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LUNAR ORBITER I FINAL REPORT

APPENDICES

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by

THE BOEING COMPANY

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See note on DRF regarding App. D. & E.

Appendix A

PHOTO CROSS REFERENCE INDEX

Appendix A
CROSS REFERENCE INDEX OF LUNAR PHOTOS

The purpose of this appendix is to provide the reader with a method by which the 211 photographs taken of the lunar surface can be identified with respect to readout periods and with respect to actual photo sites on the lunar surface. As identified in Volume II of this report, the lunar photographs appear in the form of (1) 35-mm film (which is the output of the GRE at each DSIF site), and (2) 9-1/2-inch film (which is the output of the reassembly printer at Eastman Kodak). Separate numbers were assigned during the mission for each readout sequence from the spacecraft. This number has been incorporated in the GRE roll number which also identifies the recording station and the spacecraft number. During the reassembly process at Eastman Kodak, additional coded numbers were added in the titling data of each photograph which identifies a specific 9-1/2- by 14-inch reassembled negative. Prior to the flight, edge data numers were pre-exposed on the spacecraft film. These numbers run in sequence from 0 through 999 and then recycle again. The individual numbers appear at approximately 0.09-inch intervals along the 70-mm spacecraft film. These edge print numbers or framelet numbers are the key to finding a specific framelet read out from the spacecraft within any given photograph or subframe. Each readout sequence from the spacecraft was recorded at a specific DSIF site. Since there are two GRE's at each site, each read out sequence was recorded on two rolls of 35-mm film. The first of these rolls to arrive at Eastman Kodak was used as the basis for reassembling the lunar photograph. The backup roll, as it arrived, was not used for reassembly; however, it is available and does have the same information as the roll used for reassembly. The table will include the makeup of the individual reassembled subframes with respect to edge print numbers from the primary GRE roll. It will also indicate the GRE roll number and coverage of the second roll of GRE film.

DEFINITION OF TERMS

Photo Site — The photo site identification used is that number assigned for the mission design to identify the lunar area which was photographed during that particular sequence.

Spacecraft Exposure Number — The spacecraft exposure number begins with number 5 and increments sequentially through number 215. The camera operations below number 5 were those required to ensure that fresh film was moved from the supply spool into the platen area in preparation for taking pictures. Camera operations in excess of 215 were used to move the last pictures of the lunar surface through the photo system to a position in the readout gate where they could be read out and transmitted back to the DSIF sites. The exposure number is followed by a dash and another set of digits. These digits identify whether the picture being described was taken by the high-resolution 610-mm 24-inch lens or the moderate 80-mm 3-inch lens.

Photo Sequence Number of Number — The photo sequence is identified as the actual exposure number in the total number of pictures that were used to cover that specific photo site. During the course of the mission, photos were taken in single-frame sequences, four-frame sequences, eight-frame sequences, and 16-frame sequences.

Recording DSIF Site — Recording DSIF site is the station which accurately received the video signal from the spacecraft during the recording period; as such, they were Goldstone, California; Woomera, Australia; and Madrid, Spain.

Readout Sequence — The readout sequence is a sequentially increasing number of times that the readout system of the spacecraft was activated by command from the ground. Readout sequence numbers 1 and 141 were used to read out and transmit the Goldstone test film which was spliced onto the spacecraft film and read out prior to the actual start of lunar photography and after completion of the final readout. Readout periods were divided into two areas. Priority readouts were made during the actual taking of photo coverage of the photo sites. Readout sequences 002 through 047 were assigned to the priority readout area. Readout sequences 048 through 140 were assigned to the final readout.

GRE Roll Number — The GRE roll number is an eight-digit number which is set into the end of each GRE and recorded outside of the spocket holes on the 35-mm film. The first two digits identify the GRE by number and by station. The second two digits identify the spacecraft. The next three digits identify the readout sequence number. The last digit identifies whether this represents transmissions from the spacecraft or test data.

Kodak Identification (K.I.) Number — This is a sequentially signed number given to the roll of GRE film as it is received at Eastman Kodak and prepared for the reassembly process. The first of the four digits identifies the spacecraft or mission. The remaining three numbers identify the sequence number. To provide correlation between the film used for reassembly printing and the corresponding duplicate film which was not used for reassembly printing, the Kodak identification numbers of these two rolls of film covering identical radar periods will differ by exactly 500 numbers.

Framelet Number — The framelet numbers are the edge data numbers which define both ends of the photograph (either high or moderate resolution) and the individual reassembly subframes that are used to make up the complete photograph. The numbers are arranged so that the first number represents that section of the picture which is to the north on the lunar surface and the last number represents the edge of the picture which is generally on the south on the lunar surface.

Heading Reassembly Number — This number is an alphanumeric code, the numerical part represents the sequency of reassemblies or the order in which the reassembled negatives were made on the reassembly printer at Eastman Kodak.

The letters H and F or M and F identify either a high- or moderate-resolution photo which was read out during final readout. Correspondingly the letter T identifies the subframes which were read out during priority readout. Title subframe location (percent of spacecraft photo) the area of the photo indicated is shown by the percentages shown. The lower percentages represent areas to the north of the lunar surface with increasing numbers going toward the south.

ARRANGEMENT OF DATA WITHIN TABULATION

The arrangement of subframes and GRE film within the cross reference tables is in the following order.

Primary photo sites are arranged in the order read out in the final readout (Site I-9.2B through Site I-0). Film set photos are also grouped by nearside, farside, and potential Mission B site candidates. Within a given site the exposure number is arranged in the order taken with the high-resolution photo presented first.

The first entry of each exposure represents the final readout GRE roll used to make the reassembled negative and defines the complete photo. This is followed by a breakdown of the framelet and subframe numbers arranged so that the first entry represents the northern edge and the last entry represents the southern edge of the photograph. If a picture is completely covered by one readout sequence, one such entry will be made; however, in many cases two readout sequences were required. In the latter cases the second readout sequence GRE film completes the area covered by the original photo. The backup GRE film for these subframes is identified on the next lines.

In these areas where portions of the photo were read out in priority readout, they are the next entry in the tablulation and are arranged as described above. Where the readout was duplicated by recording at two sites, each reassembly is entered as a separate item and shows the area of the complete photo covered by the partial readout. All of the moderate-resolution photos are presented in a similar manner.

The following tables will present the master key to assembling the approximately 25,000 individual framelets, approximately 2500 reassembled subframes, and nearly 300 rolls of 35-mm film to recreate the 211 pairs of photos taken by Lunar Orbiter I in its historic flight.

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO._OF_	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-9.2B	200-610mm	1 of 16	Goldstone	056	03 01 056 0	1062			
							982-987	0659 HF	0 - 6
							985-000	0658 HF	4 - 20
							998-014	0657 HF	17 - 34
							012-027	0656 HF	32 - 47
							025-041	0655 HF	45 - 62
							039-054	0654 HF	60 - 75
							052-068	0653 HF	73 - 90
							065-078	0652 HF	87 - 100
			Goldstone	056	04 01 056 0	1562			
	200-80mm	1 of 16	Madrid	055	07 01 055 0	1067			
							241-229	0682 MF	0 - 45
							231-215	0683 MF	38 - 93
							217-213	0684 MF	86 - 100
			Madrid	055	08 01 055 0	1567			
	201-610mm	2 of 16	Madrid	055	07 01 055 0	1067			
							111-117	0692 HF	0 - 6
							115-130	0691 HF	5 - 20
							128-144	0690 HF	18 - 34
							142-157	0689 HF	32 - 47
							155-170	0688 HF	45 - 60
							168-184	0687 HF	58 - 74
							182-197	0686 HF	72 - 87
							195-206	0685 HF	85 - 100
			Madrid	055	08 01 055 0	1567			
	201-80mm	2 of 16	Woomera	054	06 01 054 0	1086			
							369-358	1205 MF	0 - 40
							360-345	1206 MF	33 - 83
							347-340	1207 MF	77 - 100
			Woomera	054	05 01 054 0	1586			
	202-610mm	3 of 16	Madrid	055	07 01 055 0	1067			
							243-249	0681 HF	0 - 7
							247-262	0680 HF	5 - 21
							260-275	0679 HF	19 - 34
							273-289	0678 HF	32 - 50
							287-302	0677 HF	48 - 63
							300-316	0676 HF	61 - 79
							314-328	0675 HF	77 - 91
			Woomera	054	05 01 054 0	1086			
							329-339	1208 HF	91 - 100
			Madrid	055	08 01 055 0	1567			
			Woomera	054	06 01 054 0	1586			
	202-80mm	3 of 16	Woomera	054	05 01 054 0	1086			
							502-490	1194 MF	0 - 45
							492-477	1195 MF	38 - 90
							479-474	1196 MF	83 - 100
			Woomera	054	06 01 054 0	1586			
	203-610mm	4 of 16	Woomera	054	05 01 054 0	1086			
							374-378	1204 HF	0 - 5
							376-392	1203 HF	3 - 19
							390-405	1202 HF	17 - 32
							403-419	1201 HF	30 - 46
							417-432	1200 HF	44 - 59
							430-445	1199 HF	57 - 72
							443-459	1198 HF	71 - 86
							457-470	1197 HF	85 - 100
			Woomera	054	06 01 054 0	1586			
	203-80mm	4 of 16	Woomera	053	05 01 053 0	1085			
							633-620	1183 MF	0 - 48
							622-606	1184 MF	41 - 96
							608-605	1185 MF	90 - 100
			Woomera	053	06 01 053 0	1585			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-0.2B	204-610mm	5 of 16	Woomera	054	05 01 054 0	1086			
							506-519	1193 HF	0 - 14
							517-532	1192 HF	12 - 27
							530-546	1191 HF	25 - 41
							544-559	1190 HF	39 - 55
							557-573	1189 HF	53 - 68
							571-585	1188 HF	66 - 80
			Woomera	053	05 01 053 0	1085			
							586-591	1187 HF	81 - 86
							589-602	1186 HF	84 - 100
			Woomera	054	06 01 054 0	1586			
			Woomera	053	06 01 053 0	1585			
	204-80mm	5 of 16	Woomera	053	05 01 053 0	1085			
							765-752	1172 MF	0 - 50
							754-738	1173 MF	41 - 97
							741-737	1174 MF	86 - 100
			Woomera	045	06 01 045 0	1066			
							765-754	0780 MP	0 - 41
			Woomera	053	06 01 053 0	1585			
			Woomera	045	05 01 045 0	1566			
	205-610mm	6 of 16	Woomera	053	05 01 053 0	1085			
							637-642	1182 HF	0 - 6
							640-655	1181 HF	4 - 19
							653-669	1180 HF	17 - 33
							667-682	1179 HF	31 - 47
							680-696	1178 HF	45 - 60
							694-709	1177 HF	58 - 73
							707-723	1176 HF	71 - 87
							721-733	1175 HF	85 - 100
			Woomera	053	06 01 053 0	1585			
	205-80mm	6 of 16	Goldstone	052	03 01 052 0	1063			
							895-881	0645 MF	0 - 52
							883-868	0646 MF	45 - 96
							870-867	0647 MF	90 - 100
			Goldstone	045	03 01 045 0	1057			
							871-867	0500 MP	86 - 100
			Woomera	045	06 01 045 0	1066	871-867	0771 MP	86 - 100
			Woomera	047	06 01 047 0	1065			
							895-883	0767 MP	0 - 45
							885-870	0768 MP	38 - 87
							872-867	0769 MP	83 - 100
			Goldstone	052	04 01 052 0	1563			
			Goldstone	045	04 01 052 0	1557			
			Woomera	045	05 01 045 0	1566			
			Woomera	047	05 01 047 0	1565			
	206-610mm	7 of 16	Woomera	053	05 01 053 0	1085			
							768-772	1171 HF	0 - 5
							770-785	1170 HF	3 - 18
							783-799	1169 HF	16 - 32
							797-812	1168 HF	30 - 45
							810-826	1167 HF	43 - 59
							823-839	1166 HF	56 - 72
							837-851	1165 HF	70 - 84
			Goldstone	052	03 01 052 0	1063	852-864	0648 HF	83 - 100
			Woomera	045	06 01 045 0	1066			
							768-772	0779 HP	0 - 5
							770-785	0778 HP	3 - 18
							783-799	0777 HP	16 - 32
							797-812	0776 HP	30 - 45
							810-826	0775 HP	43 - 59
							823-839	0774 HP	56 - 72
							837-852	0773 HP	70 - 85
							850-864	0772 HP	83 - 100
			Woomera	047	06 01 047 0	1065			
							862-864	0770 HP	95 - 100

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. _ OF _	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-9.2B	206-610mm	7 of 16	Goldstone	045	03 01 045 0	1057			
							768-772	0508 HP	0 - 5
							770-785	0507 HP	3 - 18
							783-799	0506 HP	16 - 32
							797-812	0505 HP	30 - 45
							810-826	0504 HP	43 - 59
							824-839	0503 HP	57 - 72
							837-852	0502 HP	70 - 85
							850-864	0501 HP	83 - 100
			Woomera	053	06 01 053 0	1585			
			Goldstone	052	04 01 052 0	1563			
			Woomera	045	05 01 045 0	1566			
			Woomera	047	05 01 047 0	1565			
			Goldstone	045	04 01 045 0	1557			
	206-80mm	7 of 16	Goldstone	052	03 01 052 0	1063			
							026-013	0634 MF	0 - 48
							015-000	0635 MF	41 - 93
							002-998	0636 MF	86 - 100
			Woomera	046	06 01 046 0	1064			
							026-015	0755 MP	0 - 41
							017-001	0756 MP	34 - 90
							003-998	0757 MP	83 - 100
			Goldstone	052	04 01 052 0	1563			
			Woomera	046	05 01 046 0	1564			
	207-610mm	8 of 16	Goldstone	052	03 01 052 0	1063			
							899-903	0644 HF	0 - 5
							901-917	0643 HF	3 - 19
							915-930	0642 HF	17 - 32
							928-944	0641 HF	30 - 46
							942-957	0640 HF	44 - 59
							955-970	0639 HF	57 - 72
							968-984	0638 HF	70 - 86
							982-995	0637 HF	84 - 100
			Woomera	047	06 01 047 0	1065			
							896-905	0766 HP	2 - 7
							903-914	0765 HP	5 - 16
							912-927	0764 HP	14 - 29
							925-941	0763 HP	27 - 43
							939-954	0762 HP	41 - 56
							952-968	0761 HP	54 - 70
							966-981	0760 HP	68 - 83
							979-993	0759 HP	81 - 95
			Woomera	046	06 01 046 0	1064			
							994-996	0758 HP	96 - 98
			Goldstone	052	04 01 052 0	1563			
			Woomera	047	05 01 047 0	1565			
			Woomera	046	05 01 046 0	1564			
	207-80mm	8 of 16	Goldstone	052	03 01 052 0	1063			
							156-145	0623 MF	0 - 48
							147-132	0624 MF	41 - 93
							134-130	0625 MF	86 - 100
			Goldstone	052	04 01 052 0	1563			
	208-610mm	9 of 16	Goldstone	052	03 01 052 0	1063			
							031-035	0633 HF	0 - 5
							033-049	0632 HF	3 - 19
							047-062	0631 HF	17 - 32
							060-076	0630 HF	30 - 46
							074-089	0629 HF	44 - 59
							087-103	0628 HF	57 - 73
							100-116	0627 HF	70 - 86
							114-127	0626 HF	84 - 100
			Woomera	046	06 01 046 0	1064			
							031-037	0754 HP	0 - 7
							035-046	0753 HP	5 - 16
							044-050	0752 HP	14 - 29

