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REPORT CHANGE RECORD FOR ➨ RAQUEL I Initial Flight Report

The following additions, revisions, or errata corrections, shall be incorporated into the document identified above. This Report Change Record sheet should be inserted as the first page of the affected document preceding the title page.

ADDENDUM PAGE	REVISION REMOVE PAGE	REVISION INSERT PAGE	ERRATA INSERT PAGE	REVISION OR ERRATA CORRECTION (CORRECT IN INK)	CORRECTIONS MADE INITIALS	CORRECTIONS MADE DATE
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Section 1

INTRODUCTION

This preliminary flight evaluation report provides information relating to spacecraft operation from liftoff through the launch phase and evaluates the spacecraft performance for the 10 consecutive days from 4 November through 13 November 1974 (flight day 7 through day 16).

RAQUEL I was launched on 29 October 1974 via a TITAN-3D/host vehicle (HV) booster combination. The spacecraft was ejected during rev 13 after an HV yaw maneuver had been performed. After the spacecraft had separated from the HV, a preprogrammed timer actuated six events that occurred prior to the first turn-on of the spacecraft on rev 15. The programmed events ignited three spin rockets to stabilize the spacecraft and two orbit-adjust rocket motors were fired to place the spacecraft into its proper orbit. A portion of the solar arrays was deployed and the two telemetry/command antennas were erected. The deployments of the remaining antennas and solar arrays were accomplished by real time commands during the first five acquisitions.

An ACS maneuver accomplished between revs 49 and 77 successfully placed the spacecraft on station.

The spacecraft was formally declared operational and ready for normal mission tasking on 4 November 1974 via the Operational Transfer Letter to L/C P. Tiger (DOZC).

The evaluation of the spacecraft performance during all of the operations covered by this report indicate that, with the exception of the band 5 problem described in section 12.2, all of the conditions of the Performance Incentive Plan have been satisfactorily met.

Section 2

PERFORMANCE

The performance parameters of the performance agreement are shown in table 2-1. The requirements of the performance agreement have been met. Table 2-2 lists the predicted nominal and actual orbit parameters.

