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LANDSAT-2 AND LANDSAT-3 FLIGHT EVALUATION REPORT

23 OCTOBER 1978 TO 23 JANUARY 1979

Prepared By

GE LANDSAT OPERATIONS CONTROL CENTER

For

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Goddard Space Flight Center
Greenbelt, Maryland 20771

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GENERAL ELECTRIC

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APPROVED: Thomas W. Winchester

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INTRODUCTION

This is the 17th report in a continuing series of documents issued at launch, and quarterly thereafter, to present flight performance analyses of the Landsat-2 spacecraft. Previously issued documents are:

Document No.	Title	Date
75SDS4215	Landsat-2 Launch and Flight Activation Evaluation Report, 22 to 26 January 1975, Launch through Orbit 50 and Orbit Adjust Operation.	21 March 1975
75SDS4228	Landsat-1 and Landsat-2 Flight Evaluation Report, 23 January 1975 to 23 April 1975.	15 August 1975
75SDS4255	Landsat-1 and Landsat-2 Flight Evaluation Report, 23 April 1975 to 23 July 1975.	10 October 1975
75SDS4266	Landsat-1 and Landsat-2 Flight Evaluation Report, 23 July 1975 to 23 October 1975.	1 December 1975
76SDS4207	Landsat-1 and Landsat-2 Flight Evaluation Report, 23 October 1975 to 23 January 1976.	29 February 1976
76SDS4248	Landsat-1 and Landsat-2 Flight Evaluation Report, 23 January 1976 to 23 April 1976.	14 July 1976
76SDS4263	Landsat-1 and Landsat-2 Flight Evaluation Report, 23 April 1976 to 23 July 1976.	15 October 1976
76SDS4278	Landsat-1 and Landsat-2 Flight Evaluation Report, 23 July 1976 to 23 October 1976	30 November 1976
77SDS4204	Landsat-1 and Landsat-2 Flight Evaluation Report, 23 October 1976 to 22 January 1977.	22 February 1977
77SDS4228	Landsat-1 and Landsat-2 Flight Evaluation Report, 23 January 1977 to 23 April 1977.	23 May 1977
77SDS4244	Landsat-1 and Landsat-2 Flight Evaluation Report, 23 April to 23 July 1977	22 August 1977

Document No.	Title	Date
77SDS4258	Landsat-1 and Landsat-2 Flight Evaluation Report, 23 July 1977 to 23 October 1977	2 November 1977
78SDS4202	Landsat-1 and Landsat-2 Flight Evaluation Report, 23 October 1977 to 23 January 1978	1 February 1978
78SDS4216	Landsat-1, Landsat-2, and Landsat-3 Flight Evaluation Report, 23 January 1978 to 23 April 1978	3 May 1978
78SDS4232	Landsat-2 and Landsat-3 Flight Evaluation Report, 23 April 1978 to 23 July 1978	1 August 1978
78SDS4250	Landsat-2 and Landsat-3 Flight Evaluation Report, 23 July 1978 to 23 October 1978	1 November 1978

This report contains analysis of flight performance for Orbits 18990 to 20270 for Landsat-2.

SECTION 1
SUMMARY
LANDSAT-2 OPERATIONS

SECTION 1

SUMMARY LANDSAT-2 OPERATIONS

Landsat-2 has completed its fourth year of successful operation. It travelled over half a billion miles, collected a third of a million images of nearly all the land masses of the earth, and relayed over one and a third million messages from environmental sensors in remote earth locations.

The Landsat-2 spacecraft was launched from the Western Test Range on 22 January 1975, at 022:17:55:51.604. The launch and orbit injection phase of the space flight were nominal and deployment of the spacecraft followed predictions. All systems continue to perform normally except Forward Scanner Pressure, Forward Scanner Pressure Telemetry, Wideband Video Tape Recorder No. 1 (WBVTR-1), and Narrow Band Tape Recorder No. 1 (NBTR-1). The Forward Scanner Pressure had begun leaking before launch but will not affect scanner performance. The Forward Scanner Pressure (Function 1003) telemetry became erratic in Orbit 2244 on 2 July 1975.

WBVTR-1 failed to rewind during Orbit 1021, 5 April 1975, and had intermittent operation until Orbit 2238, 2 July 1975, when normal operation was resumed. WBVTR-1 had a new anomaly in Orbit 2683 on 3 August 1975 because of failure of one of the 4 heads. As a result, it could not be used with MSS data, but performed satisfactorily with RBV data (because RBV provides a synchronizing pulse which permits data from the bad head to be isolated and eliminated). After Orbit 7181 on 20 June 1976, the recorder was used regularly in service recording RBV data until failure of a second head in Orbit 10064, 13 January 1977. All operation of WBVTR-1 had been discontinued since that date.

WBVTR-2 started to rewind but stopped prematurely in Orbit 1919, 9 June 1975, and again in Orbit 3854, 26 October 1975, with the cause unknown. Unit remains operational.

WBVTR-2 had 30% high headwheel current during playback in Orbit 9738 on 21 December 1976. The anomaly is cured by an operational procedure of toggling playback to record to playback. Frequency of anomaly is increasing. Unit remains operational. On 29 November 1978 WBVTR-2 exceeded 1000 hours of in-flight operation.

Narrow Band Tape Recorder No. 1 (NBTR-1) halted after 35 seconds of playback in Orbit 02067, on 15 January 1979. Subsequent attempts at operation were unsuccessful. NBTR-1 had 18320 hours of in-flight operation over its four years of flight. The remaining good Narrow Band Tape Recorder No. 2 is being used to cover MSS, RBV, Downlinks, and Video Tape Recorder operation. One long (2.5 hour) record operation per day is scheduled for Offline Analysis.

Batteries 1, 2, 5, 6, 7 and 8 have been turned OFF one by one for restoration cycles and returned to service after a few weeks.

From 2 November 1977 to 2 February 1978, a series of orbit adjust burns were made to change the inclination angle of Landsat-2. Payload operation continued during this cycle as the ground track was maintained.

The DCS receiver was turned OFF in Orbit 15857, 4 March 1978. DCS operation has been resumed with Landsat-3.

The spacecraft continues to perform its mission satisfactorily. Table 1-1 shows cumulative in-orbit payload system performance.

Table 1-1. In-Orbit Payload Systems Performance Launch thru Orbit 20397 (1-24-79) Landsat 2

RBV	Total Scenes Imaged	2824
	Total Area Imaged (million sq. n mi.)	24.7
	ON TIME (hr.)	30
	ON/OFF Cycles	346
	% Real Time Images	73
	% Recorded Images	27
MSS	Total Scenes Imaged	299,228
	Total Area Imaged (million sq. n mi.)	2,609
	ON TIME (hr.)	3,172
	ON/OFF Cycles	19,501
	% Real Time Images	80
	% Recorded Images	20
DCS	Messages at OCC	1,353,058
(Not in Use)	Users	(Not in Use)
	ON TIME (hr.)	27,283
WPA-1	ON TIME (hr.)	109
	ON/OFF Cycles	704
WPA-2	ON TIME (hr.)	2,792
	ON/OFF Cycles	15,512
WBVTR-1	% Record Mode	38
(Not in Use)	% Playback Mode	41
	% Rewind Mode	20
	% Standby Mode	1
	Time Head-Tape Contact (hr.)	121.7
	Cycles Head-Tape Contact	1,950
	ON TIME (hr.)	154
WBVTR-2	% Record Mode	38
	% Playback Mode	41
	% Rewind Mode	20
	% Standby Mode	1
	MFSE Count in P/B	~10
	Time Head-Tape Contact (hr.)	1,029
	Cycles Head-Tape Contact	14,109
	ON TIME (hr.)	1,303

SECTION 2
ORBITAL PARAMETERS
LANDSAT-2

SECTION 2

ORBITAL PARAMETERS

At the close of this report period, Landsat-2's ground track error was 2.80 nm East (longitude at the equator).

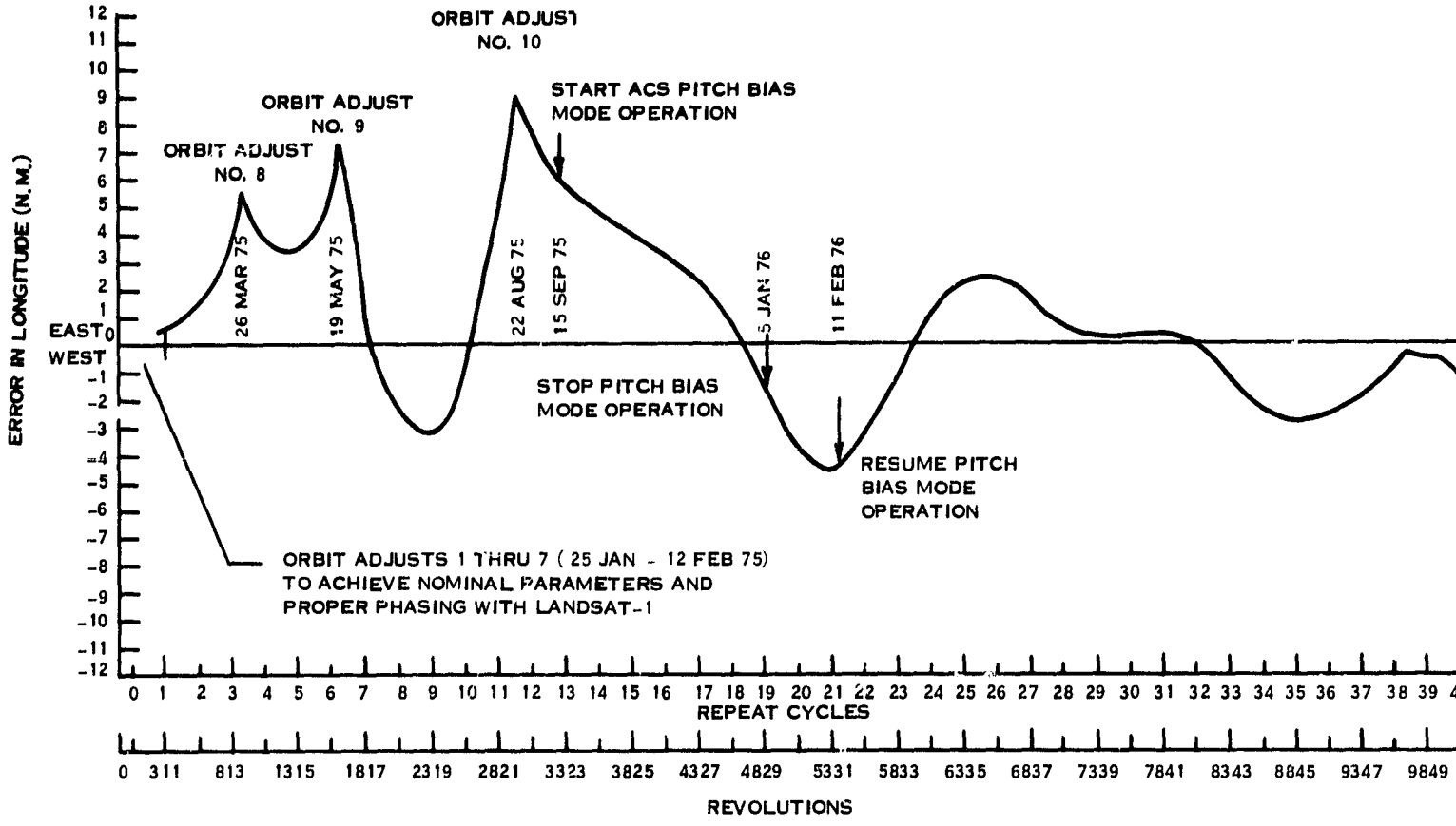
Spacecraft drag (which is directly proportional to solar activity) increased during this quarter. In the absence of the "controlled pitch gating via pitch position bias program", drag effected Landsat 2's ground track and a minus X axis, orbit maintenance orbit adjust was performed during orbit 19246 (2 November 1978) to correct this condition.

Error in longitude since launch as a function of time, orbit maintenance burns, and the Pitch Position Bias program are shown in Figure 2-1.

Figure 2-2 shows the mean local time for the spacecraft descending equatorial cross. The mean local time crossings for Landsats 2 and 3 respectively are 09:18:40 MLT and 09:32:19 MLT and phasing relationships between Landsat-2 and 3 are shown in Figure 2-3. Landsat-3 leads Landsat-2 at their descending equatorial crossings by 37.91 GMT minutes.

The Brouwer Mean Orbital parameters for Landsat-2 are given in Table 2-1.

Appendix B provides the spacecraft orbit reference tables for January 1978 to July 1979.



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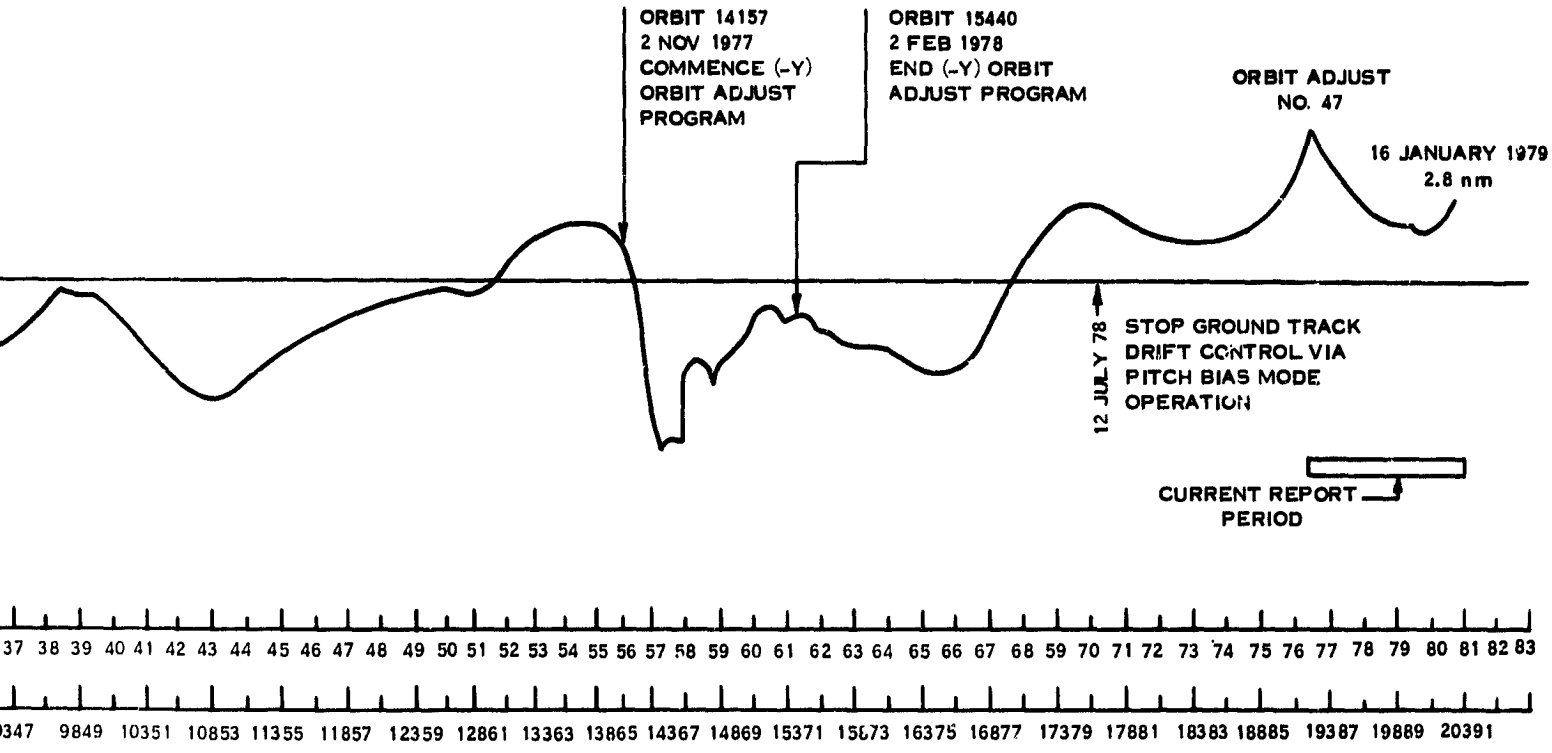
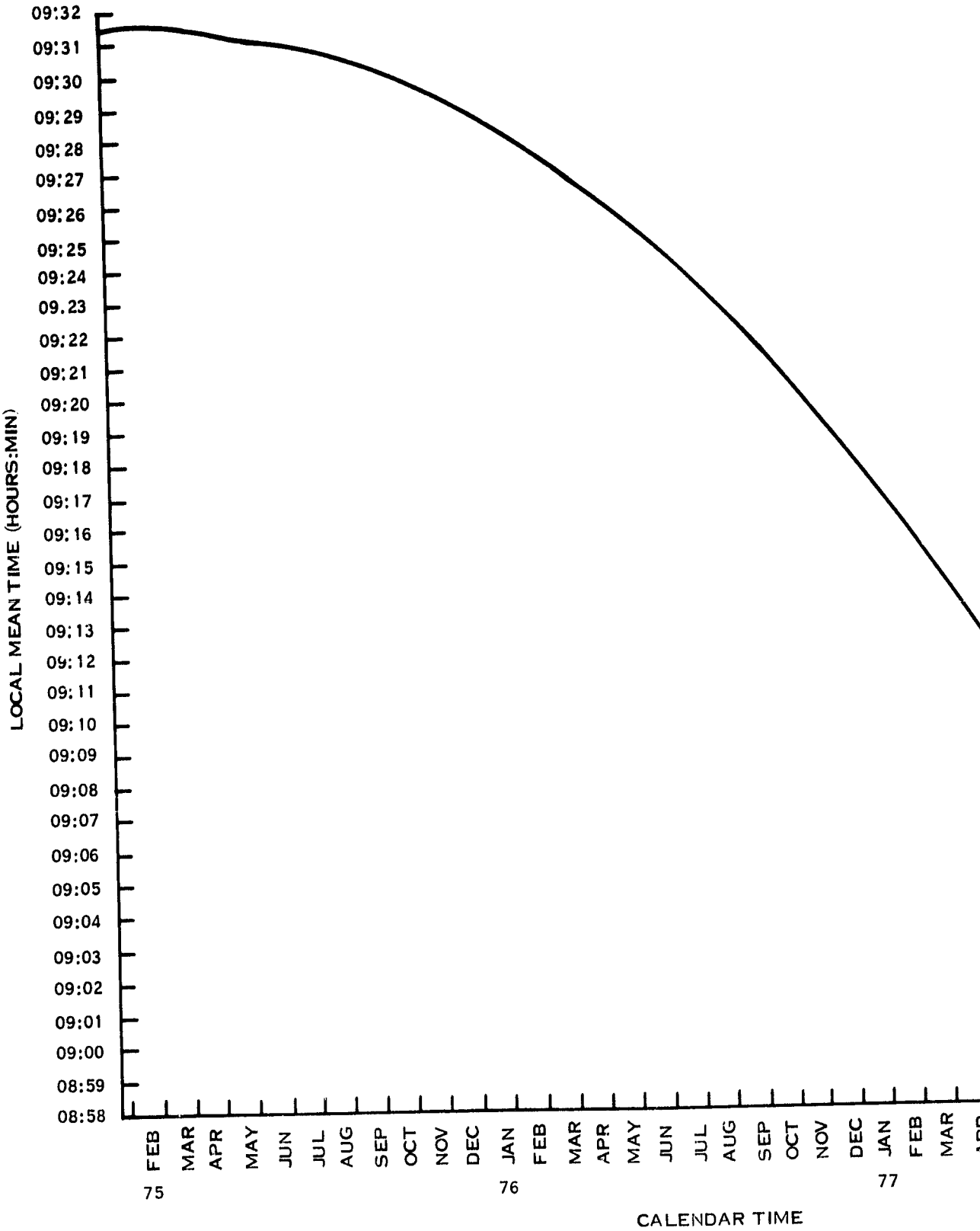


Figure 2-1. Effect of Orbit Adjusts and Pitch Position Bias Orbit Maintenance on Landsat-2's Ground Track



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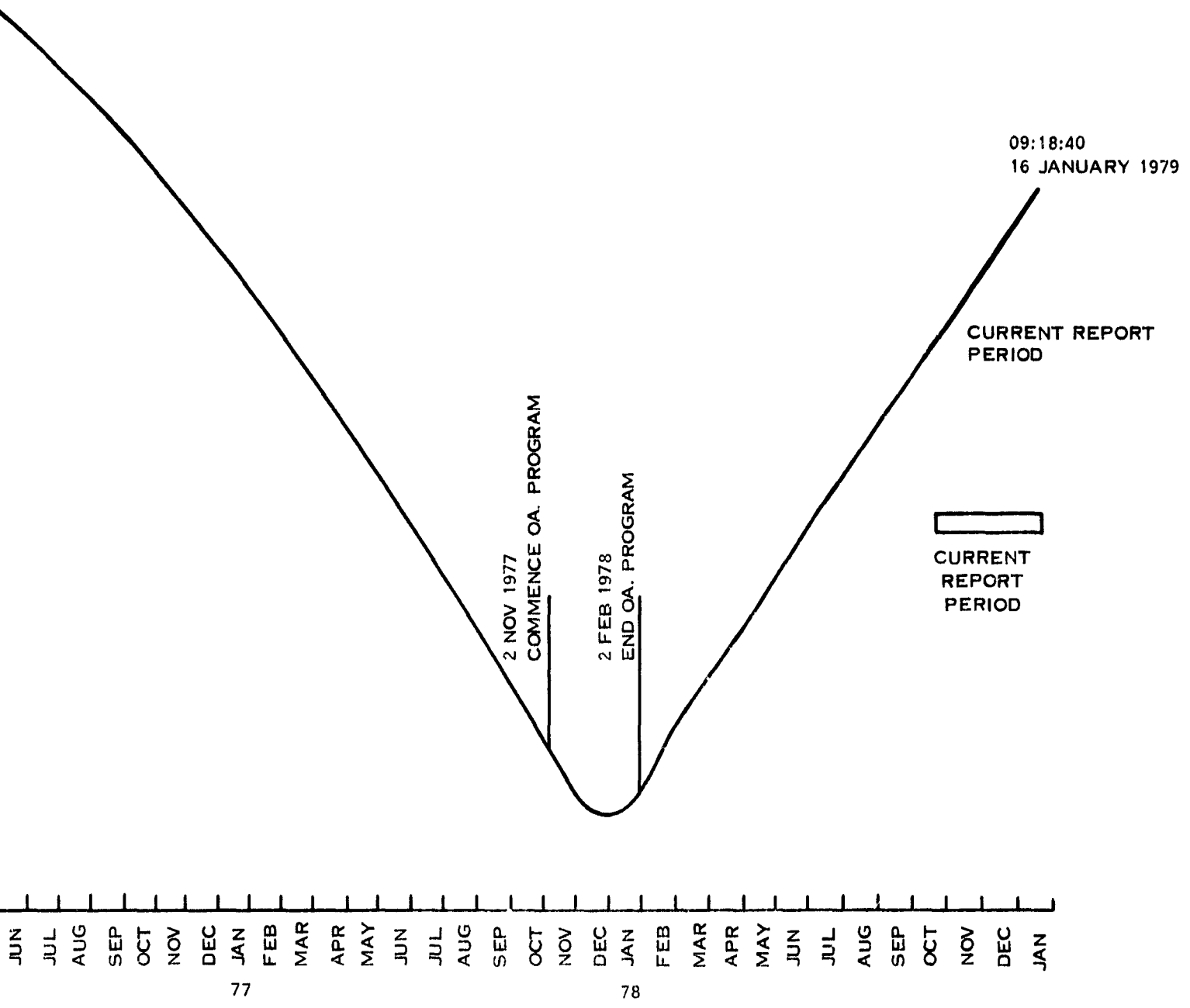

Figure 2-2. Local Mean Time of Descending Node - Landsat-2

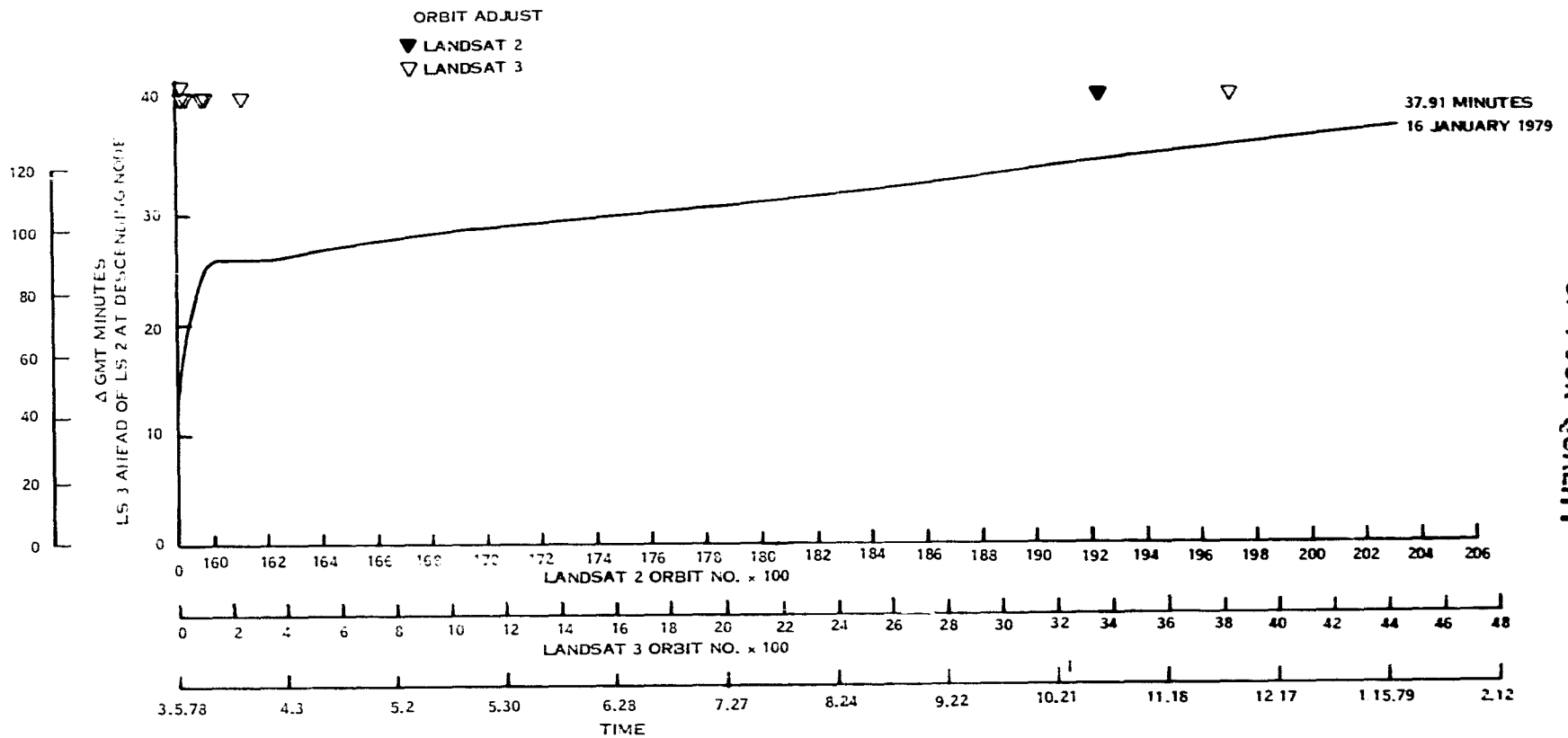

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Figure 2-3. Drift in Angular Phasing Between Landsat-2 and Landsat

Table 2-1. Landsat-2 Brouwer Mean Orbital Parameters

Element Date	Apogee (KM)	Perigee (KM)	Inclination (Deg.)	Semi-Major Axis (KM)	Eccentricity	Anomolistic Period (Min)	Nodal Period (Min)	Argument of Perigee (Deg)	Right Ascension (Deg)	Mean Anomaly (Deg)
25 Jan 1975[1]	915.03	901.56	99.095	7286.462	0.000925	103.165	—	272.852	86.637	139.578
6 Feb 1975[2]	916.84	898.47	99.096	7285.820	0.001260	103.151	—	256.040	99.347	134.523
24 Apr 1975	917.85	897.40	99.079	7285.788	0.001403	103.151	103.266	62.55	174.339	117.183
25 July 1975	917.45	897.68	99.071	7285.733	0.001356	103.150	103.265	166.118	264.891	13.726
23 Oct 1975	916.70	898.49	99.059	7285.762	0.001250	103.150	103.266	282.749	353.366	257.271
24 Jan 1976	917.36	897.81	99.016	7285.751	0.001342	103.150	103.266	31.621	84.584	148.179
23 Apr 1976	917.67	897.44	99.029	7285.721	0.001389	103.149	103.265	139.745	172.774	40.033
22 July 1976	916.62	898.40	99.021	7285.677	0.001251	103.148	103.264	253.964	260.924	286.054
22 Oct. 1976	916.95	898.09	99.009	7285.683	0.001251	103.148	103.264	6.744	350.795	173.119
22 Jan. 1977	917.59	897.47	98.993	7285.693	0.001381	103.149	103.265	111.579	80.587	68.155
22 Apr 1977	916.84	898.09	98.975	7285.633	0.001287	103.147	103.263	221.210	168.277	318.768
24 Jul 1977	916.47	898.46	98.967	7285.632	0.001236	103.147	103.263	334.189	257.806	205.754
23 Oct 1977	917.40	897.52	98.955	7285.627	0.001364	103.147	103.263	81.812	347.225	97.914
22 Jan 1978[3]	915.24	900.32	99.162	7285.943	0.001024	103.154	103.269	191.142	76.302	348.761
22 Apr 1978[4]	914.74	900.97	99.215	7286.022	0.000945	103.156	103.271	309.149	166.247	230.816
23 Jul 2978	915.52	899.91	99.206	7285.880	0.001071	103.153	103.268	62.192	258.093	304.755
23 Oct 1978	915.50	900.07	99.194	7285.923	0.001059	103.154	103.269	162.731	349.853	149.509
16 Jan 1979	914.70	900.89	99.179	7285.938	0.000948	103.154	103.269	296.602	74.498	103.544

1. Post Launch.
2. After the sequence of phasing maneuvers completed in Orbit 212.
3. Interim value - orbit adjust program commenced 2 Nov 1977 was in process
4. Orbit adjust program completed 2 February 1978.

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SECTION 3
POWER SUBSYSTEM (PWR)
LANDSAT-2

SECTION 3

POWER SUBSYSTEM (PWR)

The Power Subsystem on Landsat-2 has performed satisfactorily throughout this report period.

The solar arrays continued to provide excess energy above spacecraft and payload requirements and are expected to support the Landsat-2 mission through 1979. The percentage degradation of the arrays is plotted as a function of days-in-orbit in Figure 3-1, along with the pre-launch predicted array degradation. The array degradation at the end of 48 months in orbit was 21.5% which is higher than predicted. The projected values of midday array current are plotted in Figure 3-2. Here the array current is adjusted for sun intensity and array degradation, as well as sun angle. Along with the same curve is plotted the actual telemetry values observed until the end of the current report period.

The battery packs on-line ranged from 8.0 to 9.3% depth of discharge (DOD) during this report period. When any battery reached high charge-to-discharge current ratios (C/D) it was turned OFF for a restoration cycle of a few weeks, leaving 6 batteries on-line at all times. The history of these restoration cycles is shown in Table 3-1. All battery-pack performance remained satisfactory. Battery voltages have been maintained within suitable limits with Landsat-2 power management procedure, excess array energy being dissipated through auxiliary loads. Temperatures ranged from 16.7°C to 30.6°C during this report period.

The power subsystem electronics have performed well during this report period with all regulated voltage stable. Table 3-2 shows major subsystem parameters and Table 3-3 shows power subsystem telemetry for selected orbits. Some parameters in Table 3-2 may be slightly different from those in Table 3-3 because Table 3-2 uses a power management time span (night followed by day), whereas the time span used in Table 3-3 is the playback period from the NBR.

The shunt limiter on Landsat-2 has operated several times since launch and has held the solar array bus voltage at specified levels.

Figure 3-3 shows the actual variation in sun angle to orbit plane and solar panels for Landsat-2. Figure 3-4 is a prediction of the sun angle through 1979 for Landsat-2.

Many orbits have again displayed the characteristics of notching in the array current telemetry. This condition is presumed to be sets of parallel solar cells with intermittent electrical connections, probably located where temperature extremes exist. The phenomenon occurred last year also.

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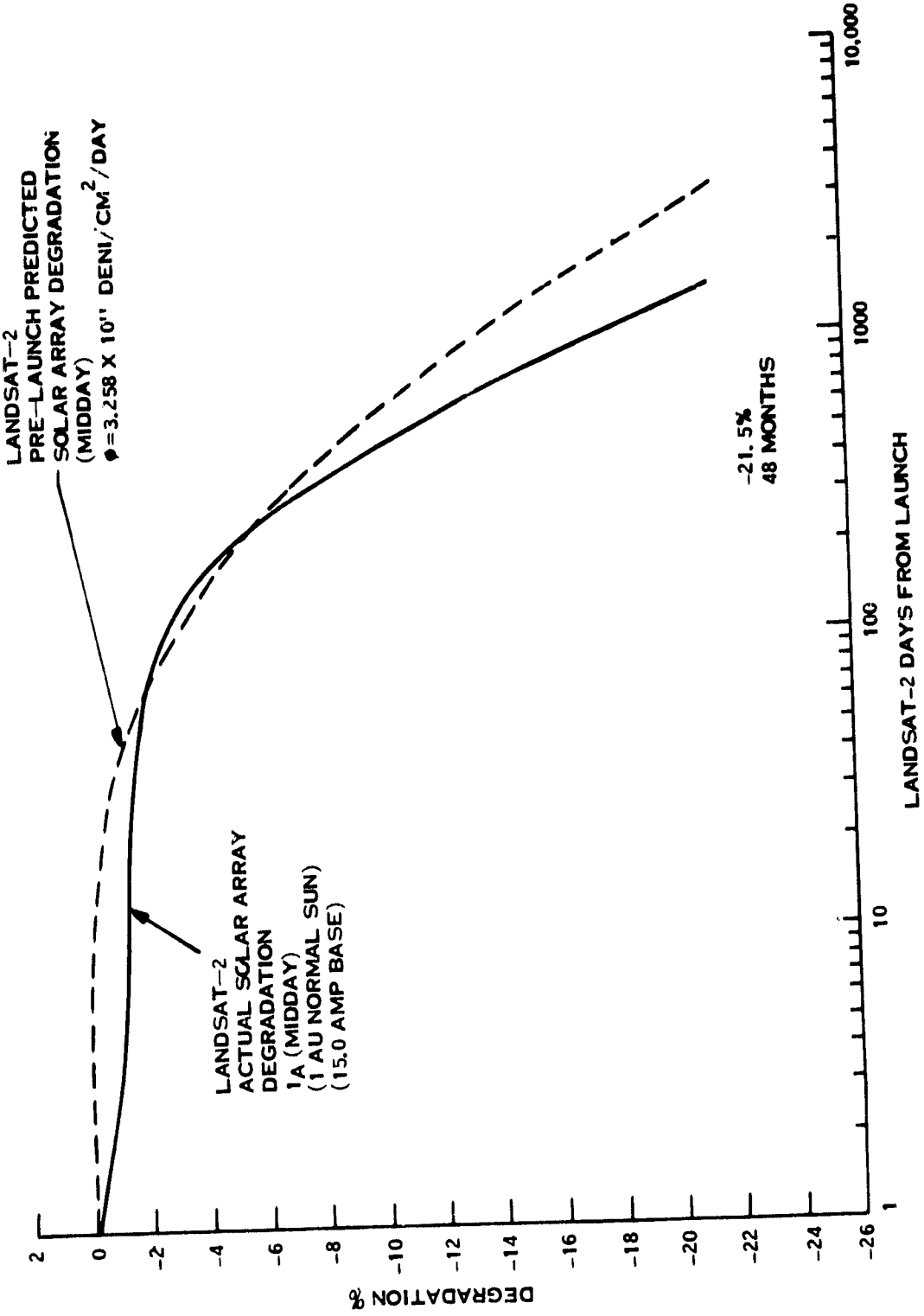
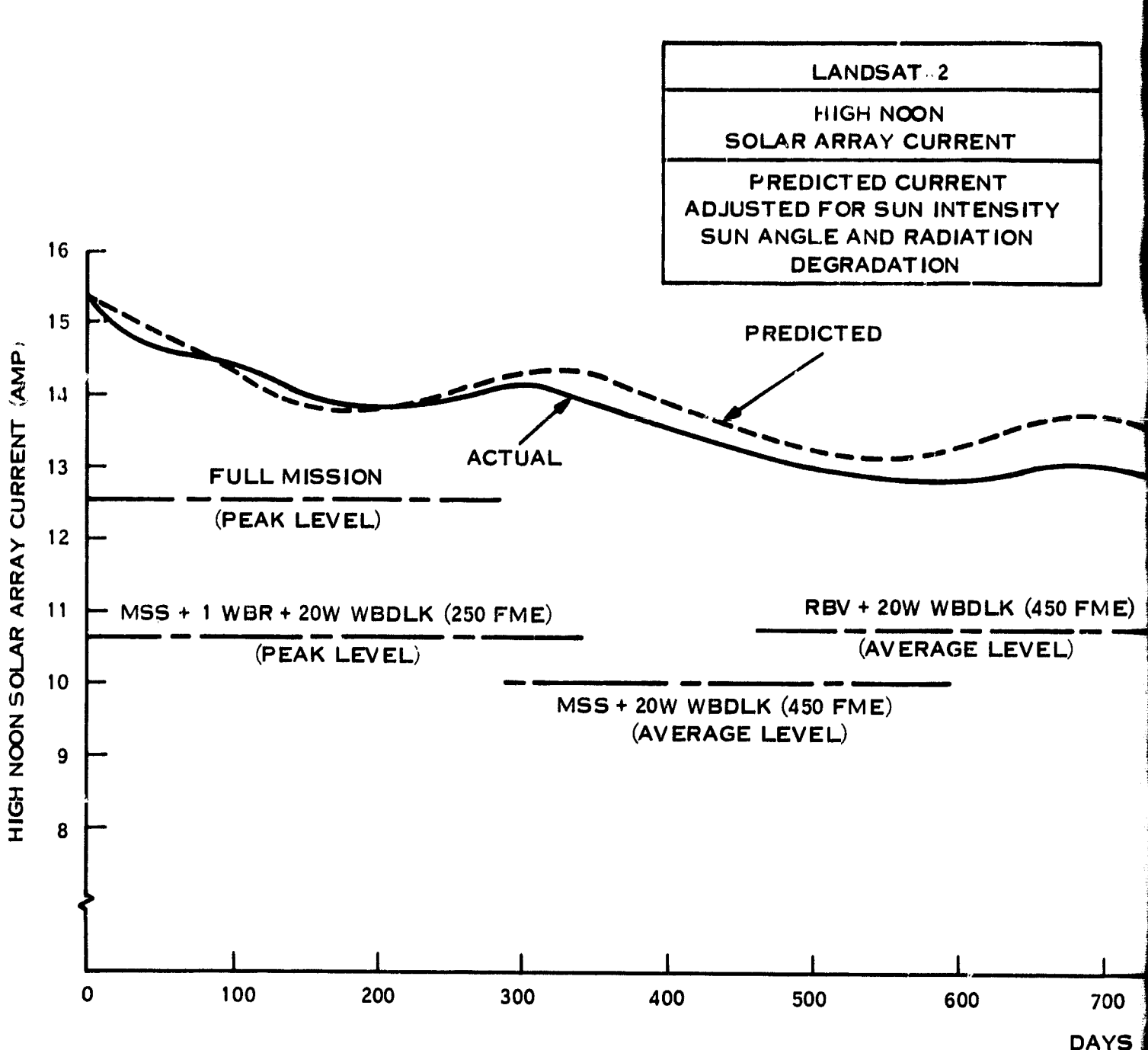


Figure 3-1. Landsat-2 Midday Solar Array Degradation vs. Days from Launch



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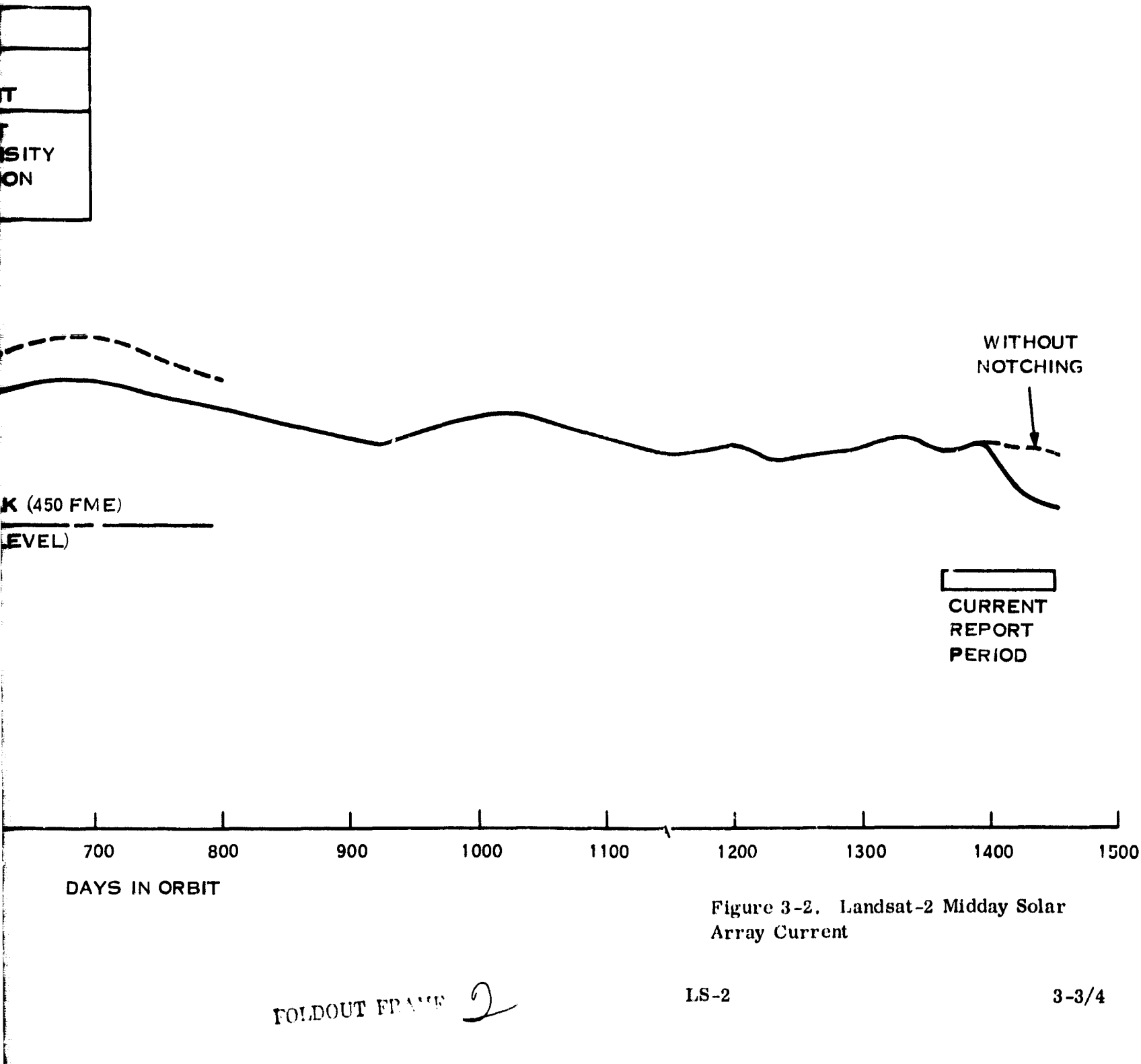

Figure 3-2. Landsat-2 Midday Solar Array Current

			1	2	3	4	5	6	7	8	9	
BATT. 1	OFF	ORB	8029	11420	12562	13580	14870	17851	19791	20240		
		DATE	8-20-76	4-20-77	7-11-77	9-22-77	12-24-77	7-27-78	12-11-78	1-13-79		
	ON	ORB	8509	11947	12964	13670	15048	18088	19945			
		DATE	9-23-76	5-28-77	8-9-77	9-29-77	1-5-78	8-11-78	12-22-78			
BATT. 2	OFF	ORB	12078	18279								
		DATE	6-6-77	8-25-79								
	ON	ORB	12272	18942								
		DATE	6-20-77	10-12-78								
BATT. 3	OFF	ORB										
		DATE										
	ON	ORB										
		DATE										
BATT. 4	OFF	ORB										
		DATE										
	ON	ORB										
		DATE										
BATT. 5	OFF	ORB	10249	15297	19945							
		DATE	1-26-77	1-23-78	12-22-78							
	ON	ORB	10657	15354	20240							
		DATE	2-24-77	2-2-78	1-13-79							
BATT. 6	OFF	ORB	7601	8591	9652	10962	11993	12271	12965	13454	13677	14
		DATE	7-20-76	10-28-76	12-7-76	3-18-77	5-31-77	6-20-77	8-9-77	9-13-77	9-29-77	11-
	ON	ORB	7992	9164	10028	11311	12077	12532	13159	13486	13836	14
		DATE	8-17-76	11-9-76	1-10-77	4-12-77	6-6-77	7-9-77	8-23-77	9-15-77	10-10-77	11-
BATT. 7	OFF	ORB	13489	13959	18098	19900	20237	24240				
		DATE	9-16-77	10-19-77	8-12-78	12-14-78	1-12-79	1-13-79				
	ON	ORB	13570	14159	18277	20002	20238					
		DATE	9-21-77	11-3-77	8-25-78	12-27-78	1-12-79					
BATT. 8	OFF	ORB	13161	19339								
		DATE	8-23-77	11-9-78								
	ON	ORB	13444	19737								
		DATE	9-12-77	12-8-78								

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	9	10	11	12	13	14	15	16	17	18	19	20
0 79												
4 77	13677 9-29-77	14230 11-8-77	14571 12-2-77	14710 12-12-77	15354 2-2-78	15983 3-13-78	17696 7-14-78	18265 8-24-78	18279 8-25-79	19203 10-30-78	19791 12-11-78	19998 12-26-78
6 77	13836 10-10-77	14325 11-15-77	14615 12-5-77	14755 12-15-77	15550 2-10-78	16125 3-24-78	17840 7-24-78	18277 8-25-78	18436 9-5-78	19332 11-8-78	19876 12-18-78	2-238 1-13-79

Table 3-1. Landsat-2 Battery Restoration Cycle

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Table 3-2. Landsat-2 Major Power Subsystem Parameters

	ORBIT							
Pwr. Mgmt. Orbit No.	50	5100	10192	15211	17711	19451	19881	20252
Batt 1 Max	33.43	32.66	32.57	32.48	33.17	32.74	F	F
2 Chge	33.40	32.63	32.54	32.46	33.23	32.71	32.46	32.80
3 Volts	33.36	32.57	32.57	32.41	33.26	32.75	32.49	32.92
4	33.45	32.68	32.59	32.51	33.28	32.85	32.51	32.85
5	33.42	32.65	32.56	32.56	33.33	32.91	32.48	32.91
6	33.41	32.64	32.56	F	F	32.82	32.56	32.90
7	33.45	32.68	32.59	32.51	33.28	32.85	32.42	F
8	33.45	32.68	32.59	32.50	33.27	F	32.50	32.94
Average	33.42	32.65	32.57	32.50	32.67	32.80	32.49	32.89
Batt 1 End-of-Night	29.32	29.06	28.98	28.55	28.98	28.80	F	F
2 Volts	29.38	29.04	28.95	28.61	28.95	28.87	28.95	28.95
3	29.32	29.07	28.89	28.64	28.98	28.89	28.89	28.89
4	29.34	29.09	28.91	28.57	29.00	28.91	28.91	28.91
5	29.40	29.06	28.97	28.63	28.97	28.89	28.89	28.97
6	29.31	28.96	28.88	F	28.54	28.79	28.88	28.88
7	29.34	29.08	29.00	28.65	29.00	28.91	28.91	F
8	29.34	29.00	28.91	28.57	29.00	F	28.91	28.91
Average	29.34	29.04	28.94	28.40	28.93	28.88	28.91	28.92
Batt 1 Chge	12.76	21.43	13.74	15.00	18.33	17.61	F	F
2 Share	11.68	11.42	11.44	13.67	14.37	14.93	14.08	16.86
3 (%)	12.24	12.48	12.41	13.64	13.90	13.09	12.74	15.81
4	11.99	11.76	11.81	13.55	13.30	12.54	12.21	11.82
5	12.84	13.24	12.95	14.48	12.41	12.49	13.41	17.25
6	13.35	14.32	15.14	F	F	13.90	14.36	17.57
7	12.90	12.97	11.74	14.88	13.76	13.98	18.61	F
8	12.24	11.38	10.77	13.78	12.99	F	13.44	15.79
Batt 1 Load	12.60	11.80	11.16	14.84	13.08	12.21	F	F
2 Share	12.70	13.34	14.14	15.41	16.01	18.77	18.33	18.96
3 (%)	12.67	13.74	13.94	13.80	15.88	15.27	15.27	16.90
4	12.44	12.48	13.00	13.80	15.05	14.55	14.45	15.24
5	12.34	12.36	9.96	13.80	13.33	12.67	11.22	16.87
6	12.70	11.56	15.27	F	F	12.97	14.87	17.01
7	12.47	12.70	11.33	14.46	13.00	13.56	10.43	F
8	12.04	12.02	11.21	13.88	13.64	F	15.41	15.01
Batt 1 Temp	21.46	21.94	22.71	21.78	22.74	23.45	20.25	20.67
2 In	20.25	19.94	20.30	19.60	20.34	19.58	19.32	19.77
3 (°C)	18.60	17.86	17.52	17.22	16.96	17.07	16.92	17.35
4	20.83	20.36	20.36	20.97	19.79	20.26	20.38	20.46
5	24.98	27.27	30.49	34.34	22.37	25.31	27.67	28.47
6	24.26	27.28	27.69	30.39	21.16	24.87	25.74	26.72
7	24.71	26.32	27.01	29.26	23.79	25.55	29.58	25.65
8	23.63	24.41	24.55	25 66	22.66	22.77	24.15	24.50
Average	22.34	23.17	23.83	25.90	21.23	22.36	23.00	22.95
S/C Reg Bus Pwr. (W)	N	149.30	154.49	143.60	132.3	138.67	135.73	125.20
Comp Load Pwr. (W)	N	24.80	6.64	0.00	0.00	0.00	0.00	0.00
P/L Reg Bus Pwr. (W)	N	9.8	9.59	9.90	9.5	12.25	9.56	9.31
C/D Ratio	1.15	1.11	1.24	1.46	1.36	1.28	1.15	1.20
Total Charge (A-M)	271.90	223.46	223.51	243.06	258.43	238.85	206.39	201.56
Total Discharge (A-M)	237.20	201.45	180.84	166.79	190.08	186.52	180.20	168.22
Solar Array (A-M)	1106	1003	939	821.90	829.3	872.3	829.4*	825.4*
S.A. Peak I (Amp)	16.05	14.43	13.25	11.99	12.24	12.86	12.78	12.39
Midday Array I (Amp)	N	13.72	12.86	11.92	11.61	12.00	11.14*	10.99*
Sun Angle (Deg)(γ)	N	8.35	10.70	14.80	2.35	5.00	6.98	9.71
Max R Pad Temp (°C)	N	63.20	58.40	53.27	55.09	+60.80	+62.00	+59.60
Min R Pad Temp (°C)	N	-35.00	-34.40	-36.80	-37.40	-35.00	-34.40	-32.60
Max L Pad Temp (°C)	N	62.15	62.15	56.92	56.92	+62.15	+64.31	+62.15
Min L Pad Temp (°C)	N	-42.14	-39.43	-38.86	-44.29	-42.86	-41.43	-38.86

N - Data Not Available
F - Unit Off
*Intermittent Temperature Sensitive Dropouts Present

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Table 3-3. Landsat-2 Power Subsystem Analog Telemetry (Average Value for Data Received in NBTR Playback)

Func	Description	Unit	Orbits							
			50	5102	10192	15211	17711	19451	19881	20252
6001	Batt 1 Disc 1	Amp	1.01	0.74	0.52	0.66	0.70	0.63	F	F
6002	2		1.01	0.84	0.65	0.71	0.84	0.99	0.98	1.12
6003	3		1.00	0.87	0.64	0.62	0.85	0.81	0.83	0.98
6004	4		1.00	0.78	0.60	0.63	0.80	0.75	0.80	0.90
6005	5		0.99	0.78	0.47	0.63	0.71	0.63	0.63	0.98
6006*	6		1.02	0.73	0.70	F	F	0.68	0.81	0.99
6007	7		1.00	0.80	0.52	0.66	0.69	0.68	0.59	F
6008	8		0.97	0.75	0.52	0.52	0.72	F	0.85	0.87
6011	Batt 1 Chg 1	Amp	0.47	0.42	0.46	0.52	0.72	0.61	F	F
6012	2		0.43	0.38	0.37	0.47	0.56	0.52	0.43	0.45
6013	3		0.45	0.42	0.40	0.47	0.54	0.46	0.39	0.43
6014	4		0.44	0.39	0.39	0.48	0.51	0.44	0.38	0.40
6015	5		0.47	0.44	0.45	0.51	0.48	0.44	0.42	0.47
6016*	6		0.49	0.47	0.49	F	F	0.48	0.44	0.47
6017	7		0.47	0.43	0.40	0.52	0.53	0.49	0.58	F
6018	8		0.45	0.38	0.36	0.49	0.50	F	0.41	0.43
6021	Batt 1 Volt	VDC	31.50	31.11	30.79	30.71	31.28	31.10	F	F
6022	2		31.48	31.09	30.80	30.68	31.30	31.12	31.06	31.28
6023	3		31.49	31.10	30.81	30.70	31.33	31.14	31.08	31.30
6024	4		31.49	31.10	30.81	30.70	31.33	31.14	31.08	31.30
6025	5		31.50	31.11	30.79	30.73	31.34	31.14	31.07	31.31
6026*	6		31.49	31.08	30.80	F	F	31.13	31.08	31.31
6027	7		31.52	31.14	30.83	30.74	31.35	31.16	31.06	F
6028	8		31.49	31.11	30.81	30.71	31.33	F	31.09	31.30
6031	Batt 1 Temp	DGC	21.59	21.91	22.67	21.73	22.79	23.36	20.25	20.66
6032	2		20.53	19.90	20.36	19.51	20.38	19.55	19.23	19.74
6033	3		18.80	17.77	17.54	17.06	17.02	17.01	16.94	17.34
6034	4		20.90	20.33	20.43	20.94	19.83	20.21	20.39	20.48
6035	5		25.16	27.18	30.52	34.20	22.38	25.23	27.71	28.47
6036	6		24.37	27.19	27.67	30.32	21.15	24.81	25.73	26.72
6037	7		24.83	26.19	26.95	29.20	23.81	25.54	29.62	25.64
6038	8		23.75	24.36	24.49	25.63	22.70	22.78	24.17	24.53
6040	Rt. Pad Temp	DGC	28.96	30.90	26.11	24.98	22.58	28.34	28.54	28.16
6041	Rt Pad VM	VDC	33.72	32.86	31.44	30.53	33.37	32.82	32.55	32.15
6042	Rt Pad VN	VDC	33.46	32.44	31.27	21.60	32.41	31.98	31.85	32.04
6044	Lt. Pad Temp	DGC	25.56	28.72	26.41	27.99	21.32	28.08	28.47	29.07
6045	Lt Pad VF	VDC	34.40	33.82	33.36	33.24	34.25	33.93	33.81	34.13
6046	Lt. Pad VG	VDC	34.48	33.91	33.45	33.32	34.34	34.01	33.91	34.21
6050	S C UR Bus V	VDC	31.73	31.33	30.93	30.99	31.53	31.35	31.30	31.36
6051	S C RG Bus V	VDC	24.57	24.58	24.57	24.58	24.58	24.58	24.58	24.58
6052	Aux Reg AV	VDC	23.36	23.44	23.44	23.44	23.44	23.41	23.44	23.45
6053	Aux Reg BV	VDC	23.37	23.44	23.43	23.44	23.44	23.44	23.44	23.45
6054	Solar 1	Amp	14.81	13.40	12.25	10.57	11.31	11.80	11.17	10.94
6056	S C RG Bus 1	Amp	7.23	6.28	6.41	5.86	5.40	5.61	5.38	5.11
6058	PC Mod T1	DGC	21.67	20.77	20.08	20.37	19.42	19.45	19.68	19.60
6059	PC Mod T2	DGC	20.44	19.56	19.16	18.94	18.69	18.69	18.64	18.75
6070	P L RG Bus V	VDC	24.61	24.00	24.59	24.59	24.61	24.61	24.60	24.62
6071	P L UR Bus V	VDC	31.85	31.40	30.97	31.03	31.63	31.43	31.36	31.65
6073	P Aux AV	VDC	23.47	23.51	23.50	23.50	23.50	23.51	23.51	23.50
6074	P Aux BV	VDC	23.46	23.51	23.50	23.50	23.50	23.51	23.51	23.50
6075	PR Mod T1	DGC	20.84	20.32	20.82	20.23	20.30	19.99	19.68	20.02
6076	PR Mod T2	DGC	22.13	21.79	22.14	21.77	21.82	21.65	21.45	21.92
6079	Fuse Blow V	VDC	24.48	24.49	24.48	24.49	24.48	24.48	24.47	24.48
6080	Shunt 1 1	Amp	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00
6081	2		0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00
6082	3		0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00
6083	4		0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00
6084	5		0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00
6085	6		0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00
6086	7		0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00
6087	8		0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00
6100	P L RG Bus 1	Amp	0.38	0.54	0.40	0.41	0.39	0.50	0.47	0.39
Total No. Major Frames		Frm	396	785	697	725	690	381	783	394

*Intermittent Temperature Sensitive Dropout Present

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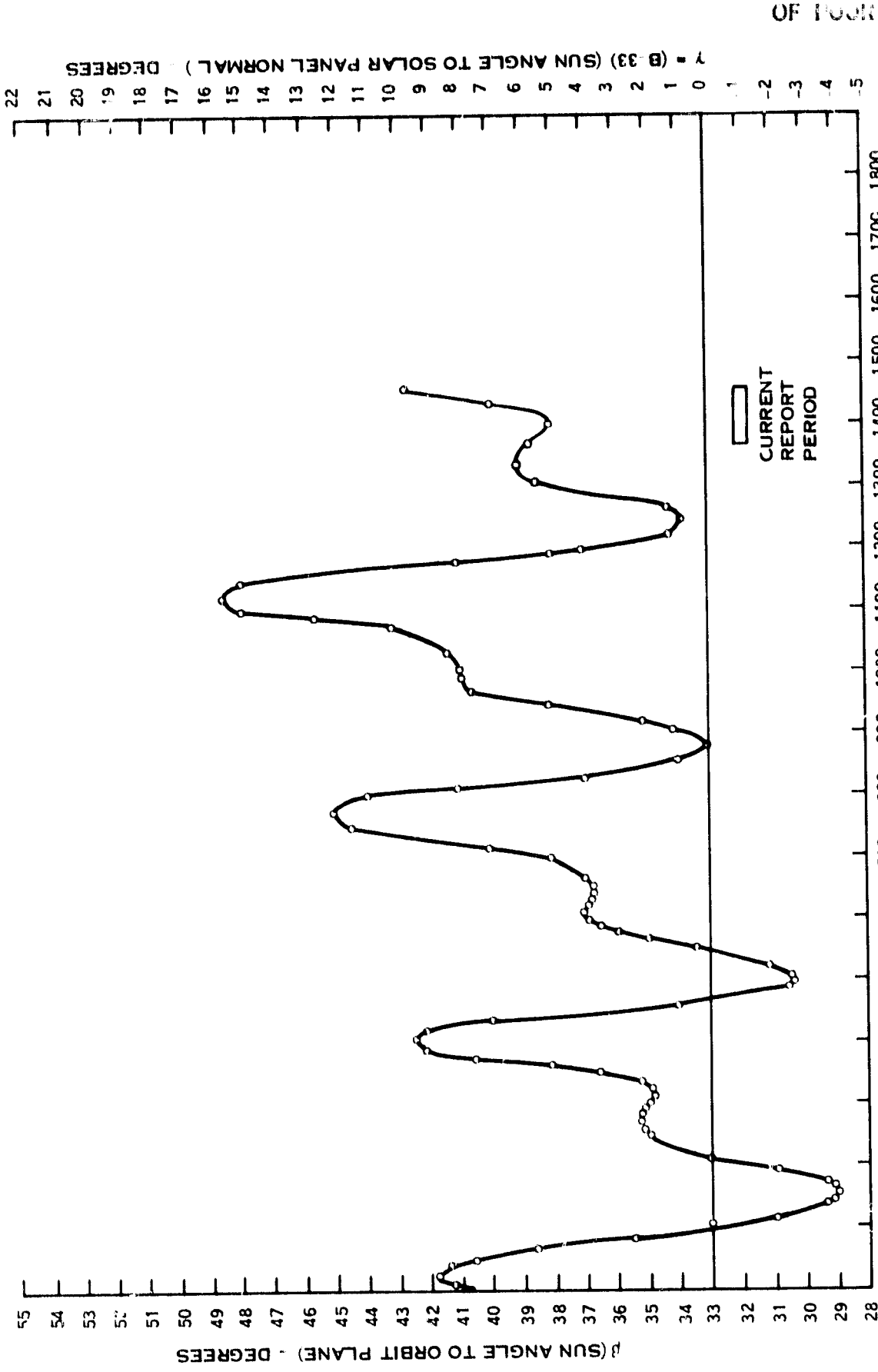

Figure 3-3. Landsat Actual β (Orbit Plane) and α (Solar Panel) Sun Angles

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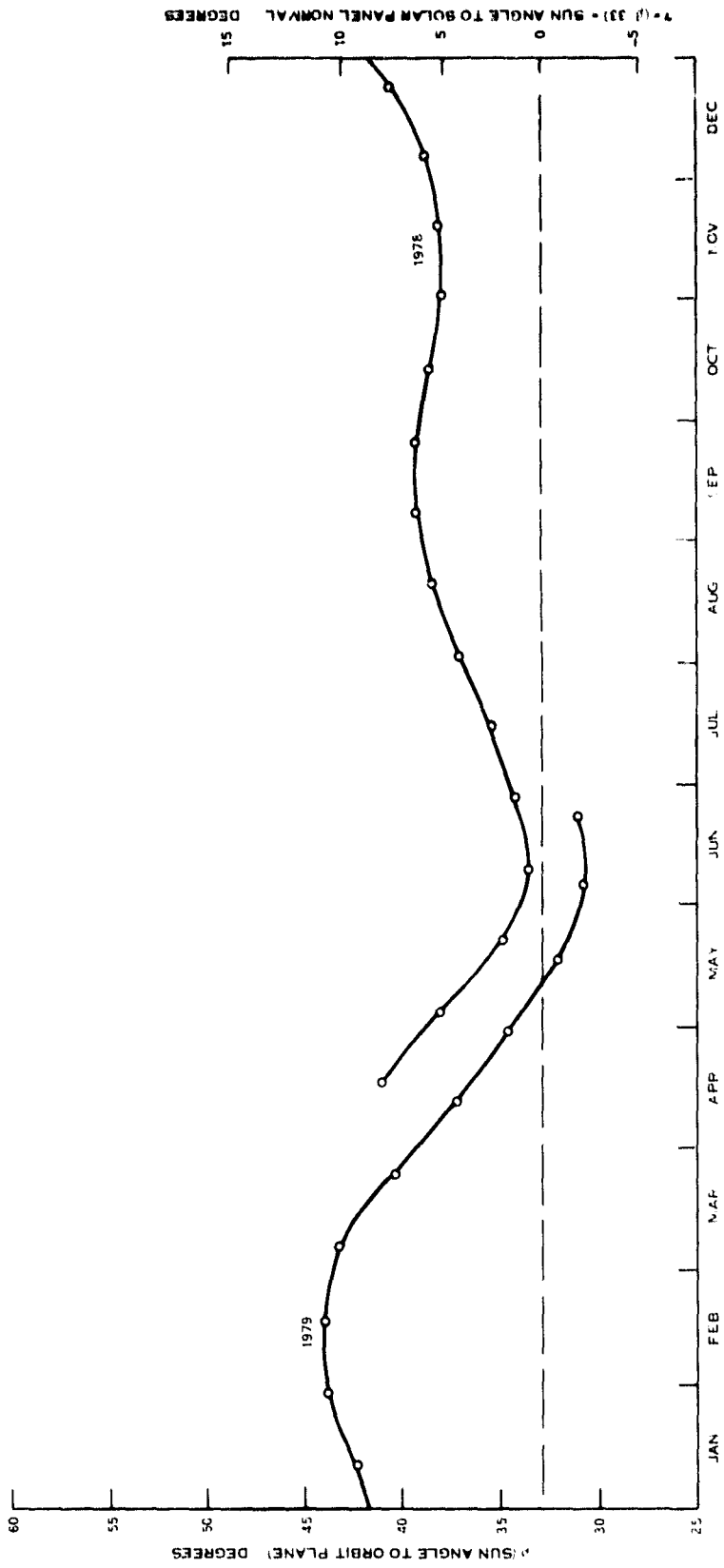


Figure 3-4. Predicted Beta Angle for LS-2

SECTION 4

ATTITUDE CONTROL SUBSYSTEM (ACS)
LANDSAT-2

SECTION 4

ATTITUDE CONTROL SYSTEM (ACS)

Landsat 2's Attitude Control System has performed normally since launch and has consistently maintained correct spacecraft attitude.