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-9.2B	208-610mm	9 of 16	Woomera	046	06 01 046 0	1064			
							057-073	0751 HP	27 - 43
							071-086	0750 HP	41 - 56
							084-099	0749 HP	54 - 69
							097-113	0748 HP	67 - 83
							111-125	0747 HP	81 - 95
			Goldstone	052	04 01 052 0	1563			
			Woomera	046	05 01 046 0	1564			
	208-80mm	9 of 16	Goldstone	051	03 01 051 0	1061			
							290-277	0612 MF	0 - 47
							279-264	0613 MF	40 - 90
							266-261	0614 MF	83 - 100
			Goldstone	051	04 01 051 0	1561			
	209-610mm	10 of 16	Goldstone	051	03 01 051 0	1061			
							161-165	0622 HF	0 - 5
							163-179	0621 HF	3 - 19
							177-192	0620 HF	17 - 32
							190-206	0619 HF	30 - 46
							203-219	0618 HF	43 - 59
							217-232	0617 HF	57 - 72
							230-246	0616 HF	70 - 86
							244-258	0615 HF	84 - 100
			Goldstone	051	04 01 051 0	1561			
	209-80mm	10 of 16	Goldstone	051	03 01 051 0	1061			
							420-409	0601 MF	0 - 41
							411-396	0602 MF	34 - 86
							398-392	0603 MF	79 - 100
			Goldstone	051	04 01 051 0	1561			
	210-610mm	11 of 16	Goldstone	051	03 01 051 0	1061			
							293-297	0611 HF	0 - 5
							295-310	0610 HF	3 - 18
							308-324	0609 HF	16 - 32
							322-337	0608 HF	30 - 45
							335-351	0607 HF	43 - 50
							349-364	0606 HF	57 - 72
							362-378	0605 HF	70 - 86
							376-390	0604 HF	84 - 100
			Goldstone	051	04 01 051 0	1561			
	210-80mm	11 of 16	Goldstone	050	03 01 050 0	1060			
							552-539	0590 MF	0 - 47
							541-525	0591 MF	40 - 93
							527-523	0592 MF	87 - 100
			Goldstone	050	04 01 050 0	1560			
	211-610mm	12 of 16	Goldstone	051	03 01 051 0	1061			
							424-438	0600 HF	0 - 15
							436-451	0599 HF	13 - 28
							449-464	0598 HF	26 - 41
			Goldstone	050	03 01 050 0	1060			
							465-469	0597 HF	40 - 46
							467-483	0596 HF	44 - 60
							481-496	0595 HF	58 - 63
							494-509	0594 HF	61 - 86
							507-520	0593 HF	84 - 100
			Goldstone	051	04 01 051 0	1561			
			Goldstone	050	04 01 050 0	1560			
	211-80mm	12 of 16	Goldstone	050	03 01 050 0	1060			
							683-671	0579 MF	0 - 43
							673-657	0580 MF	37 - 90
							659-654	0581 MF	83 - 100
			Goldstone	050	04 01 050 0	1560			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-9.2B	212-610mm	13 of 16	Goldstone	050	03 01 050 0	1060			
							555-559	0589 HF	0 - 5
							557-572	0588 HF	3 - 18
							570-586	0587 HF	16 - 32
							583-599	0586 HF	29 - 45
							597-612	0585 HF	43 - 58
							610-626	0584 HF	56 - 72
							624-639	0583 HF	70 - 85
							637-651	0582 HF	83 - 100
			Goldstone	050	04 01 050 0	1560			
	212-80mm	13 of 16	Madrid	049	07 01 049 0	1059			
							814-800	0568 MF	0 - 50
							802-787	0569 MF	43 - 93
							789-785	0570 MF	87 - 100
			Madrid	049	08 01 049 0	1559			
	213-610mm	14 of 16	Madrid	049	07 01 049 0	1059			
							688-697	0578 HF	0 - 10
							696-704	0577 HF	9 - 17
							702-717	0576 HF	15 - 30
							715-731	0575 HF	28 - 44
							729-744	0574 HF	42 - 57
							742-757	0573 HF	55 - 70
							755-771	0572 HF	68 - 84
							769-782	0571 HF	82 - 100
			Madrid	049	08 01 049 0	1559			
	213-80mm	14 of 16	Madrid	049	07 01 049 0	1059			
							944-932	0557 MF	0 - 45
							934-919	0558 MF	38 - 90
							921-916	0559 MF	83 - 100
			Madrid	049	08 01 049 0	1559			
	214-610mm	15 of 16	Madrid	049	07 01 0490	1059			
							817-822	0567 HF	0 - 6
							820-836	0566 HF	4 - 20
							834-849	0565 HF	18 - 33
							847-862	0564 HF	31 - 46
							860-876	0563 HF	44 - 60
							874-889	0562 HF	58 - 73
							887-903	0561 HF	71 - 87
							901-913	0560 HF	85 - 100
			Madrid	049	08 01 049 0	1559			
	214-80mm	15 of 16	Madrid	048	07 01 048 0	1058			
							076-062	0546 MF	0 - 50
							064-049	0547 MF	43 - 93
							051-047	0548 MF	87 - 100
			Madrid	048	08 01 048 0	1558			
	215-610mm	16 of 16	Madrid	049	07 01 049 0	1059			
							946-959	0556 HF	0 - 14
							957-971	0555 HF	12 - 26
			Madrid	048	07 01 048 0	1058			
							973-979	0554 HF	24 - 34
							977-992	0553 HF	32 - 47
							990-006	0552 HF	45 - 61
							004-019	0551 HF	59 - 74
							017-033	0550 HF	72 - 88
							031-043	0549 HF	86 - 100
			Madrid	049	08 01 049 0	1559			
			Madrid	048	08 01 048 0	1558			
	215-80mm	16 of 16	Madrid	048	07 01 048 0	1058			
							207-194	0535 MF	0 - 47
							196-180	0536 MF	40 - 93
							182-178	0537 MF	87 - 100
			Madrid	048	08 01 048 0	1558			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-9.2A	184-610mm	1 of 16	Goldstone	063	03 01 063 0	1068			
							885-890	0795 HF	0 - 6
							888-903	0794 HF	4 - 19
							901-917	0793 HF	17 - 33
							914-930	0792 HF	30 - 46
							928-943	0791 HF	44 - 59
							941-957	0790 HF	57 - 73
							955-970	0789 HF	71 - 86
							968-981	0788 HF	84 - 100
			Goldstone	063	04 01 063 0	1568			
	184-80mm	1 of 16	Madrid	062	07 01 062 0	1073			
							144-131	0873 MF	0 - 47
							133-118	0874 MF	40 - 90
							120-115	0875 MF	83 - 100
			Madrid	062	08 01 062 0	1573			
	185-610mm	2 of 16	Goldstone	063	03 01 063 0	1068			
							014-022	0784 HF	0 - 9
							020-035	0783 HF	7 - 22
							033-048	0782 HF	20 - 35
							046-061	0781 HF	33 - 48
			Madrid	062	07 01 062 0	1073			
							062-073	0879 HF	47 - 60
							071-086	0878 HF	58 - 73
							084-100	0877 HF	71 - 87
							098-110	0876 HF	85 - 100
			Goldstone	063	04 01 063 0	1568			
			Madrid	062	08 01 062 0	1573			
	185-80mm	2 of 16	Madrid	062	07 01 062 0	1073			
							273-261	0862 MF	0 - 43
							263-248	0863 MF	37 - 87
							250-244	0864 MF	80 - 100
			Madrid	062	08 01 062 0	1573			
	186-610mm	3 of 16	Madrid	062	07 01 062 0	1073			
							145-154	0872 HF	0 - 10
							152-163	0871 HF	8 - 19
							161-176	0870 HF	17 - 32
							174-189	0869 HF	30 - 45
							187-203	0868 HF	43 - 59
							201-216	0867 HF	57 - 72
							214-230	0866 HF	70 - 86
							228-242	0865 HF	84 - 100
			Madrid	062	08 01 062 0	1573			
	186-80mm	3 of 16	Madrid	061	07 01 061 0	1072			
							405-393	0850 MF	0 - 45
							395-380	0851 MF	38 - 90
							382-377	0852 MF	83 - 100
			Madrid	061	08 01 061 0	1572			
	187-610mm	4 of 16	Madrid	062	07 01 062 0	1073			
							276-281	0861 HF	0 - 6
							279-294	0860 HF	4 - 19
							292-308	0859 HF	17 - 33
							306-321	0858 HF	31 - 46
							319-335	0857 HF	44 - 60
							333-348	0856 HF	58 - 73
							346-362	0855 HF	71 - 87
							360-373	0854 HF	85 - 100
			Madrid	062	08 01 062 0	1573			
	187-80mm	4 of 16	Madrid	061	07 01 061 0	1072			
							536-523	0839 MF	0 - 48
							525-509	0840 MF	41 - 96
							511-508	0841 MF	90 - 100
			Madrid	061	08 01 061 0	1572			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO._OF_	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-9.2A	188-610mm	5 of 16	Madrid	061	07 01 061 0	1072			
							408-413	0849 HF	0 - 6
							411-426	0848 HF	4 - 19
							424-440	0847 HF	17 - 33
							438-453	0846 HF	31 - 46
							451-467	0845 HF	44 - 60
							465-480	0844 HF	58 - 73
							478-493	0843 HF	71 - 86
							491-505	0842 HF	84 - 100
			Madrid	061	08 01 061 0	1572			
	188-80mm	5 of 16	Woomera	060	05 01 060 0	1089			
							668-655	1280 MF	0 - 47
							657-641	1281 MF	40 - 93
							643-639	1282 MF	87 - 100
			Madrid	042	07 01 042 0	1056			
							668-654	0531 MP	0 - 50
							656-643	0532 MP	43 - 87
			Woomera	060	06 01 060 0	1589			
			Madrid	042	08 01 042 0	1556			
	189-610mm	6 of 16	Madrid	061	07 01 061 0	1072			
							539-551	0838 HF	0 - 13
							549-565	0837 HF	11 - 27
							563-578	0836 HF	25 - 40
							576-592	0835 HF	38 - 54
							590-605	0834 HF	52 - 67
							603-618	0833 HF	65 - 80
							616-630	0832 HF	78 - 92
			Woomera	060	05 01 060 0	1089			
							632-635	1283 HF	94 - 100
			Madrid	061	08 01 061 0	1572			
			Woomera	060	06 01 060 0	1589			
	189-80mm	6 of 16	Woomera	060	05 01 060 0	1089			
							798-787	1269 MF	0 - 40
							789-773	1270 MF	33 - 87
							775-769	1271 MF	80 - 100
			Goldstone	044	03 01 044 0	1054			
							798-786	0497 MP	0 - 43
							788-773	0498 MP	37 - 87
							775-769	0499 MP	80 - 100
			Madrid	042	07 01 0420	1056			
							774-769	0522 MP	83 - 100
			Woomera	060	06 01 060 0	1589			
			Goldstone	044	04 01 044 0	1554			
			Madrid	042	08 01 042 0	1556			
	190-610mm	7 of 16	Woomera	060	05 01 060 0	1089			
							672-674	1279 HF	0 - 3
							672-688	1278 HF	1 - 17
							686-701	1277 HF	15 - 30
							699-715	1276 HF	28 - 44
							713-728	1275 HF	42 - 57
							726-742	1274 HF	55 - 71
							740-755	1273 HF	69 - 84
							753-768	1272 HF	82 - 100
			Madrid	042	07 01 042 0	1056			
							672-674	0530 HP	0 - 3
							672-688	0529 HP	1 - 17
							686-701	0528 HP	15 - 30
							699-714	0527 HP	28 - 43
							712-728	0526 HP	41 - 57
							726-741	0525 HP	55 - 70
							739-755	0524 HP	68 - 84
							753-768	0523 HP	82 - 100
			Woomera	060	06 01 060 0	1589			
			Madrid	042	08 01 042 0	1556			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. _ OF _	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-9.2A	190-80mm	7 of 16	Woomera	059	05 01 059 0	1088			
							931-919	1258 MF	0 - 43
							921-905	1259 MF	37 - 90
							907-902	1260 MF	83 - 100
	190-80mm	7 of 16	Madrid	043	07 01 043 0	1055			
							931-918	0518 MP	0 - 47
							920-905	0519 MP	40 - 90
							907-902	0520 MP	83 - 100
			Woomera	059	06 01 059 0	1588			
			Madrid	043	08 01 043 0	1555			
	191-610mm	8 of 16	Woomera	060	05 01 060 0	1089			
							803-815	1268 HF	0 - 13
							813-829	1267 HF	11 - 27
							827-842	1266 HF	25 - 40
							840-856	1265 HF	38 - 54
							854-869	1264 HF	52 - 67
							867-882	1263 HF	65 - 80
							880-896	1262 HF	78 - 94
			Woomera	059	05 01 059 0	1088			
							897-899	1261 HF	95 - 100
			Goldstone	044	03 01 044 0	1054			
							803-806	0496 HP	0 - 4
							804-817	0495 HP	2 - 15
							815-831	0494 HP	13 - 29
							829-844	0493 HP	27 - 42
							842-858	0492 HP	40 - 56
							856-871	0491 HP	54 - 69
							869-884	0490 HP	67 - 82
							882-897	0489 HP	80 - 95
			Madrid	043	07 01 043 0	1055			
							898-899	0521 HP	96 - 100
			Woomera	060	06 01 060 0	1589			
			Woomera	059	06 01 060 0	1588			
			Goldstone	044	04 01 044 0	1554			
			Madrid	043	08 01 043 0	1555			
	191-80mm	8 of 16	Woomera	059	05 01 059 0	1088			
							062-048	1247 MF	0 - 50
							050-035	1248 MF	43 - 93
							037-033	1249 MF	87 - 100
			Woomera	059	06 01 059 0	1588			
	192-610mm	9 of 16	Woomera	059	05 01 059 0	1088			
							933-939	1257 HF	0 - 7
							937-952	1256 HF	5 - 20
							950-965	1255 HF	18 - 33
							963-979	1254 HF	31 - 47
							977-992	1253 HF	45 - 60
							990-006	1252 HF	58 - 74
							004-019	1251 HF	72 - 87
							017-030	1250 HF	85 - 100
			Madrid	043	07 01 043 0	1055			
							933-938	0517 HP	0 - 6
							936-949	0516 HP	4 - 17
							947-963	0515 HP	15 - 31
							961-976	0514 HP	29 - 44
							974-990	0513 HP	42 - 58
							988-003	0512 HP	56 - 71
							001-016	0511 HP	69 - 84
							014-028	0510 HP	82 - 96
			Woomera	059	06 01 059 0	1588			
			Madrid	043	08 01 043 0	1555			
	192-80mm	9 of 16	Woomera	059	05 01 059 0	1088			
							193-180	1236 MF	0 - 47
							182-167	1237 MF	40 - 90
							169-164	1238 MF	83 - 100
			Woomera	059	06 01 059 0	1588			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-9.2A	193-610mm	10 of 16	Woomera	059	05 01 059 0	1088			
							065-070	1246 HF	0 - 6
							068-084	1245 HF	4 - 20
							082-097	1244 HF	18 - 33
							095-111	1243 HF	31 - 47
							109-124	1242 HF	45 - 60
							122-138	1241 HF	58 - 74
							136-151	1240 HF	72 - 87
							149-161	1239 HF	85 - 100
			Woomera	059	06 01 059 0	1588			
	193-80mm	10 of 16	Woomera	058	06 01 058 0	1087			
							324-310	1224 MF	0 - 52
							312-297	1225 MF	45 - 97
							299-296	1226 MF	90 - 100
			Woomera	058	05 01 058 0	1587			
	194-610mm	11 of 16	Woomera	059	05 01 059 0	1088			
							194-202	1235 HF	0 - 9
							200-210	1234 HF	7 - 17
			Woomera	058	06 01 058 0	1087			
							212-218	1233 HF	15 - 25
							216-227	1232 HF	23 - 34
							225-240	1231 HF	32 - 47
							238-254	1230 HF	45 - 61
							252-267	1229 HF	59 - 74
							265-281	1228 HF	72 - 88
							279-292	1227 HF	86 - 100
			Woomera	059	06 01 059 0	1588			
			Woomera	058	05 01 058 0	1587			
	194-80mm	11 of 16	Woomera	058	06 01 058 0	1087			
							455-442	1213 MF	0 - 47
							444-428	1214 MF	40 - 93
							430-426	1215 MF	87 - 100
			Woomera	058	05 01 058 0	1587			
	195-610mm	12 of 16	Woomera	058	06 01 058 0	1087			
							326-332	1223 HF	0 - 7
							330-345	1222 HF	5 - 20
							343-359	1221 HF	18 - 34
							357-372	1220 HF	32 - 47
							370-386	1219 HF	45 - 61
							384-399	1218 HF	59 - 74
							397-413	1217 HF	72 - 88
							411-423	1216 HF	86 - 100
			Woomera	058	05 01 058 0	1587			
	195-80mm	12 of 16	Goldstone	057	03 01 057 0	1070			
							585-574	0739 MF	0 - 41
							576-560	0740 MF	34 - 90
							562-557	0741 MF	83 - 100
			Goldstone	057	04 01 057 0	1570			
	196-610mm	13 of 16	Woomera	058	06 01 058 0	1087			
							458-468	1212 HF	0 - 11
							466-482	1211 HF	9 - 25
							480-495	1210 HF	23 - 38
							493-508	1209 HF	36 - 51
			Goldstone	057	03 01 057 0	1070			
							509-515	0745 HF	52 - 58
							513-529	0744 HF	56 - 72
							527-542	0743 HF	70 - 85
							540-555	0742 HF	83 - 100
			Woomera	058	05 01 058 0	1587			
			Goldstone	057	04 01 057 0	1570			
	196-80mm	13 of 16	Goldstone	057	03 01 057 0	1070			
							718-706	0728 MF	0 - 43
							706-692	0729 MF	43 - 90
							694-689	0730 MF	83 - 100
			Goldstone	057	04 01 057 0	1570			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-9.2A	197-610mm	14 of 16	Goldstone	057	03 01 057 0	1070			
							589-593	0738 HF	0 - 3
							591-607	0737 HF	1 - 17
							605-620	0736 HF	15 - 30
							618-634	0735 HF	28 - 44
							632-647	0734 HF	42 - 57
							645-661	0733 HF	55 - 71
							659-674	0732 HF	69 - 84
							672-686	0731 HF	82 - 100
			Goldstone	057	04 01 057 0	1570			
	197-80mm	14 of 16	Goldstone	056	03 01 056 0	1062			
							848-835	0671 MF	0 - 48
							837-822	0672 MF	41 - 93
							824-820	0673 MF	86 - 100
			Goldstone	056	04 01 056 0	1562			
	198-610mm	15 of 16	Goldstone	057	03 01 057 0	1070			
							720-735	0727 HF	0 - 16
							733-748	0726 HF	14 - 29
							746-761	0725 HF	27 - 42
							759-775	0724 HF	40 - 66
							773-788	0723 HF	65 - 79
							786-802	0722 HF	77 - 83
							800-814	0721 HF	81 - 95
			Goldstone	056	03 01 056 0	1062			
							815-817	0674 HF	96 - 100
			Goldstone	057	04 01 057 0	1570			
			Goldstone	056	04 01 056 0	1562			
	198-80mm	15 of 16	Goldstone	056	03 01 056 0	1062			
							980-967	0660 MF	0 - 47
							969-954	0661 MF	40 - 90
							956-951	0662 MF	83 - 100
			Goldstone	056	04 01 056 0	1562			
	199-610mm	16 of 16	Goldstone	056	03 01 056 0	1062			
							851-855	0670 HF	0 - 5
							853-869	0669 HF	3 - 19
							866-882	0668 HF	16 - 32
							880-895	0667 HF	30 - 45
							893-909	0666 HF	43 - 59
							907-922	0665 HF	57 - 72
							920-936	0664 HF	70 - 86
							934-948	0663 HF	84 - 100
			Goldstone	056	04 01 056 0	1562			
	199-80mm	16 of 16	Goldstone	056	03 01 056 0	1062			
							109-097	0649 MF	0 - 47
							099-088	0650 MF	39 - 79
							090-082	0651 MF	72 - 100
			Goldstone	056	04 01 056 0	1562			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-8.1	176-610mm	1 of 8	Madrid	067	07 01 067 0	1074			
							834-838	0879 HF	0 - 5
			Woomera	066	05 01 066 0	1091			
							839-852	1333 HF	6 - 19
							850-865	1332 HF	17 - 32
							863-879	1331 HF	30 - 46
							877-892	1330 HF	44 - 59
							890-906	1329 HF	57 - 73
							904-919	1328 HF	71 - 86
							917-930	1327 HF	84 - 100
			Madrid	067	08 01 067 0	1574			
			Woomera	066	06 01 066 0	1591			
	176-80mm	1 of 8	Woomera	066	05 01 066 0	1091			
							093-083	1313 MF	0 - 37
							085-069	1314 MF	30 - 83
							071-064	1315 MF	77 - 100
			Woomera	066	06 01 066 0	1591			
	177-610mm	2 of 8	Woomera	066	05 01 066 0	1091			
							964-968	1323 HF	0 - 5
							966-982	1322 HF	3 - 19
							980-995	1321 HF	17 - 32
							993-009	1320 HF	30 - 46
							007-022	1319 HF	44 - 59
							020-035	1318 HF	57 - 72
							033-049	1317 HF	70 - 86
							047-060	1316 HF	84 - 100
			Woomera	066	06 01 066 0	1591			
	177-80mm	2 of 8	Woomera	065	06 01 065 0	1090			
							223-212	1302 MF	0 - 41
							214-199	1303 MF	34 - 86
							201-195	1304 MF	79 - 100
			Woomera	065	05 01 065 0	1590			
	178-610mm	3 of 8	Woomera	066	05 01 066 0	1091			
							098-107	1312 HF	0 - 10
							105-120	1311 HF	8 - 23
							118-134	1310 HF	21 - 37
							132-146	1309 HF	35 - 49
			Woomera	065	06 01 065 0	1090			
							147-154	1308 HF	50 - 57
							152-167	1307 HF	55 - 70
							165-181	1306 HF	68 - 84
							179-194	1305 HF	82 - 100
			Woomera	066	06 01 066 0	1591			
			Woomera	065	05 01 065 0	1590			
	178-80mm	3 of 8	Woomera	065	06 01 065 0	1090			
							358-344	1291 MF	0 - 50
							346-331	1292 MF	43 - 93
							333-329	1293 MF	87 - 100
			Woomera	065	05 01 065 0	1590			
	179-610mm	4 of 8	Woomera	065	06 01 065 0	1090			
							229-235	1301 HF	0 - 7
							233-248	1300 HF	5 - 20
							246-261	1299 HF	18 - 33
							259-275	1298 HF	31 - 47
							273-288	1297 HF	45 - 60
							286-302	1296 HF	58 - 74
							300-315	1295 HF	72 - 87
							313-326	1294 HF	85 - 100
			Woomera	065	05 01 065 0	1590			
	179-80mm	4 of 8	Goldstone	064	03 01 064 0	1069			
							488-476	0717 MF	0 - 45
							478-463	0718 MF	38 - 90
							465-460	0719 MF	83 - 100
			Goldstone	064	04 01 064 0	1569			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. _OF_	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-8.1	180-610mm	5 of 8	Woomera	065	06 01 065 0	1090			
							361-373	1290 HF	0 - 13
							371-387	1289 HF	11 - 27
							385-400	1288 HF	25 - 40
							398-413	1287 HF	38 - 53
							411-427	1286 HF	51 - 67
							425-440	1285 HF	65 - 80
							438-454	1284 HF	78 - 94
			Goldstone	064	03 01 064 0	1069			
							456-457	0720 HF	96 - 100
			Woomera	065	05 01 065 0	1590			
			Goldstone	064	04 01 064 0	1569			
	180-80mm	5 of 8	Goldstone	064	03 01 064 0	1069			
							620-606	0706 MF	0 - 50
							608-593	0707 MF	43 - 93
							595-591	0708 MF	87 - 100
			Goldstone	064	04 01 064 0	1569			
	181-610mm	6 of 8	Goldstone	064	03 01 064 0	1069			
							492-496	0716 HF	0 - 5
							494-510	0715 HF	3 - 19
							508-523	0714 HF	17 - 32
							521-536	0713 HF	30 - 45
							534-550	0712 HF	43 - 59
							548-563	0711 HF	57 - 72
							561-577	0710 HF	70 - 86
							575-587	0709 HF	84 - 100
			Goldstone	064	04 01 064 0	1569			
	181-80mm	6 of 8	Goldstone	064	03 01 064 0	1069			
							751-738	0695 MF	0 - 47
							740-725	0696 MF	40 - 90
							727-722	0697 MF	83 - 100
			Goldstone	064	04 01 064 0	1569			
	182-610mm	7 of 8	Goldstone	064	03 01 064 0	1069			
							622-626	0705 HF	0 - 5
							624-639	0704 HF	3 - 18
							637-653	0703 HF	16 - 32
							651-666	0702 HF	30 - 45
							664-680	0701 HF	43 - 59
							678-693	0700 HF	57 - 72
							693-708	0699 HF	72 - 87
							706-718	0698 HF	85 - 100
			Goldstone	064	04 01 064 0	1569			
	182-80mm	7 of 8	Goldstone	063	03 01 063 0	1068			
							881-867	0796 MF	0 - 50
							869-854	0797 MF	43 - 93
							856-852	0798 MF	87 - 100
			Goldstone	063	04 01 063 0	1568			
	183-610mm	8 of 8	Goldstone	063	03 01 063 0	1068			
							760-771	0805 HF	0 - 11
							769-785	0804 HF	9 - 26
							783-798	0803 HF	24 - 39
							796-811	0802 HF	37 - 52
							809-825	0801 HF	50 - 66
							823-838	0800 HF	64 - 77
							836-850	0799 HF	75 - 100
			Goldstone	063	04 01 063 0	1568			
	183-80mm	8 of 8	Goldstone	063	03 01 063 0	1068			
							013-999	0785 MF	0 - 50
							001-986	0786 MF	43 - 93
							988-984	0787 MF	87 - 100
			Goldstone	063	04 01 063 0	1568			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. _ OF _	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-7	157-610mm	1 of 16	Madrid	075	07 01 075 0	1079			
							345-359	1009 HF	0 - 15
			Madrid	074	07 01 074 0	1078			
							361-365	1008 HF	17 - 21
							363-378	1007 HF	19 - 34
							376-392	1006 HF	32 - 48
							390-405	1005 HF	46 - 61
							403-419	1004 HF	59 - 75
							417-432	1003 HF	73 - 88
							430-444	1002 HF	86 - 100
			Madrid	075	08 01 075 0	1579			
			Madrid	074	08 01 074 0	1578			
	157-80mm	1 of 16	Madrid	074	07 01 074 0	1078			
							607-593	0988 MF	0 - 50
							595-580	0989 MF	43 - 93
							582-578	0990 MF	87 - 100
			Madrid	074	08 01 074 0	1578			
	158-610mm	2 of 16	Madrid	074	07 01 074 0	1078			
							478-483	0998 HF	0 - 6
							481-497	0997 HF	4 - 20
							495-510	0996 HF	18 - 33
							508-524	0995 HF	31 - 47
							522-537	0994 HF	45 - 60
							535-551	0993 HF	58 - 74
							549-564	0992 HF	72 - 87
							562-574	0991 HF	85 - 100
			Madrid	074	08 01 074 0	1578			
	158-80mm	2 of 16	Woomera	073	06 01 073 0	1093			
							737-725	1403 MF	0 - 43
							727-712	1404 MF	37 - 87
							714-708	1405 MF	80 - 100
			Woomera	073	05 01 073 0	1593			
	159-610mm	3 of 16	Madrid	074	07 01 074 0	1078			
							610-613	0987 HF	0 - 4
							611-627	0986 HF	2 - 18
							625-640	0985 HF	16 - 31
							638-653	0984 HF	29 - 44
			Woomera	073	06 01 073 0	1093			
							654-667	1409 HF	45 - 58
							665-680	1408 HF	56 - 71
							678-694	1407 HF	69 - 85
							692-706	1406 HF	83 - 100
			Madrid	074	08 01 074 0	1578			
			Woomera	073	05 01 073 0	1593			
	159-80mm	3 of 16	Woomera	073	06 01 073 0	1093			
							869-855	1392 MF	0 - 50
							857-841	1393 MF	43 - 97
							843-840	1394 MF	90 - 100
			Woomera	073	05 01 073 0	1593			
	160-610mm	4 of 16	Woomera	073	06 01 073 0	1093			
							741-745	1402 HF	0 - 5
							743-759	1401 HF	3 - 19
							757-772	1400 HF	17 - 32
							770-785	1399 HF	30 - 45
							783-799	1398 HF	43 - 59
							797-812	1397 HF	57 - 72
							810-826	1396 HF	70 - 86
							824-837	1395 HF	84 - 100
			Woomera	073	05 01 073 0	1593			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. OF	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-7	160-80mm	4 of 16	Woomera	072	05 01 072 0	1092			
							000-987	1356 MF	0 - 48
							989-980	1357 MF	41 - 72
			Woomera	073	06 01 073 0	1093			
							979-971	1383 MF	76 - 100
			Goldstone	041	03 01 041 0	1045			
							000-988	0396 MP	0 - 45
							990-974	0397 MP	38 - 93
							976-972	0464 MP	86 - 97
			Woomera	072	06 01 072 0	1592			
			Woomera	073	05 01 073 0	1593			
			Goldstone	041	04 01 041 0	1545			
	161-610mm	5 of 16	Woomera	073	06 01 073 0	1093			
							871-884	1391 HF	0 - 14
							882-897	1390 HF	12 - 27
							895-908	1389 HF	25 - 38
							906-922	1388 HF	36 - 52
							920-933	1387 HF	50 - 63
							931-944	1386 HF	61 - 74
							942-958	1385 HF	72 - 88
							956-968	1384 HF	86 - 100
			Woomera	073	05 01 073 0	1593			
	161-80mm	5 of 16	Woomera	072	05 01 072 0	1092			
							131-117	1345 MF	0 - 50
							119-103	1346 MF	43 - 97
							105-102	1347 MF	90 - 100
			Goldstone	041	03 01 041 0	1045			
							105-102	0387 MP	90 - 100
			Woomera	072	06 01 072 0	1592			
			Goldstone	041	04 01 041 0	1545			
	162-610mm	6 of 16	Woomera	072	05 01 072 0	1092			
							002-007	1355 HF	0 - 6
							005-020	1354 HF	4 - 19
							018-034	1353 HF	17 - 33
							032-047	1352 HF	31 - 46
							045-060	1351 HF	44 - 59
							058-074	1350 HF	57 - 73
							072-087	1349 HF	71 - 86
							085-098	1348 HF	84 - 100
			Goldstone	041	03 01 041 0	1045			
							002-008	0395 HP	0 - 7
							006-021	0394 HP	5 - 20
							019-035	0393 HP	18 - 34
							033-048	0392 HP	32 - 47
							046-061	0391 HP	45 - 60
							059-075	0390 HP	58 - 74
							073-088	0389 HP	72 - 87
							086-098	0388 HP	85 - 100
			Woomera	072	06 01 072 0	1592			
			Goldstone	041	04 01 041 0	1545			
	162-80mm	6 of 16	Woomera	072	05 01 072 0	1092			
							261-251	1334 MF	0 - 37
							253-237	1335 MF	30 - 83
							239-232	1336 MF	77 - 100
			Woomera	072	06 01 072 0	1592			
	163-610mm	7 of 16	Woomera	072	05 01 072 0	1092			
							133-137	1344 HF	0 - 5
							135-150	1343 HF	3 - 18
							148-163	1342 HF	16 - 31
							161-177	1341 HF	29 - 45
							175-190	1340 HF	43 - 58
							188-204	1339 HF	56 - 72
							202-217	1338 HF	70 - 85
							215-229	1337 HF	83 - 100
			Woomera	072	06 01 072 0	1592			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO._OF_	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
1-7	163-80mm	7 of 16	Goldstone	071	03 01 071 0	1076			
							392-378	0949 MF	0 - 50
							380-365	0950 MF	43 - 93
							367-363	0951 MF	87 - 100
			Goldstone	071	04 01 071 0	1576			
	164-610mm	8 of 16	Goldstone	071	03 01 071 0	1076			
							269-282	0958 HF	0 - 14
							280-295	0957 HF	12 - 27
							293-309	0956 HF	25 - 41
							307-322	0955 HF	39 - 54
							320-335	0954 HF	52 - 67
							333-349	0953 HF	65 - 81
							347-361	0952 HF	79 - 100
			Goldstone	071	04 01 071 0	1576			
	164-80mm	8 of 16	Goldstone	071	03 01 071 0	1076			
							523-510	0938 MF	0 - 48
							512-497	0939 MF	41 - 93
							499-495	0940 MF	86 - 100
			Goldstone	071	04 01 071 0	1576			
	165-610mm	9 of 16	Goldstone	071	03 01 071 0	1076			
							395-400	0948 HF	0 - 6
							398-414	0947 HF	4 - 20
							412-427	0946 HF	18 - 33
							425-441	0945 HF	31 - 47
							439-454	0944 HF	45 - 60
							452-467	0943 HF	58 - 73
							465-481	0942 HF	71 - 87
							479-492	0941 HF	85 - 100
			Goldstone	071	04 01 071 0	1576			
	165-80mm	9 of 16	Goldstone	070	03 01 070 0	1071			
							654-642	0825 MF	0 - 45
							644-629	0826 MF	38 - 90
							631-626	0827 MF	83 - 100
			Goldstone	070	04 01 070 0	1571			
	166-610mm	10 of 16	Goldstone	071	03 01 071 0	1076			
							526-532	0937 HF	0 - 7
							530-541	0936 HF	5 - 16
							539-555	0935 HF	14 - 30
							553-568	0934 HF	28 - 43
							566-581	0933 HF	41 - 56
			Goldstone	070	03 01 070 0	1071			
							582-591	0831 HF	57 - 66
							589-597	0830 HF	64 - 72
							595-611	0829 HF	70 - 86
							609-623	0828 HF	84 - 100
			Goldstone	071	04 01 071 0	1576			
			Goldstone	070	04 01 070 0	1571			
	166-80mm	10 of 16	Goldstone	070	03 01 070 0	1071			
							785-772	0814 MF	0 - 48
							774-758	0815 MF	41 - 97
							760-757	0816 MF	90 - 100
			Goldstone	070	04 01 070 0	1571			
	167-610mm	11 of 16	Goldstone	070	03 01 070 0	1071			
							658-662	0824 HF	0 - 5
							660-675	0823 HF	3 - 18
							673-689	0822 HF	16 - 32
							687-702	0821 HF	30 - 45
							700-716	0820 HF	43 - 59
							714-729	0819 HF	57 - 72
							727-743	0818 HF	70 - 86
							741-754	0817 HF	84 - 100
			Goldstone	070	04 01 070 0	1571			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO.__OF__	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-7	167-80mm	11 of 16	Madrid	069	07 01 069 0	1077			
							917-904	0982 MF	0 - 47
							906-895	0983 MF	40 - 77
			Goldstone	070	03 01 070 0	1071			
							894-888	0806 MF	80 - 100
			Madrid	069	08 01 069 0	1577			
			Goldstone	070	04 01 070 0	1571			
	168-610mm	12 of 16	Goldstone	070	03 01 070 0	1071			
							789-794	0813 HF	0 - 6
							792-807	0812 HF	4 - 19
							805-821	0811 HF	17 - 33
							819-834	0810 HF	31 - 46
							832-848	0809 HF	44 - 60
							846-861	0808 HF	58 - 73
							859-875	1137 HF	71 - 87
							873-886	0807 HF	85 - 100
			Goldstone	070	04 01 070 0	1571			
	168-80mm	12 of 16	Madrid	069	07 01 069 0	1077			
							048-036	0971 MF	0 - 45
							038-022	0972 MF	38 - 93
							024-020	0973 MF	86 - 100
			Madrid	069	08 01 069 0	1577			
	169-610mm	13 of 16	Madrid	069	07 01 069 0	1077			
							920-924	0981 HF	0 - 5
							922-937	0980 HF	3 - 18
							935-951	0979 HF	16 - 32
							949-964	0978 HF	30 - 45
							962-978	0977 HF	43 - 59
							976-991	0976 HF	57 - 72
							989-004	0975 HF	70 - 85
							002-016	0974 HF	83 - 100
			Madrid	069	08 01 069 0	1577			
	169-80mm	13 of 16	Madrid	069	07 01 069 0	1077			
							179-168	0960 MF	0 - 41
							170-154	0961 MF	34 - 90
							156-151	0962 MF	83 - 100
			Madrid	069	08 01 069 0	1577			
	170-610mm	14 of 16	Madrid	069	07 01 069 0	1077			
							051-056	0970 HF	0 - 6
							054-069	0969 HF	4 - 19
							067-083	0968 HF	17 - 33
							081-096	0967 HF	31 - 46
							094-109	0966 HF	44 - 59
							107-123	0965 HF	57 - 73
							121-136	0964 HF	71 - 86
							134-147	0963 HF	84 - 100
			Madrid	069	08 01 069 0	1577			
	170-80mm	14 of 16	Madrid	068	07 01 068 0	1075			
							310-298	0924 MF	0 - 43
							300-284	0925 MF	37 - 90
							286-281	0926 MF	83 - 100
			Madrid	068	08 01 068 0	1575			
	171-610mm	15 of 16	Madrid	069	07 01 069 0	1077			
							183-194	0959 HF	0 - 12
							192-207	0958 HF	10 - 25
			Madrid	068	07 01 068 0	1075			
							208-215	0932 HF	26 - 33
							213-228	0931 HF	31 - 46
							226-241	0930 HF	44 - 59
							239-255	0929 HF	57 - 73
							253-268	0928 HF	71 - 86
							266-279	0927 HF	84 - 100
			Madrid	069	08 01 069 0	1577			
			Madrid	068	08 01 068 0	1575			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. _OF_	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
1-7	171-80mm	15 of 16	Madrid	068	07 01 068 0	1075			
							442-430	0913 MF	0 - 39
							432-416	0914 MF	32 - 89
							418-413	0915 MF	82 - 100
			Madrid	068	08 01 068 0	1575			
	172-610mm	16 of 16	Madrid	068	07 01 068 0	1075			
							315-320	0923 HF	0 - 6
							318-333	0922 HF	4 - 19
							331-347	0921 HF	17 - 33
							345-360	0920 HF	31 - 46
							358-373	0919 HF	44 - 59
							371-387	0918 HF	57 - 73
							385-400	0917 HF	71 - 86
							398-411	0916 HF	84 - 100
			Madrid	068	08 01 068 0	1575			
	172-80mm	16 of 16	Madrid	067	07 01 067 0	1074			
							574-561	0902 MF	0 - 47
							563-548	0903 MF	40 - 90
							550-545	0904 MF	83 - 100
			Madrid	067	08 01 067 0	1574			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. OF	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-6	141-610mm	1 of 8	Madrid	081	08 01 081 0	1101			
							248-253	1565 HF	0 - 6
							251-267	1564 HF	4 - 20
							265-280	1563 HF	18 - 33
							278-294	1562 HF	31 - 47
							292-307	1561 HF	45 - 60
							305-321	1560 HF	58 - 74
							319-334	1559 HF	72 - 87
							332-344	1558 HF	85 - 100
			Madrid	081	07 01 081 0	1601			
	141-80mm	1 of 8	Madrid	081	08 01 081 0	1101			
							507-493	1544 MF	0 - 50
							495-480	1545 MF	43 - 94
							482-478	1546 MF	87 - 100
			Madrid	081	07 01 081 0	1601			
	142-610mm	2 of 8	Madrid	081	08 01 081 0	1101			
							379-383	1554 HF	0 - 5
							381-397	1553 HF	3 - 19
							395-410	1552 HF	17 - 32
							408-423	1551 HF	30 - 45
							421-437	1550 HF	43 - 59
							435-450	1549 HF	57 - 72
							448-464	1548 HF	70 - 86
							462-476	1547 HF	84 - 100
			Madrid	081	07 01 081 0	1601			
	142-80mm	2 of 8	Madrid	080	07 01 080 0	1080			
							639-625	1051 MF	0 - 50
							625-612	1052 MF	50 - 94
							614-610	1053 MF	87 - 100
			Madrid	080	08 01 080 0	1580			
	143-610mm	3 of 8	Madrid	081	08 01 081 0	1101			
							510-515	1543 HF	0 - 6
							513-528	1542 HF	4 - 19
			Madrid	080	07 01 080 0	1080			
							529-542	1059 HF	20 - 33
							540-556	1058 HF	31 - 47
							554-569	1057 HF	45 - 60
							567-582	1056 HF	58 - 73
							580-596	1055 HF	71 - 87
							594-607	1054 HF	85 - 100
			Madrid	081	07 01 081 0	1601			
			Madrid	080	08 01 080 0	1580			
	143-80mm	3 of 8	Madrid	080	07 01 080 0	1080			
							769-757	1040 MF	0 - 45
							759-744	1041 MF	38 - 90
							746-741	1042 MF	83 - 100
			Madrid	080	08 01 080 0	1580			
	144-610mm	4 of 8	Madrid	080	07 01 080 0	1080			
							642-647	1050 HF	0 - 6
							645-661	1049 HF	4 - 20
							659-674	1048 HF	18 - 33
							672-687	1047 HF	31 - 46
							685-701	1046 HF	44 - 60
							699-714	1045 HF	58 - 73
							712-728	1044 HF	71 - 87
							726-738	1043 HF	85 - 100
			Madrid	080	08 01 080 0	1580			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-6	144-80mm	4 of 8	Woomera	079	05 01 079 0	1031			
							901-887	1454 MF	0 - 50
							889-873	1455 MF	43 - 97
							875-872	1456 MF	90 - 100
			Woomera	040	06 01 040 0	1053			
							898-885	0478 MP	13 - 57
							887-876	0479 MP	50 - 87
							878-872	0480 MP	80 - 100
			Woomera	079	06 01 079 0	1531			
			Woomera	040	05 01 040 0	1553			
	145-610mm	5 of 8	Madrid	080	07 01 080 0	1080			
							770-781	1039 HF	0 - 12
							779-790	1038 HF	10 - 21
							788-802	1037 HF	19 - 33
							799-814	1036 HF	30 - 45
			Woomera	079	05 01 079 0	1031			
							815-822	1461 HF	46 - 53
							820-830	1460 HF	51 - 61
							828-844	1459 HF	59 - 75
							842-857	1458 HF	73 - 88
							855-870	1457 HF	86 - 100
			Woomera	040	06 01 040 0	1053			
							773-777	0488 HP	4 - 8
							775-790	0487 HP	6 - 21
							788-804	0486 HP	19 - 35
							802-817	0485 HP	33 - 48
							815-831	0484 HP	46 - 62
							829-844	0483 HP	60 - 75
							842-857	0482 HP	73 - 88
							855-870	0481 HP	86 - 100
			Madrid	080	08 01 080 0	1580			
			Woomera	079	06 01 079 0	1531			
			Woomera	040	05 01 040 0	1553			
	145-80mm	5 of 8	Woomera	079	05 01 079 0	1031			
							033-021	1443 MF	0 - 43
							023-007	1444 MF	37 - 90
							009-004	1445 MF	83 - 100
			Woomera	079	06 01 079 0	1531			
	146-610mm	6 of 8	Woomera	079	05 01 079 0	1031			
							904-909	1453 HF	0 - 6
							907-922	1452 HF	4 - 19
							920-936	1451 HF	17 - 33
							934-949	1450 HF	32 - 46
							947-962	1449 HF	44 - 59
							960-976	1448 HF	57 - 73
							974-989	1447 HF	71 - 86
							987-000	1446 HF	84 - 100
			Woomera	079	06 01 079 0	1531			
	146-80mm	6 of 8	Woomera	078	06 01 078 0	1029			
							163-151	1432 MF	0 - 43
							153-137	1433 MF	37 - 90
							139-134	1434 MF	83 - 100
			Woomera	078	05 01 078 0	1529			
	147-610mm	7 of 8	Woomera	079	05 01 079 0	1031			
							037-050	1442 HF	0 - 14
							048-063	1441 HF	12 - 27
							061-077	1440 HF	25 - 41
							075-090	1439 HF	39 - 54
							088-103	1438 HF	52 - 67
							101-116	1437 HF	65 - 80
			Woomera	078	06 01 078 0	1029			
							117-121	1436 HF	81 - 85
							119-133	1435 HF	83 - 100
			Woomera	079	06 01 079 0	1531			
			Woomera	078	05 01 078 0	1529			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-6	147-80mm	7 of 8	Woomera	078	06 01 078 0	1029			
							296-283	1421 MF	0 - 47
							285-269	1422 MF	40 - 87
							271-267	1423 MF	80 - 100
			Woomera	078	05 01 078 0	1529			
	148-610mm	8 of 8	Woomera	078	06 01 078 0	1029			
							169-173	1431 HF	0 - 5
							171-186	1430 HF	3 - 18
							184-200	1429 HF	16 - 32
							198-213	1428 HF	30 - 45
							211-226	1427 HF	43 - 58
							224-240	1426 HF	56 - 72
							238-253	1425 HF	70 - 85
							251-265	1424 HF	83 - 100
			Woomera	078	05 01 078 0	1529			
	148-80mm	8 of 8	Woomera	078	06 01 078 0	1029			
							428-414	1410 MF	0 - 52
							416-401	1411 MF	45 - 97
							403-400	1412 MF	90 - 100
			Woomera	078	05 01 078 0	1529			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. _ OF _	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-5	118-610mm	1 of 16	Woomera	091	05 01 091 0	1104			
							236-241	1371 HF	0 - 6
							239-254	1370 HF	4 - 19
							252-268	1369 HF	17 - 33
							266-281	1368 HF	31 - 46
							279-294	1367 HF	44 - 59
							292-308	1366 HF	57 - 73
							306-321	1365 HF	71 - 86
							319-334	1364 HF	84 - 100
			Woomera	091	06 01 091 0	1604			
	118-80mm	1 of 16	Goldstone	090	03 01 090 0	1094			
							495-482	1481 MF	0 - 48
							484-469	1482 MF	41 - 93
							471-467	1483 MF	86 - 100
			Goldstone	090	04 01 090 0	1594			
	119-610mm	2 of 16	Woomera	091	05 01 091 0	1104			
							367-375	1360 HF	0 - 9
							373-388	1359 HF	7 - 22
							386-401	1358 HF	20 - 35
			Goldstone	090	03 01 090 0	1094			
							402-413	1488 HF	36 - 47
							411-426	1487 HF	49 - 60
							424-440	1486 HF	58 - 74
							438-453	1485 HF	72 - 87
							451-463	1484 HF	85 - 100
			Woomera	091	06 01 091 0	1604			
			Goldstone	090	04 01 090 0	1594			
	119-80mm	2 of 16	Goldstone	090	03 01 090 0	1094			
							626-614	1470 MF	0 - 43
							616-601	1471 MF	37 - 87
							603-597	1472 MF	80 - 100
			Goldstone	035	03 01 035 0	1038			
							626-614	0321 MP	0 - 43
							616-601	0322 MP	37 - 87
							603-597	0323 MP	80 - 100
			Goldstone	090	04 01 090 0	1594			
			Goldstone	035	04 01 035 0	1538			
	120-610mm	3 of 16	Goldstone	090	03 01 090 0	1094			
							499-502	1480 HF	0 - 4
							500-516	1479 HF	2 - 18
							514-529	1478 HF	16 - 31
							527-543	1477 HF	29 - 45
							541-556	1476 HF	43 - 58
							554-569	1475 HF	56 - 71
							567-583	1474 HF	69 - 85
							581-596	1473 HF	83 - 100
			Goldstone	035	03 01 035 0	1038			
							512-516	0330 HP	14 - 18
							514-529	0329 HP	16 - 31
							527-543	0328 HP	29 - 45
							541-556	0327 HP	43 - 58
							554-570	0326 HP	56 - 72
							568-583	0325 HP	70 - 85
							581-596	0324 HP	83 - 100
			Goldstone	090	04 01 090 0	1594			
			Goldstone	035	04 01 035 0	1538			
	120-80mm	3 of 16	Goldstone	089	04 01 089 0	1096			
							759-746	1672 MF	0 - 48
							748-735	1673 MF	41 - 86
							737-731	1674 MF	79 - 100
			Goldstone	089	08 01 089 0	1596			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. _ OF _	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-5	121-610mm	4 of 16	Goldstone	090	03 01 090 0	1094			
							630-637	1469 HF	0 - 8
							635-650	1468 HF	6 - 21
							648-663	1467 HF	19 - 34
							661-677	1466 HF	32 - 48
							675-690	1465 HF	46 - 61
							688-704	1464 HF	59 - 75
							702-717	1463 HF	73 - 88
							715-727	1462 HF	86 - 100
			Goldstone	035	03 01 035 0	1038			
							630-642	0320 HP	0 - 13
			Goldstone	090	04 01 090 0	1594			
			Goldstone	035	04 01 035 0	1538			
	121-80mm	4 of 16	Goldstone	089	04 01 089 0	1096			
							890-876	1660 MF	0 - 50
							878-863	1661 MF	43 - 93
							865-861	1662 MF	87 - 100
			Goldstone	036	03 01 036 0	1041			
							890-877	0332 MP	0 - 47
							879-864	0333 MP	40 - 90
							866-861	0334 MP	83 - 100
			Woomera	036	05 01 036 0	1051			
							890-877	0399 MP	0 - 47
							879-864	0400 MP	40 - 90
							866-861	0401 MP	83 - 100
			Goldstone	089	03 01 089 0	1596			
			Goldstone	036	04 01 036 0	1541			
			Woomera	036	06 01 036 0	1551			
	122-610mm	5 of 16	Goldstone	089	04 01 089 0	1096			
							762-766	1659 HF	0 - 5
							764-780	1658 HF	3 - 19
							778-793	1657 HF	17 - 32
							791-807	1656 HF	30 - 46
							805-820	1655 HF	44 - 59
							818-833	1654 HF	57 - 72
							831-847	1653 HF	70 - 86
							845-858	1652 HF	84 - 100
			Goldstone	036	03 01 036 0	1041			
							762-772	0342 HP	0 - 11
							770-779	0341 HP	9 - 18
							777-792	0340 HP	16 - 31
							790-805	0339 HP	29 - 44
							803-819	0338 HP	42 - 58
							817-832	0337 HP	56 - 71
							830-846	0336 HP	69 - 85
							844-858	0335 HP	83 - 100
			Woomera	036	05 01 036 0	1051			
							762-767	0409 HP	0 - 6
							765-781	0408 HP	4 - 20
							779-794	0407 HP	18 - 33
							792-808	0406 HP	31 - 47
							806-821	0405 HP	45 - 60
							819-834	0404 HP	58 - 73
							832-848	0403 HP	71 - 87
							846-858	0402 HP	85 - 100
			Goldstone	089	03 01 089 0	1596			
			Goldstone	036	04 01 036 0	1541			
			Woomera	036	06 01 036 0	1551			
	122-80mm	5 of 16	Goldstone	089	04 01 089 0	1096			
							021-008	1649 MF	0 - 47
							010-995	1650 MF	40 - 90
							997-992	1651 MF	83 - 100
			Goldstone	089	03 01 089 0	1596			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-5	123-610mm	6 of 16	Goldstone	089	04 01 089 0	1096			
							892-896	1659 HF	0 - 5
							894-909	1658 HF	3 - 18
							907-923	1657 HF	16 - 32
							921-936	1656 HF	30 - 45
							934-950	1655 HF	43 - 59
							948-963	1654 HF	57 - 72
							961-977	1653 HF	70 - 86
							975-988	1652 HF	84 - 100
			Goldstone	036	03 01 036 0	1041			
							892-893	0331 HP	0 - 2
			Woomera	036	05 01 036 0	1051			
							892-893	0398 HP	0 - 2
			Goldstone	089	03 01 089 0	1596			
			Goldstone	036	04 01 036 0	1541			
			Woomera	036	06 01 036 0	1551			
	123-80mm	6 of 16	Madrid	088	08 01 088 0	1103			
							151-138	1614 MF	0 - 47
							140-124	1615 MF	40 - 93
							126-122	1616 MF	82 - 100
			Woomera	037	05 01 037 0	1052			
							151-138	0442 MP	0 - 47
							140-124	0443 MP	40 - 93
							126-122	0444 MP	82 - 100
			Madrid	088	07 01 088 0	1603			
			Woomera	037	06 01 037 0	1552			
	124-610mm	7 of 16	Goldstone	089	04 01 089 0	1096			
							023-035	1648 HF	0 - 13
							033-048	1647 HF	11 - 26
							046-060	1646 HF	24 - 38
			Madrid	037	08 01 037 0	1103			
							062-068	1621 HF	40 - 46
							066-082	1620 HF	44 - 60
							080-095	1619 HF	58 - 73
							093-108	1618 HF	71 - 86
							106-120	1617 HF	84 - 100
			Woomera	037	05 01 037 0	1052			
							023-031	0452 HP	0 - 9
							029-040	0451 HP	7 - 18
							038-053	0450 HP	16 - 31
							051-067	0449 HP	29 - 45
							065-080	0448 HP	43 - 58
							078-093	0447 HP	56 - 71
							091-107	0446 HP	69 - 85
							105-120	0445 HP	83 - 100
			Goldstone	089	03 01 089 0	1596			
			Madrid	037	07 01 037 0	1603			
	124-80mm	7 of 16	Madrid	088	08 01 088 0	1103			
							282-270	1603 MF	0 - 45
							272-256	1604 MF	38 - 93
							258-254	1605 MF	86 - 100
			Madrid	088	07 01 088 0	1603			
	125-610mm	8 of 16	Madrid	088	08 01 088 0	1103			
							155-160	1613 HF	0 - 6
							158-173	1612 HF	4 - 19
							171-187	1611 HF	17 - 33
							185-200	1610 HF	31 - 46
							198-214	1609 HF	44 - 60
							212-227	1608 HF	58 - 73
							225-241	1607 HF	71 - 85
							239-251	1606 HF	83 - 100
			Madrid	088	07 01 088 0	1603			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-5	125-80mm	8 of 16	Madrid	087	08 01 087 0	1102			
							414-402	1592 MF	0 - 41
							404-388	1593 MF	35 - 90
							390-385	1594 MF	83 - 100
			Woomera	038	05 01 038 0	1050			
							414-400	0431 MP	0 - 49
							402-391	0432 MP	41 - 79
							393-385	0433 MP	72 - 100
			Madrid	087	07 01 087 0	1602			
			Woomera	038	06 01 038 0	1550			
	126-610mm	9 of 16	Madrid	088	08 01 088 0	1103			
							285-292	1602 HF	0 - 8
							290-305	1601 HF	6 - 21
							303-319	1600 HF	19 - 35
							317-332	1599 HF	33 - 48
							330-346	1598 HF	46 - 62
							344-358	1597 HF	60 - 74
			Madrid	087	08 01 087 0	1102			
							359-370	1596 HF	75 - 86
							368-381	1595 HF	84 - 100
			Woomera	038	05 01 038 0	1050			
							285-290	0441 HP	0 - 6
							288-303	0440 HP	4 - 19
							301-317	0439 HP	17 - 33
							315-330	0438 HP	31 - 46
							328-344	0437 HP	44 - 60
							342-357	0436 HP	58 - 73
							355-370	0435 HP	71 - 86
							368-381	0434 HP	84 - 100
			Madrid	088	08 01 088 0	1603			
			Madrid	087	08 01 087 0	1602			
			Woomera	038	06 01 038 0	1550			
	126-80mm	9 of 16	Madrid	087	08 01 087 0	1102			
							546-531	1581 MF	0 - 53
							533-518	1582 MF	47 - 97
							520-517	1583 MF	90 - 100
			Madrid	087	07 01 087 0	1602			
	127-610mm	10 of 16	Madrid	087	08 01 087 0	1102			
							418-422	1591 HF	0 - 5
							420-435	1590 HF	3 - 18
							433-449	1589 HF	16 - 32
							447-462	1588 HF	30 - 45
							460-475	1587 HF	43 - 58
							473-489	1586 HF	56 - 72
							487-502	1585 HF	70 - 85
							500-515	1584 HF	83 - 100
			Madrid	087	07 01 087 0	1602			
	127-80mm	10 of 16	Madrid	087	08 01 087 0	1102			
							676-661	1570 MF	0 - 57
							663-650	1571 MF	50 - 96
							652-649	1572 MF	89 - 100
			Madrid	087	07 01 087 0	1602			
	128-610mm	11 of 16	Madrid	087	08 01 087 0	1102			
							549-554	1580 HF	0 - 6
							552-567	1579 HF	4 - 19
							565-580	1578 HF	17 - 32
							578-594	1577 HF	30 - 46
							592-607	1576 HF	44 - 59
							605-621	1575 HF	57 - 73
							619-634	1574 HF	71 - 86
							632-645	1573 HF	84 - 100
			Madrid	087	07 01 087 0	1602			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-5	128-80mm	11 of 16	Woomera	086	05 01 086 0	1100			
							808-795	1530 MF	0 - 47
							797-782	1531 MF	40 - 90
							784-779	1532 MF	83 - 100
			Woomera	086	06 01 086 0	1600			
	129-610mm	12 of 16	Woomera	086	05 01 086 0	1100			
							680-683	1540 HF	0 - 4
							681-697	1539 HF	2 - 18
							695-710	1538 HF	16 - 31
							708-724	1537 HF	29 - 45
							722-737	1536 HF	43 - 58
							735-750	1535 HF	56 - 71
							748-764	1534 HF	69 - 85
							762-776	1533 HF	83 - 100
			Woomera	086	06 01 086 0	1600			
	129-80mm	12 of 16	Woomera	086	05 01 086 0	1100			
							939-925	1519 MF	0 - 50
							927-912	1520 MF	43 - 93
							914-910	1521 MF	87 - 100
			Madrid	039	07 01 039 0	1044			
							926-912	0378 MF	47 - 93
							914-910	0379 MF	87 - 100
			Woomera	086	06 01 086 0	1600			
			Madrid	039	08 01 039 0	1544			
	130-610mm	13 of 16	Woomera	086	05 01 086 0	1100			
							811-815	1529 HF	0 - 5
							813-829	1528 HF	3 - 19
							827-842	1527 HF	17 - 32
							840-856	1526 HF	30 - 46
							854-869	1525 HF	44 - 59
							867-882	1524 HF	42 - 72
							880-896	1523 HF	70 - 86
							894-908	1522 HF	84 - 100
			Madrid	039	07 01 039 0	1044			
							816-829	0386 HP	6 - 19
							827-842	0385 HP	17 - 32
							840-856	0384 HP	30 - 46
							854-869	0383 HP	44 - 59
							867-883	0382 HP	57 - 73
							881-896	0381 HP	71 - 85
							894-908	0380 HP	83 - 100
			Woomera	086	06 01 086 0	1600			
			Madrid	039	08 01 039 0	1544			
	130-80mm	13 of 16	Woomera	085	06 01 085 0	1099			
							070-057	1508 MF	0 - 48
							059-044	1509 MF	41 - 93
							046-042	1510 MF	86 - 100
			Woomera	085	05 01 085 0	1599			
	131-610mm	14 of 16	Woomera	086	05 01 086 0	1100			
							942-949	1518 HF	0 - 8
							947-963	1517 HF	6 - 22
							961-976	1516 HF	20 - 35
							974-989	1515 HF	33 - 48
			Woomera	085	06 01 085 0	1095			
							990-001	1514 HF	49 - 60
							999-014	1513 HF	58 - 73
							012-028	1512 HF	71 - 87
							026-039	1511 HF	85 - 100
			Woomera	086	06 01 086 0	1600			
			Woomera	085	05 01 085 0	1595			
	131-80mm	14 of 16	Woomera	085	06 01 085 0	1095			
							201-189	1497 MF	0 - 45
							191-176	1498 MF	38 - 90
							178-173	1499 MF	83 - 100
			Woomera	085	05 01 085 0	1595			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-5	132-610mm	15 of 16	Woomera	085	06 01 085 0	1095			
							074-079	1507 HF	0 - 6
							077-093	1506 HF	4 - 20
							091-106	1505 HF	18 - 33
							104-119	1504 HF	31 - 46
							117-133	1503 HF	44 - 60
							131-146	1502 HF	58 - 73
							144-160	1501 HF	71 - 87
							158-170	1500 HF	85 - 100
			Woomera	085	05 01 085 0	1595			
	132-80mm	15 of 16	Goldstone	084	04 01 084 0	1095			
							333-319	1643 MF	0 - 50
							321-305	1644 MF	43 - 97
							307-304	1645 MF	90 - 100
			Goldstone	084	03 01 084 0	1595			
	133-610mm	16 of 16	Woomera	085	06 01 085 0	1095			
							204-209	1496 HF	0 - 6
							207-222	1495 HF	4 - 19
							220-236	1494 HF	17 - 33
							234-249	1493 HF	31 - 46
							247-263	1492 HF	44 - 60
							261-276	1491 HF	58 - 73
							274-290	1490 HF	71 - 86
							288-300	1489 HF	84 - 100
			Woomera	085	05 01 085 0	1595			
	133-80mm	16 of 16	Goldstone	084	04 01 084 0	1095			
							463-451	1632 MF	0 - 43
							453-437	1633 MF	37 - 90
							439-434	1634 MF	83 - 100
			Goldstone	084	03 01 084 0	1595			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-4	105-610mm	1 of 8	Woomera	097	05 01 097 0	1106			
							533-538	1757 HF	0 - 6
							536-552	1756 HF	4 - 20
							550-565	1755 HF	18 - 33
							563-579	1754 HF	31 - 47
							577-592	1753 HF	45 - 60
							590-606	1752 HF	58 - 74
							604-619	1751 HF	72 - 87
							617-630	1750 HF	85 - 100
			Goldstone	030	03 01 030 0	1037			
							534-536	0265 HF	2 - 4
			Woomera	097	06 01 097 0	1606			
			Goldstone	030	04 01 030 0	1537			
	105-80mm	1 of 8	Goldstone	096	04 01 096 0	1098			
							794-780	1710 MF	0 - 50
							782-767	1711 MF	43 - 93
							769-765	1712 MF	87 - 100
			Goldstone	031	03 01 031 0	1035			
							794-781	0302 MP	0 - 47
							783-768	0303 MP	40 - 90
							770-765	0304 MP	83 - 100
			Goldstone	096	03 01 096 0	1598			
			Goldstone	031	04 01 031 0	1535			
	106-610mm	2 of 8	Woomera	097	05 01 097 0	1106			
							665-673	1746 HF	0 - 9
							671-685	1745 HF	7 - 21
			Goldstone	096	04 01 096 0	1098			
							686-695	1718 HF	22 - 31
							693-709	1717 HF	29 - 45
							707-722	1716 HF	43 - 58
							720-735	1715 HF	56 - 71
							733-749	1714 HF	69 - 85
							747-761	1713 HF	83 - 100
			Goldstone	031	03 01 031 0	1035			
							710-722	0308 HP	46 - 58
							720-736	0307 HP	56 - 72
							734-749	0306 HP	70 - 85
							747-761	0305 HP	83 - 100
			Woomera	097	06 01 097 0	1606			
			Goldstone	096	03 01 096 0	1598			
			Goldstone	031	04 01 031 0	1535			
	106-80mm	2 of 8	Goldstone	096	04 01 096 0	1098			
							924-912	1699 MF	0 - 43
							914-899	1700 MF	37 - 87
							901-895	1701 MF	80 - 100
			Goldstone	096	03 01 096 0	1598			
	107-610mm	3 of 8	Goldstone	096	04 01 096 0	1098			
							797-800	1709 HF	0 - 4
							798-813	1708 HF	2 - 17
							812-827	1707 HF	16 - 31
							825-841	1706 HF	29 - 45
							839-854	1705 HF	43 - 58
							852-867	1704 HF	56 - 71
							865-881	1703 HF	69 - 85
							879-893	1702 HF	83 - 100
			Goldstone	031	03 01 031 0	1035			
							791-802	0301 HP	0 - 6
			Goldstone	096	03 01 096 0	1598			
			Goldstone	031	04 01 031 0	1535			
	107-80mm	3 of 8	Goldstone	095	03 01 095 0	1097			
							056-044	1688 MF	0 - 43
							046-031	1689 MF	37 - 87
							033-027	1690 MF	80 - 100
			Goldstone	095	04 01 095 0	1597			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO._OF_	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-4	108-610 mm	4 of 8	Goldstone	096	04 01 096 0	1098			
							928-937	1698 HF	0 - 10
							935-949	1697 HF	8 - 22
			Goldstone	095	03 01 095 0	1097			
							950-959	1696 HF	23 - 32
							957-972	1695 HF	30 - 45
							970-986	1694 HF	43 - 59
							984-999	1693 HF	57 - 72
							997-013	1692 HF	70 - 86
							011-024	1691 HF	84 - 100
			Goldstone	096	03 01 096 0	1598			
			Goldstone	095	04 01 095 0	1597			
	108-80mm	4 of 8	Goldstone	095	03 01 095 0	1097			
							187-174	1677 MF	0 - 48
							176-161	1678 MF	41 - 93
							163-159	1679 MF	86 - 100
			Goldstone	095	04 01 095 0	1597			
	109-610mm	5 of 8	Goldstone	095	03 01 095 0	1097			
							060-064	1687 HF	0 - 5
							067-078	1686 HF	3 - 19
							076-091	1685 HF	17 - 32
							089-104	1684 HF	30 - 45
							102-118	1683 HF	43 - 59
							116-131	1682 HF	57 - 72
							129-145	1681 HF	70 - 86
							143-156	1680 HF	84 - 100
			Goldstone	095	04 01 095 0	1597			
	109-80mm	5 of 8	Madrid	094	07 01 094 0	1109			
							319-306	1813 MF	0 - 47
							308-292	1814 MF	40 - 93
							294-290	1815 MF	87 - 100
			Woomera	032	05 01 032 0	1048			
							319-306	0411 MP	0 - 47
							308-293	0412 MP	40 - 90
							295-290	0413 MP	83 - 100
			Madrid	094	08 01 094 0	1609			
			Woomera	032	06 01 032 0	1548			
	110-610mm	6 of 8	Goldstone	095	04 01 095 0	1097			
							191-201	1676 HF	0 - 11
							199-213	1675 HF	9 - 23
			Madrid	094	07 01 094 0	1109			
							214-223	1821 HF	24 - 33
							221-236	1820 HF	31 - 46
							234-250	1819 HF	44 - 60
							248-263	1818 HF	58 - 73
							261-277	1817 HF	71 - 87
							275-287	1816 HF	85 - 100
			Woomera	032	05 01 032 0	1048			
							197-208	0420 HP	7 - 18
							206-221	0419 HP	16 - 31
							219-235	0418 HP	29 - 45
							233-248	0417 HP	43 - 58
							246-261	0416 HP	56 - 71
							259-275	0415 HP	69 - 85
							273-287	0414 HP	83 - 100
			Goldstone	095	03 01 095 0	1597			
			Woomera	032	06 01 032 0	1548			
	110-80mm	6 of 8	Madrid	094	07 01 094 0	1109			
							450-436	1802 MF	0 - 50
							438-422	1803 MF	43 - 97
							424-421	1804 MF	90 - 100
			Madrid	094	08 01 094 0	1609			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. OF	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-4	111-610mm	7 of 8	Madrid	094	07 01 094 0	1109			
							321-326	1812 HF	0 - 6
							324-339	1811 HF	4 - 19
							337-353	1810 HF	17 - 33
							351-366	1809 HF	31 - 46
							364-379	1808 HF	44 - 59
							377-393	1807 HF	57 - 73
							391-406	1806 HF	71 - 86
							404-417	1805 HF	84 - 100
			Woomera	032	05 01 032 0	1048			
							321-327	0410 HP	0 - 7
			Madrid	094	08 01 094 0	1609			
			Woomera	032	06 01 032 0	1548			
	111-80mm	7 of 8	Madrid	093	07 01 093 0	1108			
							580-567	1791 MF	0 - 47
							569-554	1792 MF	40 - 90
							556-551	1793 MF	83 - 100
			Woomera	033	06 01 033 0	1049			
							580-568	0422 MP	0 - 43
							570-554	0423 MP	47 - 90
							556-551	0424 MP	83 - 100
			Madrid	093	08 01 093 0	1608			
			Woomera	033	05 01 033 0	1549			
	112-610mm	8 of 8	Madrid	094	07 01 094 0	1109			
							453-462	1801 HF	0 - 9
							460-476	1800 HF	7 - 23
							474-489	1799 HF	21 - 36
							487-502	1798 HF	34 - 49
							500-513	1797 HF	47 - 60
			Madrid	093	07 01 093 0	1108			
							516-525	1796 HF	63 - 72
							523-538	1795 HF	70 - 85
							536-549	1794 HF	83 - 100
			Woomera	033	06 01 033 0	1049			
							456-469	0430 HP	3 - 16
							467-483	0429 HP	14 - 30
							481-496	0428 HP	28 - 43
							494-509	0427 HP	41 - 56
							507-523	0426 HP	54 - 70
							521-536	0465 HP	68 - 83
							534-549	0425 HP	81 - 100
			Madrid	094	08 01 094 0	1609			
			Madrid	093	08 01 093 0	1608			
			Woomera	033	05 01 033 0	1549			
	112-80mm	8 of 8	Madrid	093	07 01 093 0	1108			
							712-697	1780 MF	0 - 53
							699-688	1781 MF	47 - 83
							690-683	1782 MF	77 - 100
			Madrid	093	08 01 093 0	1608			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. _ OF _	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-3	85-610mm	1 of 16	Madrid	106	07 01 106 0	1117			
							915-929	2000 HF	0 - 15
			Madrid	105	08 01 105 0	1116			
							930-933	1999 HF	16 - 19
							931-946	1998 HF	17 - 32
							944-960	1997 HF	30 - 46
							958-973	1996 HF	44 - 59
							971-986	1995 HF	57 - 72
							984-000	1994 HF	70 - 86
							998-012	1993 HF	84 - 100
			Woomera	024	05 01 024 0	1042			
							915-919	0346 HP	0 - 5
							917-932	0345 HP	3 - 18
							930-945	0344 HP	16 - 31
							943-957	0343 HP	29 - 43
			Madrid	106	08 01 106 0	1617			
			Madrid	105	07 01 105 0	1616			
			Woomera	024	06 01 024 0	1542			
	85-80mm	1 of 16	Madrid	105	08 01 105 0	1116			
							175-161	1979 MF	0 - 50
							163-148	1980 MF	43 - 93
							150-146	1981 MF	87 - 100
			Madrid	025	07 01 025 0	1036			
							175-162	0313 MP	0 - 47
							164-148	0314 MP	40 - 93
							150-146	0315 MP	87 - 100
			Madrid	105	08 01 105 0	1616			
			Madrid	025	07 01 025 0	1036			
	86-610mm	2 of 16	Madrid	105	08 01 105 0	1116			
							045-049	1989 HF	0 - 5
							047-062	1988 HF	3 - 18
							060-076	1987 HF	16 - 32
							074-089	1986 HF	30 - 45
							087-103	1985 HF	43 - 59
							101-116	1984 HF	57 - 72
							114-130	1983 HF	70 - 86
							128-142	1982 HF	84 - 100
			Madrid	025	07 01 025 0	1036			
							084-092	0319 HP	40 - 48
							090-106	0318 HP	46 - 62
							104-119	0365 HP	60 - 75
							117-132	0317 HP	73 - 88
							130-142	0316 HP	86 - 100
			Madrid	105	07 01 105 0	1616			
			Madrid	025	08 01 025 0	1536			
	86-80mm	2 of 16	Woomera	104	05 01 104 0	1115			
							305-291	1968 MF	0 - 50
							293-277	1969 MF	43 - 97
							279-276	1970 MF	90 - 100
			Woomera	104	06 01 104 0	1615			
	87-610mm	3 of 16	Madrid	105	08 01 105 0	1116			
							178-185	1978 HF	0 - 8
							183-199	1977 HF	6 - 22
							197-211	1976 HF	20 - 34
			Woomera	104	05 01 104 0	1115			
							212-221	1975 HF	35 - 44
							219-235	1974 HF	42 - 58
							233-248	1973 HF	56 - 71
							246-262	1972 HF	69 - 85
							260-275	1971 HF	83 - 100
			Madrid	025	07 01 025 0	1036			
							178-186	0312 HP	0 - 9
							184-193	0311 HP	7 - 16
							191-206	0310 HP	14 - 29
							204-218	0309 HP	27 - 41