Table 2-1

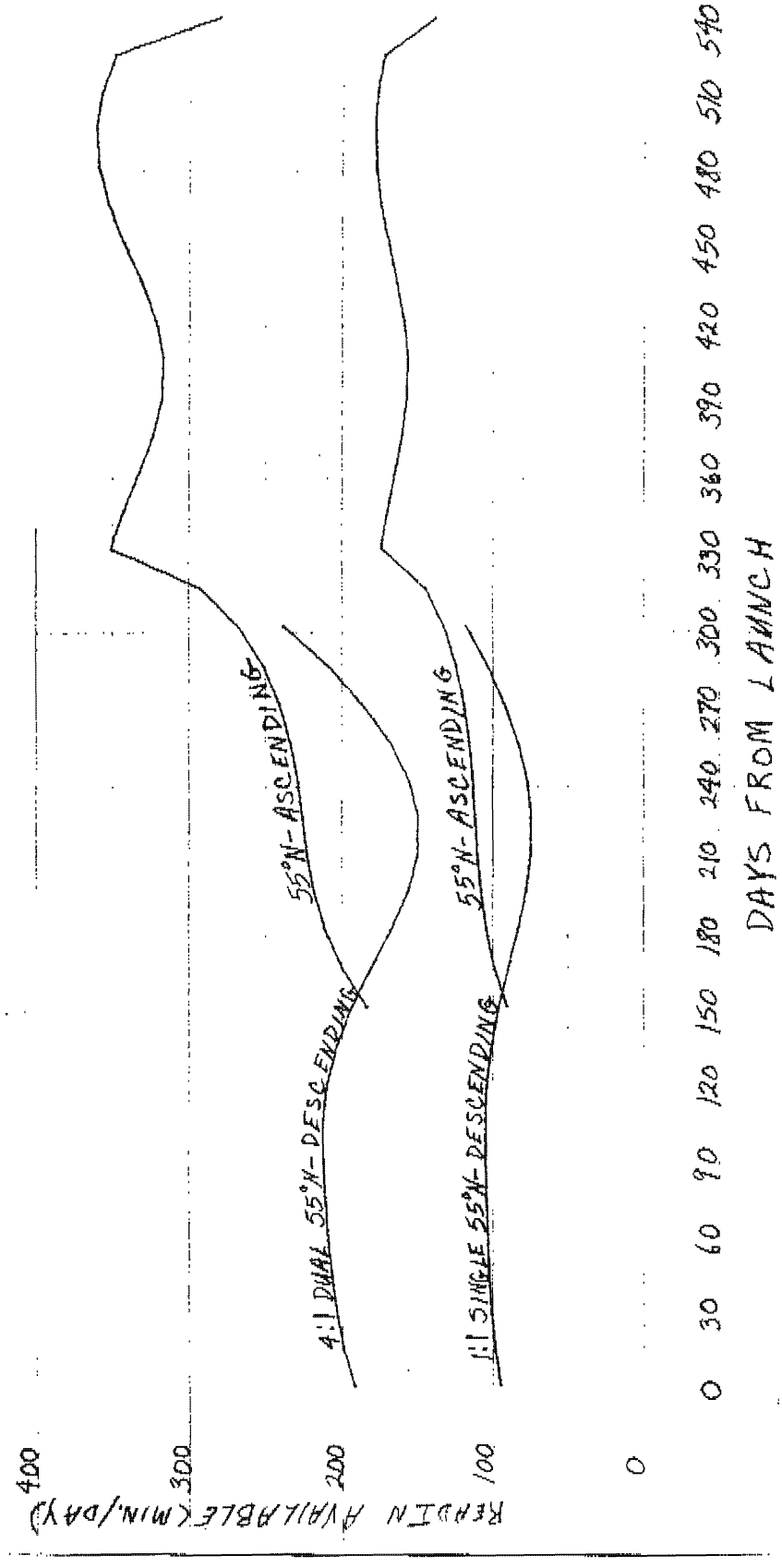
PERFORMANCE PARAMETERS

Parameter	Performance Required	Performance Actual
Minutes/Day of T/R Read-In vs Calendar	See Figure 2-1	--
Minimum T/R Readout Time for a Full Tape	282.5 secs	Has exceeded 282.5 secs on each of the three T/R's
Signal Strength for the T/R Readout	-87 dBm 1:1 mode	-87 dBm 1:1 mode
(With maximum elevation greater than 5 degrees and in accordance with RAQUEL I Signal Strength Contour Plots - SCF Stations, BIF 003W/2-072814-75)	-92 dBm 4:1 mode	-92 dBm 4:1 mode

Table 2-2

ORBIT PARAMETERS

Parameter	Predicted Nominal	Actual (Based on Rev. 15)
Apogee ($R_a - R_{eq}$) nm	285.5	290.2
Perigee ($R_p - R_{eq}$) nm	273.0	278.9
Period, Nodal (min)	95.00	95.21
Inclination (deg)	95.99	96.06
Spin Rate after Deployments (rpm)	60.4	60.8
Spin Axis In-Plane Angle from Node (deg)	106.2	104.3
Spin Axis Cross-Plane Angle (deg)	+29.4	+25.3



Notes:

1. Inclination = 96.08°
2. Altitude = 278 NM, circular
3. Ω_N = 20.916° (Rev 15)
4. Liftoff = 1930Z, 29 Oct 1974

Figure 2-1 Read-In Availability

Section 3

PRIMARY MISSION OBJECTIVES

The mission objectives of the RAQUEL I system are as follows:

a. ELINT technical information - includes collection of technical intelligence (TI) data on known emitters.

b. General search for new emitters/signals - includes detection, identification, and location of new emitters/signals.

c. Collection of data to satisfy operational ELINT surveillance requirements primarily in the 12 to 18 GHz frequency range, with supplemental collection in the 4 to 12 GHz range if required.

d. Collection of electronic order-of-battle (EOB) primarily in the 12 to 18 GHz range with secondary coverage in the 4 to 12 GHz range if required.