In order to conserve freon, Pitch Position Bias is implemented - via COMSTOR - in every spacecraft night to minimize Pitch flywheel speed and thus prevent Pitch gating.

To unload Roll Wheel momentum, 2 to 3 pneumatic momentary enables are included in the COMSTOR bias schedule.

Table 4-1 shows the bias sequences maintained during this report period.

Actual freon consumption along with a plot of predicted freon consumption is shown in Figure 4-1.

Landsat 2's gating profile since launch is shown in Figure 4-2 while Figure 4-3 shows the spacecraft's cumulative gating history.

An orbit adjust (see Section 7) was conducted during Orbit 19246 (2 November 1978) with the ACS in the Orbit Adjust mode and with pneumatics enabled. Spacecraft attitude was maintained without event.

RMP1 was exercised twice in the back-up mode during this report period. The first occasion was in conjunction with the orbit adjust maneuver. The second occasion was a precautionary measure taken during Orbits 20202 through 20204 (10 January 1979) while a false anomaly in RMP2 was being investigated.

Flywheel duty cycles remain low (3 to 8 percent) and dual scanner sun transient response is normal.

Both SADS are tracking the sun and their motor voltage and tachometer signatures are normal.

System's temperatures, pressures, voltages and currents have all been normal as shown in Telemetry Summary, Tables 4-2, 4-3 and 4-4.

Table 4-1. Landsat 2 Pitch Position Bias Quarterly Pneumatic Gating Summary

Period		PPB Implementation Sequence			Minutes Positioned About Satellite Midnight, T_o		Resulting Average Number of Pitch Gates Per Day
From Orbit	To Orbit	N_o*	$N_o + 1$	$N_o + 2$	From	To	
19093 23 Oct 78	19161 27 Oct 78	$+2.9^o$	$+2.9^o$	$+2.9^o$	$T_o - 23$	$T_o - 6$	.60(-P)
19162 27 Oct 78	19353 10 Nov 78	$+2.9^o$	$+2.9^o$	$+2.9^o$	$T_o - 22$	$T_o + 5$	.71(-P)
19354 10 Nov 78	19606 28 Nov 78	$+2.9^o$	$+2.9^o$	$+2.9^o$	$T_o - 23$	$T_o + 1$	.64(-P)
19607 28 Nov 78	20106 3 Jan 79	$+2.9^o$	$+2.9$	$+2.9^o$	$T_o - 23$	$T_o - 2$	.11(-P)
20107 3 Jan 79	20293 16 Jan 79	$+2.9^o$	$+2.9^o$	$+2.9^o$	$T_o - 23$	$T_o - 5$	.38(-P)

*N_o Equals Satellite Night

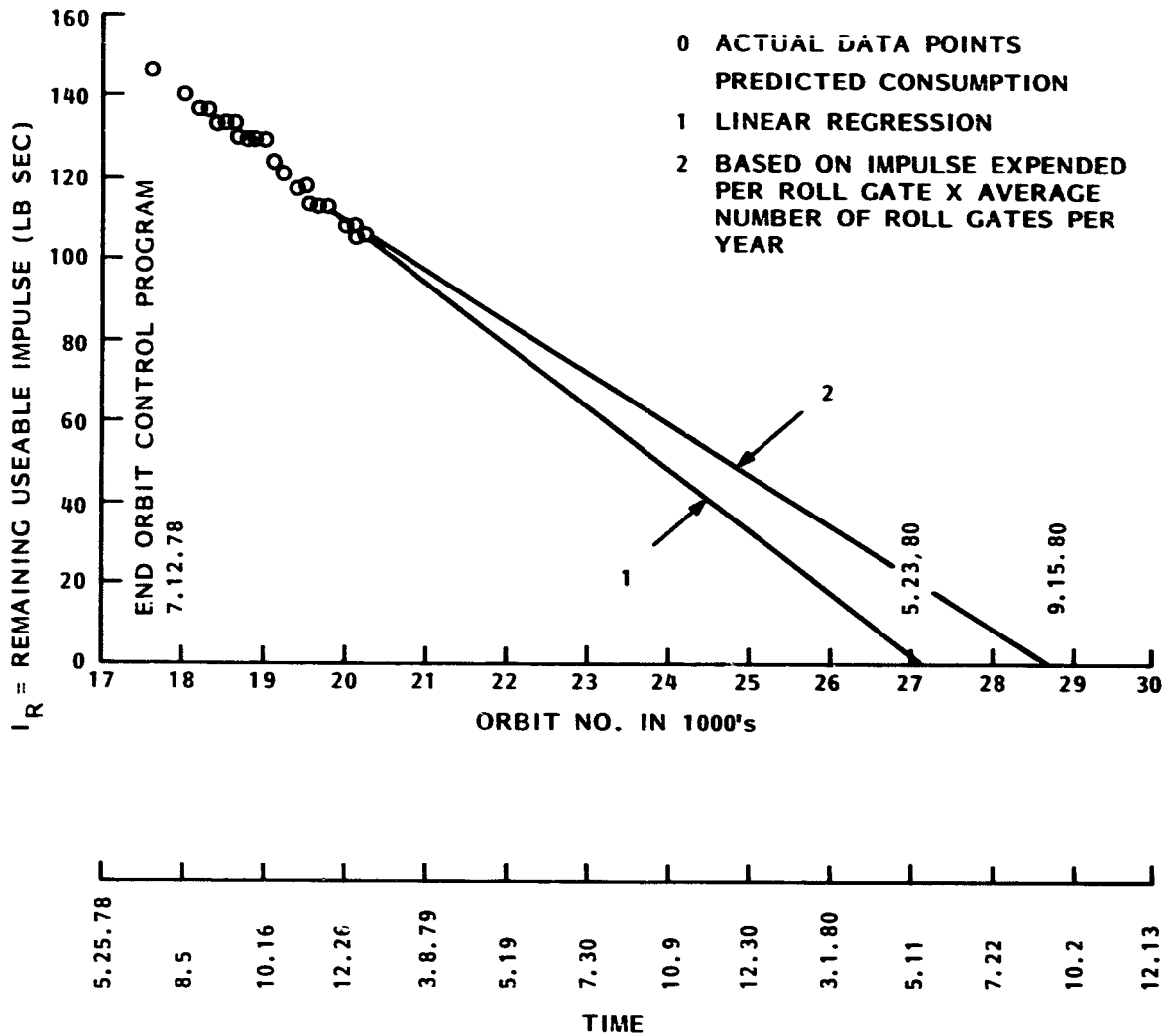
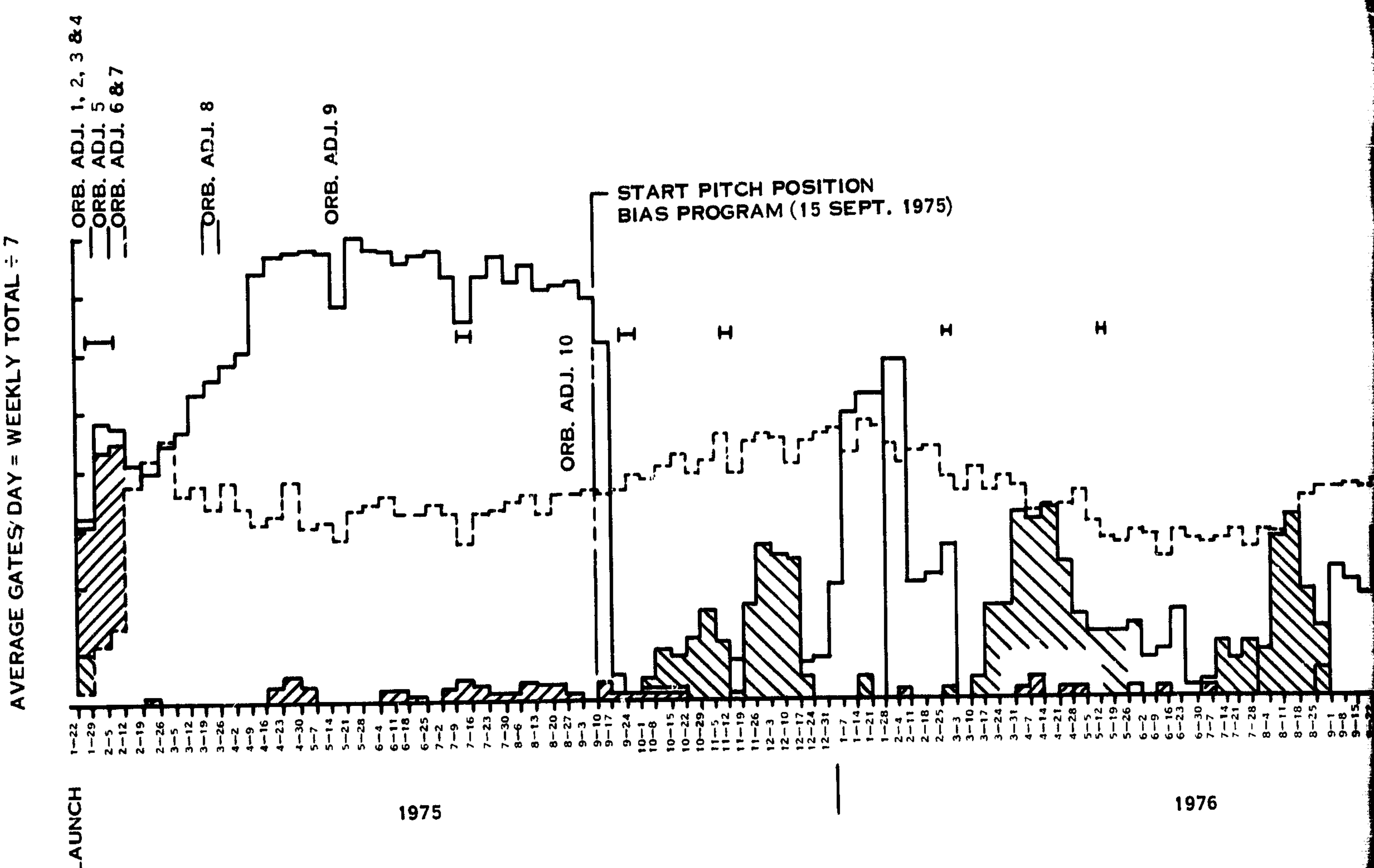


Figure 4-1. Landsat-2 Freon Life Expectancy Prediction



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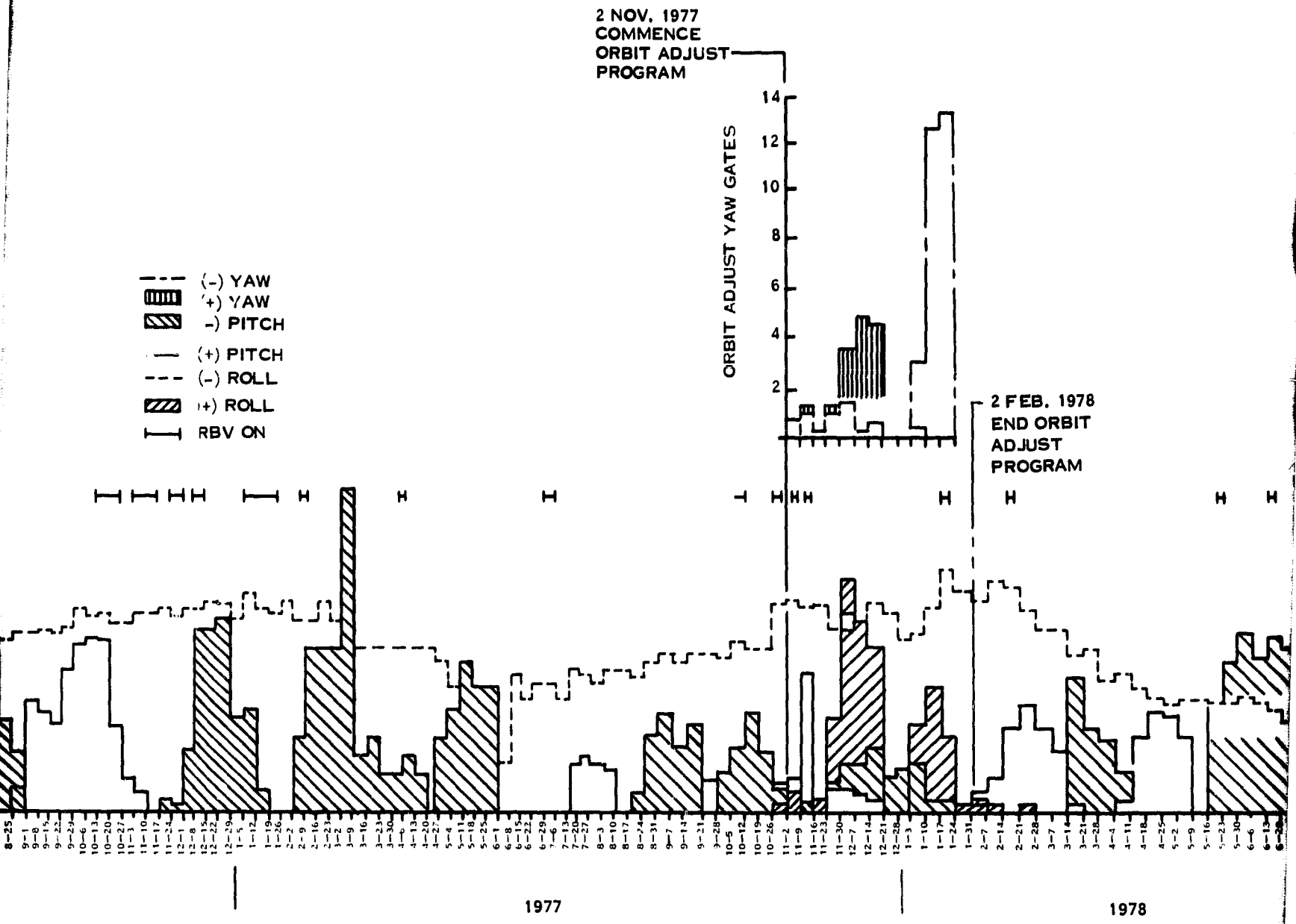

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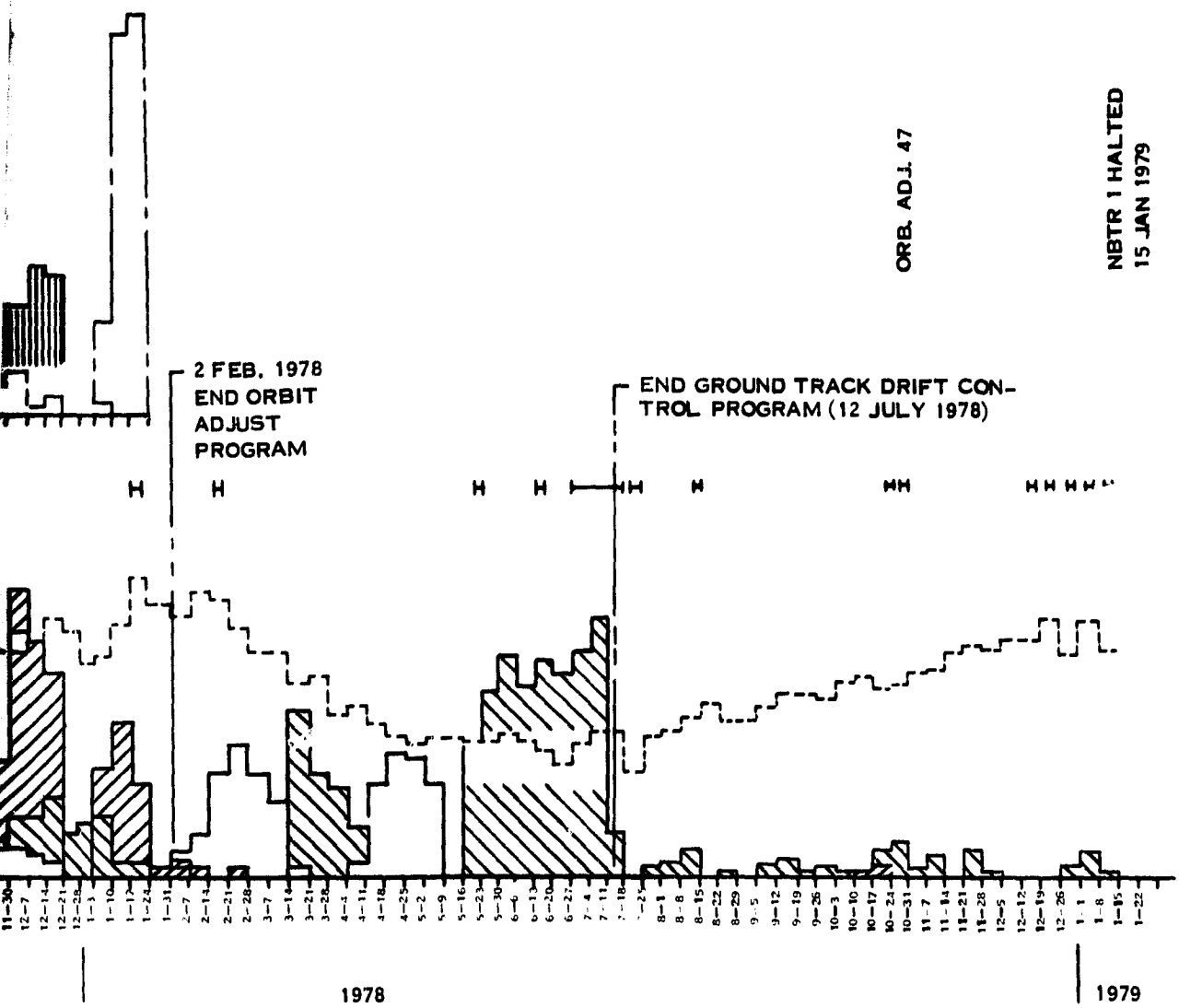

Figure 4-2. Landsat-2 Gating Frequency vs Time

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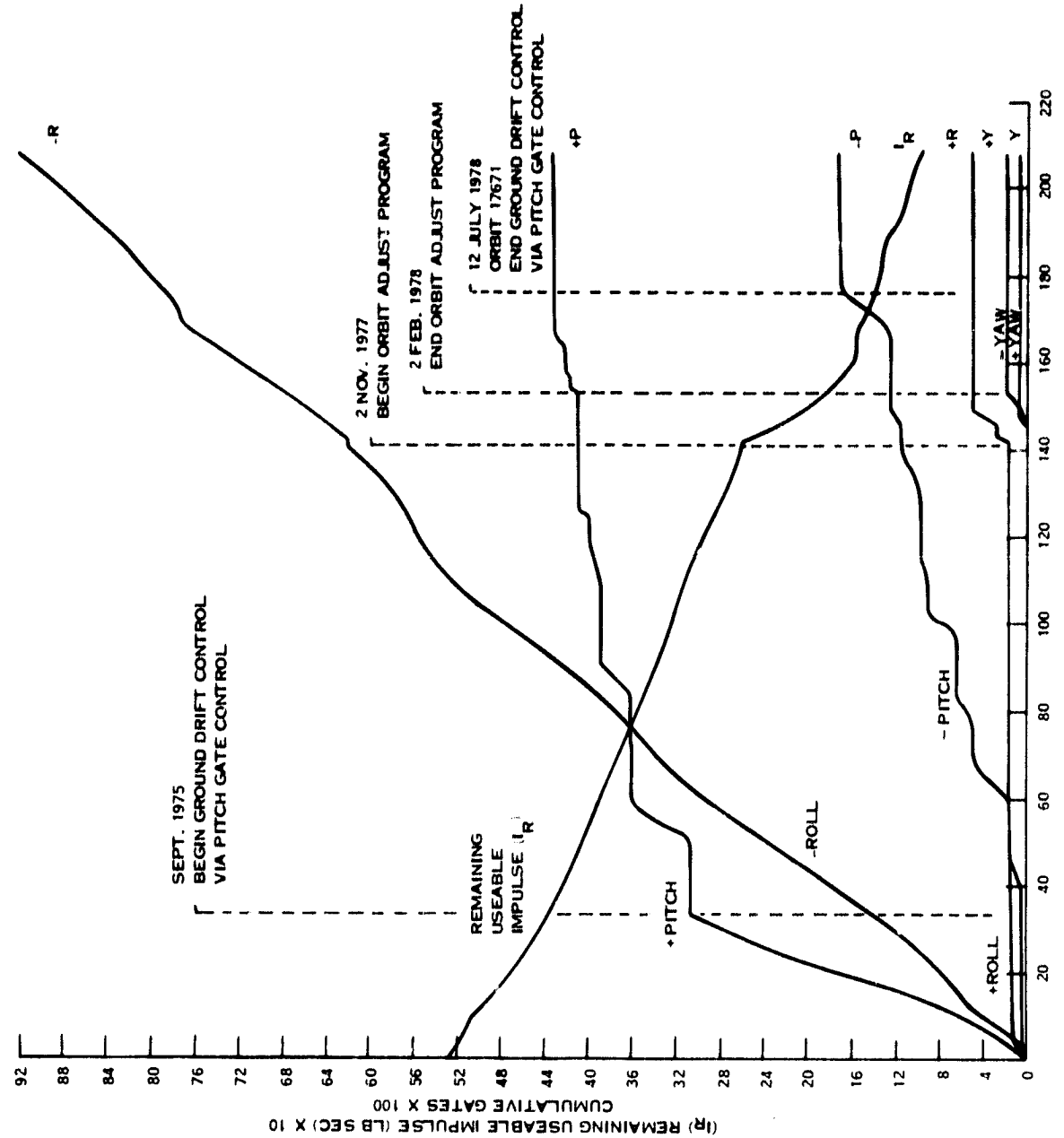

Figure 4-3. Landsat-2 Cumulative Gating History

Table 4-2. Landsat-2 ACS Subsystem Temperature and Pressure Average

Func	Name	Units	Orbits							
			29	5102	10191	15211	17711	19430	19881	20252
1084	RMP 1 Gyro Temperature	DGC	19.33[1]	22.69	22.70	20.21[3]	23.32	25.48	25.29	24.30
1094	RMP 2 Gyro Temperature	DGC	70.00	74.26	74.50	65.14	64.30	64.53	64.49	64.23
1222	SAD RT MTR HSNG Temp.	DGC	19.50	22.98	22.73	20.06	24.41	26.10	25.87	24.45
1242	SAD LT MTR HSNG Temp.	DGC	26.87	29.79	30.26	28.17	30.19	32.29	32.41	31.71
1223	SAD RT MTR WNDNG Temp.	DGC	21.76	24.36	23.72	20.87	25.90	27.38	26.97	25.31
1243	SAD LT MTR WNDNG Temp.	DGC	30.23	32.83	33.15	30.47	32.90	35.51	35.53	34.69
1228	SAD RT HSG Pressure	PSI	7.26	7.18	7.00	6.77	6.77	6.77	6.77	6.77
1248	SAD LT HSG Pressure	PSI	7.28	7.21	6.91	6.46	6.48	6.41	6.41	6.36
1007	FWD Scanner MTR Temp.	DGC	22.07	23.80	23.97	21.18	24.09	26.45	26.25	25.06
1016	Rear Scanner MTR Temp.	DGC	24.19	25.04	24.83	22.87	25.14	27.08	27.01	26.11
1003	FWD Scanner Pressure	PSI	9.59[2]	D	D	D	D	D	D	D
1012	Rear Scanner Pressure	PSI	6.21	5.62	5.11	4.47	4.42	4.29	4.19	4.09
1212	Gas Tank Pressure	PSI	1948.00	1517.64	1256.98	863.19[4]	701.50	604.25	579.09	554.94
1210	Gas Tank Temperature	DGC	20.66	24.25	24.43	22.25	24.66	26.73	26.67	26.00
1213	Manifold Pressure	PSI	53.98	54.56	55.26	56.49	56.88	57.17	57.13	57.47
1211	Manifold Temperature	DGC	19.18	22.59	22.78	20.51	22.98	25.22	25.20	24.25
1059	C&B Power Supply Card Temp	DGC	39.00	41.47	41.81	39.93	41.91	43.58	43.52	42.84
1260	TH01 EBP	DGC	24.29	27.21	27.58	25.58	27.55	29.81	29.90	29.07
1261	TH02 EBP	DGC	20.29	23.25	23.48	21.32	23.77	26.03	26.01	24.98
1262	TH03 EBP	DGC	18.29	21.46	21.29	18.99	22.26	24.17	24.03	22.91
1263	TH01 STS	DGC	6.54	0.52	- 1.66	- 3.67	- 1.07	2.28	2.38	1.52
1264	TH02 STS	DGC	D	D	D	D	D	D	D	D
1265	TH03 STS	DGC	8.46	8.67	11.66	9.78	8.07	13.09	13.48	13.54
1266	TH04 STS	DGC	- 2.78	- 3.26	- 0.08	- 3.56	- 2.37	3.65	3.65	2.63
1267	TH05 STS	DGC	9.62	5.57	4.24	0.97	3.27	8.02	7.95	7.23
1224	SAD R FSST	DGC	35.00	35.81	34.24	7.91[5]	44.44	46.51	45.58	41.79
1244	SAD L FSST	DGC	50.00	49.13	55.24	52.49	54.37	58.00	58.63	58.29

(1) RMP-1 Left off after initial test in Orbit 1
(2) Prelaunch leak - refer to text
(3) RMP1 in standby mode during orbit adjust maneuvers
(4) Pressure drop due to freon consumed during orbit adjust maneuvers
(5) Low temperature caused by large beta angle shadowing
D Defective telemetry point

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Table 4-3. Landsat-2 ACS Voltages and Currents

Func	Name	Units	Orbit							
			20	5102	10191	15211	17711	19430	19881	20252
1001	RMP 1 MTR Volts	VDC	F	F	F	F	F	F	F	F
1002	RMP 1 MTR Current	Amps	F	F	F	F	F	F	F	F
1000	RMP 1 Supply Volts	VDC	F	F	F	F	F	F	F	F
1001	RMP 2 MTR Volts	VDC	29.99	29.92	29.87	29.90	29.89	29,88	29,88	29,88
1002	RMP 2 MTR Current	Amps	0.10	0.10	0.10	0.10	0,10	,10	,10	,10
1000	RMP 2 Supply Volts	VDC	23.63	23.59	23.58	23.61	23.59	23,56	23,56	23,58
1220	SAD NT MTR WNDNG Volts	VDC	4.47	4,47	4.09	4.23	4,17	4,19	4,22	4,30
1240	SAD LT MTR WNDNG Volts	VDC	4,98	4,72	4.87	4,83	4,66	4,96	4,83	4,75
1227	SAD RT +15 VDC Conv	VDC	15.14	15.16	15.15	15.18	15.12	15,11	15,11	15,12
1247	SAD LT +15 VDC Conv	VDC	15.21	15.21	15.22	15.21	15,20	15,20	15,20	15,19
1056	CLR ± 6 VDC	TMV	2.38	2.38	2.40	2.40	2,40	2,40	2,40	2,40
1055	CLR ± 10 VDC	TMV	2.98	2.92	2.94	2.94	2,94	2,95	2,96	2,95
1057	CLR Power Supply Volts	TMV	2.97	2.96	2.97	2.96	2,97	2,97	2,97	2,97

Table 4-4. Landsat-2 ACS Attitude Errors and Driver Duty Cycles

Func	Name	Units	Orbit							
			20	5102	10191	15211	17711	19430	19881	20252
1041	Pitch Fine Error	DEG	-0.15	-0.13	-0.82	-0.78	-,12	-,87*	-,77*	-,71*
1043	Pitch Flywheel Speed	RPM	-156.12	-162.97	3.39	51.87	-146.47	56,87	69,96	31,41
1038	Pitch Mtr Drvr CCW	PCT	6.64	6,65	4.43	1.76	8,59	5,21	4,18	3,40
1039	Pitch Mtr Drvr CW	PCT	2.03	1,80	3.87	4,59	5,79	7,49	6,49	5,66
1030	Roll Fine Error	DEG	-0.13	-0.14	-0.21	-0,20	-,12	-,17	-,16	-,17
1027	Roll Rear Flywheel SPD	RPM	729.30	748,56	792.27	796.70	752.71	805,55	773,67	770,26
1026	Roll Fwd Flywheel SPD	RPM	703.02	735.81	737.44	767.93	748.23	172,76	753,69	740,43
1022	Roll Rear Mtr Drvr CCW	PCT	0.67	0,61	0.87	0.01	,71	,79	,62	,29
1025	Roll Rear Mtr Drvr CW	PCT	7.54	6,34	6.09	6.07	5,72	6,46	5,91	5,75
1023	Roll Fwd Mtr Drvr CCW	PCT	0.70	0,67	0.72	0,03	,94	1,09	,74	,64
1024	Roll Fwd Mtr Drvr CW	PCT	5.46	4,01	4.44	3.20	3,84	4,52	3,87	3,55
1035	Yaw Tach	RPM	-95.73	-38,16	-163.04	-34,38	-159,65	-64,12	-77,96	-94,31
1033	Yaw Mtr Drvr CW	PCT	1.98	2,01	1.91	1.81	1,92	2,63	2,08	1,71
1034	Yaw Mtr Drvr CCW	PCT	2.10	1,90	2.49	1.50	2,46	2,90	2,15	1,80
1231	SAD Right Tach	D/M	3.38	3,38	3.37	3.42	3,38	3,35	3,36	3,37
1241	SAD Left Tach	D/M	3.68	3,56	3.48	3,55	3,52	3,47	3,47	3,47

*Pitch Position Bias was implemented during this Orbit.

SECTION 5

COMMAND/CLOCK SUBSYSTEM (CMD)

LANDSAT-2

SECTION 5

COMMAND/CLOCK SUBSYSTEM (CMD)

The Command Clock Subsystem operated nominally in this report period.

GMT was retarded 1 second on 31 December 1978 at 23:59:60. Subsequently, during Orbit 20070 on 1 January 1979, the spacecraft clock was set back 2 seconds.

Figure 5-1 shows the history of the S/C clock drift since launch. Figure 5-2 shows the cumulative clock drift, 22.931 seconds faster in 48 months; and Figure 5-3 gives drift rate of the S/C clock. The clock of Landsat-2 drifts in the same direction as Landsat-3.

While loading ECAM during Orbit 20193 on 9 January 1979, using VHF uplink over Alaska, the VHF receiver output was briefly abnormal. A section of ECAM then failed to load, and the Primary Comstor went out of the activate mode and assumed an indeterminate state. The ECAM and Comstor were reloaded and operations are normal again. The anomaly is being studied.

Table 5-1 shows typical telemetry values since launch. All are nominal.

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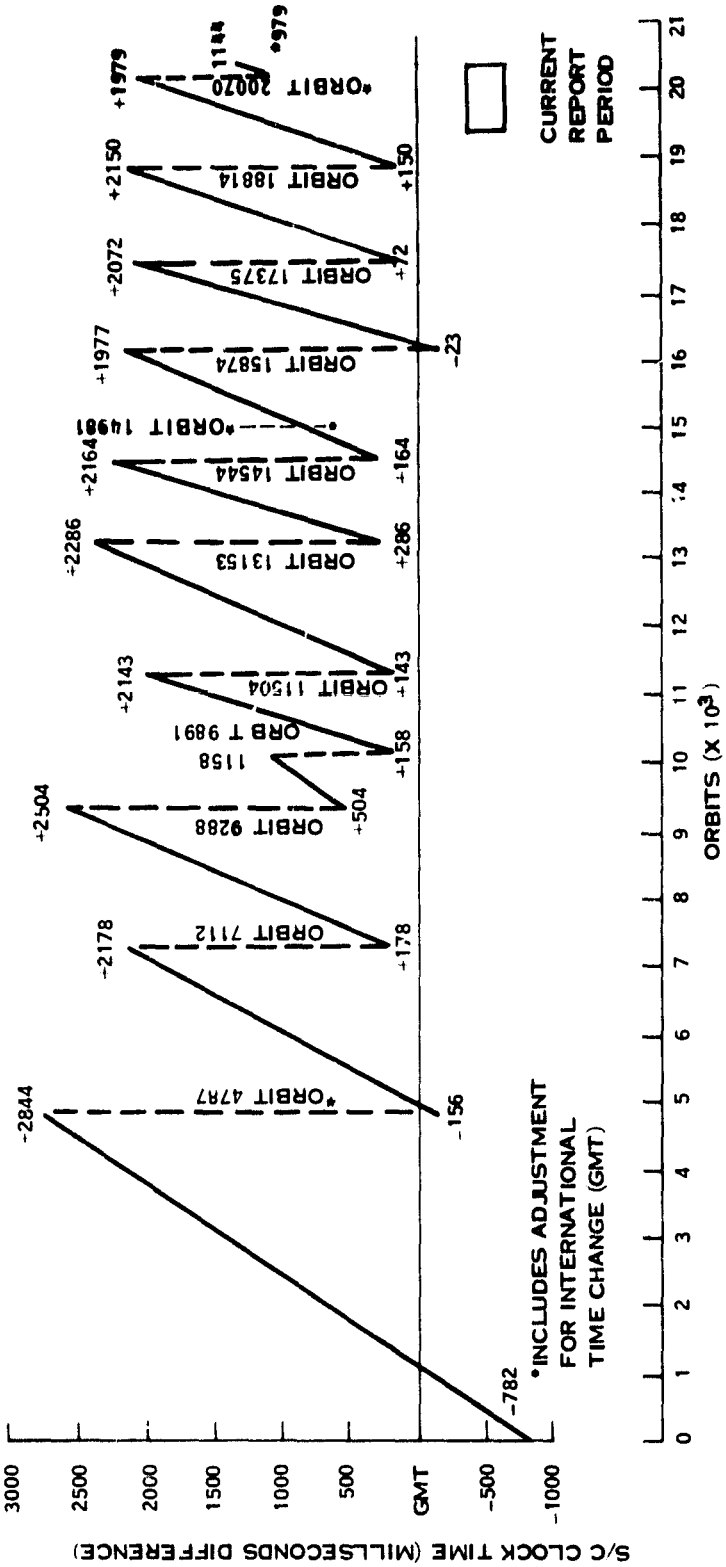

Figure 5-1. Landsat-2 Clock Drift History

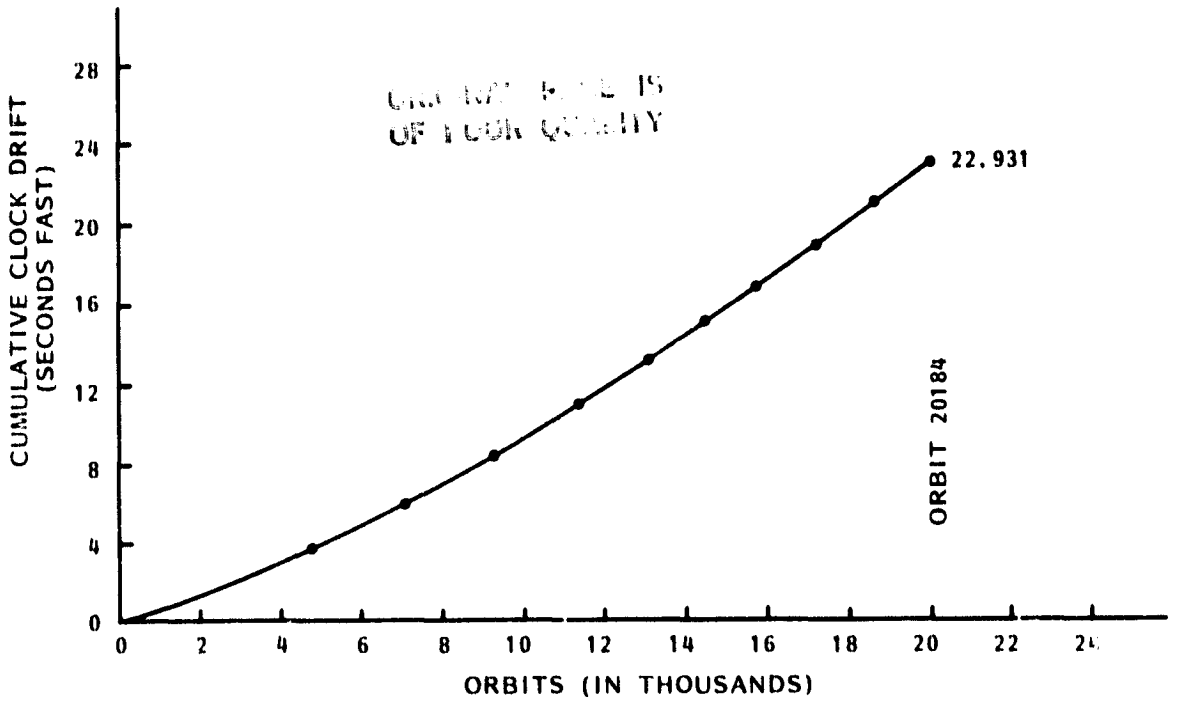

Figure 5-2. Cumulative Clock Drift

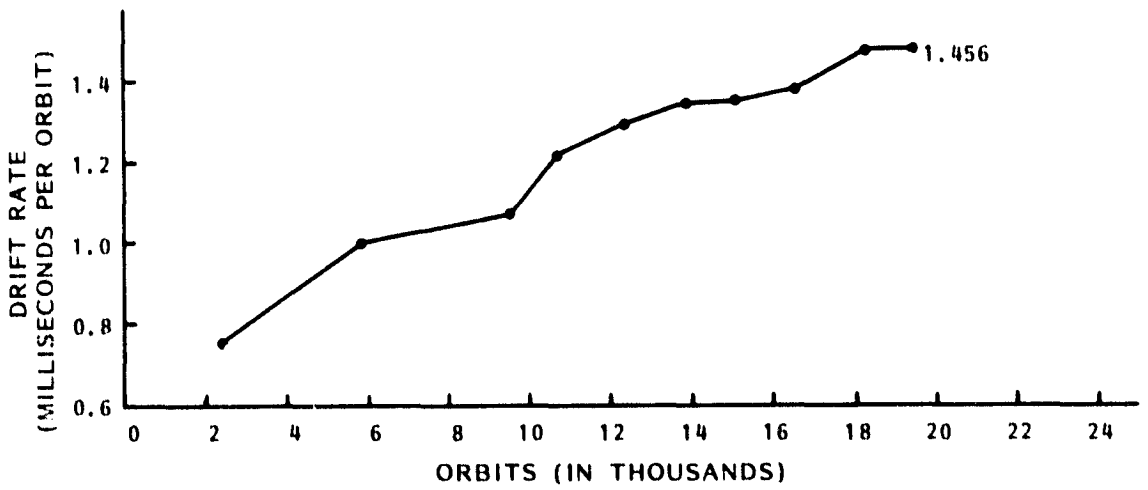

Figure 5-3. Drift Rate of S/C Clock

Table 5-1. Command/Clock Telemetry Summary, Landsat-2

Function No.	Name	Units	Orbit 35	5091	10192	15211	17710	19430	19881	20251
8005	Pri. Power Supply Temp	DGC	38.82	39.43	39.08	39.12	39.16	39.06	39.45	39.13
8006	Red. Power Supply Temp	DGC	36.93	38.00	37.85	37.91	38.04	38.02	38.39	38.09
8007	Pri. Osc. Temp	DGC	28.70	28.70	28.56	28.69	28.16	27.97	28.69	28.67
8008	Red Osc. Temp	DGC	27.82	27.26	26.97	27.40	26.95	26.95	27.37	27.09
8009	Pri. Osc. Output	TMV	1.06	1.05	1.05	1.06	1.06	1.05	1.05	1.05
8010	Red. Osc. Output	TMV	1.17	1.18	1.18	1.18	1.13	1.18	1.18	1.18
8011	100 KHz	TMV	3.17	3.15	3.15	3.15	3.16	3.16	3.15	3.15
8012	10 KHz	TMV	3.08	3.05	3.05	3.05	3.05	3.05	3.05	3.05
8013	2.5 KHz	TMV	3.01	2.95	2.95	2.95	2.95	2.95	2.95	2.95
8014	400 Hz	TMV	4.17	4.45	4.45	4.45	4.45	4.45	4.45	4.45
8015	Pri. -4V Power Supply	TMV	N	2.05	2.05	2.05	2.05	2.05	2.05	2.05
8016	Red. -4V Power Supply	TMV	N	2.00	2.00	2.00	2.01	2.00	2.00	2.00
8017	Pri. -6V Power Supply	TMV	N	2.30	2.30	2.30	2.31	2.30	2.30	2.30
8018	Red. -6V Power Supply	TMV	N	2.30	2.30	2.30	2.31	2.30	2.30	2.30
8019	Pri. -6V Power Supply	TMV	N	5.23	5.23	5.23	5.23	5.22	5.23	5.23
8020	Red. -6V Power Supply	TMV	N	5.23	5.23	5.23	5.23	5.22	5.23	5.23
8021	Pri. -23V Power Supply	TMV	N	5.70	5.70	5.70	5.69	5.70	5.70	5.70
8022	Red -23V Power Supply	TMV	N	5.65	5.65	5.65	5.66	5.65	5.65	5.65
8023	Pri. -29V Power Supply	TMV	N	5.29	5.29	5.30	5.30	5.30	5.30	5.30
8024	Red -29V Power Supply	TMV	N	5.29	5.28	5.29	5.29	5.29	5.29	5.29
8101	CIU A - 12V	TMV	3.79	3.97	3.97	3.97	3.95	3.96	3.96	3.96
8102	CIU B - 12V	TMV	3.78	3.95	3.95	3.95	3.95	3.95	3.95	3.95
8103	CIU A - 5V	TMV	3.93	4.15	4.15	4.14	4.14	4.13	4.14	4.14
8104	CIU B - 5V	TMV	3.90	4.10	4.10	4.10	4.10	4.10	4.10	4.10
8105	CIU A Temp	DGC	26.01	21.67	21.67	22.29	21.01	21.21	21.69	21.61
8106	CIU B Temp	DGC	23.35	19.70	19.71	20.21	19.16	19.30	19.74	19.67
8201	Receiver RF-A Temp	DGC	N	29.14	28.83	28.86	28.48	28.29	28.73	28.73
8202	Receiver RF-B Temp	DGC	25.03	F	22.66	22.67	22.18	21.88	22.48	22.55
8203	D MOD A Temp	DGC	28.95	38.56	38.25	38.33	38.09	37.86	38.19	38.18
8204	D MOD B Temp	DGC	37.75	26.72	26.31	26.34	25.90	25.68	26.19	26.27
8205	Receiver A AGC	DBM	F	-91.43	-90.78	-89.02	-87.21	90.06	-90.35	-93.73
8206	Receiver B AGC	DBM	-87.83	F	F	F	F	F	F	F
8207	Amp. A Output	TMV	F	2.54	2.75	2.66	2.69	2.72	2.54	2.25
8208	Amp. B Output	TMV	2.10	F	F	F	F	F	F	F
8209	Freq. Shift Key A Out	TMV	F	1.08	1.09	1.08	1.08	1.08	1.09	1.08
8210	Freq. Shift Key B Out	TMV	1.11	F	F	F	F	F	F	F
8211	Amp. A Output	TMV	F	1.13	1.14	1.13	1.13	1.14	1.13	1.12
8212	Amp. B Output	TMV	1.13	F	F	F	F	F	F	F
8215	D MOD A - 15V	TMV	F	4.87	4.87	4.87	4.87	4.87	4.87	4.87
8216	D MOD B - 15V	TMV	4.77	F	F	F	F	F	F	F
8217	Regulator A - 10V	TMV	F	5.40	5.40	5.40	5.40	5.40	5.40	5.40
8218	Regulator B - 10V	TMV	5.32	F	F	F	F	F	F	F
8311	ECAM Mem. Tmp	DGC	N	18.41	18.41	18.38	18.13	18.21	18.54	18.30
8312	ECAM Pwr Spply Temp	DGC	N	23.13	23.00	22.97	22.52	22.51	23.06	22.80

N - Data Not Available.
F - Unit Off.

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SECTION 6

TELEMETRY SUBSYSTEM (TLM)

LANDSAT-2

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SECTION 6

TELEMETRY SUBSYSTEM (TLM)

The TLM has operated nominally in this report period.

Table 6-1 shows typical telemetry values since launch. All are nominal. Functions 1264 (Thermal Shield 5 Temperature), 4002 (MMCA Board 2 Temperature) and 13200 (APU 24 Volt Input) were defective before launch but verification of these functions is acceptable by adjacent temperature and downstream voltage measurements respectively.

The memory section of the telemetry matrix remains in the 0, 0 mode.

Table 6-1. Landsat-2 TMP Telemetry Values

Func	Name	Units	Orbit							
			35	5091	10192	15211	17710	19430	19881	20252
9001	Memory Sequencer A Converter	VDC	4.45	4.45	4.45	4.45	4.45	4.45	4.45	4.45
9002	Memory Sequencer B Converter	VDC	F	F	F	F	F	F	F	F
9003	Memory Sequencer Temp	DGC	20.00	21.37	21.34	21.87	20.51	21.10	21.45	21.88
9004	Formatter A Converter	VDC	4.52	4.52	4.52	4.54	4.50	4.51	4.52	4.52
9005	Formatter B Converter	VDC	F	F	F	F	F	F	F	F
9006	Dig. Mux A Converter	VDC	4.22	4.22	4.22	4.23	4.21	4.21	4.22	4.22
9007	Dig. Mux B Converter	VDC	F	F	F	F	F	F	F	F
9008	Formatter Dig Mux Temp	DGC	25.00	27.80	29.75	32.56	23.91	26.05	28.81	30.00
9009	Analog Mux A Converter	VDC	4.02	4.05	4.05	4.05	4.05	4.05	4.05	4.05
9010	Analog Mux B Converter	VDC	F	F	F	F	F	F	F	F
9011	A D Converter A Voltage	VDC	4.02	4.03	4.04	4.05	4.03	4.03	4.03	4.03
9012	A D Converter B Voltage	VDC	F	F	F	F	F	F	F	F
9013	Analog Mux, A D Conv. Temp	DGC	25.00	27.33	27.44	29.72	24.91	26.68	27.51	27.52
9014	Preregulator A Voltage	VDC	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
9015	Preregulator B Voltage	VDC	F	F	F	F	F	F	F	F
9016	Reprogrammer Temp	DGC	22.50	24.74	25.47	28.98	21.84	22.50	25.02	24.96
9017	Memory A Converter	VDC	4.45	4.45	4.45	4.45	4.45	4.45	4.45	4.45
9018	Memory A Temp	DGC	17.50	17.17	17.16	16.66	15.30	15.00	15.58	16.85
9019	Memory B Converter	VDC	F	F	F	F	F	F	F	F
9020	Memory B Temp	DGC	17.50	17.41	17.50	17.52	16.86	17.37	17.39	17.50
9100	Reflected Power	dBm	18.29	14.18	14.53	15.24	13.89	14.07	14.17	14.39
9101	Xmtr A-20 VDC	VDC	3.80	3.97	3.98	3.98	3.97	3.97	3.97	3.97
9102	Xmtr B-20 VDC	VDC	F	F	F	F	F	F	F	F
9103	Xmtr A Temp	DGC	27.73	26.40	30.37	26.69	21.56	23.36	26.09	29.08
9104	Xmtr B Temp	DGC	N	27.74	31.74	37.80	22.69	24.56	27.50	30.44
9105	Xmtr A Power Output	dBm	27.73	26.69	26.41	26.59	26.30	26.34	26.37	26.41
9106	Xmtr B Power Output	dBm	F	F	F	F	F	F	F	F

N - Data Not Available.
F - Unit Off

SECTION 7

ORBIT ADJUST SUBSYSTEM (OAS)

LANDSAT-2

SECTION 7

ORBIT ADJUST SUBSYSTEM

An orbit adjust was performed during Orbit 19246 (2 November 1978) to correct the spacecraft's eastward ground track drift. The ACS was commanded into the Orbit Adjust mode with pneumatics disabled and the OA system performed normally.

The minus X thruster was fired for 20.0 seconds and the spacecraft's altitude was increased by 55.0 meters.

Burn efficiency was calculated at 93.9%.

Figures 7-1, 7-2, 7-3 and 7-4 show the OA and ACS system's performance during the burn maneuver.

Table 7-1 summarizes all of the OAS system's operations since launch.

Table 7-2 shows typical telemetry values for the OAS during its quiescent periods. Variations in thrust chamber temperatures shown in Table 7-2 are consistent with variations in sun intensity and sun angle.