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO._OF_	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-3	87-610mm	3 of 16	Madrid	105	07 01 105 0	1616			
			Woomera	104	06 01 104 0	1615			
			Madrid	025	08 01 025 0	1536			
	87-80mm	3 of 16	Woomera	104	05 01 104 0	1115			
							437-425	1957 MF	0 - 45
							427-412	1958 MF	38 - 90
							414-409	1959 MF	83 - 100
			Woomera	104	06 01 104 0	1615			
	88-610mm	4 of 16	Woomera	104	05 01 104 0	1115			
							309-313	1967 HF	0 - 5
							311-326	1966 HF	3 - 18
							324-340	1965 HF	16 - 32
							338-353	1964 HF	30 - 45
							351-367	1963 HF	43 - 59
							365-380	1962 HF	57 - 72
							378-393	1961 HF	70 - 85
							391-405	1960 HF	83 - 100
			Woomera	104	06 01 104 0	1615			
	88-80mm	4 of 16	Woomera	103	05 01 103 0	1114			
							568-555	1890 MF	0 - 47
							557-541	1891 MF	40 - 93
							543-539	1892 MF	87 - 100
			Woomera	103	06 01 103 0	1614			
	89-610mm	5 of 16	Woomera	104	05 01 104 0	1115			
							441-454	1956 HF	0 - 14
							452-467	1955 HF	12 - 27
							465-481	1954 HF	25 - 41
							479-493	1953 HF	39 - 53
			Woomera	103	05 01 103 0	1114			
							494-499	1896 HF	54 - 59
							497-512	1895 HF	57 - 72
							510-525	1894 HF	70 - 85
							523-537	1893 HF	83 - 100
			Woomera	104	06 01 104 0	1615			
			Woomera	103	06 01 103 0	1614			
	89-80mm	5 of 16	Woomera	103	05 01 103 0	1114			
							700-687	1879 MF	0 - 47
							689-673	1880 MF	40 - 93
							675-671	1881 MF	87 - 100
			Woomera	103	06 01 103 0	1614			
	90-610mm	6 of 16	Woomera	103	05 01 103 0	1114			
							571-577	1889 HF	0 - 7
							575-590	1888 HF	5 - 20
							588-604	1887 HF	18 - 34
							602-617	1886 HF	32 - 47
							615-630	1885 HF	45 - 60
							628-644	1884 HF	58 - 74
							642-657	1883 HF	72 - 87
							655-668	1882 HF	85 - 100
			Woomera	103	06 01 103 0	1614			
	90-80mm	6 of 16	Goldstone	102	03 01 102 0	1113			
							830-816	1868 MF	0 - 52
							818-803	1869 MF	45 - 97
							805-802	1870 MF	90 - 100
			Goldstone	102	04 01 102 0	1613			
	91-610mm	7 of 16	Woomera	103	05 01 103 0	1114			
							702-707	1878 HF	0 - 6
							705-720	1877 HF	4 - 19
							718-733	1876 HF	17 - 32
							731-746	1875 HF	30 - 45