25X1

Section 4

LAUNCH, ORBIT, AND DEPLOYMENT PHASES

4.1 LIFT-OFF

RAQUEL I was launched from SLC-4, East Pad, VAFB, at 11:30:00.7 local time on 29 October 1974. Host vehicle (HV) SV-9 was the orbital boost vehicle. Figure 4-1 shows the spacecraft launch, final orbit, and deployment sequences; and table 4-1 lists the launch orbit and deployment times. The host vehicle achieved an orbit that was 0.11 degree low in inclination, 1.5 nm low in perigee, 4.3 nm high in apogee and 10 degrees high in argument of perigee. These differences were accommodated by appropriate changes in host yaw maneuver and separation latitude. The predicted values shown in table 2-2 and figure 4-1 reflect these post-liftoff changes. In contrast with previous flight reports, the prelaunch nominals are not included in this document. Instead, the nominals shown are based on the actual host orbit together with the selected yaw and separation latitude. Comparing these values, the actual RAQUEL I orbit reveals the rocket motor performance and the affect of any attitude dispersion.

4.2 ERECTION, SEPARATION, SPIN-UP, AND ROCKET FIRINGS

From lift-off through rev 13, the parent program events and telemetry were monitored once each rev to determine the spacecraft status prior to and during erection and separation. Once separation had occurred, one final status check from the HV telemetry along with the playback of the tape recorded separation sequence completed the real-time support from the HV program.

An HV command load containing the spacecraft erection and separation sequence was accomplished on rev 12 GTS, with the actual erection and separation times based on the latest tracking data available prior to the generation of the command load.

Rev No. 13	14	15	16	Event	Time (Z) Predicted/Actual
1				LAUNCHER ERECTION START	14:52:32/14:52:32
2				LAUNCHER ERECTION FINISH	14:59:05/14:57:56
3				YAW MANEUVER START	15:00:51/15:00:50
4				YAW MANEUVER FINISH	15:01:29/15:01:28
5				SEPARATION AT -15° LAT. ΔV = 1.3 FT/SEC SPIN UP 30° OUT OF ORBIT PLAN (INCLUDES 27° HOST YAW MANEUVER)	15:02:29/15:02:29
	6			FIRST BURN IGNITION 7° LAT; 8° NOSE DOWN 7300 FT AHEAD OF AND 3700 FT BELOW HOST 12.7 SEC BURN TIME ΔV = 385 FT SEC	15:45:13/not available
	7			SECOND BURN IGNITION -25° LAT; 10° NOSE UP 11.6 SEC BURN TIME ΔV = 267 FT/SEC	16:35:53/not available
		8		DEPLOY +Y 24-MODULE SOLAR ARRAY	17:41:13/not available
		9		DEPLOY TC-1 & TC-2	17:46:33/not available
		10		BOSS ACQUISITION	17:47:25/17:47:30