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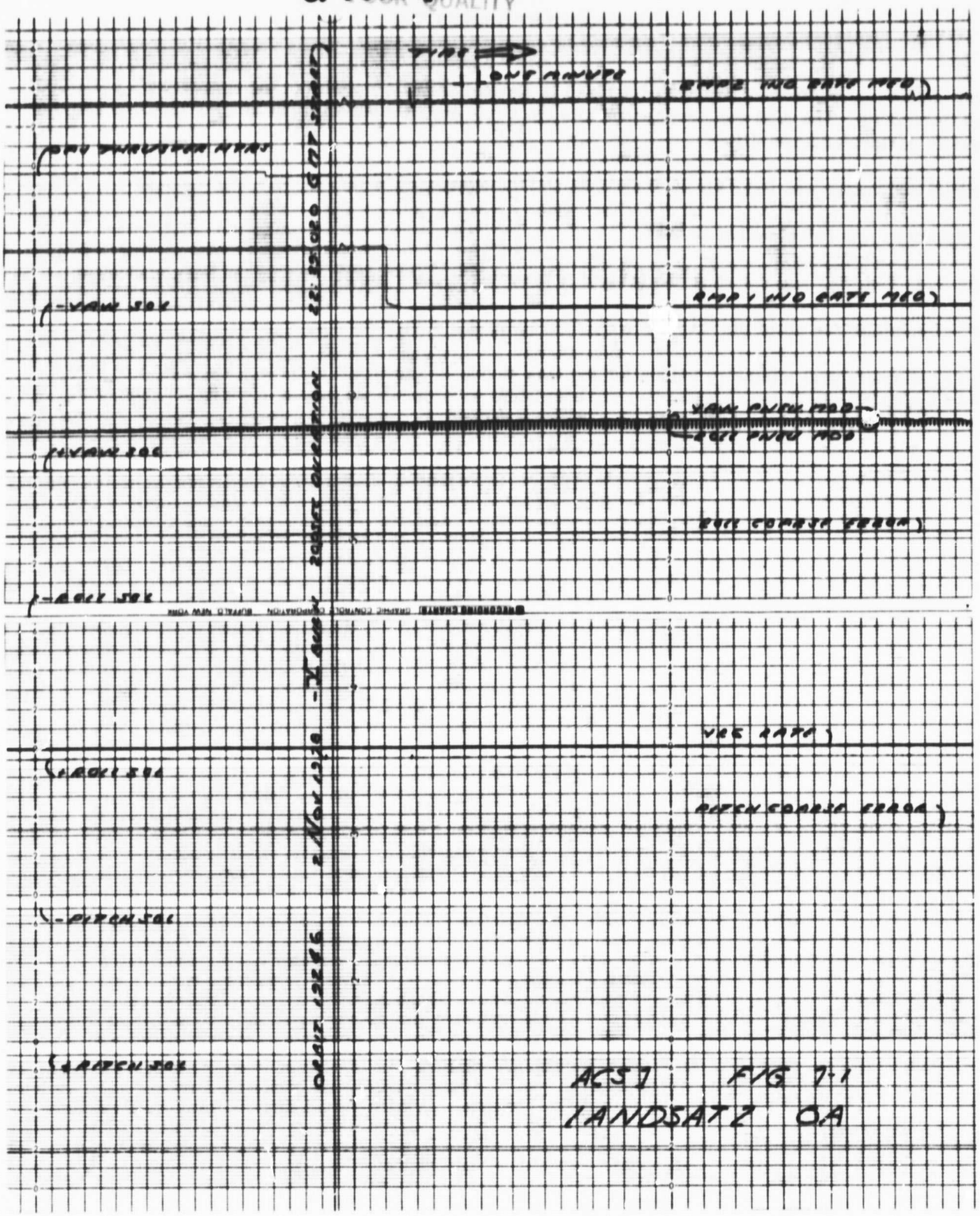

Figure 7-1. ACS 1 - Landsat-2 OA

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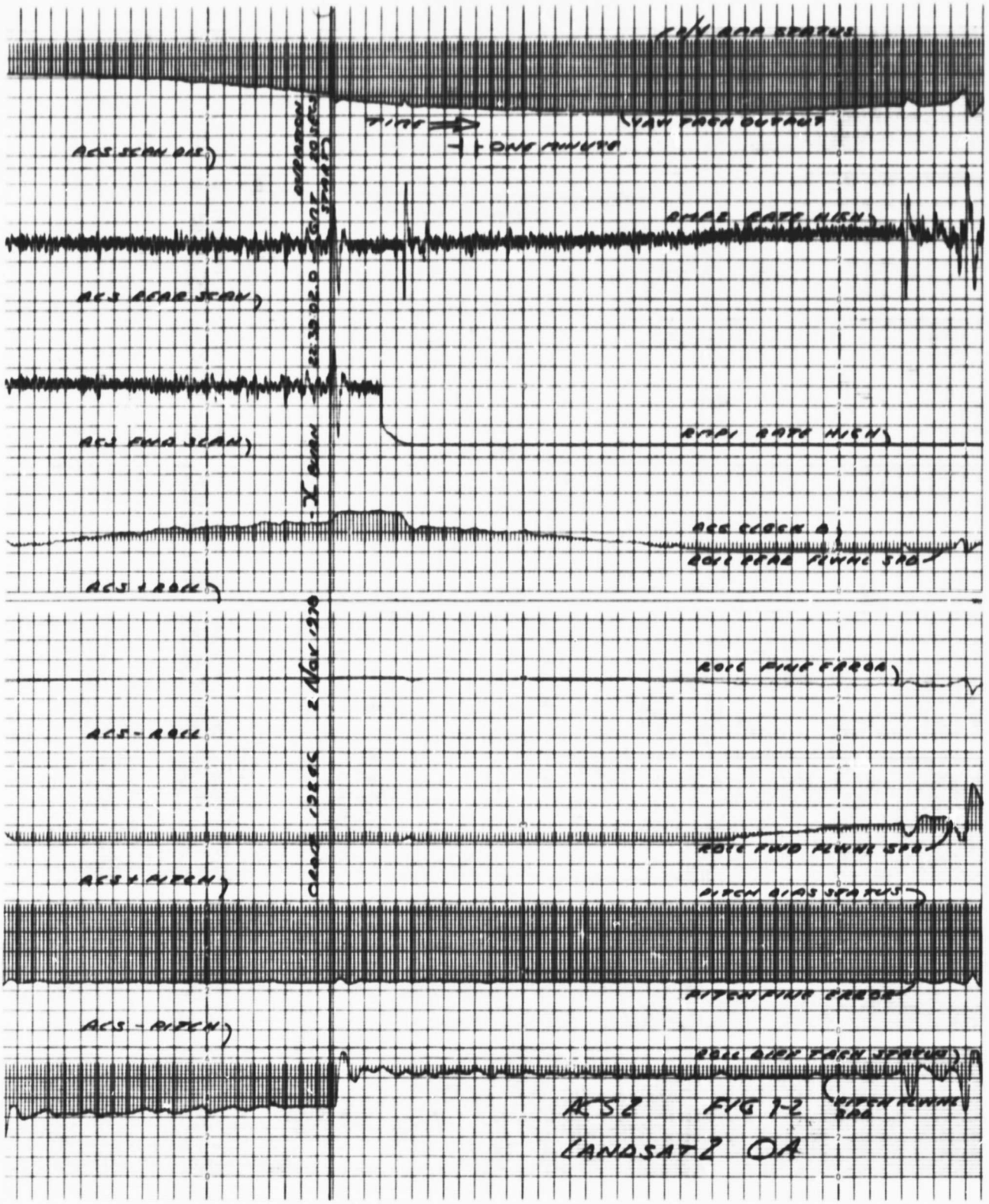

Figure 7-2. ACS 2 - Landsat-2 OA

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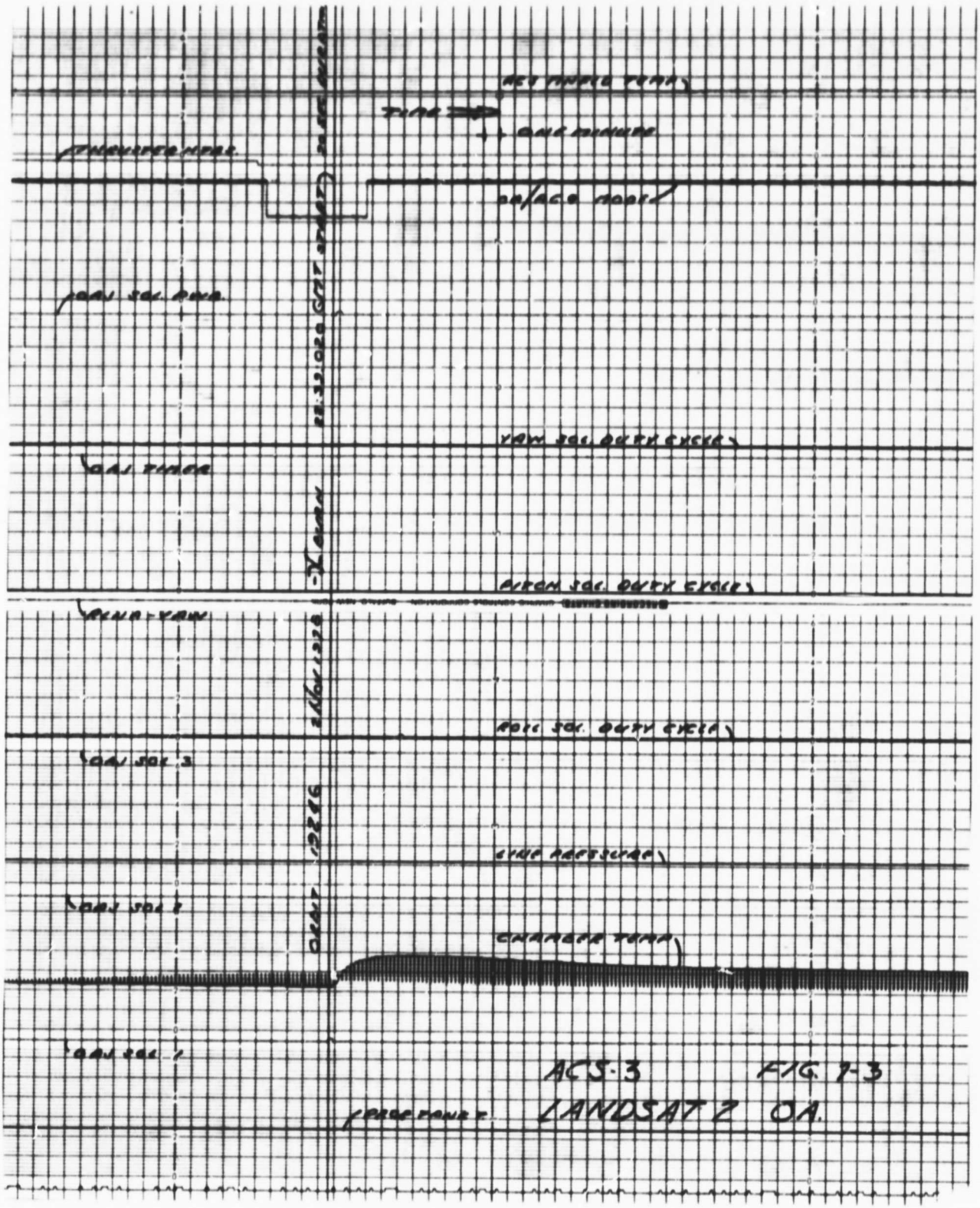

FIG. 7-3

Figure 7-3. ACS 3 - Landsat-2 OA

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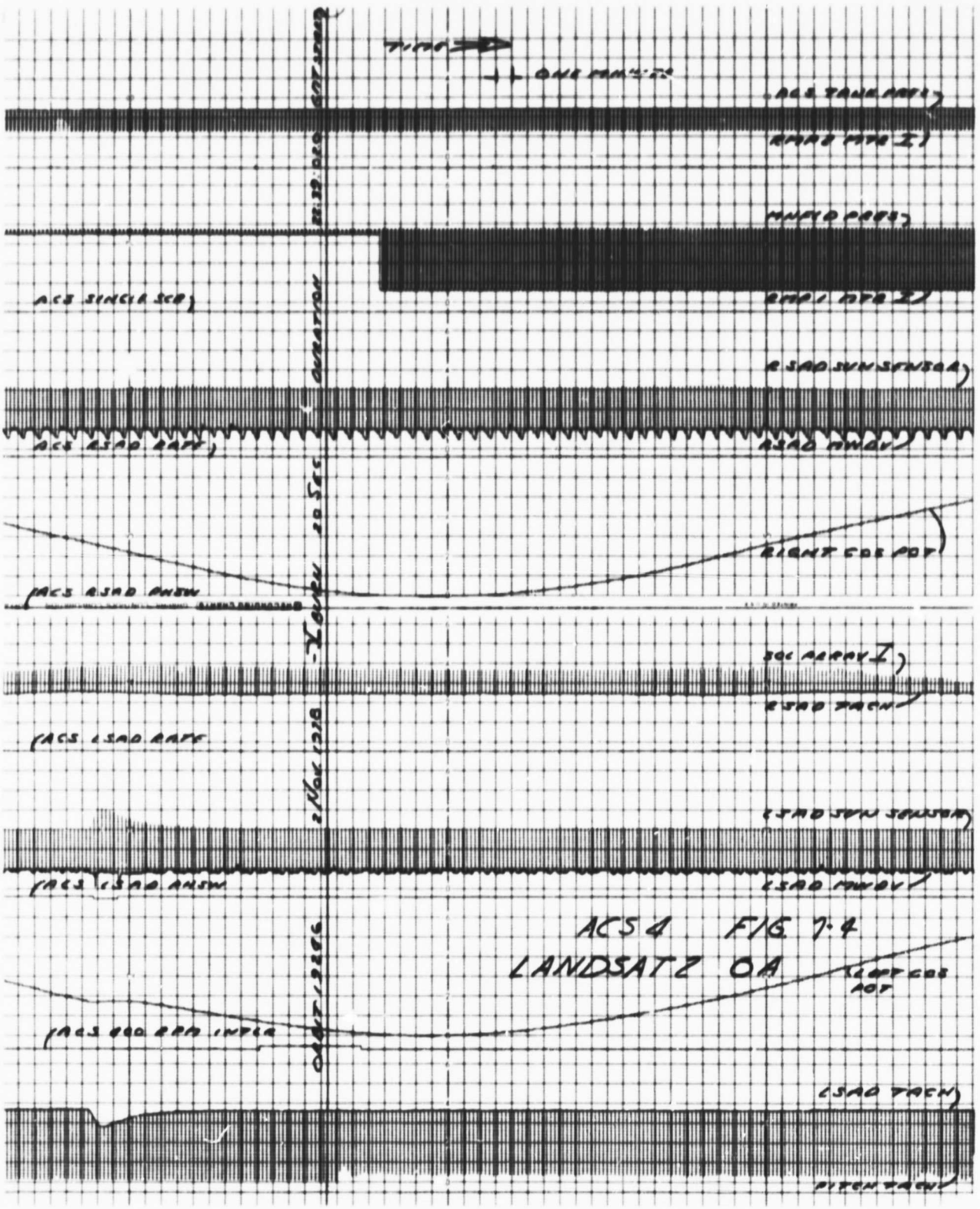

Figure 7-4. ACS 4 - Landsat-2 OA

Table 7-1. Landsat-2 Orbit Adjust Summary

Orbit Adjust No.	Orbit No.	Epoch (Burn Start Time)	Burn Axis (-Y)	Burn Axis (±X)	Burn Duration (Seconds) (-Y)	Burn Duration (Seconds) (±X)	Post Burn Freon Status (PSIA)	Hydrazine Consumed (Lbs)	Post Burn Hydrazine Tank P. (PSIA)	Burn Efficiency (%)	Δa (Meters)	Δi (Degrees)
1	32	25 Jan 75 00:34:00.8		-X		4.8	1947.19	0.02	539.96	104.3	39	0.0
2	71	27 Jan 75 19:57:00.8		+X		4.8	1923.78	0.02	547.46	90.1	-36	0.0
3	79	28 Jan 75 09:49:00.8		-X		420.0	1919.50	1.62	547.46	107.0	3455	0.0
4	86	28 Jan 75 21:13:00.8		-X		420.0	1916.40	1.51	502.46	107.0	3233	0.0
5	163	3 Feb 75 10:36:00.8		+X		420.0	1884.35	1.42	468.75	97.0	-2974	0.0
6	191	5 Feb 75 10:15:00.8		+X		360.0	1874.51	1.15	438.71	97.5	-2421	0.0
7	212	6 Feb 75 22:31:00.8		+X		308.8	1865.15	0.95	416.21	98.6	-2009	0.0
8	880	26 Mar 75 21:44:00.8		-X		12.8	1837.05	0.04	397.47	107.6	82	0.0
9	1632	19 May 75 18:54:00.8		-X		24.0	1757.46	0.07	401.21	107.6	154	0.0
10	2958	29 Aug 75 22:11:58.8		-X		22.0	1640.00	0.07	404.96	110.3	146	0.0
11	14157	2 Nov 77 23:47:01.2	-Y		5.2		1085.19	0.02	425.22	•	2.1	0.0
12	14171	3 Nov 77 23:47:07.2	-Y		60.0		1097.50	0.18	419.94	125.2	23.8	0.002
13	14185	4 Nov 77 23:52:49.2	-Y		60.0		1085.19	0.16	417.14	130.7	28.7	0.002
14	14324	14 Nov 77 23:07:01.2 23:11:42.4	-Y	+X	300.0	18.8	1065.50	0.97	401.19	97.1	128.4	0.007
15	14352	16 Nov 77 23:18:01.2 23:22:42.4	-Y	+X	300.0	18.8	1047.79	0.82	389.54	115.8	104.6	0.009
16	14382	19 Nov 77 02:06:01.2		+X		50.0	1048.00	0.18	385.80	100.9	-311.9	0.0
17	14514	28 Nov 77 14:08:01.2	-Y		300.0		1035.87	0.87	373.95	99.6	197.3	0.007
18	14542	30 Nov 77 14:17:01.2 14:22:41.2	-Y	+X	420.0	80.0	1025.30	1.43	356.13	105.8	-208.0	0.010
19	14570	2 Dec 77 14:27:31.2 14:36:11.2	-Y	+X	600.0	80.0	999.87	1.74	336.17	103.0	-131.0	9.014
20	14617	5 Dec 77 23:22:01.2	-Y		600.0		988.50	1.56	319.94	96.9	281.5	0.013

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19	14570	2 Dec 77 14:27:31.2 14:36:11.2	-Y +X		600.0	80.0	999.87	1.74	336.17	103.6	-131.9	0.014
20	14617	5 Dec 77 23:22:01.2	-Y		600.0		986.50	1.56	319.94	99.0	281.5	0.013
21	14645	7 Dec 77 23:32:01.2 23:41:05.2	-Y +X		600.0	56.0	986.50	1.56	305.16	100.1	-17.6	0.012
22	14673	9 Dec 77 23:43:31.2 23:52:43.2	-Y +X		600.0	48.0	963.06	1.47	292.22	103.3	9.8	0.012
23	14714	12 Dec 77 22:23:00.2 22:26:14.0	-Y +X		599.8	16.9	961.19	1.68	278.20	100.9	31.0	0.011
24	14828	13 Dec 77 22:23:00.2 22:32:14.0	-Y +X		599.8	46.0	949.57	1.24	269.30	103.4	31.3	0.011
25	14807	19 Dec 77 14:21:01.2 14:30:13.2	-Y +X		600.0	48.0	937.19	1.39	259.92	101.0	30.6	0.011
26	14812	19 Dec 77 22:57:30.2 23:06:42.0	-Y +X		599.8	48.0	935.99	1.48	250.36	104.7	23.1	0.011
27	14840	21 Dec 77 23:09:00.2 23:18:04.0	-Y -X		599.8	48.0	922.21	1.36	242.44	99.4	-42.5	0.010
28	15058	6 Jan 78 14:21:32.2 14:30:19.2	-Y +X		569.0	42.0	900.06	1.59	236.39	98.8	31.9	0.009
29	15105	9 Jan 78 23:14:31.2 23:23:49.2	-Y +X		600.0	48.0	887.88	0.77	232.22	97.0	-12.0	0.009
30	15119	10 Jan 78 23:20:31.2 23:29:46.0	-Y +X		600.8	46.0	887.88	1.47	224.68	101.8	-32.8	0.010
31	15127	11 Jan 78 13:06:01.2 13:15:16.0	-Y +X		600.8	46.0	878.71	1.33	218.32	101.2	-30.8	0.009
32	15133	11 Jan 78 23:26:01.2	-Y		600.8		877.81	0.70	215.55	101.9	109.4	0.009
33	15155	13 Jan 78 13:16:01.2 13:27:48.0	-Y +X		600.8	14.0	863.19	1.31	209.91	99.5	43.5	0.009
34	15197	16 Jan 78 13:35:01.2 13:44:42.0	-Y +X		600.8	20.0	863.19	1.11	205.20	98.5	15.9	0.008
35	15211	17 Jan 78 13:41:01.2 13:50:56.0	-Y +X		601.8	7.0	854.24	0.71	202.19	96.2	61.5	0.008
36	15225	18 Jan 78 13:46:01.2 13:55:26.0	-Y +X		600.8	36.0	838.57	1.27	197.50	94.8	-43.0	0.008
37	15295	23 Jan 78 14:15:01.2 14:24:46.0	-Y +X		600.8	16.0	835.90	0.91	194.14	99.8	27.7	0.008
38	15309	24 Jan 78 14:21:01.2 14:36:46.0	-Y +X		600.8	16.0	814.93	1.05	191.03	84.2	21.7	0.007

33	15155	13 Jan 78 13:18:01.2 13:27:48.0	-Y	+X	600.8	14.0	863.19	1.31	209.91	99.5	43.5	0.009
34	15197	16 Jan 78 13:35:01.2 13:44:42.0	-Y	+X	600.8	20.0	863.19	1.11	205.20	98.5	15.9	0.008
35	15211	17 Jan 78 13:41:01.2 13:50:56.0	-Y	+X	601.8	7.0	854.24	0.71	202.49	96.2	61.5	0.008
36	15225	18 Jan 78 13:46:01.2 13:55:26.0	-Y	+X	600.8	36.0	838.57	1.27	197.50	94.8	-43.0	0.008
37	15295	23 Jan 78 14:15:01.2 14:24:46.0	-Y	+X	600.8	16.0	835.90	0.91	194.14	99.8	27.7	0.008
38	15309	24 Jan 78 14:21:01.2 14:36:46.0	-Y	+X	600.8	16.0	814.93	1.05	191.03	84.2	21.7	0.007
39	15314	2 Jan 78 22:57:00.0 23:06:50.0	-Y	+X	600.0	10.0	814.13	1.02	187.50	92.2	45.0	0.007
40	15323	25 Jan 78 14:27:01.2 14:36:46.0	-Y	+X	600.8	16.0	811.82	1.02	186.48	90.6	- 4.6	0.007
41	15328	25 Jan 78 23:03:31.2 23:12:02.0	-Y	+X	600.8	30.0	806.81	1.03	182.05	88.8	- 32.8	0.007
42	15337	26 Jan 78 14:32:01.2 14:51:42.0	-Y	+X	600.8	20.0	807.40	0.99	179.25	90.5	14.7	0.007
43	15398	30 Jan 78 23:31:54.2 23:42:12.0	-Y	+X	637.8	20.0	801.57	1.04	176.34	85.3	- 1.9	0.007
44	15412	31 Jan 78 23:38:01.2 23:47:42.0	-Y	+X	600.8	20.0	801.60	0.97	174.20	82.9	- 5.4	0.006
45	15426	1 Feb 78 23:44:01.2 23:53:46.0	-Y	+X	600.8	16.0	801.57	0.95	172.50	88.0	4.5	0.006
46	15440	2 Feb 78 23:50:01.2	-Y		600.8		801.57	0.92	171.78	100.5	54.5	0.006
47	19246	2 Nov 78 22:39:02.0		-X		20.0	616.59	0.03	172.49	93.9	55.0	0.0

* - Burn too short to influence tracking data.

LS-2

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Table 7-2. Landsat-2 OAS Telemetry Values

Func.	Name	Units	Orbit 50	5102	10191	15211	17711	19430	19881	20252
2001	Prop. Tank Temp.	DGC	23.03	23.89	23.05	24.48	21.39	21.80	22.64	23.05
2003	Thrust Chamber No. 1 (-X) Temp.*	DGC	24.84	25.12	21.75	20.83	28.51	27.04	26.62	24.16
2004	Thrust Chamber No. 2 (+X) Temp.*	DGC	37.34	38.55	37.60	35.32	35.16	38.52	38.66	37.77
2005	Thrust Chamber No. 3 (-Y) Temp.*	DGC	47.22	46.35	49.78	78.50*	37.45	41.86	45.59	48.95
2006	Line Pressure	PSIA	545.60	413.25	419.94	205.21	170.62	172.44	172.47	172.49

* Orbit adjust heaters were ON.

SECTION 8

MAGNETIC MOMENT COMPENSATING ASSEMBLY (MMCA)

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SECTION 8

MAGNETIC MOMENT COMPENSATING ASSEMBLY (MMCA)

The spacecraft was corrected for unbalanced magnetic moments in Orbits 293 and 321 as reported earlier. These adjustments were made on the pitch magnetic rod of the MMCA.

No adjustment to the MMCA dipoles was made during this report period.

Orbital averages of MMCA telemetry functions for selected orbits are given in Table 8-1.

Table 8-1. Landsat-2 MMCA Telemetry Values

Function	Name	Units	Orbit							
			50	5102	10191	15211	17711	19430	19881	20252
4001	A1 Board Temp	^{o}C	20.56	19.47	19.12	18.82	18.60	18.29	18.68	18.90
4002	A2 Board Temp	^{o}C	D	D	D	D	D	D	D	D
4003	Hall Current	TMV	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
4004	Yaw Flux Density	TMV	3.05	3.07	3.07	3.07	3.07	3.07	3.07	3.07
4005	Pitch Flux Density	TMV	3.15	2.90	2.90	2.90	2.90	2	2.90	2.90
4006	Roll Flux Density	TMV	2.99	2.97	2.97	2.97	2.96	2.97	2.97	2.97

D = Defective Telemetry Function (Pre-launch)

SECTION 9

UNIFIED S-BAND/PREMODULATION PROCESSOR (USB/PMP)

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SECTION 9

UNIFIED S-BAND/PREMODULATION PROCESSOR (USB/PMP)

The USB Subsystem has operated nominally in this report period.

Table 9-1 shows telemetry values since launch. All are nominal. The transmitter has maintained a steady indicated power output of greater than 1.3 watts since launch.

USB transmitted signal levels measured at Goldstone with the spacecraft successively at the same points in space show continuous satisfactory USB performance.

Table 9-1. Landsat-2 USB/PMP Telemetry Values

Func.	Name	Units	Orbits							
			15	5091	10641	15211	17712	19430	19881	20251
11001	USB Rcvr AGC	dBm	-112.72	-124.29	-124.85	-126.13	-123.80	-122.28	-131.50	-131.50
11002	USB Xmtr Pwr	W	1.36	1.38	1.39	1.39	- 1.35	- 1.36	1.35	1.36
11003	USB Rcvr Error	kHz	- 2.15	- 2.97	- 3.43	- 4.98	- 2.55	- 4.68	- 4.22	- 4.35
11004	USB Xpond Temp	DGC	25.88	27.49	29.06	33.03	24.57	26.36	27.34	28.50
11005	USB Xpond Press	PSI	17.08	16.49	15.96	16.03	15.20	14.97	15.06	15.09
11007	USB Xmtr A -15V	VDC	2.36	F	F	F	F	F	F	F
11008	USB Xmtr B -15V	VDC	F	2.42	2.39	2.36	2.43	2.40	2.40	2.43
11009	USB Range -15V	VDC	2.07	2.06	2.06	2.06	2.05	2.05	2.05	2.05
11101	PMP Pwr A Volt	VDC	- 15.10	F	F	F	F	F	F	F
11102	PMP Pwr B Volt	VDC	F	- 14.99	- 14.99	- 14.96	- 15.00	- 14.94	- 14.99	- 14.99
11103	PMP Temp A	DGC	37.30	34.67	37.49	43.12	28.79	31.25	34.34	36.56
11104	PMP Temp B	DGC	28.34	36.08	38.64	44.11	30.30	33.08	35.52	37.64

F = Unit Off

SECTION 10
ELECTRICAL INTERFACE SUBSYSTEM (EIS)
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SECTION 10

ELECTRICAL INTERFACE SUBSYSTEM (EIS)

The Auxiliary Processing Unit (APU) consisting of Search Track Data, Time Code Data, and Back-up Timers operated satisfactorily throughout this report period. Telemetry for the APU is shown in Table 10-1, and is nominal.

Table 10-1. Landsat-2 APU Telemetry Functions

Function	Description	Unit	Orbit							
			21	5102	10192	15211	17711	19430	19881	20252
13200	APU, -24.5 VDC	TMV	D	D	D	D	D	D	D	D
13201	APU, -12 Volts	TMV	2.42	2.45	2.45	2.45	2.45	2.45	2.45	2.45
13202	APU, Temp	DGC	27.44	27.70	28.78	30.64	26.23	26.89	27.78	28.47

D - Defective Telemetry (Prelaunch)

The Power Switching Module (PSM) containing the switching relays for power to the OAS, MSS, WBPA-1, WBPA-2, WBVTR-1, WBVTR-2, RBV and PRM, functioned normally. During this report period, the MSS, WBPA-2 and WBVTR-2 power circuits, have been operated on a regular basis. RBV and WBPA-1 power circuits have been used for limited operation.

The Interface Switching Module performed all switchings normally during this report period.

SECTION 11
THERMAL SUBSYSTEM (THM)
LANDSAT-2

SECTION 11

THERMAL SUBSYSTEM (THM)

Landsat-2's Thermal Control Subsystem has provided satisfactory temperature control for all of the spacecraft equipment since launch.

Table 11-1 summarizes average subsystem temperature telemetry values taken from representative orbits that occurred over the 48 months of Landsat-2's existence.

Average temperatures in the sensory ring bays are plotted in Figure 11-1.

During this report period, the sun intensity increased from 1.010 to 1.032 times the mean value. Increase in the sun angle to the spacecraft decreased night length. Consequently, the average spacecraft temperatures were slightly higher during this report period.

A history of compensation load switching since launch is shown in Table 11-2. All compensation loads remained off in this report period.

Table 11-1. Thermal Subsystem Analog Telemetry
(Average Value for Frames of Data Received in NBTR Playback)

Function No.	Function Description	Unit	Orbits 21	5102	10192	15211	17711	19410	19881	20252
7001	THM TH01 STI	DGC	19.40	19.97	19.59	19.08	18.27	18.17	18.65	19.08
7002	THM TH02 SBO	DGC	17.18	17.47	17.65	17.36	17.15	16.61	16.96	17.15
7003	THM TH03 STI	DGC	18.73	18.50	18.65	18.02	17.54	16.98	17.13	17.61
7004	THM TH10 TCB	DGC	19.38	19.34	19.04	21.20	18.06	18.39	19.13	19.17
7005	THM TH04 STI	DGC	17.19	16.76	17.37	16.70	16.35	14.96	17.71	16.96
7006	THM TH05 SBO	DGC	17.42	16.68	16.65	16.38	16.25	15.46	16.00	16.28
7007	OA -X Thruster	DGC	19.66	19.65	19.44	19.70	19.56	19.17	19.76	19.50
7008	THM TH06 STO	DGC	14.78	14.94	13.57	13.34	13.14	12.56	14.11	13.46
7009	THM TH00 SBI	DGC	19.18	18.41	18.10	17.91	17.37	16.65	17.46	17.76
7010	THM TH07 STI	DGC	18.08	17.44	17.11	17.10	16.44	16.09	16.70	16.83
7011	THM TH08 STO	DGC	19.34	19.23	19.00	18.92	19.21	18.86	19.51	18.99
7012	THM TH09 SBI	DGC	21.44	20.95	20.94	01.48	20.16	20.19	20.84	20.81
7013	THM TH10 SBO	DGC	18.58	18.39	18.59	19.12	17.87	17.87	18.17	18.49
7014	THM TH11 STI	DGC	21.65	21.93	22.75	24.28	20.09	20.67	21.68	22.29
7015	THM TH12 SBO	DGC	25.93	24.08	26.86	29.56	22.52	23.40	24.88	26.07
7016	THM TH13 STI	DGC	22.21	23.62	25.73	29.30	20.26	21.91	23.12	24.83
7017	RBV Beam Ctr Ln	DGC	20.38	19.92	20.16	21.24	18.41	18.70	19.56	19.88
7018	THM TH14 STO	DGC	24.12	26.43	29.64	35.01	21.41	23.43	26.14	28.15
7019	NBR Rad Outbd Bd	DGC	2.72	2.93	2.44	4.65	1.79	1.64	2.11	2.10
7020	THM TH15 SBI	DGC	23.07	25.56	27.07	31.02	20.21	21.95	24.70	26.22
7021	THM TH16 STI	DGC	23.26	25.40	25.87	29.22	21.08	22.12	24.70	25.36
7022	THM TH17 SBI	DGC	21.77	23.74	23.75	27.07	20.48	20.96	23.54	24.26
7023	THM TH18 SBO	DGC	21.67	23.36	23.69	25.27	21.08	21.51	23.08	24.23
7030	THM TH03 BVR	DGC	15.50	15.14	15.59	14.08	15.19	13.94	14.93	14.79
7033	THM TH12 BVR	DGC	23.05	24.59	27.14	31.18	22.37	22.39	24.86	26.24
7035	THM TH18 BVR	DGC	19.53	20.30	20.26	21.03	18.18	19.04	19.72	20.10
7040	THM TH01 TCB	DGC	19.42	19.72	19.96	19.66	18.72	18.15	18.74	19.07
7041	THM TH02 TCB	DGC	17.55	17.39	17.42	16.94	16.95	16.11	16.53	16.93
7042	THM TH03 TCB	DGC	16.85	16.32	16.04	17.08	17.20	14.86	15.67	16.00
7043	THM TH04 TCB	DGC	19.00	18.33	18.16	19.16	19.18	18.17	18.63	19.09
7044	THM TH05 TCB	DGC	16.42	15.75	15.44	15.17	14.98	14.17	14.91	15.27
7045	THM TH07 TCB	DGC	17.76	17.34	17.01	16.92	16.75	16.27	16.82	16.76
7046	THM TH09 TCB	DGC	19.30	18.81	18.82	19.31	18.28	18.26	18.88	18.84
7048	THM TH11 TCB	DGC	23.27	23.71	24.09	27.06	22.12	22.76	23.83	24.56
7049	THM TH12 TCB	DGC	23.04	23.94	26.53	30.59	21.07	22.10	24.15	25.79
7050	THM TH13 TCB	DGC	22.89	24.67	27.61	31.09	20.52	22.08	24.50	26.30
7051	THM TH14 TCB	DGC	24.07	27.69	31.17	36.18	22.10	24.12	27.03	29.14
7052	THM TH16 TCB	DGC	22.22	24.20	25.62	29.18	21.23	21.95	23.72	24.81
7053	THM TH17 TCB	DGC	23.52	24.86	25.00	26.83	22.45	22.13	24.02	24.91
7054	THM TH18 TCB	DGC	20.01	20.99	21.41	21.17	20.77	20.06	19.77	20.13
7060	THM Shutter By 1	DEG	22.34	26.60	27.36	24.93	16.56	11.98	14.79	18.85
7061	THM Shutter By 2	DEG	19.34	21.13	17.89	11.72	13.66	9.70	11.67	12.28
7062	THM Shutter By 3	DEG	22.75	11.99	28.91	19.01	21.45	00	1.85	9.12
7063	THM Shutter By 4	DEG	33.89	33.00	32.90	27.37	30.41	25.75	28.82	30.00
7064	THM Shutter By 5	DEG	7.30	2.90	2.42	1.79	0.58	58	58	58
7065	THM Shutter By 7	DEG	17.00	14.11	8.88	6.89	6.85	5.14	7.33	9.55
7067	THM Shutter By 9	DEG	33.75	31.12	33.70	36.71	30.73	31.50	32.99	31.50
7068	THM Shutter By 10	DEG	37.16	37.09	40.64	18.39	29.32	12.09	16.45	18.17
7069	THM Shutter By 11	DEG	52.25	17.39	22.81	16.42	9.14	14.86	24.81	27.06
7070	THM Shutter By 12	DEG	61.38	67.16	40.70	83.62	49.55	58.15	70.12	78.16
7071	THM Shutter By 13	DEG	63.60	71.11	8.189	81.89	16.49	58.67	7.04	80.01
7072	THM Shutter By 14	DEG	59.41	72.14	72.91	71.60	36.82	18.90	67.12	70.11
7073	THM Shutter By 15	DEG	67.79	82.12	83.87	83.96	51.29	65.10	80.19	82.61
7074	THM Shutter By 16	DEG	55.20	61.13	68.30	76.93	33.22	44.31	68.15	61.63
7075	THM Shutter By 17	DEG	57.88	67.62	68.67	78.15	51.96	49.82	67.18	69.71
7076	THM Shutter By 18	DEG	40.49	45.81	47.49	10.15	15.42	43.26	47.17	40.01
7080	THM Q1 T Zener V	VDC	4.85	4.85	4.85	4.85	4.85	4.85	4.85	4.85
7081	THM Q2 T Zener V	VDC	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90
7082	THM Q3 T Zener V	VDC	5.03	5.03	5.04	5.01	5.03	5.03	5.03	5.01
7083	THM Q1 S Zener V	VDC	4.97	4.96	4.96	4.97	4.95	4.95	4.95	4.95
7084	THM Q2 S Zener V	VDC	4.98	4.99	4.98	5.00	4.98	4.97	4.98	4.98
7085	THM Q3 S Zener V	VDC	5.15	5.15	5.15	5.15	5.15	5.15	5.15	5.15
7090	THM PSM Mount	DGC	21.02	21.71	21.28	22.79	18.93	19.48	20.56	21.11
7091	THM Ind Attitude	DGC	17.79	17.24	16.95	16.98	16.00	15.78	16.19	16.58
7092	THM RBV Radiator	DGC	18.01	16.24	16.71	18.06	14.84	15.18	16.31	16.70
7093	THM RBVC Ctr Bm	DGC	20.74	19.31	19.14	20.64	17.53	17.95	18.85	19.29
7094	THM WBVTR Root	DGC	13.77	15.72	13.90	14.91	11.88	11.98	13.43	13.77
7095	THM WBVTR Rad Ct	DGC	3.64	5.55	4.15	6.38	3.38	1.62	1.80	1.76
7096	THM WBVTR Strap	DGC	15.90	17.63	15.29	15.98	13.46	13.49	14.68	15.02
7097	THM WB Mt Bay 1	DGC	22.91	22.49	16.17	16.44	15.77	16.01	16.87	17.87
7098	THM WB Mat Bay 1	DGC	22.07	20.14	16.20	16.50	15.32	15.84	16.86	18.35
7099	THM WBVTR Sep 3	DGC	18.03	18.12	17.79	17.38	16.60	15.65	16.39	16.92
7100	THM WBVTR Sep 17	DGC	21.83	23.51	22.98	24.85	19.99	20.29	22.59	22.48
7101	THM WBVTR 1 Cent	DGC	22.45	23.78	20.33	20.91	18.44	18.28	19.48	19.91
7102	THM WBVTR 2 Bay	DGC	17.34	17.29	17.04	16.92	15.88	15.13	16.00	16.41
7103	THM WBVTR 2 Bay 15	DGC	21.77	23.87	23.50	26.26	18.95	19.91	22.25	23.08
7104	THM WBVTR 2 Ctr	DGC	20.74	22.34	19.94	21.14	17.28	17.57	19.08	19.86
7105	THM NBTR B Sep 6	DGC	p7.82	17.86	17.29	17.67	15.96	15.65	16.15	17.14
7106	THM NBTR B Sep 1	DGC	22.11	23.85	24.92	28.10	19.55	20.71	22.89	24.23
7107	THM NBTR Bm Ctr	DGC	20.32	21.21	20.59	21.90	17.80	18.51	19.55	20.26
7108	THM MSS Mount 14	DGC	20.59	22.86	23.83	26.90	18.40	19.16	21.76	22.94
7109	THM OA - Y Thruster	DGC	25.64	27.51	29.91	36.27	21.78	23.84	26.57	28.15
7110	THM MSS WBVTR Bm	DGC	16.75	18.21	16.84	17.55	14.86	14.70	16.00	16.17
7111	THM OA +X Thruster	DGC	20.33	20.43	17.54	17.84	16.67	17.14	17.98	18.82
7130	THM Aux P1 T	DGC	34.18	29.67	12.01	8.87	9.03	11.77	10.87	13.84
7131	THM Aux P2 T	DGC	2.90	6.97	28.16	8.49	8.03	27.92	27.46	27.13

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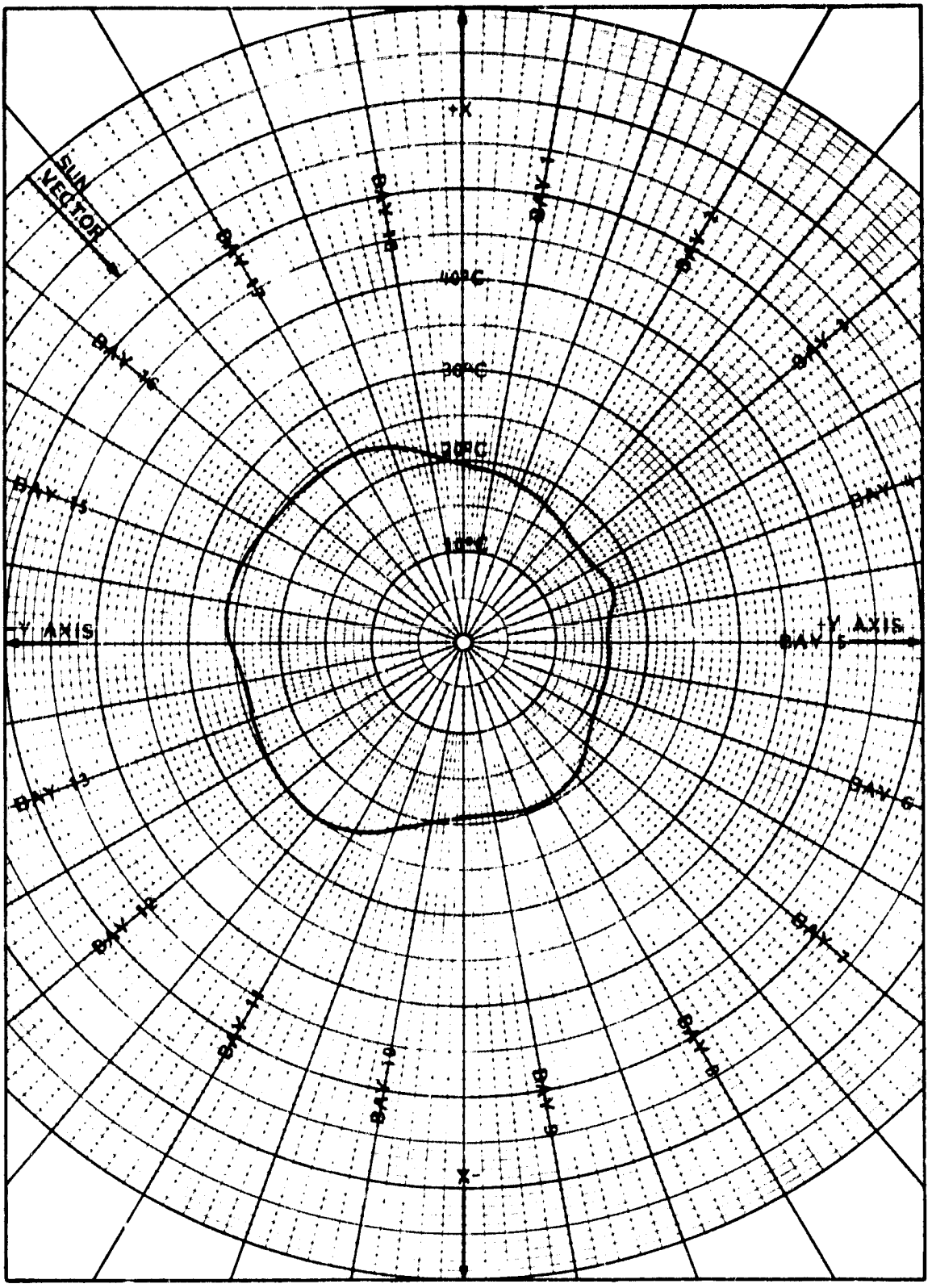

Figure 11-1. Landsat-2 Sensory Ring Average Bay Temperatures - Orbit 20252, 13 January 1979

Table 11-2. Landsat-2 Compensation Load History

Orbits	Compensation Load Status*							
	1	2	3	4	5	6	7	8
Launch	0	0	0	0	0	0	0	0
2	X	X	X	X	X	0	X	X
231	X	X	X	X	X	0	0	0
272	X	X	X	X	X	0	X	X
306	X	X	0	X	X	0	0	0
572	X	X	0	X	X	0	0	X
1367	X	X	X	X	X	0	0	X
1645	X	X	0	X	X	0	0	X
1657	X	X	X	X	X	0	0	X
4202	0	0	X	X	0	0	0	0
4372	0	0	X	X	0	0	0	X
6735	0	X	X	0	0	X	0	0
8312	X	X	0	0	X	0	0	0
9753	X	X	0	0	0	0	0	0
14727	0	0	0	0	0	0	0	0

*NOTE X = ON
0 = OFF

SECTION 12

NARROWBAND TAPE RECORDERS (NBR)

LANDSAT-2

SECTION 12

NARROWBAND TAPE RECORDERS (NBR)

During Orbit 20267 on 15 January 1979, while Alaska and Goldstone were recording a playback of NBR-A, the ground stations suddenly were unable to synchronize on the data. They had satisfactorily recorded the data for 35 seconds of its scheduled 4.8 minutes. Attempts to play back data in the next orbit were similarly unsuccessful. Motor current (Function 10001 was about 35% above normal.) The recorder has not been operated since Orbit 20268 on 15 January 1979. Study of the anomaly is continuing. The recorder has had 18320 hours of ON-time.

NBR-B has operated satisfactorily. Its ON time has been correlated with payload activity to conserve use. Both Recorders had alternated in Record and Playback modes with a nominal one minute overlap.

Table 12-1 gives cumulative operating hours for both Recorders by mode, and Table 12-2 gives typical telemetry values.

Table 12-1. NBR Operating Hours by Mode

NBR	ON	OFF	Playback	Record
A	18320	16724	720	17600
B	18423	16613	734	17689

Table 12-2. Narrowband Tape Recorder Telemetry Values, Landsat-2

Func	Name	Units	Orbits							
			36, 37	4950, 4951	11460, 11461	15211, 15212	17715, 39	19074, 5	19442, 3	19711, 2
10001	A - Motor I	mA								
	Record		132.0	130.2	125.59	114 [illegible]	117.46	122.22	122.22	122.22
	P/B		108.0	93.7	92.30	99.47	80.95	82.54	82.54	82.54
10101	B - Motor I	mA								
	Record		148.5	135.7	129.10	119.27	114.57	111.55	111.55	111.55
	P/B		113.6	135.7	127.65	119.09	107.04	105.53	107.04	107.04
10002	A - Pwr Sup. I	mA								
	Record		170.5	162.5	152.13	152.92	149.34	152.63	152.63	152.63
	P/B		410.0	399.3	472.26	386.14	376.32	389.44	389.44	386.14
10003	B - Pwr Sup. I	mA								
	Record		260.0	264.5	264.47	270.12	267.69	270.89	270. 9	270.89
	P/B		451.0	469.2	479.90	479.70	476.57	469.19	469.19	469.19
10103	A - Rec. Temp.	DGC	26.1	24.2	21.64	25.40	22.02	24.15	24.15	23.30
10103	B - Rec. Temp.	DGC	27.0	26.2	24.71	25.68	23.72	22.45	24.57	24.15
10004	A - Pwr Sup	VDC	-24.87	-25.1	-25.09	-25.08	-25.10	- 24.95	- 24.80	- 24.95
10104	B - Pwr Sup	VDC	-24.55	-24.6	-24.61	-24.73	-24.50	- 24.75	- 24.62	- 24.62

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SECTION 13

WIDEBAND TELEMETRY SUBSYSTEM (WBTS)
LANDSAT-2

SECTION 13

WIDEBAND TELEMETRY SUBSYSTEM (WBTS)

The WBTS has operated nominally in this report period.

Table 13-1 shows typical telemetry values. All are nominal.

WPA transmitted signal levels, measured at Goldstone with the spacecraft successively at the same points in space, show continuous satisfactory WPA performance.

Table 13-1. Typical Wideband Subsystem Telemetry

Func	Name	Units	Orbit							
			47	5091	10641	15211	17700	19075	19881	20248
12001 12101	Temp TWT Coll.	DGC	34.38 30.00	F 32.16	F 34.65	33.12 30.00	F 26.25	33.12 28.75	33.75 28.75	33.12 29.37
12002 12102	Cur. Helix	mA	4.29 4.41	F 4.59	F 4.61	3.90 4.70	F 4.46	4.03 4.86	3.95 4.90	3.90 4.88
12003 12103	Cur. Cath.	mA	46.04 46.42	F 46.00	F 44.07	44.93 44.62	F 45.14	44.93 45.79	44.93 45.79	44.93 45.58
12004 12104	Fwd. Pwr.	dBm	42.93 43.81	F 43.61	F 43.51	42.87 43.61	F 43.36	42.82 43.73	42.82 43.70	42.82 43.70
12005 12105	Refl. Pwr.	dBm	26.50 37.50	F 37.08	F 36.90	25.44 37.17	F 36.02	25.44 37.44	25.66 37.44	25.44 37.44
12227	Mod. A Loop Stress	Hz	2.14	F	1.60	1.77	0.75	1.64	1.64	1.64
12228	Mod. B Loop Stress	Hz	1.51	- 0.22	0.28	- 0.66	- 0.93	0.13	- 0.25	- 0.05
12229	Temp. Mod	DGC	18.51	17.97	17.41	16.00	18.44	16.00	15.63	17.29
12232	+15 VDC Pwr Sply	TMV	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65
12234	15 VDC Pwr Sply	TMV	4.27	4.04	3.99	4.10	4.19	4.07	4.10	4.10
12236	+5 VDC Pwr Sply	TMV	3.57	3.51	3.50	3.55	3.53	3.55	3.55	3.55
12238	-5 VDC Pwr Sply	TMV	4.20	4.07	4.02	4.08	4.11	4.10	4.10	4.07
12240	-24 VDC Unreg Pwr	TMV	6.20	5.90	5.92	5.92	6.02	5.85	5.98	5.85
12242	Temp. Inv.	DGC	24.12	22.53	22.18	22.17	21.26	21.34	21.20	22.02

F Unit Off

SECTION 14

ATTITUDE MEASUREMENT SENSOR (AMS)
LANDSAT-2

SECTION 14

ATTITUDE MEASUREMENT SENSOR (AMS)

The AMS is a passive radiometric balance sensor which operatos in the 14-16 micron IR band. AMS telemetry Values are shown in Table 14-1.

The AMS was launched in the OFF mode (CMD 774), turned ON during Orbit 6, and has been performing normally since then.

Table 14-1. Landsat-2 AMS Temperature Telemetry

Func	Name	Units	Orbit Number							
			50	5102	10191	15211	17711	19430	19881	20252
3004	Case Temp 1	DGC	19.00	18.68	18.36	18.67	17.50	17.65	18.35	18.37
3005	Assembly - Temp 2	DGC	18.70	18.30	17.97	18.28	17.23	17.33	18.04	18.08

SECTION 15

WIDEBAND VIDEO TAPE RECORDERS (WBVTR)
LANDSAT-2

SECTION 15

WIDEBAND VIDEO TAPE RECORDERS (WBVTR)

WBVTR-1 has not been in use since Orbit 10249 on 26 January 1977 because of failures of two of its Record/Playback heads (head 1, Orbit 2683, 3 August 1975; head 3, Orbit 10064 on 13 January 1977).

Twice in 1975, for an undetermined reason, WBVTR-2 stopped Rewind prematurely; once during Orbit 1913 on 9 June and again during Orbit 3854 on 26 October. This abnormality has not occurred since.

On 21 December 1976, during Orbit 9738, a playback of MSS data from WBVTR-2 of Landsat-2 was unusable due to high bit error counts. This anomaly has been experienced many times since then. The condition exists due to a tape overspeed of approximately 27%, caused by the servo voltage input being zero during the time of the anomaly. A simple operational procedure (Switch from Playback to Record to Playback) restores normal operation.

Table 15-1 gives typical non-modal telemetry values for WBVTR-1 and WBVTR-2. Tables 15-2 and 15-3 show the modal telemetry values for Record, Playback, Rewind, and Standby operational modes.

Figure 15-1 shows tape usage for WBVTR-2.

Table 15-1. Telemetry Values for WBVTR-1 and 2

Func	Name	Units	Orbits						
			45/46	4879	11871	17715	19430	19712	20251
13022	Tape Unit Pres	PSI	16.52	16.39	16.12	15.99	15.86	15.92	15.99
13023	Tape Unit Temp	DGC	20.74	20.12	16.69	16.30	16.69	16.69	18.12
13024	Elec U. Temp	DGC	25.00	21.68	13.85	13.46	14.24	14.23	14.98
13032	Limiter Volt	VPP	1.48	1.41	F	F	F	F	F
13034	+5.6 VDC Conv	VDC	5.70	5.57	F	F	F	F	F
13122	Tape Unit Press	PSI	16.12	15.33	14.54	13.35	13.22	13.22	13.10
13123	Tape Unit Temp	DGC	21.50	23.08	19.92	17.46	17.46	17.84	21.70
13124	Elect. U. Temp	DGC	23.50	22.72	16.63	16.92	17.04	18.07	22.25
13132	Limiter Volt	VPP	1.30	1.28	1.34	1.34	1.34	1.33	1.34
13134	+5.6 VDC Conv	VDC	5.71	5.85	5.66	5.80	6.07	5.60	5.64

F = Unit Off

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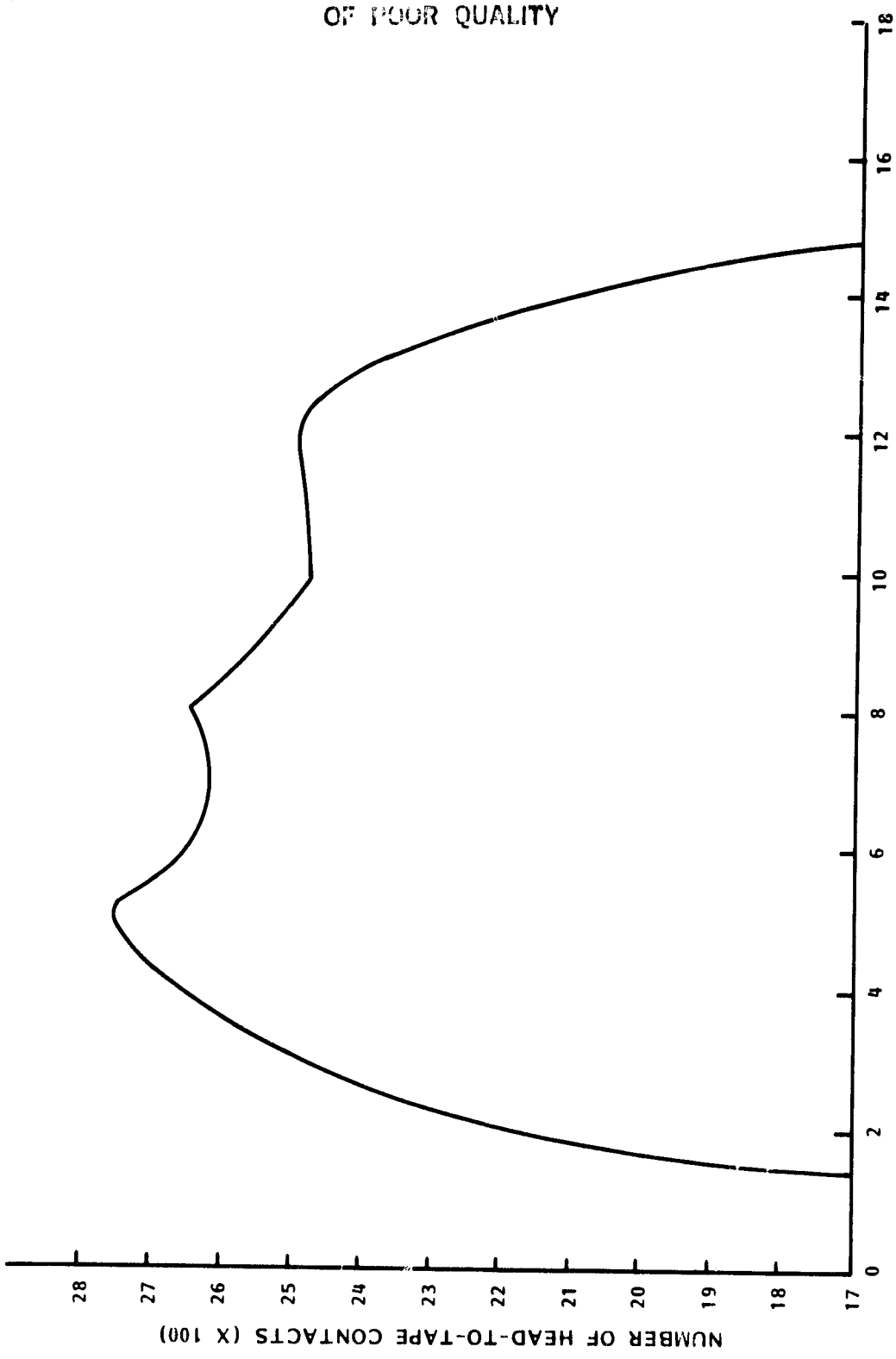

Figure 15-1. Landsat-2 WBVTR-2 Tape Usage thru Orbit 20294

Table 15-2. Function Values by Mode, Landsat-2 WBVTR-1 Telemetry

Func	Name	Units	Orbits					
			31/46	2642	4878	7628/7643	10050/10081	10249*
13029	Input P/B Voltage	VPP						
	Record		0.0	0.0	0.0	0.0	0.0	0.0
	Playback		0.60	0.32	0.30	0.32	0.35	0.35
	Rewind		0.0	0.0	0.0	0.0	0.0	0.0
	Standby		0.0	0.0	0.0	0.0	0.0	0.0
13028	Capstan Motor I	AMP						
	Record		0.31	0.33	0.31	0.33	0.31	0.32
	Playback		0.26	0.31	0.30	0.35	0.30	0.35
	Rewind		0.19	0.23	0.28	0.31	0.28	0.30
	Standby		0.0	0.0	0.0	0.0	0.0	0.0
13030	Headwheel Motor I	AMP						
	Record		0.50	0.50	0.53	0.56	0.56	0.52
	Playback		0.49	0.49	0.53	0.53	0.44	0.45
	Rewind		0.44	0.44	0.47	0.47	0.45	0.44
	Standby		0.45	0.45	0.46	0.44	0.44	0.44
13031	Recorder Input I	AMP						
	Record		3.69	3.69	3.62	3.62	3.62	3.52
	Playback		3.37	3.86	3.86	3.34	3.86	3.86
	Rewind		2.23	2.19	2.23	2.28	2.23	3.21
	Standby		1.78	1.95	1.95	1.81	1.95	1.86
13033	Servo Voltage	PCT						
	Record		0.0	0.0	0.0	0.0	0.0	0.0
	Playback		50.01	50.08	50.37	50.04	49.61	50.08
	Rewind		0.0	0.0	0.0	0.0	0.0	0.0
	Standby		0.0	0.0	0.0	0.0	0.0	0.0
13026	Capstan Motor Spd	PCT						
	Record		88.61	88.03	85.13	85.03	87.45	88.61
	Playback		88.35	86.87	85.13	87.45	94.90	88.87
	Rewind		100.2	98.48	96.73	98.48	96.00	96.52
	Standby		0.0	0.0	0.0	0.0	0.0	0.0
13027	Headwheel Mo Spd	PCT						
	Record		96.72	95.07	93.96	94.07	94.16	94.28
	Playback		97.28	94.52	92.86	92.86	94.44	94.80
	Rewind		98.6	96.73	96.73	96.73	96.73	96.60
	Standby		98.39	95.62	95.07	93.96	95.07	93.96

* Unit not used since Orbit 10249.