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. _ OF _	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-3	91-610mm	7 of 16	Goldstone	102	03 01 102 0	1113			
							747-760	1874 HF	46 - 59
							758-774	1873 HF	57 - 73
							772-787	1872 HF	71 - 86
							785-799	1871 HF	84 - 100
			Woomera	103	06 01 103 0	1614			
			Goldstone	102	04 01 102 0	1613			
	91-80mm	7 of 16	Goldstone	102	03 01 102 0	1113			
							962-948	1857 MF	0 - 50
							950-935	1858 MF	43 - 93
							937-933	1859 MF	87 - 100
			Goldstone	026	03 01 026 0	1034			
							962-949	0258 MP	0 - 47
							951-936	0259 MP	40 - 90
							938-933	0260 MP	83 - 100
			Goldstone	102	04 01 102 0	1613			
			Goldstone	026	04 01 026 0	1534			
	92-610mm	8 of 16	Goldstone	102	03 01 102 0	1113			
							834-838	1867 HF	0 - 5
							836-852	1866 HF	3 - 19
							850-865	1865 HF	17 - 32
							863-879	1864 HF	30 - 46
							877-892	1863 HF	44 - 59
							890-906	1862 HF	57 - 73
							904-919	1861 HF	71 - 86
							917-930	1860 HF	84 - 100
			Goldstone	026	03 01 026 0	1034			
							864-878	0265 HP	31 - 45
							876-891	0264 HP	43 - 58
							889-904	0263 HP	56 - 71
							902-918	0262 HP	69 - 85
							916-930	0261 HP	83 - 100
			Goldstone	102	04 01 102 0	1613			
			Goldstone	026	04 01 0260	1534			
	92-80mm	8 of 16	Madrid	101	07 01 101 0	1112			
							093-080	1949 MF	0 - 47
							082-067	1950 MF	40 - 90
							069-064	1951 MF	83 - 100
			Madrid	101	08 01 101 0	1612			
	93-610mm	9 of 16	Goldstone	102	03 01 102 0	1113			
							964-973	1856 HF	0 - 10
							971-986	1855 HF	8 - 23
							984-000	1854 HF	21 - 37
							998-013	1853 HF	35 - 50
							011-026	1852 HF	48 - 63
							024-040	1851 HF	61 - 77
							038-052	1850 HF	75 - 89
			Madrid	101	07 01 101 0	1112			
							053-060	1952 HF	90 - 100
			Goldstone	026	03 01 026 0	1034			
							964-969	0257 HP	0 - 6
							967-983	0256 HP	4 - 20
							981-995	0255 HP	18 - 32
			Goldstone	102	04 01 102 0	1613			
			Madrid	101	08 01 101 0	1612			
			Goldstone	026	04 01 0260	1534			
	93-80mm	9 of 16	Madrid	101	07 01 101 0	1112			
							223-210	1938 MF	0 - 48
							212-197	1939 MF	41 - 93
							199-195	1940 MF	86 - 100

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-3	94-610mm	10 of 16	Madrid	101	07 01 101 0	1112			
							095-100	1948 HF	0 - 6
							098-114	1947 HF	4 - 20
							112-127	1946 HF	18 - 33
							125-140	1945 HF	31 - 46
							138-154	1944 HF	44 - 60
							152-167	1943 HF	58 - 73
							165-181	1942 HF	71 - 87
							179-192	1941 HF	85 - 100
			Madrid	101	08 01 101 0	1612			
	94-80mm	10 of 16	Madrid	101	07 01 101 0	1112			
							355-342	1928 MF	0 - 47
							344-329	1929 MF	40 - 90
							331-326	1930 MF	83 - 100
			Madrid	101	08 01 101 0	1612			
	95-610mm	11 of 16	Madrid	101	07 01 101 0	1112			
							227-232	2742 HF	0 - 6
							230-246	1937 HF	4 - 20
							244-259	1936 HF	18 - 33
							257-272	1935 HF	31 - 46
							270-286	1934 HF	44 - 60
							284-299	1933 HF	58 - 73
							297-313	1932 HF	71 - 87
							311-324	1931 HF	85 - 100
			Madrid	101	08 01 101 0	1612			
	95-80mm	11 of 16	Madrid	100	07 01 100 0	1111			
							486-472	1917 MF	0 - 52
							474-458	1918 MF	45 - 100
							460-458	1919 MF	93 - 100
			Woomera	027	06 01 027 0	1046			
							486-472	0453 MP	0 - 52
							474-465	0454 MP	45 - 72
							467-458	0455 MP	66 - 100
			Madrid	100	08 01 100 0	1611			
			Woomera	027	05 01 027 0	1546			
	96-610mm	12 of 16	Madrid	101	07 01 101 0	1112			
							357-362	1927 HF	0 - 6
							360-375	1926 HF	4 - 19
							373-388	1925 HF	17 - 32
			Madrid	100	07 01 100 0	1111			
							389-402	1924 HF	33 - 46
							400-416	1923 HF	44 - 60
							414-429	1922 HF	58 - 73
							427-442	1921 HF	71 - 86
							440-454	1920 HF	84 - 100
			Woomera	027	06 01 027 0	1046			
							360-364	0463 HP	0 - 8
							362-378	0462 HP	6 - 22
							376-391	0461 HP	20 - 35
							389-405	0460 HP	33 - 49
							403-418	0459 HP	47 - 62
							416-431	0458 HP	60 - 75
							429-445	0457 HP	73 - 89
							443-454	0456 HP	87 - 100
			Madrid	101	08 01 101 0	1612			
			Madrid	100	08 01 100 0	1611			
			Woomera	027	05 01 027 0	1546			
	96-80mm	12 of 16	Madrid	100	07 01 100 0	1111			
							616-604	1906 MF	0 - 44
							606-590	1907 MF	37 - 90
							592-587	1908 MF	83 - 100
			Madrid	100	08 01 100 0	1611			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-3	97-610mm	13 of 16	Madrid	100	07 01 100 0	1111			
							488-494	1916 HF	0 - 7
							492-507	1915 HF	5 - 20
							505-521	1914 HF	18 - 34
							519-534	1913 HF	32 - 47
							532-548	1912 HF	45 - 61
							546-561	1911 HF	59 - 74
							559-574	1910 HF	72 - 87
							572-585	1909 HF	85 - 100
			Madrid	100	08 01 100 0	1611			
	97-80	13 of 16	Madrid	099	07 01 099 0	1110			
							747-733	1846 MF	0 - 52
							735-720	1847 MF	45 - 97
							722-719	1848 MF	90 - 100
			Madrid	099	08 01 099 0	1610			
	98-610mm	14 of 16	Madrid	100	07 01 100 0	1111			
							619-633	1905 HF	0 - 15
							631-646	1904 HF	13 - 28
							644-659	1903 HF	26 - 41
							656-673	1902 HF	39 - 55
							671-686	1901 HF	53 - 68
							684-700	1900 HF	66 - 72
							698-712	1899 HF	70 - 94
			Madrid	099	07 01 099 0	1110			
							713-715	1849 HF	95 - 100
			Madrid	100	08 01 100 0	1611			
			Madrid	099	08 01 099 0	1610			
	98-80mm	14 of 16	Madrid	099	07 01 099 0	1110			
							878-865	1835 MF	0 - 47
							867-852	1836 MF	40 - 90
							854-849	1837 MF	83 - 100
			Madrid	099	08 01 099 0	1610			
	99-610mm	15 of 16	Madrid	099	07 01 099 0	1110			
							750-756	1845 HF	0 - 7
							754-769	1844 HF	5 - 20
							767-783	1843 HF	18 - 34
							781-796	1842 HF	32 - 47
							794-809	1841 HF	45 - 60
							807-823	1840 HF	58 - 74
							821-836	1839 HF	72 - 87
							834-846	1838 HF	85 - 100
			Madrid	099	08 01 099 0	1610			
	99-80mm	15 of 16	Madrid	099	07 01 099 0	1110			
							009-995	1824 MF	0 - 52
							997-982	1825 MF	45 - 97
							984-981	1826 MF	90 - 100
			Madrid	028	07 01 028 0	1040			
							009-996	0367 MP	0 - 48
							995-983	0368 MP	41 - 93
							985-981	0369 MP	86 - 100
			Madrid	099	08 01 099 0	1610			
			Madrid	028	08 01 028 0	1540			
	100-610mm	16 of 16	Madrid	099	07 01 099 0	1110			
							881-885	1834 HF	0 - 5
							883-899	1833 HF	3 - 19
							897-912	1832 HF	17 - 32
							910-926	1831 HF	30 - 46
							924-939	1830 HF	44 - 59
							937-952	1829 HF	57 - 72
							950-966	1828 HF	70 - 86
							964-976	1827 HF	84 - 100

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-3	100-610mm	16 of 16	Madrid	028	07 01 028 0	1040			
							884-893	0377 HP	4 - 13
							891-900	0376 HP	11 - 20
							898-913	0375 HP	18 - 33
							911-926	0374 HP	31 - 46
							924-940	0373 HP	44 - 60
							938-953	0372 HP	58 - 73
							951-967	0371 HP	71 - 87
							965-976	0370 HP	85 - 100
			Madrid	099	08 01 099 0	1610			
			Madrid	028	08 01 028 0	1540			
	100-80mm	16 of 16	Woomera	098	06 01 098 0	1107			
							140-127	1640 MF	0 - 47
							129-114	1641 MF	40 - 90
							116-111	1642 MF	83 - 100
			Madrid	029	07 01 029 0	1039			
							140-126	0298 MP	0 - 50
							128-113	0299 MP	43 - 93
							115-111	0300 MP	87 - 100
			Woomera	098	05 01 098 0	1607			
			Madrid	029	08 01 029 0	1539			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. _ OF _	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-2	69-610mm	1 of 16	Madrid	114	08 01 114 0	1125			
							688-701	2289 HF	0 - 14
							699-713	2288 HF	12 - 26
			Madrid	113	08 01 113 0	1124			
							714-718	2287 HF	27 - 31
							716-732	2286 HF	29 - 45
							730-745	2285 HF	43 - 58
							743-759	2284 HF	56 - 72
							757-772	2283 HF	70 - 85
							770-785	2282 HF	83 - 100
			Madrid	114	07 01 114 0	1625			
			Madrid	113	07 01 113 0	1624			
	69-80mm	1 of 16	Madrid	113	08 01 113 0	1124			
							949-936	2268 MF	0 - 48
							938-922	2269 MF	41 - 96
							924-921	2270 MF	90 - 100
			Madrid	113	07 01 113 0	1624			
	69-610mm	2 of 16	Madrid	113	08 01 113 0	1124			
							819-824	2278 HF	0 - 6
							822-837	2277 HF	4 - 19
							835-851	2276 HF	17 - 33
							849-864	2275 HF	31 - 46
							862-877	2274 HF	44 - 59
							875-891	2273 HF	57 - 73
							889-904	2272 HF	71 - 86
							902-916	2271 HF	84 - 100
			Madrid	113	07 01 113 0	1624			
	69-80mm	2 of 16	Madrid	112	08 01 112 0	1123			
							078-065	2257 MF	0 - 45
							067-052	2258 MF	37 - 93
							054-050	2259 MF	85 - 100
			Woomera	018	06 01 018 0	1033			
							078-065	0230 MP	0 - 45
							067-052	0231 MP	37 - 93
							054-050	0232 MP	85 - 100
			Madrid	112	07 01 112 0	1623			
			Woomera	018	05 01 018 0	1533			
	70-610mm	3 of 16	Madrid	113	08 01 113 0	1124			
							952-958	2267 HF	0 - 7
							956-971	2266 HF	5 - 20
							969-985	2265 HF	18 - 34
							983-998	2264 HF	32 - 47
							996-011	2263 HF	45 - 60
			Madrid	112	08 01 112 0	1123			
							012-023	2262 HF	61 - 72
							021-036	2261 HF	70 - 85
							034-048	2260 HF	83 - 100
			Woomera	018	06 01 018 0	1033			
							032-036	0234 HP	80 - 84
							036-048	0233 HP	84 - 100
			Madrid	113	07 01 113 0	1624			
			Madrid	112	07 01 112 0	1623			
			Woomera	018	05 01 018 0	1533			
	70-80mm	3 of 16	Madrid	112	08 01 112 0	1123			
							211-197	2246 MF	0 - 50
							199-184	2247 MF	43 - 93
							186-182	2248 MF	87 - 100
			Madrid	112	07 01 112 0	1623			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-2	71-610mm	4 of 16	Madrid	112	08 01 112 0	1123			
							082-085	2256 HF	0 - 4
							083-099	2255 HF	2 - 18
							097-112	2254 HF	16 - 31
							110-126	2253 HF	29 - 45
							124-139	2252 HF	43 - 58
							137-152	2251 HF	56 - 71
							150-166	2250 HF	69 - 85
							164-178	2249 HF	83 - 100
			Woomera	018	06 01 018 0	1033			
							082-094	0229 HP	0 - 7
							092-107	0228 HP	5 - 20
							105-119	0227 HP	18 - 32
			Madrid	112	07 01 112 0	1623			
			Woomera	018	05 01 018 0	1533			
	71-80mm	4 of 16	Woomera	111	05 01 111 0	1122			
							342-329	2134 MF	0 - 47
							331-316	2135 MF	40 - 90
							318-313	2136 MF	83 - 100
			Madrid	019	07 04 019 0	1024			
							342-331	0268 MP	0 - 40
							333-317	0269 MP	33 - 87
							319-313	0270 MP	80 - 100
			Woomera	111	06 01 111 0	1622			
			Madrid	019	08 01 019 0	1524			
	72-610mm	5 of 16	Madrid	112	08 01 112 0	1123			
							214-228	2244 HF	0 - 15
							226-241	2243 HF	13 - 28
			Woomera	111	05 01 111 0	1122			
							242-257	2141 HF	29 - 44
							255-271	2140 HF	42 - 58
							269-284	2139 HF	56 - 71
							282-296	2138 HF	69 - 83
							294-310	2137 HF	81 - 100
			Madrid	019	07 04 019 0	1024			
							272-286	0273 HP	59 - 73
							284-299	0272 HP	71 - 86
							297-310	0271 HP	84 - 100
			Madrid	112	07 04 112 0	1623			
			Madrid	019	08 01 019 0	1524			
	72-80mm	5 of 16	Woomera	111	05 01 111 0	1122			
							473-459	2123 MF	0 - 50
							461-446	2124 MF	43 - 93
							448-444	2125 MF	87 - 100
			Woomera	111	06 01 111 0	1622			
	73-610mm	6 of 16	Woomera	111	05 01 111 0	1122			
							345-349	2133 HF	0 - 5
							347-363	2132 HF	3 - 19
							361-376	2131 HF	17 - 32
							374-389	2130 HF	30 - 45
							387-403	2129 HF	43 - 59
							401-416	2128 HF	57 - 72
							414-430	2127 HF	70 - 86
							428-441	2126 HF	84 - 100
			Madrid	019	07 04 019 0	1024			
							345-359	0267 HP	0 - 15
							357-371	0266 HP	13 - 27
			Woomera	111	05 01 111 0	1622			
			Madrid	019	08 04 019 0	1524			
	73-80mm	6 of 16	Woomera	110	06 01 110 0	1121			
							604-591	2111 MF	0 - 47
							593-578	2112 MF	40 - 90
							580-575	2113 MF	83 - 100

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-2	73-80mm	6 of 16	Madrid	020	07 04 010 0	1025			
							604-590	0277 MP	0 - 50
							592-577	0278 MP	43 - 93
							579-575	0279 MP	87 - 100
			Woomera	110	05 01 110 0	1621			
			Madrid	020	08 04 020 0	1525			
	74-610mm	7 of 16	Woomera	111	05 01 111 0	1122			
							474-483	2122 HF	0 - 10
							481-497	2121 HF	8 - 24
							495-510	2120 HF	22 - 37
							508-524	2119 HF	35 - 51
							522-537	2118 HF	49 - 64
							535-550	2117 HF	62 - 77
			Woomera	110	06 01 110 0	1121			
							551-560	2115 HF	78 - 87
							558-571	2114 HF	85 - 100
			Madrid	020	07 04 020 0	1025			
							511-521	0284 HP	38 - 48
							519-534	0283 HP	46 - 61
							532-548	0282 HP	59 - 75
							546-561	0281 HP	73 - 88
							559-571	0280 HP	86 - 100
			Woomera	111	06 01 111 0	1622			
			Woomera	110	05 01 110 0	1621			
			Madrid	020	08 04 020 0	1525			
	74-80mm	7 of 16	Woomera	110	06 01 110 0	1121			
							734-721	2100 MF	0 - 47
							723-707	2101 MF	40 - 93
							709-705	2102 MF	87 - 100
			Woomera	110	05 01 110 0	1621			
	75-610mm	8 of 16	Woomera	110	06 01 110 0	1121			
							606-611	2110 HF	0 - 6
							609-624	2109 HF	4 - 19
							622-638	2108 HF	17 - 33
							636-651	2107 HF	31 - 46
							649-665	2106 HF	44 - 60
							663-678	2105 HF	58 - 73
							676-692	2104 HF	71 - 87
							690-702	2103 HF	85 - 100
			Madrid	020	07 04 020 0	1025			
							606-608	0276 HP	0 - 3
							606-621	0275 HP	1 - 16
							619-633	0274 HP	14 - 28
			Woomera	110	05 01 110 0	1621			
			Madrid	020	08 04 020 0	1525			
	75-80mm	8 of 16	Goldstone	109	03 01 109 0	1120			
							865-853	2089 MF	0 - 43
							855-839	2090 MF	37 - 90
							841-836	2091 MF	83 - 100
			Goldstone	021	04 01 021 0	1021			
							865-853	0196 MP	0 - 43
							855-839	0197 MP	37 - 90
							841-836	0198 MP	83 - 100
			Goldstone	109	04 01 109 0	1620			
			Goldstone	021	03 01 021 0	1521			
	76-610mm	9 of 16	Woomera	110	06 01 110 0	1121			
							737-745	2099 HF	0 - 9
							743-759	2098 HF	7 - 23
							757-772	2097 HF	21 - 36
							770-785	2096 HF	34 - 49
							783-798	2095 HF	47 - 62
			Goldstone	109	03 01 109 0	1120			
							799-808	2094 HF	63 - 73
							806-821	2093 HF	71 - 88
							819-834	2092 HF	83 - 100