LAUNCH EVENT SEQUENCE

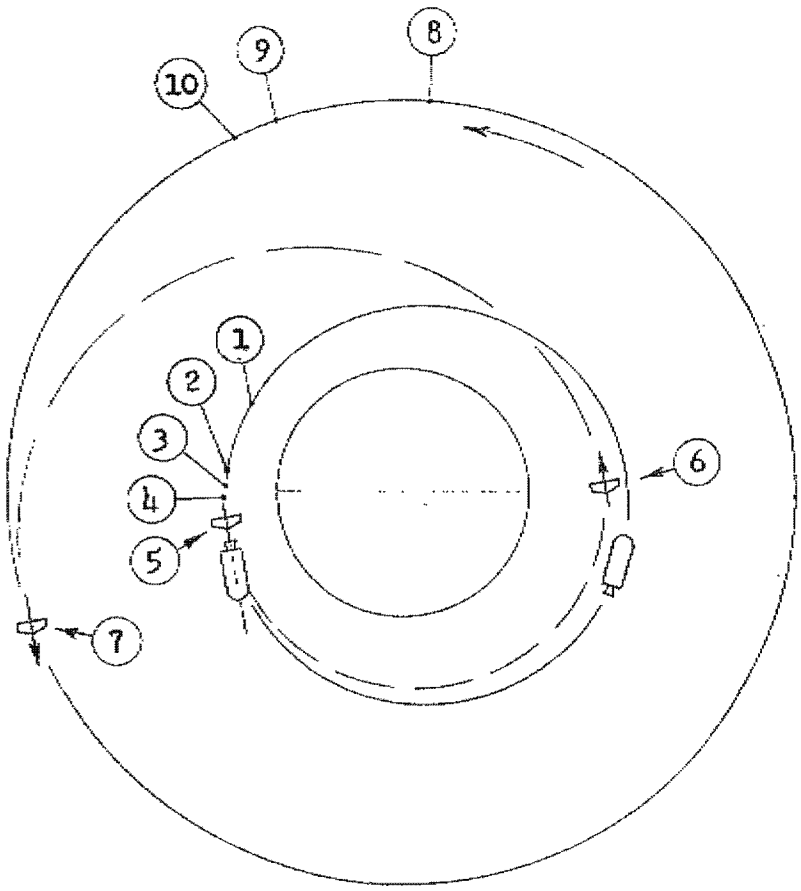


Figure 4-1 Launch Event Sequence

Table 4-1

DEPLOYMENT TIMES AND SPIN RATES

Deployments	Predicted Times (seconds) Nominal	Range	Actual Times (seconds)
A1 Position	9	5 to 15	9
A1 Dish Unfurl	<1	-- --	not monitored
A2 Rotation	8	4 to 14	16
A2 Feed Position	12	6 to 18	24
B Rotation	11	6 to 18	15
C1/D1 Position	17	10 to 25	19
C2/D2 Position	15	10 to 25	23
E1/E2 Position	7	4 to 15	9
TC-1 Position	10	5 to 15	deploy prior to first acquisition
TC-2 Position	15	10 to 20	
Solar Arrays			
+Y+Z (24 module)	115	95 to 160	
+Y-Z (24 module)	95	75 to 160	
-Y+Z (24 module)	85	65 to 140	88
-Y-Z (24 module)	80	60 to 140	88
+Y+X (17 module)	105	85 to 160	112
+Y-X (17 module)	140	120 to 160	106

Spin Rate after Following Event	Predicted (rpm)	Actual (rpm)
Deploy A1 Boom and E1/E2	63.31	63.71
Unfurl A1 and Deploy B	63.23	63.61
Deploy C1/D1 and C2/D2	63.62	63.74
Deploy +Y 17-Module and -Y 24-Module Arrays	60.88	60.91
Deploy A2 Dish and Feed	60.35	60.83

Separation occurred at 15°S latitude (geodetic) on rev. 13.5 D with erection starting 597 seconds prior to separation. A 26.9 degree left yaw maneuver by the HV was in effect at the time of separation. After separation, the spacecraft was spun up by two spin rockets via SPC-1. A third spin rocket was fired by SPC-2. Table 4-1 lists the deployment times and spin rates. Figure 4-1 shows the -Y and +Y rocket firings which were initiated by SPC-2 and -3, respectively.

The measured attitude was different from the predicted attitude by 4.4 degrees (see table 2-2). The major portion of this difference was probably caused by the third spin motor firing, which by itself was predicted to cause a dispersion of 3.2 degrees. The direction of this attitude change could not be compensated for.

The orbit achieved was almost exactly consistent with the attitude measured. From this, it was concluded that the two rocket motors both performed as planned. Note that the first burn motor was the new 11-inch size while the second burn motor was the old 8-1/2-inch size.

The most significant effects of the 5-mile increase in altitude were to decrease the orbit track walk from 3.6 degrees/day to 2.8 degrees/day and to increase the orbit decay lifetime estimate from 50 months to 54 months.

4.3 DEPLOYMENTS

4.3.1 Stored Programmed Commands

At separation from the host vehicle, the RAQUEL I 6-event deployment timer was initiated (at x 64 speed). These six events occurred and were completed prior to the first acquisition at rev 15.4 NHS. These six events are as follows:

Event	Function
SPC-1	Switch timer to X1 mode Ignite spin rockets 1 and 2
SPC-2	Ignite spin rocket no. 3 Ignite -Y orbit motor

Section 6

SPACECRAFT CONTROL

The spacecraft control system consists of a dual timer and two command receiver systems. Each command receiver system consists of a receiver (each of which has a different frequency), a demodulator, and a decoder.

