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1 AUGUST 2015

~~TOP SECRET ZARF~~ [REDACTED]

FINAL REPORT

BIT II MISSION 7065

17 June 1966

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FINAL REPORT

BIT II MISSION 7065

1. PROGRAM OBJECTIVES.

The objective of this program is to determine if and when the Agena vehicle is tracked by a radar operating in the 150 to 300 MHz frequency range. The BIT II system, designed to fulfill this objective, covers the VHF band with a hunt-lock-on receiver which searches for strong signals having wide pulse widths characteristic of long range surveillance and tracking radars. On those signals which qualify, the system locks on to determine if the emitter is continuously tracking the vehicle. Gross parameter measurements are made during this period which enable an analyst to determine the signal characteristics for possible emitter identification.

2. MISSION SUMMARY.

2.1 Mission Highlights.

The BIT II system intercepted the [REDACTED] signal on 11 March 1966 from 0847:31Z to 0849:14Z during orbit 23. Although the Agena vehicle was passing through the [REDACTED] sector of coverage at a range of approximately 285 nm during the intercept, the emitter did not lock on and

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2.1            -- Continued.

continuously track as evidenced by the continuous frequency scan noted during the entire intercept.

The system made several intercepts of allied search radars located around the periphery of the Soviet Union. These included the [REDACTED]

2.2            Flight Summary.

Vehicle number	1622
Launch date	9 March 1966
Launch time	2202Z
Inclination	75 degrees
Apogee	236.3 nm
Perigee	97.8 nm
Period	90.6 minutes
BIT II system	Serial No. 8

2.3            Mission Coverage.

This mission, which was launched on 9 March, was prematurely terminated after orbit 173 on 20 March due to the depletion of the primary battery power. The mission was scheduled for a 200 orbit life. Of 74 programmed tape recorder readouts during the 173 orbits, one was

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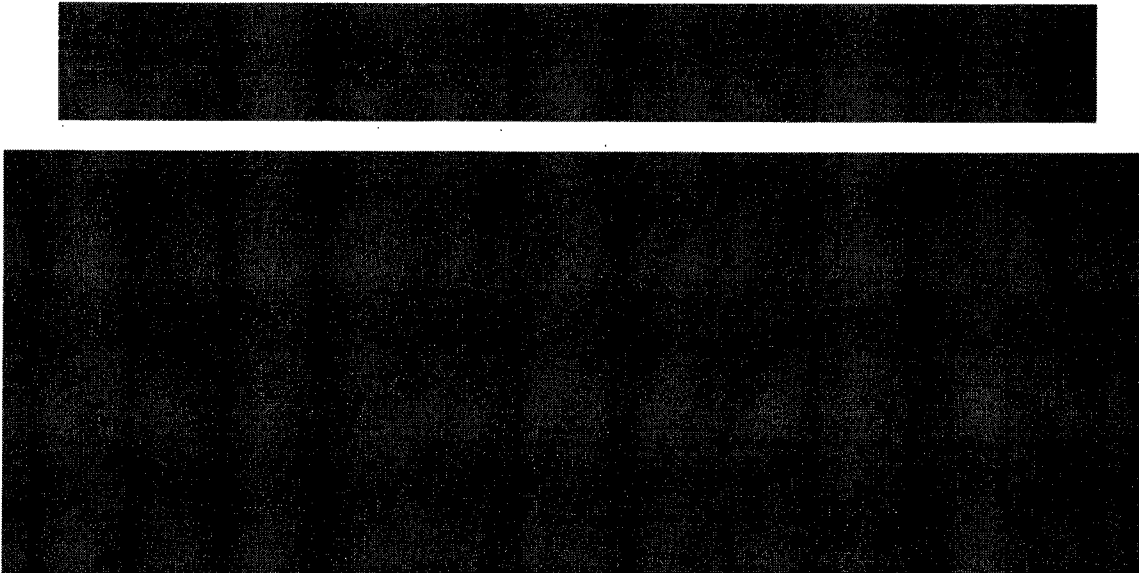
cancelled, one was short, two were lost because of low battery voltage, and thirteen were lost because of tape recorder malfunction. Part of the data recorded prior to tape recorder readout failures were recovered on subsequent readouts. Data from approximately 20 orbits were lost completely due to the readout problems.