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-2	76-610mm	9 of 16	Goldstone	021	04 01 021 0	1021			
							764-774	0204 HP	28 - 38
							772-781	0203 HP	36 - 45
							779-794	0202 HP	43 - 58
							792-808	0201 HP	56 - 72
							806-821	0200 HP	70 - 85
							819-834	0199 HP	83 - 100
			Woomera	110	05 01 110 0	1621			
			Goldstone	109	04 01 109 0	1620			
			Goldstone	021	03 01 021 0	1521			
	76-80mm	9 of 16	Goldstone	109	03 01 109 0	1120			
							996-982	2078 MF	0 - 52
							984-969	2079 MF	45 - 97
							970-968	2080 MF	93 - 100
			Goldstone	109	04 01 109 0	1620			
	77-610mm	10 of 16	Goldstone	109	03 01 109 0	1120			
							869-872	2088 HF	0 - 4
							870-886	2087 HF	2 - 18
							884-899	2086 HF	16 - 31
							897-913	2085 HF	29 - 45
							911-926	2084 HF	43 - 58
							924-940	2083 HF	56 - 72
							938-953	2082 HF	70 - 85
							951-965	2081 HF	83 - 100
			Goldstone	021	04 01 021 0	1021			
							869-871	0195 HP	0 - 3
							869-884	0194 HP	1 - 16
							882-897	0193 HP	14 - 29
			Goldstone	109	04 01 109 0	1620			
			Goldstone	021	03 01 021 0	1521			
	77-80mm	10 of 16	Goldstone	108	04 01 108 0	1119			
							128-114	2068 MF	0 - 50
							116-101	2069 MF	43 - 93
							103-099	2794 MF	87 - 100
			Goldstone	022	03 01 022 0	1026			
							128-115	0201 MP	0 - 47
							117-102	0202 MP	40 - 90
							104-099	0203 MP	83 - 100
			Goldstone	108	03 01 108 0	1619			
			Goldstone	022	04 01 022 0	1526			
	78-610mm	11 of 16	Goldstone	109	03 01 109 0	1120			
							001-011	2077 HF	0 - 11
							009-025	2076 HF	9 - 25
							023-038	2075 HF	23 - 38
							036-052	2074 HF	36 - 52
							050-065	2073 HF	50 - 65
							063-078	2072 HF	63 - 78
							076-091	2071 HF	76 - 91
			Goldstone	108	04 01 108 0	1119			
							092-097	2070 HF	92 - 100
			Goldstone	022	03 01 022 0	1026			
							061-073	0206 HP	61 - 73
							071-086	0205 HP	71 - 86
							084-097	0204 HP	84 - 97
			Goldstone	109	04 01 109 0	1620			
			Goldstone	108	03 01 108 0	1619			
			Goldstone	022	04 01 022 0	1526			
	78-80mm	11 of 16	Goldstone	108	04 01 108 0	1119			
							260-246	2057 MF	0 - 50
							248-233	2058 MF	43 - 93
							235-231	2059 MF	87 - 100
			Goldstone	108	03 01 108 0	1619			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-2	79-610mm	12 of 16	Goldstone	108	04 01 108 0	1119			
							130-134	2067 HF	0 - 5
							132-148	2066 HF	3 - 19
							146-161	2065 HF	17 - 32
							159-175	2064 HF	30 - 46
							173-188	2063 HF	44 - 59
							186-201	2062 HF	57 - 72
							199-215	2061 HF	70 - 86
							213-226	2060 HF	84 - 100
			Goldstone	022	03 01 022 0	1026			
							130-137	0200 HP	0 - 8
							135-151	0199 HP	6 - 22
							149-163	0198 HP	20 - 34
			Goldstone	108	03 01 108 0	1619			
			Goldstone	022	04 01 022 0	1526			
	79-80mm	12 of 16	Madrid	107	07 01 107 0	1118			
							389-385	2046 MF	0 - 50
			Goldstone	108	04 01 108 0	1119			
							384-369	2047 MF	53 - 70
							371-360	2048 MF	63 - 100
			Goldstone	023	03 01 023 0	1027			
							389-376	0209 MP	0 - 47
							378-362	0210 MP	40 - 93
							364-360	0211 MP	87 - 100
			Woomera	023	05 01 023 0	1043			
							389-376	0357 MP	0 - 47
							378-362	0358 MP	40 - 93
							364-360	0359 MP	87 - 100
			Madrid	107	08 01 107 0	1618			
			Goldstone	108	03 01 108 0	1619			
			Goldstone	023	04 01 023 0	1527			
			Woomera	023	06 01 023 0	1543			
	80-610mm	13 of 16	Goldstone	108	04 01 108 0	1119			
							261-266	2056 HF	0 - 6
							264-280	2055 HF	4 - 20
							278-293	2054 HF	18 - 33
							291-307	2053 HF	31 - 47
							305-320	2052 HF	45 - 60
							318-333	2051 HF	58 - 73
							331-347	2050 HF	71 - 87
							345-357	2049 HF	85 - 100
			Goldstone	023	03 01 023 0	1027			
							294-306	0216 HP	34 - 46
							304-320	0215 HP	44 - 60
							318-333	0214 HP	58 - 73
							331-346	0213 HP	71 - 86
							344-357	0212 HP	84 - 100
			Woomera	023	05 01 023 0	1043			
							294-306	0364 HP	34 - 46
							304-320	0363 HP	44 - 60
							318-333	0362 HP	58 - 73
							331-346	0361 HP	71 - 86
							344-357	0360 HP	84 - 100
			Goldstone	108	03 01 108 0	1619			
			Goldstone	023	04 01 023 0	1527			
			Woomera	023	06 01 023 0	1543			
	80-80mm	13 of 16	Madrid	107	07 01 107 0	1118			
							520-506	2035 MF	0 - 50
							508-492	2036 MF	43 - 97
							494-491	2037 MF	90 - 100
			Madrid	107	08 01 107 0	1618			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-2	81-610mm	14 of 16	Madrid	107	07 01 107 0	1118			
							390-396	2045 HF	0 - 7
							394-409	2044 HF	5 - 20
							407-423	2043 HF	18 - 34
							421-436	2042 HF	32 - 47
							434-450	2041 HF	45 - 61
							448-463	2040 HF	60 - 74
							461-477	2039 HF	72 - 88
							475-488	2038 HF	86 - 100
			Goldstone	023	03 01 023 0	1027			
							392-400	0226 HP	3 - 11
							398-413	0208 HP	9 - 24
							411-425	0207 HP	22 - 36
			Woomera	023	05 01 023 0	1043			
							392-400	0354 HP	3 - 11
							398-413	0355 HP	9 - 24
							411-425	0356 HP	22 - 36
			Madrid	107	08 01 107 0	1618			
			Goldstone	023	04 01 023 0	1527			
			Woomera	023	06 01 023 0	1543			
	81-80mm	14 of 16	Madrid	107	07 01 107 0	1118			
							651-638	2024 MF	0 - 47
							640-624	2025 MF	40 - 93
							626-622	2026 MF	87 - 100
			Madrid	107	08 01 107 0	1618			
	82-610mm	15 of 16	Madrid	107	07 01 107 0	1118			
							523-528	2034 HF	0 - 6
							526-541	2033 HF	4 - 19
							539-555	2032 HF	17 - 33
							553-568	2031 HF	31 - 46
							566-582	2030 HF	44 - 60
							580-595	2029 HF	58 - 73
							593-608	2028 HF	71 - 86
							606-619	2027 HF	84 - 100
			Madrid	107	08 01 107 0	1618			
	82-80mm	15 of 16	Madrid	106	07 01 106 0	1117			
							782-767	2013 MP	0 - 53
							769-754	2014 MP	47 - 97
							756-753	2015 MP	90 - 100
	83-610mm	16 of 16	Madrid	107	07 01 107 0	1118			
							654-664	2023 HF	0 - 11
							662-677	2022 HF	9 - 24
			Madrid	106	07 01 106 0	1117			
							678-684	2021 HF	25 - 31
							682-698	2020 HF	29 - 45
							696-711	2019 HF	43 - 58
							709-725	2018 HF	56 - 72
							723-738	2017 HF	70 - 85
							736-750	2016 HF	83 - 100
			Madrid	107	08 01 107 0	1618			
			Madrid	106	08 01 106 0	1617			
	83-80mm	16 of 16	Madrid	106	07 01 106 0	1117			
							913-899	2002 MF	0 - 50
							901-886	2003 MF	43 - 93
							888-884	2004 MF	87 - 100
			Woomera	024	05 01 024 0	1042			
							913-899	0347 MP	0 - 50
							901-885	0348 MP	43 - 97
							887-884	0349 MP	90 - 100
			Madrid	106	08 01 106 0	1617			
			Woomera	024	06 01 024 0	1542			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-1	52-610mm	1 of 16	Madrid	120	07 01 120 0	1131			
							591-594	2463 HF	0-4
							592-607	2462 HF	2-17
							605-620	2461 HF	15-30
							618-634	2460 HF	28-44
							632-647	2459 HF	42-57
							645-661	2458 HF	55-71
							659-674	2457 HF	69-84
							672-687	2456 HF	82-100
			Madrid	120	06 01 120 0	1631			
	52-60mm	1 of 16	Woomera	119	05 01 119 0	1130			
							850-838	2442 MF	0-43
							840-826	2443 MF	37-83
			Madrid	120	07 01 120 0	1131			
							824-821	2444 MF	90-100
			Woomera	119	06 01 119 0	1630			
			Madrid	120	06 01 120 0	1631			
	53-610mm	2 of 16	Madrid	120	07 01 120 0	1131			
							721-726	2452 HF	0-6
							724-739	2451 HF	4-19
							737-752	2450 HF	17-32
							750-766	2449 HF	30-46
							764-779	2448 HF	44-59
							777-793	2447 HF	57-73
							791-806	2446 HF	71-86
							804-818	2445 HF	84-100
			Madrid	120	06 01 120 0	1631			
	53-60mm	2 of 16	Woomera	119	05 01 119 0	1130			
							961-967	2431 MF	0-50
							969-954	2432 MF	43-93
							956-952	2433 MF	87-100
			Woomera	119	06 01 119 0	1630			
	54-610mm	3 of 16	Woomera	119	05 01 119 0	1130			
							854-858	2441 HF	0-5
							856-871	2440 HF	3-18
							869-884	2439 HF	16-31
							882-898	2438 HF	29-45
							896-911	2437 HF	43-58
							909-925	2436 HF	56-72
							923-938	2435 HF	70-85
							936-950	2434 HF	83-100
			Woomera	119	06 01 119 0	1630			
	54-60mm	3 of 16	Woomera	119	05 01 119 0	1130			
							113-099	2421 MF	0-50
							101-086	2422 MF	43-93
							088-084	2423 MF	87-100
			Woomera	119	06 01 119 0	1630			
	55-610mm	4 of 16	Woomera	119	05 01 119 0	1130			
							985-990	2430 HF	0-16
							988-003	2429 HF	4-19
							001-016	2428 HF	17-32
							014-030	2427 HF	30-46
							028-043	2426 HF	44-59
							041-057	2426 HF	57-73
							055-070	2425 HF	71-86
							068-081	2424 HF	84-100
			Woomera	119	06 01 119 0	1630			
	55-60mm	4 of 16	Woomera	118	06 01 118 0	1129			
							244-231	2410 MF	0-47
							233-218	2411 MF	40-90
							220-215	2412 MF	83-100
			Woomera	118	05 01 118 0	1629			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
	56-610mm	5 of 16	Woomera	119	05 01 119 0	1130			
							116-126	2420 HF	0-11
							124-138	2419 HF	9-23
			Woomera	118	06 01 118 0	1129			
I-1							140-148	2418 HF	25-33
							146-162	2417 HF	31-47
							160-175	2416 HF	45-60
							173-189	2415 HF	58-74
							187-202	2414 HF	72-87
							200-213	2413 HF	85-100
			Woomera	119	06 01 119 0	1630			
			Woomera	118	05 01 118 0	1629			
	56-80mm	5 of 16	Woomera	118	06 01 1180	1129			
							375-361	2399 MF	0-52
							363-348	2400 MF	45-97
							350-347	2401 MF	90-100
			Woomera	118	05 01 118 0	1629			
	57-610mm	6 of 16	Woomera	118	06 01 118 0	1129			
							247-251	2409 HF	0-5
							249-265	2408 HF	3-19
							263-278	2407 HF	17-32
							276-291	2406 HF	30-45
							289-305	2405 HF	43-59
							303-318	2404 HF	57-72
							316-332	2403 HF	70-86
							330-343	2402 HF	84-100
			Woomera	118	05 01 118 0	1629			
	57-80mm	6 of 16	Goldstone	117	04 01 117 0	1128			
							506-493	2388 MF	0-47
							495-480	2389 MF	40-90
							482-477	2390 MF	83-100
			Goldstone	117	03 01 117 0	1628			
	58-610mm	7 of 16	Woomera	118	06 01 118 0	1129			
							377-385	2398 HF	0-9
							383-399	2397 HF	7-23
							397-412	2396 HF	21-36
							410-426	2395 HF	34-50
							424-439	2394 HF	48-63
							437-451	2393 HF	61-75
			Goldstone	117	04 01 117 0	1128			
							453-461	2392 HF	77-85
							459-473	2391 HF	83-100
			Woomera	118	05 01 118 0	1629			
			Goldstone	117	03 01 117 0	1628			
	58-80mm	7 of 16	Goldstone	117	04 01 117 0	1128			
							636-623	2377 MF	0-48
							625-609	2378 MF	41-97
							611-608	2379 MF	90-100
			Goldstone	117	03 01 117 0	1628			
	59-610mm	8 of 16	Goldstone	117	04 01 117 0	1128			
							509-513	2387 HF	0-5
							511-526	2386 HF	3-18
							524-540	2385 HF	16-32
							538-553	2384 HF	30-45
							551-567	2383 HF	43-59
							565-580	2382 HF	57-72
							578-593	2381 HF	70-85
							591-606	2380 HF	83-100
			Goldstone	117	03 01 117 0	1628			
	59-80mm	8 of 16	Goldstone	116	03 01 116 0	1127			
							768-766	2366 MF	0-10
			Goldstone	117	04 01 117 0	1128			
							765-750	2367 MF	14-66
							752-740	2368 MF	59-100
			Goldstone	116	04 01 116 0	1627			
			Goldstone	117	03 01 117 0	1628			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-1	60-610mm	9 of 16	Goldstone	117	04 01 117 0	1128			
							641-645	2376 HF	0-5
							643-658	2375 HF	3-18
							656-672	2374 HF	16-32
							670-685	2373 HF	30-45
							683-699	2372 HF	43-59
							697-712	2371 HF	57-72
							710-725	2370 HF	70-85
							723-737	2369 HF	83-100
			Goldstone	117	03 01 117 0	1628			
	60-60mm	9 of 16	Goldstone	116	03 01 116 0	1127			
							900-887	2355 MF	0-47
							889-873	2356 MF	40-93
							875-871	2357 MF	87-100
			Goldstone	116	04 01 116 0	1627			
	61-610mm	10 of 16	Goldstone	116	03 01 116 0	1127			
							772-777	2365 HF	0-6
							775-790	2364 HF	4-19
							788-804	2363 HF	17-33
							802-817	2362 HF	31-46
							815-830	2361 HF	44-59
							828-844	2360 HF	57-73
							842-857	2359 HF	71-86
							855-868	2358 HF	84-100
			Goldstone	017	04 04 017 0	1019			
							780-792	0174 HP	9-21
							790-805	0173 HP	19-34
							803-817	0172 HP	32-46
			Goldstone	116	04 01 116 0	1627			
			Goldstone	017	03 04 017 0	1519			
	61-60mm	10 of 16	Goldstone	116	03 01 116 0	1127			
							031-016	2344 MF	0-53
							018-003	2345 MF	47-97
							005-002	2346 MF	90-100
			Goldstone	116	04 01 116 0	1627			
	62-610mm	11 of 16	Goldstone	116	03 01 116 0	1127			
							904-909	2354 HF	0-6
							907-922	2353 HF	4-19
							920-936	2352 HF	17-33
							934-949	2351 HF	31-46
							947-962	2350 HF	44-59
							960-976	2349 HF	57-73
							974-989	2348 HF	71-86
							987-000	2347 HF	84-100
			Goldstone	116	04 01 116 0	1627			
	62-60mm	11 of 16	Madrid	115	08 01 115 0	1126			
							163-151	2333 MF	0-43
							153-137	2334 MF	37-90
							139-134	2335 MF	83-100
			Madrid	115	07 01 115 0	1626			
	63-610mm	12 of 16	Goldstone	116	03 01 116 0	1127			
							035-038	2343 HF	0-4
							036-052	2342 HF	2-18
							050-065	2341 HF	16-31
							063-078	2340 HF	29-44
			Madrid	115	08 01 115 0	1126			
							078-092	2339 HF	44-58
							090-106	2338 HF	56-72
							104-119	2337 HF	70-85
							117-131	2336 HF	83-100
			Goldstone	116	04 01 116 0	1627			
			Madrid	115	07 01 115 0	1626			

(Cont.)

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DS#	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-1	63-80mm	12 of 16	Madrid	115	08 01 115 0	1126			
							294-280	2322 MF	0-50
							282-267	2323 MF	43-93
							269-265	2324 MF	87-100
			Madrid	115	07 01 115 0	1626			
	64-610mm	13 of 16	Madrid	115	08 01 115 0	1126			
							165-170	2332 HF	0-6
							168-183	2331 HF	4-19
							182-197	2330 HF	18-33
							195-211	2329 HF	31-47
							209-224	2328 HF	45-60
							222-238	2327 HF	58-74
							236-251	2326 HF	72-87
							249-262	2325 HF	85-100
			Madrid	115	07 01 115 0	1626			
	64-80mm	13 of 16	Madrid	114	08 01 114 0	1125			
							424-410	2311 MF	0-52
							412-397	2312 MF	45-97
							399-396	2313 MF	90-100
			Madrid	114	07 01 114 0	1625			
	65-610mm	14 of 16	Madrid	115	08 01 115 0	1126			
							296-300	2321 HF	0-5
							298-314	2320 HF	3-19
							312-327	2319 HF	17-32
							325-341	2318 HF	30-46
							339-354	2317 HF	44-59
							352-367	2316 HF	57-72
							365-381	2315 HF	70-86
							379-392	2314 HF	84-100
			Madrid	115	07 01 115 0	1626			
	65-80mm	14 of 16	Madrid	114	08 01 114 0	1125			
							556-542		0-50
							544-529		43-93
							531-527		87-100
			Madrid	114	07 01 114 0	1625			
	66-610mm	15 of 16	Madrid	114	08 01 114 0	1125			
							428-432	2310 HF	0-5
							430-446	2309 HF	3-19
							444-459	2308 HF	17-32
							457-472	2307 HF	30-45
							470-486	2306 HF	43-59
							484-499	2305 HF	57-72
							497-513	2304 HF	70-85
							511-524	2303 HF	83-100
			Madrid	114	07 01 114 0	1625			
	66-80mm	15 of 16	Madrid	114	08 01 114 0	1125			
							687-674	2290 MF	0-47
							676-661	2291 MF	40-90
							663-658	2292 MF	83-100
			Madrid	114	07 01 114 0	1625			
	67-610mm	16 of 16	Madrid	114	08 01 114 0	1125			
							558-562	2299 HF	0-5
							560-575	2298 HF	3-18
							573-589	2297 HF	16-32
							587-602	2296 HF	30-45
							600-616	2295 HF	43-59
							614-629	2294 HF	57-72
							627-642	2293 HF	70-85
			Madrid	114	07 01 114 0	1625			
	67-80mm	16 of 16	Madrid	113	08 01 113 0	1124			
							817-804	2279 MF	0-47
							806-790	2280 MF	40-93
							792-788	2281 MF	87-100
			Madrid	113	07 01 113 0	1624			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. _ OF _	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-0	5-610mm	1 of 16	Woomera	140	05 01 140 0	1151			
							439-444	2967 HF	0 - 6
							442-457	2966 HF	4 - 19
							455-470	2965 HF	17 - 32
							468-484	2964 HF	30 - 46
							482-497	2963 HF	44 - 59
							495-511	2962 HF	57 - 73
							509-524	2961 HF	71 - 86
							522-535	2960 HF	84 - 100
			Woomera	004	05 01 004 0	1008			
							457-472	0092 HP	19 - 34
							470-486	0091 HP	32 - 48
							484-499	0090 HP	46 - 61
							497-512	0089 HP	59 - 74
							510-526	0088 HP	72 - 88
							524-536	0087 HP	86 - 98
			Goldstone	004	03 04 004 0	1002			
							439-443	0019 HP	0 - 5
							441-457	0018 HP	3 - 19
							455-470	0017 HP	17 - 32
							468-483	0016 HP	30 - 45
							481-497	0015 HP	43 - 59
							495-510	0014 HP	57 - 72
							508-524	0013 HP	70 - 86
							522-535	0012 HP	84 - 100
			Woomera	140	06 01 140 0	1651			
			Woomera	004	06 01 004 0	1508			
			Goldstone	004	04 04 004 0	1502			
	5-80mm	1 of 16	Woomera	139	06 01 139 0	1150			
							698-686	2946 MF	0 - 45
							688-682	2947 MF	38 - 55
			Woomera	140	05 01 140 0	1151			
							682-670	2948 MF	55 - 100
			Goldstone	002	04 04 002 0	1001			
							698-687	0009 MP	0 - 41
							689-681	0010 MP	34 - 62
			Goldstone	003	03 04 003 0	1003			
							681-670	0034 MP	62 - 100
			Woomera	003	05 01 003 0	1009			
							677-670	0055 MP	76 - 100
			Woomera	139	06 01 139 0	1650			
			Woomera	140	06 01 140 0	1651			
			Goldstone	002	03 04 002 0	1501			
			Goldstone	003	04 04 003 0	1503			
			Woomera	003	06 01 003 0	1509			
	6-610mm	2 of 16	Woomera	140	05 01 140 0	1151			
							589-576	2956 HF	0 - 8
							574-589	2955 HF	6 - 21
							587-603	2954 HF	19 - 35
							601-616	2953 HF	33 - 48
							614-629	2952 HF	46 - 61
							627-643	2951 HF	59 - 75
							641-656	2950 HF	73 - 88
							654-669	2949 HF	86 - 100
			Goldstone	003	03 01 003 0	1003			
							573-588	0041 HP	5 - 20
							586-602	0040 HP	18 - 34
							600-615	0039 HP	32 - 47
							613-629	0038 HP	45 - 61
							627-642	0037 HP	59 - 74
							640-655	0036 HP	72 - 87
							653-669	0035 HP	85 - 100

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-0	6-610mm	2 of 16	Woomera	003	05 01 003 0	1009			
							573-588	0061 HP	5 - 20
							586-602	0060 HP	18 - 34
							600-615	0059 HP	32 - 47
							613-629	0058 HP	45 - 61
							627-642	0057 HP	59 - 74
							640-655	0056 HP	72 - 87
							653-669	0055 HP	85 - 100
			Woomera	140	06 01 140 0	1651			
			Goldstone	003	04 01 003 0	1503			
			Woomera	003	06 01 003 0	1509			
	6-80mm	2 of 16	Woomera	139	06 01 139 0	1150			
							826-813	2935 MF	0 - 58
							815-800	2936 MF	41 - 93
							802-798	2937 MF	86 - 100
			Goldstone	002	04 04 002 0	1001			
							808-791	0001 MP	66 - 90
			Madrid	002	08 04 002 0	1014			
							808-791	0131 MP	66 - 90
			Madrid	006	08 04 006 0	1015			
							826-813	0140 MP	0 - 58
							815-800	0141 MP	41 - 93
							802-798	0142 MP	86 - 100
			Woomera	139	05 01 139 0	1650			
			Goldstone	002	03 04 002 0	1501			
			Madrid	002	07 04 002 0	1514			
			Madrid	006	07 04 006 0	1515			
	7-610mm	3 of 16	Woomera	139	06 01 139 0	1150			
							699-703	2945 HF	0 - 5
							701-716	2944 HF	3 - 18
							715-730	2943 HF	17 - 32
							728-744	2942 HF	30 - 46
							742-757	2941 HF	44 - 59
							755-770	2940 HF	57 - 72
							768-784	2939 HF	70 - 86
							782-797	2938 HF	84 -100
			Goldstone	002	04 04 002 0	1001			
							714-729	0007 HP	16 - 31
							727-743	0006 HP	29 - 45
							741-756	0005 HP	43 - 58
							754-770	0004 HP	56 - 72
							768-783	0003 HP	70 - 85
							781-797	0002 HP	83 - 100
			Madrid	002	08 04 002 0	1014			
							761-769	0193 HP	63 - 71
							767-783	0133 HP	69 - 85
							781-797	0132 HP	83 - 100
			Madrid	006	08 04 006 0	1015			
							774-784	0144 HP	76 - 86
							782-797	0143 HP	84 - 100
			Woomera	139	05 01 139 0	1650			
			Goldstone	002	03 04 002 0	1501			
			Madrid	002	07 04 002 0	1514			
			Madrid	006	07 04 006 0	1515			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. _ OF _	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-0	7-80mm	3 of 16	Woomera	139	06 01 139 0	1150			
							958-945	2924 MF	0 - 47
							947-932	2925 MF	40 - 90
							934-929	2926 MF	83 - 100
			Madrid	005	08 04 005 0	1016			
							958-945	0151 MP	0 - 47
							947-932	0152 MP	40 - 90
							934-929	0153 MP	83 - 100
			Woomera	005	05 01 005 0	1007			
							958-945	0081 MP	0 - 47
							947-932	0082 MP	40 - 90
							934-929	0083 MP	83 - 100
			Woomera	139	05 01 139 0	1650			
			Madrid	005	07 04 005 0	1516			
			Woomera	005	06 01 005 0	1507			
	8-610mm	4 of 16	Woomera	139	06 01 139 0	1150			
							827-835	2934 HF	0 - 9
							833-849	2933 HF	7 - 23
							847-862	2932 HF	21 - 36
							860-876	2931 HF	34 - 50
							874-889	2930 HF	48 - 63
							887-902	2929 HF	61 - 76
							900-916	2928 HF	74 - 90
							914-929	2927 HF	88 - 100
			Madrid	005	08 04 005 0	1016			
							908-914	0155 HP	82 - 88
							912-927	0154 HP	86 - 101
			Woomera	005	05 01 005 0	1007			
							909-916	0084 HP	83 - 90
							914-929	0085 HP	88 - 100
	8-610mm	4 of 16	Madrid	006	08 04 006 0	1015			
							827-842	0139 HP	0 - 16
							840-856	0138 HP	14 - 30
							854-869	0137 HP	28 - 43
							867-882	0136 HP	41 - 56
							880-896	0135 HP	54 - 70
							894-908	0134 HP	68 - 82
			Woomera	139	05 01 139 0	1650			
			Madrid	005	07 04 005 0	1516			
			Woomera	005	06 01 005 0	1507			
			Madrid	006	07 04 006 0	1515			
	8-80mm	4 of 16	Goldstone	138	03 01 138 0	1149			
							088-075	2912 MF	0 - 47
							077-061	2913 MF	40 - 93
							063-059	2914 MF	87 - 100
			Goldstone	008	03 04 008 0	1005			
							088-074	0052 MP	0 - 50
							076-060	0053 MP	43 - 97
							062-059	0054 MP	90 - 100
			Woomera	008	05 01 008 0	1017			
							088-076	0164 MP	0 - 43
							078-063	0165 MP	37 - 87
							065-059	0166 MP	77 - 100
			Goldstone	138	04 01 138 0	1649			
			Goldstone	008	04 04 008 0	1505			
			Woomera	008	06 01 008 0	1517			
	9-610mm	5 of 16	Woomera	139	06 01 139 0	1150			
							959-971	2923 HF	0 - 13