Following the deployment phase, the timer configuration is switched from a 3-timer system to a 2-timer system for normal operation. Each timer is identical and only timer no. 1 has been used. Timer no. 2 will not be used nor will its operation be verified unless required by a failure. Each timer consists of four PE/CE combinations used for tasking or ACS operation, an SE-1 event (672 +4, -0 seconds) to back up TLM OFF, and an SE-2 event (32 +4, -0 seconds) used to allow warmup time for the horizon sensor and the payload YIG heater. All of these events have been verified, are within tolerance, and are being used for normal operation.

Both of the command receiver systems are powered by the continuous bus and are actively redundant. Both systems have been verified and found to operate properly.

Section 7

DATA STORAGE AND TRANSMISSION

7.1 GENERAL

Spacecraft equipment associated with data storage and transmission is as follows:

a. Three 1-MHz dual-channel tape recorders. Each recorder can operate in either the 1:1 or 4:1 read-in/readout ratio mode. Both tracks of any recorder are read out over a single carrier in the 1:1 mode. Identical data are recorded on both tracks of a recorder in the 4:1 mode, and one of these tracks is selected for transmission on a carrier during readout. Tape recorders can be read out serially or two at a time. To summarize, this system requires one tape recorder; the second and third are redundant.

b. One 2.0-watt, narrowband, phase modulated transmitter (carrier 1) used for 8-kbps spacecraft status NRZ-L PCM.

c. Three 7.0-watt wideband, frequency modulated transmitters. Three of these transmitters (carriers 4, 5, and 6) are used for 256 kbps per second NRZ-S PCM payload data. The 7.0-watt transmitter (carrier 6) can also be used to replace the status (carrier 1). To summarize, the payload data requires one 7.0-watt transmitter; the other two are spares.

d. Two telemetry/command antennas (TC-1 and TC-2)

e. One duplexer switch

f. One duplexer box

g. One multicoupler

h. Two payload TRG's (one is a spare)

i. Payload VCO's as follows:

1. Channel 10: Payload status on 30-point PAM commutator (used only in the backup mode)
2. Channel 14: TRG
3. Channel 15: Horizon sensor and solar aspect sensor data (used only in the backup mode)
4. Channel F: TI AM or CW DF data
5. Channel H: TI FM or CW Omni data.

The following data are recorded during read-in:

a. 1:1 Primary Mode

1. Track 1: 50-kHz ref tone
Channel 14 VCO
Channel F VCO
Channel H VCO
0.75-MHz pre-D

2. Track 2: 256-kbps NRZ-S PCM

b. 4:1 Primary Mode

256-kbps NRZ-S is recorded on both tracks of the tape recorder.

Before-and-after tape recorder readout, two format options are available by real time as follows:

a. Option 1. Four tones (250-khz tone sent twice at two amplitudes: 500 kHz and 1.0 MHz) are sequentially turned on (one at a time) for four seconds each. After four seconds of a grounded input, the cycle is continuously repeated. The tones are derived from the TRG.

b. Option 2. The channel 14 VCO (TRG), the 50-kHz tone, and the 1.7-MHz VCO (modulated by the 256-kbps PCM signal) are operational simultaneously.

The spacecraft can operate in a bypass mode where the payload data are transmitted real time via a wideband carrier. The option is available to simultaneously read in the data on a tape recorder.

To date, all the primary equipment has performed properly. The operation of the backup equipment is not verified during the evaluation phase.

7.2 TAPE RECORDER OPERATION

7.2.1 Tape Recorder No. 1

The data from tape recorder no. 1 have a jitter level (ref. para. 13.4) of ±3 percent when operated in the 4:1 mode. This is compared to a jitter level

of from ±1.0 to ±1.5 percent exhibited on the other two tape recorders. The jitter level of tape recorder no. 1, from tapes made during the spacecraft ground test span that were processed through the [redacted] processing system, was ±2 percent. Surveillance of this tape recorder's characteristics will continue. The tracking stations experienced problems in reshaping/bit synchronizing data from tape recorder no. 1 with 4:1 mode MSORT-R data. For this reason, 4:1 mode readouts of tape recorder no. 1 are being avoided over the NHS station.