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Table 15-3. Function Values by Mode - Landsat-2 WBVTR-2 Telemetry

Func	Name	Units	Orbits							
			31/46	4878	10198/10199	15303/15286	17115	19433/19442	19712/19875	20249
13129	Input P/B Voltage	VPP								
	Record		0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00
	Playback		0.35	0.34	0.34	0.33	0.31	0.36	0.32	0.36
	Rewind		0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00
	Standby		0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00
13128	Capstan Motor I	AMP								
	Record		0.33	0.38	0.32	0.34	0.32	0.38	0.38	0.37
	Playback		0.33	0.35	0.35	0.36	0.32	0.32	0.32	0.32
	Rewind		0.20	0.15	0.18	0.18	0.15	0.18	0.19	0.18
	Standby		0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00
13130	Headwheel Motor I	AMP								
	Record		0.47	0.48	0.49	0.47	0.50	0.48	0.48	0.49
	Playback		0.48	0.48	0.49	0.47	0.47	0.47	0.46	0.47
	Rewind		0.44	0.41	0.43	0.41	0.41	0.40	0.39	0.40
	Standby		0.43	0.41	0.44	0.40	0.41	0.41	0.40	0.41
13131	Recorder Input I	AMP								
	Record		2.90	2.90	2.90	2.93	2.96	2.90	2.90	2.93
	Playback		3.14	3.11	3.20	3.11	3.11	3.08	3.08	3.08
	Rewind		1.80	1.80	1.80	1.78	1.71	1.73	1.75	1.75
	Standby		1.51	1.62	1.49	1.48	1.55	1.53	1.46	1.46
13133	Servo Voltage	PCT								
	Record		0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00
	Playback		49.00	49.43	49.45	49.71	49.72	50.01	50.01	50.01
	Rewind		0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00
	Standby		0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00
13126	Capstan Motor Spd	PCT								
	Record		112.10	105.33	105.30	103.96	103.96	102.58	102.59	102.59
	Playback		112.10	103.96	105.07	102.59	102.59	101.90	101.90	101.90
	Rewind		120.43	117.68	117.14	116.31	115.62	115.63	116.31	115.63
	Standby		0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00
13127	Headwheel Mo Spd	PCT								
	Record		98.08	95.48	95.01	93.40	93.40	93.40	92.88	92.88
	Playback		97.04	94.44	94.80	93.40	92.88	92.88	92.88	92.88
	Rewind		98.6	96.52	96.81	94.44	93.92	93.92	94.44	93.92
	Standby		100.79	96.00	95.95	94.96	94.44	94.44	93.40	92.88

SECTION 16
RETURN BEAM VIDICON (RBV)
LANDSAT-2

SECTION 16

RETURN BEAM VIDICON (RBV)

RBV was on for quarterly engineering test during this report period. Telemetry data was normal.

RBV scenes are transmitted to Canada, Brazil, Iran and Japan as well as to U.S. stations.

Table 16-1 gives typical telemetry values for the RBV Subsystem. Tables 16-2, 16-3 and 16-4 gives telemetry values for Prepare, Read and Hold modes for the three RBV cameras.

Table 16-1. RBV Telemetry Values

Func	Name	Units	Orbits						
			54	5662	10157	15228	17739	19075	19712
14001	CCC Board Temp.	DGC	19.65	20.41	20.15	21.57	18.28	18.83	19.39
14002	CCC Pwr. Sup. Temp	DGC	20.52	20.80	20.17	22.79	18.83	19.94	20.19
14003	15 VDC Sup.	TMV	3.92	4.00	3.84	3.77	3.92	3.95	3.95
14004	+6V, -5.25 VDC Sup.	TMV	2.92	3.13	3.03	2.93	3.05	3.07	3.07
14100			N	0.70	1.95	1.18	1.15	0.75	1.15
14200 *	VID Output V	TMV	1.05	1.26	0.88	1.18	0.67	1.70	2.10
14300			1.03	1.31	1.10	1.17	0.70	1.60	2.17
14102			3.95	3.82	3.70	3.85	3.80	3.92	3.80
14202 *	Comb. Align Cur.	TMV	3.91	3.88	3.92	3.91	3.97	3.87	3.97
14302			3.90	3.83	3.75	3.74	3.85	3.85	3.97
14103			24.24	26.51	23.00	29.43	22.70	23.26	26.02
14203 *	Elec Temp.	DGC	19.84	22.05	20.18	19.86	19.28	18.18	22.60
14303			25.05	29.42	23.42	35.07	22.60	23.70	29.24
14104			24.44	26.28	23.15	28.66	21.70	22.26	26.13
14204 *	LV Pwr Sup T.	DGC	18.14	20.61	18.90	18.07	17.18	16.62	21.05
14304			25.36	29.17	24.00	35.25	23.26	23.26	29.31
14105			4.00	3.96	3.84	3.84	4.00	3.97	4.00
14205 *	Defl. Pwr. Sup. +10 VDC	TMV	3.97	3.94	3.82	3.81	3.95	3.97	3.97
14305			4.00	3.96	3.96	4.00	4.00	4.00	4.06
14106			3.67	3.63	3.26	3.54	3.67	3.67	3.67
14206 *	L.V.P.S. +6V, -6.3 VDC	TMV	3.65	3.62	3.34	3.50	3.65	3.65	3.65
14306			3.70	3.68	3.42	3.72	3.70	3.70	3.70
14107			2.61	2.61	2.60	2.51	2.77	2.67	2.65
14207 *	Ther. Elec. Cur.	TMV	2.49	2.51	2.44	2.40	2.60	2.55	2.55
14307			2.57	2.57	2.71	2.44	2.72	2.57	2.67
14108			2.43	2.50	2.46	2.44	2.55	2.55	2.55
14208 *	Vid. Fil. Cur.	TMV	2.40	2.36	2.39	2.30	2.40	2.40	2.42
14308			2.58	2.54	2.59	2.47	2.60	2.60	2.57
14110			2.98	2.96	2.98	2.98	2.97	2.97	2.97
14210 *	Vid. Tgt. Volt	TMV	2.86	2.96	2.60	2.88	3.00	3.00	3.10
14310			2.63	2.58	2.37	2.52	2.62	2.62	2.67
14113			2.92	2.81	2.98	2.79	3.35	2.90	2.90
14213 *	Vert Def V	TMV	3.15	3.05	3.16	3.12	3.10	3.12	3.12
14313			3.59	3.44	3.04	3.47	4.00	4.00	3.50
14114			19.87	19.21	19.85	19.82	21.99	22.55	21.99
14214 *	Vid FPT	DGC	20.55	19.80	20.46	20.24	20.54	21.06	21.06
14314			20.65	20.56	20.38	21.57	22.40	22.86	22.86
14115			21.04	21.31	21.02	21.41	17.07	17.62	18.18
14215 *	F. Coil T	DGC	20.67	21.26	19.17	21.06	17.62	17.62	18.18
14315			22.25	22.89	20.61	24.14	18.62	19.18	20.28

* - 141XX Refers to Camera 1
142XX Refers to Camera 2
143XX Refers to Camera 3
N - Data not available

FOLDOUT FRAME

Table 16-2. Camera #1 (Blue) Telemetry (Values in TMV)

Func	Name	Units	Mode	Orbits					
				054	5663	10157	15228	17739	19712
14101	Focus I	TMV	Prep	1.68	1.74	1.67	1.77	1.67	1.70
			Read	2.80	2.85	2.80	2.90	2.80	2.82
			Hold	0.65	0.69	0.65	0.75	0.65	0.65
14109	Grid V	TMV	Prep	0.80	0.78	0.80	0.77	0.80	0.80
			Read	2.42	2.42	2.45	2.45	2.42	2.42
			Hold	3.95	3.98	3.95	3.97	3.95	3.95
14111	Cath I	TMV	Prep	3.05	3.02	3.05	3.02	3.02	3.02
			Read	0.83	0.83	0.85	0.82	0.82	0.85
			Hold	0.38	0.37	0.37	0.37	0.37	0.37
14112	Hor Def	TMV	Prep	1.75	1.77	1.77	1.77	1.77	1.77
			Read	3.25	3.25	3.21	3.25	3.22	3.25
			Hold	0.0	0.0	0.0	0.0	0.0	0.00
14120	+500 V	TMV	Prep	0.85	0.90	0.92	0.90	0.95	0.90
			Read	4.05	4.05	4.05	4.05	4.02	4.05
			Hold	4.05	4.05	4.05	4.05	4.02	4.02

Table 16-3. Camera #2 (Yellow) Telemetry (Values in TMV)

Func	Name	Units	Mode	Orbits					
				054	5663	10157	15228	17739	19712
14201	Focus I	TMV	Prep	1.56	1.54	1.50	1.50	1.50	1.50
			Read	2.65	2.65	2.65	2.65	2.62	2.62
			Hold	0.54	0.53	0.54	0.50	0.50	0.50
14209	Grid V	TMV	Prep	0.75	0.80	0.80	0.75	0.77	0.80
			Read	2.25	2.22	2.25	2.20	2.25	2.25
			Hold	4.05	4.11	4.11	4.10	4.07	4.10
14211	Cath I	TMV	Prep	3.05	3.05	3.05	3.05	3.05	3.05
			Read	0.95	0.95	0.95	0.95	0.95	0.95
			Hold	0.37	0.35	0.35	0.35	0.35	0.37
14212	Hor Def	TMV	Prep	1.85	1.87	1.87	1.85	1.85	1.85
			Read	3.25	3.31	3.24	3.30	3.30	3.30
			Hold	0.0	0.0	0.0	0.0	0.0	0.00
14220	+500V	TMV	Prep	1.15	1.14	1.15	1.12	1.12	1.12
			Read	4.25	4.27	4.27	4.27	4.27	4.27
			Hold	4.25	4.27	4.27	4.27	4.27	4.27

			Read	0.95	0.95	0.95	0.95	0.95	0.95
			Hold	0.37	0.35	0.35	0.35	0.35	0.37
14212	Hor Def	TMV	Prep	1.85	1.87	1.87	1.85	1.85	1.85
			Read	3.25	3.31	3.24	3.30	3.30	3 30
			Hold	0.0	0.0	0.0	0.0	0.0	0.00
14220	+500V	TMV	Prep	1.15	1.14	1.15	1.12	1.12	1.12
			Read	4.25	4.27	4.27	4.27	4.27	4.27
			Hold	4.25	4.27	4.27	4.27	4.27	4.27

Table 16-4. Camera #3 (Red) Telemetry (Values in TMV)

Func	Name	Units	Mode	Orbit					
				054	5663	10157	15228	17739	19712
14301	Focus I	TMV	Prep	1.79	1.85	1.77	1.95	1.77	1.80
			Read	2.85	2.93	2.85	3.02	2.85	2.90
			Hold	0.65	0.72	0.69	0.80	0.67	0.70
14309	Grid V	TMV	Prep	0.75	0.75	0.77	0.77	0.77	0.77
			Read	2.65	2.66	2.66	2.72	2.67	2.70
			Hold	4.08	4.13	4.12	4.12	4.10	4.10
14311	Cath I	TMV	Prep	3.25	3.22	3.23	3.22	3.22	3.22
			Read	0.54	0.55	0.55	0.55	0.55	0.55
			Hold	0.39	0.40	0.40	0.40	0.40	0.40
14312	Hor Def	TMV	Prep	2.05	2.07	2.07	2.07	2.02	2.02
			Read	3.25	3.42	3.42	3.40	3.40	3.40
			Hold	0.0	0.0	0.0	0.0	0.0	0.00
14320	+500 V	TMV	Prep	1.15	1.15	1.15	1.15	1.15	1.15
			Read	4.25	4.27	4.27	4.27	4.25	4.25
			Hold	4.25	4.27	4.27	4.27	4.25	4.25

SECTION 17

MULTISPECTRAL SCANNER SUBSYSTEM (MSS)

LANDSAT-2

SECTION 17

MULTISPECTRAL SCANNER SUBSYSTEM (MSS)

The MSS Subsystem has operated nominally in this period. Figure 17-1 shows the number of scenes imaged at each geographic location this quarter. Figure 17-2 show scenes imaged since launch. Only those scenes received by U.S. and Parkistan ground stations are shown. Scenes transmitted by Canada, Italy, Iran, and Brazil (55% of total) are not shown. More scenes were transmitted to foreign users than to U.S. users.

Table 17-1 shows typical telemetry values since launch. All are nominal.

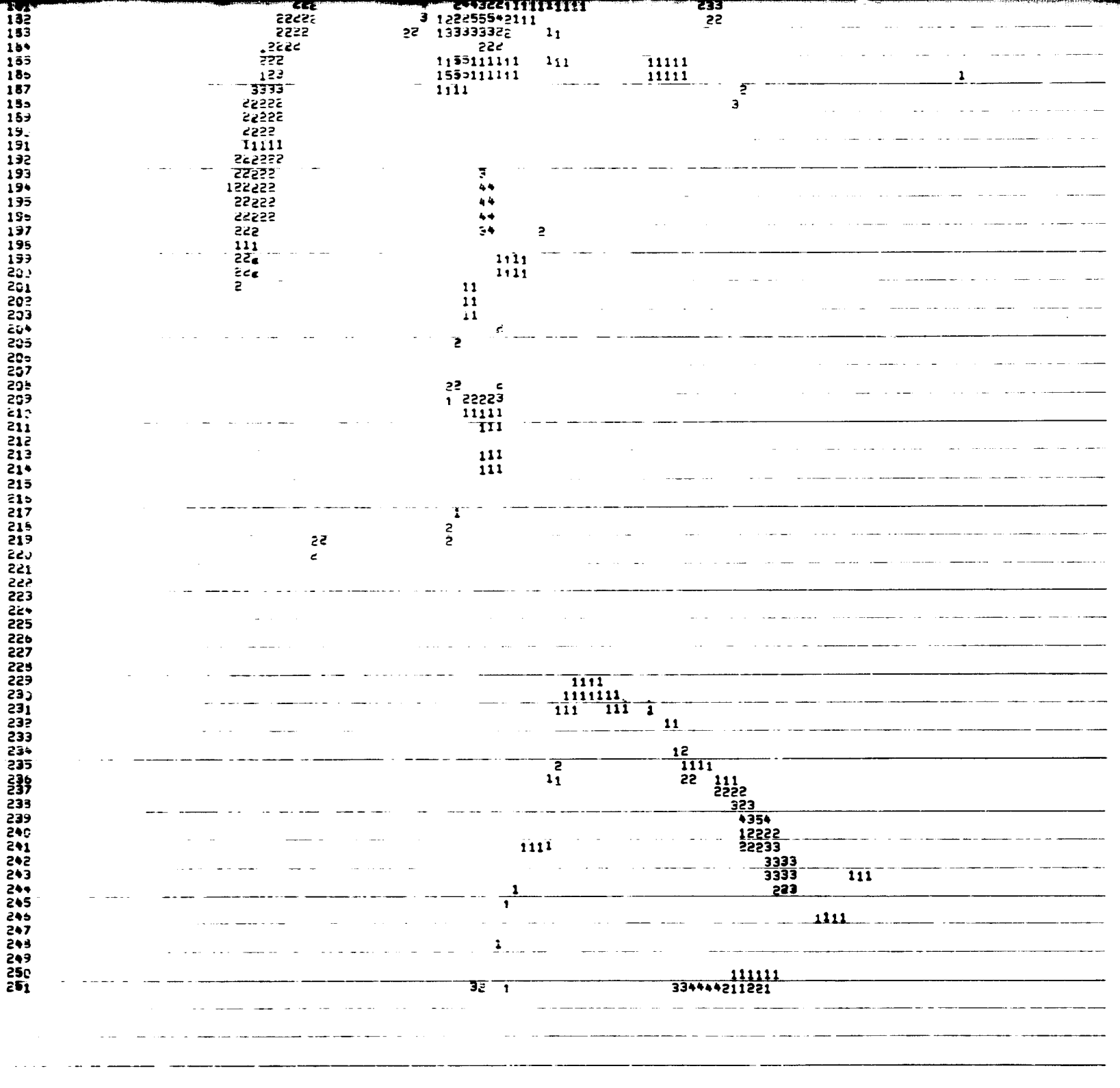
Table 17-2 shows the history of sensor response to a constant input radiance level. Each sensor is sampled at 5 radiance levels and all show essentially the same trends. Only one of these levels (the second highest) is listed in Table 17-2. Line length history is also shown in Table 17-2. It is well within satisfactory limits. Sensor responses and line lengths this quarter are also satisfactory.

Sun calibrations, performed every month, show performance is nominal. To update processing parameters, both low-gain and high-gain data are now being taken.

Table 17-1. MSS Telemetry - Landsat-2

Parm	Name	Units	Orbits							
			27	5091	10192	15211	17712	19430	19881	20242
15040	MUX -6 V	TMV	4.05	4.04	4.05	4.05	4.05	4.05	4.05	4.05
15041	A/D SUPPLY	TMV	5.95	5.95	5.95	5.95	5.95	5.92	5.92	5.92
15042	AVERAGE DENSITY DATA TRANS	TMV	1.71	1.95	2.62	1.98	2.03	2.06	2.01	2.12
15043	FIBER OPTICS PLATE 1 TEMP	DGC	18.13	21.75	20.15	21.04	17.74	17.69	19.26	19.33
15044	FIBER OPTICS PLATE 2 TEMP	DGC	17.87	20.28	18.54	19.50	15.85	15.79	17.59	17.62
15045	MUX TEMP	DGC	23.38	23.63	24.68	28.27	19.91	20.73	24.17	25.12
15046	ELEC COVER TEMP	DGC	20.25	22.96	20.01	21.02	17.26	17.26	19.12	19.37
15047	PWR. SUP. TEMP	DGC	19.45	21.62	20.66	21.75	17.22	17.18	19.36	19.92
15048	SCAN MIR REG. TEMP	DGC	18.30	21.13	20.94	22.37	16.61	17.01	19.50	20.19
15049	SCAN MIR DRIVE ELEC. TEMP	DGC	18.96	21.42	21.25	22.64	16.79	17.10	19.68	20.63
15050	SCAN MIR DRIVE COVER TEMP	DGC	17.26	21.21	20.85	22.25	16.70	17.11	19.47	20.06
15051	SCAN MIR TEMP	DGC	17.26	20.89	20.46	22.06	16.52	16.86	19.10	19.55
15052	ROT. SHUT HOUSING TEMP	DGC	23.26	20.28	18.58	19.58	15.85	15.84	17.69	17.74
15053	SCAN MIR REG VOLT	TMV	4.70	4.57	4.63	4.63	4.57	4.58	4.57	4.58
15054	CAL LAMP CURRENT	TMV	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17
15055	BAND 1 15 VDC	TMV	4.98	4.97	4.97	4.97	4.97	4.97	4.97	4.97
15056	BAND 2 15 VDC	TMV	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
15057	BAND 3 15 VDC	TMV	4.95	4.95	4.95	4.95	4.95	4.94	4.95	4.94
15058	BAND 4 15 VDC	TMV	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
15059	TLM -15 V	TMV	5.06	5.07	5.07	5.07	5.07	5.07	5.07	5.07
15060	+12 V/-6 V	TMV	5.03	5.02	5.01	5.02	5.01	5.00	5.01	5.01
15061	LOGIC +5 V	TMV	4.81	4.83	4.85	4.83	4.84	4.92	4.87	4.85
15062	RECT. +19 V	TMV	5.03	5.05	5.05	5.05	5.05	5.05	5.05	5.02
15063	RECT. -19 V	TMV	3.60	3.60	3.60	3.60	3.59	3.60	3.59	3.61
15064	BAND 1 HVA	TMV	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95
15065	BAND 1 HVB	TMV	F	F	F	F	F	F	F	F
15066	BAND 2 HVA	TMV	4.70	4.75	4.73	4.73	4.72	4.72	4.72	4.72
15067	BAND 2 HVB	TMV	F	F	F	F	F	F	F	F
15068	BAND 3 HVA	TMV	4.72	4.73	4.75	4.75	4.75	4.75	4.75	4.75
15069	BAND 3 HVB	TMV	F	F	F	F	F	F	F	F
15070	SHUT MOT. CONTR. INTEG	TMV	2.60	2.60	2.60	2.58	2.59	2.58	2.59	2.59
15071	SCAN MIRROR DRIVE CLOCK	TMV	2.00	2.00	2.01	2.00	1.97	1.99	1.99	2.00

F = Unit OFF



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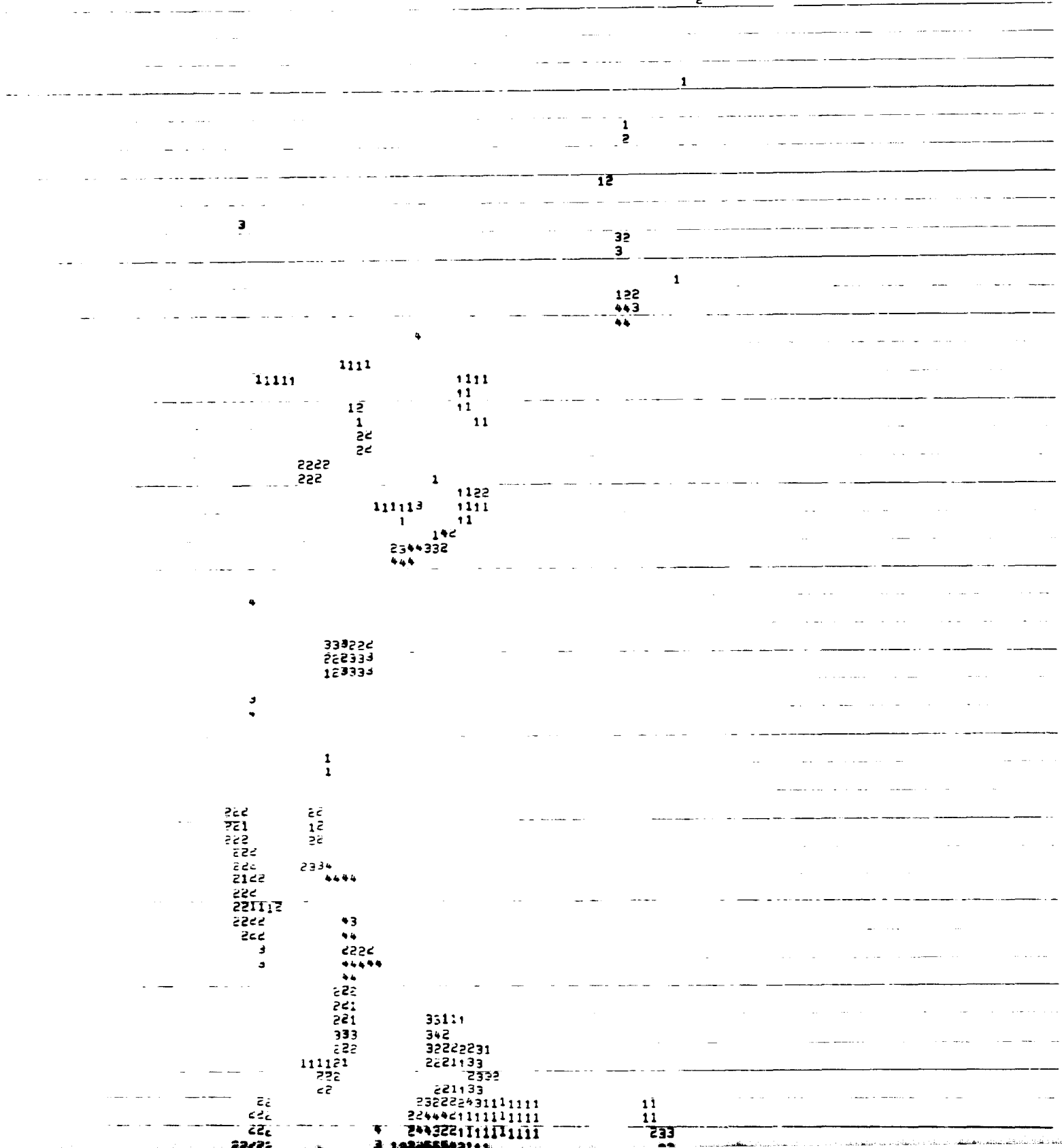

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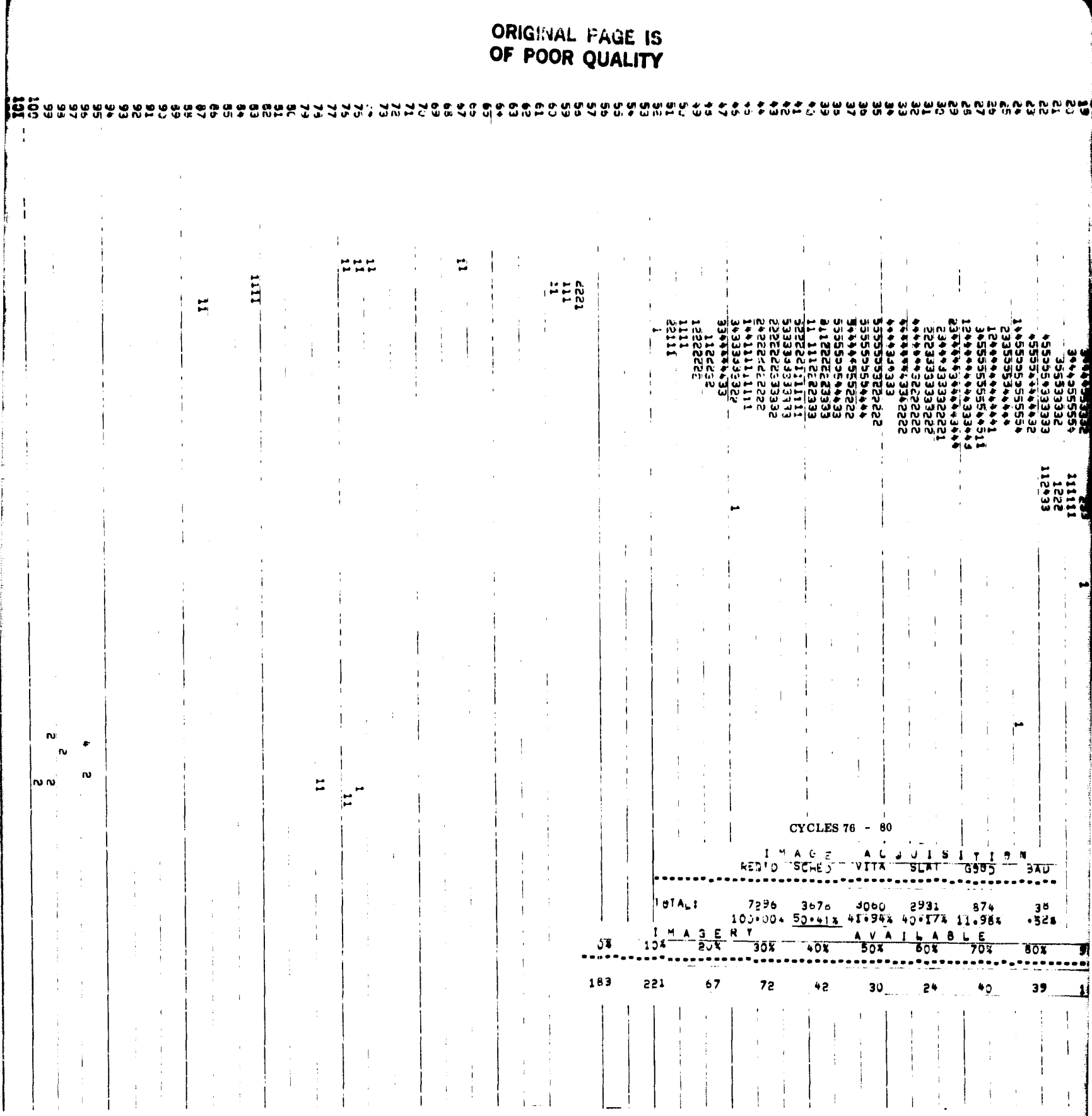

Figure 1

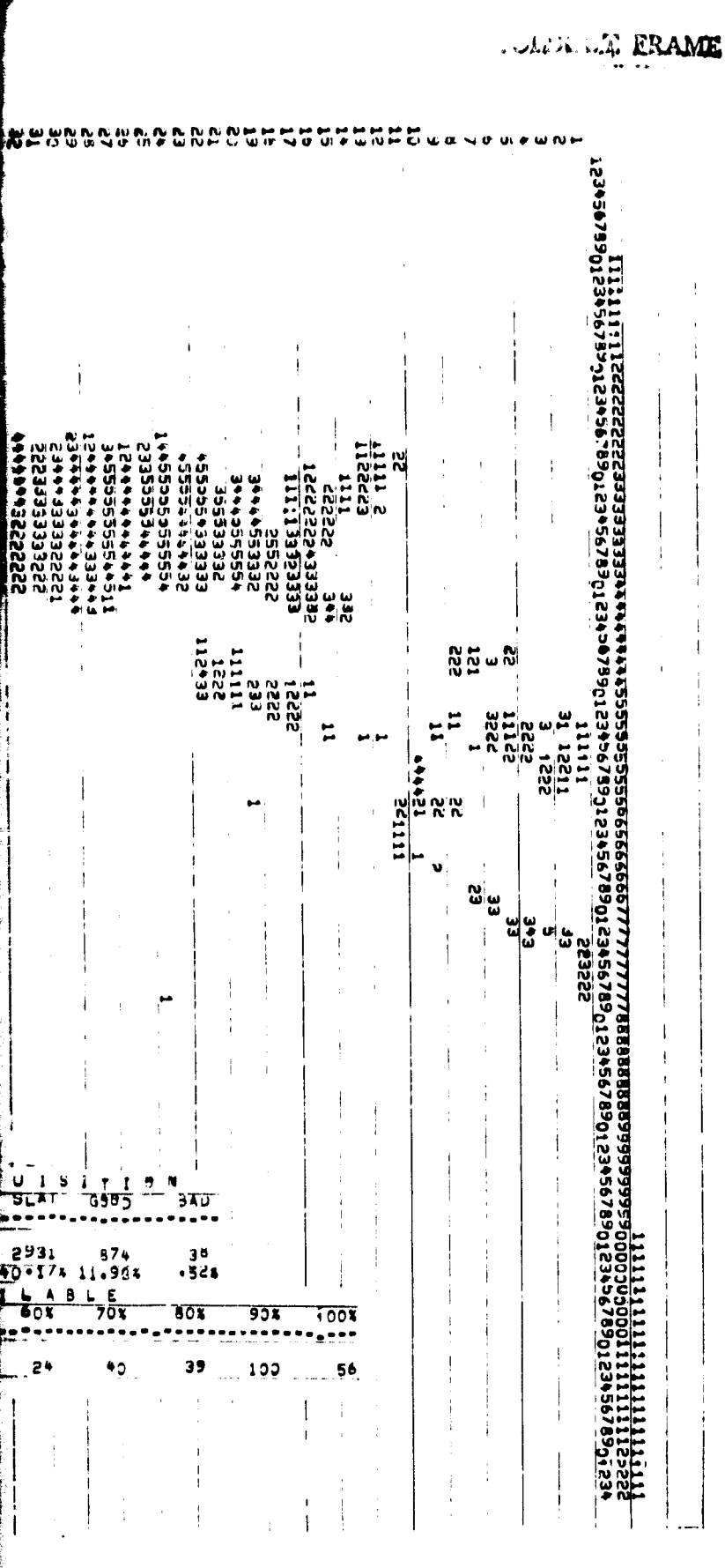

Figure 17-1. MSS Scenes This Quarter
Landsat-2

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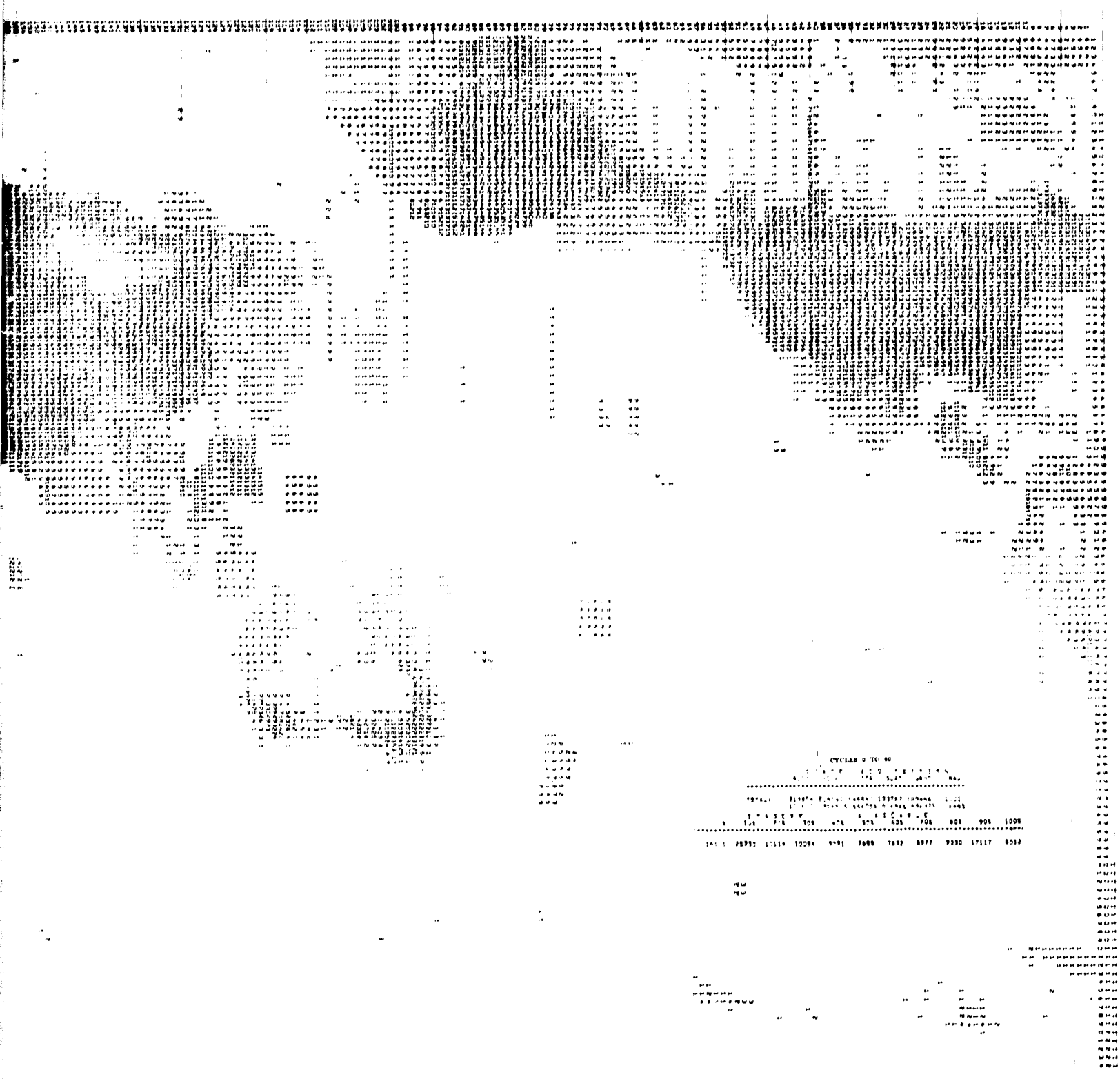

Figure 17-2. MSS Scenes Since Launch
Landsat-2

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Table 17-2. MSS Response History - Landsat-2

Quantum Level for Constant Calibration Lamp Input
(0 = Black; 63 = White)

Band	Sensor	At 1st Turn ON	Average Value in Orbit			4th Year		% Chg Since Launch
			1st Year	2nd Year	3rd Year	First 3 Quar.	Current Quar.	
1	1	43	40	39	38	37	36	-16
	2	41	40	39	37	36	35	-15
	3	46	43	42	41	42	41	-11
	4	46	45	45	44	43	43	- 7
	5	44	40	39	38	38	36	-18
	6	46	43	43	42	42	40	-13
2	7	47	45	45	45	45	45	- 4
	8	44	40	41	41	41	41	- 7
	9	48	46	46	45	44	44	- 8
	10	50	48	48	46	47	46	- 8
	11	48	47	47	47	47	46	- 4
	12	47	44	44	42	42	41	-13
3	13	42	40	40	39	39	38	-10
	14	44	43	42	41	40	40	- 9
	15	47	46	47	47	47	47	0
	16	47	45	46	46	46	46	- 2
	17	48	46	46	46	47	47	- 2
	18	46	44	45	45	46	46	0
4	19	25	25	25	25	25	25	0
	20	26	27	27	26	26	26	0
	21	32	32	32	31	31	31	- 3
	22	29	30	30	29	29	29	0
	23	32	33	33	32	32	32	0
	24	28	28	28	28	28	27	- 4
Line Length		3250	3249	3248	3246	3240	3241	0.3

SECTION 18

DATA COLLECTION SYSTEM (DCS)

LANDSAT-2

SECTION 18

DATA COLLECTION SUBSYSTEM (DCS)

The DCS Subsystem was turned OFF during Orbit 15857 on 4 March 1978, and the function assumed by Landsat-3. The subsystem is capable of resuming operational status if desired.

APPENDIX A

LANDSAT-2 ANOMALIES AND OBSERVATIONS

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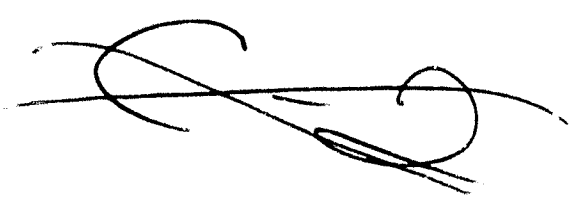
Appendix A. Landsat-2 Anomalies and Observations

Date	Anomaly Observation	How Observed	Comments
Prelaunch	Forward Scanner Pressure Leak	Spacecraft Integration	Before launch pressure increased. After launch pressure decreased. No anticipated effect on Scanner or S/C mission
Prelaunch	Defective TLM Functions 1264, 4002, 13200	Spacecraft Integration	Functions measure non-critical temperatures. Sensors failed prior to launch. Mission unaffected.
1 8 75	Unencoded command 781, CIU Channel B Off, received by spacecraft from RF interference. Commands 782 or 786, switch comedecs; and commands 780 or 784, switch PWM regulator, received at other times	On-Line	Non-Landsat OCC Authorized Unencoded commands received in Orbit 619, 640, 743, 1575, 1700, 2005, 3104, 4769, 5025, 7925, 8721, 9804, 9823, 9863, 10268, 10466, 10522, 10538, 10800, 13309, 14508, 14804, 15533, 16270, 17396, 19792.
3 17 75	MMCA Pitch Flux Density TLM Drift	Off-Line	Telemetry decreased 5 counts and indicates increase flux density on charged magnet. Probable sensor drift. No apparent effect on S/C performance
4 5 75	WBVTR-1 Rewind Failure (MDR E01252)	On-Line	WBVTR-1 failed to execute Rewind command or prematurely terminated rewinds due to false BOT signal. Subsequent commands or Fool-Logic techniques allowed return to operation. Investigation Committee report issued. Problems occurred Orbit 1021, 1532, 1568, 2238. Operation restricted to 500 thru 1500 feet.
6 9 75	WBVTR-2 had Short Rewind (MDR E01255)	On-Line	WBVTR-2 started rewind but stopped prematurely in Orbit 1919 and again in Orbit 3854. Investigation Committee did not define a probable cause but assigned a momentary False BOT as reason for short rewind. Unit remains operational
8 3 75	WBVTR-1 data did not provide sync to ground station (MDR D04930)	On-Line	One head circuit of WBVTR-1 failed to operate. 25% of data lost in data stream. Operation discontinued until early 1976, when it was used with RBV only
11 14 75	MSS False End-of-Line Codes (MDR D04940)	Off-Line	Occasional End-of-Line codes occurring in preamble or along video data. Creates 4 black and 4 white words in scene data. Occurs over magnetic anomalies with low incidence rate. Operation continued.
1 25 76	Solar Array Current Notch (MDR D04934)	On-Line	In Orbit 5123, abnormal drops in solar array current appeared for portion of satellite day. S/C operation unaffected because solar array has excess power to date.
7 20 76	Battery 6 Turned Off. Subsequent Battery 1, 2, 5, 6, 7 and 8 Turned Off.	On-Line & Off-Line	Battery 6 decreased in load share and rose in charge share thereby causing overcharge. Temperature increased and unit was turned off in Orbit 7601. (Returned to service in Orbit 7892.) See Table 3-2 for history of all battery restoration cycles.
7 29 76	WBVTR-2 Automatic Shutdown by SMART	On-Line	SMART circuits detected high headwheel currents in Orbit 7720 and shutdown WBVTR-2. WBVTR-2 operation was normal; high headwheel current assigned to slipped phase. Normal operation resumed after reset.
12 21 76	WBVTR-2 had 30% high P/B speed (MDRD04936)	On-Line	Ground equipment would not synch on WBVTR-2 P/B data during Orbit 9738 P/B. Analysis showed P/B speed was 30% high. Toggling, record to P/B, restored normal operation. Occurred frequently this quarter requiring replay of garbled data.
1 15 77	WBVTR-1 second head failed (MDR D04937)	On-Line	Observation of CRT trace during WBVTR-1 RBV P/B data in Orbit 10086 showed second head failed. Operation discontinued
8 12 77	Payload Automatic Inhibit from ECAM by SMART	On-Line	SMART circuits detected S/C unreg bus low voltage on Orbit 13342 caused by operation problems. Inhibited further payload operation from ECAM. Reset returned S/C to normal. Recurred during Orbit 14865, 15013, 15156, 16685, 16698, 16744. Reset returned S/C to normal each time.
1 3 79	COMSTOR went to an indeterminate mode MDR #D04546	On-Line	During loading of ECAM in Orbit 20193 a command abort occurred during or at end of "Serial Data Transfer On" command 007. COMSTOR went from Activate to an indeterminate mode. COMSTOR was reloaded and is performing normally.
1 15 79	NBTR-1 failed during P/B MDR # D0947	On-Line	NBTR-1 halted after 35 seconds of P/B in Orbit 20260. Subsequent operation attempts unsuccessful. Unit has 15820 in-flight operation hours. Motor current is high.

APPENDIX B

LANDSAT-2 SPACECRAFT ORBIT REFERENCE TABLES



APPENDIX B

LANDSAT-2

SPACECRAFT ORBIT REFERENCE TABLES

FROM JANUARY 1978 THROUGH JULY 1979

ORBIT 14981 TO 23026

FLIGHT DAY 1075 THROUGH 1651

Landsat-2

January 1978

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	1	1075	14981-14994	113-126	9	59
2	2	1076	14995-15008	127-140	10	59
3	3	1077	15009-15022	141-154	11	59
4	4	1078	15023-15036	155-168	12	59
5	5	1079	15037-15050	169-182	13	59
6	6	1080	15051-15064	183-196	14	59
7	7	1081	15065-15077	197-209	15	59
8	8	1082	15078-15091	210-223	16	59
9	9	1083	15092-15105	224-237	17	59
10	10	1084	15106-15119	238-251	18	59
11	11	1085	15120-15133	1- 14	1	60
12	12	1086	15134-15147	15- 28	2	60
13	13	1087	15148-15161	29- 42	3	60
14	14	1088	15162-15175	43- 56	4	60
15	15	1089	15176-15189	57- 70	5	60
16	16	1090	15190-15203	71- 84	6	60
17	17	1091	15204-15217	85- 98	7	60
18	18	1092	15218-15231	99-112	8	60
19	19	1093	15232-15245	113-126	9	60
20	20	1094	15246-15259	127-140	10	60
21	21	1095	15260-15273	141-154	11	60
22	22	1096	15274-15287	155-168	12	60
23	23	1097	15288-15301	169-182	13	60
24	24	1098	15302-15315	183-196	14	60
25	25	1099	15316-15328	197-209	15	60
26	26	1100	15329-15342	210-223	16	60
27	27	1101	15343-15356	224-237	17	60
28	28	1102	15357-15370	238-251	18	60
29	29	1103	15371-15384	1- 14	1	61
30	30	1104	15385-15398	15- 28	2	61
31	31	1105	15399-15412	29- 42	3	61

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February 1978

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	32	1106	15413-15426	43- 56	4	61
2	33	1107	15427-15440	57- 70	5	61
3	34	1108	15441-15454	71- 84	6	61
4	35	1109	15455-15468	85- 98	7	61
5	36	1110	15469-15482	99-112	8	61
6	37	1111	15483-15496	113-126	9	61
7	38	1112	15497-15510	127-140	10	61
8	39	1113	15511-15524	141-154	11	61
9	40	1114	15525-15538	155-168	12	61
10	41	1115	15539-15552	169-182	13	61
11	42	1116	15553-15566	183-196	14	61
12	43	1117	15567-15579	197-209	15	61
13	44	1118	15580-15593	210-223	16	61
14	45	1119	15594-15607	224-237	17	61
15	46	1120	15608-15621	238-251	18	61
16	47	1121	15622-15635	1- 14	1	62
17	48	1122	15636-15649	15- 28	2	62
18	49	1123	15650-15663	29- 42	3	62
19	50	1124	15664-15677	43- 56	4	62
20	51	1125	15678-15691	57- 70	5	62
21	52	1126	15692-15705	71- 84	6	62
22	53	1127	15706-15719	85- 98	7	62
23	54	1128	15720-15733	99-112	8	62
24	55	1129	15734-15747	113-126	9	62
25	56	1130	15748-15761	127-140	10	62
26	57	1131	15762-15775	141-154	11	62
27	58	1132	15776-15789	155-168	12	62
28	59	1133	15790-15803	169-182	13	62

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March 1978

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	60	1134	15804-15817	183-196	14	62
2	61	1135	15818-15830	197-209	15	62
3	62	1136	15831-15844	210-223	16	62
4	63	1137	15845-15858	224-237	17	62
5	64	1138	15859-15872	238-251	18	62
6	65	1139	15873-15886	1- 14	1	63
7	66	1140	15887-15900	15- 28	2	63
8	67	1141	15901-15914	29- 42	3	63
9	68	1142	15915-15928	43- 56	4	63
10	69	1143	15929-15942	57- 70	5	63
11	70	1144	15943-15956	71- 84	6	63
12	71	1145	15957-15970	85- 98	7	63
13	72	1146	15971-15984	99-112	8	63
14	73	1147	15985-15998	113-126	9	63
15	74	1148	15999-16012	127-140	10	63
16	75	1149	16013-16026	141-154	11	63
17	76	1150	16027-16040	155-168	12	63
18	77	1151	16041-16054	169-182	13	63
19	78	1152	16055-16068	183-196	14	63
20	79	1153	16069-16081	197-209	15	63
21	80	1154	16082-16095	210-223	16	63
22	81	1155	16096-16109	224-237	17	63
23	82	1156	16110-16123	238-251	18	63
24	83	1157	16124-16137	1- 14	1	64
25	84	1158	16138-16151	15- 28	2	64
26	85	1159	16152-16165	29- 42	3	64
27	86	1160	16166-16179	43- 56	4	64
28	87	1161	16180-16193	57- 70	5	64
29	88	1162	16194-16207	71- 84	6	64
30	89	1163	16208-16221	85- 98	7	64
31	90	1164	16222-16235	99-112	8	64

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Landsat-2

April 1978

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	91	1165	16236-16249	113-126	9	64
2	92	1166	16250-16263	127-140	10	64
3	93	1167	16264-16277	141-154	11	64
4	94	1168	16278-16291	155-168	12	64
5	95	1169	16292-16305	169-182	13	64
6	96	1170	16306-16319	183-196	14	64
7	97	1171	16320-16332	197-209	15	64
8	98	1172	16333-16346	210-223	16	64
9	99	1173	16347-16360	224-237	17	64
10	100	1174	16361-16374	238-251	18	64
11	101	1175	16375-16388	1- 14	1	65
12	102	1176	16389-16402	15- 28	2	65
13	103	1177	16403-16416	29- 42	3	65
14	104	1178	16417-16430	43- 56	4	65
15	105	1179	16431-16444	57- 70	5	65
16	106	1180	16445-16458	71- 84	6	65
17	107	1181	16459-16472	85- 98	7	65
18	108	1182	16473-16486	99-112	8	65
19	109	1183	16487-16500	113-126	9	65
20	110	1184	16501-16514	127-140	10	65
21	111	1185	16515-16528	141-154	11	65
22	112	1186	16529-16542	155-168	12	65
23	113	1187	16543-16556	169-182	13	65
24	114	1188	16557-16570	183-196	14	65
25	115	1189	16571-16583	197-209	15	65
26	116	1190	16584-16597	210-223	16	65
27	117	1191	16598-16611	224-237	17	65
28	118	1192	16612-16625	238-251	18	65
29	119	1193	16626-16639	1- 14	1	66
30	120	1194	16640-16653	15- 28	2	66

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Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	121	1195	16654-16667	29- 42	3	66
2	122	1196	16668-16681	43- 56	4	66
3	123	1197	16682-16695	57- 70	5	66
4	124	1198	16696-16709	71- 84	6	66
5	125	1199	16710-16723	85- 98	7	66
6	126	1200	16724-16737	99-112	8	66
7	127	1201	16738-16751	113-126	9	66
8	128	1202	16752-16765	127-140	10	66
9	129	1203	16766-16779	141-154	11	66
10	130	1204	16780-16793	155-168	12	66
11	131	1205	16794-16807	169-182	13	66
12	132	1206	16808-16820	183-195	14	66
13	133	1207	16821-16834	196-209	15	66
14	134	1208	16835-16848	210-223	16	66
15	135	1209	16849-16862	224-237	17	66
16	136	1210	16863-16876	238-251	18	66
17	137	1211	16877-16890	1- 14	1	67
18	138	1212	16891-16904	15- 28	2	67
19	139	1213	16905-16918	29- 42	3	67
20	140	1214	16919-16932	43- 56	4	67
21	141	1215	16933-16946	57- 70	5	67
22	142	1216	16947-16960	71- 84	6	67
23	143	1217	16961-16974	85- 98	7	67
24	144	1218	16975-16988	99-112	8	67
25	145	1219	16989-17002	113-126	9	67
26	146	1220	17003-17016	127-140	10	67
27	147	1221	17017-17030	141-154	11	67
28	148	1222	17031-17044	155-168	12	67
29	149	1223	17045-17058	169-182	13	67
30	150	1224	17059-17071	183-195	14	67
31	151	1225	17072-17085	196-209	15	67

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June 1978

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	152	1226	17086-17099	210-223	16	67
2	153	1227	17100-17113	224-237	17	67
3	154	1228	17114-17127	238-251	18	67
4	155	1229	17128-17141	1- 14	1	68
5	156	1230	17142-17155	15- 28	2	68
6	157	1231	17156-17169	29- 42	3	68
7	158	1232	17170-17183	43- 56	4	68
8	159	1233	17184-17197	57- 70	5	68
9	160	1234	17198-17211	71- 84	6	68
10	161	1235	17212-17225	85- 98	7	68
11	162	1236	17226-17239	99-112	8	68
12	163	1237	17240-17253	113-126	9	68
13	164	1238	17254-17267	127-140	10	68
14	165	1239	17268-17281	141-154	11	68
15	166	1240	17282-17295	155-168	12	68
16	167	1241	17296-17309	169-182	13	68
17	168	1242	17310-17322	183-195	14	68
18	169	1243	17323-17336	196-209	15	68
19	170	1244	17337-17350	210-223	16	68
20	171	1245	17351-17364	224-237	17	68
21	172	1246	17365-17378	238-251	18	68
22	173	1247	17379-17392	1- 14	1	69
23	174	1248	17393-17406	15- 28	2	69
24	175	1249	17407-17420	29- 42	3	69
25	176	1250	17421-17434	43- 56	4	69
26	177	1251	17435-17448	57- 70	5	69
27	178	1252	17449-17462	71- 84	6	69
28	179	1253	17463-17476	85- 98	7	69
29	180	1254	17477-17490	99-112	8	69
30	181	1255	17491-17504	113-126	9	69

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July 1978

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	182	1256	17505-17518	127-140	10	69
2	183	1257	17519-17532	141-154	11	69
3	184	1258	17533-17546	155-168	12	69
4	185	1259	17547-17560	169-182	13	69
5	186	1260	17561-17573	183-195	14	69
6	187	1261	17574-17587	196-209	15	69
7	188	1262	17588-17601	210-223	16	69
8	189	1263	17602-17615	224-237	17	69
9	190	1264	17616-17629	238-251	18	69
10	191	1265	17630-17643	1- 14	1	70
11	192	1266	17644-17657	15- 28	2	70
12	193	1267	17658-17671	29- 42	3	70
13	194	1268	17672-17685	43- 56	4	70
14	195	1269	17686-17699	57- 70	5	70
15	196	1270	17700-17713	71- 84	6	70
16	197	1271	17714-17727	85- 98	7	70
17	198	1272	17728-17741	99-112	8	70
18	199	1273	17742-17755	113-126	9	70
19	200	1274	17756-17769	127-140	10	70
20	201	1275	17770-17783	141-154	11	70
21	202	1276	17784-17797	155-168	12	70
22	203	1277	17798-17811	169-182	13	70
23	204	1278	17812-17824	183-195	14	70
24	205	1279	17825-17838	196-209	15	70
25	206	1280	17839-17852	210-223	16	70
26	207	1281	17853-17866	224-237	17	70
27	208	1282	17867-17880	238-251	18	70
28	209	1283	17881-17894	1- 14	1	71
29	210	1284	17895-17908	15- 28	2	71
30	211	1285	17909-17922	29- 42	3	71
31	212	1286	17923-17936	43- 56	4	71

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August 1978

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	213	1287	17937-17950	57- 70	5	71
2	214	1288	17951-17964	71- 84	6	71
3	215	1289	17965-17978	85- 98	7	71
4	216	1290	17979-17992	99-112	8	71
5	217	1291	17993-18006	113-126	9	71
6	218	1292	18007-18020	127-140	10	71
7	219	1293	18021-18034	141-154	11	71
8	220	1294	18035-18048	155-168	12	71
9	221	1295	18049-18062	169-182	13	71
10	222	1296	18063-18075	183-195	14	71
11	223	1297	18076-18089	196-209	15	71
12	224	1298	18090-18103	210-223	16	71
13	225	1299	18104-18117	224-237	17	71
14	226	1300	18118-18131	238-251	18	71
15	227	1301	18132-18145	1- 14	1	72
16	228	1302	18146-18159	15- 28	2	72
17	229	1303	18160-18173	29- 42	3	72
18	230	1304	18174-18187	43- 56	4	72
19	231	1305	18188-18201	57- 70	5	72
20	232	1306	18202-18215	71- 84	6	72
21	233	1307	18216-18229	85- 98	7	72
22	234	1308	18230-18243	99-112	8	72
23	235	1309	18244-18257	113-126	9	72
24	236	1310	18258-18271	127-140	10	72
25	237	1311	18272-18285	141-154	11	72
26	238	1312	18286-18299	155-168	12	72
27	239	1313	18300-18313	169-182	13	72
28	240	1314	18314-18326	183-195	14	72
29	241	1315	18327-18340	196-209	15	72
30	242	1316	18341-18354	210-223	16	72
31	243	1317	18355-18368	224-237	17	72

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September 1978

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	244	1318	18369-18382	238-251	18	72
2	245	1319	18383-18396	1- 14	1	73
3	246	1320	18397-18410	15- 28	2	73
4	247	1321	18411-18424	29- 42	3	73
5	248	1322	18425-18438	43- 56	4	73
6	249	1323	18438-18452	57- 70	5	73
7	250	1324	18453-18466	71- 84	6	73
8	251	1325	18467-18480	85- 98	7	73
9	252	1326	18481-18494	99-112	8	73
10	253	1327	18495-18508	113-126	9	73
11	254	1328	18509-18522	127-140	10	73
12	255	1329	18523-18536	141-154	11	73
13	256	1330	18537-18550	155-168	12	73
14	257	1331	18551-18563	169-181	13	73
15	258	1332	18564-18577	182-195	14	73
16	259	1333	18578-18591	196-209	15	73
17	260	1334	18592-18605	210-223	16	73
18	261	1335	18506-18619	224-237	17	73
19	262	1336	18620-18633	238-251	18	73
20	263	1337	18634-18647	1- 14	1	74
21	264	1338	18648-18661	15- 28	2	74
22	265	1339	18662-18675	29- 42	3	74
23	266	1340	18676-18689	43- 56	4	74
24	267	1341	18690-18703	57- 70	5	74
25	268	1342	18704-18717	71- 84	6	74
26	269	1343	18718-18731	85- 98	7	74
27	270	1344	18732-18745	99-112	8	74
28	271	1345	18746-18759	113-126	9	74
29	272	1346	18760-18773	127-140	10	74
30	273	1347	18774-18787	141-154	11	74

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October 1978

Date	GMT Day	Flight Day	Spacecraft Orbit	Cycle Orbits	Cycle Day	Cycle
1	274	1348	18788-18801	155-168	12	74
2	275	1349	18802-18814	169-181	13	74
3	276	1350	18815-18828	182-195	14	74
4	277	1351	18829-18842	196-209	15	74
5	278	1352	18843-18856	210-223	16	74
6	279	1353	18857-18870	224-237	17	74
7	280	1354	18871-18884	238-251	18	74
8	281	1355	18885-18898	1- 14	1	75
9	282	1356	18899-18912	15- 28	2	75
10	283	1357	18913-18926	29- 42	3	75
11	284	1358	18927-18940	43- 56	4	75
12	285	1359	18941-18954	57- 70	5	75
13	286	1360	18955-18968	71- 84	6	75
14	287	1361	18969-18982	85- 98	7	75
15	288	1362	18983-18996	99-112	8	75
16	289	1363	18997-19010	113-126	9	75
17	290	1364	19011-19024	127-140	10	75
18	291	1365	19025-19038	141-154	11	75
19	292	1366	19039-19052	155-168	12	75
20	293	1367	19053-19065	169-181	13	75
21	294	1368	19066-19079	182-195	14	75
22	295	1369	19080-19093	196-209	15	75
23	296	1370	19094-19107	210-223	16	75
24	297	1371	19108-19121	224-237	17	75
25	298	1372	19122-19135	238-251	18	75
26	299	1373	19136-19149	1- 14	1	76
27	300	1374	19150-19163	15- 28	2	76
28	301	1375	19164-19177	29- 42	3	76
29	302	1376	19178-19191	43- 56	4	76
30	303	1377	19192-19205	57- 70	5	76
31	304	1378	19206-19219	71- 84	6	76

