This memorandum defines the manner in which central station heaters, power dumps and experiment standby are to be arranged. The five switched central station heaters are replaced by two switched power dumps.

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At the request of the Central Station thermal design group, five commandable heaters have been carried along in the Central Station electrical and command design. This memo spells out more clearly how these heaters are to be used. In addition, this memorandum considers the various arrangements necessary for standby mode for the experiments.

Minimum Load

The minimum load on the PCU will occur during the day with all experiments in standby status. This minimum value is given by

ARRAY "A"

Data S/S	19.96
PCU	4.00
Cables	0.74
Passive Seismic	5.00
Magnetometer	3.50
SIDE	0.00
Solar Wind	3.00
Total	36.20

ARRAY "B"

Data S/S	19.96
PCU	4.00
Cables	0.74
Passive Seismic	5.00
Heat Flow	5.00
SIDE	0.00
Active Seismic	0.00
CPLE	2.50
Total	37.20

Thus the shunt regulator would be required to dissipate a minimum of about 20 watts under these conditions. This can be done but it is about at the regulator limit and it is preferable to reduce this further. In order to handle the contingency that the RTG is overpowered, it is recommended that command switchable dummy loads be placed on the + 29v lead. These should be such as to give a total load of 20 watts, thus enabling the system to handle an RTG with up to 70 watts while holding the amount of dissipation required in the regulator down to about 14 watts. To obtain a flexible power dump, these two loads should thus take 7 and 13 watts.

Central Station Thermal Balance

In order to maintain thermal balance for the central station, it is necessary to replace any item which normally dissipates power in the central station by an equally powerful heater during non-operating periods. It is suggested that printed sheet heaters be sized to the individual box and pasted to the thermal plate above the box. The following table shows the power required and the increased weight allowed to accommodate these heaters.

Location	Power (watts)	Wt. Allowed (lbs.)
Passive Seismic	4	.030
Transmitter	9.2	.023
Receiver	1.25	.024

Back-Up Heater

An emergency thermal survival capability for the central station will be provided in order to account for uncertainties in the thermal design due to unknown factors in the lunar environment. This will be accomplished by means of a thermostatically controlled central station back-up heater. This heater will dissipate 10 watts and the thermostat will be set to turn on at a temperature below the normal operating range and have a large enough hysteresis to stay on until the temperature is back in the operating range. Specifically then the thermostat should turn on the heater at $-20^{\circ}F$ and turn it back off at $+10^{\circ}F$. The heater can be similar to those above and located near the center of the thermal plate. The heater should dissipate 10 watts into the thermal plate.

Summary

There are no commandable central station heaters required. Instead, there are four automatic heaters, three on the "off" or "standby" side of certain central station components and one thermostatically controlled. Of the five former central station heater switches, three are eliminated and two are now used to switch power into the commandable power dumps. Figure I summarizes the arrangement of these heaters and power dumps as well as the standby arrangements for each experiment of Array A. Figure 2 covers the same for Array B.