25X1

7.2.2 Tape Recorder No. 2

A detailed analysis of tracks 1 and 2 of tape recorder no. 2 was conducted as a result of the computer analysis system having difficulty in obtaining bit sync on track 1 data during 4:1 mode readouts. Analysis of on-orbit tests showed that poor data are being obtained from track 1 of tape recorder no. 2 during approximately the first 20 seconds of the read-in portion of the tape. Analysis of ground tapes shows that this characteristic was present during the system test span, but was not evident due to differing bit sync characteristics and the fact that flight data have signal-to-noise levels that are degraded relative to system test data. The problem is the result of physical edge damage to the tape that most probably occurred during manufacture of the tape recorder.

Direction was issued on 21 November 1974 to select only track 2 of tape recorder no. 2 for transmission when reading out in the 4:1 mode.

Section 8
ATTITUDE SENSING SYSTEM

This was the first application of the four-eye, 0.25-degree-increment solar aspect sensor system. It functioned properly and permitted accurate determination of dynamic balance at an earlier point in time than with previous systems.

Comparison of the four aspect angles during revs 15, 16, 17, and 18 revealed dynamic balance within 0.3 degree of prediction after each deployment through solar arrays. The same comparison for revs 29 through 300 showed the dynamic balance following A^2 deployment was within 0.49 degree of prediction.

Wobble did not exceed 0.5 degree at any time while deployments were being monitored. This provides a good indication that the dampers on the spring-powered actuators performed properly.

The horizon sensor output is available in bipolar form only, making evaluation of data quality an indirect process. The spin axis determinations and geoposition results have been adequate to satisfy all mission requirements.

To date, the backup SAS shift register and horizon sensor no. 2 have not been tested on-orbit as they will be selected only in the event that a primary unit fails.

12.2.2 CW and TI Receiver Performance

Calibration data signals from the ARV cal vans have been received. The response of the CW and TI receiver is shown in table 12-2. The response of the CW and TI receiver to the TSG signal is the same as prelaunch, except band 5. The TI frequency measuring accuracy of the payload for 16 cal passes for pure CW signals is a two sigma error of 0.16 MHz. If the TI digital output is the result of the payload in the spectral analysis mode, the output frequency indicated is the step with the highest-step registered. The number of calibration passes conducted is insufficient to establish an error in the spectrum analysis mode.

Table 12-2

CW AND TI RECEIVER CALIBRATION SUMMARY

Rev.	Seq.	Band	Type	Frequency (MHz) X'mtr	CW R'cvr	TI R'cvr
32	27	6	DF	12,600.3		
54	61	8	OMNI	16,124.92	16,135	16,125.43
99	121	8	DF	16,500.56	16,505	16,500.4
122	159	7	DF	14,800.03	14,805	14,800.2
160	203	5	DF	10,100.42	10,105	No. Meas.
160	203	5	DF	11,000.46	11,105	11,000.61
258	401	6	DF	12,600.52	12,605	12,600.9
258	401	6	DF	13,398.86	13,405	13,398.95
311	536	7	DF	14,200.38	14,205	14,200.11
326	569	2	DF	4,500.7	4,505	4,506.3
341	607	6	OMNI	13,800.01	13,805	13,799.83
379	673	8	DF	17,499.24	17,505	17,499.0
409	734	2	DF	5,500.03	5,505	5,500.1
553	978	2	DF	4,800.2	4,807	4,802.8
560	992	3	OMNI	7,500.01	7,505	7,499.9
575	1021	3	DF	6,500.46	6,505	6,500.59
621	1107	4	DF	8,100.18	8,105	8,100.36
621	1107	4	DF	8,199.62	8,205	8,199.87
651	1167	7	DF	14,605.00	14,615	14,605.7
666	1193	6	DF	13,100.001	13,105	13,100.23
772	1397	4	DF	9,180.00	9,185	9,180.0

Note: All revs fine tuning mode is S/L except rev 651 which is S/A.