The system was typically operated whenever the vehicle was above 10 degrees north latitude. Once during each 24-hour period, it was operated during an entire orbit.

3. OPERATIONAL RESULTS.

3.1 [REDACTED] Intercept - Orbit 23.

<u>Time</u>	<u>Vehicle Position</u>	<u>Altitude</u>
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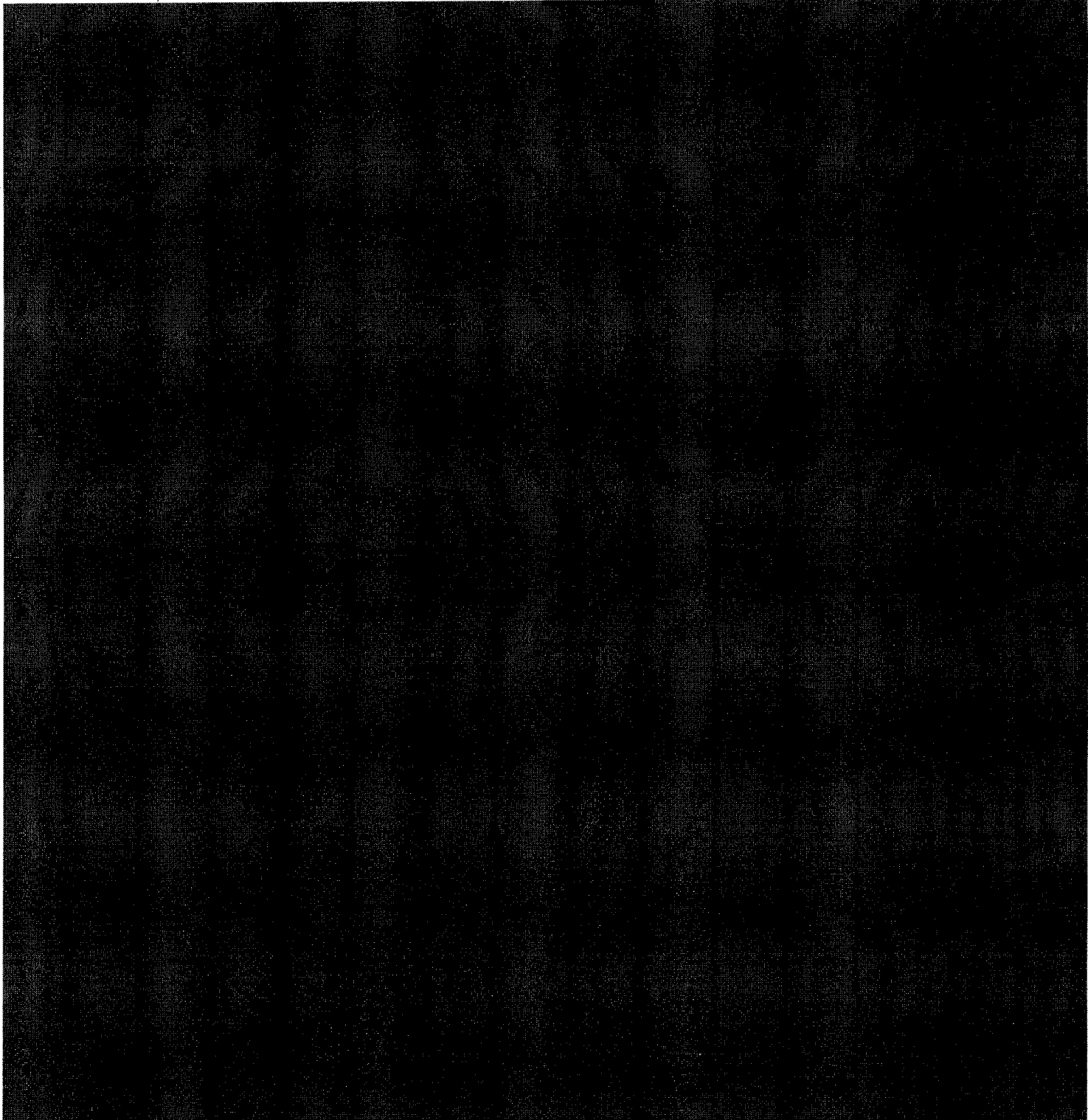
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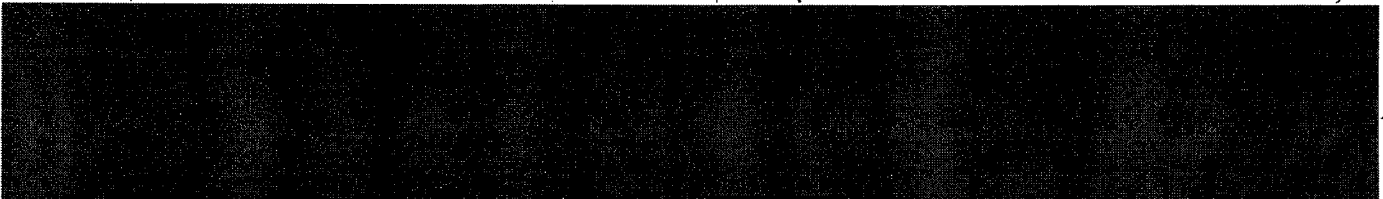
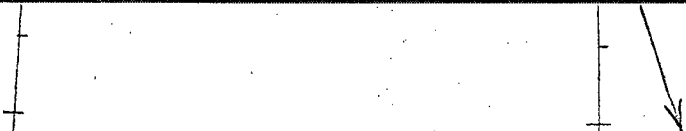
