~~TOP SECRET~~ [redacted] lysis 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 20ma 12V = .24
Mid Ampl. 4ma 12 = .5

a. Command and S.R. System 1.32 watts
b. Command, S.R. and telemetry System 25% of 2.67 watts + 25% of R
c. D.L. System (on stand-by) 1.19 watts
(2) Xmtrs 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 75% 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^2 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:

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

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

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

P_{sc} = 4.97 watt[redacted] power load on solar cell.

HANDLE VIA BYEMAN CONTROL SYSTEM ONLY

~~TOP SECRET~~

~~TOP SECRET~~

V. Design torleral

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	~~9.3%~~ 33.0%

Data link xmtr off cw draws 100ma @ 24V = 2.4 W. each

2.4
1.9
6.7

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Dick:

There is a power supply meeting on 7614 which was the 2½" diameter which died this month. It will be here until 5:30 PM. This evening if there are questions

RD Mengo

Handle via Byeman Control System Only

~~Top Secret~~

Approved for Release: 2024/06/08 C05025911

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1 February 1963

(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
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

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.

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.

Total cost of the two four ball launches is 8.4 M for Code 5170

SYEMAN-TALENT-KEYHOLE
CONTROL SYSTEMS JOINTLY

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