Section 13

MISSION DATA ANALYSIS

13.1 PROCEDURE SUMMARY

The report period covers the 10 days (11/4 to 11/13) immediately following completion of the spacecraft ACS maneuver. During revs 84 through 197 the RAQUEL I payload was tasked for read-in segments 98 through 256 for purposes of engineering analysis. Starting with rev 198 (read-in segment 257) and continuing through the remainder of the report period, the payload was tasked predominantly in a J-band search mode.

During the report period, the [redacted] processing system, data handling, and analysis procedures were validated. The system was declared in an operational production status on 21 November. Processing of the data from the J-band search, starting with read-in segment 257 had priority over previous non-J-band processing and analysis. 25X1

Payload data were received in [redacted] via microwave from VTS via COMSAT from HTS and GTS, and via station recorded tapes. Edited PCM data were received via MSORT tape from the STC on selected passes. PCM data were normally processed from the earliest received source.

Payload PCM data from the station tapes, or received via COMSAT or microwave transmissions were preprocessed through the direct data transfer (DDT) system and then input to the CYBER computer processing system. Data received via MSORT were read directly into the computer system.

Analog data on the station tapes or received via COMSAT or microwave transmission are used for more detailed analysis of signals of interest. Such analysis is normally accomplished on a long-term basis, using the computer output listings as a means of identifying/selecting signals to be analyzed. The primary data source for the detailed analysis are the station tapes.

Computer processed outputs can be divided into three categories:

a. DF data certification package from which the [redacted] reports are generated and then transmitted to the data user 25X1

b. Pulse DF-omni package for second level analysis and correlation of signals in the DF and omni channels

c. CW analysis package which includes the TI receiver activity summary, used for correlation of digital and analog data and as "tip-offs" to signals of interest.

Four separate reports [redacted] were selected and transmitted to the data user for engineering analysis and to validate the reporting system. The following segments were reported. 25X1

Segment Number	Data Content
88*	Band 8, Pulse DF data - backside
121	Band 8, CW DF data - calibration pass
140	Band 7, Pulse DF data - backside
159	Band 7, CW DF data - calibration pass

*Segment 88 was not tasked during the period covered by this report; rather, it was "stacked" with segment no. 140 and transmitted to the data user on 11/8.

Eleven calibration read-in segments were scheduled during the report period. Of these, 1 segment (98) resulted in no valid calibration signals due to the payload band 5 anomaly. In segment 203, also due to the payload band 5 anomaly, one of the CW transmissions was not received, and the ground-processing software was unable to properly reconstruct the signal series of the two-pulse transmissions. One segment (246) was tasked improperly, resulting in noninterception of the calibration signals. Table 13-1 summarizes the processed results of the calibration signals received during the remaining nine calibration passes. The measurement values (frequency, PRI, PW, and signal power) as processed from the payload data are considered acceptable and within expected tolerances. The geolocation values are the result of reprocessing the data after bias analysis corrections were incorporated into the software. The location accuracy of the reprocessed signals falls within the