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November 1978

Date	GMT Day	Flight Day	Spacecraft Orbit	Cycle Orbits	Cycle Day	Cycle
1	305	1379	19220-19233	85- 98	7	76
2	306	1380	19234-19247	99-112	8	76
3	307	1381	19248-19261	113-126	9	76
4	308	1382	19262-19275	127-140	10	76
5	309	1383	19276-19289	141-154	11	76
6	310	1384	19290-19303	155-168	12	76
7	311	1385	19304-19316	169-181	13	76
8	312	1386	19317-19330	182-195	14	76
9	313	1387	19331-19344	196-209	15	76
10	314	1388	19345-19358	210-223	16	76
11	315	1389	19359-19372	224-237	17	76
12	316	1390	19373-19386	238-251	18	76
13	317	1391	19387-19400	1- 14	1	77
14	318	1392	19401-19414	15- 28	2	77
15	319	1393	19415-19428	29- 42	3	77
16	320	1394	19429-19442	43- 56	4	77
17	321	1395	19443-19456	57- 70	5	77
18	322	1396	19457-19470	71- 84	6	77
19	323	1397	19471-19484	85- 98	7	77
20	324	1398	19485-19498	99- 112	8	77
21	325	1399	19499-19512	113-126	9	77
22	326	1400	19513-19526	127-140	10	77
23	327	1401	19527-19540	141-154	11	77
24	328	1402	19541-19554	155-168	12	77
25	329	1403	19555-19567	169-181	13	77
26	330	1404	19568-19581	182-195	14	77
27	331	1405	19582-19595	196-209	15	77
28	332	1406	19596-19609	210-223	16	77
29	333	1407	19610-19623	224-237	17	77
30	334	1408	19624-19637	238-251	18	77

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December 1978

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	335	1409	19638-19651	1- 14	1	78
2	336	1410	19652-19665	15- 28	2	78
3	337	1411	19666-19679	29- 42	3	78
4	338	1412	19680-19693	43- 56	4	78
5	339	1413	19694-19707	57- 70	5	78
6	340	1414	19708-19721	71- 84	6	78
7	341	1415	19722-19735	85- 98	7	78
8	342	1416	19736-19749	99-112	8	78
9	343	1417	19750-19763	113-126	9	78
10	344	1418	19764-19777	127-140	10	78
11	345	1419	19778-19791	141-154	11	78
12	346	1420	19792-19805	155-168	12	78
13	347	1421	19806-19818	169-181	13	78
14	348	1422	19819-19832	182-195	14	78
15	349	1423	19833-19846	196-209	15	78
16	350	1424	19847-19860	210-223	16	78
17	351	1425	19861-19874	224-237	17	78
18	352	1426	19875-19888	238-251	18	78
19	353	1427	19889-19902	1- 14	1	79
20	354	1428	19903-19916	15- 28	2	79
21	355	1429	19917-19930	29- 42	3	79
22	356	1430	19931-19944	43- 56	4	79
23	357	1431	19945-19958	57- 70	5	79
24	358	1432	19959-19972	71- 84	6	79
25	359	1433	19973-19986	85- 98	7	79
26	360	1434	19987-20000	99-112	8	79
27	361	1435	20001-20014	113-126	9	79
28	362	1436	20015-20028	127-140	10	79
29	363	1437	20029-20042	141-154	11	79
30	364	1438	20043-20056	155-168	12	79
31	365	1439	20057-20069	169-181	13	79

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Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	1	1440	20070-20083	182-195	14	80
2	2	1441	20084-20097	196-209	15	80
3	3	1442	20098-20111	210-223	16	80
4	4	1443	20112-20125	224-237	17	80
5	5	1444	20126-20139	238-251	18	80
6	6	1445	20140-20153	1- 14	1	81
7	7	1446	20154-20167	15- 28	2	81
8	8	1447	20168-20181	29- 42	3	81
9	9	1448	20182-20195	43- 56	4	81
10	10	1449	20196-20209	57- 70	5	81
11	11	1450	20210-20223	71- 84	6	81
12	12	1451	20224-20237	85- 98	7	81
13	13	1452	20238-20251	99-112	8	81
14	14	1453	20252-20265	113-126	9	81
15	15	1454	20266-20279	127-140	10	81
16	16	1455	20280-20293	141-154	11	81
17	17	1456	20294-20306	155-167	12	81
18	18	1457	20307-20320	168-181	13	81
19	19	1458	20321-20334	182-195	14	81
20	20	1459	20335-20348	196-209	15	81
21	21	1460	20349-20362	210-223	16	81
22	22	1461	20363-20376	224-237	17	81
23	23	1462	20377-20390	238-251	18	81
24	24	1463	20391-20404	1- 14	1	82
25	25	1464	20405-20418	15- 28	2	82
26	26	1465	20419-20432	29- 42	3	82
27	27	1466	20433-20446	43- 56	4	82
28	28	1467	20447-20460	57- 70	5	82
29	29	1468	20461-20474	71- 84	6	82
30	30	1469	20475-20488	85- 98	7	82
31	31	1470	20489-20502	99-112	8	82

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February 1979

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	32	1471	20503-20516	113-126	9	82
2	33	1472	20517-20530	127-140	10	82
3	34	1473	20531-20544	141-154	11	82
4	35	1474	20545-20557	155-167	12	82
5	36	1475	20558-20571	168-181	13	82
6	37	1476	20572-20585	182-195	14	82
7	38	1477	20586-20599	196-209	15	82
8	39	1478	20600-20613	210-223	16	82
9	40	1479	20614-20627	224-237	17	82
10	41	1480	20628-20641	238-251	18	82
11	42	1481	20642-20655	1- 14	1	83
12	43	1482	20656-20669	15- 28	2	83
13	44	1483	20670-20683	29- 42	3	83
14	45	1484	20684-20699	43- 56	4	83
15	46	1485	20698-20711	57- 70	5	83
16	47	1486	20712-20725	71- 84	6	83
17	48	1487	20726-20739	85- 98	7	83
18	49	1488	20740-20753	99-112	8	83
19	50	1489	20754-20767	113-126	9	83
20	51	1490	20768-20781	127-140	10	83
21	52	1491	20782-20795	141-154	11	83
22	53	1492	20796-20808	155-167	12	83
23	54	1493	20809-20822	168-181	13	83
24	55	1494	20823-20836	182-195	14	83
25	56	1495	20837-20850	196-209	15	83
26	57	1496	20851-20864	210-223	16	83
27	58	1497	20865-20878	224-237	17	83
28	59	1498	20879-20892	238-251	18	83

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March 1979

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	60	1499	20893-20906	1- 14	1	84
2	61	1500	20907-20920	15- 28	2	84
3	62	1501	20921-20934	29- 42	3	84
4	63	1502	20935-20948	43- 56	4	84
5	64	1503	20949-20962	57- 70	5	84
6	65	1504	20963-20976	71- 84	6	84
7	66	1505	20977-20990	85- 98	7	84
8	67	1506	20991-21004	99-112	8	84
9	68	1507	21005-21018	113-126	9	84
10	69	1508	21019-21032	127-140	10	84
11	70	1509	21033-21046	141-154	11	84
12	71	1510	21047-21059	155-167	12	84
13	72	1511	21060-21073	168-181	13	84
14	73	1512	21074-21087	182-195	14	84
15	74	1513	21088-21101	196-209	15	84
16	75	1514	21102-21115	210-223	16	84
17	76	1515	21116-21129	224-237	17	84
18	77	1516	21130-21143	238-251	18	84
19	78	1517	21144-21157	1- 14	1	85
20	79	1518	21158-21171	15- 28	2	85
21	80	1519	21172-21185	29- 42	3	85
22	81	1520	21186-21199	43- 56	4	85
23	82	1521	21200-21213	57- 70	5	85
24	83	1522	21214-21227	71- 84	6	85
25	84	1523	21228-21241	85- 98	7	85
26	85	1524	21242-21255	99-112	8	85
27	86	1525	21256-21269	113-126	9	85
28	87	1526	21270-21283	127-140	10	85
29	88	1527	21284-21297	141-154	11	85
30	89	1528	21298-21310	155-167	12	85
31	90	1529	21311-21324	168-181	13	85

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Landsat-2

April 1979

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	91	1530	21325-21338	182-195	14	85
2	92	1531	21339-21352	196-209	15	85
3	93	1532	21353-21366	210-223	16	85
4	94	1533	21367-21380	224-237	17	85
5	95	1534	21381-21394	238-251	18	85
6	96	1535	21395-21408	1- 14	1	86
7	97	1536	21409-21422	15- 29	2	86
8	98	1537	21423-21436	29- 42	3	86
9	99	1538	21437-21450	43- 56	4	86
10	100	1539	21451-21464	57- 70	5	86
11	101	1540	21465-21478	71- 84	6	86
12	102	1541	21479-21492	85- 98	7	86
13	103	1542	21493-21506	99-112	8	86
14	104	1543	21507-21520	113-126	9	86
15	105	1544	21521-21534	127-140	10	86
16	106	1545	21535-21548	141-154	11	86
17	107	1546	21549-21561	155-167	12	86
18	108	1547	21562-21575	168-181	13	86
19	109	1548	21576-21589	182-195	14	86
20	110	1549	21590-21603	196-209	15	86
21	111	1550	21604-21617	210-223	16	86
22	112	1551	21618-21631	224-237	17	86
23	113	1552	21632-21645	238-251	18	86
24	114	1553	21646-21659	1- 14	1	87
25	115	1554	21660-21673	15- 28	2	87
26	116	1555	21674-21687	29- 42	3	87
27	117	1556	21688-21701	43- 56	4	87
28	118	1557	21702-21715	57- 70	5	87
29	119	1558	21716-21729	71- 84	6	87
30	120	1559	21730-21743	85- 98	7	87

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Landsat-2

May 1979

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	121	1560	21744-21757	99-112	8	87
2	121	1561	21758-21771	113-126	9	87
3	123	1562	21772-21785	127-140	10	87
4	124	1563	21786-21798	141-153	11	87
5	125	1564	21799-21812	154-167	12	87
6	126	1565	21813-21826	168-181	13	87
7	127	1566	21827-21840	182-195	14	87
8	128	1567	21841-21854	196-209	15	87
9	129	1568	21855-21868	210-223	16	87
10	130	1569	21869-21882	224-237	17	87
11	131	1570	21883-21896	238-251	18	87
12	132	1571	21897-21910	1- 14	1	88
13	133	1572	21911-21924	15- 28	2	88
14	134	1573	21925-21938	29- 42	3	88
15	135	1574	21939-21952	43- 56	4	88
16	136	1575	21953-21966	57- 70	5	88
17	137	1576	21967-21980	71- 84	6	88
18	138	1577	21981-21994	85- 98	7	88
19	139	1578	21995-22008	99-112	8	88
20	140	1579	22009-22022	113-126	9	88
21	141	1580	22023-22036	127-140	10	88
22	142	1581	22037-22049	141-153	11	88
23	143	1582	22050-22063	154-169	12	88
24	144	1583	22064-22077	168-181	13	88
25	145	1584	22078-22091	182-195	14	88
26	146	1585	22092-22105	196-209	15	88
27	147	1586	22106-22119	210-223	16	88
28	148	1587	22120-22133	224-237	17	88
29	149	1588	22134-22147	238-251	18	88
30	150	1589	22148-22161	1- 14	1	89
31	151	1590	22162-22175	15- 28	2	89

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Landsat-2

June 1979

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	152	1591	22176-22189	29- 42	3	89
2	153	1592	22190-22203	43- 56	4	89
3	154	1593	22204-22217	57- 70	5	89
4	155	1594	22218-22231	71- 84	6	89
5	156	1595	22232-22245	85- 98	7	89
6	157	1596	22246-22259	99-112	8	89
7	158	1597	22260-22273	113-126	9	89
8	159	1598	22274-22287	127-140	10	89
9	160	1599	22288-22300	141-153	11	89
10	161	1600	22301-22314	154-167	12	89
11	162	1601	22315-22328	168-181	13	89
12	163	1602	22329-22342	182-195	14	89
13	164	1603	22343-22356	196-209	15	89
14	165	1604	22357-22370	210-223	16	89
15	166	1605	22371-22384	224-237	17	89
16	167	1606	22385-22398	238-251	18	89
17	168	1607	22399-22412	1- 14	1	90
18	169	1608	22413-22426	15- 28	2	90
19	170	1609	22427-22440	29- 42	3	90
20	171	1610	22441-22454	43- 56	4	90
21	172	1611	22455-22468	57- 70	5	90
22	173	1612	22469-22482	71- 84	6	90
23	174	1613	22483-22496	85- 98	7	90
24	175	1614	22497-22510	99-112	8	90
25	176	1615	22511-22524	113-126	9	90
26	177	1616	22525-22538	127-140	10	90
27	178	1617	22539-22551	141-153	11	90
28	179	1618	22552-22565	154-167	12	90
29	180	1619	22566-22579	168-181	13	90
30	181	1620	22580-22593	182-195	14	90

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Landsat-2

July 1979

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	182	1621	22594-22607	196-209	15	90
2	183	1622	22608-22621	210-223	16	90
3	184	1623	22622-22635	224-237	17	90
4	185	1624	22636-22649	238-251	18	90
5	186	1625	22650-22663	1- 14	1	91
6	187	1626	22664-22677	15- 28	2	91
7	188	1627	22678-22691	29- 42	3	91
8	189	1628	22692-22705	43- 56	4	91
9	190	1629	22706-22719	57- 70	5	91
10	191	1630	22720-22733	71- 84	6	91
11	192	1631	22734-22747	85- 98	7	91
12	193	1632	22748-22761	99-112	8	91
13	194	1633	22762-22775	113-126	9	91
14	195	1634	22776-22789	127-140	10	91
15	196	1635	22790-22802	141-153	11	91
16	197	1636	22803-22816	154-167	12	91
17	198	1637	22817-22830	168-181	13	91
18	199	1638	22831-22844	182-195	14	91
19	200	1639	22845-22858	196-209	15	91
20	201	1640	22859-22872	210-223	16	91
21	202	1641	22873-22886	224-237	17	91
22	203	1642	22887-22900	238-251	18	91
23	204	1643	22901-22914	1- 14	1	92
24	205	1644	22915-22928	15- 28	2	92
25	206	1645	22929-22942	29- 42	3	92
26	207	1646	22943-22956	43- 56	4	92
27	208	1647	22957-22970	57- 70	5	92
28	209	1648	22971-22984	71- 84	6	92
29	210	1649	22985-22998	85- 98	7	92
30	211	1650	22999-23012	99-112	8	92
31	212	1651	23013-23026	113-126	9	92

APPENDIX C

LANDSAT-2 DOCUMENTS ISSUED THIS REPORT PERIOD

APPENDIX C

LANDSAT-2 DOCUMENTS ISSUED THIS REPORT PERIOD

No.	Document No.	Description and Date
1	14 NO-L/3-242	Landsat-2 and 3 Line Start Anomaly Over Brazil, dated 12/5/78.
2	14NO-L-2-244	Malfunction of NBR-1 in Landsat-2, dated 1/16/79.

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INTRODUCTION

This is the 5th report in a continuing series of documents issued at launch, and quarterly thereafter, to present flight performance analyses of the Landsat-3 spacecraft. The previously issued documents are:

Document No,	Title	Date
78SDS4203	Landsat-3 Launch and Flight Activation Evaluation Report 5 to 9 March 1978, through Orbit 50 and Orbit Adjust Operation.	17 March 1978
78SDS4216	Landsat-1, Landsat-2, and Landsat-3 Flight Evaluation Report, 23 January 1978 to 23 April 1978	3 May 1978
78SDS4232	Landsat-2 and Landsat-3 Flight Evaluation Reports, 23 April 1978 to 23 July 1978	1 August 1978
78SDS4250	Landsat-2 and Landsat-3 Flight Evaluation Report 23 July 1978 to 23 October 1978	1 November 1978

This report contains analysis of flight performance for Orbits 3120 to 4400 for Landsat-3.

SECTION I

SUMMARY

LANDSAT-3 OPERATIONS

SECTION 1

SUMMARY LANDSAT-3 OPERATIONS

The Landsat-3 spacecraft was launched from the Western Test Range on 5 March 1978 at 064:17:54:00.551 GMT. The launch and orbital injection phase of the spacecraft were nominal and deployment of the spacecraft followed predictions.

All systems performed normally until Orbit 41, 8 March 1978, when cell 4 of the "B" COMSTOR would not load and verify properly. Subsequent orbits would not verify and dummy commands "000" were used in cell 4 until 18 March 1978, when cell 4 changed to all "ones." The "B" COMSTOR was then taken out of operational use until Orbit 1897 (19 June 1978) when it was activated for processing spacecraft commands after a test for its stability.

The ECAM halted on 4 May 1978 due to a fixed core checksum error. It again halted on 31 May 1978 when core location 0403 (octal) contained a discrepancy. Neither error affects spacecraft operation. The on-board checksum value for ECAM has been changed to accommodate the core errors and ECAM operation has been normal since then.

The RBV Camera 1 had intermittent white level saturation during an RBV image which was first detected in Orbit 55, 9 March 1978. It was more prevalent in the first 5% of occasional images. Operational use of the RBV was not interrupted.

In late August, processing of MSS data revealed occasional missed line starts, resulting in aborting that frame (100 x 100 nm) in processing. The anomaly seemed to occur more frequently in September, but has not been seen since early October after a switch to scan monitor light source B. Study of the anomaly is continuing.

Band 5 sensor decline from gas contamination improved until the first turn ON after the 7th outgas cycle on 11 July 1978. Sensor 26 was nominal, but no output was visible from sensor 25. After tests in subsequent orbits confirmed this anomaly, Band 5 was turned OFF for study.

Band 5 was returned to operational service on 13 October during Orbit 3094. Only sensor 26 is supplying data. Gas molecule decontamination has probably reached its asymtotic best.

In early December, data from Brazil and from processing of MSS data revealed extra scan monitor pulses occurring as early line starts or extra end of line codes (4 black, 4 white pixels) in the scene data. They occur only over magnetic anomalies, i.e., Brazil and Africa, at a low incidence rate. Landsat-1 and Landsat-2 had similar occurrences.

The spacecraft continues to perform its mission satisfactorily with MSS, RBV, and both Wideband Telemetry Systems in use. Table 1-1 shows cumulative in-orbit payload system performance.

Table 1-1. In-Orbit Payload Systems Performance-Launch thru Orbit 4529 (1/24/79), Landsat-3

RBV	Total Scenes Imaged	19,435
	Total Area Imaged (million sq. n mi.	169.5
	ON TIME (hr.)	196
	ON/OFF Cycles	2,244
	% Real Time Images	89
	% Recorded Images	11
MSS	Total Scenes Imaged	67,688
	Total Area Imaged (million sq. n mi.	599.4
	ON TIME (hr.)	830
	ON/OFF Cycles	5,755
	% Real Time Images	79
	% Recorded Images	21
DCS	Messages at OCC	332,356
	Users	21
	ON TIME (hr.)	7,786
WPA-1	ON TIME (hr.)	225
	ON/OFF Cycles	1,571
WPA-2	ON TIME (hr.)	721
	ON/OFF Cycles	3,844
WBVTR-1	% Record Mode	38
	% Playback Mode	41
	% Rewind Mode	20
	% Standby Mode	1
	Time Head-Tape Contact (hr.)	114
	Cycles Head-Tape Contact	1,450
	ON TIME (hr.)	145
WBVTR-2	% Record Mode	38
	% Playback Mode	41
	% Rewind Mode	20
	% Standby Mode	1
	MFSE Count in P/B	< 5
	Time Head-Tape Contact (hr.)	210
	Cycles Head-Tape Contact	2,725
	ON TIME (hr.)	265

SECTION 2
ORBITAL PARAMETERS
LANDSAT-3

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SECTION 2

ORBITAL PARAMETERS

At the close of this report period, Landsat-3's ground track error was 1.82 nm east (longitude at the equator).

Spacecraft drag (which is directly proportional to solar-activity) increased during this quarter. In the absence of the "controlled pitch gating via pitch position bias program," drag effected Landsat 2's ground track and a minus X axis, orbit maintenance orbit adjust was performed during Orbit 4059 (21 Dec 1978) to correct this condition.

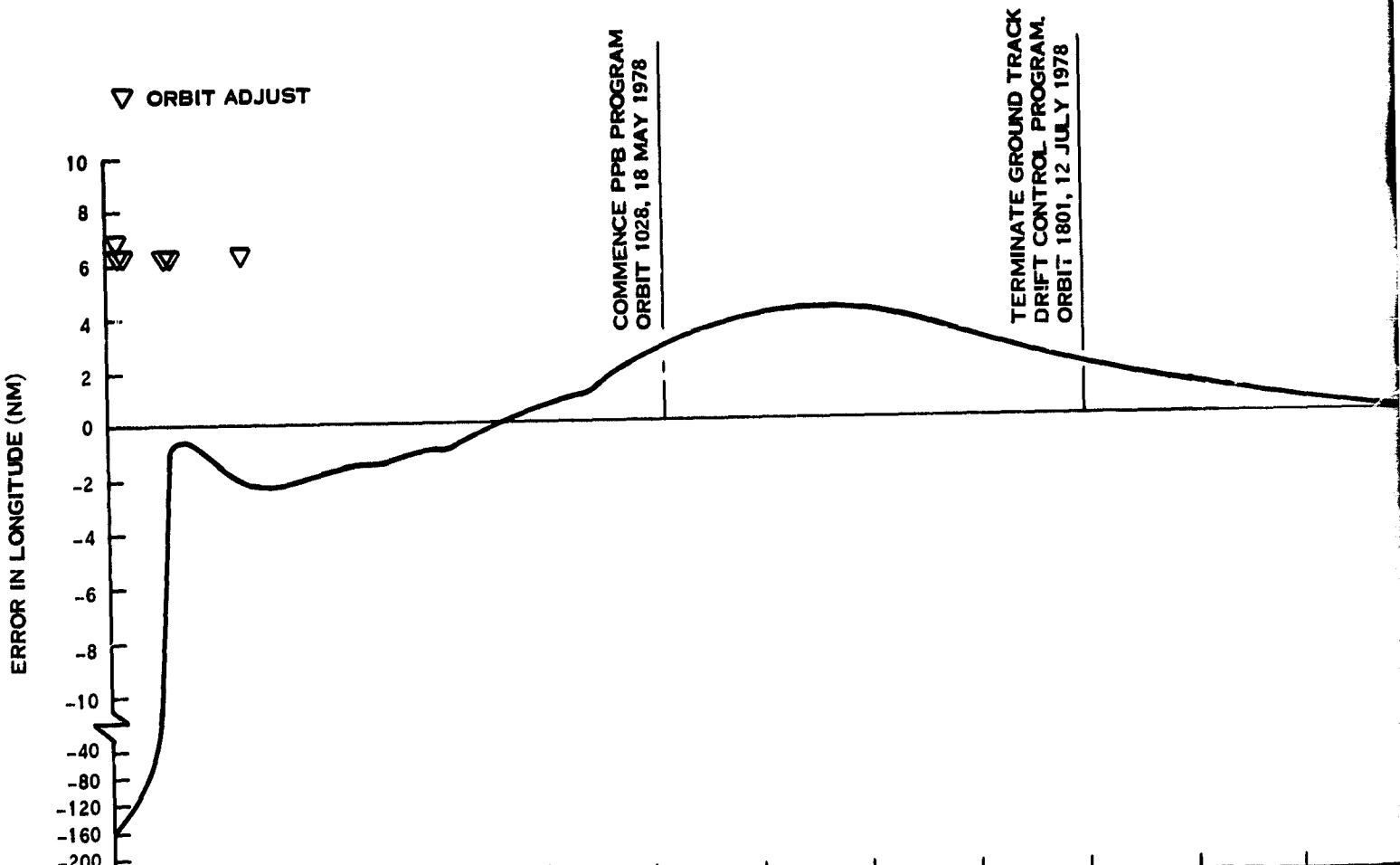
Error in longitude since launch as a function of time, orbit maintenance burns, and the Pitch Position Bias program are shown in Figure 2-1.

Figure 2-2 shows the mean local time for the spacecraft's descending equatorial crossing. The mean local time crossings for Landsats 2 and 3 respectively are 09:18:40 MLT and 09:32:19 MLT.

Phasing relationships between Landsat-2 and 3 are shown in Figure 2-3. Landsat-3 leads Landsat-2 at their descending equatorial crossings by 37.91 GMT minutes.

The Brouwer Mean Orbital parameters for Landsat-2 are given in Table 2-1.

Appendix B provides the spacecraft orbit reference tables for March 1978 to July 1979.



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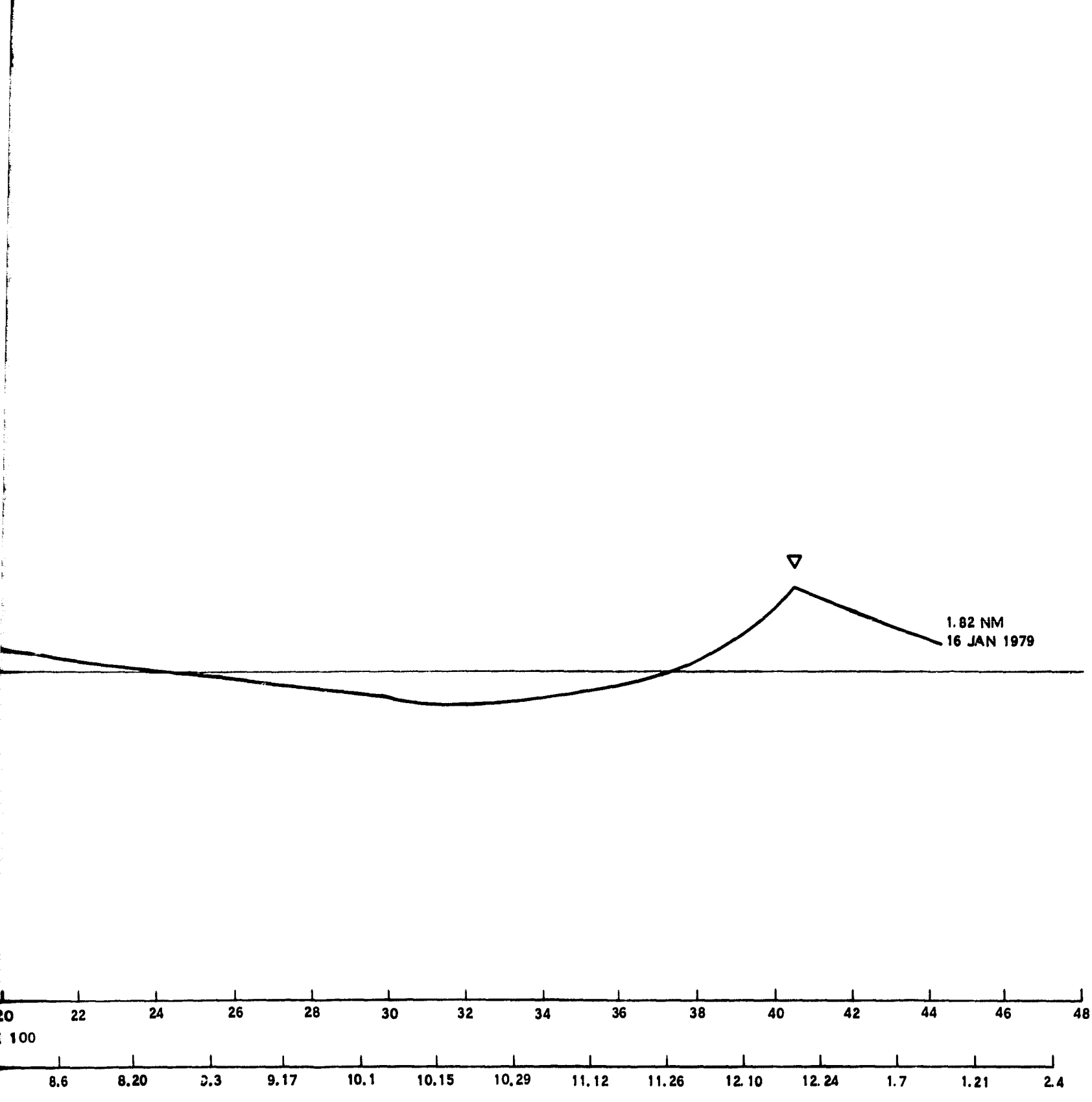

Figure 2-1. Landsat-3 Ground Track

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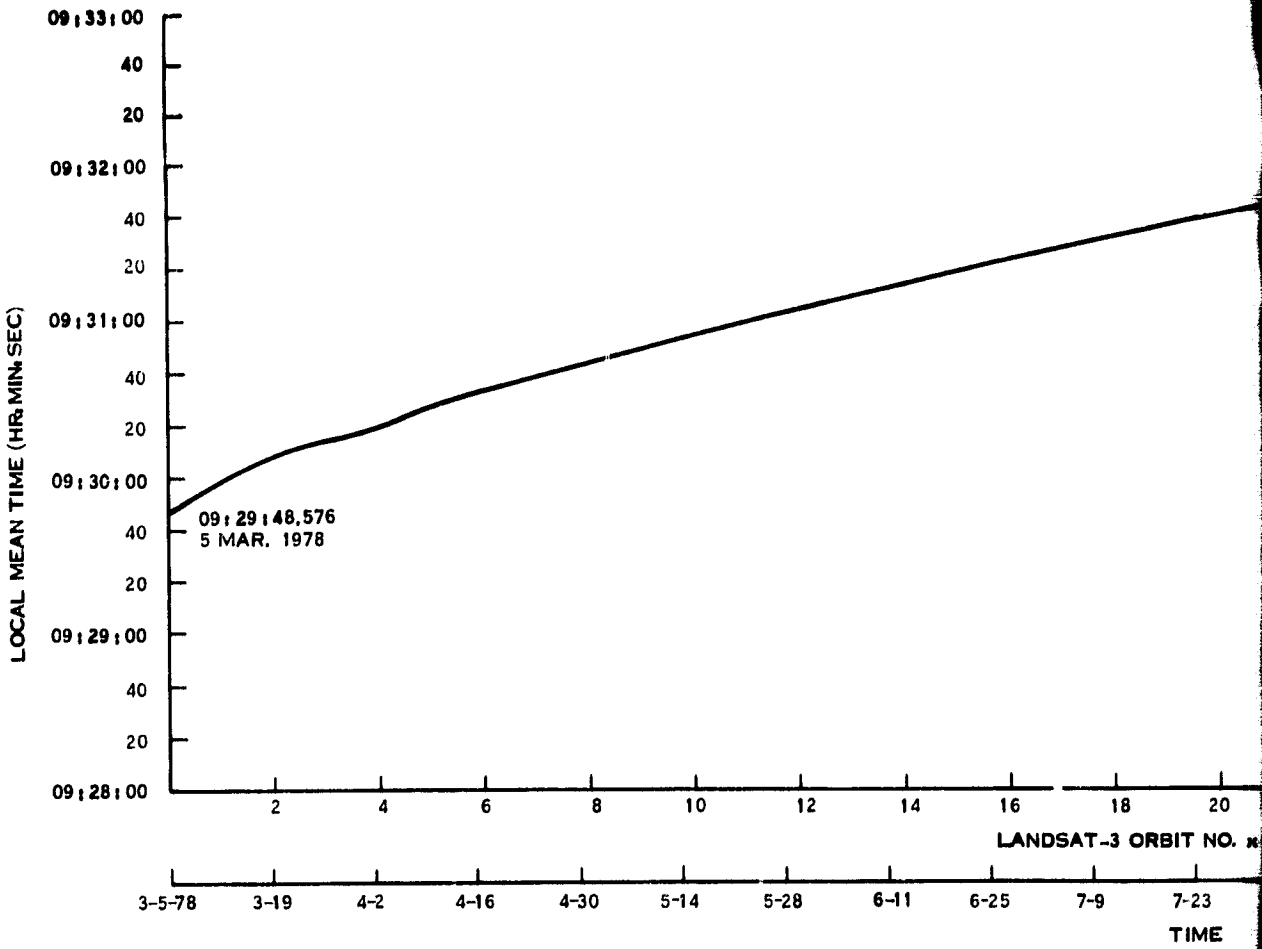

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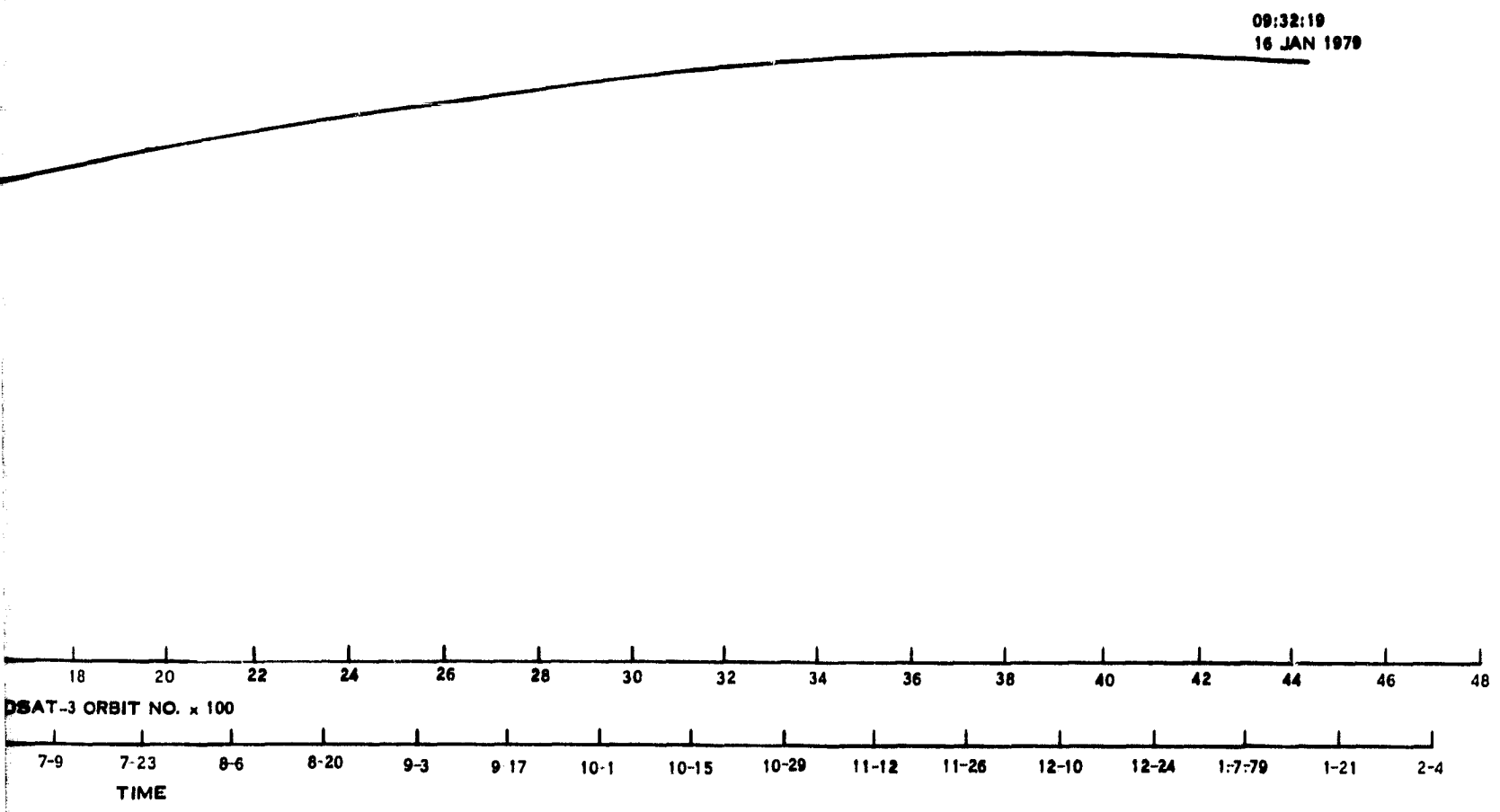

Figure 2-2. Local Mean Time at Descending Node, Landsat-3

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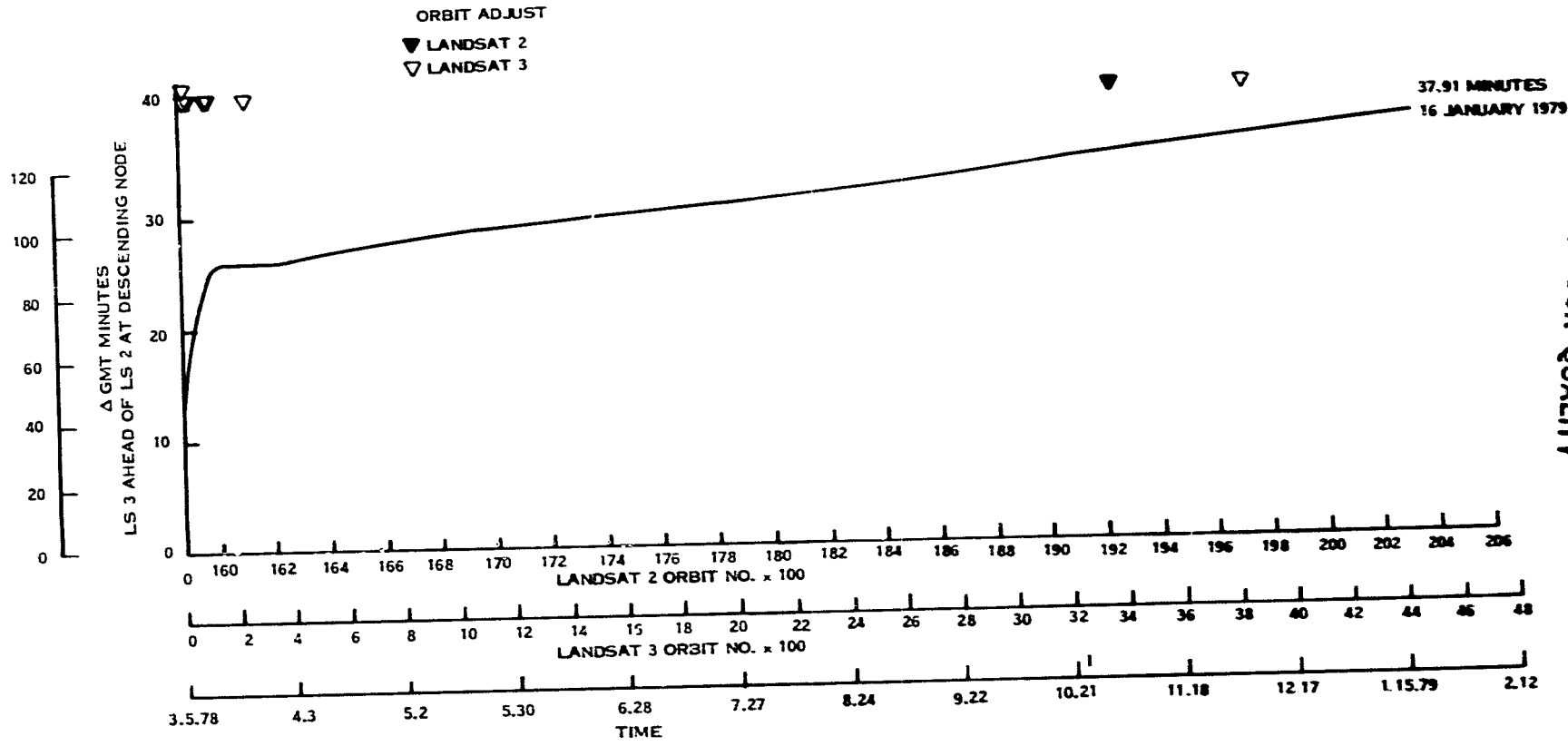

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Figure 2-3. Drift in Angular Phasing Between Landsat-2 and Landsat-3

Table 2-1. Landsat-3 Brouwer Mean Orbital Parameters

Element / Date	Apogee (KM)	Perigee (KM)	Inclination (Deg.)	Semi-Major Axis (KM)	Eccentricity	Anomolistic Period (Min)	Nodal Period (Min)	Argument of Perigee (Deg)	Right Ascension (Deg)	Mean Anomaly (Deg)
Nominal	915.99	899.67	99.1487	7285.9970	0.001120	103.15516	103.269	302.5609	125.6747	98.1639
5 Mar 1978[1]	913.96	897.30	99.1348	7283.7988	0.001143	103.10848	103.2	306.5555	125.6244	94.3356
14 Mar 1978[2]	916.67	898.83	99.1249	7285.9149	0.001225	103.15341	103.26	258.6162	133.8339	281.4021
20 Apr 1978	917.37	897.84	99.1213	7285.7685	0.001340	103.15031	103.266	154.0432	171.2200	25.7708
23 July 1978	916.56	898.66	99.1116	7285.7740	0.001228	103.15042	103.266	261.2939	263.2883	213.2205
23 Oct 1978	917.14	898.21	99.0994	7285.8163	0.001299	103.15184	103.266	14.6621	354.1226	56.7372
16 Jan 1979	917.92	897.60	99.0866	7285.9014	0.001395	103.15364	103.156	136.6106	77.9191	35.4071

1. Post Launch.
2. After the sequence of phasing maneuvers completed in Orbit 115.

SECTION 3
POWER SUBSYSTEM (PWR)
LANDSAT-3

SECTION 3

POWER SUBSYSTEM (PWR)

The Power Subsystem on Landsat-3 has performed satisfactorily throughout this report period.

The solar arrays continued to provide excess energy above spacecraft and payload requirements and are expected to support the Landsat-3 mission through 1979. The percentage degradation of the arrays is plotted as a function of days in orbit in Figure 3-1, along with the pre-launch predicted array degradation. The array degradation at the end of 10 months in orbit was 7.39%. The projected values of midday array current are plotted in Figure 3-2. Here the array current is adjusted for sun intensity and array degradation, as well as sun angle. Along with the same curve is plotted the actual telemetry values observed until the end of the current report period.

The battery packs on-line ranged from 8.1 to 11.2% depth of discharge (DOD) during this report period. Battery voltages have been maintained within suitable limits with Landsat-3 power management procedure, excess array energy being dissipated through auxiliary loads. Temperatures ranged from 17.44°C to 24.88°C during this report period.

The power subsystem electronics have performed well during this report period with all regulated voltages stable. Table 3-1 shows major subsystem parameters and Table 3-2 shows power subsystem telemetry for selected orbits. Some parameters in Table 3-1 may be slightly different from those in Table 3-2 because Table 3-1 uses a power management time span (night followed by day), whereas the time span used in Table 3-2 is the playback period from the NBR.

Figure 3-3 shows the predicted variation in sun angle to orbit plane and solar panels for Landsat-3.

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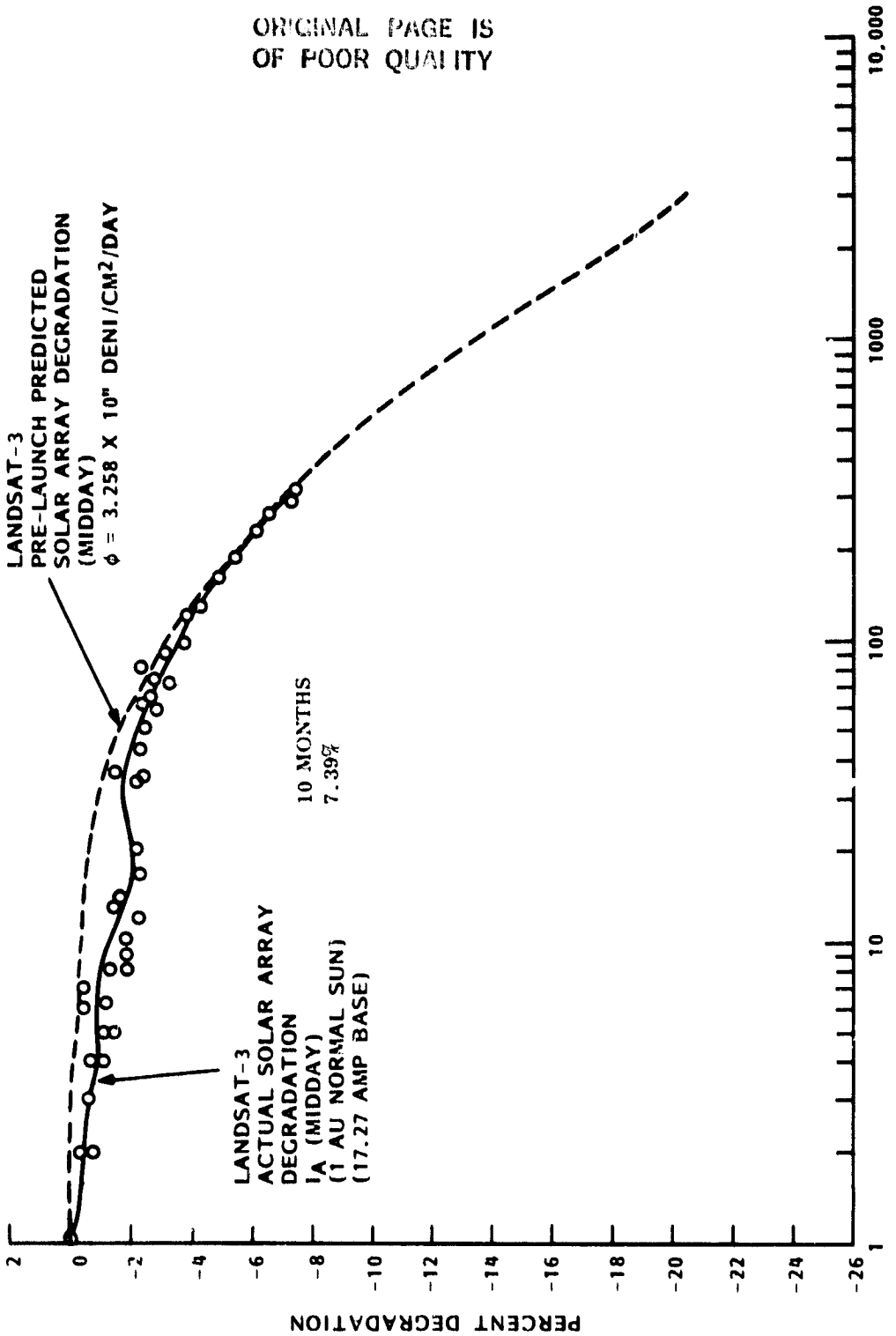

Figure 3-1. Landsat-3 I_A (Midday) Degradation vs Days

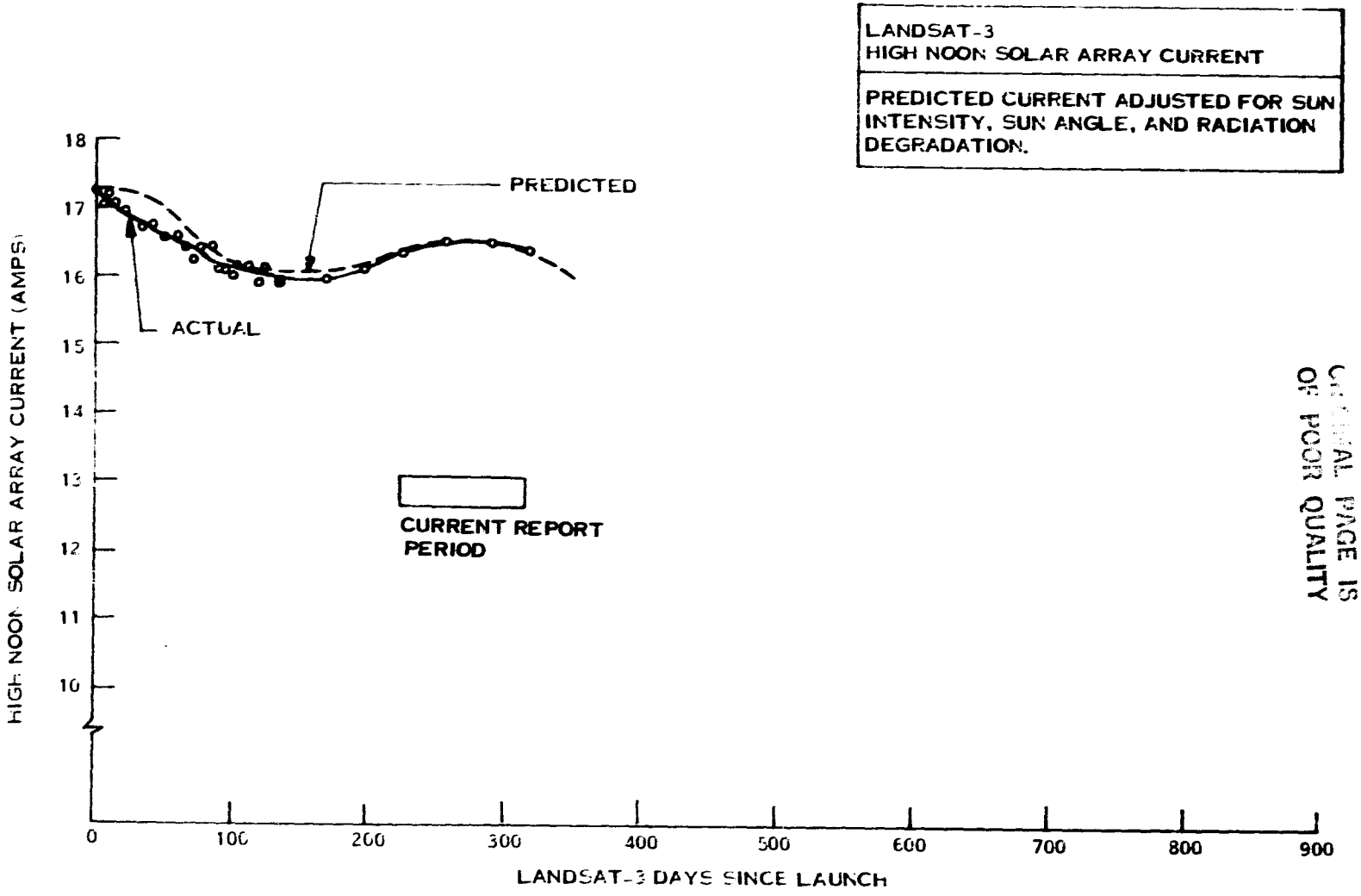

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Figure 3-2. Landsat-3 Midday Solar Array Current

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Table 3-1. Landsat-3 Major Power Subsystem Parameters

Description	Orbit					
	65	1464	2711	3552	4001	4412
Batt 1 Max	32,41	32,92	32,92	32,75	33,00	33,00
2 Chge	32,41	32,83	32,92	32,66	33,00	33,00
3 Volt*	32,50	33,00	33,00	32,84	33,09	33,09
4	32,32	32,83	32,83	32,66	33,00	32,92
5	32,41	32,92	32,92	32,75	33,00	33,00
6	32,41	32,92	33,00	32,75	33,09	33,09
7	32,64	33,04	33,04	32,87	33,21	33,13
8	32,32	32,84	32,92	32,66	33,00	33,00
Average	32,41	32,91	32,94	32,74	33,05	33,03
Batt 1 End-of-Night	29,60	29,51	28,58	29,60	29,94	29,26
2 Volt*	29,51	29,51	28,49	29,51	29,85	29,26
3	29,75	29,67	28,75	29,75	30,09	29,42
4	29,51	29,51	28,49	29,51	29,85	29,17
5	29,60	29,60	28,66	29,60	29,94	29,34
6	29,60	29,60	28,58	29,60	29,94	29,26
7	29,76	29,68	28,75	29,76	30,10	29,42
8	29,51	29,43	28,94	29,51	29,85	29,17
Average	29,60	29,56	28,60	29,60	29,94	29,29
Batt 1 Chge	12,51	12,79	12,70	12,80	12,85	12,81
2 Share	11,78	12,43	11,90	12,20	12,33	11,99
3 (%)	11,64	11,90	12,16	11,97	11,82	11,77
4	12,31	12,16	12,50	12,27	12,06	12,25
5	14,25	13,17	13,65	13,56	13,71	13,95
6	12,54	12,77	13,30	12,32	12,38	12,13
7	12,84	12,40	12,63	12,56	12,48	12,69
8	12,11	12,39	12,17	12,33	12,37	12,41
Batt 1 Load	12,85	12,94	12,66	12,78	12,86	12,85
2 Share	11,94	12,28	11,73	11,88	12,04	11,90
3 (%)	11,99	12,53	12,77	12,59	12,64	12,75
4	12,06	12,33	11,97	11,91	11,66	11,79
5	13,88	13,06	12,84	12,73	12,82	13,06
6	11,97	12,34	13,40	13,49	13,86	13,18
7	12,80	12,63	12,37	12,23	11,99	12,12
8	12,51	11,99	12,26	12,39	12,12	12,35
Batt 1 Temp	15,70	16,67	15,86	18,71	19,31	19,20
2 In.	14,31	16,20	15,82	18,18	18,68	17,74
3 (°C)	15,26	20,33	16,68	17,90	18,55	17,02
4	19,46	20,33	20,79	21,44	22,12	21,96
5	19,57	17,74	19,45	20,81	22,12	23,37
6	15,49	17,16	16,91	17,96	18,49	17,90
7	20,71	19,80	20,09	22,04	23,04	23,74
8	17,55	17,88	18,44	20,33	21,48	21,83
Average	17,26	17,86	18,24	19,67	20,47	20,46
S/C Reg Bus Pwr. (W)	148,90	151,90	150,43	162,68	184,00	160,96
Comp Load Pwr. (W) (P/O S/C Reg Bus Pwr)	0,00	5,89	5,39	5,39	5,39	5,39
P/L Reg Bus Pwr. (W)	14,30	10,60	30,14	25,97	27,69	27,20
C/D Ratio	1,26	1,44	1,06	1,11	1,13	1,06
Total Charge (A-M)	253,00	274,31	310,63	306,65	275,53	327,19
Total Discharge (A-M)	200,70	190,94	293,80	277,29	243,99	309,53
Solar Array (A-M)	1252,00	1132,00	1152,00	1180,10	1183,50	1183,90
S.A. Peak 1 (Amp)	18,08	16,93	16,85	17,29	17,29	17,29
Midday Array 1 (Amp)	17,38	16,05	16,14	16,49	16,49	16,41
Sun Angle (Deg) (γ)	7,40	- 3,77	1,64	1,11	3,43	6,91
Max R Pad Temp (°C)	58,40	59,60	59,60	+ 64,40	+ 65,60	+ 64,40
Min R Pad Temp (°C)	- 38,67	- 42,67	- 39,34	- 40,00	40,00	38,00
Max L Pad Temp (°C)	53,84	53,07	54,61	+ 58,46	+ 58,46	+ 59,23
Min L Pad Temp (°C)	- 40,71	- 45,48	- 43,57	- 44,29	43,57	41,43

* All Voltages are Negative

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Table 3-2. Landsat-3 Power Subsystem Analog Telemetry (Average Value for Data Received in NBTR Playback)

Function	Description	Unit*	Orbit					
			56	1464	2711	3552	4001	4429
6001	Batt 1 Disc 1	Amp	0.74	0.73	1.00	0.81	0.79	0.82
6002	2		0.69	0.70	0.94	0.77	0.75	0.77
6003	3		0.60	0.71	0.99	0.79	0.76	0.78
6004	4		0.73	0.70	0.96	0.76	0.72	0.76
6005	5		0.80	0.73	1.06	0.83	0.81	0.87
6006	6		0.64	0.69	0.98	0.80	0.78	0.81
6007	7		0.74	0.72	1.01	0.80	0.75	0.81
6008	8		0.72	0.68	0.98	0.79	0.75	0.79
6011	Batt 1 Chg I	Amp	0.62	0.63	0.59	0.68	0.62	0.46
6012	2		0.59	0.63	0.55	0.64	0.59	0.43
6013	3		0.62	0.59	0.57	0.64	0.57	0.43
6014	4		0.63	0.58	0.58	0.65	0.58	0.44
6015	5		0.72	0.61	0.63	0.72	0.66	0.51
6016	6		0.62	0.58	0.57	0.65	0.60	0.45
6017	7		0.66	0.59	0.59	0.67	0.60	0.45
6018	8		0.62	0.64	0.57	0.65	0.59	0.44
6021	Batt 1 Volt	VDC	31.06	31.50	31.25	31.09	31.59	31.30
6022	2		31.04	31.47	31.23	31.06	31.56	31.26
6023	3		31.18	31.60	31.26	31.20	31.69	31.40
6024	4		31.00	31.43	31.18	31.02	31.52	31.22
6025	5		31.09	31.52	31.27	31.11	31.61	31.32
6026	6		31.10	31.54	31.29	31.13	31.63	31.33
6027	7		31.24	31.66	31.41	31.27	31.75	31.45
6028	8		31.00	31.43	31.19	31.03	31.53	31.23
6031	Batt 1 Temp	DGC	15.79	16.71	16.92	18.60	19.22	18.72
6032	2		14.55	16.18	15.95	18.11	18.53	17.59
6033	3		15.33	17.07	16.72	17.81	18.46	17.65
6034	4		19.47	20.36	20.78	21.35	22.07	21.57
6035	5		19.58	17.81	19.45	20.74	22.06	23.04
6036	6		15.56	17.17	16.93	17.91	18.40	17.74
6037	7		20.71	19.83	21.01	21.97	22.99	23.45
6038	8		17.63	17.87	18.50	20.25	21.38	21.44

6034	4		19.47	20.36	20.78	21.35	22.07	21.57
6035	5		19.58	17.81	19.45	20.74	22.06	23.04
6036	6		15.56	17.17	16.93	17.91	18.40	17.74
6037	7		20.71	19.83	21.01	21.97	22.99	23.45
6038	8		17.63	17.87	18.50	20.25	21.38	21.44
6040	Rt. Pad Temp	DGC	28.58	24.33	26.76	29.56	29.98	30.17
6041	Rt. Pad VM	VDC	34.03	34.75	34.43	34.08	34.67	34.33
6042	Rt. Pad VN	VDC	33.83	34.80	34.47	34.12	34.66	34.18
6044	Lt. Pad Temp	DGC	23.63	18.08	21.63	23.94	24.58	25.74
6045	Lt. Pad VF	VDC	34.05	34.76	34.44	34.09	34.67	34.38
6046	Lt. Pad VG	VDC	33.65	34.36	34.04	33.69	34.27	33.96
6050	S/C UR Bus V	VDC	31.26	31.76	31.50	31.27	31.79	31.52
6051	S/C RG Bus V	VDC	24.58	24.60	24.60	24.60	24.61	24.61
6052	Aux Reg AV	VDC	23.52	23.52	23.52	23.52	23.52	23.52
6053	Aux Reg BV	VDC	23.52	23.52	23.52	23.52	23.52	23.52
6054	Solar I	Amp	16.73	15.89	15.85	16.27	16.18	15.95
6055	S/C RG Bus I	Amp	T	T	T	T	T	T
6056	S/C RG Bus I	Amp	6.08	6.20	6.24	6.61	6.65	6.18
6058	PC Mod T1	DGC	20.30	21.67	20.95	22.88	23.25	21.79
6059	PC Mod T2	DGC	18.44	19.99	19.49	20.99	21.47	20.45
6070	P/L RG Bus V	VDC	24.64	24.66	24.66	24.65	24.66	24.65
6071	P/L UR Bus V	VDC	31.27	31.76	31.51	31.28	31.79	31.54
6072	P/L RG Bus I	Amp	T	T	T	T	T	T
6073	P Aux AV	VDC	23.63	23.65	23.70	23.69	23.69	23.66
6074	P Aux BV	VDC	23.68	23.68	23.72	23.70	23.70	23.69
6075	PR Mod T1	DGC	17.36	18.61	18.45	19.80	20.05	19.27
6076	PR Mod T2	DGC	16.77	18.21	17.95	19.26	19.61	18.92
6079	Fuse Blow V	VDC	24.66	24.68	24.69	24.68	24.69	24.68
6080	Shunt 1 I	Amp	0.00	0.00	0.00	0.00	0.00	0.00
6081	2		0.00	0.00	0.00	0.00	0.00	0.00
6082	3		0.00	0.00	0.00	0.00	0.00	0.00
6083	4		0.00	0.00	0.00	0.00	0.00	0.00
6084	5		0.00	0.00	0.00	0.00	0.00	0.00
6085	6		0.00	0.00	0.00	0.00	0.00	0.00
6086	7		0.00	0.00	0.00	0.00	0.00	0.00
6087	8		0.00	0.00	0.00	0.00	0.00	0.00
6100	P/L RG Bus I	Amp	0.58	0.43	1.23	1.05	0.97	0.62
Total No.	Major Frames	Frm	372	785	388			

* All Voltages are Negative
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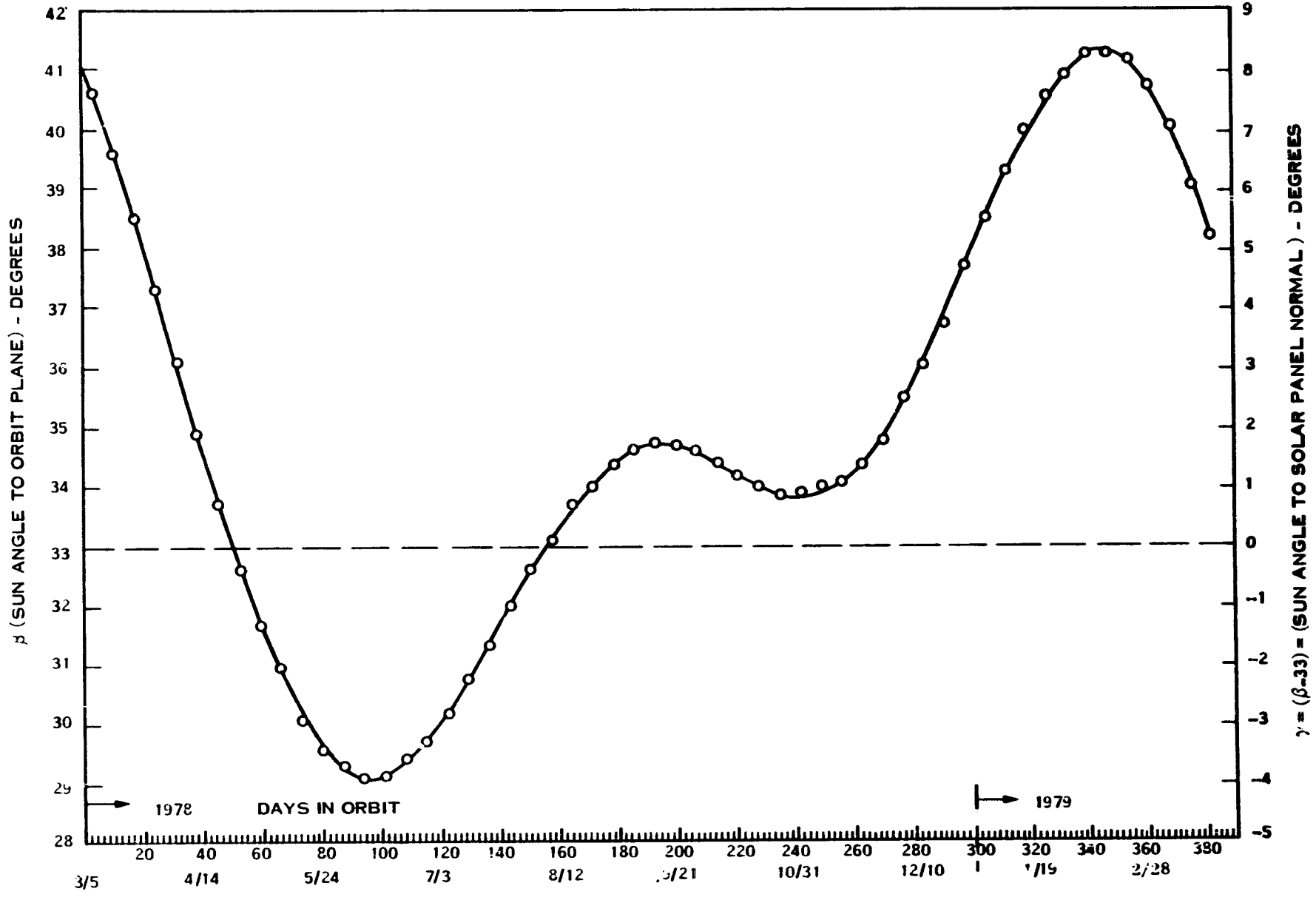

Figure 3-3. Landsat-3 Predicted Sun Angle

SECTION 4

ATTITUDE CONTROL SUBSYSTEM (ACS)
LANDSAT-3

SECTION 4

ATTITUDE CONTROL SYSTEM (ACS)

Since launch, Landsat-3's ACS systems performance has been normal.

