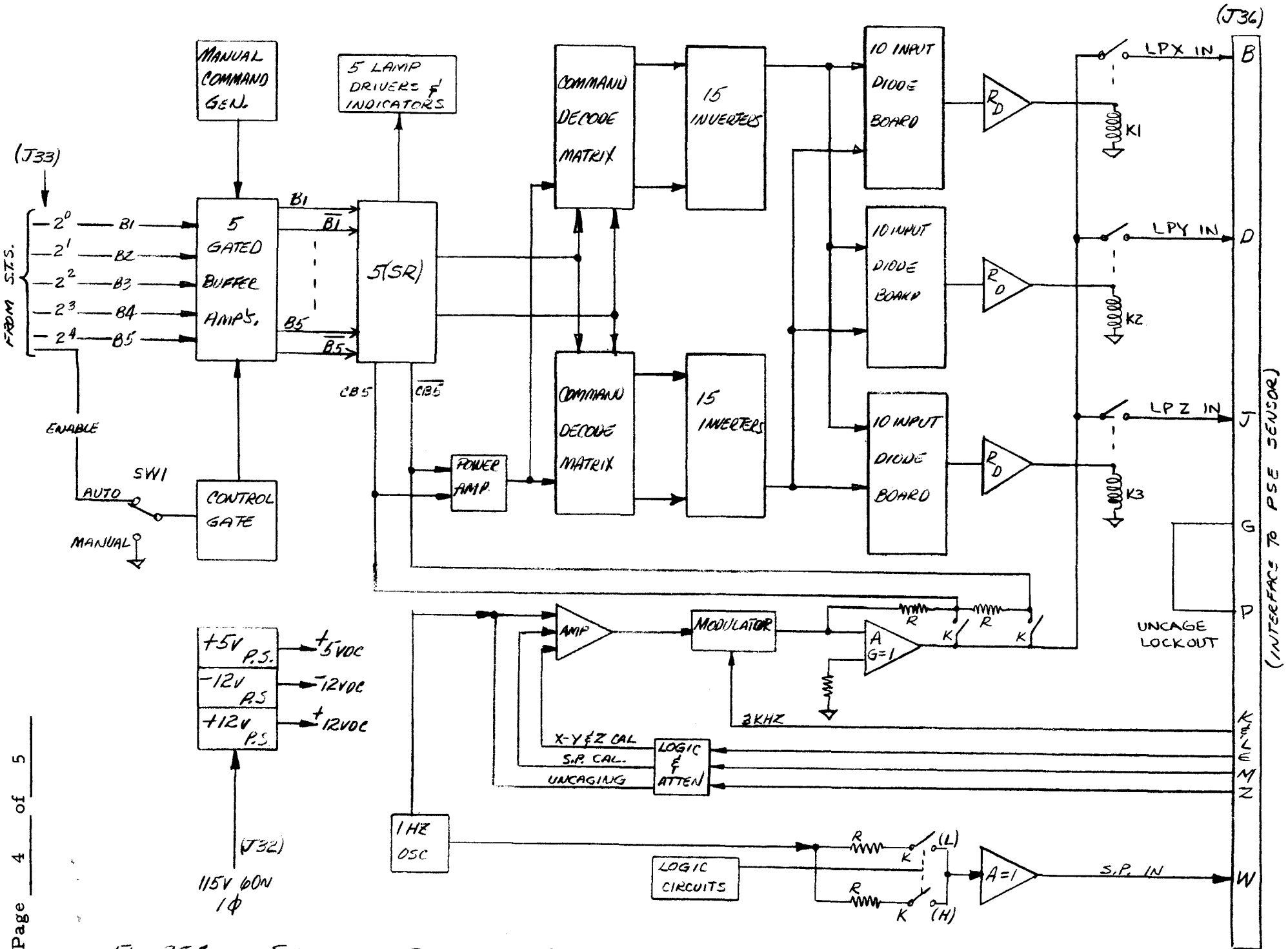
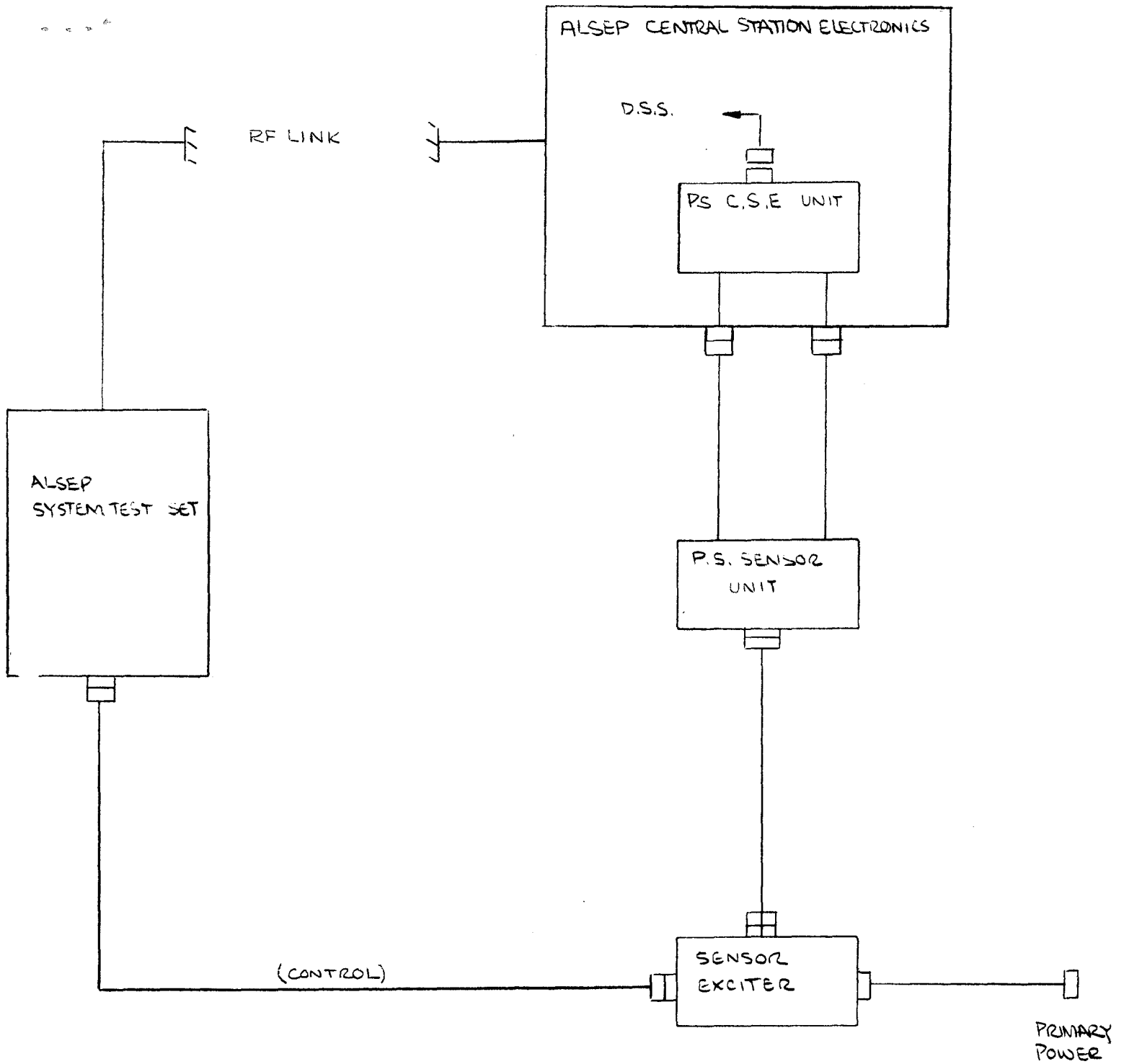


FIG. 2E1. SIMPLIFIED BLOCK DIAGRAM, PSE SENSOR EXCITER.

(J. LEWKO 4/25/67)



BLOCK DIAGRAM TEST CONFIGURATION PSE/STS/SENSOR EXCITER.  
FIGURE 2.

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