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DESIGN AND SYSTEM ENGINEERING

Accomplishments

1. Monitoring and evaluation of Viking Lander 1 power system data continued. Figures 1 thru 6 show typical SOL day cycles for mission days 1315 and 1358. The RTG series power range as measured at the PCDA was 64 to 66 watts at finroot temperatures between 270°F and 310°F. The data shown are in April and May of 1980.

Figures 7 thru 12 show the Mars Lander performance history of Viking 1. These data include both the minimum and maximum data for each of the SOL days plotted to show the range of performance experienced on the Martian surface.
2. Power system performance data for Pioneer 10 and Pioneer Saturn (initially designated Pioneer 11) were monitored through the reporting period and are shown in Figure 13. After adjusting for the telemetry characteristics, the estimated RTG system net power was 114 watts for both, Pioneer 10 and Pioneer Saturn. Signal quality from both systems was satisfactory for the period. Approximate earth to spacecraft distances as of May 1980 are 23 AU for Pioneer 10, and 10 AU for Pioneer Saturn.

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FIGURE 1

VIKING LANDER CAPSULE NO. 1

RTG S/N 111 MARS DAY/NIGHT PERFORMANCE CYCLE

FIGURE 2

VIKING LANDER CAPSULE NO. 1

RTG S/N 112 MARS DAY/NIGHT PERFORMANCE CYCLE

FIGURE 3
VIKING LANDER CAPSULE NO. 1
RTC SERIES MARS DAY/NIGHT PERFORMANCE CYCLE

SOL DAY 1315

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FIGURE 4

VIKING LANDER CAPSULE NO. 1

RTG S/N 111 MARS DAY/NIGHT PERFORMANCE CYCLE

■ CALCULATED PARAMETERS AT RTG OUTPUT RECEPTACLE

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FIGURE 5

VIKING LANDER CAPSULE NO. 1

RTG S/N 112 MARS DAY/NIGHT PERFORMANCE CYCLE

FIGURE 6 **VIKING LANDER CAPSULE NO. 1** **RTG SERIES MARS DAY/NIGHT PERFORMANCE CYCLE**

SOL DAY 1358

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FIGURE 9
VIKING LANDER CAPSULE NO. 1
RTG S/N 112 PERFORMANCE

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FIGURE 10
VIKING LANDER CAPSULE NO. 1
RTG S/N 112 PERFORMANCE

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*CALCULATED PARAMETERS AT RTG POWER OUTPUT RECEPTACLE

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FIGURE 12 VIKING LANDER CAPSULE NO. 1 RTG SERIES PERFORMANCE

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NOTE - THE MARS LANDED DATA INCLUDES BOTH
THE DAILY MINIMUM AND MAXIMUM DATA

FIGURE 13
RTG FLIGHT SYSTEM PERFORMANCE