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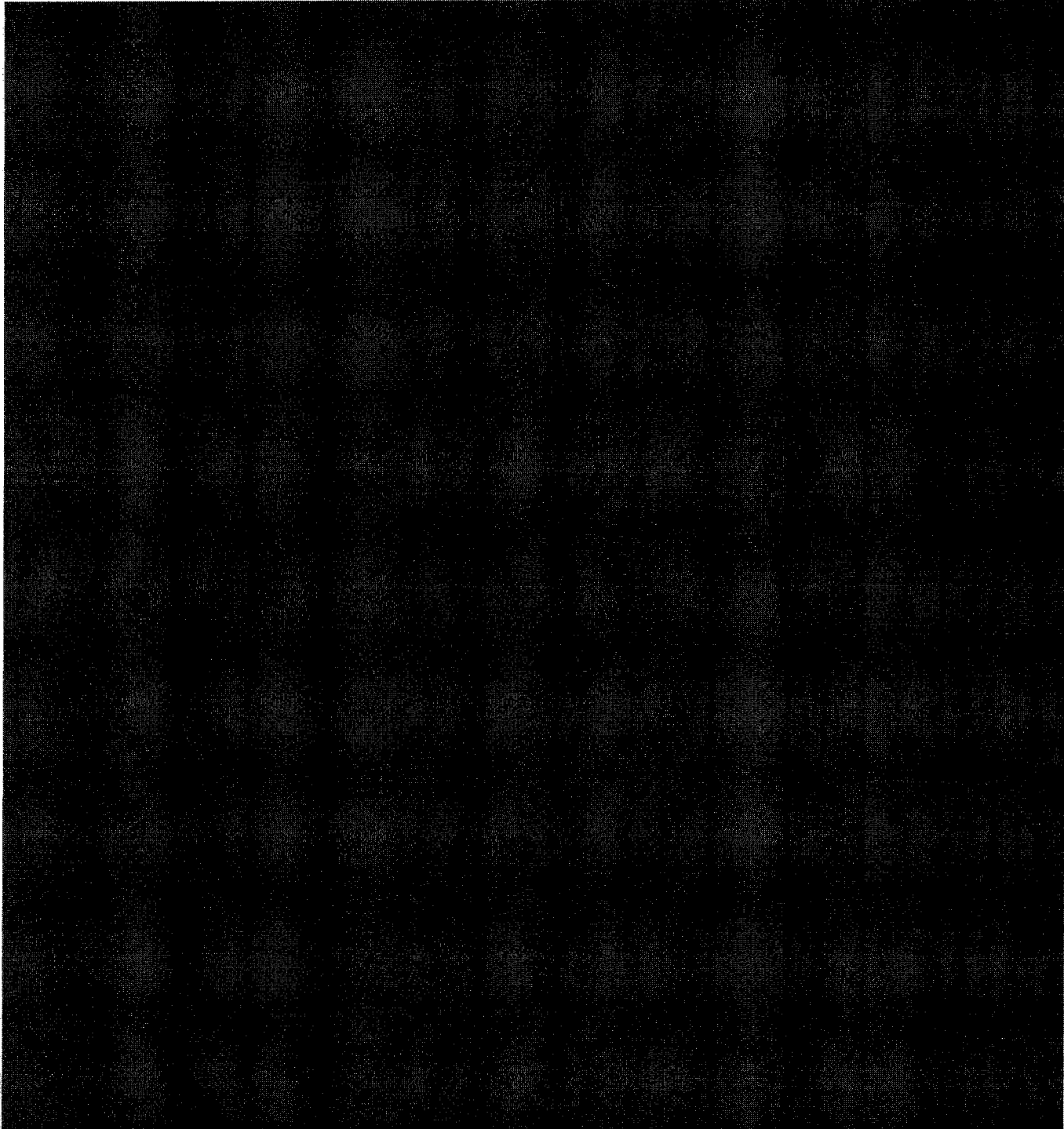
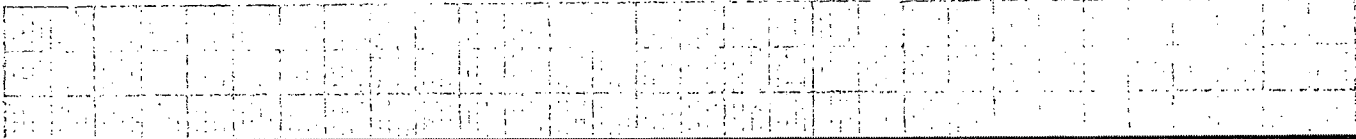
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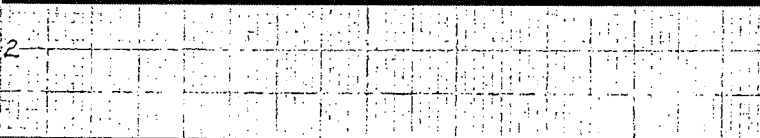