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-0	9-610mm	5 of 16	Goldstone	138	03 01 138 0	1149			
							974-978	2922 HF	16 - 20
							976-992	2921 HF	18 - 34
							990-005	2920 HF	32 - 47
							003-019	2919 HF	45 - 61
							017-032	2918 HF	58 - 74
							030-046	2917 HF	72 - 88
							044-059	2916 HF	86 - 100
			Madrid	005	08 04 005 0	1016			
							959-974	0150 HP	0 - 16
							972-987	0149 HP	14 - 29
							985-001	0148 HP	27 - 43
							999-014	0147 HP	41 - 56
							012-028	0146 HP	54 - 70
							026-040	0145 HP	68 - 82
			Woomera	005	05 01 005 0	1007			
							959-974	0080 HP	0 - 16
							972-987	0079 HP	14 - 29
							985-001	0078 HP	27 - 43
							999-014	0077 HP	41 - 56
							012-028	0076 HP	54 - 70
							026-040	0075 HP	68 - 82
			Woomera	139	05 01 139 0	1650			
			Goldstone	138	04 01 138 0	1649			
			Madrid	005	07 04 005 0	1516			
			Woomera	005	06 01 005 0	1507			
	9-80mm	5 of 16	Goldstone	138	03 01 138 0	1149			
							220-207	2901 MF	0 - 48
							209-193	2902 MF	41 - 97
							195-192	2903 MF	90 - 100
			Goldstone	007	04 04 007 0	1004			
							220-206	0031 MP	0 - 52
							208-192	0032 MP	45 - 100
							194-192	0033 MP	93 - 100
			Goldstone	138	04 01 138 0	1649			
			Goldstone	007	04 04 007 0	1504			
	10-610mm	6 of 16	Goldstone	138	03 01 138 0	1149			
							089-097	2911 HF	0 - 9
							095-111	2910 HF	7 - 23
							109-124	2909 HF	21 - 36
							122-137	2908 HF	34 - 49
							135-151	2907 HF	47 - 63
							149-164	2906 HF	61 - 76
							162-178	2905 HF	74 - 90
							176-191	2904 HF	88 - 100
			Goldstone	008	03 01 008 0	1005			
							089-096	0051 HP	0 - 8
							094-109	0050 HP	6 - 21
							107-123	0049 HP	19 - 35
							121-136	0048 HP	33 - 48
							134-150	0047 HP	46 - 62
							148-163	0046 HP	60 - 75
							161-176	0045 HP	73 - 88
							174-189	0044 HP	86 - 100
			Woomera	008	05 01 008 0	1017			
							089-096	0163 HP	0 - 8
							094-109	0162 HP	6 - 21
							107-123	0161 HP	19 - 35
							121-136	0160 HP	33 - 48
							134-150	0159 HP	46 - 62
							148-163	0158 HP	60 - 75
							161-176	0157 HP	73 - 88
							174-189	0156 HP	86 - 100
			Goldstone	138	04 01 138 0	1649			
			Goldstone	008	04 01 008 0	1505			
			Woomera	008	06 01 008 0	1517			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. OF	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-0	10-80mm	6 of 16	Goldstone	137	04 01 137 0	1148			
							351-339	2890 MF	0 - 43
							341-325	2891 MF	37 - 90
							327-322	2892 MF	83 - 100
			Goldstone	137	03 01 137 0	1648			
	11-610mm	7 of 16	Goldstone	138	03 01 138 0	1149	221-229	2900 HF	0 - 9
							227-242	2899 HF	7 - 22
							240-256	2898 HF	20 - 36
							254-268	2897 HF	34 - 48
			Goldstone	137	04 01 137 0	1148			
							270-281	2896 HF	50 - 61
							279-294	2895 HF	59 - 74
							292-307	2894 HF	72 - 87
							305-320	2893 HF	85 - 100
			Goldstone	007	04 04 007 0	1004			
							221-226	0030 HP	0 - 6
							224-239	0029 HP	4 - 19
							237-252	0028 HP	17 - 32
							250-266	0027 HP	30 - 46
							264-279	0026 HP	44 - 59
							277-293	0025 HP	57 - 73
							291-306	0024 HP	71 - 86
			Goldstone	138	04 01 138 0	1649			
			Goldstone	137	03 01 137 0	1648			
			Goldstone	007	03 04 007 0	1504			
	11-80mm	7 of 16	Goldstone	137	04 01 137 0	1148			
							482-471	2879 MF	0 - 41
							473-457	2880 MF	34 - 90
							459-454	2881 MF	83 - 100
			Madrid	009	07 04 009 0	1012			
							482-469	0126 MP	0 - 90
			Woomera	009	06 01 009 0	1022			
							482-476	0191 MP	0 - 45
							472-470	0192 MP	38 - 45
			Goldstone	137	03 01 137 0	1648			
			Madrid	009	08 04 009 0	1512			
			Woomera	009	05 01 009 0	1522			
	12-610mm	8 of 16	Goldstone	137	04 01 137 0	1148			
							353-359	2889 HF	0 - 7
							357-372	2888 HF	5 - 20
							370-386	2887 HF	18 - 34
							384-399	2886 HF	32 - 47
							397-412	2885 HF	45 - 60
							410-426	2884 HF	58 - 74
							424-439	2883 HF	72 - 87
							437-453	2882 HF	85 - 100
			Goldstone	137	03 01 137 0	1648			
	12-80mm	8 of 16	Madrid	136	07 01 136 0	1147			
							613-601	2868 MF	0 - 43
							603-587	2869 MF	37 - 90
							589-584	2870 MF	83 - 100
			Madrid	009	07 04 009 0	1012			
							592-584	0117 MP	73 - 100
			Woomera	009	06 01 009 0	1022			
							592-584	0182 MP	73 - 100
			Madrid	136	08 01 136 0	1647			
			Madrid	009	08 04 009 0	1512			
			Woomera	009	05 01 009 0	1522			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-0	13-610mm	9 of 16	Goldstone	137	04 01 137 0	1148			
							484-491	2878 HF	0 - 8
							489-504	2877 HF	6 - 21
							502-518	2876 HF	19 - 35
							516-531	2875 HF	33 - 48
							529-544	2874 HF	46 - 61
							542-557	2873 HF	59 - 74
			Madrid	136	07 01 136 0	1147			
							558-569	2872 HF	75 - 86
							567-582	2871 HF	84 - 100
			Madrid	009	07 04 009 0	1012			
							484-490	0125 HP	0 - 7
							488-504	0124 HP	5 - 21
							502-517	0123 HP	19 - 34
							515-530	0122 HP	32 - 47
							528-544	0121 HP	45 - 61
							542-557	0120 HP	59 - 74
							555-571	0119 HP	72 - 88
							569-582	0118 HP	86 - 100
			Woomera	009	06 01 009 0	1022			
							484-490	0190 HP	0 - 7
							488-504	0189 HP	5 - 21
							502-517	0188 HP	19 - 34
							515-530	0187 HP	32 - 47
							528-544	0186 HP	45 - 61
							542-557	0185 HP	59 - 74
							555-571	0184 HP	72 - 88
							569-582	0183 HP	86 - 100
			Goldstone	137	03 01 137 0	1648			
			Madrid	136	08 01 136 0	1647			
			Madrid	009	08 04 009 0	1512			
			Woomera	009	05 01 009 0	1522			
	13-80mm	9 of 16	Madrid	136	07 01 136 0	1147			
							745-730	2857 MF	0 - 53
							732-717	2858 MF	47 - 97
							719-716	2859 MF	90 - 100
			Madrid	136	08 01 136 0	1647			
	14-610mm	10 of 16	Madrid	136	07 01 136 0	1147			
							615-621	2867 HF	0 - 8
							619-634	2866 HF	6 - 20
							632-647	2865 HF	18 - 33
							645-661	2864 HF	31 - 47
							659-674	2863 HF	45 - 60
							672-688	2862 HF	58 - 74
							686-701	2861 HF	72 - 87
							699-714	2860 HF	85 - 100
			Madrid	136	08 01 136 0	1647			
	14-80mm	10 of 16	Madrid	135	07 01 135 0	1146			
							875-862	2997 MF	0 - 48
							864-858	2998 MF	41 - 62
			Madrid	136	07 01 136 0	1147			
							857-847	2848 MF	66 - 100
			Madrid	135	08 01 135 0	1646			
			Madrid	136	08 01 136 0	1647			
	15-610mm	11 of 16	Madrid	136	07 01 136 0	1147			
							747-753	2856 HF	0 - 7
							751-766	2855 HF	5 - 20
							764-779	2854 HF	18 - 33
							777-793	2853 HF	31 - 47
							791-806	2852 HF	45 - 60
							804-820	2851 HF	58 - 74
							818-833	2850 HF	72 - 87
							831-846	2849 HF	86 - 100
			Madrid	136	08 01 136 0	1647			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. OF	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-0	15-80mm	11 of 16	Madrid	135	07 01 135 0	1146			
							006-994	2986 MF	0 - 45
							996-981	2987 MF	38 - 90
							983-978	2988 MF	83 - 100
			Madrid	135	08 01 135 0	1646			
	16-610mm	12 of 16	Madrid	135	07 01 135 0	1146			
							876-882	2996 HF	0 - 7
							880-896	2995 HF	5 - 21
							894-909	2994 HF	19 - 34
							907-923	2993 HF	32 - 48
							921-936	2992 HF	46 - 61
							936-949	2991 HF	61 - 74
							947-963	2990 HF	72 - 88
							961-976	2989 HF	86 - 100
			Madrid	135	08 01 135 0	1646			
	16-80mm	12 of 16	Madrid	135	07 01 135 0	1146			
							137-124	2975 MF	0 - 45
							126-111	2976 MF	39 - 87
							113-109	2977 MF	81 - 100
			Madrid	135	08 01 135 0	1646			
	17-610mm	13 of 16	Madrid	135	07 01 135 0	1146			
							008-014	2985 HF	0 - 7
							012-018	2984 HF	5 - 21
							026-041	2983 HF	19 - 34
							039-054	2982 HF	32 - 47
							052-068	2981 HF	45 - 61
							066-081	2980 HF	59 - 74
							079-095	2979 HF	72 - 88
							093-108	2978 HF	86 - 100
			Madrid	135	08 01 135 0	1646			
	17-80mm	13 of 16	Madrid	134	07 01 134 0	1145			
							269-256	2838 MF	0 - 47
							258-243	2839 MF	40 - 90
							245-240	2840 MF	83 - 100
			Madrid	134	08 01 134 0	1645			
	18-610mm	14 of 16	Madrid	135	07 01 135 0	1146			
							139-146	2974 HF	0 - 8
							144-159	2973 HF	6 - 21
			Madrid	134	07 01 134 0	1145			
							163-173	2846 HF	25 - 35
							171-187	2845 HF	33 - 49
							185-200	2844 HF	47 - 62
							198-214	2843 HF	60 - 76
							212-227	2842 HF	74 - 89
							225-240	2841 HF	87 - 100
			Madrid	135	08 01 135 0	1646			
			Madrid	134	08 01 134 0	1645			
	18-80mm	14 of 16	Madrid	134	07 01 134 0	1145			
							399-386	2827 MF	0 - 47
							388-372	2828 MF	40 - 93
							374-370	2829 MF	87 - 100
			Madrid	134	08 01 134 0	1645			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-0	19-610mm	15 of 16	Madrid	134	07 01 134 0	1145			
							272-276	2837 HF	0 - 5
							274-290	2836 HF	3 - 19
							288-303	2835 HF	17 - 32
							301-316	2834 HF	30 - 45
							314-330	2833 HF	43 - 59
							328-343	2832 HF	57 - 72
							341-357	2831 HF	70 - 86
							355-370	2830 HF	84 - 100
			Madrid	134	08 01 134 0	1645			
	19-80mm	15 of 16	Woomera	133	05 01 133 0	1144			
							530-516	2815 MF	0 - 50
							518-502	2816 MF	43 - 97
							504-501	2817 MF	90 - 100
			Woomera	133	06 01 133 0	1644			
	20-610mm	16 of 16	Madrid	134	07 01 134 0	1145			
							399-404	2826 HF	0 - 6
							402-417	2825 HF	4 - 19
							415-430	2824 HF	17 - 32
							428-444	2823 HF	30 - 46
							442-456	2822 HF	44 - 58
			Woomera	133	05 01 133 0	1144			
							457-460	2821 HF	59 - 62
							458-473	2820 HF	60 - 75
							471-486	2819 HF	73 - 88
							484-500	2818 HF	86 - 100
			Madrid	134	08 01 134 0	1645			
			Woomera	133	06 01 133 0	1644			
	20-80mm	16 of 16	Woomera	133	05 01 133 0	1144			
							661-648	2804 MF	0 - 43
							650-634	2805 MF	36 - 93
							636-632	2806 MF	86 - 100
			Goldstone	010	03 04 0100	1006			
							661-647	0069 MP	0 - 44
							649-634	0070 MP	39 - 93
							636-632	0071 MP	86 - 100
			Madrid	010	07 040 100	1011			
							661-647	0111 MP	0 - 44
							649-634	0112 MP	39 - 93
							636-632	0113 MP	86 - 100
			Woomera	133	06 01 133 0	1644			
			Goldstone	010	04 04 010 0	1506			
			Madrid	010	08 04 010 0	1511			
	21-610mm	1 of 4	Woomera	133	05 01 133 0	1144			
							532-538	2814 HF	0 - 7
							540-551	2813 HF	9 - 20
							549-565	2812 HF	18 - 34
							563-578	2811 HF	32 - 47
							576-591	2810 HF	45 - 60
							589-605	2809 HF	58 - 74
							603-618	2808 HF	72 - 87
							616-632	2807 HF	85 - 100
			Goldstone	010	03 04 010 0	1006			
							584-602	0074 HP	53 - 71
							600-616	0073 HP	69 - 85
							614-629	0072 HP	83 - 98
			Madrid	010	07 04 010 0	1011			
							590-604	0116 HP	59 - 73
							602-618	0115 HP	71 - 87
							616-632	0114 HP	85 - 100
			Woomera	133	06 01 133 0	1644			
			Goldstone	010	04 04 010 0	1506			
			Madrid	010	08 04 010 0	1511			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. _ OF _	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-0	21-80mm	1 of 4	Woomera	132	06 01 132 0	1143			
							792-777	2792 MF	0 - 53
							779-766	2793 MF	47 - 90
			Woomera	133	05 01 133 0	1144			
							765-763	2795 MF	93 - 100
			Woomera	132	05 01 132 0	1643			
			Woomera	133	06 01 133 0	1644			
	22-610mm	2 of 4	Woomera	133	05 01 133 0	1144			
							663-668	2803 HF	0 - 6
							671-681	2802 HF	9 - 19
							679-694	2801 HF	17 - 32
							692-708	2800 HF	30 - 46
							706-721	2799 HF	44 - 59
							719-735	2798 HF	57 - 73
							733-748	2797 HF	71 - 86
							746-762	2796 HF	84 - 100
			Goldstone	010	03 04 010 0	1006			
							663-667	0068 HP	0 - 5
							665-681	0067 HP	3 - 19
							679-694	0066 HP	17 - 32
							692-707	0065 HP	30 - 45
							705-719	0064 HP	43 - 57
			Madrid	010	07 04 010 0	1011			
							663-667	0110 HP	0 - 5
							665-681	0109 HP	3 - 19
							679-694	0108 HP	17 - 32
							692-707	0107 HP	30 - 45
							705-719	0106 HP	43 - 57
			Woomera	133	06 01 133 0	1644			
			Goldstone	010	04 04 040 0	1506			
			Madrid	010	08 04 0100	1511			
	22-80mm	2 of 4	Woomera	132	06 01 132 0	1143			
							923-909	2781 MF	0 - 52
							911-896	2782 MF	45 - 97
							898-895	2783 MF	90 - 100
			Goldstone	011	03 04 011 0	1010			
							923-911	0101 MP	0 - 45
							913-897	0102 MP	38 - 93
							899-895	0103 MP	86 - 100
			Woomera	011	05 01 011 0	1028			
							923-915	0221 MP	0 - 31
							917-902	0222 MP	24 - 76
							904-895	0223 MP	69 - 100
			Woomera	132	05 01 132 0	1643			
			Goldstone	011	04 04 011 0	1510			
			Madrid	011	06 01 011 0	1528			
	23-610mm	3 of 4	Woomera	132	06 01 132 0	1143			
							794-799	2791 HF	0 - 6
							803-813	2790 HF	10 - 20
							811-826	2789 HF	18 - 33
							824-840	2788 HF	31 - 47
							838-853	2787 HF	45 - 60
							851-867	2786 HF	58 - 74
							865-880	2785 HF	72 - 87
							878-894	2784 HF	85 - 100
			Goldstone	011	03 04 011 0	1010			
							867-881	0105 HP	74 - 88
							879-894	0104 HP	86 - 100
			Woomera	011	05 01 011 0	1028			
							868-881	0225 HP	75 - 88
							879-894	0224 HP	86 - 100
			Woomera	132	05 01 132 0	1643			
			Goldstone	011	04 04 011 0	1510			
			Woomera	011	06 01 011 0	1528			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
I-0	23-80mm	3 of 4	Woomera	132	06 01 132 0	1143			
							054-041	2771 MF	0 - 48
							043-028	2772 MF	41 - 93
							030-026	2972 MF	86 - 100
			Woomera	132	05 01 132 0	1643			
	24-610mm	4 of 4	Woomera	132	06 01 132 0	1143			
							926-935	2780 HF	0 - 10
							933-943	2779 HF	8 - 18
							941-956	2778 HF	16 - 31
							954-969	2777 HF	29 - 44
							967-983	2776 HF	42 - 58
							981-996	2775 HF	56 - 71
							994-010	2774 HF	69 - 85
							008-023	2773 HF	83 - 100
			Woomera	011	05 01 011 0	1028			
							929-944	0220 HP	4 - 19
							942-957	0219 HP	17 - 32
							955-971	0218 HP	30 - 46
							969-983	0217 HP	44 - 58
			Goldstone	011	03 04 011 0	1010			
							946-960	0099 HP	21 - 35
							958-973	0098 HP	33 - 48
							971-983	0097 HP	46 - 58
			Woomera	132	05 01 132 0	1643			
			Woomera	011	06 01 011 0	1528			
			Goldstone	011	04 04 011 0	1510			
	24-80mm	4 of 4	Goldstone	131	03 01 131 0	1142			
							185-171	2760 MF	0 - 50
							173-158	2761 MF	43 - 93
							160-156	2762 MF	87 - 100
			Goldstone	131	04 01 131 0	1642			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. _ OF _	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
Front-side	25-60mm	1 of 1	Woomera	132	06 01 132 0	1143			
							056-063	2770 HF	0 - 8
							061-076	2769 HF	6 - 21
			Goldstone	131	03 01 131 0	1142			
							077-086	2768 HF	22 - 31
							084-099	2767 HF	29 - 44
							097-113	2766 HF	42 - 58
							111-126	2765 HF	56 - 71
							124-140	2764 HF	69 - 85
							138-153	2763 HF	83 - 100
			Woomera	132	05 01 132 0	1643			
			Goldstone	131	04 01 131 0	1642			
	25-80mm	1 of 1	Goldstone	131	03 01 131 0	1142			
							315-301	2749 MF	0 - 52
							303-287	2750 MF	45 - 100
							289-287	2751 MF	93 - 100
			Goldstone	131	04 01 131 0	1642			
	26-610mm	1 of 1	Goldstone	131	03 01 131 0	1142			
							187-191	2759 HF	0 - 5
							189-204	2758 HF	3 - 18
							202-218	2757 HF	16 - 32
							216-231	2756 HF	30 - 45
							229-245	2755 HF	43 - 59
							243-258	2754 HF	57 - 72
							256-272	2753 HF	70 - 86
							270-283	2752 HF	84 - 100
			Goldstone	131	04 01 131 0	1642			
	26-80mm	1 of 1	Goldstone	130	04 01 131 0	1141			
							446-433	2737 MF	0 - 47
							435-419	2738 MF	40 - 93
							421-417	2739 MF	87 - 100
			Madrid	012	08 04 012 0	1020			
							446-438	0181 MP	0 - 36
			Goldstone	130	03 01 130 0	1641			
			Madrid	012	07 04 012 0	1520			
	27-610mm	1 of 1	Goldstone	131	03 01 131 0	1142			
							317-323	2748 HF	0 - 7
							321-336	2747 HF	5 - 20
							334-350	2746 HF	18 - 34
							348-363	2745 HF	32 - 47
							361-377	2744 HF	45 - 61
							375-389	2743 HF	59 - 73
			Goldstone	130	04 01 130 0	1141			
							390-401	2741 HF	74 - 85
							399-413	2740 HF	83 - 100
			Goldstone	131	04 01 131 0	1642			
			Goldstone	130	03 01 130 0	1641			
	27-80mm	1 of 1	Goldstone	130	04 01 130 0	1141			
							576-563	2716 MF	0 - 47
							565-549	2717 MF	40 - 93
							551-547	2718 MF	87 - 100
			Goldstone	130	03 01 130 0	1641			
	29-610mm	1 of 1	Goldstone	130	04 01 130 0	1141			
							579-582	2715 HF	0 - 4
							580-596	2714 HF	2 - 18
							594-609	2713 HF	16 - 31
							607-623	2712 HF	29 - 45
							621-636	2711 HF	43 - 58
							634-650	2710 HF	56 - 72
							648-663	2709 HF	70 - 85
							661-675	2708 HF	83 - 100

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. _ OF _	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
Front-side	29-610mm	1 of 1	Goldstone	014	03 04 014 0	1018			
							644-652	0171 HP	66 - 74
							650-666	0170 HP	72 - 88
							664-675	0169 HP	86 - 100
			Goldstone	130	03 01 130 0	1641			
			Goldstone	014	04 04 014 0	1518			
	29-80mm	1 of 1	Madrid	129	07 01 129 0	1140			
							838-824	2694 MF	0 - 50
							826-811	2695 MF	43 - 93
							813-809	2696 MF	87 - 100
			Madrid	129	08 01 129 0	1640			
	31-610mm	1 of 1	Madrid	129	07 01 129 0	1140			
							841-846	2693 HF	0 - 7
							844-860	2692 HF	5 - 21
							858-873	2691 HF	19 - 34
							871-887	2690 HF	32 - 48
							885-900	2689 HF	46 - 61
							898-914	2688 HF	59 - 75
							912-927	2687 HF	73 - 88
							925-937	2686 HF	86 - 100
			Madrid	129	08 01 129 0	1640			
	31-80mm	1 of 1	Madrid	128	07 01 128 0	1139			
							100-088	2643 HF	0 - 43
							090-075	2644 MF	37 - 87
							077-071	2645 MF	80 - 100
			Madrid	128	08 01 128 0	1639			
	32-610mm	1 of 1	Madrid	129	07 01 129 0	1140			
							971-974	2682 HF	0 - 4
							972-986	2681 HF	2 - 16
			Madrid	128	07 01 128 0	1139			
							988-003	2651 HF	18 - 33
							001-017	2650 HF	31 - 47
							015-030	2649 HF	45 - 60
							028-043	2648 HF	58 - 73
							041-057	2647 HF	71 - 87
							055-069	2646 HF	85 - 100
			Woomera	015	05 01 015 0	1030			
							004-012	0245 HP	34 - 42
			Madrid	129	08 01 129 0	1640			
			Madrid	128	08 01 128 0	1639			
			Woomera	015	06 01 015 0	1530			
	32-80mm	1 of 1	Madrid	128	07 01 128 0	1139			
							231-218	2632 MF	0 - 48
							220-205	2633 MF	41 - 93
							207-203	2634 MF	86 - 100
			Woomera	016	06 01 016 0	1032			
							231-228	0238 MP	0 - 14
							230-220	0239 MP	7 - 41
			Madrid	128	08 01 128 0	1639			
			Woomera	016	05 01 016 0	1532			
	33-610mm	1 of 1	Madrid	128	07 01 128 0	1139			
							102-108	2642 HF	0 - 7
							106-122	2641 HF	5 - 21
							120-135	2640 HF	19 - 34
							133-148	2639 HF	32 - 47
							146-162	2638 HF	45 - 61
							160-175	2637 HF	59-74
							173-189	2636 HF	72 - 88
							187-202	2635 HF	86 - 100
			Madrid	128	08 01 128 0	1639			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
Front-side	33-80mm	1 of 1	Madrid	127	07 01 127 0	1138			
							363-350	2621 MF	0 - 47
							352-337	2622 MF	40 - 90
							339-334	2623 MF	83 - 100
			Madrid	127	08 01 127 0	1638			
	34-610mm	1 of 1	Madrid	128	07 01 128 0	1139			
							232-242	2631 HF	0 - 11
							241-256	2630 HF	10 - 25
							254-269	2629 HF	23 - 38
							267-283	2628 HF	36 - 52
							281-296	2627 HF	50 - 65
							294-309	2626 HF	63 - 78
			Madrid	127	07 01 127 0	1138			
							310-319	2625 HF	79 - 88
							317-332	2624 HF	86 - 100
			Woomera	016	06 01 016 0	1032			
							235-250	0237 HP	4 - 19
							248-264	0236 HP	17 - 33
							262-275	0235 HP	31 - 44
			Madrid	128	08 01 128 0	1639			
			Madrid	127	08 01 127 0	1638			
			Woomera	016	05 01 016 0	1532			
	34-80mm	1 of 1	Madrid	127	07 01 127 0	1138			
							493-480	2611 MF	0 - 48
							482-466	2612 MF	41 - 97
							468-465	2613 MF	90 - 100
			Madrid	127	08 01 127 0	1638			
	41-610mm	1 of 1	Woomera	125	06 01 125 0	1136			
							150-153	2556 HF	0 - 4
							151-166	2555 HF	2 - 17
							164-180	2554 HF	15 - 31
							178-193	2553 HF	29 - 44
							191-207	2552 HF	42 - 56
							205-220	2551 HF	54 - 71
							218-234	2550 HF	69 - 85
							232-246	2549 HF	83 - 97
			Goldstone	124	03 01 124 0	1135			
							247-249	2680 HF	98 - 100
			Woomera	125	05 01 125 0	1636			
			Goldstone	124	04 01 124 0	1635			
	41-80mm	1 of 1	Goldstone	124	03 01 124 0	1135			
							410-397	2666 MF	0 - 47
							399-384	2667 MF	40 - 90
							386-381	2668 MF	87 - 100
			Goldstone	124	04 01 124 0	1635			
	42-610mm	1 of 1	Goldstone	124	03 01 124 0	1135			
							280-285	2676 HF	0 - 6
							283-298	2675 HF	4 - 19
							296-312	2674 HF	17 - 33
							310-325	2673 HF	31 - 46
							323-339	2672 HF	44 - 60
							337-352	2671 HF	58 - 73
							350-366	2670 HF	71 - 87
							364-378	2669 HF	85 - 100
			Goldstone	124	04 01 124 0	1635			
	42-80mm	1 of 1	Goldstone	124	03 01 124 0	1135			
							540-524	2655 MF	0 - 57
							526-511	2656 MF	50 - 100
							513-511	2657 MF	90 - 100
			Goldstone	124	04 01 124 0	1635			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
Front-side	43-610mm	1 of 1	Goldstone	124	03 01 124 0	1135			
							411-415	2665 HF	0 - 5
							413-428	2664 HF	3 - 18
							426-442	2663 HF	16 - 32
							440-455	2662 HF	30 - 45
							453-468	2661 HF	43 - 58
							466-482	2660 HF	56 - 72
							480-495	2659 HF	70 - 85
							493-508	2658 HF	83 - 100
			Goldstone	124	04 01 124 0	1635			
	43-80mm	1 of 1	Goldstone	123	04 01 123 0	1134			
							672-656	2540 MF	0 - 50
							658-643	2541 MF	44 - 88
							645-639	2542 MF	83 - 100
			Goldstone	123	03 01 123 0	1634			
	44-610mm	1 of 1	Goldstone	124	03 01 124 0	1135			
							538-547	2654 HF	0 - 10
							545-559	2653 HF	8 - 22
			Goldstone	123	04 01 123 0	1134			
							560-574	2548 HF	23 - 37
							572-587	2547 HF	35 - 50
							585-600	2546 HF	48 - 63
							598-614	2545 HF	61 - 77
							612-627	2544 HF	75 - 90
							625-641	2543 HF	88 - 100
			Goldstone	124	04 01 124 0	1635			
			Goldstone	123	03 01 123 0	1634			
	44-80mm	1 of 1	Goldstone	123	04 01 123 0	1134			
							802-788	2529 MF	0 - 50
							790-775	2530 MF	43 - 93
							777-773	2531 MF	87 - 100
			Goldstone	123	03 01 123 0	1634			
	46-610mm	1 of 1	Goldstone	123	04 01 123 0	1134			
							804-815	2528 HF	0 - 12
							813-829	2527 HF	11 - 26
							827-842	2526 HF	24 - 39
							840-855	2525 HF	37 - 52
							853-868	2524 HF	50 - 65
			Madrid	122	07 01 122 0	1133			
							869-878	2523 HF	66 - 75
							876-891	2522 HF	73 - 88
							889-899	2521 HF	86 - 100
			Goldstone	123	03 01 123 0	1634			
			Madrid	122	08 01 122 0	1633			
	46-80mm	1 of 1	Madrid	122	07 01 122 0	1133			
							064-050	2508 MP	0 - 50
							052-037	2509 MP	43 - 93
							039-035	2510 MP	87 - 100
			Madrid	122	08 01 122 0	1633			
	47-610mm	1 of 1	Madrid	122	07 01 122 0	1133			
							934-938	2518 HF	0 - 5
							936-952	2517 HF	3 - 18
							950-965	2516 HF	16 - 22
							963-978	2515 HF	20 - 45
							976-992	2514 HF	43 - 61
							990-005	2513 HF	59 - 72
							003-019	2512 HF	70 - 86
							017-032	2511 HF	84 - 100
			Madrid	122	08 01 122 0	1633			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
Front-side	47-80mm	1 of 1	Madrid	121	07 01 121 0	1132			
							194-184	2497 MF	0 - 37
							183-169	2498 MF	40 - 87
							171-165	2499 MF	80 - 100
			Madrid	121	08 01 121 0	1632			
	50-610mm	1 of 1	Madrid	121	07 01 121 0	1132			
							328-332	2485 HF	0 - 5
							330-345	2484 HF	3 - 18
							343-359	2483 HF	16 - 32
							357-372	2482 HF	30 - 45
							370-386	2481 HF	43 - 59
							384-399	2480 HF	57 - 72
							397-412	2479 HF	70 - 85
							410-424	2478 HF	83 - 100
			Madrid	121	08 01 121 0	1632			
	50-80mm	1 of 1	Madrid	120	07 01 120 0	1131			
							587-574	2464 MF	0 - 47
							576-560	2465 MF	40 - 93
							562-558	2466 MF	87 - 100
			Madrid	120	08 01 120 0	1631			
	51-610mm	1 of 1	Madrid	121	07 01 121 0	1132			
							459-471	2474 HF	0 - 13
							469-484	2473 HF	11 - 26
							482-496	2472 HF	24 - 38
			Madrid	120	07 01 120 0	1131			
							498-504	2471 HF	40 - 46
							502-517	2470 HF	44 - 59
							515-531	2469 HF	57 - 73
							529-544	2468 HF	71 - 86
							542-556	2467 HF	84 - 100
			Madrid	121	08 01 121 0	1632			
			Madrid	120	08 01 120 0	1631			
	51-80mm	1 of 1	Madrid	120	07 01 120 0	1131			
							718-706	2453 MF	0 -45
							708-692	2454 MF	38 - 93
							694-690	2455 MF	86 - 100
			Madrid	120	08 01 120 0	1631			
	101-610mm	1 of 1	Madrid	099	07 01 099 0	1110			
							011-024	1823 HF	0 - 14
							022-036	1822 HF	12 - 26
			Woomera	098	06 01 098 0	1107			
							038-042	1648 HF	28 - 32
							040-055	1647 HF	30 - 45
							053-069	1646 HF	43 - 59
							067-082	1645 HF	57 - 72
							080-096	1644 HF	70 - 86
							094-109	1643 HF	84 - 100
			Madrid	028	07 01 028 0	1040			
							011-017	0366 HP	0 - 7
			Madrid	099	08 01 099 0	1610			
			Woomera	098	05 01 098 0	1607			
			Madrid	028	08 01 028 0	1540			
	101-80mm	1 of 1	Woomera	098	06 01 098 0	1107			
							273-257	1629 MF	0 - 50
							259-244	1630 MF	44 - 88
							246-240	1631 MF	83 - 100

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
Front-side	101-80mm	1 of 1	Madrid	029	07 01 019 0	1039			
							273-258	0285 MP	0 - 47
							260-245	0286 MP	41 - 85
							247-240	0287 MP	80 - 100
			Woomera	098	05 01 098 0	1607			
			Madrid	029	08 01 029 0	1539			
	102-610mm	1 of 1	Woomera	098	06 01 098 0	1107			
							141-147	1639 HF	0 - 7
							145-160	1638 HF	5 - 20
							158-174	1637 HF	18 - 34
							172-187	1636 HF	32 - 45
							185-201	1635 HF	45 - 61
							199-214	1634 HF	59 - 74
							212-228	1633 HF	72 - 88
							226-239	1632 HF	86 - 100
			Madrid	029	07 01 029 0	1039			
							141-147	0296 HP	0 - 7
							144-160	0295 HP	4 - 20
							158-173	0294 HP	18 - 33
							171-186	0293 HP	31 - 46
							184-200	0292 HP	44 - 60
							198-209	0291 HP	58 - 69
							207-215	0290 HP	67 - 75
							213-229	0289 HP	73 - 89
							227-239	0288 HP	87 - 100
			Woomera	098	05 01 098 0	1607			
			Madrid	029	08 01 029 0	1539			
	103-80mm	1 of 1	Woomera	097	05 01 097 0	1106			
							402-391	1769 MF	0 - 40
							393-382	1770 MF	33 - 70
							384-373	1771 MF	63 - 100
			Woomera	097	06 01 097 0	1606			
	104-610mm	1 of 1	Woomera	097	05 01 097 0	1106			
							403-409	1768 HF	0 - 7
							407-422	1767 HF	5 - 20
							420-436	1766 HF	18 - 34
							434-449	1765 HF	32 - 47
							447-464	1764 HF	45 - 62
							464-476	1763 HF	60 - 74
							474-489	1762 HF	72 - 87
							487-499	1761 HF	85 - 100
			Goldstone	030	03 01 030 0	1037			
							451-462	0272 HP	49 - 60
							460-475	0271 HP	58 - 73
							473-489	0270 HP	71 - 87
							487-499	0269 HP	85 - 97
			Woomera	097	06 01 097 0	1606			
			Goldstone	030	04 01 030 0	1537			
	104-80mm	1 of 1	Woomera	097	05 01 097 0	1106			
							663-649	1747 MF	0 - 50
							651-635	1746 MF	43 - 97
							637-634	1749 MF	93 - 100
			Woomera	097	06 01 097 0	1606			
	117-610mm	1 of 1	Woomera	091	05 01 091 0	1104			
							109-115	1382 HF	0 - 7
							113-124	1381 HF	5 - 16
							122-138	1380 HF	14 - 30
							136-151	1379 HF	28 - 43
							149-164	1378 HF	41 - 56
							162-178	1377 HF	54 - 70
							176-191	1376 HF	68 - 83
							189-203	1375 HF	81 - 100

