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PL 120 and PL 121 Report

October 12and 13

An effort to monitor both phases of a special operation of PL 120 and 121 was scheduled for October 12, 1964 at Hybla Valley, Va. The first phase consisted of transmitting commands to the satellites and the second phase consisted of satellite signal reception to determine the effects of the commands.

Tests were made during two consecutive passes. PL 120 was not located. During the first pass (8565) telemetry data from PL 121 indicated that no commands were received by the satellite. The personnel for phase two departed. During the central portion of the second pass, data indicated that all commands were recei ed and corresponding relays were operated. This agrees with previous results that indicate a reduced receiver sensiti ity. It was assumed that the satellite was beyond the PL receiving range during the first pass.

On October 13 continued effort was scheduled for the best available passes. PL 120 arrived with telemetry on and responded to all commands including complete turn off.

PL 121 also arrived with telemetry on and responded to all commands during the central portion of the pass. Both satellites emit good and clear signals for ground station reception.

The personnel of phase two reported equipment troubles which resulted in an unsatisfactory amount of data. Further tests will be scheduled in the near future.

During these tests the following information was obtained from the telemetry data:

Satellite	Oct. 12	Oct. 12	Oct. 13	Oct. 13	Oct. 13
Satellite	121	121	121	121	120
Pass #	8565	8566	8578	8579	8585
Package Temperature	40°C	39°C	41°C	43°C	46°C
Skin Temperature	52°C	42°C	29°C	29°C	40°C
Solar Cell Temperature	48°C	45°C	18°C	48°C	58°C
Minus Battery Voltage	11.45 V	11.8 V	11.5 V	11.3 V	11.65 V
Plus Battery Voltage	11.30 V	11.5 V	11.1 V	11.0 V	11.3 V

Although the temperatures remained the same throughout the pass, the voltages changed with load conditions. The above figures indicate the starting and ending voltages except for pass 8579 where the ending voltage was 0.2 V higher.

During passes 8578 and 8579 relay operation during command reception caused the plus battery voltage to decrease by 1.0 volt. In some cases the voltage dropped to 9.6 volt during command but increased to 10.2 during DL operation.

The rece[redacted]of commands by PL 120 decreased the plus voltage by only 0.6 volt. D[redacted]L operation, it was 0.3 volt lower than initial value.

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When DL was turned off, the plus battery voltage of both satellites returned to the initial value immediately. The change in the minus battery voltage was negligible throughout the pass.

Although both satellites are now in a 10% sunlight orbit, the ability to provide power for more than two passes per day has not noticeable increased over 64% sunlight period of early September. This is especially true of PL 121.

In order to provide sufficient monitoring, it is recommended that the personnel of the Hybla Valley ground station be notified of any scheduled operation of more than one pass per day.

Until further notice both satellites will be commanded completely twice each week. The results will serve as an operational verification for field stations that have reported recent command reception difficulties.

This project is continuing as part of the Hybla Valley Operation.

Ralph M. Gran

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