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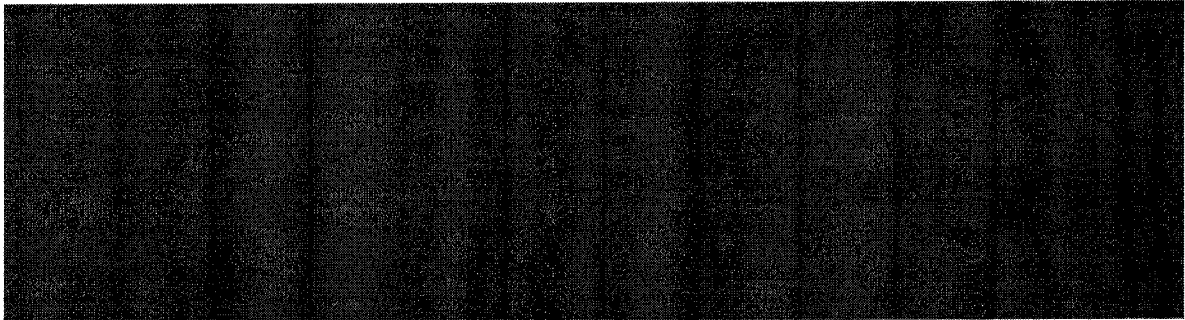
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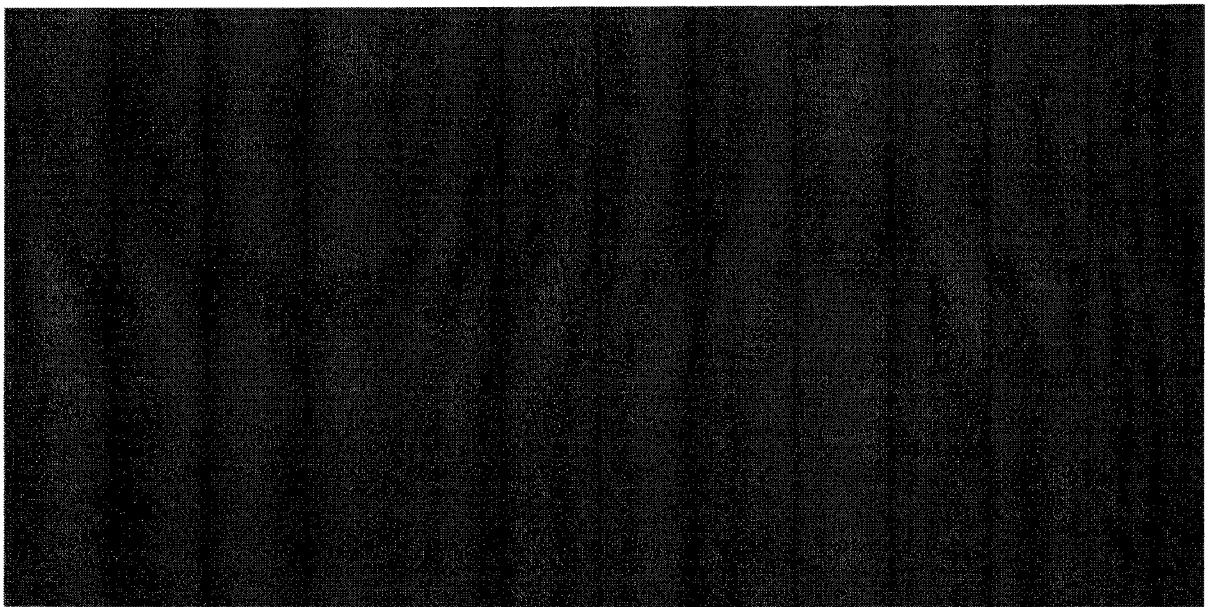
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3.2      Other Intercepts.