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. _ OF _	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
Front-side	117-610mm	1 of 1	Woomera	091	06 01 091 0	1604			
	117-80mm	1 of 1	Woomera	091	05 01 091 0	1104			
							366-353	1361 MF	0 - 47
							355-339	1362 MF	40 - 93
							341-337	1363 MF	87 - 100
			Woomera	091	06 01 091 0	1604			
	137-610mm	1 of 1	Goldstone	083	03 01 083 0	1084			
							726-730	1152 HF	0 - 5
							728-744	1151 HF	3 - 19
							742-757	1150 HF	17 - 32
							755-770	1149 HF	30 - 45
							768-784	1148 HF	43 - 59
							782-797	1147 HF	57 - 72
							795-811	1146 HF	70 - 86
							809-822	1145 HF	84 - 100
			Goldstone	083	04 01 083 0	1584			
	137-80mm	1 of 1	Goldstone	082	03 01 082 0	1083			
							985-972	1130 MF	0 - 47
							974-958	1131 MF	40 - 93
							960-956	1132 MF	87 - 100
			Goldstone	082	03 01 082 0	1583			
	138-610mm	1 of 1	Goldstone	083	03 01 083 0	1084			
							856-864	1141 HF	0 - 9
							862-878	1140 HF	7 - 23
							876-891	1139 HF	21 - 36
							889-901	1138 HF	34 - 46
			Goldstone	082	03 01 082 0	1083			
							903-913	1136 HF	48 - 58
							911-927	1135 HF	56 - 72
							925-940	1134 HF	70 - 85
							938-952	1133 HF	83 - 100
			Goldstone	083	04 01 083 0	1584			
			Goldstone	082	04 01 082 0	1583			
	138-80mm	1 of 1	Goldstone	082	03 01 082 0	1083			
							115-102	1119 MF	0 - 47
							104-088	1120 MF	40 - 93
							090-086	1121 MF	87 - 100
			Goldstone	082	04 01 082 0	1583			
	139-610mm		Goldstone	082	03 01 082 0	1083			
							987-992	1129 HF	0 - 6
							990-005	1128 HF	4 - 19
							003-019	1127 HF	17 - 33
							017-032	1126 HF	31 - 46
							030-045	1125 HF	44 - 59
							043-059	1124 HF	57 - 73
							057-072	1123 HF	71 - 86
							070-084	1122 HF	84 - 100
			Goldstone	082	04 01 082 0	1583			
	139-80mm	1 of 1	Madrid	081	08 01 081 0	1101			
							246-234	1566 MF	0 - 45
							236-220	1567 MF	38 - 93
							222-218	1568 MF	86 - 100
			Madrid	081	07 01 081 0	1601			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. _ OF _	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
Front-side	140-610mm	1 of 1	Goldstone	082	03 01 082 0	1083			
							119-130	1118 HF	0 - 12
							128-144	1117 HF	10 - 26
							142-157	1116 HF	24 - 39
							155-171	1115 HF	37 - 53
							169-184	1114 HF	51 - 66
							182-197	1113 HF	64 - 79
							195-210	1112 HF	77 - 92
			Madrid	081	08 01 081 0	1101			
							211-215	1569 HF	93 - 100
			Goldstone	082	04 01 082 0	1583			
			Madrid	081	07 01 081 0	1601			
	140-80mm	1 of 1	Madrid	081	08 01 081 0	1101			
							378-363	1555 MF	0 - 53
							365-350	1556 MF	47 - 97
							352-349	1557 MF	90 - 100
			Madrid	081	07 01 081 0	1601			
	173-610mm	1 of 1	Madrid	068	07 01 068 0	1075			
							444-454	0912 HF	0 - 9
							452-467	0911 HF	7 - 24
							465-481	0910 HF	22 - 38
							479-494	0909 HF	36 - 49
							492-508	0908 HF	47 - 65
							506-520	0907 HF	63 - 77
			Madrid	067	07 01 067 0	1074			
							521-530	0906 HF	78 - 87
							528-541	0905 HF	85 - 100
			Madrid	068	08 01 068 0	1575			
			Madrid	067	08 01 067 0	1574			
	173-80mm	1 of 1	Madrid	067	07 01 067 0	1074			
							703-691	0891 MF	0 - 45
							693-678	0892 MF	38 - 90
							680-675	0893 MF	83 - 100
			Madrid	067	08 01 0670	1574			
	174-610mm	1 of 1	Madrid	067	07 01 067 0	1074			
							575-584	0901 HF	0 - 10
							582-593	0900 HF	8 - 19
							591-606	0899 HF	17 - 32
							604-619	0898 HF	30 - 45
							617-633	0897 HF	43 - 59
							631-646	0896 HF	57 - 72
							644-660	0895 HF	70 - 86
							658-672	0894 HF	84 - 100
			Madrid	067	08 01 067 0	1574			
	174-80mm	1 of 1	Madrid	067	07 01 067 0	1074			
							833-819	0880 MF	0 - 50
							821-805	0881 MF	43 - 97
							807-804	0882 MF	90 - 100
			Madrid	067	08 01 067 0	1574			
	175-610mm	1 of 1	Madrid	067	07 01 067 0	1074			
							705-709	0890 HF	0 - 5
							707-722	0889 HF	3 - 18
							720-736	0888 HF	16 - 32
							734-749	0887 HF	30 - 45
							747-763	0886 HF	43 - 59
							761-776	0885 HF	57 - 72
							774-789	0884 HF	70 - 85
							787-801	0883 HF	83 - 100
			Madrid	067	08 01 067 0	1574			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
Front-side	175-80mm	1 of 1	Woomera	66	05 01 066 0	1091			
							962-948	1324 MF	0 - 50
							950-935	1325 MF	43 - 93
							937-933	1326 MF	87 - 100
			Woomera	66	06 01 066 0	1591			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
Farside	28-610mm	1 of 1	Goldstone	130	04 01130 0	1141			
							544-531	2719 HF	0 - 14
							533-518	2720 HF	12 - 27
							520-504	2721 HF	25 - 41
							506-491	2722 HF	39 - 54
							493-478	2733 HF	52 - 67
							480-464	2734 HF	65 - 81
							466-451	2735 HF	79 - 94
							453-448	2736 HF	92 - 100
			Madrid	012	08 04 012 0	1020			
							520-506	0175 HP	25 - 39
							508-493	0176 HP	37 - 52
							495-480	0177 HP	50 - 65
							482-466	0178 HP	63 - 79
							468-453	0179 HP	77 - 92
							453-448	0180 HP	90 - 100
			Goldstone	130	03 01 130 0	1641			
			Madrid	012	07 04 012 0	1520			
	28-80mm	1 of 1	Goldstone	130	04 01 130 0	1141			
							679-685	2707 MF	0 - 23
							683-698	2706 MF	17 - 67
			Madrid	129	07 01 129 0	1140			
							699-708	2705 MF	70 - 100
			Goldstone	013	03 04 013 0	1013			
							699-708	0130 MP	70 - 100
			Madrid	013	08 04 013 0	1023			
							699-708	0197 MP	70 - 100
			Goldstone	014	03 04 014 0	1018			
							679-686	0168 MP	0 - 27
							684-698	0167 MP	20 - 67
			Goldstone	130	03 01 130 0	1641			
			Madrid	129	07 01 129 0	1640			
			Goldstone	013	03 01 013 0	1513			
			Madrid	013	08 04 013 0	1523			
			Goldstone	014	03 04 014 0	1518			
	30-610mm	1 of 1	Madrid	129	07 01 129 0	1140			
							807-793	2697 HF	0 - 15
							795-780	2698 HF	13 - 28
							782-766	2699 HF	26 - 42
							768-753	2700 HF	40 - 55
							755-739	2701 HF	53 - 69
							741-726	2702 HF	67 - 82
							728-712	2703 HF	80 - 96
							714-711	2704 HF	94 - 100
			Goldstone	013	03 04 013 0	1013			
							749-735	0127 HP	59 - 73
							737-722	0128 HP	71 - 86
							724-711	0129 HP	84 - 100
			Madrid	013	08 04 013 0	1023			
							749-735	0194 HP	59 - 73
							737-722	0195 HP	71 - 86
							724-711	0196 HP	84 - 100
			Madrid	129	08 01 129 0	1640			
			Goldstone	013	04 04 013 0	1513			
			Madrid	013	07 04 013 0	1523			
	30-80mm	1 of 1	Madrid	129	07 01 129 0	1140			
							941-945	2685 MF	0 - 17
							943-958	2684 MF	10 - 60
							956-970	2683 MF	53 - 100
			Madrid	129	08 01 129 0	1640			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. _ OF _	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
Farside	35-610mm	1 of 4	Madrid	127	07 01 127 0	1138			
							461-446	2613 HF	0 - 16
							448-433	2614 HF	14 - 29
							435-420	2615 HF	27 - 42
							422-406	2616 HF	40 - 56
							408-393	2617 HF	54 - 69
							395-379	2618 HF	67 - 83
							381-366	2619 HF	81 - 96
							368-364	2620 HF	94 - 100
			Madrid	127	08 01 127 0	1638			
	35-80mm	1 of 4	Madrid	127	07 01 127 0	1138			
							596-605	2603 MF	0 - 36
							603-617	2602 MF	28 - 79
			Woomera	126	05 01 126 0	1137			
							619-624	2601 MF	86 - 100
			Madrid	127	08 01 127 0	1638			
			Woomera	126	06 01 126 0	1637			
	36-610mm	2 of 4	Madrid	127	07 01 127 0	1138			
							592-578	2604 HF	0 - 15
							580-565	2605 HF	13 - 28
							567-551	2606 HF	26 - 42
							553-538	2607 HF	40 - 55
							540-525	2608 HF	53 - 68
							527-511	2609 HF	66 - 82
							513-498	2610 HF	80 - 95
							500-496	2611 HF	93 - 100
			Madrid	127	08 01 127 0	1638			
	36-80mm	2 of 4	Woomera	126	05 01 126 0	1137			
							726-730	2592 MF	0 - 17
							728-743	2591 MF	10 - 60
							741-755	2590 MF	53 - 100
			Woomera	126	06 01 126 0	1637			
	37-610mm	3 of 4	Woomera	126	05 01 126 0	1137			
							723-710	2593 HF	0 - 14
							712-697	2594 HF	12 - 27
							699-683	2595 HF	25 - 41
							685-670	2596 HF	39 - 54
							672-657	2597 HF	52 - 67
							659-643	2598 HF	65 - 81
							645-630	2599 HF	79 - 94
							632-627	2600 HF	92 - 100
			Woomera	126	06 01 126 0	1637			
	37-80mm	3 of 4	Woomera	126	05 01 126 0	1137			
							858-860	2581 MF	0 - 10
							858-873	2580 MF	3 - 55
							871-886	2579 MF	48 - 100
			Woomera	126	06 01 126 0	1637			
	38-610mm	4 of 4	Woomera	126	05 01 126 0	1137			
							854-840	2582 HF	0 - 15
							842-827	2583 HF	13 - 28
							829-813	2584 HF	26 - 42
							815-800	2585 HF	40 - 55
							802-786	2586 HF	53 - 69
							788-773	2587 HF	67 - 82
							775-759	2588 HF	80 - 96
							761-758	2589 HF	94 - 100
			Woomera	126	06 01 126 0	1637			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. OF	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
Farside	38-80mm	4 of 4	Woomera	125	06 01 125 0	1136			
							988-992	2570 MF	0 - 17
							990-005	2569 MF	10 - 60
							003-017	2568 MF	53 - 100
			Woomera	125	05 01 125 0	1636			
	39-610mm	1 of 2	Woomera	125	06 01 125 0	1136			
							985-970	2571 HF	0 - 16
							972-956	2572 HF	14 - 30
							958-943	2573 HF	28 - 43
							945-934	2574 HF	41 - 52
			Woomera	126	05 01 126 0	1137			
							933-918	2575 HF	53 - 68
							920-905	2576 HF	66 - 81
							907-891	2577 HF	79 - 95
							893-888	2578 HF	93 - 100
			Woomera	125	05 01 125 0	1636			
			Woomera	126	06 01 126 0	1637			
	39-80mm	1 of 2	Woomera	125	06 01 125 0	1136			
							119-122	2559 MF	0 - 20
							120-135	2558 MF	7 - 57
							133-148	2557 MF	50 - 100
			Woomera	125	05 01 125 0	1636			
	40-610mm	2 of 2	Woomera	125	06 01 125 0	1136			
							116-102	2560 HF	0 - 15
							104-088	2561 HF	13 - 29
							090-075	2562 HF	27 - 42
							077-061	2563 HF	40 - 56
							063-048	2564 HF	54 - 69
							050-035	2565 HF	67 - 82
							037-021	2566 HF	80 - 96
							023-020	2567 HF	94 - 100
			Woomera	125	05 01 125 0	1636			
	40-80mm	2 of 2	Goldstone	124	03 01 124 0	1135			
							250-254	2679 MF	0 - 17
							252-267	2678 MF	10 - 60
							265-279	2677 MF	53 - 100
			Goldstone	124	04 01 124 0	1635			
	115-610mm	1 of 1	Woomera	092	06 01 092 0	1105			
							942-928	1733 HF	0 - 15
							930-914	1734 HF	13 - 29
							916-901	1735 HF	27 - 42
							903-887	1736 HF	40 - 54
							889-874	1737 HF	52 - 69
							876-861	1738 HF	67 - 82
							863-847	1739 HF	80 - 96
							849-846	1740 HF	94 - 100
			Woomera	034	05 01 034 0	1047			
							847-846	0466 HP	96 - 100
			Woomera	092	05 01 092 0	1605			
			Woomera	034	06 01 034 0	1547			
	115-80mm	1 of 1	Woomera	092	06 01 092 0	1105			
							076-082	1721 MF	0 - 23
							080-095	1720 MF	17 - 67
							093-105	1719 MF	60 - 100
			Woomera	092	05 01 092 0	1605			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
Faraide	116-610mm	1 of 1	Woomera	092	06 01 092 0	1105			
							072-060	1722 HF	0 - 13
							062-046	1723 HF	11 - 25
							048-033	1724 HF	23 - 40
							035-019	1725 HF	38 - 54
							021-006	1726 HF	52 - 67
							008-993	1727 HF	65 - 80
							995-979	1728 HF	78 - 94
							981-975	1729 HF	92 - 100
			Woomera	092	05 01 092 0	1605			
	116-80mm	1 of 1	Woomera	091	05 01 091 0	1104			
							206-209	1374 MF	0 - 14
							207-223	1373 MF	7 - 62
							221-234	1372 MF	55 - 100
			Woomera	091	06 01 091 0	1604			
	136-610mm	1 of 1	Goldstone	083	03 01 083 0	1084			
							691-679	1156 HF	0 - 13
							681-665	1157 HF	11 - 27
							667-652	1158 HF	25 - 40
							654-639	1159 HF	38 - 53
							641-625	1160 HF	51 - 67
							627-612	1161 HF	65 - 80
							612-598	1162 HF	80 - 94
							600-595	1163 HF	92 - 100
			Goldstone	083	04 01 083 0	1584			
	136-80mm	1 of 1	Goldstone	083	03 01 083 0	1084			
							825-829	1144 MF	0 - 17
							827-842	1143 MF	10 - 60
							840-854	1142 MF	53 - 100
			Goldstone	083	04 01 083 0	1584			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. OF	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
B-2	48-610mm	1 of 1	Madrid	122	07 01 122 0	1133			
							067-070	2507 HF	0 - 4
							068-084	2506 HF	2 - 18
							082-097	2505 HF	16 - 29
							095-110	2504 HF	27 - 44
							108-124	2503 HF	42 - 58
							122-137	2502 HF	56 - 69
							135-151	2501 HF	67 - 85
							149-164	2500 HF	83 - 100
			Madrid	122	08 01 122 0	1633			
	48-80mm	1 of 1	Madrid	121	07 01 121 0	1132			
							327-312	2486 MF	0 - 53
							314-299	2487 MF	47 - 97
							301-298	2488 MF	90 - 100
			Madrid	121	08 01 121 0	1632			
	49-610mm	1 of 1	Madrid	121	07 01 121 0	1132			
							196-202	2496 HF	0 - 7
							200-216	2495 HF	5 - 21
							214-229	2494 HF	19 - 34
							227-242	2493 HF	32 - 47
							240-256	2492 HF	45 - 61
							254-269	2491 HF	59 - 74
							267-283	2490 HF	72 - 88
							281-292	2489 HF	86 - 100
			Madrid	121	08 01 121 0	1632			
	49-80mm	1 of 1	Madrid	121	07 01 121 0	1132			
							455-442	2475 MF	0 - 48
							444-428	2476 MF	41 - 97
							430-427	2477 MF	90 - 100
			Madrid	121	08 01 121 0	1632			
B-4	84-610mm	1 of 1	Madrid	106	07 01 106 0	1117			
							785-790	2012 HF	0 - 6
							788-803	2011 HF	4 - 19
							801-816	2010 HF	17 - 32
							814-830	2009 HF	30 - 46
							828-843	2008 HF	44 - 59
							841-857	2007 HF	57 - 73
							855-870	2006 HF	71 - 86
							868-880	2005 HF	84 - 100
			Woomera	024	05 01 024 0	1042			
							829-843	0353 HP	45 - 59
							841-856	0352 HP	57 - 72
							854-869	0351 HP	70 - 85
							867-881	0350 HP	83 - 97
			Madrid	106	08 01 106 0	1617			
			Woomera	024	06 01 024 0	1542			
	84-80mm	1 of 1	Madrid	105	08 01 105 0	1116			
							044-029	1990 MF	0 - 53
							031-016	1991 MF	47 - 97
							018-015	1992 MF	90 - 100
			Madrid	105	07 01 105 0	1616			
B-5	103-610mm	1 of 1	Woomera	098	06 01 098 0	1107			
							270-281	1628 HF	0 - 12
							279-295	1627 HF	10 - 26
							293-308	1626 HF	24 - 39
							306-322	1625 HF	37 - 53
							320-335	1624 HF	51 - 66
							333-348	1623 HF	64 - 79
							346-361	1622 HF	77 - 92
			Woomera	097	05 01 097 0	1106			
							362-369	1772 HF	93 - 100
			Woomera	098	05 01 098 0	1607			
			Woomera	097	06 01 097 0	1606			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. _ OF _	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
B-5	103-80mm	1 of 1	Woomera	097	05 01 097 0	1106			
							532-519	1758 MF	0 - 47
							521-505	1759 MF	40 - 93
							507-503	1760 MF	87 - 100
			Goldstone	030	03 01 030 0	1037			
							532-520	0266 MP	0 - 43
							522-507	0267 MP	37 - 87
							509-503	0268 MP	80 - 100
			Woomera	097	06 01 097 0	1606			
			Goldstone	030	04 01 030 0	1537			
B-7	113-610mm	1 of 1	Madrid	093	07 01 093 0	1108			
							583-588	1790 HF	0 - 6
							586-601	1789 HF	4 - 19
							599-614	1788 HF	17 - 28
							612-628	1787 HF	26 - 46
							626-641	1786 HF	44 - 59
							639-655	1785 HF	57 - 73
							653-668	1784 HF	71 - 86
							666-680	1783 HF	84 - 100
			Woomera	033	06 01 033 0	1049			
							583-586	0421 HP	0 - 4
			Madrid	093	08 01 093 0	1608			
			Woomera	033	05 01 033 0	1549			
	113-80mm	1 of 1	Woomera	092	06 01 092 0	1105			
							842-829	1741 MF	0 - 48
							831-816	1742 MF	41 - 93
							818-814	1743 MF	86 - 100
			Woomera	034	05 01 034 0	1047			
							842-829	0467 MP	0 - 48
							831-815	0468 MP	41 - 97
							817-814	0469 MP	90 - 100
			Woomera	092	05 01 092 0	1605			
			Woomera	034	06 01 034 0	1547			
	114-610mm	1 of 1	Madrid	093	07 01 093 0	1108			
							713-717	1779 HF	0 - 5
							715-731	1778 HF	3 - 19
							729-744	1777 HF	17 - 32
							742-757	1776 HF	30 - 45
							755-771	1775 HF	43 - 59
							769-784	1774 HF	57 - 72
							782-797	1773 HF	70 - 85
			Woomera	092	06 01 092 0	1105			
							798-809	1744 HF	86 - 100
			Woomera	034	05 01 034 0	1047			
							717-723	0477 HP	0 - 11
							721-732	0476 HP	9 - 20
							730-746	0475 HP	18 - 34
							744-759	0474 HP	32 - 47
							757-773	0473 HP	45 - 61
							771-786	0472 HP	59 - 74
							784-799	0471 HP	72 - 87
							797-809	0470 HP	85 - 100
			Madrid	093	08 01 093 0	1608			
			Woomera	092	05 01 092 0	1605			
			Woomera	034	06 01 034 0	1547			
	114-80mm	1 of 1	Woomera	092	06 01 092 0	1105			
							972-959	1730 MF	0 - 47
							961-946	1731 MF	40 - 90
							948-943	1732 MF	83 - 100
			Woomera	092	05 01 092 0	1605			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. _OF_	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
B-8	134-610mm	1 of 1	Goldstone	084	04 01 084 0	1095			
							335-339	1642 HF	0 - 5
							337-352	1641 HF	3 - 18
							350-366	1640 HF	16 - 32
							364-379	1639 HF	30 - 45
							377-392	1638 HF	43 - 58
							390-406	1637 HF	56 - 72
							404-419	1636 HF	70 - 85
							417-431	1635 HF	83 - 100
			Goldstone	084	03 01 084 0	1595			
	134-80mm	1 of 1	Goldstone	083	03 01 083 0	1084			
							594-589	1164 MF	0 - 20
			Goldstone	084	04 01 084 0	1095			
							588-574	1622 MF	23 - 70
							576-565	1623 MF	63 - 100
			Goldstone	083	04 01 083 0	1584			
			Goldstone	084	03 01 084 0	1595			
	135-610mm	1 of 1	Goldstone	084	04 01 084 0	1095			
							465-471	1631 HF	0 - 7
							469-484	1630 HF	5 - 20
							482-498	1629 HF	18 - 34
							496-511	1628 HF	32 - 47
							509-524	1627 HF	45 - 60
							522-538	1626 HF	58 - 74
							536-551	1625 HF	72 - 87
							549-561	1624 HF	85 - 100
			Goldstone	084	03 01 084 0	1595			
	135-80mm	1 of 1	Goldstone	083	03 01 083 0	1084			
							724-710	1153 MF	0 - 50
							712-697	1154 MF	43 - 93
							699-695	1155 MF	87 - 100
			Goldstone	083	04 01 083 0	1584			
B-9	149-610mm	1 of 1	Woomera	078	06 01 078 0	1029			
							169-173	1431 HF	0 - 5
							171-186	1430 HF	3 - 18
							184-200	1429 HF	16 - 32
							198-213	1428 HF	30 - 45
							211-226	1427 HF	43 - 58
							224-240	1426 HF	56 - 72
							238-253	1425 HF	70 - 85
							251-265	1424 HF	83 - 100
			Woomera	078	05 01 078 0	1529			
	149-80mm	1 of 1	Goldstone	077	03 01 077 0	1082			
							558-544	1101 MF	0 - 52
							546-531	1102 MF	45 - 97
							533-530	1103 MF	90 - 100
			Goldstone	077	04 01 077 0	1582			
	151-610mm	1 of 1	Goldstone	077	03 01 077 0	1082			
							560-567	1100 HF	0 - 8
							565-575	1099 HF	6 - 16
							573-589	1098 HF	14 - 30
							587-602	1097 HF	28 - 43
							600-616	1096 HF	41 - 57
							614-629	1095 HF	55 - 70
							627-642	1094 HF	68 - 83
							640-655	1093 HF	81 - 100
			Goldstone	077	04 01 077 0	1582			
	151-80mm	1 of 1	Goldstone	076	03 01 076 0	1081			
							818-806	1079 MF	0 - 45
							808-793	1080 MF	38 - 90
							795-790	1081 MF	83 - 100
			Goldstone	076	04 01 076 0	1581			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __OF__	RECORDING DSIF	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
B-10	150-610mm	1 of 1	Goldstone	077	03 01 077 0	1082			
							430-434	1111 HF	0 - 5
							432-448	1110 HF	3 - 19
							446-461	1109 HF	17 - 32
							459-475	1108 HF	30 - 46
							473-488	1107 HF	44 - 59
							486-501	1106 HF	57 - 72
							499-515	1105 HF	70 - 86
							513-524	1104 HF	84 - 100
			Goldstone	077	04 01 077 0	1582			
	150-80mm	1 of 1	Goldstone	077	03 01 077 0	1082			
							686-674	1090 MF	0 - 45
							676-661	1091 MF	38 - 90
							663-658	1092 MF	83 - 100
			Goldstone	077	04 01 077 0	1582			
B-11	153-610mm	1 of 4	Goldstone	076	03 01 076 0	1081			
							820-826	1078 HF	0 - 7
							824-839	1077 HF	5 - 20
							837-853	1076 HF	18 - 34
							851-866	1075 HF	32 - 47
							864-880	1074 HF	45 - 61
							878-893	1073 HF	59 - 74
							891-906	1072 HF	72 - 87
							904-917	1071 HF	85 - 100
			Goldstone	076	04 01 076 0	1581			
	153-80mm	1 of 4	Madrid	075	07 01 075 0	1079			
							079-068	1032 MF	0 - 43
							070-054	1033 MF	36 - 93
							056-051	1034 MF	86 - 100
			Madrid	075	08 01 075 0	1579			
	154-610mm	2 of 4	Goldstone	076	03 01 076 0	1081			
							952-958	1067 HF	0 - 7
							956-967	1066 HF	5 - 16
							965-980	1065 HF	14 - 29
							978-994	1064 HF	27 - 39
							992-007	1063 HF	37 - 56
							005-021	1062 HF	54 - 70
							019-034	1061 HF	68 - 73
							032-046	1060 HF	81 - 100
			Goldstone	076	04 01 076 0	1581			
	154-80mm	2 of 4	Madrid	075	07 01 075 0	1079			
							211-197	1021 MF	0 - 50
							199-184	1022 MF	43 - 93
							186-182	1023 MF	87 - 100
			Madrid	075	08 01 075 0	1579			
	155-610mm	3 of 4	Madrid	075	07 01 075 0	1079			
							084-088	1031 HF	0 - 5
							086-101	1030 HF	3 - 18
							099-114	1029 HF	16 - 31
							112-128	1028 HF	29 - 45
							126-141	1027 HF	43 - 58
							139-155	1026 HF	56 - 72
							153-168	1025 HF	70 - 85
							166-181	1024 HF	83 - 100
			Madrid	075	08 01 075 0	1579			
	155-80mm	3 of 4	Madrid	075	07 01 075 0	1079			
							343-332	1010 MF	0 - 41
							334-318	1011 MF	34 - 90
							320-315	1012 MF	83 - 100
			Madrid	075	08 01 075 0	1579			

PHOTO SITE	S/C EXPOSURE NO.	PHOTO SEQUENCE NO. __ OF __	RECORDING DS#	READOUT SEQUENCE	GRE ROLL NO.	K.I. NO.	FRAMELET NO.	REASSEMBLY NO.	SUBFRAME LOCATION (% OF S/C PHOTO)
B-11	156-610mm	4 of 4	Madrid	075	07 01 075 0	1079			
							216-220	1020 HF	0 - 5
							218-233	1019 HF	3 - 18
							231-246	1018 HF	16 - 31
							244-260	1017 HF	29 - 45
							258-273	1016 HF	43 - 58
							271-287	1015 HF	56 - 72
							285-300	1014 HF	70 - 85
							298-312	1013 HF	83 - 100
			Madrid	075	08 01 075 0	1579			
	156-80mm	4 of 4	Madrid	074	07 01 074 0	1078			
							475-461	0999 MF	0 - 50
							463-448	1000 MF	43 - 93
							450-446	1001 MF	87 - 100
			Madrid	074	08 01 074 0	1578			

Appendix B

FPAC SUPPORTING DATA

SPACECRAFT MANEUVERS

This appendix section contains the spacecraft maneuvers for the approximate time interval:

Day	Hr.	Min.	Sec.		Day	Hr.	Min.	Sec.
222*	20	00	00	through	242*	06	00	00

Data in this section is identified by column as:

Col. 1	Day
Col. 2	Hour
Col. 3	Minute
Col. 4	Second
Col. 5, 6	Items pertinent to the computer program for which this input deck is used
Col. 7	Comment pertaining to maneuvers and program input
Col. 8	Command sequence number