In order to conserve freon, the controlled pitch gating program using Pitch Position Bias remains discontinued as a mechanism for controlling ground track drift (ground track drift control will be maintained - as required - by the OA subsystem). Currently, Pitch Position Bias is being implemented to minimize Pitch flywheel speed and prevent Pitch gating using the Arm, Disarm commands as the controlling functions.

Table 4-1 shows the bias sequences implemented during this report period. Figures 4-1 and 4-2 summarize Landsat-3's pneumatic gating pattern since launch.

Table 4-1. Landsat-3 Pitch Position Bias, Pitch Pneumatic Gating Summary

Period		PPB Implementation Sequence			Minutes Positioned About Satellite Ascending Node, A_N		Resulting Average Number of Pitch Gates per Day
From Orbit	To Orbit	N_o *	$N_o + 1$	$N_o + 2$	From	To	
3239 23 Oct 78	3292 27 Oct 78	+ 2.9°	+ 2.9°	+ 2.9°	A_N - 13	A_N - 2	0.14 (-P)
3293 27 Oct 78	3569 16 Nov 78	+ 2.9°	+ 2.9°	+ 2.9°	A_N - 9	A_N	0.17 (+P)
3570 16 Nov 78	3724 27 Nov 78	+ 2.9°	+ 2.9°	+ 2.9°	A_N - 6	A_N + 6	0.64 (+P)
3725 27 Nov 78	3849 6 Dec 78	+ 2.9°	+ 2.9°	+ 2.9°	A_N - 6	A_N + 8	0.33 (+P)
3850 6 Dec 78	4239 3 Jan 79	+ 2.9°	+ 2.9°	+ 2.9°	A_N - 6	A_N + 10	0.11 (+P)
4240 3 Jan 79	4420 16 Jan 79	+ 2.9°	+ 2.9°	+ 2.9°	A_N - 6	A_N + 12	1.00 (-P)
4421 16 Jan 79	4522 23 Jan 79	+ 2.9°	+ 2.9°	+ 2.9°	A_N - 6	A_N + 9	0

* N_o Equals Satellite Night

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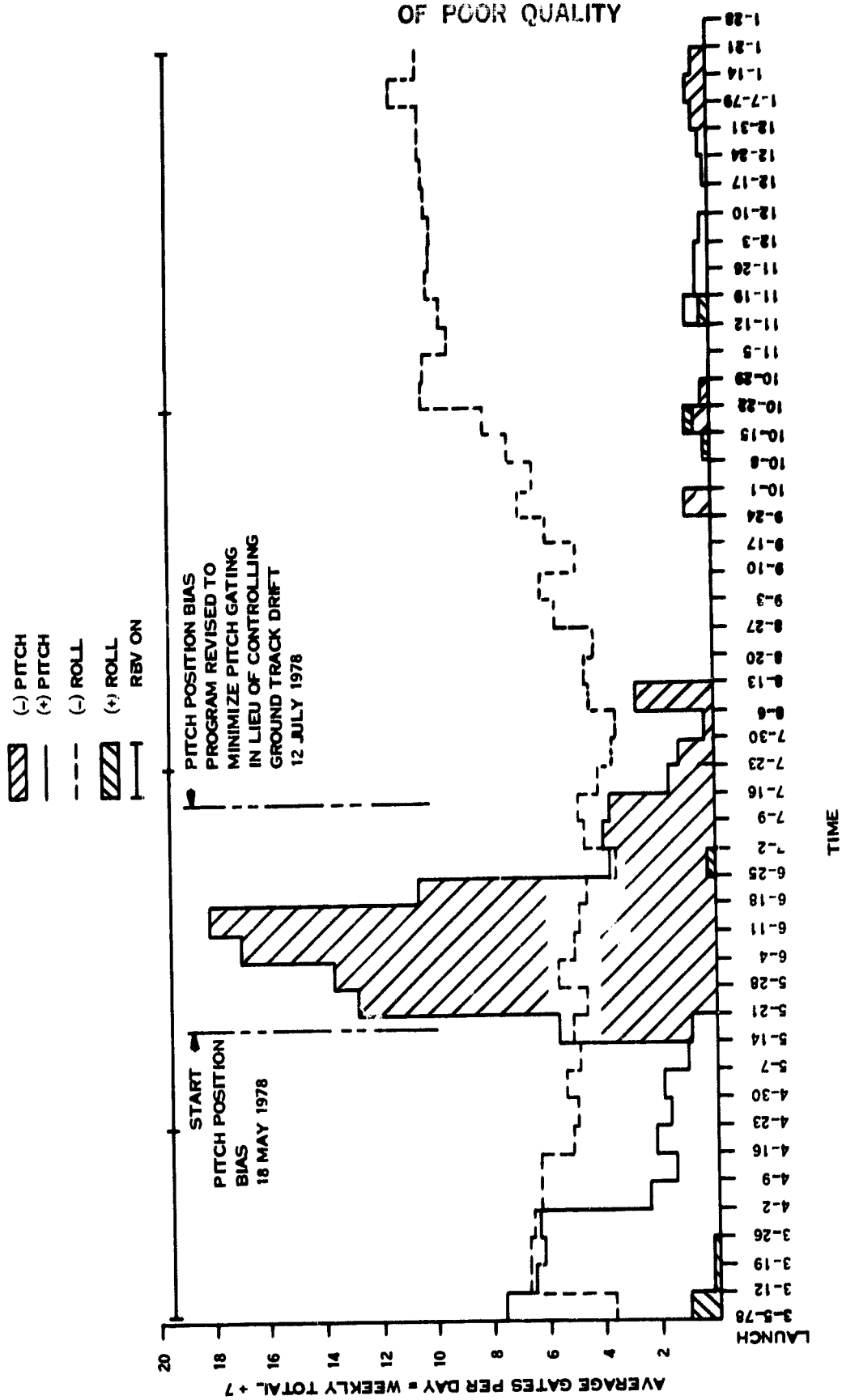

Figure 4-1. Landsat-3 Gating Frequency vs Time

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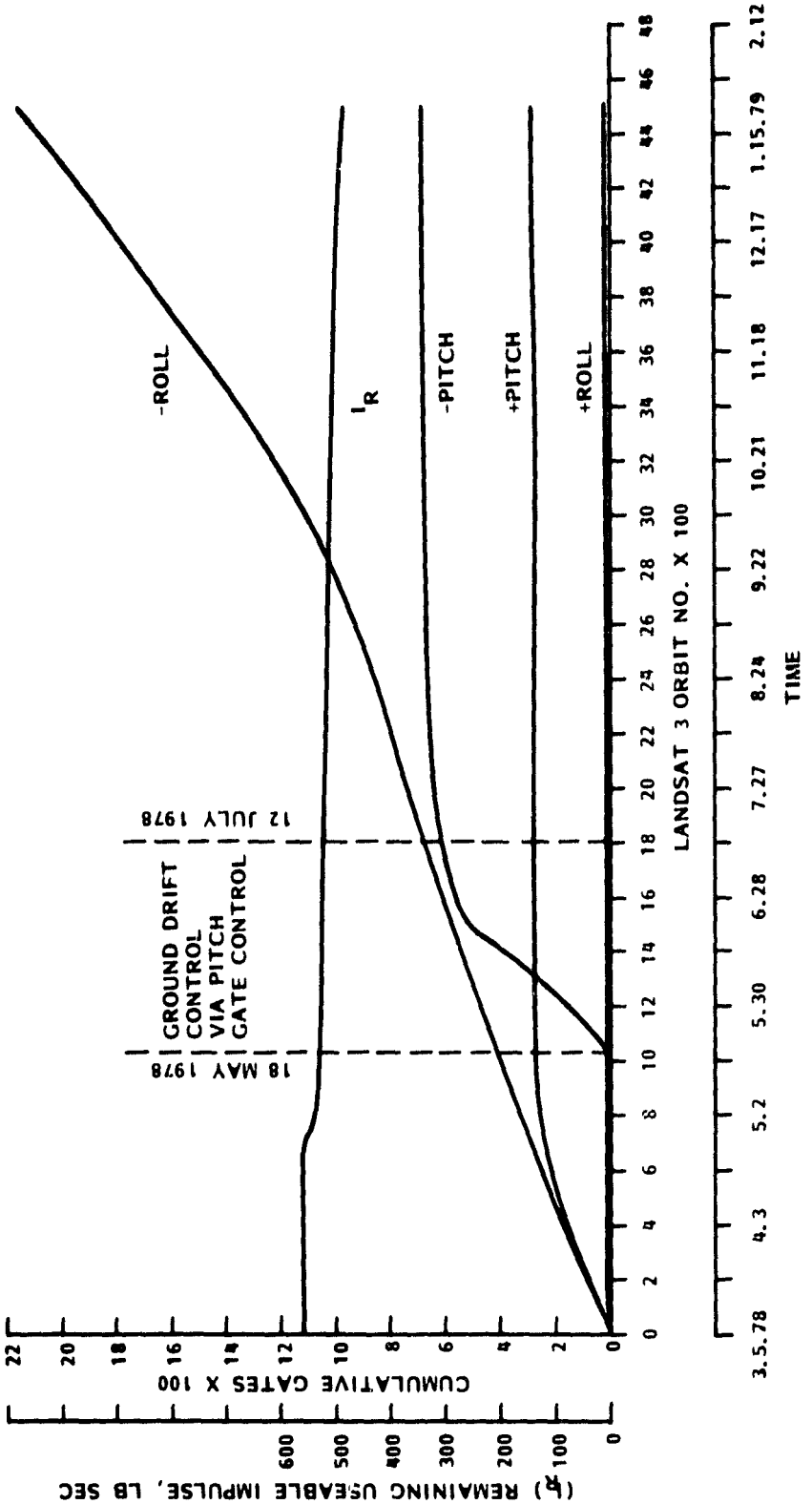

Figure 4-2. Landsat-3 Cumulative Gating History

Flywheel duty cycles are low (3 to 8 percent); dual scanner mode sun transient response is normal.

Both SADS are tracking the sun and their motor voltage and tachometer output signatures are normal.

An orbit adjust (see Section 7) was conducted during Orbit 4059 (21 December 1978). The ACS was commanded into the Orbit Adjust mode with pneumatics disabled and spacecraft attitude was successfully maintained during the burn period.

RMP1 performed normally in the standby mode when it was commanded ON during the orbit adjust period, as a backup for the controlling RMP2.

System's temperatures, pressures, voltages and currents have all been normal as shown in the Telemetry Summary, Tables 4-2, 4-3 and 4-4.

Table 4-2. Landsat-3 ACS Voltages and Currents

Func	Name	Units	Orbits					
			50	1431	2700	3550	4001	4430
1081	RMP 1 MTR Volts	VDC	F	F	F	F	F	F
1082	RMP 1 MTR Current	Amps	F	F	F	F	F	F
1080	RMP 1 Supply Volts	VDC	F	F	F	F	F	F
1091	RMP 2 MTR Volts	VDC	30.50	30.57	30.56	30.51	30.51	30.51
1092	RMP 2 MTR Current	Amps	0.11	0.11	0.11	0.11	0.11	0.11
1090	RMP 2 Supply Volts	VDC	23.66	23.65	23.63	23.60	23.60	23.60
1220	SAD RT MTR WNDNG Volts	VDC	4.64	4.05	4.10	4.08	4.09	4.11
1240	SAT LT MTR WNDNG Volts	VDC	6.30	6.50	7.09	6.79	7.20	7.18
1227	SAT RT -15 VDC Conv.	VDC	15.48	15.48	15.48	15.48	15.48	15.48
1247	SAT LT -15 VDC Conv.	VDC	14.93	14.94	14.94	14.94	14.94	14.94
1056	CLB $\pm$ 6 VDC	TMV	2.35	2.35	2.35	2.35	2.35	2.35
1055	CLB $\pm$ 10 VDC	TMV	2.88	2.88	2.87	2.88	2.88	2.88
1057	CLB Power Supply Volts	TMV	2.94	2.90	2.90	2.90	2.90	2.89

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Table 4-3. Landsat-3 ACS Attitude Errors and Driver Duty Cycles

Func	Name	Units	Orbit					
			051	1431	2700	3550	4001	4430
1041	Pitch Fine Error	DGC	- 0,13	- 1,27*	0,40	- 0,41	- 0,04	- 0,35
1043	Pitch Flywheel Speed	RPM	-199,25	311,67	151,87	-135,11	- 8,81	143,78
1038	Pitch Mtr Drvr CCW	PCT	5,04	2,02	4,83	7,04	6,20	4,39
1039	Pitch Mtr Drvr CW	PCT	2,92	5,41	6,85	5,57	6,19	6,17
1030	Roll Fine Error	DEG	- 0,13	- 0,19	- 0,19	- 0,18	- 0,14	- 0,17
1027	Roll Rear Flywheel SPD	RPM	705,38	801,37	804,05	801,01	782,98	701,16
1026	Roll Fwd Flywheel SPD	RPM	761,61	746,75	744,37	734,33	748,07	747,60
1022	Roll Rear Mtr Drvr CCW	PCT	1,05	0,04	0,59	0,57	0,74	0,83
1025	Roll Rear Mtr Drvr CW	PCT	6,94	6,00	7,12	6,63	6,07	7,00
1023	Roll Fwd Mtr Drvr CCW	PCT	1,03	0,01	0,35	0,43	0,78	0,68
1024	Roll Fwd Mtr Drvr Cw	PCT	7,49	5,30	6,03	6,38	7,72	7,07
1035	Yaw Tach	RPM	24,29	2,80	5,44	10,92	- 15,53	- 97,06
1033	Yaw Mtr Drvr CW	PCT	2,90	1,52	2,43	2,14	2,18	2,12
1034	Yaw Mtr Drvr CCW	PCT	2,72	1,42	2,00	1,77	2,00	2,33
1221	SAD Right Tach	D/M	3,22	4,06	4,00	3,99	3,98	4,03
1241	SAD Left Tach	D/M	3,75	3,76	3,76	3,74	3,75	3,77

* Pitch Position Bias Implementated in this Orbit

Table 4-4. Landsat-3 ACS Subsystem Temperature and Pressure Averages

Func	Name	Units	Orbit					
			30	1431	2700	3550	4001	4430
1094	RMP 1 Gyro Temperature	DGC	18,78	22,30	23,20	25,50	25,47	24,79
1094	RMP 2 Gyro Temperature	DGC	73,52	77,00	78,00	78,00	78,00	78,00
1222	SAD RT MTR HSNG Temp	DGC	21,32	26,71	27,31	29,57	29,35	28,25
1242	SAD LT MTR HSNG Temp	DGC	26,72	30,10	31,52	33,54	33,52	33,42
1223	SAD RT MTR WNDNG Temp	DGC	19,94	25,37	25,65	27,96	27,54	26,31
1243	SAD LT MTR WNDNG Temp	DGC	27,03	29,47	30,37	32,80	32,29	32,96
1228	SAD RT HSG Pressure	PSI	6,93	7,00	7,00	7,00	7,01	6,93
1248	SAD LT HSG Pressure	PSI	7,31	7,31	7,25	7,26	7,26	7,19
1007	FWD Scanner MTR Temp	DGC	21,30	24,35	26,30	29,70	29,97	28,95
1016	Rear Scanner MTR Temp	DGC	22,64	24,96	26,17	28,84	29,06	28,23
1003	FWD Scanner Pressure	PSI	7,27	6,19	5,98	5,94	5,84	5,66
1012	Rear Scanner Pressure	PSI	6,93	7,14	7,04	6,96	6,88	6,88
1212	Gas Tank Pressure	PSI	1990,29	1963,84	1937,44	1929,73	1912,31	1852,03
1210	Gas Tank Temperature	DGC	19,70	23,31	24,54	26,93	27,14	26,41
1213	Manifold Pressure	PSI	59,21	59,98	59,45	59,27	59,50	59,49
1211	Manifold Temperature	DGC	19,80	23,42	24,68	27,07	27,31	26,55
1059	CLG Power Sup Card Temp	DGC	32,36	34,73	36,07	38,15	38,20	37,95
1260	THO1 EBP	DGC	23,15	25,98	27,30	29,65	29,87	29,51
1261	THO2 EBP	DGC	18,71	21,96	23,49	25,72	25,87	25,44
1262	THO3 EBP	DGC	16,64	20,93	22,00	24,32	24,26	23,42
1263	THO1 STS	DGC	- 1,25	0,14	2,44	4,76	4,92	4,04
1264	THO2 STS	DGC	- 10,75	- 9,90	- 7,24	- 6,47	- 6,43	- 7,51
1265	THO3 STS	DGC	5,33	1,66	9,62	10,39	10,77	12,29
1266	THO4 STS	DGC	11,52	- 7,46	- 4,79	- 1,24	- 1,25	- 0,43
1267	THO5 STS	DGC	6,37	6,39	8,91	10,51	10,51	10,47
1224	SAD R FSST	DGC	31,58	40,59	40,57	42,08	41,79	39,91
1244	SAD L FSST	DGC	40,97	41,54	42,91	43,91	44,14	44,13

SECTION 5

COMMAND/CLOCK SUBSYSTEM (CMD)

LANDSAT-3

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SECTION 5

COMMAND/CLOCK SUBSYSTEM (CMD)

The Command Clock Subsystem operated nominally in this report period.

ECAM SMART-2 (WBVTR-1 Headwheel Current Protect) fired during Orbit 1871 (July 17, 1978). It is set at a value below critical range. Tests made in Orbit 1878 were normal so standard operations were required.

SMART 4 and 5 (WBVTR-1, 2 End of Tape Protection) were activated during Orbit 1897 (July 26, 1978).

SMART 6 (Back-up End of Tape Protection using analog tape footage indicator), which is in the monitor mode, was set prior to launch near the End of Tape. During operations in Orbit 3199 (October 21, 1978) the tape was operated outside the setting and the SMART circuit tripped as expected. Since the circuit is only a monitor at present no operational activities was affected. This SMART Circuit is intended for use as a variable tape position protector if required.

GMT was retarded 1 second on 31 December 1978 at 23:59:60. Subsequently, during Orbit 4202 on 1 January 1979, the spacecraft clock was set back 3 seconds.

Figures 5-1, 5-2 and 5-3 show clock performance since launch. The clock of Landsat 3 drifts in the same direction as Landsat-2.

Table 5-1 shows typical telemetry values since launch. All telemetry values are nominal.

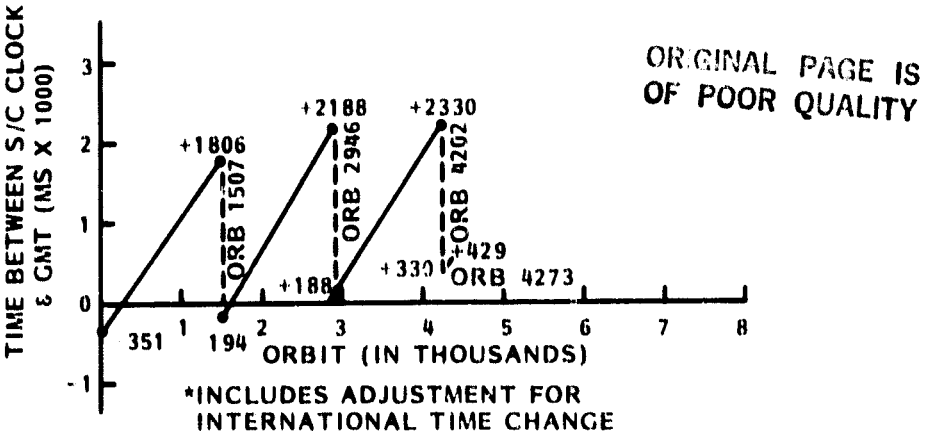

Figure 5-1. Landsat-3 Clock Drift from GMT

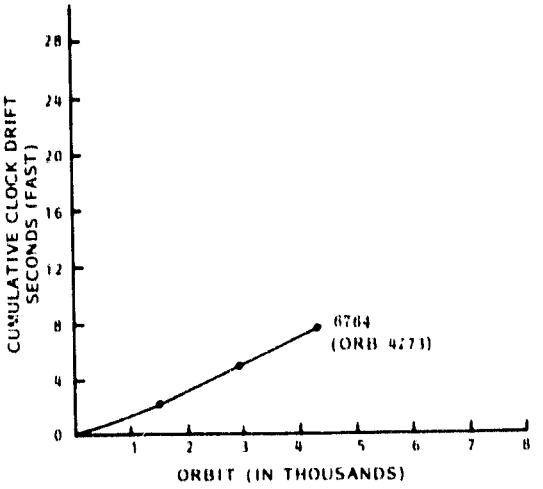

Figure 5-2. Landsat-3 Cumulative Clock Drift

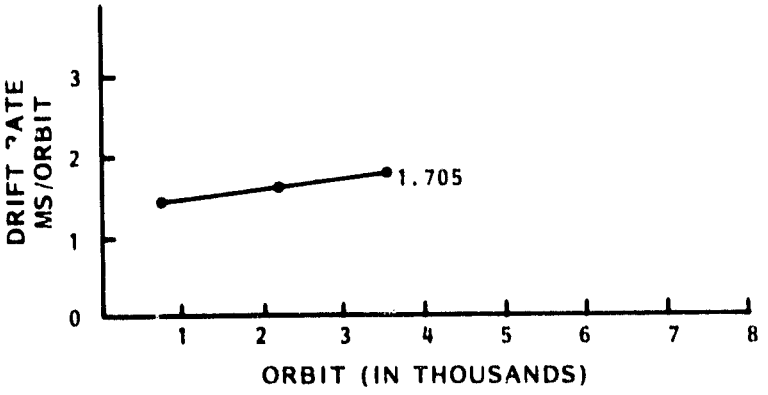

Figure 5-3. Landsat-3 Clock Drift Rate

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Table 5-1. Command Clock Telemetry Summary

Fun	Name	Units	Orbit					
			34	1431	2711	3550	4001	4430
8005	Pri. Power Supply Temp	DGC	41.25	42.97	42.81	42.23	44.04	43.15
8006	Red. Power Supply Temp	DGC	41.59	43.37	43.18	43.81	44.41	43.71
8007	Pri. Osc. Temp	DGC	30.28	30.77	30.34	31.10	31.95	31.21
8008	Red. Osc. Temp	DGC	31.21	31.61	31.15	31.63	32.53	31.80
8009	Pri. Osc. Output	TMV	1.05	1.06	1.06	1.07	1.08	1.07
8010	Red. Soc. Output	TMV	1.24	1.25	1.25	1.25	1.25	1.25
8011	100 KHz	TMV	3.13	3.13	3.13	3.13	3.13	3.13
8012	10 KHz	TMV	3.07	3.07	3.06	3.06	3.07	3.06
8013	2.5 KHz	TMV	2.95	2.95	2.95	2.95	2.95	2.95
8014	400 Hz	TMV	4.45	4.45	4.45	4.45	4.45	4.45
8015	Pri. + 4V Power Supply	VDC	2.05	2.05	2.05	2.05	2.05	2.05
8016	Red. + 4V Power Supply	VDC	1.97	1.97	1.97	1.97	1.97	1.97
8017	Pri. + 6V Power Supply	VDC	2.28	2.27	2.27	2.27	2.27	2.28
8018	Red. + 6V Power Supply	VDC	2.25	2.25	2.25	2.25	2.25	2.25
8019	Pri. - 6V Power Supply	VDC	5.25	5.25	5.25	5.25	5.25	5.25
8020	Red. - 6V Power Supply	VDC	5.23	5.23	5.23	5.23	5.23	5.23
8021	Pri. - 23V Power Supply	VDC	5.70	5.70	5.70	5.70	5.70	5.70
8022	Red. - 23V Power Supply	VDC	5.80	5.80	5.80	5.80	5.80	5.80
8023	Pri. -29V Power Supply	VDC	5.42	5.43	5.43	5.43	5.43	5.43
8024	Red. - 29V Power Supply	VDC	5.38	5.40	5.39	5.39	5.40	5.39
8101	CIU A - 12V	VDC	3.95	3.95	3.95	3.95	3.95	3.95
8102	CIU B - 12V	VDC	3.98	3.98	3.99	3.99	3.99	3.99
8103	CIU A - 5V	VDC	4.12	4.12	4.12	4.12	4.12	4.12
8104	CIU B - 5V	VDC	4.15	4.15	4.15	4.15	4.15	4.15
8105	CIU A Temp.	DGC	22.53	22.01	22.02	22.48	23.04	22.70
8106	CIU B Temp.	DGC	20.36	19.96	19.98	20.33	20.83	20.52
8201	Receiver RF-A Temp.	DGC	28.70	28.79	28.48	29.01	30.06	29.30
8202	Receiver RF-B Temp.	DGC	21.74	21.76	21.30	22.06	23.37	22.36
8203	D MOD A Temp	DGC	36.00	36.55	36.35	36.80	37.59	37.09
8204	D MOD B Temp	DGC	25.27	25.50	25.21	25.79	26.79	26.09
8205	Receiver A AGC	DBM	-84.89	-86.05	-88.71	-91.46	-92.78	-84.89
8206	Receiver B AGC	DBM	F	F	F	F	F	F
8207	Amp. A Output	TMV	2.41	2.35	2.44	2.33	2.39	2.55
8208	Amp. B Output	TMV	F	F	F	F	F	F
8209	Freq. Shift Key A Out	TMV	1.09	1.08	1.08	1.08	1.08	1.08
8210	Freq. Shift Key B Out	TMV	F	F	F	F	F	F
8211	Amp. A Output	TMV	1.12	1.10	1.11	1.10	1.10	1.11
8212	Amp. B Output	TMV	F	F	F	F	F	F
8215	D MOD A - 15V	TMV	5.01	5.02	5.02	5.02	5.02	5.02
8216	D MOD B - 15V	TMV	F	F	F	F	F	F
8217	Regulator A - 10V	TMV	5.52	5.52	5.52	5.52	5.52	5.52
8218	Regulator B - 10V	TMV	F	F	F	F	F	F
8311	ECAM Memory Temp	DGC	16.18	15.43	15.22	16.25	16.79	16.37
8312	ECAM Pwr. Sup Temp	DGC	19.59	16.80	16.43	18.13	18.99	18.42

F = Unit OFF

SECTION 6

TELEMETRY SUBSYSTEM (TLM)

LANDSAT-3

SECTION 6

TELEMETRY SUBSYSTEM (TLM)

The TLM Subsystem has operated nominally during this report period. Table 6-1 shows typical telemetry values since launch. All are nominal. Landsat-3 has redundant capability and "A" units have been operated since launch. Telemetry format "0" (fast verify) is in use.

Table 6-1. TMP Telemetry Values

Func	Name	Units	Orbit					
			33	1431	2711	3550	4001	4430
09001	Power Supply A +5V	TMV	4.70	4.69	4.69	4.69	4.68	4.68
09002	Power Supply B +5V	TMV	F	F	F	F	F	F
09003	Power Supply A +15V	TMV	4.90	4.90	4.90	4.90	4.90	4.90
09004	Power Supply B +15V	TMV	F	F	F	F	F	F
09005	Power Supply A -6V	TMV	5.65	5.65	5.65	5.65	5.65	5.65
09006	Power Supply B -6V	TMV	F	F	F	F	F	F
09007	Power Supply A -15V	TMV	4.97	4.97	4.97	4.97	4.97	4.97
09008	Power Supply B -15V	TMV	F	F	F	F	F	F
09009	Power Supply A -22V	TMV	5.35	5.35	5.35	5.35	5.35	5.35
09010	Power Supply B -22V	TMV	F	F	F	F	F	F
09011	Power Supply A +6V	TMV	4.82	4.82	4.82	4.82	4.82	4.81
09012	Power Supply B +6V	TMV	F	F	F	F	F	F
09013	Power Supply A Temp	DGC	26.66	26.85	27.81	29.14	30.38	31.48
09014	Power Supply B Temp	DGC	25.10	23.50	24.56	26.10	27.50	28.62
09015	Temperature C	DGC	19.19	19.48	20.60	22.22	23.74	24.87
09100	Reflected Power	DBM	7.61	7.79	6.94	6.92	7.05	5.66
09101	XMTR A -20 VDC	TMV	3.87	3.90	3.90	3.90	3.90	3.90
09102	XMTR B -20 VDC	TMV	F	F	F	F	F	F
09103	XMTR A - Temp	DGC	21.01	17.73	19.16	20.08	21.49	22.53
09104	XMTR B - Temp	DGC	21.89	18.60	20.05	20.97	22.43	23.54
09105	XMTR A Power Output	DBM	28.72	28.86	28.90	28.91	28.96	28.97
09106	XMTR B Power Output	DBM	F	F	F	F	F	F

F - Unit OFF

SECTION 7

ORBIT ADJUST SUBSYSTEM (OAS)

LANDSAT-3

SECTION 7

ORBIT ADJUST SUBSYSTEM (OAS)

An orbit adjust was performed during Orbit 4059 (21 December 1978) to correct the spacecraft's eastward ground track drift. The ACS was commanded into the Orbit Adjust mode with pneumatics enabled and the OA system's performance was normal.

The minus X thruster was fired for 12.8 seconds and the spacecraft's altitude was increased by 85.7 meters.

Burn efficiency was calculated at 101.1%.

Figures 7-1, 7-2, 7-3 and 7-4 show the OA and ACS system's performance during the orbit adjust maneuver.

Table 7-1 summarizes all of the OAS system's operations since launch.

Table 7-2 shows typical telemetry values for the OAS during its quiescent periods. Variations in thrust chamber temperatures shown in Table 7-2 are consistent with variations in sun intensity and sun angle.

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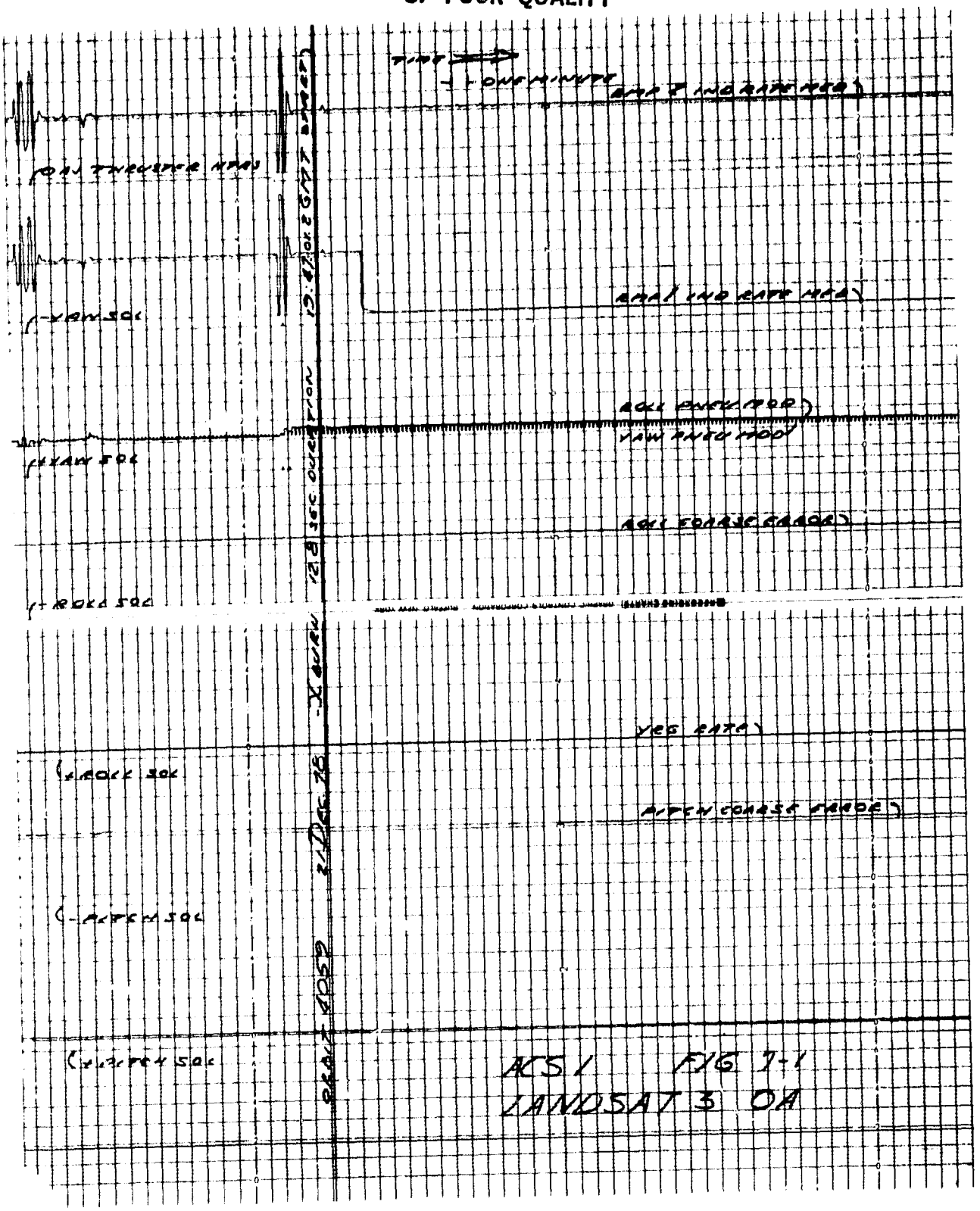

Figure 7-1 ACS 1 - Landsat-3 OA

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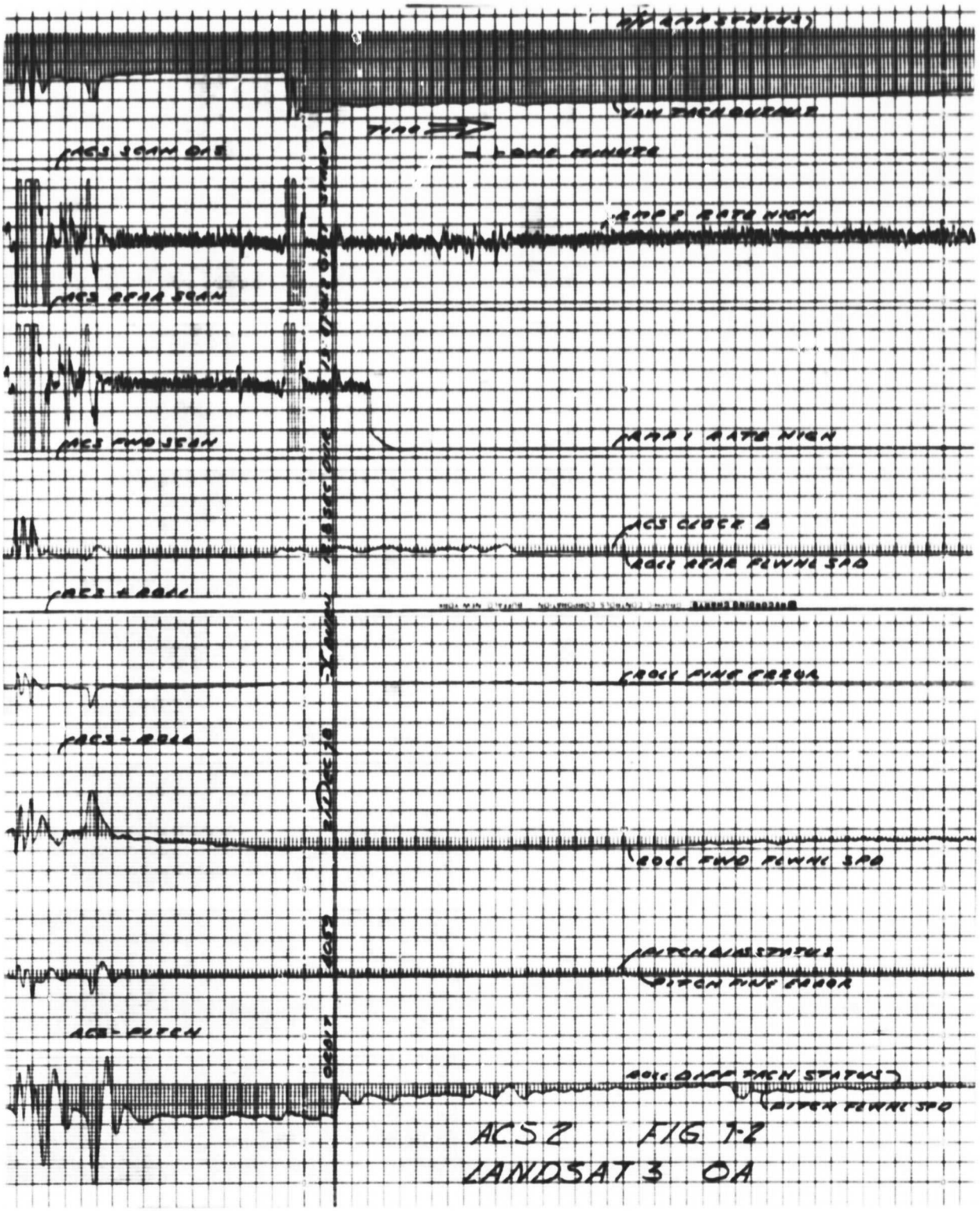

Figure 7-2. ACS 2 - Landsat-3 OA

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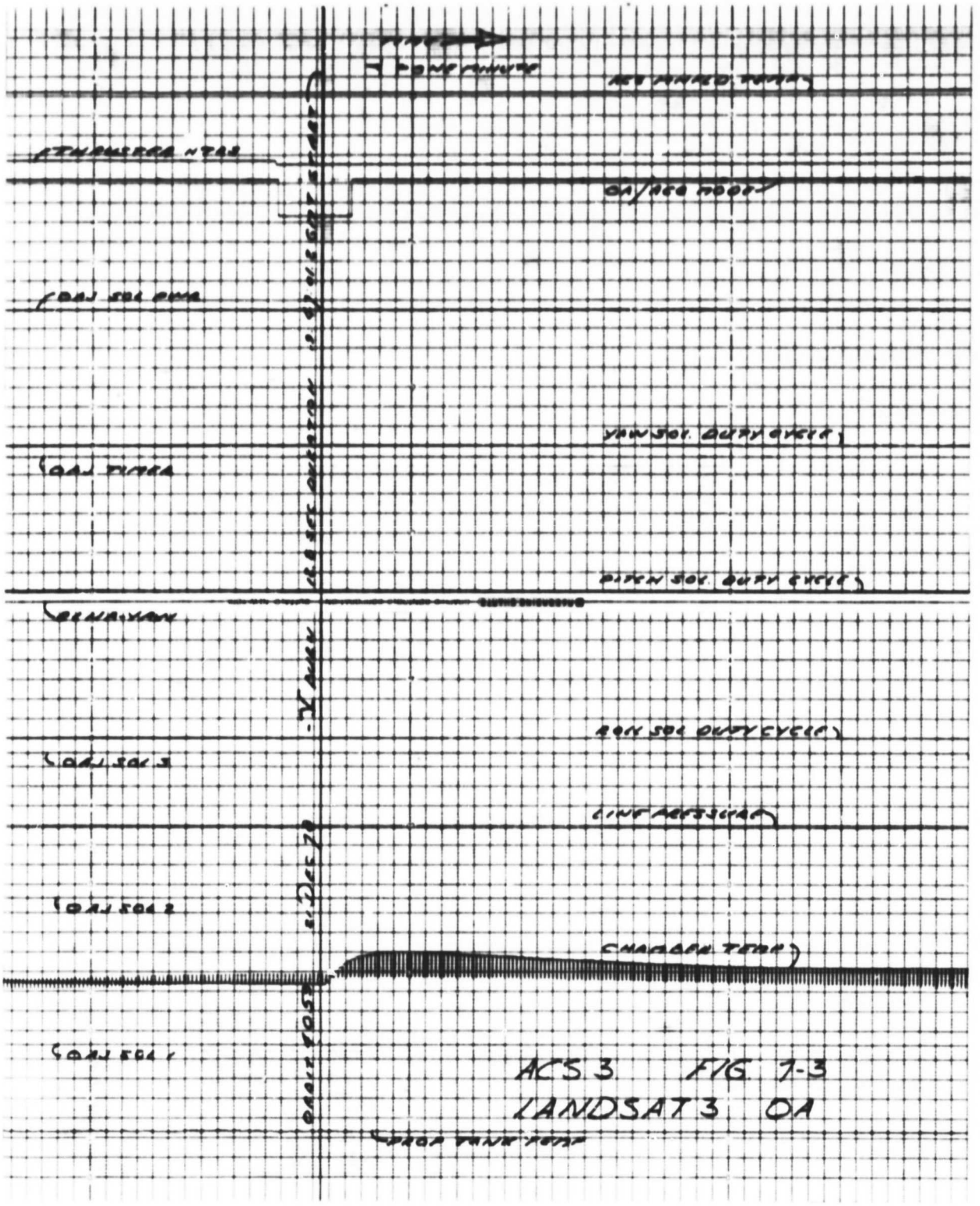

Figure 7-3. ACS 3 - Landsat-3 OA

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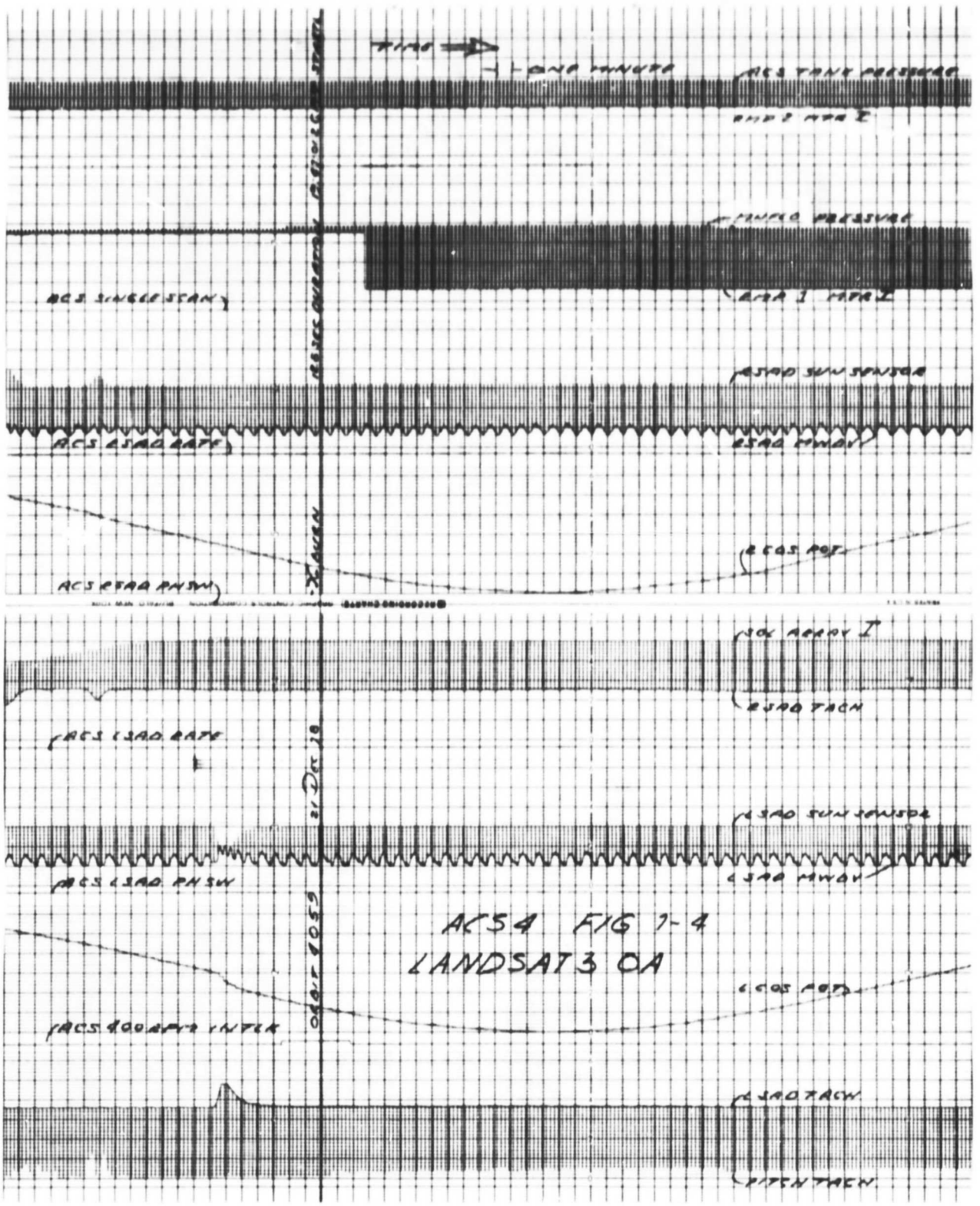

Figure 7-4. ACS 4 - Landsat-3 OA

Table 7-1. Landsat-3 Orbit Adjust Summary

Orbit Adjust No.	Orbit No.	Epoch (Burn Start Time)	Burn Axis	Burn Duration (secs)	Post-Burn Freon Status (psia)	Hydrazine Consumed (lbs)	Post-Burn Hz Tank P (psia)	Burn Efficiency (%)	Δa (Meters)	Δi (degrees)
1	26	7 Mar 78 14:33:11.4	+X	5.2	N	0.02	532.44	N	N	0.0
2	26	7 Mar 78 14:40:01.2	-X	5.2	2006.12	0.02	532.44	N	N	0.0
3	30	7 Mar 78 21:23:01.2	+X	420.0	2012.09	1.58	532.44	107.2	-3662.2	0.0
4	109	13 Mar 78 21:00:01.2	-X	660.0	2004.51	2.30	476.20	103.7	4932.5	0.0
5	115	13 Mar 78 23:43:09.2	-X	112.0	2016.25	0.36	424.17	108.1	804.0	0.0
6	253	22 Mar 78 21:00:01.2	+X	4.8	2012.46	0.01	419.94	109.5	- 35.7	0.0
7	4059	21 Dec 78 19:47:01.2	-X	12.8	1899.96	0.04	434.96*	101.1	85.7	0.0

N - Data Not Available

* - Pressure increased due to seasonal temperature increase.

Table 7-2. Landsat-3 OAS Telemetry Values

Func	Name	Units	Orbit					
			140	1430	2700	3550	4001	4430
2001	Prop. Tank Temp.	DGC	15.55	17.64	18.05	18.89	19.72	20.14
2003	Thrust Chamber No. 1 (-x) Temp.	DGC	28.15	35.34	32.15	33.61	33.01	28.63
2004	Thrust Chamber No. 2 (+x) Temp.	DGC	32.88	36.77	35.91	38.15	38.21	38.01
2005	Thrust Chamber No. 3 (-y) Temp.	DGC	50.31	36.51	43.96	45.17	49.62	53.97
2006	Line Pressure	psia	416.59	427.44	430.62	434.94	434.94	435.48

SECTION 8

MAGNETIC MOMENT COMPENSATING ASSEMBLY (MMCA)

LANDSAT-3

SECTION 8

MAGNETIC MOMENT COMPENSATION ASSEMBLY (MMCA)

The MMCA's operational mode has not been altered from its launch configuration.

Presently, no plan exists to implement MMCA compensation. Payload operations have not generated unusual magnetic torques that result in buildup of spacecraft momentum.

MMCA telemetry values are shown in Table 8-1.

Table 8-1. MMCA Telemetry Values

			Orbit					
Func	Name	Units	4	1431	2700	3550	4001	4430
4001	A1 Board Temp	DGC	17.66	17.52	17.56	17.76	18.23	17.93
4002	A1 Board Temp	DGC	20.31	20.23	20.31	20.48	21.06	20.77
4003	Hall Current	TMV	3.63	3.62	3.62	3.62	3.62	3.62
4004*	Yaw Flex Density	TMV	3.24	3.22	3.23	3.22	3.23	3.23
4005*	Pitch Flux Density	TMV	3.20	3.19	3.20	3.18	3.18	3.18
4006*	Roll Flux Density	TMV	3.15	3.12	3.12	3.12	3.11	3.12

* In previous reports, the values listed for these functions were in units of "Thousands of Pole CM" not TMV.

SECTION 9

UNIFIED S-BAND/PREMODULATION PROCESSOR (USB/PMP)

LANDSAT-3

SECTION 9

UNIFIED S-BAND/PREMODULATION PROCESSOR (USB/PMP)

The USB Subsystem has operated nominally in this report period.

Table 9-1 shows telemetry values since launch. All are nominal. The transmitter has maintained a steady indicated power output of about 1.6 watts since lat nch.

USB transmitter signal levels measured at Goldstone with the spacecraft successively at the same points in space show continuous satisfactory USB performance.

Table 9-1. Landsat-3 USB/PMP Telemetry Values

Func	Description	Units	Orbit					
			50	1521	2721	3552	4001	4430
11001	USB Rcvr AGC	dBm	-101.62	-93.62	-109.30	-120.68	-108.06	-121.98
11002	USB Xmtr Pwr	W	1.65	1.65	1.67	1.69	1.69	1.66
11003	USB Rcvr Error	KHz	1.81	3.63	2.92	6.25	3.76	3.80
11004	USB Xpond Temp	DGC	24.63	22.50	23.81	24.94	25.78	26.24
11005	USB Xpond Press	PSI	17.00	16.95	17.00	17.00	17.00	17.00
11007	USB Xmtr A -15V	VDC	F	F	F	F	F	F
11008	USB Xmtr B -15V	VDC	2.35	2.36	2.36	2.35	2.36	2.35
11009	USB Range -15V	VDC	2.05	2.05	2.05	2.05	2.05	2.05
11101	PMP Pwr A Volt	VDC	F	F	F	F	F	F
11102	PMP Pwr B Volt	VDC	- 15.11	-15.10	- 15.10	- 15.05	- 15.06	- 15.06
11103	PMP Temp A	DGC	21.48	17.29	19.79	21.46	22.71	24.90
11104	PMP Temp B	DGC	25.96	22.18	24.48	26.43	27.64	29.78

F = Unit OFF

SECTION 10
ELECTRICAL INTERFACE SUBSYSTEM (EIS)
LANDSAT-3

SECTION 10

ELECTRICAL INTERFACE SUBSYSTEM (EIS)

Search Track Data and Backup Timers in the Auxiliary Processing Unit (APU) operated satisfactorily throughout this report period. Telemetry for the APU is shown in Table 10-1.

The Power Switching Module (PSM), containing the switching relays for power to the OAS, MSS, WBVTR No. 1 and No. 2, RBV and PRM, functioned normally. During this report period, the MSS as well as WBVTR No. 2 power circuits, have been operated on a regular basis. RBV and WBVTR No. 1 power circuits have been used less frequently.

The Interface Switching Module performed all switchings normally during this report period.

The Auxiliary Load Controller (ALC) performed all switching normally during this report period.

Table 10-1. Landsat-3 APU Telemetry Functions

Func	Description	Unit	Orbit					
			43	1464	2700	3550	4001	4430
13200	APU, -24.5 Vdc	TMV	2.62	2.62	2.63	2.63	2.63	2.63
13201	APU, -12 Volts	TMV	2.42	2.43	2.43	2.43	2.43	2.43
13202	APU Temp	DGC	24.43	23.24	23.78	24.13	25.00	24.80

SECTION 11
THERMAL SUBSYSTEM (THM)
LANDSAT-3

SECTION 11

THERMAL SUBSYSTEM (THM)

Since launch, Landsat-3's Thermal Control Subsystem has provided satisfactory temperature control for all of the spacecraft equipment.