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TABLE 1

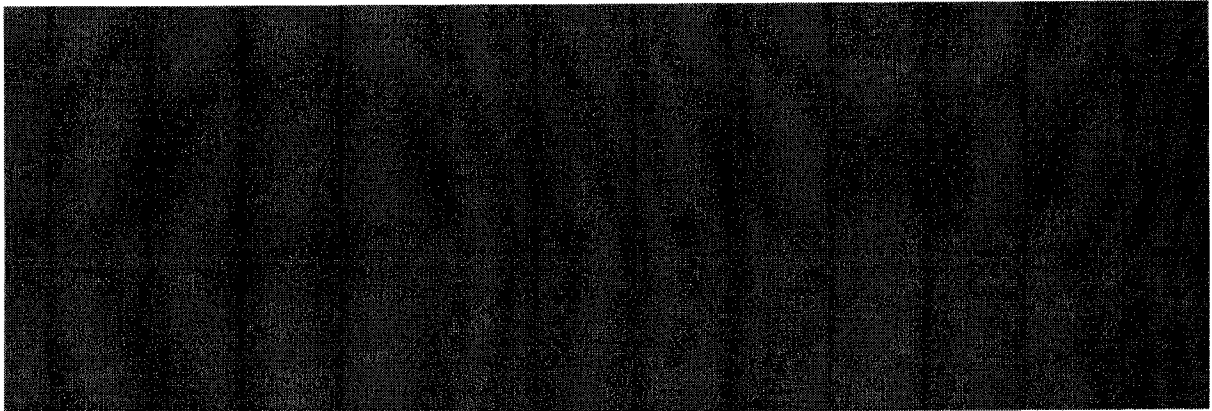
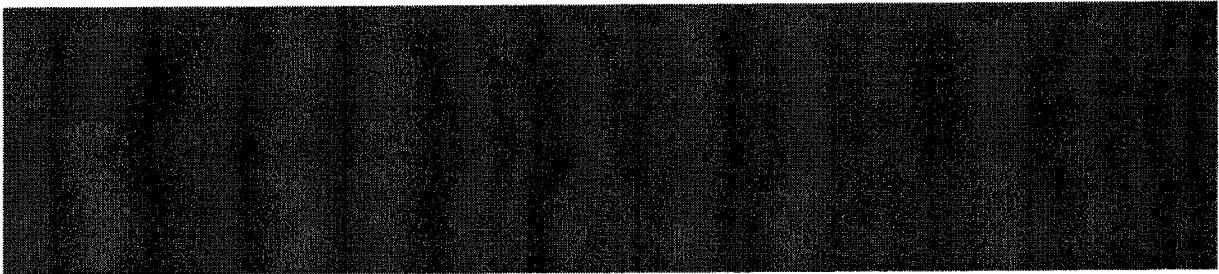
<u>Intercept Segment</u>	<u>Max. Signal Amplitude</u>	<u>Ave. Signal Amplitude</u>
[REDACTED]		

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3.1            -- Continued.



4.            SYSTEM PERFORMANCE.

4.1            Specifications.

- (a)    Frequency coverage            151 to 302 MHz
- (b)    Receiver detection sensi-  
tivity                            -50 dbm Low Channel
- (c)    Receiver bandpass            5.4 MHz, -22 dbm High Channel
- (d)    Image rejection                48 db
- (e)    Pulse width qualification      20  $\mu$ sec
- (f)    Measurement ranges  
  
          Amplitude                    -50 to -20 dbm Low Channel  
  
  -22 to +10 dbm High Channel

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4.1            -- Continued.

Pulse interval	1 to 100 msec Low Channel
	1 to 50 msec High Channel
Pulse width	20 to 200 $\mu$ sec
Pulse count	20 to 1500 pps non-qualified
	10 to 500 pps qualified
Discriminator range	-3.5 to +4.0 MHz centered at 70 MHz
(g) Duration of sweep lock	4 sec

4.2            System Operation.

A general description of the BIT II system is given in the Appendix of the Final Report for Mission 7063. The system block diagram is also shown in previous Mission Reports.

The BIT II unit used on this mission functioned properly throughout the mission. The unit did not generate false pulse qualifications when subjected to dense signal environments as did the units used on the first two missions. This was the first unit flown with the modified Pulse Width Qualifier integrator circuit which has a fast (less than 0.5  $\mu$ sec) decay time to prevent false stops from groups of narrow pulses. Although this modified circuit apparently corrected the problem of false stops, the ultimate effectiveness of this circuit modification will not be determined until a unit is flown using the maximum detection sensitivity of -60 to -65 dbm. This

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mission was flown with the sensitivity preset to -50 dbm which considerably reduced the pulse density of the signal environment as seen by the BIT II system.

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