

~~TOP SECRET~~

Analysis of Satellite #110

I. Equipment power requirements:

1. All values were obtained during the system test of the satellite. The test was run at room temperature and 13 volts. Power was corrected to a 12.5 volt operating point.

*Modulators 20mw 12V = .14  
Vid Amps 6ma 12 = .5*

- a. Command and S.R. System 1.32 watts
  - b. Command, S.R. and telemetry System *25%* 2.67 watts + *25% of P<sub>L</sub>*
  - c. D.L. System (on stand-by) 1.19 watts
- (2) Xmitrs D.L. " 50% Duty Cycle 5.7 watts*

2. The normal operating mode is calculated to be 2.97 watts. This includes command, S.R., telemetry and D.L. System (25%). *on 47% of the total time but no data.*

II. Battery Power Requirements:

1. Individual cells were tested and the average power efficiency was calculated to be 80%. Assume a 65% sunlight orbit.

III. Solar Cell Power Output:

1. The average power output for the six panels measured at Table Mountain (100 mw/cm<sup>2</sup> collimated) was found to be 4.54 watts per panel.

2. Using the ratio of  $\frac{m=0}{m=1}$  as 1.21, the space power is calculated to be 5.50 watts per panel.

3. Relating the panel output to the Table Mountain satellite test the following values can be computed:

- a. minimum satellite output 5.50 watts
- b. average (probable) satellite output 7.42
- c. maximum satellite output 9.58 watts

IV. Calculations:

$$\% \text{ sun } P_{sc} = \frac{1}{\% \text{ batt}} P_L \% \text{ dark} + P_L \% \text{ sun}$$

$$P_{sc} = \left[ \frac{1}{\% \text{ batt}} \frac{\% \text{ dark}}{\% \text{ sun}} + 1 \right] P_L$$

$$P_{sc} = \left[ \frac{1}{.80} \frac{.35}{.65} + 1 \right] 2.97 = (1.674) (2.97)$$

$$P_{sc} = 4.97 \text{ watt}$$

power load on solar cell

HANDLE VIA  
BREMEN  
CONTROL SYSTEM ONLY

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v. Design tolera

Minimum available  
solar cell power  
5.50 watts

Safety  
Factor  
1.1

tolerable  
Degradation  
9.6%

Average (probable)  
solar cell power  
7.42

1.49

~~2.2%~~ 33.0%

Data link Xmit of CW draws 100ma @ 24V = 2.4W each

2.4  
7.9  
---  
6.7

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HANDLE VIA  
BYEMAN  
CONTROL SYSTEM ONLY

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~~Princ~~

This is a power supply analysis on 7191A which was the 24" dia one which died this month. I'll be here until 5:30 PM. This evening if there are questions.

R.D. Mayo

Handle via Bueman Control System only

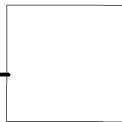
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(7104) (7105) MISSIONS.

Program Plans

Plans for two additional Thor-Agena launches in calendar 1964 using payloads developed on FY '64 funds to be available in July 1963 are as follows:

Cost Each

a.	Each launch will contain two 20 inch diameter payload containing 4 collection channels with no more than 18 collection antennas. All antennas are the monopole type.	.8
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b.	Each launch will contain two 24 inch diameter payloads containing 4 collection channels with no more than 12 collection antennas. All antennas are the monopole type.	1.3
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Each 24 inch payload may contain a scientific experiment if time permits.

c.	A new high capacity command system will be developed with an address system to permit operation of four payloads on the same radio frequency for each launch. Four separate collection channel "on" functions will be provided with a single turn off function common to all channels.
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d.	The information collected by the four separate bands are transmitted as wide and narrow pulses on two data link transmitters whose frequency is separated by .5 Mc.
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Total cost of the two four ball launches is 8.4 M for Code 5170

BYEMAN-TALEN-KEYHOLE CONTROL SYSTEMS JOINTLY

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