Table 13-1
ARV CAL SUMMARY

Rev/Seg	Band	Type	Frequency Xmt	Frequency Rec	PRI Xmt	PRI Rec	PW Xmt	PW Rec	Sig Pwr Xmt	Sig Pwr Rec	Miss	Deb	BA	Half-cone Angle	Remarks
84/ 98	5	Omni												-	Note 1
99/121	8	DF	16500.56	16505	CW	X	CW	X	-113.3	-78	4		207	.27	
114/148	6	DF	13324.3	13318	200.0	200.0	0.5	0.5	-82.9	-58	4		218	.19	
122/159	6	DF	14800.03	14805	CW	X	CW	X	-115	-81	2		138	.4	
137/177	6	DF	13117.77	13666	1000.0	1000.0	1.0	1.0	-92	-55	1		103	.2	
160/203	5	DF	10100.42	10105	CW	X	CW	X	-89.9	-87	29		137	.54	
	5	DF	11000.46	11015	CW	X	CW	X	-89.9	-90	28		131	.67	
	5	DF	11900.45		CW				-95.9					-	
	5	DF	10417.60	10420	2000.0	2000.0	1.0	1.0/ 0.7	-66.4	-53	28		121		Note 1
	5	DF	11590.63	11595	999.99	1000.0	0.7	0.7	-67.1	-59	26		300	-	
175/224	8	DF	16110.33	16109	1000.0	1000.0	1.0	1.0	-93.9	-59	5		357	.43	
190/246	5 6 5 5	DF DF DF DF	10299.58 12616.05 10999.63 11699.54		CW 500.0 CW CW		CW 2.0 CW CW		-88.0					- - - -	Note 2
205/276	7	DF	14714.01	14713	2000.0	2000.02	5.0	4.9	-86.0	-53	2		8	.18	
220/309	3	DF	6562.09	6561	200.0	200.0	1.0	1.0	-82.7	-51	11		229	1.27	
228/330	4	DF	8617.08	8616	2000.0	1999.98	2.0	2.1	-82.9	-52	12		273	1.22	

NOTE 1. Payload Band 5 anomaly
2. Not received due to tasking error

MISS = Miss Distance
DEB = Distance to Elliptical Border
BA = Bearing Angle from emitter location

25X1

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13-3

allowable 1.5-degree angular displacement (half-cone angle) from the payload antenna boresight.

13.2 MSORT-R

MSORT-R is a computerized method for editing the payload PCM data received from the spacecraft. The MSORT-R program resides at the tracking stations. The editing is accomplished in accordance with a set of preloaded selection parameters called mode structure items (MOSI's). The edited data, having had the extraneous digital data removed (NO DATA words and data not within MOSI limits), is then transmitted to the STC via the 2400-bps data lines. The resultant computer tape at the STC is then [redacted] for processing.

During the reporting period, MSORT-R was exercised on a routine basis with NHS, and as an alternate to COMSAT transmission with HTS and GTS.

MSORT-R software in the SCF had discrepancies which negated routine satisfactory processing of data received by that method. Additionally, difficulty for RTS bit synchronizers to retain bit sync lock on the PCM bit stream caused excessive dropouts. Problems have been significantly reduced based on improvements in the SCF software to correct erroneous time reports, on coordinated SCF and [redacted] software changes to improve read-in separation, and improved bit synchronizer techniques. 25X1

13.3 DATA QUALITY

During the 10-day report period, data were transmitted to [redacted] via all available methods (i.e., electrical transmission via COMSAT and microwave, MSORT, and via station recorded tape). All three methods were demonstrated satisfactorily. However, they did not result in satisfactorily processed data 100 percent of the time.

Station tapes recordings were generally satisfactory. Improvements were noted as station personnel gained experience and became familiar with data link characteristics and with optimum recording and data processing techniques.

The electrical transmission (microwave and COMSAT) performed according to their published specifications.

The following statistics were compiled from a total of 862 read-in segments during the early portion of the J-band tasking. Although this sampling extends beyond the 10-day report period, it is a fair representation of the data processability throughout the report period. Processing problems existing during the sampling period were also inherent in the system during the entire 10-day period. Processing of the J-band tasking data was given a higher priority than the pre-J-band tasking. Pre-J-band tasking was processed or reprocessed on a "time available" basis.

13.3.1 First Attempt Processing Results

25X1

a. 77% received in [redacted] via COMSAT or microwave
b. 23% received in [redacted] via MSORT
c. 19% processing aborted on the first attempt
   1. 9% received via COMSAT or microwave
   2. 10% received via MSORT
d. In addition to the 19% that aborted, 11% had discrepancies:
   1. 4% required reprocessing
   2. 7% acceptable as processed.

      Discrepancies:

      Bad spin clocking composite

      Wrong read-in rev.

13.3.2 Net Results Including Reprocessing

Note: Aborted MSORT's were reprocessed from station tapes

a. 91.5 percent acceptable as processed

b. 8.5 percent processing unsuccessfully

   1. 6 percent considered "lost" due to problems on the ground for the following reasons:

      Duration too short
      Tasking error
      Station recording error.