FIGURE 1 : POWER DISTRIBUTION - ARRAY A -

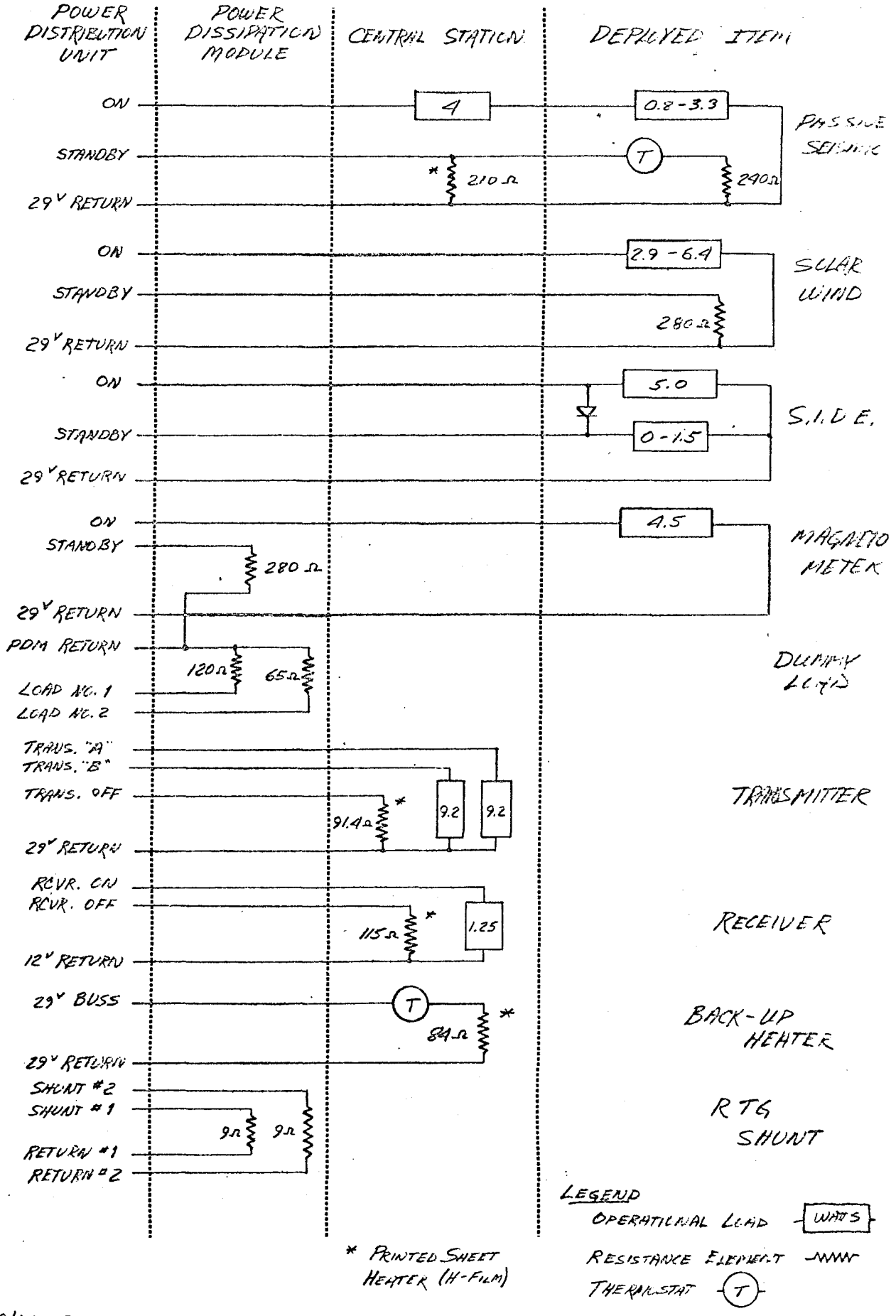

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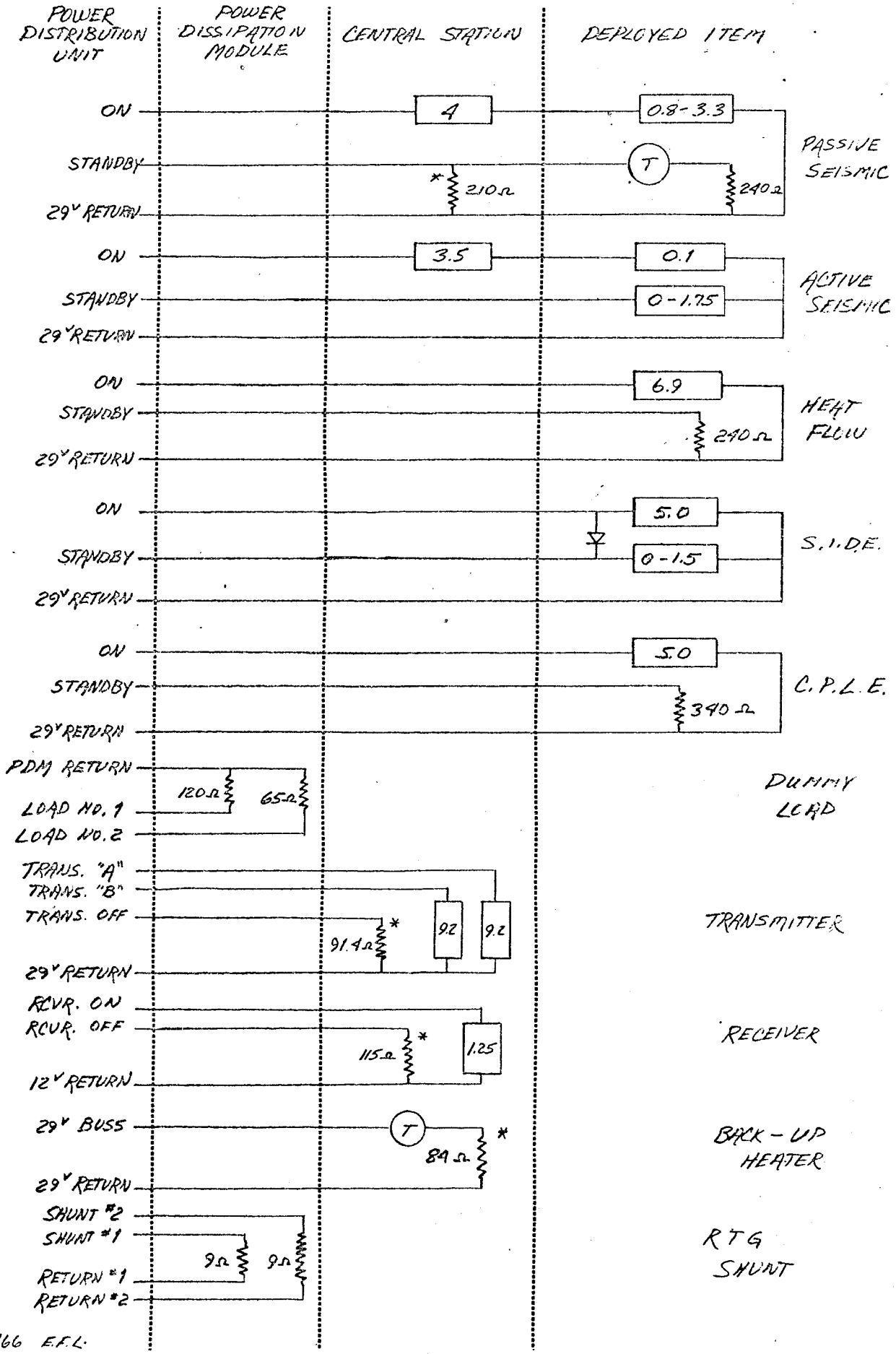
FIGURE 2: POWER DISTRIBUTION - ARRAY B -



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