Table 11-1 summarizes average subsystem temperature telemetry values taken from representative orbits that occurred during the ten months of Landsat-3's existence.

Average temperature in the sensory ring bays are plotted in Figure 11-1.

During this report period, the sun intensity increased from 1.010 to 1.032 times the mean value. Increase in the sun angle to the spacecraft decreased night length. Consequently the average spacecraft temperatures were slightly higher during this report period.

A history of compensation load switching since launch is shown in Table 11-2. Compensation load 8 was turned on in Orbit 65 (10 March 1978) to increase the temperature of MSS and remained on during this report period.

Compensation loads 1, 2, 3, 4, 5, 7 and 8 were on from orbit 3074 (12 October 1978) to orbit 3080 (12 October 1978) as part of the MSS band 5 test effort. All compensation loads except comp load number 8 were turned off during orbit 3081.

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FOLDOUT FRAME

Table 11-1. Landsat-3 Thermal Subsystem Analog Telemetry
(Average Value for Frames of Data Received in NBTR Playback)

Function No.	Name	Unit	Orbit					
			50	1454	2700	3550	4001	4430
7001	THM TH02SBM	DGC	15.52	14.89	15.31	16.53	17.27	16.97
7002	THM TH01SBO	DGC	16.73	15.99	16.59	17.46	18.30	18.17
7003	THM TH03SBI	DGC	16.40	16.13	16.30	17.94	18.38	18.31
7004	THM TH10TCB	DGC	19.92	19.09	19.77	20.12	21.21	20.82
7005	THM TH11SBM	DGC	21.11	19.84	20.75	21.29	22.42	22.15
7006	THM TH05SBA	DGC	15.74	15.97	15.89	16.56	17.00	16.60
7007	OA-X THRUSTER	DGC	20.20	21.05	20.88	21.38	21.90	20.39
7008	THM TH02TCB	DGC	16.55	15.91	16.64	17.52	18.17	17.82
7009	THM TH07SBM	DGC	16.08	16.48	16.08	16.67	17.90	16.95
7010	THM TH08SBI	DGC	17.93	18.02	17.97	18.39	19.59	18.71
7011	THM TH09SBM	DGC	20.02	20.07	20.17	20.62	21.48	20.75
7012	THM TH10SBO	DGC	18.84	18.61	18.94	19.31	20.03	19.37
7013	THM TH04SBM	DGC	16.47	16.69	16.44	18.02	18.19	18.12
7014	THM TH11STO	DGC	20.46	19.41	20.20	20.73	21.60	21.22
7015	THM TH12SBI	DGC	21.64	19.51	20.92	21.67	22.93	23.26
7016	THM TH12STO	DGC	21.45	19.36	20.52	21.75	22.57	22.69
7017	RBV BEAM CTR LN	DGC	20.89	20.14	20.61	21.05	22.30	21.89
7018	THM TH13SBM	DGC	21.88	18.94	20.59	21.44	22.99	23.76
7019	NBR RAD OUTBDB4	DGC	2.73	2.53	2.68	3.07	3.68	3.42
7020	THM TH13STM	DGC	22.42	19.84	21.24	22.32	23.52	24.16
7021	THM TH14SBI	DGC	20.86	17.50	19.42	20.36	22.12	23.37
7022	THM TH14STO	DGC	20.48	17.00	19.17	19.97	21.48	22.51
7023	THM TH15SBM	DGC	19.95	16.18	18.42	19.59	21.37	23.35
7030	THM TH15STO	DGC	19.43	15.90	18.31	19.47	21.05	22.56
7031	THM TH16SBM	DGC		14.76	16.60	17.87	19.51	21.51
7032	THM TH17SBI	DGC		16.95	18.45	19.48	20.98	22.00
7033	THM TH05TCB	DGC	16.17	16.41	16.63	16.97	17.61	17.11
7034	THM TH18SBM	DGC		16.15	17.43	18.27	19.56	20.06
7035	THM TH18STM	DGC	18.04	16.47	17.53	18.32	19.23	19.66
7040	THM TH01TCB	DGC	16.45	15.64	16.29	17.13	18.07	17.60
7041	THM TH06STO	DGC	13.27	13.52	13.48	14.02	14.77	14.08
7042	THM TH03TCB	DGC	16.49	16.88	15.96	18.77	18.54	18.80
7043	THM TH04TCB	DGC	17.98	18.16	18.07	19.15	19.25	19.14
7044	THM TH17STO	DGC	17.99	16.13	17.22	18.38	19.95	21.22
7045	THM TH07TCB	DGC	16.16	16.41	16.36	16.69	18.03	16.96
7046	THM TH09TCB	DGC	18.83	18.84	19.14	19.42	20.03	19.61
7048	THM TH11TCB	DGC	21.59	20.07	21.18	21.75	22.75	22.82
7049	THM TH12TCB	DGC	21.45	18.86	20.22	21.30	22.33	22.97
7050	THM TH13TCB	DGC	22.25	19.31	20.99	21.68	23.27	24.02
7051	THM TH14TCB	DGC	20.75	16.97	19.35	20.41	22.05	23.62
7052	THM TH16TCB	DGC	19.57	17.00	18.73	19.92	21.49	22.95
7053	THM TH17TCB	DGC	18.98	17.58	18.52	19.35	20.76	21.32
7054	THM TH18TCB	DGC	17.23	15.95	16.89	17.49	18.29	18.54
7060	THM SHUTTER BAY 1	DEC	0.90	3.14	7.17	14.39	28.60	21.16

7051	THM TH14TCB	DGC	20.75	16.97	19.35	20.41	22.05	23.62
7052	THM TH16TCB	DGC	19.57	17.00	18.73	19.92	21.49	22.95
7053	THM TH17TCB	DGC	18.96	17.58	18.52	19.35	20.76	21.32
7054	THM TH18TCB	DGC	17.23	15.95	16.89	17.49	18.29	18.54
7060	THM SHUTTER BAY 1	DEG	9.90	2.14	7.17	14.39	28.60	21.16
7061	THM SHUTTER BAY 2	DEG	0.00	0.00	0.00	0.00	0.00	0.00
7062	THM SHUTTER BAY 3	DEG	1.07	7.02	1.07	21.50	21.36	22.09
7063	THM SHUTTER BAY 4	DEG	6.60	9.78	12.79	15.80	21.24	18.96
7064	THM SHUTTER BAY 5	DEG	6.00	3.33	3.34	4.31	4.67	5.46
7065	THM SHUTTER BAY 7	DEG	0.00	1.08	0.00	1.94	11.54	4.84
7067	THM SHUTTER BAY 9	DEG	28.82	28.00	30.02	31.08	35.45	33.30
7068	THM SHUTTER BAY 10	DEG	30.27	23.56	28.97	31.88	39.49	38.07
7069	THM SHUTTER BAY 11	DEG	40.32	29.52	36.78	40.71	47.31	49.13
7070	THM SHUTTER BAY 12	DEG	40.17	24.08	33.63	41.21	48.54	54.59
7071	THM SHUTTER BAY 13	DEG	36.13	15.57	28.23	32.91	43.10	48.85
7072	THM SHUTTER BAY 14	DEG	13.76	0.00	6.80	13.83	25.64	35.67
7074	THM SHUTTER BAY 16	DEG	17.35	0.00	7.71	19.21	31.09	37.45
7075	THM SHUTTER BAY 17	DEG	18.29	1.30	11.20	22.30	33.68	35.48
7076	THM SHUTTER BAY 18	DEG	11.42	0.00	4.59	12.23	21.69	23.59
7080	THM Q1 T ZENER V	TMV	4.93	4.92	4.92	4.93	4.93	4.93
7081	THM Q2 T ZENER V	TMV	5.08	5.09	5.09	5.09	5.09	5.09
7082	THM Q3 T ZENER V	TMV	5.05	5.05	5.05	5.06	5.06	5.06
7083	THM Q1 S ZENER V	TMV	5.01	5.00	5.01	5.01	5.01	5.01
7084	THM Q2 S ZENER V	TMV	4.90	4.90	4.90	4.90	4.91	4.91
7085	THM Q3 S ZENER V	TMV	5.03	5.04	5.04	5.04	5.05	5.05
7090	THM TH ECAM M	DGC	19.34	17.31	17.50	18.57	19.43	18.93
7091	THM IND ATTITUDE	DGC	21.11	18.05	19.78	20.66	22.42	23.54
7092	THM RBV RADIATOR	DGC	13.10	12.15	12.65	13.19	14.67	14.08
7093	THM RBVC CTR BM	DGC	17.80	16.70	17.22	17.78	19.63	19.03
7094	THM WBVTR BOOT	DGC	10.23	9.71	10.37	11.42	12.41	12.83
7095	THM WBVTR RAD CT	DGC	- 1.22	- 0.55	- 0.09	0.85	1.57	1.86
7096	THM WBVTR STRAP	DGC	12.84	12.03	12.85	13.78	14.76	14.99
7097	THM WBMT BAY 1	DGC	17.05	13.95	16.34	16.57	16.71	17.07
7098	THM WBMT BAY 18	DGC	16.50	13.48	15.34	16.68	16.39	17.21
7099	THM WBVTR SEP 3	DGC	15.40	14.69	15.23	16.44	16.98	17.02
7100	THM WBVTR SEP 17	DGC	18.42	16.38	17.78	18.61	19.82	20.52
7101	THM WBVTR 1 CENT	DGC	16.46	14.89	16.15	16.80	17.74	18.00
7102	THM VTR2 BAY 4	DGC	15.75	15.46	15.67	16.68	17.28	17.17
7103	THM VTR2 BAY 15	DGC	18.42	15.87	17.28	18.64	19.84	21.13
7104	THM WBVTR2 CTR	DGC	16.52	15.00	15.89	17.08	17.96	18.64
7105	THM NBTRB SEP 6	DGC	15.98	15.54	15.78	16.40	17.26	17.01
7106	THM NBTRB SEP 1	DGC	20.40	17.72	19.24	20.31	21.79	22.74
7107	THM NBTR BM CTR	DGC	17.71	16.40	16.99	18.05	19.45	19.56
7108	THM MSS MOUNT 14	DGC	16.14	14.79	15.72	16.92	18.69	19.74
7109	OA-Y THRUSTER	DGC	23.15	18.41	21.05	22.08	23.89	25.56
7110	THM MSS WBVTR BM	DGC	13.97	13.76	14.01	15.12	16.23	16.46
7111	OA +X THRUSTER	DGC	16.80	14.47	16.06	16.79	17.14	17.45
7130	THM AVX P1 T	DGC	36.47	34.99	24.69	36.85	40.35	37.18
7131	THM AVX P2 T	DGC	33.24	16.09	34.33	27.46	14.68	26.71

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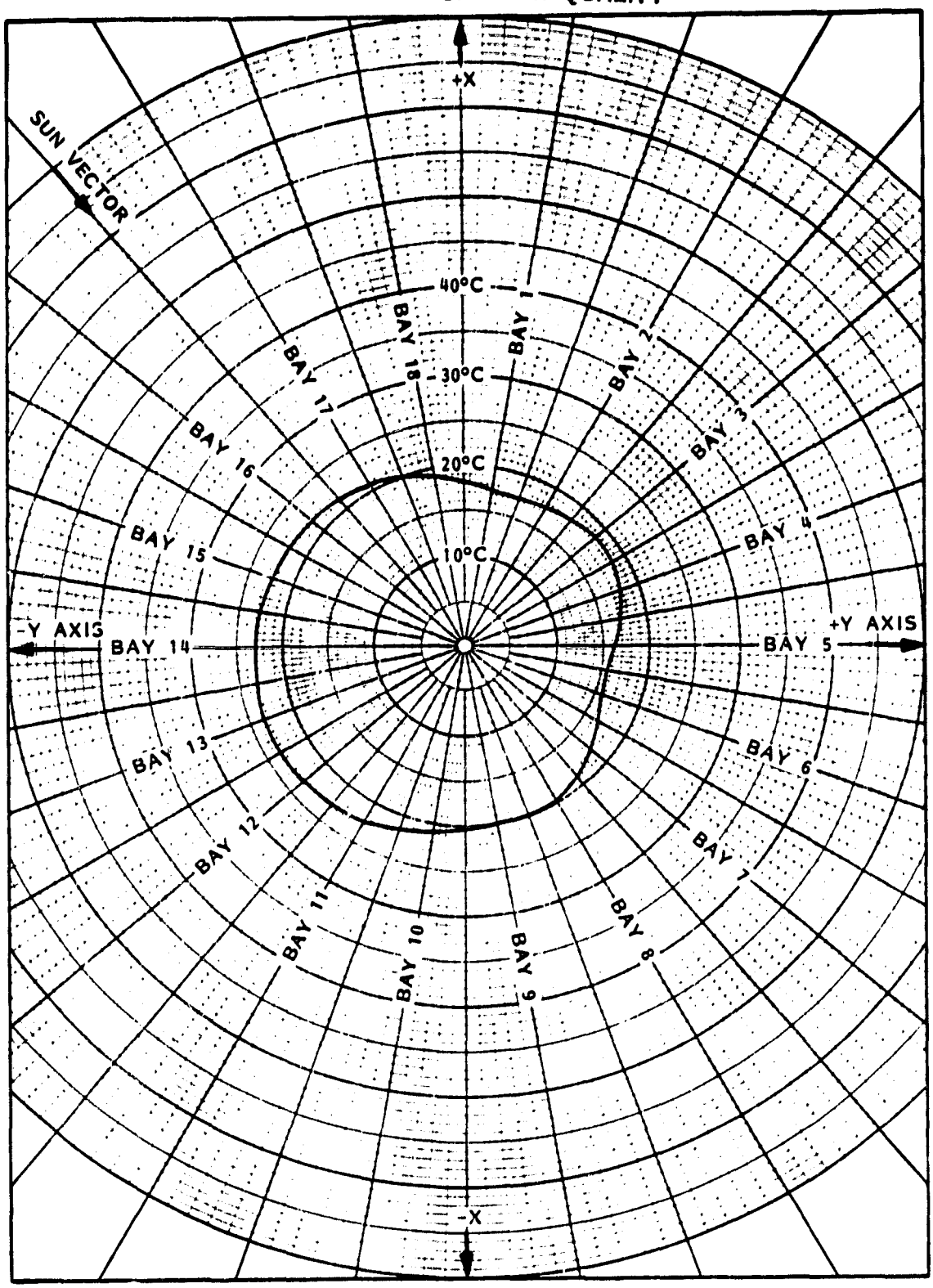

Figure 11-1. Landsat-3 Sensory Ring Average Bay Temperatures, Orbit 4430, 17 January 1979

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Table 11-2. Landsat-3 Compensation Load History

Orbits	Compensation Load Status*							
	1	2	3	4	5	6	7	8
Launch	0	0	0	0	0	0	0	0
3	0	0	X	X	X	0	X	X
34	0	0	X	X	X	X	X	X
48	0	0	0	0	0	0	0	0
65	0	0	0	0	0	0	0	X
3074	X	X	X	X	X	0	X	X
3081	0	0	0	0	0	0	0	X

SECTION 12
NARROWBAND TAPE RECORDERS (NBR)
LANDSAT-3

SECTION 12

NARROWBAND TAPE RECORDERS (NBR)

The Narrowband Recorder Subsystem operated satisfactorily throughout the entire report period, both Recorders alternating in Record and Playback modes with a nominal one minute overlap.

Table 12-1 gives cumulative operating hours for both Recorders by mode, and Table 12-2 gives typical telemetry values.

Table 12-1. NBR Operating Hours by Mode

NBR	On	Off	Playback	Record
A	3658	4065	160	3905
B	3658	4065	160	3905

Table 12-2. Narrow Band Tape Recorder Telemetry Values

			Orbits					
Func	Name	Units	30/31	1524/25	2795/96	3541/3560	3903/3911	4453/54
10001	A-Motor Current	mA						
	Record		182.47	182.47	182.47	182.47	182.47	182.47
	P/B		179.38	177.83	177.83	177.83	177.83	176.29
10101	B-Motor Current	mA						
	Record		150.00	143.88	139.29	140.81	140.81	136.22
	P/B		142.34	142.34	134.69	133.16	133.16	133.16
10002	A-Pwr Supply Cur	mA						
	Record		167.57	170.95	167.57	170.95	170.95	170.95
	P/B		387.12	383.75	380.39	383.75	383.75	383.75
10102	B-Pwr Supply Cur	mA						
	Record		186.67	186.66	183.33	186.66	186.66	186.66
	P/B		406.62	419.95	419.95	413.32	413.32	413.32
10003	A-Recorder Temp	DGC	20.43	17.61	20.43	20.65	22.39	22.39
10103	B-Recorder Temp	DGC	19.35	21.30	21.52	20.87	20.87	23.04
10004	A-Pwr Supply	VDC	-24.37	-24.38	-24.50	-24.50	-24.50	-24.50
10104	B-Pwr Supply	BDC	-24.38	-24.38	-24.50	-24.62	-24.62	-24.62

SECTION 13

WIDEBAND TELEMETRY SUBSYSTEM (WBTS)

LANDS T-3

SECTION 13

WIDEBAND TELEMETRY SUBSYSTEM (WBTS)

The WBTS has operated nominally in this report period.

Table 13-1 shows typical telemetry values.

Signal levels measured at Goldstone with the spacecraft successively at the same points in space, show continuously satisfactory performance.

Table 13-1. Typical Wideband Subsystem Telemetry

Func*	Name	Units	Orbit					
			34/50	1521	2721	3552	4001	4430
12001	Temp TWT Coil	DGC	39.38	39.13	38.13	31.88	34.81	38.13
12101			29.07	30.00	26.60	28.20	29.07	28.13
12002	Cur. Helix	mA	4.73	4.79	4.80	4.74	4.71	4.80
12102			6.50	6.22	6.06	6.11	6.12	6.15
12003	Cur. Cath	mA	44.50	44.40	44.03	43.92	43.88	43.93
12103			40.32	39.53	39.41	39.32	39.32	39.28
12004	Forward Power	dBm	42.04	42.25	42.26	42.24	42.25	42.25
			42.46	42.79	42.79	42.77	42.75	42.75
12005	Refl. Pwr.	dBm	30.00	30.00	28.62	28.56	28.65	28.65
12105			31.80	31.74	31.35	31.31	31.31	31.24
12227	Mod A Volt Loop Stress	MHz	+1.45	-0.81	-1.04	-1.26	-1.34	-1.28
12228	Mod B Loop Stress	MHz	1.26	0.10	0.05	0.05	0.01	0.13
12229	Temp. Mod	DGC	14.51	17.25	17.14	17.95	18.36	18.15
12232	+15 VDC Pwr Supply	TMV	2.68	2.69	2.69	2.69	2.68	2.69
12234	-15 VDC Pwr Supply	TMV	4.38	4.34	4.35	4.32	4.33	4.34
12236	+5 VDC Pwr Supply	TMV	4.05	4.05	4.05	4.05	4.05	4.05
12238	-5 VDC Pwr Supply	TMV	5.18	5.13	5.13	5.14	5.16	5.17
12240	-24 VDC Unreg Pwr	TMV	6.15	6.12	6.12	6.07	6.08	6.08
12242	Temp. Inv.	DGC	18.45	17.75	18.30	19.49	19.81	19.60

* 120XX applies to WPA-1; 121XX applies to WPA-2; 122XX applies to modulator.

SECTION 14

ATTITUDE MEASUREMENT SENSOR (AMS)
LANDSAT-3

SECTION 14

ATTITUDE MEASUREMENT SENSOR (AMS)

The AMS is a passive radiometric balance sensor which operates in the 14 - 16 micron IR Band. AMS Telemetry Values are shown in Table 14-1.

The AMS was launched in the OFF mode (CMD 774). It was turned ON during Orbits 5 and 17 and has been performing normally since then.

Table 14-1. AMS Telemetry Values

Func	Name	Unit	Orbits					
			6	1431	2700	3550	4001	4430
3004	Case - Temp 1	DGC	19.23	17.71	19.25	20.05	21.70	22.97
3005	Assembly - Temp 2	DGC	19.62	18.30	19.79	20.68	22.27	23.63

SECTION 15

WIDEBAND VIDEO TAPE RECORDERS (WBVTR)
LANDSAT-3

SECTION 15

WIDEBAND VIDEO TAPE RECORDERS (WBVTR)

The WBVTR subsystem (Recorders 1 and 2) operated satisfactorily during this report period. Minor frame sync error counts have averaged below 5 per 10 seconds.

Tables 15-1, 15-2 and 15-3 show typical telemetry values for various recorded functions and modes. Figure 15-1 shows tape usage for Recorders 1 and 2.

Table 15-1. Telemetry Values for WBVTR-1 and -2

Func	Name	Unit	Orbits					
			42/45	1525/30	2795/96	3542	4021	4381
13022	Tape Unit Press	PSI	16.25	16.12	16.12	16.12	16.12	16.12
13023	Tape Unit Temp	DGC	16.08	13.62	15.92	15.47	15.54	16.1[illegible]
13024	Elect U. Temp	DGC	18.42	12.69	15.38	13.84	14.10	14.[illegible]0
13032	Limiter Volt	VPP	1.38	1.38	1.38	1.40	1.40	1.40
13034	+ 5.6 VDC Conv	VDC	5.67	5.47	5.30	5.47	5.65	5.93
13122	Tape Unit Press	PSI	17.15	17.00	17.00	17.13	17.13	17.14
13123	Tape Unit Temp	DGC	16.75	16.30	15.26	16.11	18.45	18.92
13124	Elect. U. Temp	DGC	19.62	18.07	14.79	14.62	19.41	18.34
13132	Limiter Volt	VPP	1.31	1.31	1.33	1.31	1.31	1.31
13134	+ 5.6 VDC Conv	VDC	5.42	5.27	5.70	5.51	5.53	5.54

Table 15-2. Telemetry Values for WBVTR-1

Func	Name	Units	Orbit					
			42/45	1524/25	2795/96*	3560	3903	4454
13029	InputP/B Voltage	VPP						
	Record		0.00	0.00	0.00	0.00	0.00	0.00
	Playback		0.89	0.86	0.45	0.61	0.70	0.74
	Rewind		0.00	0.00	0.00	0.00	0.00	0.00
	Standby		0.00	0.00	0.00	0.00	0.00	0.00
13028	Capstan Motor 1	AMP						
	Record		0.35	0.33	0.35	0.35	0.32	0.28
	Playback		0.40	0.34	0.30	0.30	0.28	0.28
	Rewind		0.23	0.16	0.17	0.17	0.17	0.17
	Standby		0.00	0.00	0.00	0.00	0.00	0.00
13030	Headwheel Motor 1	AMP						
	Record		0.50	0.48	0.47	0.45	0.45	0.49
	Playback		0.48	0.42	0.48	0.47	0.45	0.47
	Rewind		0.41	0.37	0.40	0.38	0.37	0.38
	Standby		0.43	0.37	0.41	0.38	0.38	0.38
13031	Recorder Input I	AMP						
	Record		3.17	2.89	3.03	2.82	2.82	2.94
	Playback		3.03	2.58	3.24	2.68	2.65	2.61
	Rewind		1.60	1.42	1.64	1.42	1.40	1.37
	Standby		1.28	1.25	1.32	1.10	1.10	1.20
13033	Servo Voltage	PCT						
	Record		0.00	0.00	0.00	0.00	0.00	0.00
	Playback		49.10	49.43	49.27	49.54	49.60	49.65
	Rewind		0.00	0.00	0.00	0.00	0.00	0.00
	Standby		0.00	0.00	0.00	0.00	0.00	0.00
13026	Capstan Motor Spd	PCT						
	Record		101.64	102.82	101.64	102.23	102.23	102.23
	Playback		101.05	102.82	100.45	102.23	102.23	102.23
	Rewind		108.15	106.38	107.56	106.38	105.68	105.78
	Standby		0.00	0.00	0.00	0.00	0.00	0.00
13027	Headwheel Motor Spd	PCT						
	Record		101.13	101.13	102.18	101.13	101.13	101.13
	Playback		101.65	101.65	100.60	101.13	101.13	101.13
	Rewind		102.71	102.18	103.23	102.18	102.18	102.18
	Standby		102.71	102.18	101.65	102.70	100.60	102.70

* WBR payloads switched in this period to MSS to WBR-1; RBV to WBR-2

Table 15-3. Telemetry Values for WBVTR-2

Func	Name	Units	Orbit					
			42/45	1530	2795/96*	3560	3903	4455
13129	Input P/B Voltage	VPP						
	Record		0.00	0.00	0.00	0.00	0.00	0.00
	Playback		0.58	0.61	0.80	0.60	0.58	0.54
	Rewind		0.00	0.00	0.00	0.00	0.00	0.00
	Standby		0.00	0.00	0.00	0.00	0.00	0.00
13128	Capstan Motor 1	AMP						
	Record		0.45	0.37	0.32	0.30	0.27	0.30
	Playback		0.28	0.37	0.28	0.32	0.30	0.36
	Rewind		0.18	0.20	0.13	0.17	0.17	0.16
	Standby		0.00	0.00	0.00	0.00	0.00	0.00
13130	Headwheel Motor 1	AMP						
	Record		0.43	0.48	0.45	0.48	0.47	0.46
	Playback		0.47	0.47	0.45	0.45	0.45	0.45
	Rewind		0.40	0.41	0.40	0.38	0.40	0.40
	Standby		0.42	0.42	0.39	0.37	0.40	0.40
13131	Recorder Input I	AMP						
	Record		2.39	2.67	2.15	2.32	2.15	2.33
	Playback		2.79	2.64	1.82	2.24	2.24	2.24
	Rewind		1.20	1.28	1.00	1.03	1.03	1.08
	Standby		1.03	1.05	0.91	0.91	0.84	0.91
13133	Servo Voltage	PCT						
	Record		0.00	0.00	0.00	0.00	0.00	0.00
	Playback		50.29	50.49	50.68	50.78	50.68	50.78
	Rewind		0.00	0.00	0.00	0.00	0.00	0.00
	Standby		0.00	0.00	0.00	0.00	0.00	0.00
13126	Capstan Motor Spd	PCT						
	Record		98.35	98.35	99.00	99.00	98.35	98.35
	Playback		96.41	97.06	99.00	97.06	97.06	97.06
	Rewind		98.35	99.00	97.70	97.70	97.70	97.06
	Standby		0.00	0.00	0.00	0.00	0.00	0.00
13127	Headwheel Motor Spd	PCT						
	Record		104.09	104.09	103.48	104.09	103.48	103.48
	Playback		102.87	102.87	104.09	102.87	102.87	102.87
	Rewind		103.97	105.32	104.70	104.70	104.70	104.70
	Standby		104.10	105.32	104.70	105.32	102.87	103.48

* WBR payloads switched in this period to MSS to WBR-1; RBV to WBR-2

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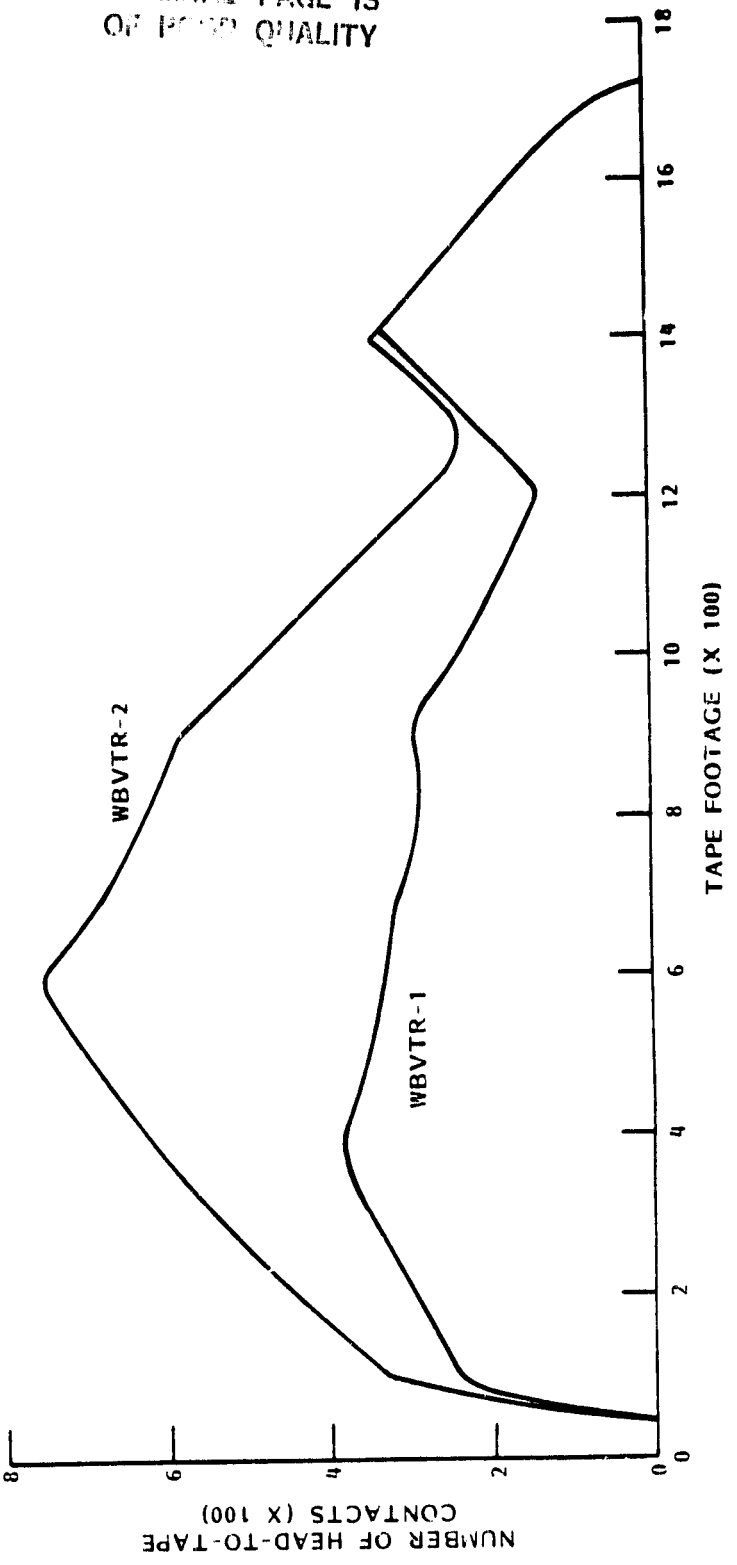

Figure 15-1. Landsat-3 WBVTR Tape Footage Thru Orbit 4426

SECTION 16

RETURN BEAM VIDICON (RBV)

LANDSAT-3

SECTION 16

RETURN BEAM VIDICON (RBV)

The RBV operated satisfactorily during this period.

The white-clip anomaly continues to occur occasionally in the first five percent of the image format of Camera 1. No cause has been determined to date.

RBV scenes are transmitted to Canada, Brazil, Italy, Iran and Japan, as well as to U.S. stations. For the first time, more scenes are transmitted to foreign stations than to the U.S.

Table 16-1 gives typical telemetry values for the RBV subsystem. Tables 16-2 and 16-3 give telemetry values for Prepare, Read and Hold modes for the two RBV Cameras. (Several temperature values, such as 14203, Elect. Temp. tend to be high for long RBV on Times. They are normal in such cases.)

Table 16-1. RBV Telemetry Values

Func	Name	Unit	Orbit					
			34	1525	2795	3541	3903	4430
14001	CCC Board Temp	DGC	21.84	20.49	21.05	21.60	21.60	21.60
14002	CCC Pwr. Sup. Temp	DGC	23.39	21.60	22.15	23.81	23.26	23.26
14003	15 Vdc Sup.	TMV	4.00	4.00	4.00	4.00	3.97	3.97
14004	+6 V, -5, VDC Sup.	TMV	3.07	3.07	3.07	3.07	3.05	3.05
14100 *	VID Output V	TMV	0.83	1.10	2.1*	3.20	3.20	1.35
14200			0.76	1.50	1.92	1.12	2.22	2.02
14102 *	Comb. Align Cur.	TMV	4.15	4.15	4.17	4.15	4.15	4.15
14202			4.13	4.15	4.15	4.15	4.15	4.15
14103 *	Elec Temp	DGC	19.23	18.28	18.28	20.49	20.49	20.49
14203			23.45	20.39	22.60	25.36	26.47	28.68
14104 *	LV Pwr Sup T.	DGC	19.05	18.39	17.83	21.15	21.15	21.15
14204			23.10	19.94	22.15	24.91	26.02	27.68
14105 *	Defl. Pwr. Sup. +10 VDC	TMV	4.02	4.00	4.02	4.02	4.02	4.02
14205			4.05	4.05	4.07	4.07	4.07	4.07
14106 *	L.V.P.S. +6 V, -6.3 VDC	TMV	3.77	3.77	3.77	3.77	3.77	3.77
14206			3.75	3.75	3.75	3.75	3.75	3.75
14107 *	Ther. Elec. Cur.	TMV	3.02	3.52	2.70	2.72	2.72	2.75
14207			2.57	2.57	2.50	2.55	2.55	2.55
14108 *	Vid. Fil. Cur.	TMV	2.62	2.57	2.60	2.57	2.57	2.57
14208			2.38	2.62	2.65	2.57	2.60	2.57
14110 *	Vid. Tgt. Volt	TMV	3.55	3.52	3.37	3.37	3.37	3.37
14210			3.06	3.32	3.32	3.40	3.45	3.42
14113 *	Vert Def V	TMV	3.20	2.95	3.05	3.02	3.02	3.02
14213			2.78	2.97	2.95	2.95	2.95	2.95
14114 *	VID FTP	DGC	24.10	23.10	23.65	22.55	22.55	22.55
14214			23.90	22.09	22.60	21.57	21.57	21.57
14115	Foc Coil T	DGC	19.80	18.18	18.73	20.94	21.49	2[illegible]
14215			20.00	18.18	18.73	20.94	21.49	20.94

* 141XX refers to Camera 1; 142XX refers to Camera 2

Table 16-2. Camera No. 1 Telemetry (Values in TMV)

Func	Name	Units	Mode	Orbit					
				34	1525	2795	3541	3903	4430
14101	Focus I	TMV	Prep	1.65	1.62	1.62	1.62	1.65	1.65
			Read	2.77	2.77	2.77	2.77	2.80	2.77
			Hold	0.55	0.52	0.55	0.55	0.55	0.52
14109	Grid V	TMV	Prep	0.70	0.72	0.72	0.72	0.72	0.72
			Read	2.20	2.22	2.22	2.22	2.20	2.20
			Hold	4.15	4.17	4.15	4.17	4.17	4.17
14111	Cath I	TMV	Prep	3.10	3.12	3.12	3.10	3.10	3.10
			Read	0.77	0.77	0.77	0.77	0.77	0.77
			Hold	0.40	0.40	0.40	0.40	0.40	0.40
14112	Hor Def	TMV	Prep	2.00	2.00	2.02	2.02	2.02	2.02
			Read	3.42	3.45	3.47	3.45	3.45	3.45
			Hold	0.00	0.02	0.02	0.02	0.02	0.02
14120	+ 500 V	TMV	Prep	1.07	1.05	1.07	1.05	1.05	1.05
			Read	4.17	4.17	4.20	4.17	4.20	4.17
			Hold	4.17	4.17	4.20	4.17	4.17	4.17

Table 16-3. Camera No. 2 Telemetry (Values in TMV)

Func	Name	Units	Mode	Orbit					
				34	1525	2795	3541	3903	4453
14201	Focus I	TMV	Prep	1.57	1.55	1.57	1.57	1.57	1.60
			Read	2.70	2.67	2.70	2.70	2.70	2.72
			Hold	0.50	0.47	0.50	0.50	0.50	0.52
14209	Grid V	TMV	Prep	0.55	0.55	0.55	0.55	0.55	0.55
			Read	1.90	1.92	1.92	1.90	1.90	1.90
			Hold	4.15	4.17	4.17	4.17	4.20	4.17
14211	Cath I	TMV	Prep	3.30	3.32	3.32	3.30	3.30	3.30
			Read	0.90	0.92	0.92	0.90	0.90	0.90
			Hold	0.40	0.40	0.40	0.40	0.40	0.40
14212	Hor Def	TMV	Prep	1.67	1.72	1.65	1.67	1.70	1.70
			Read	3.45	3.05	3.05	3.02	3.02	3.02
			Hold	0.00	0.02	0.05	0.00	0.00	0.00
14220	+ 500 V	TMV	Prep	1.10	1.10	1.10	1.10	1.10	1.10
			Read	4.25	4.25	4.25	4.25	4.25	4.25
			Hold	4.25	4.25	4.25	4.25	4.25	4.25

SECTION 17

MULTISPECTRAL SCANNER SUBSYSTEM (MSS)

LANDSAT-3

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SECTION 17

MULTISPECTRAL SCANNER SUBSYSTEM (MSS)

Bands 1 through 4 operate nominally. From mid-August through mid-October line start pulses were occasionally missed by the scanner, and a late line start was generated by the MUX. During Orbit 3081 on 12 October 1978, Scan Monitor Light Source B was substituted for Light Source A. Line start pulses have been normal since then.

Band 5 is now in its 14th outgas cycle. It has operated nominally, but with gradually declining sensor responsivity.

Table 17-1 shows typical telemetry values since launch. All are nominal.

Table 17-2 shows the history of sensor response to a constant input radiance level. All sensors are satisfactory, with the exception of: Sensor 25 which failed during the 6th outgas cycle; and Sensor 26 which has declining responsivity. The line length history shown is satisfactory. Table 17-3 shows the gain history, or responsivity, of Sensors 25 and 26. In the last month of this quarter, analysis of the latest sun calibration data indicates an average 6% rise for this quarter in all sensors of Bands 1 through 4. Sensor 26 in Band 5 shows a similar improvement. The cause is being studied.

Figure 17-1A and 1B show the number of scenes imaged at each geographic location this quarter. Figure 17-1A shows the scenes taken during the north-to-south passage from all 5 bands. Figure 17-1B shows the scenes taken during the south-to-north passage (i.e., the 'night' side of the earth) from the infrared sensors in Band 5. The Antarctica, therefore, is at the top of this map, and the northern-most earth latitudes are at the bottom.

Figures 17-2A and B similarly show the number of scenes imaged at each geographic location since launch. Figure 17-2A shows daylight scenes, all going N to S, top to bottom on the figures. Figure 17-2B shows night scenes, all going S to N, top to bottom on the figures.

Only those scenes received by the U.S. ground stations are shown. Scenes transmitted to Canada, Brazil, Iran, Japan and Italy (60% of the total) are not shown. For the first time, more scenes were transmitted to foreign users than to the U.S.

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Table 17-1. MSS Analog Telemetry - Landsat 3

Func	Name	Units	Orbit					
			50	1521	2721	3552	4001	4430
15021	Band 5 15V	TMV	F	4.80	F	4.76	4.75	4.75
15022	Band 5 PA Case Temp	DGC	11.15	13.80	14.27	15.68	17.16	17.63
15025	Ch 25 Bias	TMV	F	3.67	F	6.34	6.36	6.37
15026	Ch 26 Bias	TMV	F	3.61	F	3.67	3.68	3.70
15040	Mux -6 V	VDC	6.19	6.17	6.18	6.18	6.18	6.18
15041	A/D Conv Ref. Voltage	VDC	3.60	3.60	3.60	3.60	3.60	3.60
15042	Avg Den Data Trans	TMV	1.92	2.13	2.06	2.04	2.20	2.15
15043	Fiber Opt Plate 1 Temp	DGC	13.92	15.31	16.70	17.59	19.09	19.57
15044	Fiber Opt Plate 2 Temp	DGC	12.66	13.59	14.62	15.55	17.18	17.70
15045	Multiplexer Temp	DGC	18.37	17.29	17.57	19.76	21.05	21.74
15046	Elect. Cover Temp	DGC	14.23	17.99	18.81	19.92	21.40	21.97
15047	Power Supply Temp	DGC	14.31	15.70	16.77	17.99	19.76	20.44
15048	Scan Mirror Reg Temp	DGC	12.61	13.77	15.17	16.32	18.16	19.05
15049	Scan Mirror Drive Elect. T.	DGC	12.94	14.45	15.76	16.95	18.99	19.91
15050	Scan Mirror Drive Coil T	DGC	12.69	13.85	15.27	16.30	18.14	19.04
15051	Scan Mirror Temp	DGC	12.25	13.16	14.73	15.75	17.45	18.40
15052	Rot Sht Hsg Temp	DGC	13.93	15.11	16.40	17.28	18.78	19.28
15053	Scn Mirror Reg Volt	VDC	24.02	23.34	23.35	23.34	23.35	23.34
15054	Cal Lamp Current	mA	112.50	112.56	112.50	112.50	112.50	112.50
15055	BD 1 15V	TMV	5.07	5.07	5.07	5.07	5.07	5.07
15056	BD 2 15 V	TMV	5.05	5.05	5.05	5.05	5.05	5.05
15057	BD 3 15 V	TMV	5.10	5.10	5.10	5.10	5.10	5.10
15058	BD 4 15 V	TMV	5.02	5.02	5.02	5.02	5.01	5.02
15059	TLM -15 V	VDC	- 15.17	- 15.17	- 15.17	- 15.17	- 15.17	- 15.17
15060	SM Reg +12 V/-6 V	TMV	5.00	5.00	5.00	5.00	5.00	5.00
15061	Logic +5 V	TMV	4.87	4.87	4.85	4.87	4.87	4.87
15062	+19 V Rect Out	TMV	5.90	5.89	6.02	5.90	5.90	5.90
15063	-19 V Rect Out	TMV	4.30	4.22	4.31	4.22	4.22	4.22
15064	BD 1 HVA	TMV	5.00	5.00	5.02	5.02	5.02	5.02
15065	BD 1 HVB	TMV	F	F	F	F	F	F
15066	BD 2 HVA	TMV	5.04	5.05	5.05	5.05	5.05	5.05
15067	BD 3 HVB	TMV	F	F	F	F	F	F
15068	BD 3 HVA	TMV	5.00	5.02	5.02	5.02	5.02	5.02
15069	BD 3 HVB	TMV	F	F	F	F	F	F
15070	Shtr Mtr Con. Int.	TMV	2.55	2.54	2.53	2.54	2.53	2.53
15071	Scan Mirror Drive	VDC	- 7.95	- 7.99	- 8.01	- 8.01	- 8.02	- 8.02
15080	RAD Cool 1st Stg T	DGC	F	-112.60	-112.63	-111.97	-111.81	112.22
15081	RAD Cool 2nd Stg W T	DGC	F	-181.00	-181.00	-181.00	-181.00	-118.00
15082	RAD Cool 2nd Stg N T	DGC	F	-180.52	-180.89	-180.60	-180.47	-180.18

F = Unit Off

Table 17-2. MSS Response History - Landsat-3

Quantum Level for Constant Calibration Lamp Input
(0 = Black; 63 = White)

Band	Sensor	Q.L. Average Value in Orbit			% Chg Since Launch
		at 1st Turn On	1st 3 Quar	This Quar	
1	1	54	48	51	- 6
	2	49	44	47	- 4
	3	48	46	50	+ 4
	4	50	44	47	- 6
	5	51	46	48	- 6
	6	48	42	45	- 6
2	7	55	51	54	- 2
	8	56	53	56	0
	9	52	47	50	- 4
	10	53	49	52	- 2
	11	56	52	54	- 4
	12	53	51	54	+ 2
3	13	56	53	55	- 2
	14	55	53	56	+ 2
	15	53	49	51	- 4
	16	51	50	52	+ 2
	17	57	50	57	0
	18	53	52	54	+ 2
4	19	32	33	35	+ 9
	20	34	35	38	+12
	21	38	39	41	+ 8
	22	34	35	38	+12
	23	35	36	38	+ 9
	24	30	31	33	+10
5	25*	42.72	Q	Q	Q
	26*	39.54	32.63	28.11	- 31
Line Length		3187	3186	3185	-0.06

* = GAIN for sensors; meas. immed. after cooldown, and normalized to gain step 6.
Q = Failed during 7th outgas period (July 9-11)

Table 17-3. Gain for Sensors Measured Immediately After Cooldown and Normalized to Gain Step 6

Date	After Outgas Cycle	Orbit	Sens. 25	Sens. 26	Comment
1978:					
3-21	1	222	42.72	39.54	
4-3	2	403	(38.95)	(35.66)	36 hours after Cooldown
4-17	3	598	42.45	39.17	
5-3	4	821	(40.11)	(37.42)	2 hours after Cooldown
5-25	5	1120	40.23	38.14	
6-19	6	1476	35.47	34.61	
7-12	7	1790	Q	33.57	
8-11	8	2215	Q	32.63	
9-8	9	2606	Q	31.16	
10-13	10	3095	Q	31.18	
11-9	11	3471	Q	29.67	
12-7	12	3861	Q	28.11	
1979:					
1-2	13	4224	Q	27.45	

Q = Sensor Failed

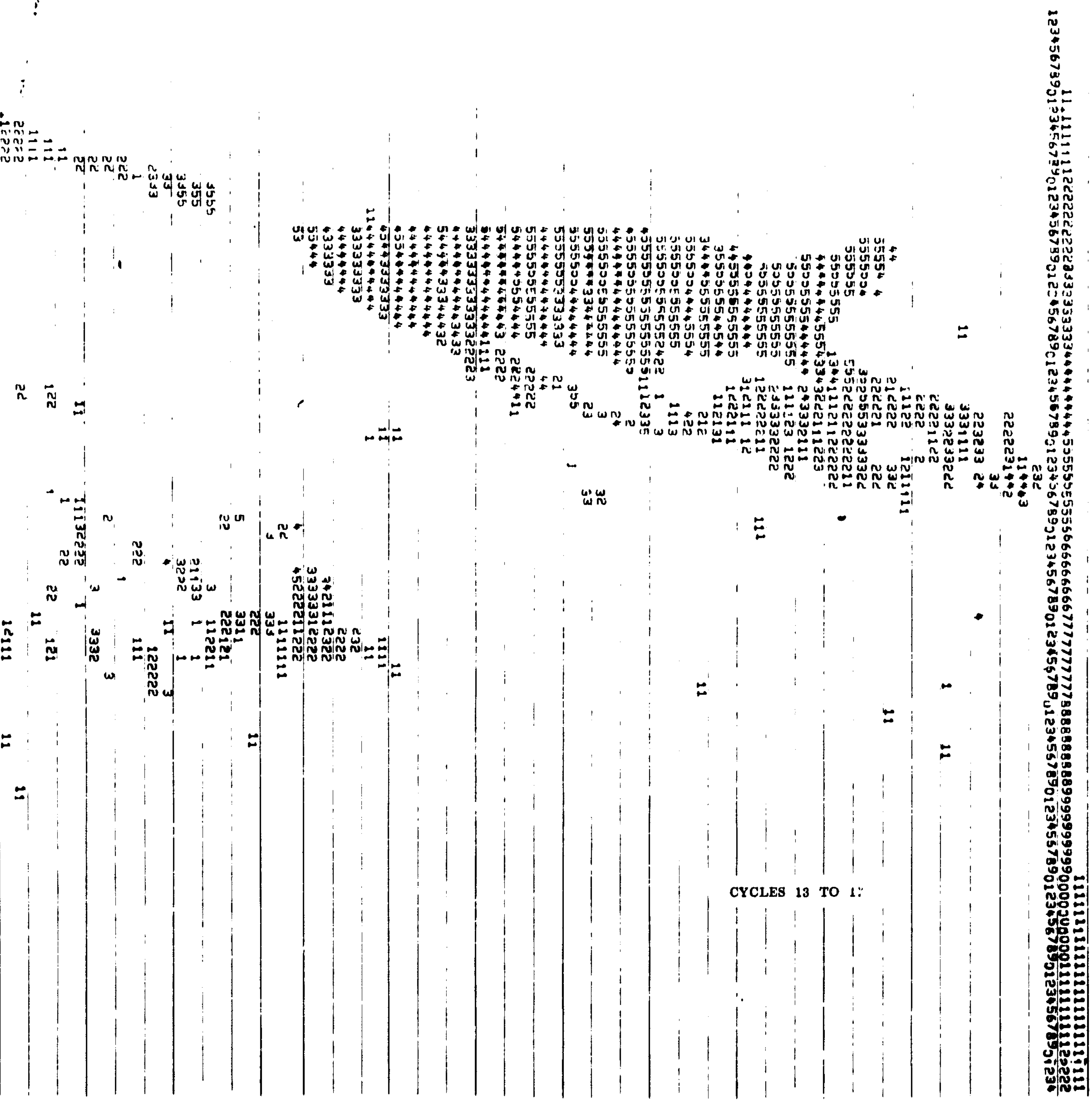

Figure 17-1A. MSS Scenes in N-S Passages
This Quarter - Landsat-3

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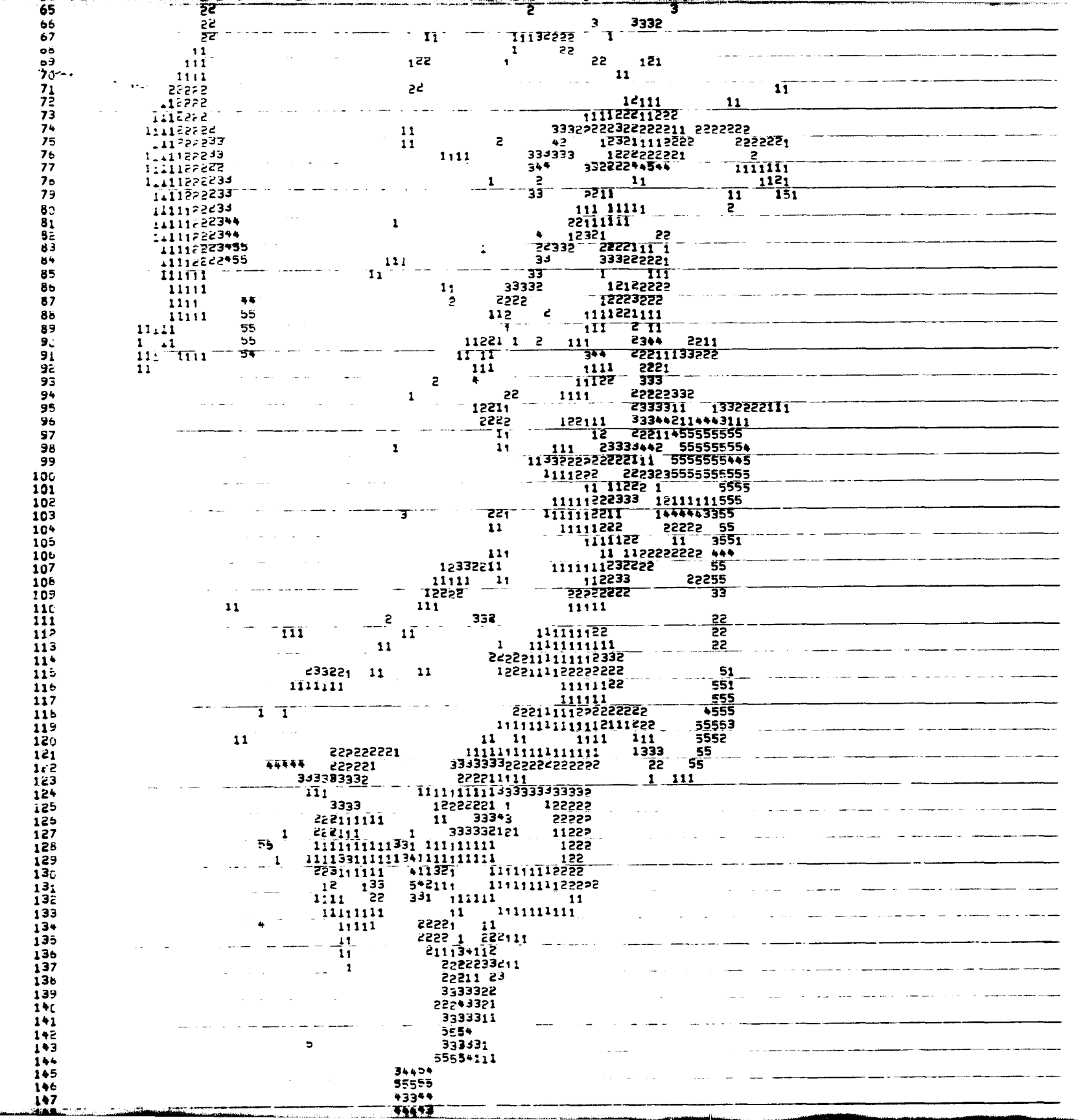

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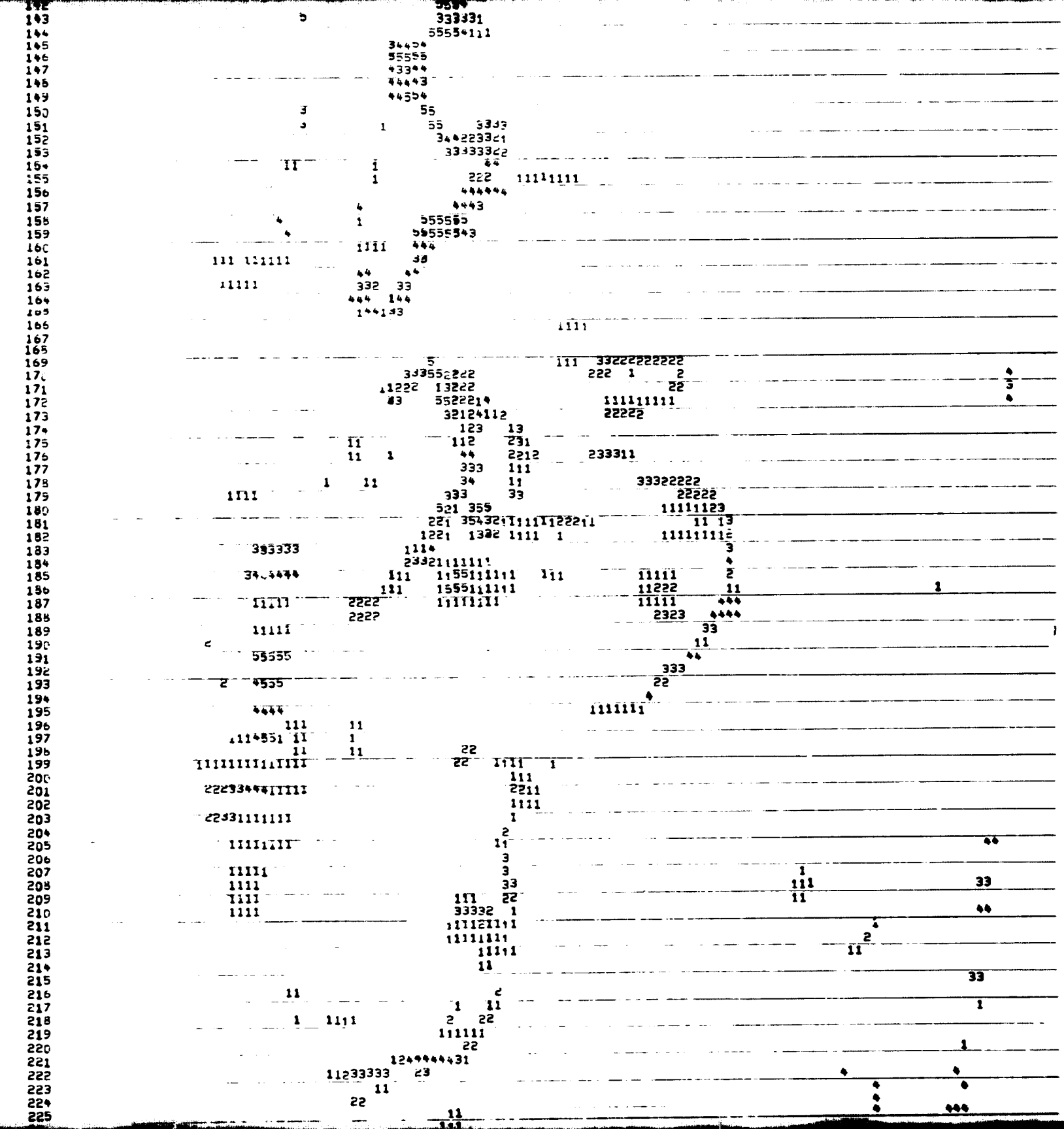

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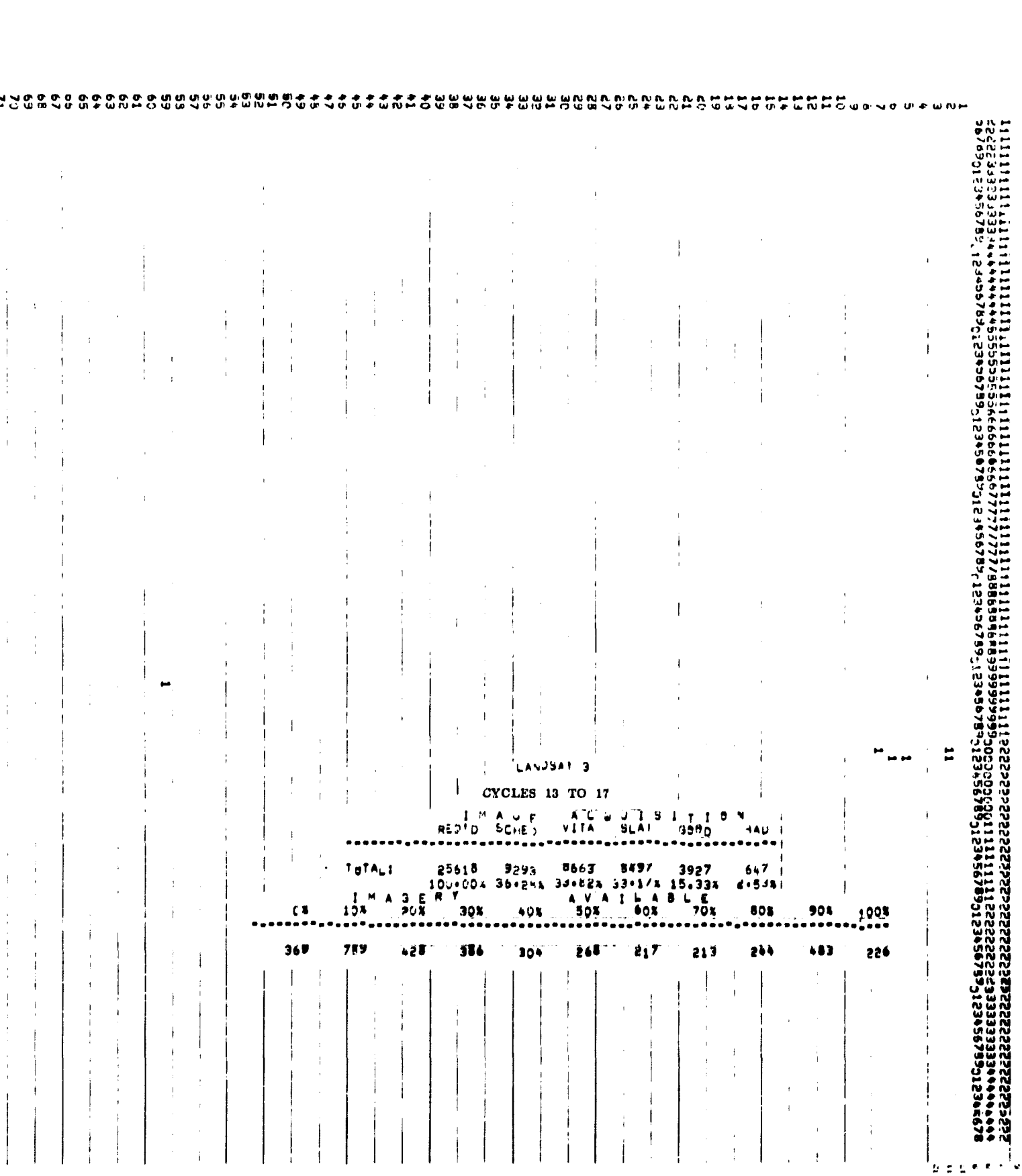

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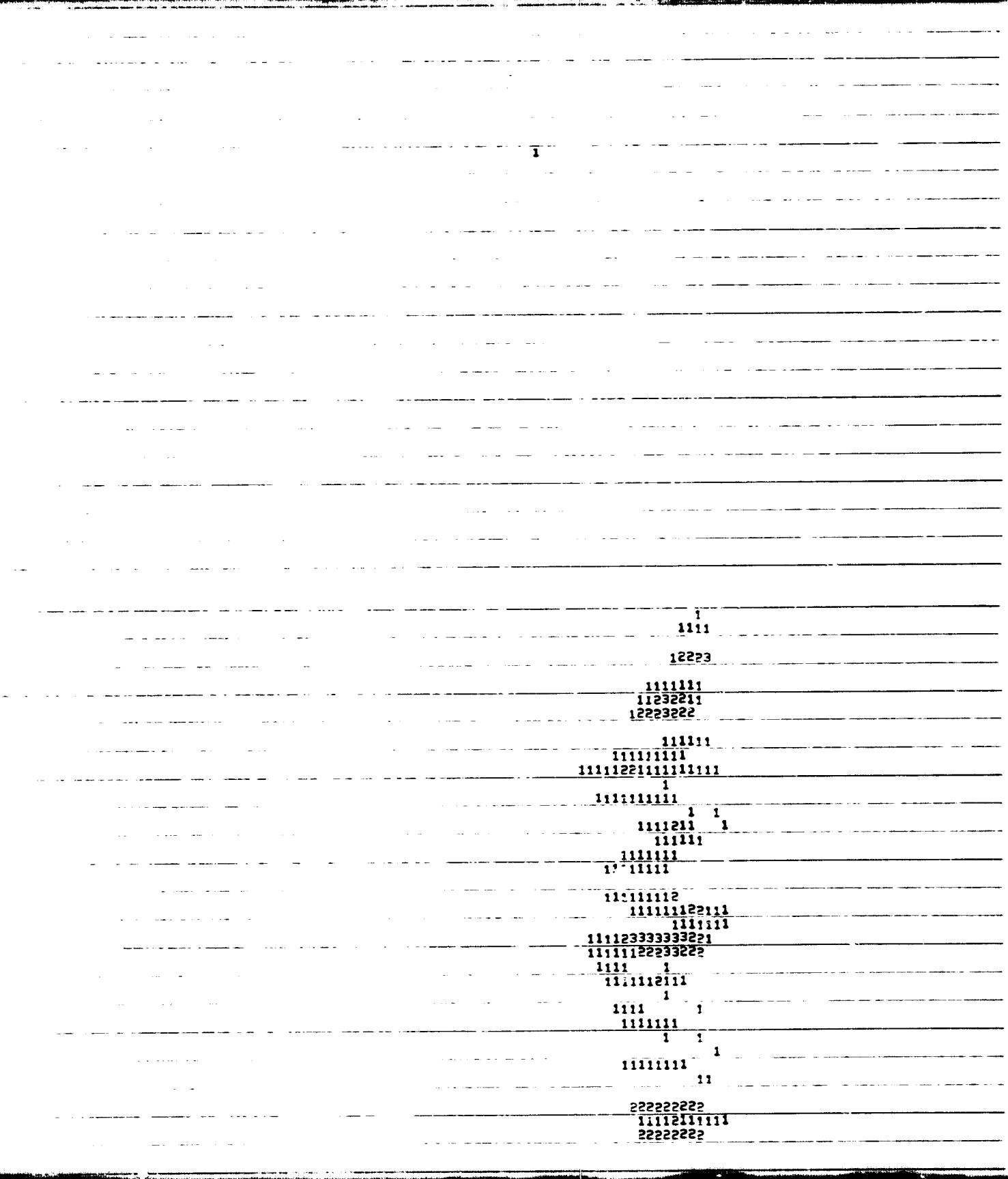
Figure 17-1B. MSS Scenes in S-N Passages (Night) This Quarter Landsat-3



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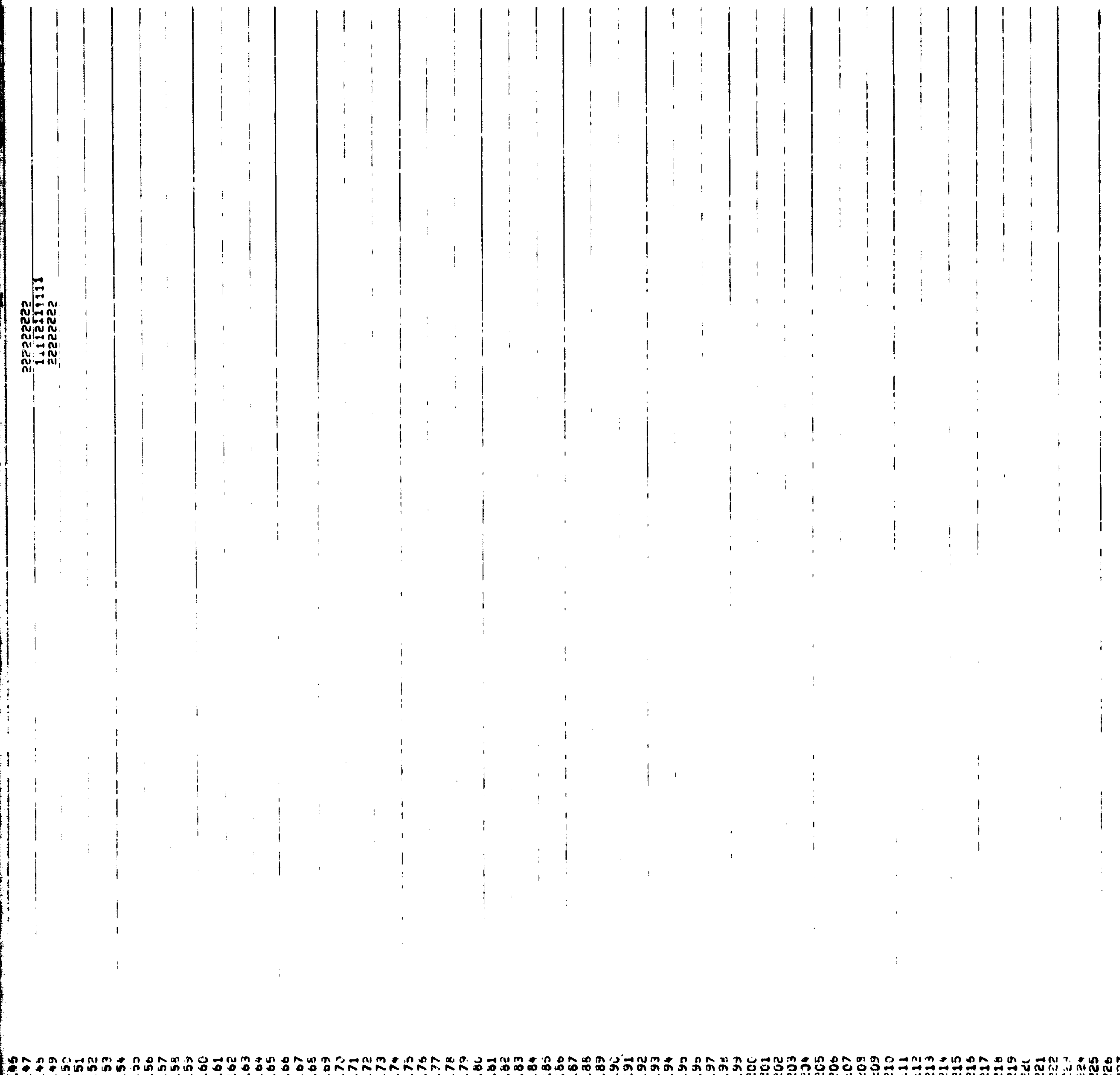

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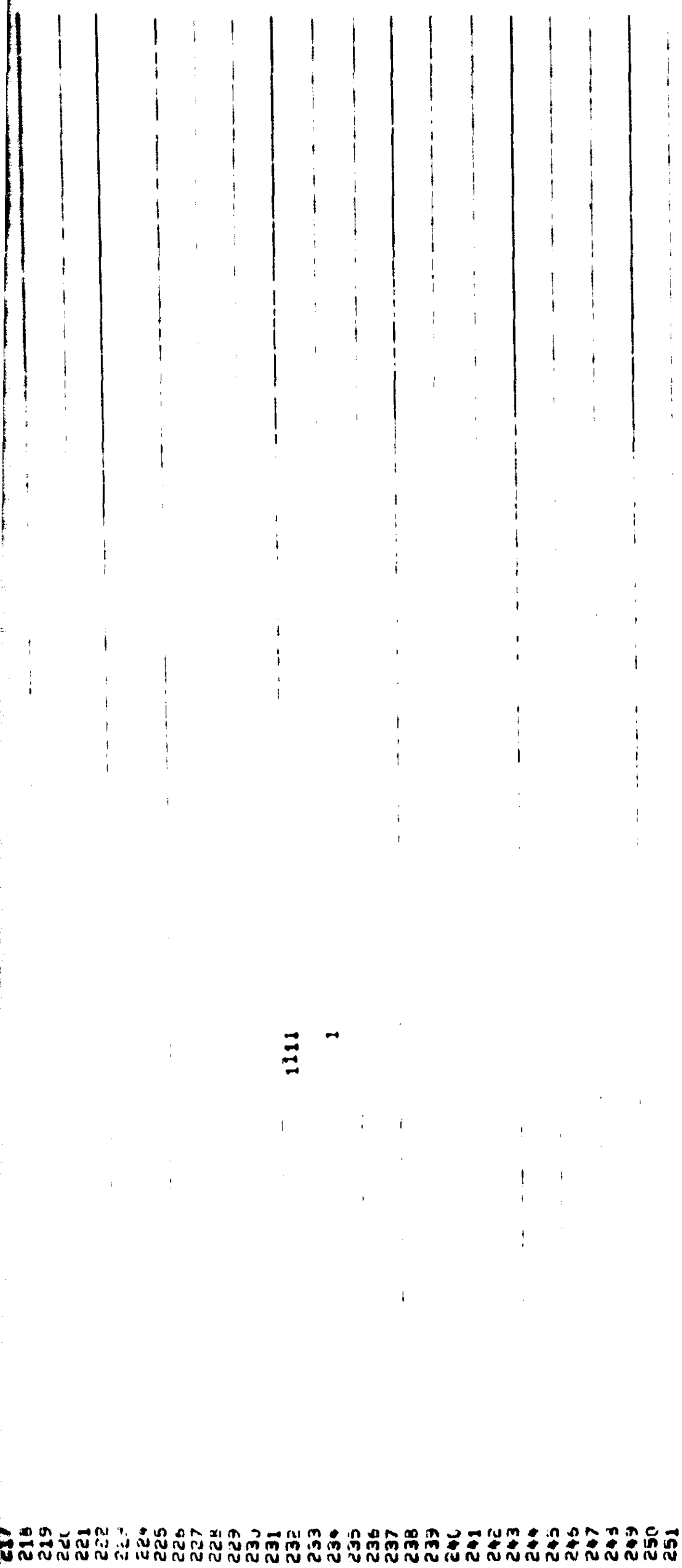

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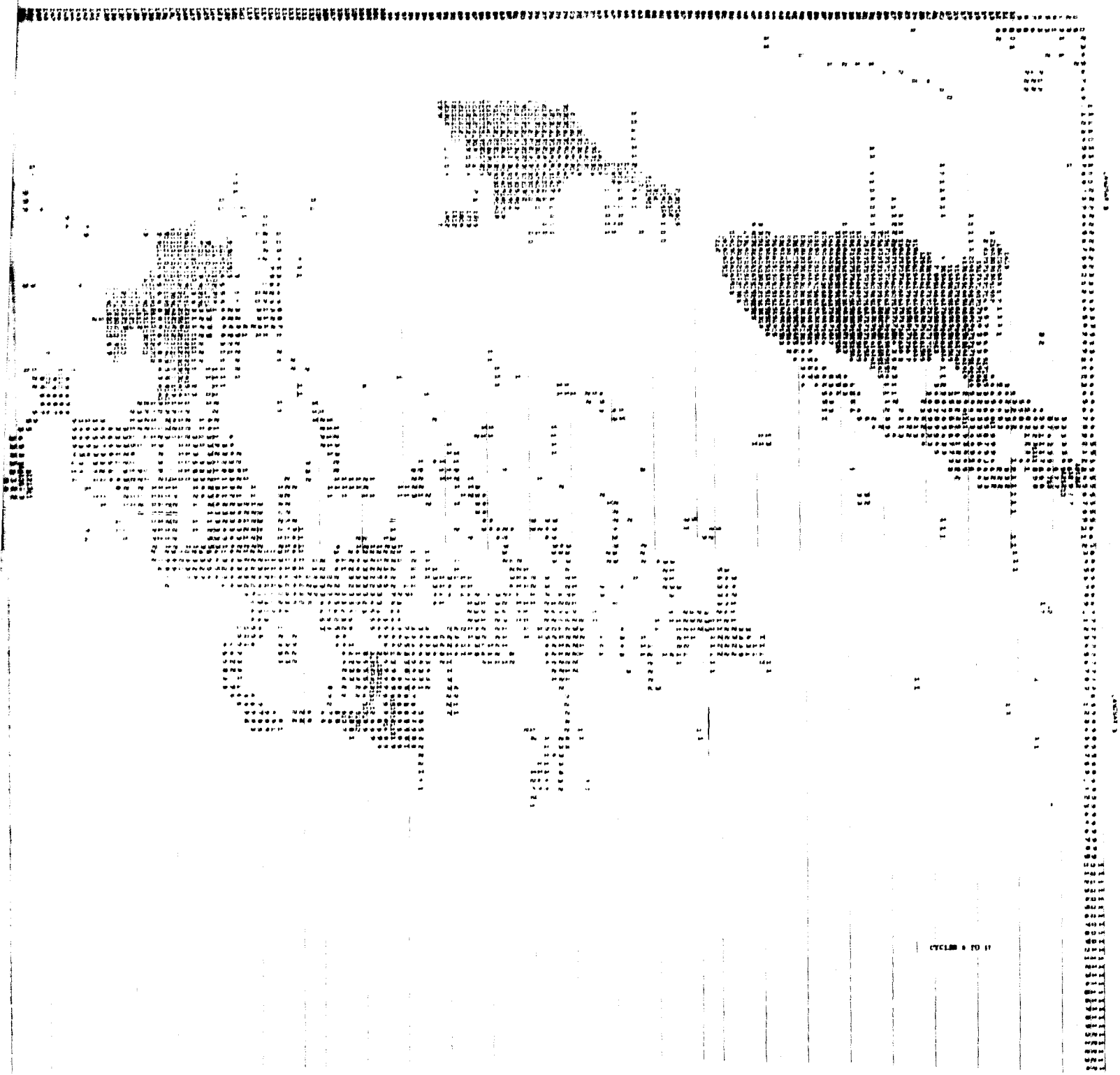

Figure 17-2A. Map of MSS Scenes in N-S Passages (Daylight) Since Launch Landsat-3

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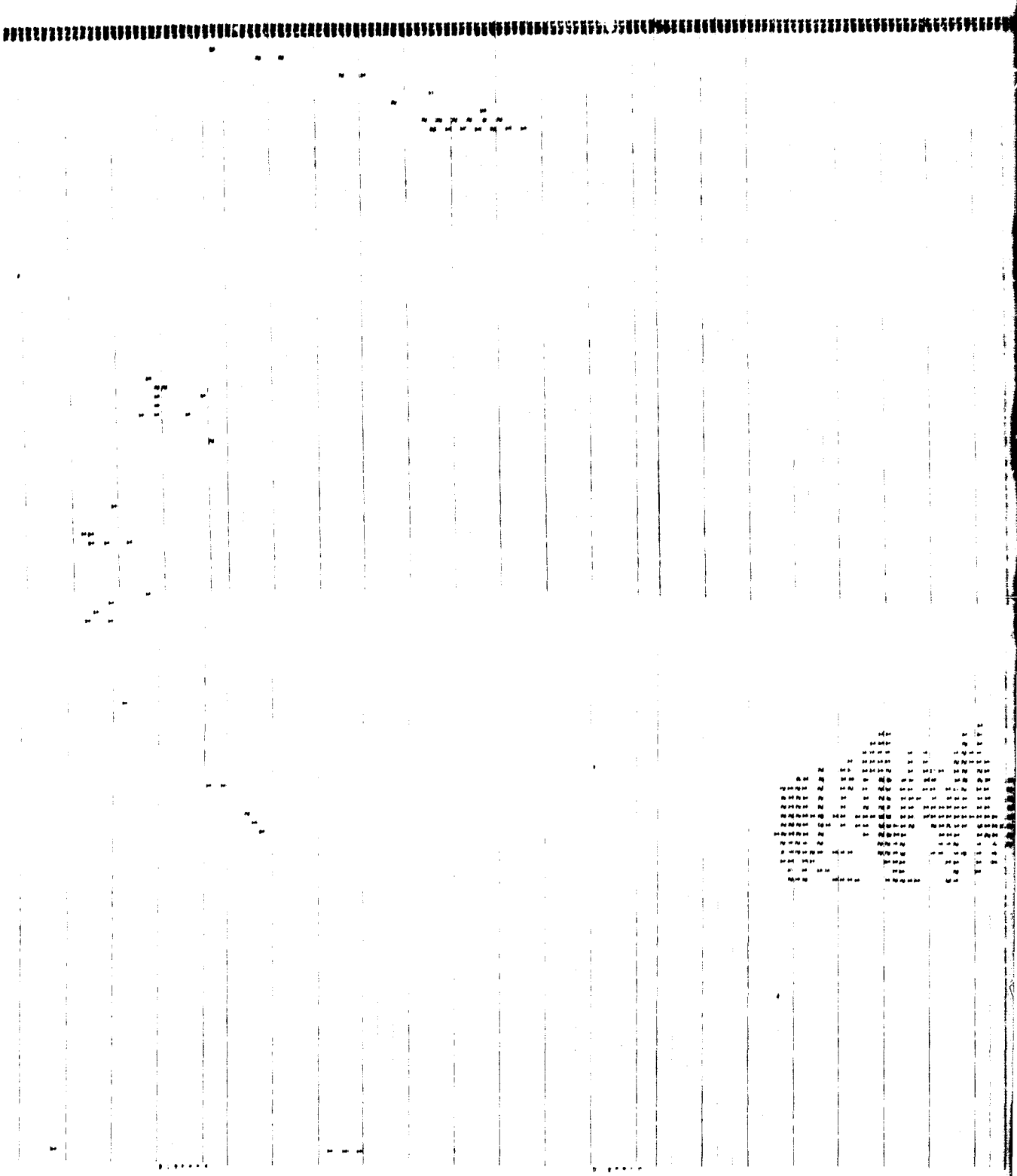

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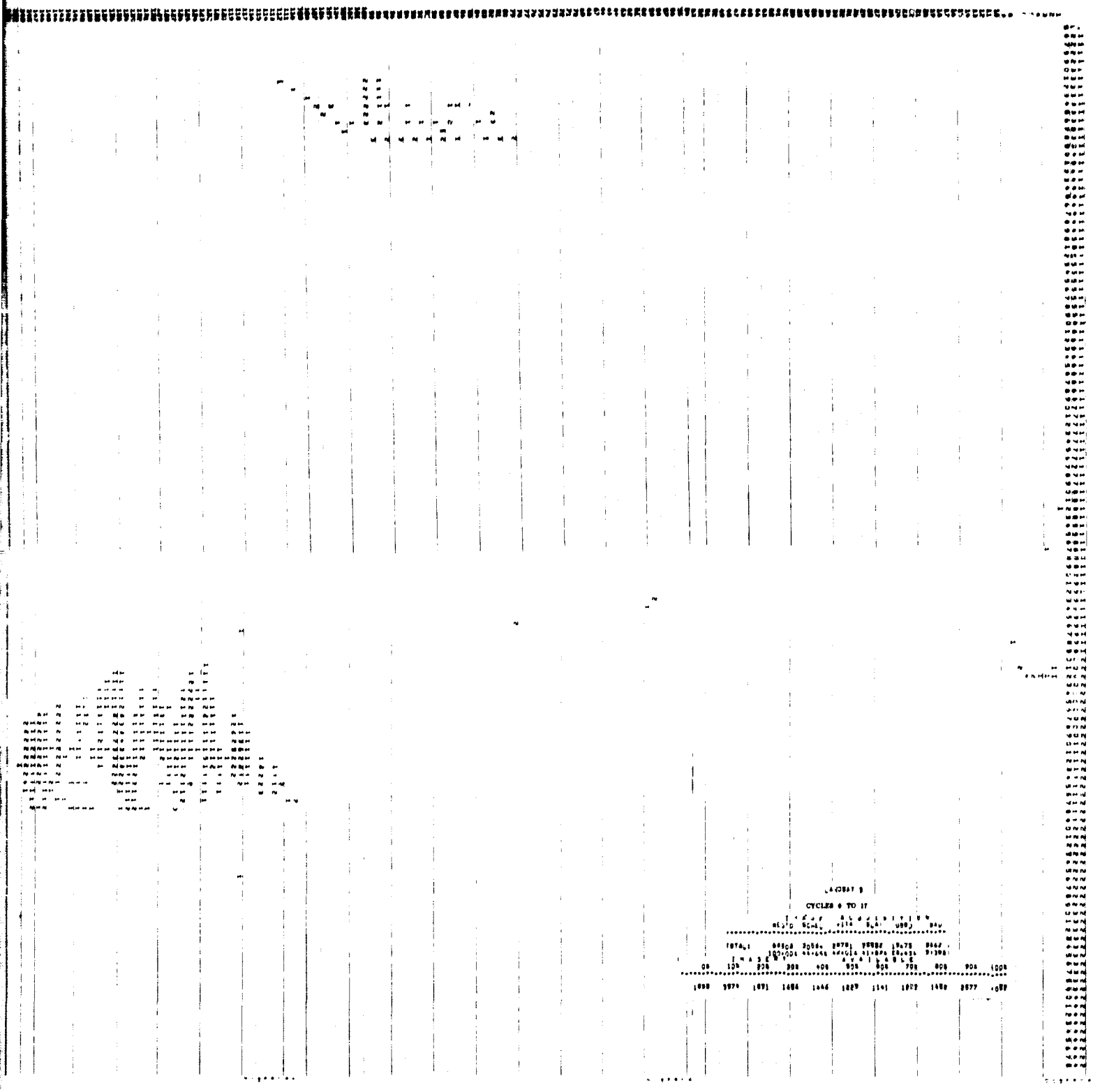

Figure 17-2B. Map of MSS Scenes in S-N Passages (Night) Since Launch Landsat-3

SECTION 18
DATA COLLECTION SYSTEM (DCS)
LANDSAT-3

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SECTION 18

DATA COLLECTION SUBSYSTEM (DCS)

The DCS Subsystem performed nominally during this report period. The number of messages received at OCC decreased 32%, corresponding to the 31% decrease in the number of deployed platforms. The number of users decreased by 50%.

Figure 18-1 shows the number of DCS messages received in each 18-day cycle at OCC. Active DCP's in the field average about 55. The precentage of good messages is about 95%.

There are 21 users in the data base; 183 DCP's are in the data base.

Table 18-1 shows telemetry values since launch. All are nominal.

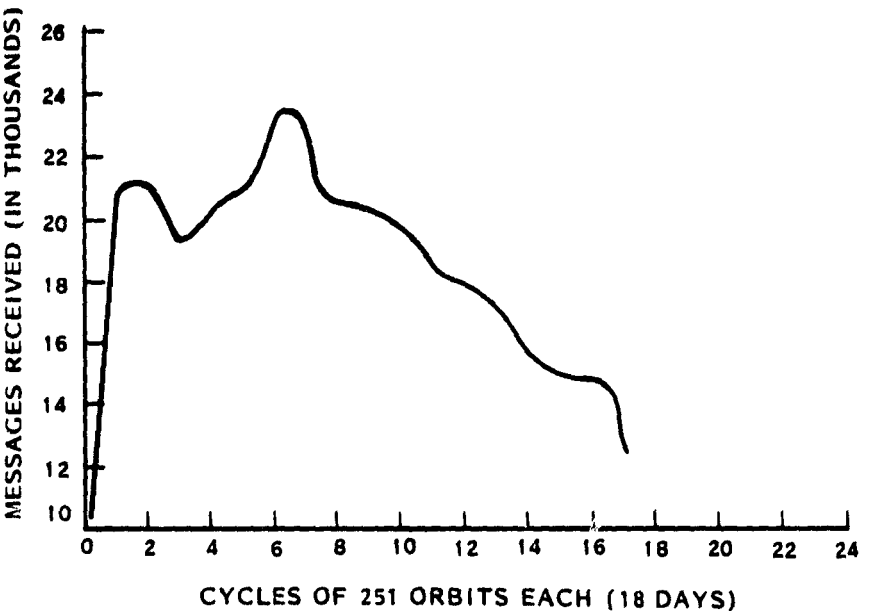

Figure 18-1. Landsat-3 Number of DCS Messages for Each 18-Day Cycle

Table 18-1. DCS Telemetry Values

Func	Name	Units	Orbit					
			43	1521	2721	3553	4001	4430
16001	Receiver 1 Sig Strength	dBm	-125.00	-127.21	-123.45	-125.31	-128.11	-124.80
16002	Receiver 1 Temp	DGC	19.05	19.00	20.17	20.95	21.68	21.64
16003	Rec-1 Pwr Input Volt	VDC	2.35	2.34	2.35	2.35	2.36	2.36
16004	Receiver 2 Sig Strength	dBm	F	F	F	F	F	F
16005	Receiver 2 Temp.	DGC	F	F	F	F	F	F
16006	Receiver 2 Input Volt	VDC	F	F	F	F	F	F

F = Unit Off

APPENDIX A

LANDSAT-3 ANOMALIES AND OBSERVATIONS

APPENDIX A

LANDSAT-3 ANOMALIES AND

Date	Anomaly/Observation	How Observed	
3/8/78	Cell 4 of B Comstor would not verify. MDR D04942	On-Line	Cell 4 of when all operation
3/9/78	RBV had intermittent white level saturation in first 5% of image. MDR D04939	Off-Line	White lev
4/3/78	Sensor responsivity was observed to be successively lower at first turn-on after each outgas cycle.	Off-Line	Study bei taminat
5/4/78	ECAM halted on checksum. MDR D04941	On-Line	ECAM ha changed changed
7/11/78	No output from sensor 25 video on MSS Band 5. MDR D04943	On-Line	First ope 1-4 norm
7/16/78	SMART #6 analog WBVTR-1 EOT detection fired while in monitor mode (Orbit 1857)	On-Line	Variable normal d
7/19/78	SMART #4 and 5 digital EOT detection for WBVTR-1 and WBVTR-2 fired in Orbit 1897.	On-Line	Operation matic shu
7/24/78	SMART #2 fired due to WBVTR-1 high headwheel current (HWI) in Orbit 1971	On-Line	Subsequen reset.
8/27/78	Intermittent delayed line start pulse on MSS. MDR D04944	Off-Line	Delayed l visible wh scan code
11/4/78	SMART #7 analog WBVTR-2 EOT detection fired while in monitor mode (Orbit 3465)	On-Line	Variable normal d
11/17/78	SMART #1 fired due to low unregulated voltage in Orbit (3576)	On-Line	Simultane bus voltag reset and Reoccurr program
12/6/78	MSS False End-of-Line Codes	Off-Line	Occasion extra 4 b incident

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APPENDIX A

OMALIES AND OBSERVATIONS

Comments

Cell 4 of B Comstor would not load properly in Orbits 41, 45 and 48. Operational use discontinued on 3/18/78 when all "1's" appeared in cell 4. Tested and operation resumed in Orbit 1897 on 19 July 1978 with cell 4 non-operational.

White level saturation occurred in first 5% of images at intermittent occurrence.

Study being made to determine if responsivity decline due to sensor deterioration or to non-water vapor contamination.

ECAM halted on internal check on Orbit 839 (5 May 1978). Memory fault not critical and stable. Checksum changed and operation continued. Reoccurred at new non-critical memory location on 31 May 1978. Checksum changed and returned to operation.

First operation after 7th outgas cycle showed no output from sensor 25. Sensor 25 operated nominally. Bands 1-4 normal.

Variable end of tape (EOT) protection circuit presently set inside normal operating range and fired indicating normal detection. No effect on operation as circuit is in monitor mode.

Operation to end of tape caused SMART #4 and 5 circuit to fire before primary mechanical EOT switch. Automatic shutdown and inhibit of payloads occurred. Recorder returned to operation and SMART #4 and 5 reset.

Subsequent test operation showed normal HWI and normal operation of recorder resumed. SMART #2 was reset.

Delayed line start generated by mux after apparent miss of scan monitor pulse No. 1. Mid scan code not visible when commanded on. Switched to scan monitor light source B. Anomaly not seen in this mode. Mid scan code still not visible when commanded on.

Variable end of tape (EOT) protection circuit presently set inside normal operating range and fired indicating normal detection. No effect on operation as circuit is in monitor mode.

Simultaneous MSS and RBV playbacks during spacecraft night discharged the batteries until the unregulated bus voltage reached -26.5 volts. The SMART triggered and shut down payload operation. The SMART #1 was reset and normal operation resumed. Mission planning instructed to prohibit dual simultaneous P/B at night. Reoccurred in Orbit 3939 (12/13/78) during night playback due to low power caused by power management program error which has been corrected. SMART #1 was reset and normal operation resumed.

Occasional extra scan monitor pulses occurring in preamble or along video data cause early line starts or extra 4 black and 4 white (End-of-Line Code) pixels in scene data. Occurs over magnetic anomalies with low incident rate; i.e., Brazil, Africa. Operation continued.

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APPENDIX B

LANDSAT-3 SPACECRAFT ORBIT REFERENCE TABLES

APPENDIX B

LANDSAT-3

SPACECRAFT ORBIT REFERENCE TABLES

FROM LAUNCH, 5 MARCH 1978 THROUGH 31 JULY 1979

ORBITS 0 TO 7157

FLIGHT DAY 0 THROUGH 514

Landsat-3

March 1978

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1						
2						
3						
4						
5	64	1	0-3			0
6	65	2	4-17			0
7	66	3	18-31			0
8	67	4	32-45			0
9	68	5	46-59			0
10	69	6	60-73			0
11	70	7	74-87			0
12	71	8	88-101			0
13	72	9	102-115			0
14	73	10	116-129			0
15	74	11	130-143	1-14	1	1
16	75	12	144-157	15-28	2	1
17	76	13	158-171	29-42	3	1
18	77	14	172-185	43-56	4	1
19	78	15	186-199	57-70	5	1
20	79	16	200-213	71-84	6	1
21	80	17	214-227	85-98	7	1
22	81	18	228-241	99-112	8	1
23	82	19	242-255	113-126	9	1
24	83	20	256-268	127-139	10	1
25	84	21	269-282	140-153	11	1
26	85	22	283-296	154-167	12	1
27	86	23	297-310	168-181	13	1
28	87	24	311-324	182-195	14	1
29	88	25	325-338	196-209	15	1
30	89	26	339-352	210-223	16	1
31	90	27	353-366	224-237	17	1

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April 1978

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	91	28	367-380	238-251	18	1
2	92	29	381-394	1-14	1	2
3	93	30	395-408	15-28	2	2
4	94	31	409-422	29-42	3	2
5	95	32	423-436	43-56	4	2
6	96	33	437-450	57-70	5	2
7	97	34	451-464	71-84	6	2
8	98	35	465-478	85-98	7	2
9	99	36	479-492	99-112	8	2
10	100	37	493-506	113-126	9	2
11	101	38	507-519	127-139	10	2
12	102	39	520-533	140-153	11	2
13	103	40	534-547	154-167	12	2
14	104	41	548-561	168-181	13	2
15	105	42	562-575	182-195	14	2
16	106	43	576-589	196-209	15	2
17	107	44	590-603	210-223	16	2
18	108	45	604-617	224-237	17	2
19	109	46	618-631	238-251	18	2
20	110	47	632-645	1- 14	1	3
21	111	48	646-659	15- 28	2	3
22	112	49	660-673	29- 42	3	3
23	113	50	674-687	43- 56	4	3
24	114	51	688-701	57- 70	5	3
25	115	52	702-715	71- 84	6	3
26	116	53	716-729	85- 98	7	3
27	117	54	730-743	99-112	8	3
28	118	55	744-757	113-126	9	3
29	119	56	758-770	127-139	10	3
30	120	57	771-784	140-153	11	3

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May 1978

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	121	58	785-798	154-167	12	3
2	122	59	799-812	168-181	13	3
3	123	60	813-826	182-195	14	3
4	124	61	827-840	196-209	15	3
5	125	62	841-854	210-223	16	3
6	126	63	855-868	224-237	17	3
7	127	64	869-882	238-251	18	3
8	128	65	883-896	1-14	1	4
9	129	66	897-910	15-28	2	4
10	130	67	911-924	29-42	3	4
11	131	68	925-938	43-56	4	4
12	132	69	939-952	57-70	5	4
13	133	70	953-966	71-84	6	4
14	134	71	967-980	85-98	7	4
15	135	72	981-994	99-112	8	4
16	136	73	995-1008	113-126	9	4
17	137	74	1009-1021	127-139	10	4
18	138	75	1022-1035	140-153	11	4
19	139	76	1036-1049	154-167	12	4
20	140	77	1050-1063	168-181	13	4
21	141	78	1064-1077	182-195	14	4
22	142	79	1078-1091	196-209	15	4
23	143	80	1092-1105	210-223	16	4
24	144	81	1106-1119	224-237	17	4
25	145	82	1120-1133	238-251	18	4
26	146	83	1134-1147	1-14	1	5
27	147	84	1148-1161	15-28	2	5
28	148	85	1162-1175	29-42	3	5
29	149	86	1176-1189	43-56	4	5
30	150	87	1190-1203	57-70	5	5
31	151	88	1204-1217	71-84	6	5

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June 1978

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	152	89	1218-1231	85-98	7	5
2	153	90	1232-1245	99-112	8	5
3	154	91	1246-1259	113-126	9	5
4	155	92	1260-1272	127-139	10	5
5	156	93	1273-1286	140-153	11	5
6	157	94	1287-1300	154-167	12	5
7	158	95	1301-1314	168-181	13	5
8	159	96	1315-1328	182-195	14	5
9	160	97	1329-1342	196-209	15	5
10	161	98	1343-1356	210-223	16	5
11	162	99	1357-1370	224-237	17	5
12	163	100	1371-1384	238-251	18	5
13	164	101	1385-1398	1-14	1	6
14	165	102	1399-1412	15-28	2	6
15	166	103	1413-1426	29-42	3	6
16	167	104	1427-1440	43-56	4	6
17	168	105	1441-1454	57-70	5	6
18	169	106	1455-1468	71-84	6	6
19	170	107	1469-1482	85-98	7	6
20	171	108	1483-1496	99-112	8	6
21	172	109	1497-1510	113-126	9	6
22	173	110	1511-1523	127-139	10	6
23	174	111	1524-1537	140-153	11	6
24	175	112	1538-1551	154-167	12	6
25	176	113	1552-1565	168-181	13	6
26	177	114	1566-1579	182-195	14	6
27	178	115	1580-1593	196-209	15	6
28	179	116	1594-1607	210-223	16	6
29	180	117	1608-1621	224-237	17	6
30	181	118	1622-1635	238-251	18	6

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July 1978

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	182	119	1636-1649	1- 14	1	7
2	183	120	1650-1663	15- 28	2	7
3	184	121	1664-1677	29- 42	3	7
4	185	122	1678-1691	43- 56	4	7
5	186	123	1692-1705	57- 70	5	7
6	187	124	1706-1719	71- 84	5	7
7	188	125	1720-1733	85- 98	7	7
8	189	126	1734-1747	99-112	8	7
9	190	127	1748-1761	113-126	9	7
10	191	128	1762-1774	127-139	10	7
11	192	129	1775-1788	140-153	11	7
12	193	130	1789-1802	154-167	12	7
13	194	131	1803-1816	168-181	13	7
14	195	132	1817-1830	182-195	14	7
15	196	133	1831-1844	196-209	15	7
16	197	134	1845-1858	210-223	16	7
17	198	135	1859-1872	224-237	17	7
18	199	136	1873-1886	238-251	18	7
19	200	137	1887-1900	1- 14	1	8
20	201	138	1901-1914	15- 28	2	8
21	202	139	1915-1928	29- 42	3	8
22	203	140	1929-1942	43- 56	4	8
23	204	141	1943-1956	57- 70	5	8
24	205	142	1957-1970	71- 84	6	8
25	206	143	1971-1984	85- 98	7	8
26	207	144	1985-1998	99-112	8	8
27	208	145	1999-2012	113-126	9	8
28	209	146	2013-2025	127-139	10	8
29	210	147	2026-2039	140-153	11	8
30	211	148	2040-2053	154-167	12	8
31	212	149	2054-2067	168-181	13	8

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August 1978

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	213	150	2068-2081	182-195	14	8
2	214	151	2082-2095	196-209	15	8
3	215	152	2096-2109	210-223	16	8
4	216	153	2110-2123	224-237	17	8
5	217	154	2124-2137	238-251	18	8
6	218	155	2138-2151	1- 14	1	9
7	219	156	2152-2165	15- 28	2	9
8	220	157	2166-2179	29- 42	3	9
9	221	158	2180-2193	43- 56	4	9
10	222	159	2194-2207	57- 70	5	9
11	223	160	2208-2221	71- 84	6	9
12	224	161	2222-2235	85- 98	7	9
13	225	162	2236-2249	99-112	8	9
14	226	163	2250-2263	113-126	9	9
15	227	164	2264-2276	127-139	10	9
16	228	165	2277-2290	140-153	11	9
17	229	166	2291-2304	154-167	12	9
18	230	167	2305-2318	168-181	13	9
19	231	168	2319-2332	182-195	14	9
20	232	169	2333-2346	196-209	15	9
21	233	170	2347-2360	210-223	16	9
22	234	171	2361-2374	224-237	17	9
23	235	172	2375-2388	238-251	18	9
24	236	173	2389-2402	1- 14	1	10
25	237	174	2403-2416	15- 28	2	10
26	238	175	2417-2430	29- 42	3	10
27	239	176	2431-2444	43- 56	4	10
28	240	177	2445-2458	57- 70	5	10
29	241	178	2459-2472	71- 84	6	10
30	242	179	2473-2486	85- 98	7	10
31	243	180	2487-2500	99-112	8	10

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September 1978

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	244	181	2501-2514	113-126	9	10
2	245	182	2515-2527	127-139	10	10
3	246	183	2528-2541	140-153	11	10
4	247	184	2542-2555	154-167	12	10
5	248	185	2556-2569	168-181	13	10
6	249	186	2570-2583	182-195	14	10
7	250	187	2584-2597	196-209	15	10
8	251	188	2598-2611	210-223	16	10
9	252	189	2612-2625	224-237	17	10
10	253	190	2626-2639	238-251	18	10
11	254	191	2640-2653	1- 14	1	11
12	255	192	2654-2667	15- 28	2	11
13	256	193	2668-2681	29- 42	3	11
14	257	194	2682-2695	43- 56	4	11
15	258	195	2696-2709	57- 70	5	11
16	259	196	2710-2723	71- 84	6	11
17	260	197	2724-2737	85- 98	7	11
18	261	198	2738-2751	99-112	8	11
19	262	199	2752-2765	113-126	9	11
20	263	200	2766-2778	127-139	10	11
21	264	201	2779-2792	140-153	11	11
22	265	202	2793-2806	154-167	12	11
23	266	203	2807-2820	168-181	13	11
24	267	204	2821-2834	182-195	14	11
25	268	205	2835-2848	196-209	15	11
26	269	206	2849-2862	210-223	16	11
27	270	207	2863-2876	224-237	17	11
28	271	208	2877-2890	238-251	18	11
29	272	209	2891-2904	1- 14	1	12
30	273	210	2905-2918	15- 28	2	12

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October 1978

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	274	211	2919-2932	29- 42	3	12
2	275	212	2933-2946	43- 56	4	12
3	276	213	2947-2960	57- 70	5	12
4	277	214	2961-2974	71- 84	6	12
5	278	215	2975-2988	85- 98	7	12
6	279	216	2989-3002	99-112	8	12
7	280	217	3003-3016	113-126	9	12
8	281	218	3017-3029	127-139	10	12
9	282	219	3030-3043	140-153	11	12
10	283	220	3044-3057	154-167	12	12
11	284	221	3058-3071	168-181	13	12
12	285	222	3072-3085	182-195	14	12
13	286	223	3086-3099	196-209	15	12
14	287	224	3100-3113	210-223	16	12
15	288	225	3114-3127	224-237	17	12
16	289	226	3128-3141	238-251	18	12
17	290	227	3142-3155	1- 14	1	13
18	291	228	3156-3169	15- 28	2	13
19	292	229	3170-3183	29- 42	3	13
20	293	230	3184-3197	43- 56	4	13
21	294	231	3198-3211	57- 70	5	13
22	295	232	3212-3225	71- 84	6	13
23	296	233	3226-3239	85- 98	7	13
24	297	234	3240-3253	99-112	8	13
25	298	235	3254-3267	113-126	9	13
26	299	236	3268-3280	127-139	10	13
27	300	237	3281-3294	140-153	11	13
28	301	238	3295-3308	154-167	12	13
29	302	239	3309-3322	168-181	13	13
30	303	240	3323-3336	182-195	14	13
31	304	241	3337-3350	196-209	15	13

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November 1978

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	305	242	3351-3364	210-223	16	13
2	306	243	3365-3378	224-237	17	13
3	307	244	3379-3392	230-251	18	13
4	308	245	3393-3406	1- 14	1	14
5	309	246	3407-3420	15- 28	2	14
6	310	247	3421-3434	29- 42	3	14
7	311	248	3435-3448	43- 56	4	14
8	312	249	3449-3462	57- 70	5	14
9	313	250	3463-3476	71- 84	6	14
10	314	251	3477-3490	85- 98	7	14
11	315	252	3491-3504	99-112	8	14
12	317	253	3505-3518	113-126	9	14
13	317	254	3519-3531	127-139	10	14
14	318	255	3532-3545	140-153	11	14
15	319	256	3546-3559	154-167	12	14
16	320	257	3560-3573	168-181	13	14
17	321	258	3574-3587	182-195	14	14
18	322	259	3588-3601	196-209	15	14
19	323	260	3602-3615	210-223	16	14
20	324	261	3616-3629	224-237	17	14
21	325	262	3630-3643	238-251	18	14
22	326	263	3644-3657	1- 14	1	15
23	327	264	3658-3671	15- 28	2	15
24	328	265	3672-3685	29- 42	3	15
25	329	266	3686-3699	43- 56	4	15
26	330	267	3700-3713	57- 70	5	15
27	331	268	3714-3727	71- 84	6	15
28	332	269	3728-3741	85- 98	7	15
29	333	270	3742-3755	99-112	8	15
30	334	271	3756-3769	113-126	9	15

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December 1978

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	335	272	3770-3782	127-139	10	15
2	336	273	3783-3796	140-153	11	15
3	337	274	3797-3810	154-167	12	15
4	338	275	3811-3824	168-181	13	15
5	339	276	3825-3838	182-195	14	15
6	340	277	3839-3852	196-209	15	15
7	341	278	3853-3866	210-223	16	15
8	342	279	3867-3880	224-237	17	15
9	343	280	3881-3894	238-251	18	15
10	344	281	3895-3908	1- 14	1	16
11	345	282	3909-3922	15- 28	2	16
12	346	283	3923-3936	29- 42	3	16
13	347	284	3937-3950	43- 56	4	16
14	348	285	3951-3964	57- 70	5	16
15	349	286	3965-3978	71- 84	6	16
16	350	287	3979-3992	85- 98	7	16
17	351	288	3992-4006	99-112	8	16
18	352	289	4007-4020	113-126	9	16
19	353	290	4021-4033	127-139	10	16
20	354	291	4034-4047	140-153	11	16
21	355	292	4048-4061	154-167	12	16
22	356	293	4062-4075	168-181	13	16
23	357	294	4076-4089	182-195	14	16
24	358	295	4090-4103	196-209	15	16
25	359	296	4104-4117	210-223	16	16
26	360	297	4118-4131	224-237	17	16
27	361	298	4132-4145	238-251	18	16
28	362	299	4146-4159	1- 14	1	17
29	363	300	4160-4173	15- 28	2	17
30	364	301	4174-4187	29- 42	3	17
31	365	302	4188-4201	43- 56	4	17

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January 1979

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	1	303	4202-4215	57- 70	5	17
2	2	304	4216-4229	71- 84	6	17
3	3	305	4230-4243	85- 98	7	17
4	4	306	4244-4257	99-112	8	17
5	5	307	4258-4271	113-126	9	17
6	6	308	4272-4284	127-139	10	17
7	7	309	4285-4298	140-153	11	17
8	8	310	4299-4312	154-167	12	17
9	9	311	4313-4326	168-181	13	17
10	10	312	4327-4340	182-195	14	17
11	11	313	4341-4354	196-209	15	17
12	12	314	4355-4368	210-223	16	17
13	13	315	4369-4382	224-237	17	17
14	14	316	4383-4396	238-251	18	17
15	15	317	4397-4410	1- 14	1	18
16	16	318	4411-4424	15- 28	2	18
17	17	319	4425-4438	29- 42	3	18
18	18	320	4439-4452	43- 56	4	18
19	19	321	4453-4466	57- 70	5	18
20	20	322	4467-4480	71- 84	6	18
21	21	323	4481-4494	85- 98	7	18
22	22	324	4495-4508	99-112	8	18
23	23	325	4509-4522	113-126	9	18
24	24	326	4523-4535	127-139	10	18
25	25	327	4536-4549	140-153	11	18
26	26	328	4550-4563	154-167	12	18
27	27	329	4564-4577	168-181	13	18
28	28	330	4578-4591	182-195	14	18
29	29	331	4592-4605	196-209	15	18
30	30	332	4606-4619	210-223	16	18
31	31	333	4620-4633	224-237	17	18

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February 1979

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	32	334	4634-4647	238-251	18	18
2	33	335	4648-4661	1- 14	1	19
3	34	336	4662-4675	15- 28	2	19
4	35	337	4676-4689	29- 42	3	19
5	36	338	4690-4703	43- 56	4	19
6	37	339	4704-4717	57- 70	5	19
7	38	340	4718-4731	71- 84	6	19
8	39	341	4732-4745	85- 98	7	19
9	40	342	4746-4759	99-112	8	19
10	41	343	4760-4773	113-126	9	19
11	42	344	4774-4786	127-139	10	19
12	43	345	4787-4800	140-153	11	19
13	44	346	4801-4814	154-167	12	19
14	45	347	4815-4828	168-181	13	19
15	46	348	4829-4842	182-195	14	19
16	47	349	4843-4856	196-209	15	19
17	48	350	4857-4870	210-223	16	19
18	49	351	4871-4884	224-237	17	19
19	50	352	4885-4898	238-251	18	19
20	51	353	4899-4912	1- 14	1	20
21	52	354	4913-4926	15- 28	2	20
22	53	355	4927-4940	29- 42	3	20
23	54	356	4941-4954	43- 56	4	20
24	55	357	4955-4968	57- 70	5	20
25	56	358	4969-4982	71- 84	6	20
26	57	359	4983-4996	85- 98	7	20
27	58	360	4997-5010	99-112	8	20
28	59	361	5011-5024	113-126	9	20

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March 1979

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	60	362	5025-5037	127-139	10	20
2	61	363	5038-5051	140-153	11	20
3	62	364	5052-5065	154-167	12	20
4	63	365	5066-5079	168-181	13	20
5	64	366	5080-5093	182-195	14	20
6	65	367	5094-5107	196-209	15	20
7	66	368	5108-5121	210-223	16	20
8	67	369	5122-5135	224-237	17	20
9	68	370	5136-5149	238-251	18	20
10	69	371	5150-5163	1- 14	1	21
11	70	372	5164-5177	15- 28	2	21
12	71	373	5178-5191	29- 42	3	21
13	72	374	5192-5205	43- 56	4	21
14	73	375	5206-5219	57- 70	5	21
15	74	376	5220-5233	71- 84	6	21
16	75	377	5234-5247	85- 98	7	21
17	76	378	5248-5261	99-112	8	21
18	77	379	5262-5275	113-126	9	21
19	78	380	5276-5288	127-139	10	21
20	79	381	5289-5302	140-153	11	21
21	80	382	5303-5316	154-167	12	21
22	81	383	5317-5330	168-181	13	21
23	82	384	5331-5344	182-195	14	21
24	83	385	5345-5358	196-209	15	21
25	84	386	5359-5372	210-223	16	21
26	85	387	5373-5386	224-237	17	21
27	86	388	5387-5400	238-251	18	21
28	87	389	5401-5414	1- 14	1	22
29	88	390	5415-5428	15- 28	2	22
30	89	391	5429-5442	29- 42	3	22
31	90	392	5443-5456	43- 56	4	22

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April 1979

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	91	393	5457-5470	57- 70	5	22
2	92	394	5471-5484	71- 84	6	22
3	93	395	5485-5498	85- 98	7	22
4	94	396	5499-5512	99-112	8	22
5	95	397	55[illegible]-5526	113-126	9	22
6	96	398	5527-5539	127-139	10	22
7	97	399	5540-5553	140-153	11	22
8	98	400	5554-5567	154-167	12	22
9	99	401	5568-5581	168-181	13	22
10	100	402	5582-5595	182-195	14	22
11	101	403	5596-5609	196-209	15	22
12	102	404	5610-5623	210-223	16	22
13	103	405	5624-5637	224-237	17	22
14	104	406	5638 5651	238-251	18	22
15	105	407	5652-5665	1- 14	1	23
16	106	408	5666-5679	15- 28	2	23
17	107	409	5680-5693	29- 42	3	23
18	108	410	5694-5707	43- 56	4	23
19	109	411	5708-5721	57- 70	5	23
20	110	412	5722-5735	71- 84	6	23
21	111	413	5736-5749	85- 98	7	23
22	112	414	5750-5763	99-112	8	23
23	113	415	5764-5777	113-126	9	23
24	114	416	5778-5790	127-139	10	23
25	115	417	5791-5804	140-153	11	23
26	116	418	5805-5818	154-167	12	23
27	117	419	5819-5832	168-181	13	23
28	118	420	5833-5846	182-195	14	23
29	119	421	5847-5860	196-209	15	23
30	120	422	5861-5874	210-223	16	23

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May 1979

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	121	423	5875-5888	224-237	17	23
2	122	424	5889-5902	238-251	18	23
3	123	425	5903-5916	1- 14	1	24
4	123	426	5917-5930	15- 28	2	24
5	125	427	5931-5944	29- 42	3	24
6	126	428	5945-5958	43- 56	4	24
7	127	429	5959-5972	57- 70	5	24
8	128	430	5973-5986	71- 84	6	24
9	129	431	5987-6000	85- 98	7	24
10	130	432	6001-6014	99-112	8	24
11	131	433	6015-6028	113-126	9	24
12	132	434	6029-6041	127-139	10	24
13	133	435	6042-6055	140-153	11	24
14	134	436	6056-6069	154-167	12	24
15	135	437	6070-6083	168-181	13	24
16	136	438	6084-6097	182-195	14	24
17	137	439	6098-6111	196-209	15	24
18	138	440	6112-6125	210-223	16	24
19	139	441	6126-6139	224-237	17	24
20	140	442	6140-6153	238-251	18	24
21	141	443	6154-6167	1- 14	1	25
22	142	444	6168-6181	15- 28	2	25
23	143	445	6182-6195	29- 42	3	25
24	144	446	6196-6209	43- 56	4	25
25	145	447	6210-6223	57- 70	5	25
26	146	448	6224-6237	71- 84	6	25
27	147	449	6238-6251	85- 98	7	25
28	148	450	6252-6265	99-112	8	25
29	149	451	6266-6279	113-126	9	25
30	150	452	6280-6292	127-139	10	25
31	151	453	6293-6306	140-153	11	25

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June 1979

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	152	454	6307-6320	154-167	12	25
2	153	455	6321-6334	168-181	13	25
3	154	456	6335-6348	182-195	14	25
4	155	457	6349-6362	196-209	15	25
5	156	458	6363-6376	210-223	16	25
6	157	459	6377-6390	224-237	17	25
7	158	460	6391-6404	238-261	18	25
8	159	461	6405-6418	1- 14	1	26
9	160	462	6419-6432	15- 28	2	26
10	161	463	6433-6446	29- 42	3	26
11	162	464	6447-6460	43- 56	4	26
12	163	465	6461-6474	57- 70	5	26
13	164	466	6475-6488	71- 84	6	26
14	165	467	6489-6502	85- 98	7	26
15	166	468	6503-6516	99-112	8	26
16	167	469	6517-6530	113-126	9	26
17	168	470	6531-6543	127-139	10	26
18	169	471	6544-6557	140-153	11	26
19	170	472	6558-6571	154-167	12	26
20	171	473	6572-6585	168-181	13	26
21	172	474	6586-6599	182-195	14	26
22	173	475	6600-6613	196-209	15	26
23	174	476	6614-6627	210-223	16	26
24	175	477	6628-6641	224-237	17	26
25	176	478	6642-6655	238-251	18	26
26	177	479	6656-6669	1- 14	1	27
27	178	480	6670-6683	15- 28	2	27
28	179	481	6684-6697	29- 42	3	27
29	180	482	6698-6711	43- 56	4	27
30	181	483	6712-6725	57- 70	5	27

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July 1979

Date	GMT Day	Flight Day	Spacecraft Orbits	Cycle Orbits	Cycle Day	Cycle
1	182	484	6726-6739	71- 84	6	27
2	183	485	6740-6753	85- 98	7	27
3	184	486	6754-6767	99-112	8	27
4	185	487	6768-6781	113-126	9	27
5	186	488	6782-6794	127-139	10	27
6	187	489	6795-6808	140-153	11	27
7	188	490	6809-6822	154-167	12	27
8	189	491	6823-6836	168-181	13	27
9	190	492	6837-6850	182-195	14	27
10	191	493	6851-6864	196-209	15	27
11	192	494	6865-6878	210-223	16	27
12	193	495	6879-6892	224-237	17	27
13	194	496	6893-6906	238-251	18	27
14	195	497	6907-6920	1- 14	1	28
15	196	498	6921-6934	15- 28	2	28
16	197	499	6935-6948	29- 42	3	28
17	198	500	6949-6962	43- 56	4	28
18	199	501	6963-6976	57- 70	5	28
19	200	502	6977-6990	71- 84	6	28
20	201	503	6991-7004	85- 98	7	28
21	202	504	7005-7018	99-112	8	28
22	203	505	7019-7032	113-126	9	28
23	204	506	7033-7045	127-139	10	28
24	205	507	7046-7059	140-153	11	28
25	206	508	7060-7073	154-167	12	28
26	207	509	7074-7087	168-181	13	28
27	208	510	7088-7101	182-195	14	28
28	209	511	7102-7115	196-209	15	28
29	210	512	7116-7129	210-223	16	28
30	211	513	7130-7143	224-237	17	28
31	212	514	7144-7157	238-251	18	28

APPENDIX C

LANDSAT-3 DOCUMENTS ISSUED THIS REPORT PERIOD

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APPENDIX C

LANDSAT-3 DOCUMENTS ISSUED THIS REPORT PERIOD

No.	Document No.	Description and Date
1	14NO-L/C-238, Revision A	Landsat-3 MSS Line Start Anomaly, dated 11/21/78
2	14NO-L/3-239	Tenth Outgas Cycle and Subsequent Operations, dated 11/6/78
3	14NO-L/3-240	MSS Band 5 - A Vanishing Resource, dated 12/14/78
4	14NO-L/3-241	MSS Band 5 Landsat-3: Eleventh Outgas Cycle and Subsequent Operation, dated 12/4/78
5	14NO-L/3-242	Landsat 2 and 3 Line Start Anomaly Over Brazil, dated 12/5/78
6	14N5-L/3-243	MSS Band 5 Landsat 3: Twelfth Outgas Cycle and Subsequent Operation, dated 1/4/79
7	14NO-L/3-245	MSS Band 5 and Landsat-3: Thirteenth Outgas Cycle and Subsequent Operations, dated 1/23/79