* Day 222 — August 10, 1966

* Day 242 — August 30, 1966

DAY	HH	MM	SS.S				
222	20	10	33.2	1	0.	$ DBC	1C
222	20	26	30.1	7	360.	$ 360 DEG. ROLL - SUN ACQ.	2C
222	20	53	1.2	2	0.	$ DBO	3C
222	21	41	55.7	1	0.	$ DBC	4C
222	21	45	46.1	13	0.	$ SUNSET (DRIFT TEST)	5C
223	01	46	10.4	1	0.	$ DBC (ACQUIRE SUN)	6C
223	01	46	10.5	12	0.	$ SUNRISE (END DRIFT TEST)	7C
223	02	19	1.4	1	0.	$ DBC	8C
223	02	21	52.1	7	360.	$ STAR MAP ROLL 1	9C
223	08	00	.2	9	95.	$ YAW EMP-YAP	10C
223	08	06	35.3	9	95.	$ YAW EMM-YAP	11C
223	08	10	36.7	12	0.	$ ACQUIRE SUN	12C
223	10	17	30.0	7	360.0	$ EMP-ROP STAR MAP	13C
223	10	48	22.0	9	95.0	$ EMP-YAP TRACKER TEST (+95 DEG)	14C
223	10	54	53.0	9	95.0	$ EMM-YAP RETURN TO SUN(-95 DEG)	15C
223	11	00	55.0	12	0.0	$ ACQUIRE SUN	16C
223	14	26	28.0	7	27.4	$ ROLL TO MOON (+27.4 DEG)	17C
223	14	42	36.0	7	2.0	$ ROLL SEARCH (-2.0 DEG)	18C
223	14	53	0.0	7	1.0	$ ROLL SEARCH (-1.0 DEG)	19C
223	16	15	9.0	10	0.0	$ ACQUIRE MOON	20C
223	16	44	20.0	7	93.0	$ RETURN TO CANOPUS (+93.0 DEG)	21C
223	23	0	30.4	7	95.0	$ ROLL	22C
223	23	20	0.1	1	0.	$ DBC	23C
223	23	23	18.8	7	73.35	$ ROLL EMP ROP	24C
223	23	49	25.6	8	25.24	$ PITCH EMP PIM	25C
223	23	59	59.7	2	0.	$ DBO	26C
224	00	00	1.3	3	32.2	$ BURN EMP	27C
224	00	01	49.1	1	0.	$ DBC	28C
224	00	02	45.4	8	25.24	$ PITCH EMM PIM	29C
224	00	04	32.6	7	73.35	$ ROLL EMM ROP	30C
224	00	07	16.9	12	0.	$ ACQUIRE SUN	31C
224	00	14	0.1	7	85.95	$ ROLL	32C
224	01	33	52.5	8	36.0	$ PITCH NEG 36 DEG	33C
224	09	46	9.0	8	36.0	$ PITCH POS 36 DEG	34C
224	09	52	41.0	12	0.	$ ASU AND LOCK	35C
224	14	51	49.0	8	36.0	$ PITCH NEG 36 DEG	36C
225	02	34	33.0	8	36.0	$ PITCH POS 36 DEG	37C
225	02	40	18.0	8	0.	$ ASU AND LOCK	38C
225	03	03	35.4	7	90.0	$ ROLL POS 90 DEG	39C
225	03	12	34.0	7	360.0	$ ROLL POS 360 DEG	40C
225	05	34	38.0	7	104.0	$ ROLL NEG 104.0 DEG	41C
225	05	54	0.0	2	0.	$ OPEN DEADBAND	42C
225	05	55	20.0	7	40.0	$ ROLL POS 40.0 0.05 RATE	43C
225	07	16	1.4	1	0.	$ CLOSE DEADBAND	44C
225	07	35	59.8	9	38.	$ YAW MINUS	45C
225	10	43	23.0	9	38.	$ YAW PLUS	46C
225	10	51	03.	12	0.	$ ASU	47C
225	11	07	34.	7	20.1	$ ROM	48C
[illegible]	[illegible]	27	32.	7	4.2	$ ROP	49C
225	[illegible]	47	30.	7	8.4	$ ROM	50C
225	12	37	25.	7	4.2	$ ROM	51C
225	13	47	42.	10	0.	$ ACA	52C
225	14	46	27.	11	0.	$ CANOPUS SET(LEROLLPLACED ON IH	53C
225	14	51	48.0	8	36.0	$ EMP PIM THERMAL RELIEF(-36DEG)	54C
225	20	00	0.0	10	0.0	$ ACQUIRE CANOPUS	55C
225	20	12	51.0	11	0.0	$ INERTIAL HOLD=ROLL AXIS	56C
225	20	23	24.4	9	11.2	$ EMP-YAM-TRACKER TEST(-11.2 DEG	57C
225	20	49	20.0	8	36.0	$ EMP-PIM-THERMAL RELIEF(-36 DEG	58C
225	23	42	31.0	8	36.0	$ EMM-PIM-RETURN (+36 DEG)	59C

225	23	55	34.0	9	11.2	$ EMM-ROM-RETURN (+11.2 DEG	60C
226	00	13	37.0	12	0.0	$ ACQUIRE SUN	61C
226	00	49	43.0	10	0.0	$ ACQUIRE CANOPUS	62C
226	02	18	45.0	8	36.0	$ PITCH -36.0	63C
226	09	35	9.0	8	36.0	$ PITCH + 36.0	64C
226	09	37	20.0	12	0.	$ ASU	65C
226	13	22	24.	7	2.3	$ROLL MINUS	66C
226	15	22	56.	13	0.	$SUNSET	67C
226	15	27	3.2	1	0.	$ DBC	68C
226	15	27	55.0	7	19.16	$ EMP-ROP ROLL	69C
226	15	29	24.8	8	108.72	$ EMP-PIM PITCH	70C
226	15	34	3.4	2	0.	$ DBO	71C
226	15	34	3.6	3	588.	$ BURN	72C
226	15	45	17.0	8	108.72	$ PITCH EMM-PIM	73C
226	15	49	45.9	7	19.16	$ ROLL EMM-ROP	74C
226	15	51	15.6	12	0.	$ ACQUIRE SUN	75C
226	16	02	06.	12	0.	$SUNRISE	76C
226	22	24	57.0	13	0.0	$ SUNSET 2	77C
226	23	17	10.0	12	0.0	$ SUNRISE 2	78C
227	02	02	40.0	13	0.0	$ SENSET 3	79C
227	02	55	17.3	12	0.0	$ SUNRISE 3	80C
227	05	40	01.4	13	0.0	$ SUNSET 4	81C
227	06	32	14.0	12	0.0	$ SUNRISE 4	82C
227	09	17	45.0	13	0.0	$ SUNSET 5	83C
227	10	09	58.	12	0.0	$ SUNRISE 5	84C
227	12	55	05.	13	0.0	$ SUNSET 6	85C
227	13	47	19.	12	0.0	$ SUNRISE 6	86C
227	16	32	49.	13	0.	$ SUNSET 7	87C
227	16	35	30.	7	39.2	$ ROLL-39.2	88C
227	16	37	36.0	2	0.	$ OPEN DB	89C
227	17	25	52.	12	0.	$ SUNRISE 7	90C
227	19	56	43.	1	0.	$ DB.CLOSURE	91C
227	20	10	33.	13	0.	$ SUNSET 8	92C
227	20	29	25.	7	27.82	$ ROLL PLUS 27.82	93C
227	21	02	23.	12	0.	$ SUNRISE 8	94C
227	23	47	53.	13	0.	$ SUNSET 9	95C
228	0	0	31.	7	5.15	$ ROLL POS 5.15	96C
228	00	40	07.0	12	0.	$ SUNRISE 9	97C
228	03	25	37.0	13	0.	$ SUNSET 10	98C
228	04	17	27.0	12	0.	$ SUNRISE 10	99C
228	07	02	58.0	13	0.0	$ SUNSET 11	100C
228	07	55	11.0	12	0.0	$ SUNRISE 11	101C
228	10	40	41.0	13	0.0	$ SUNSET 12	102C
228	11	32	32.0	12	0.0	$ SUNRISE 12	103C
228	14	21	06.6	13	0.0	$ SUNSET 13	104C
228	14	47	59.0	7	6.4	$ ROM (-6.4 DEG)	105C
228	15	10	15.0	12	0.0	$ SUNRISE 13	106C
228	17	55	46.0	13	0.0	$ SUNSET 14	107C
228	18	47	36.0	12	0.0	$ SUNRISE 14	108C
228	21	33	29.0	13	0.0	$ SUNSET 15	109C
228	22	25	20.0	12	0.0	$ SUNRISE 15	110C
229	01	10	50.0	13	0.0	$ SUNSET 16	111C
229	02	02	40.0	12	0.0	$ SUNRISE 16	112C
229	04	48	34.0	13	0.0	$ SUNSET 17	113C
229	05	00	28.0	7	353.7	$ ROP 353.7 DEG	114C
229	05	40	29.0	12	0.0	$ SUNRISE 17	115C
229	08	25	54.0	13	0.0	$ SUNSET 18	116C
229	09	17	45.0	12	0.0	$ SUNRISE 18	117C
229	11	08	0.0	1	0.0	$ 0.2 DEAD BAND SPARE-1	C

229	11	08	0.0	12	0.0	$ SUNRISE	SPARE-2	C
229	11	08	0.0	11	0.0	$ CANOPUS OCCULT	SPARE-3	C
229	12	03	38.0	13	0.0	$ SUNSET 19		118C
229	12	55	28.0	12	0.0	$ SUNRISE 19		119C
229	15	41	45.0	13	0.0	$ SUNSET 20		120C
229	16	32	49.0	12	0.0	$ SUNRISE 20		121C
229	19	18	42.0	13	0.0	$ SUNSET 21		122C
229	19	44	49.0	7	6.2	$ ROLL (-6.2)		123C
229	20	10	33.0	12	0.0	$ SUNRISE 21		124C
229	22	56	26.0	13	0.0	$ SUNSET 22		125C
229	23	47	53.0	12	0.0	$ SUNRISE 22		126C
230	02	34	9.0	13	0.0	$ SUNSET 23		127C
230	03	25	37.0	12	0.0	$ SUNRISE 23		128C
230	06	11	30.0	13	0.0	$ SUNSET 24		129C
230	07	02	57.0	12	0.0	$ SUNRISE 24		130C
230	09	49	14.0	13	0.0	$ SUNSET 25		131C
230	10	40	41.0	12	0.0	$ SUNRISE 25		132C
230	13	26	34.0	13	0.0	$ SUNSET 26		133C
230	14	18	02.0	12	0.0	$ SUNRISE 26		134C
230	14	37	40.0	7	3.6	$ ROLL +3.6		135C
230	14	38	44.0	9	12.5	$ YAW +12.45		136C
230	14	40	02.0	8	8.1	$ PITCH -8.1		137C
230	14	48	05.0	8	8.1	$ PITCH +8.1		138C
230	14	49	13.0	9	12.5	$ YAW -12.5		139C
230	14	50	34.0	7	3.6	$ ROLL -3.6		140C
230	14	51	49.0	12	0.0	$ ACQUIRE SUN		141C
230	14	51	50.	1	0.	$ DBC(TO PICKUP YAW ACQUISITION)		142C
230	17	04	18.	13	0.	$ SUNSET 27		143C
230	17	55	45.	12	0.	$ EASTER SUNRISE 27 HALLELUJAH		144C
230	20	42	02.	13	0.	$ SUNSET 28		145C
230	21	00	34.	7	6.0	$ ROLL-6.0 DEG.		146C
230	21	33	29.0	12	0.	$ SUNRISE 28		147C
231	00	14	23.0	13	0.0	$ SUNSET 29		148C
231	01	10	50.0	12	0.0	$ SUNRISE 29		149C
231	03	59	07.0	13	0.0	$ SUNSET 30		150C
231	04	48	33.0	12	0.0	$ SUNRISE 30		151C
231	07	34	50.0	13	0.0	$ SUNSET 31		152C
231	08	25	54.0	12	0.0	$ SUNRISE 31		153C
231	11	12	20.0	13	0.0	$ SUNSET 32		154C
231	11	34	37.0	7	5.5	$ ROLL MINUS 5.5		155C
231	12	03	38.0	12	0.0	$ SUNRISE 32		156C
231	14	49	54.0	13	0.0	$ SUNSET 33		157C
231	15	41	21.0	12	0.0	$ SUNRISE 33		158C
231	15	50	31.0	7	179.7	$ ROM		159C
231	17	40	31.0	7	176.0	$ ROM		160C
231	18	27	38.0	13	0.0	$ SUNSET 34		161C
231	19	18	42.0	12	0.0	$ SUNRISE 34		162C
231	22	04	35.0	13	0.0	$ SUNSET 35		163C
231	22	14	11.0	7	7.0	$ ROLL (-7.0 DEG)		164C
231	22	56	26.0	12	0.0	$ SUNRISE 35		165C
232	01	42	42.0	13	0.0	$ SUNSET 36		166C
232	02	33	46.0	12	0.0	$ SUNRISE 36		167C
232	05	20	26.0	13	0.0	$ SUNSET 37		168C
232	06	10	44.0	12	0.0	$ SUNRISE 37		169C
232	06	20	22.0	7	183.5	$ ROLL -183.5 DEG		170C
232	08	13	34.0	7	182.89	$ ROLL -182.89 DEG		171C
232	08	58	09.0	13	0.0	$ SUNSET 38		172C
232	09	49	14.0	12	0.0	$ SUNRISE 38		173C
232	12	35	30.0	13	0.0	$ SUNSET 39		174C

232	13	26	34.0	12	0.0	$ SUNRISE 39	175C
232	14	03	29.0	7	181.0	$ ROLL -181.0 DEG PHOTO 175A	C
232	15	20	11.0	7	183.7	$ ROLL -183.7 DEG	176C
232	16	13	14.0	13	0.0	$ SUNSET 40	177C
232	17	04	18.0	12	0.0	$ SUNRISE 90	178C
232	19	50	57.0	13	0.0	$ SUNSET 41	179C
232	20	42	02.0	12	0.0	$ SUNRISE 41	180C
232	23	28	18.0	13	0.0	$ SUNSET 42	181C
233	00	19	22.0	12	0.0	$ SUNRISE 42	182C
233	03	06	02.0	13	0.0	$ SUNSET 43	183C
233	03	57	06.0	12	0.0	$ SUNRISE 43	184C
233	06	43	45.0	13	00	$ SUNSET 44	185C
233	07	06	25.0	7	4.82	$ ROLL -4.82 DEG	186C
233	07	34	27.0	12	0.0	$ SUNRISE 44	187C
233	09	41	58.0	7	43.4	$ ROLL +43.4 DEG ORBIT TRANSFER	188C
233	09	44	16.0	8	25.3	$ PITCH +25.31 DEG	189C
233	09	49	58.2	2	0.0	$ OPEN DEADBAND	190C
233	09	50	0.80	3	22.7	$ BURN ORBIT TRANSFER 131.9 FPS	191C
233	09	52	19.0	1	0.0	$ CLOSE DEADBAND	192C
233	09	53	10.0	8	25.3	$ PITCH -25.3 DEG	193C
233	09	54	52.0	7	43.4	$ ROLL -43.4 DEG	194C
233	09	57	10.9	12	0.0	$ ACQUIRE SUN	195C
233	10	20	43.0	13	0.0	$ SUNSET 1	196C
233	11	12	10.0	12	0.0	$ SUNRISE 1	197C
233	13	49	37.0	13	0.0	$ SUNSET 2	198C
233	14	41	04.0	12	0.0	$ SUNRISE 2	199C
233	17	18	54.0	13	0.0	$ SUNSET 3	200C
233	17	47	28.0	7	7.04	$ ROLL-7.04 DEG	201C
233	18	10	21.0	12	0.0	$ SUNRISE	202C
233	20	48	10.0	13	0.0	$ SUNSET 4	203C
233	21	39	15.0	12	0.0	$ SUNRISE 4	204C
233	21	42	43.0	8	30.0	$ PITCH -30	205C
234	00	17	04.0	13	0.0	$ SUNSET 5	206C
234	00	18	48.0	8	30.0	$ PITCH +30	207C
234	01	08	08.0	12	0.0	$ SUNRISE 5	208C
234	03	46	21.0	13	0.0	$ SUNSET 6	209C
234	04	01	45.0	7	3.8	$ ROLL (-3.83 DEG)	210C
234	04	37	48.0	12	0.0	$ SUNRISE 6	211C
234	06	40	03.3	8	30.0	$ PITCH 30 SUNSET 7 07 15 15	212C
234	07	31	30.0	8	30.0	$ PITCH (-30 DEG) THERMAL	213C
234	08	15	32.0	12	0.0	$ SUNRISE 7 ASU COMMAND NOT ON	214C
234	10	44	31.0	13	0.0	$ SUNSET 8	215C
234	11	36	22.3	12	0.0	$ SUNRISE 8	216C
234	14	13	48.0	13	0.0	$ SUNSET 9	217C
234	14	53	44.0	7	1.11	$ ROLL NEG 1.111 DEG	218C
234	15	04	53.0	12	0.0	$ SUNRISE 9	219C
234	15	15	41.0	7	5.36	$ ROLL +5.36 SIGHT A1 PHOTO	220C
234	15	16	47.0	9	12.46	$ YAW +12.46 SIGHT A1 PHOTO	221C
234	15	18	08.0	8	9.60	$ PITCH -9.60 SIGHT A1 PHOTO	222C
234	15	24	25.0	8	9.60	$ PITCH +9.60 SIGHT A1 PHOTO	223C
234	15	25	34.0	9	12.46	$ YAW -12.46 SIGHT A1 PHOTO	224C
234	15	26	43.0	7	5.36	$ ROLL -5.36 SIGHT A1 PHOTO	225C
234	15	27	55.0	12	0.0	$ ASU COMMAND USE SUNRISE	226C
234	17	42	42.0	13	0.0	$ SUNSET 10	227C
234	18	13	28.0	7	1.56	$ ROLL -1.56 ROLL UPDATE	228C
234	18	34	09.0	12	0.0	$ SUNRISE 10	229C
234	18	45	41.0	7	5.43	$ ROLL +5.43 SIGHT A2 PHOTO	230C
234	18	46	50.0	9	12.48	$ YAW +12.48 SIGHT A2 PHOTO	231C
234	18	48	08.0	8	4.98	$ PITCH -4.98 SIGHT A2 PHOTO	232C

234	18	52	09.0	8	4.98	$ PITCH +4.98 SIGHT A2 PHOTO		233C
234	18	53	10.0	9	12.48	$ YAW -12.48 SIGHT A2 PHOTO		234C
234	18	54	30.0	7	5.43	$ ROLL -5.43 SIGHT A2 PHOTO		235C
234	18	55	40.0	12	0.0	$ ASU COMMAND USE SUNRISE		236C
234	21	11	59.0	13	0.0	$ SUNSET 11		237C
234	22	03	03.0	12	0.0	$ SUNRISE 11		238C
235	00	40	53.0	13	0.0	$ SUNSET 12		239C
235	01	07	07.0	7	5.95	$ ROLL MINUS 5.95		240C
235	01	32	20.0	12	0.0	$ SUNRISE 12		241C
235	04	10	09.0	13	0.0	$ SUNSET 13	242	C
235	05	01	14.0	12	0.0	$ SUNRISE 13	243	C
235	07	39	26.0	13	0.0	$ SUNSET 14	244	C
235	08	30	30.0	12	0.0	$ SUNRISE 14	245	C
235	08	41	53.0	7	5.7	$ ROLL PLUS 5.7	246	C
235	08	42	15.0	9	12.6	$ YAW PLUS 12.6	247	C
235	08	43	11.0	8	1.6	$ PITCH MINUS 1.6	248	C
235	08	47	47.0	8	1.6	$ PITCH PLUS 1.6	249	C
235	08	48	41.0	9	12.6	$ YAW MINUS 12.6	250	C
235	08	50	05.0	7	5.7	$ ROLL MINUS 5.7	251	C
235	08	51	15.0	12	0.0	$ ACQUIRE SUN	252	C
235	11	08	20.0	13	0.0	$ SUNSET 15	253	C
235	11	59	24.0	12	0.0	$ SUNRISE 15	254	C
235	14	37	37.0	13	0.0	$ SUNSET 16		255C
235	14	59	30.0	7	3.5	$ ROLL MINUS 3.5		256C
235	15	28	41.0	12	0.0	$ SUNRISE 16		257C
235	16	25	23.8	7	188.7	$ ROLL PLUS 188.7		258C
235	16	32	32.6	8	25.6	$ PITCH PLUS 25.6		259C
235	16	37	43.0	8	25.6	$ PITCH MINUS 25.6		260C
235	16	39	04.6	7	188.7	$ ROLL MINUS 188.7		261C
235	16	46	36.4	12	0.0	$ ASU		262C
235	18	06	30.0	13	0.0	$ SUNSET 17		263C
235	18	57	35.0	12	0.0	$ SUNRISE 17		264C
235	21	35	47.0	13	0.0	$ SUNSET 18		265C
235	22	13	25.0	7	5.02	$ ROLL -5.016		266C
235	22	26	52.0	12	0.0	$ SUNRISE 18		267C
236	01	05	04.0	13	0.0	$ SUNSET 19		268C
236	01	56	08.0	12	0.0	$ SUNRISE 19		269C
236	02	10	41.1	7	6.13	$ ROLL +6.13		270C
236	02	11	50.0	9	12.75	$ YAW +12.75		271C
236	02	13	05.0	8	5.47	$ PITCH -5.47		272C
236	02	17	06.4	8	5.47	$ PITCH +5.47		273C
236	02	18	13.2	9	12.75	$ YAW -12.75		274C
236	02	19	34.0	7	6.13	$ ROLL -6.13		275C
236	02	20	43.0	12	0.0	$ SUNRISE ASU		276C
236	04	33	58.0	13	0.0	$ SUNSET 20		277C
236	05	25	02.0	12	0.0	$ SUNRISE 20		278C
236	08	03	15.0	13	0.0	$ SUNSET 21		279C
236	08	35	57.6	7	3.16	$ ROLL -3.16		280C
236	08	54	19.0	12	0.0	$ SUNRISE 21		281C
236	09	04	28.1	7	5.9	$ ROLL +5.9		282C
236	09	05	31.4	9	12.5	$ YAW +12.5		283C
236	09	06	47.9	8	2.4	$ PITCH -2.4		284C
236	09	11	44.1	8	2.4	$ PITCH +2.4		285C
236	09	12	40.4	9	12.5	$ YAW -12.5		286C
236	09	13	56.8	7	5.9	$ ROLL -5.9		287C
236	09	15	26.0	12	0.0	$ SUNRISE ASU		288C
236	11	32	8.0	13	00.	$ SUNSET 22		289C
236	12	23	13.0	12	0.0	$ SUNRISE 22		290C
236	15	01	25.0	13	0.0	$ SUNSET 23		291C

236	15	34	26.0	7	3.1	$ ROLL -3.1	292C
236	15	52	29.0	12	0.0	$ SUNRISE 23	293C
236	18	30	19.0	13	0.0	$ SUNSET 24	294C
236	19	21	33.0	12	0.0	$ SUNRISE 24	295C
236	21	59	59.0	13	0.0	$ SUNSET 25	296C
236	22	50	40.0	12	0.0	$ SUNRISE 25	297C
236	23	30	25.0	7	176.35	$ ROP	298C
237	01	28	52.0	13	0.0	$ SUNSET 26	299C
237	02	19	34.0	12	0.0	$ SUNRISE 26	300C
237	02	30	26.0	7	176.74	$ ROP	301C
237	04	57	46.0	13	0.0	$ SUNSET 27	302C
237	05	48	51.0	12	0.0	$ SUNRISE 27	303C
237	07	04	51.0	7	187.0	$ ROLL 187	304C
237	07	11	47.0	8	45.4	$ PITCH 45.4	305C
237	07	16	24.0	8	45.4	$ PITCH -45.4	306C
237	07	18	45.0	7	187.0	$ ROLL -187	307C
237	07	25	15.0	12	0.0	$ ACQUIRE SUN	308C
237	08	25	26.0	13	0.0	$ SUNSET 28	309C
237	08	51	29.0	7	3.0	$ ROLL -3	310C
237	09	18	59.0	12	0.0	$ SUNRISE 28	311C
237	11	55	57.0	13	0.0	$ SUNSET 29	312C
237	12	47	1.0	12	0.0	$ SUNRISE 29	313C
237	12	57	05	7	6.5	$ ROLL +6.5	314C
237	12	58	11.0	9	12.6	$ YAW +12.6	315C
237	12	59	29	8	2.3	$ PITCH -2.3	316C
237	13	03	28	8	2.3	$ PITCH +2.3	317C
237	13	04	26	9	12.6	$ YAW -12.6	318C
237	13	05	48	7	6.5	$ ROLL -6.5	319C
237	13	06	59	12	0.0	$ ACQUIRE SUN	320C
237	13	57	47	7	1.3	$ ROLL -1.3	321C
237	15	20	0.0	13	0.0	$ SUNSET 30	322C
237	15	44	29.3	7	0.01	$ ROLL +.01	323C
237	15	45	20.5	7	34.2	$ ROLL +34.2	324C
237	15	47	23.6	8	129.7	$ PITCH -129.7	325C
237	16	1	29.0	2	0.0	$ DBO	326C
237	16	1	43.0	3	2.8	$ BURN 17.7 FT/S	327C
237	16	2	24.5	1	0.0	$ DBC	328C
237	16	2	51.9	8	129.7	$ PITCH +129.7	329C
237	16	07	59.2	7	34.2	$ ROLL -34.2	330C
237	16	9	58.6	7	0.1	$ ROLL +0.01	331C
237	16	16	18.0	12	0.0	$ SUNRISE 30	332C
237	18	52	0.0	13	0.0	$ SUNSET 31	333C
237	19	42	30.0	12	0.0	$ SUNRISE 31	334C
237	22	20	00.0	13	0.0	$ SUNSET 32	335C
237	22	46	29.6	7	5.6	$ ROLL -5.64	336C
237	23	08	20.0	12	0.0	$ SUNRISE	337C
238	01	46	55.0	13	0.0	$ SUNSET 33	338C
238	02	34	55.0	12	0.0	$ SUNRISE 33	339C
238	03	39	57.0	7	182.0	$ ROLL+181.995	340C
238	04	07	27.0	7	183.13	$ ROLL-183.128	341C
238	05	13	30.0	13	0.0	$ SUNSET 34	342C
238	05	32	27.0	8	36.0	$ PITCH-36.0	343C
238	09	12	24.0	8	36.0	$ PITCH +36.0	344C
238	09	35	47.0	12	0.0	$ ASU SUNRISE	345C
238	12	03	0.0	13	0.0	$ SUNSET 36	346C
238	12	37	39.0	7	4.0	$ ROLL -4.0 DEG	347C
238	12	54	0.0	12	0.0	$ SUNRISE 36	348C
238	14	24	33.0	8	0.011	$ INERTIAL HOLD MANVR	349C
238	16	33	35.0	12	0.0	$ SUN ACQUISITION	350C

238	19	03	0.0	13	0.0	$ SUNSET 38	351C
238	19	32	38.0	7	1.7	$ ROLL - 1.7 DEG	352C
238	19	46	44.0	12	0.0	$ SUNRISE 38	353C
238	20	34	08.0	8	28.16	$ PITCH MINUS 28.160 DEG	354C
238	21	16	42.0	8	16.90	$ PITCH MINUS 16.090 DEG	355C
238	22	43	54.0	8	45.1	$ PITCH PLUS 45.1	356C
238	22	58	51.0	7	1.8	$ ROLL PLUS 1.8	357C
238	23	12	56.0	12	0.0	$ SUNRISE 39	358C
238	23	26	42.0	7	6.9	$ ROLL PLUS 6.9	359C
238	23	27	51.0	9	12.9	$ YAW PLUS 12.9	360C
238	23	29	09.0	8	16.7	$ PITCH MINUS 16.7	361C
238	23	34	37.0	8	16.7	$ PITCH PLUS 16.7	362C
238	23	36	07.0	9	12.9	$ YAW MINUS 12.9	363C
238	23	37	08.0	7	6.9	$ ROLL MINUS 6.9	364C
238	23	38	40.0	12	0.0	$ ASU SUNRISE	365C
239	00	14	26.0	8	16.0	$ PITCH PLUS 16.0 THERMAL	366C
239	02	45	54.0	8	16.0	$ PITCH MINUS 16.0 TO SUN	367C
239	02	48	45.0	12	0.0	$ ASU SUNRISE	368C
239	03	07	31.0	8	16.0	$ PITCH PLUS 16.0 THERMAL	369C
239	06	14	33.0	7	4.5	$ ROLL MINUS 4.5 UPDATE	370C
239	07	42	30.0	8	16.0	$ PITCH MINUS 16.0 TO SUN	371C
239	07	46	44.0	12	0.0	$ ASU SUNRISE	372C
239	08	40	18.0	13	0.0	$ SUNSET 42	373C
239	09	31	57.0	12	0.0	$ SUNRISE 42	374C
239	09	39	43.0	7	25.1	$ ROLL PLUS 25.1	375C
239	09	51	35.0	7	28.0	$ ROLL MINUS 28.0	376C
239	09	54	01.0	8	16.0	$ PITCH PLUS 16.0 DEG	377C
239	14	26	39.0	8	11.3	$ PITCH PLUS 11.3 DEG	378C
239	16	09	24.0	8	28.2	$ PITCH MINUS 28.2 DEG	379C
239	16	24	45.0	12	0.0	$ SUNRISE	380C
239	16	30	55.0	8	16.0	$ PITCH PLUS 16.0 DEG	381C
239	16	35	32.0	8	12.0	$ PITCH PLUS 12.0 DEG	382C
239	18	53	0.7	8	16.0	$ PITCH -16	383C
239	18	54	57	12	0.0	$ SUNRISE ASV ORBIT 44	384C
239	19	00	0.0	13	0.0	$ SUNSET 44	385C
239	19	50	57.0	12	0.0	$ SUNRISE ASV ORBIT 45	386C
239	19	59	26.3	8	16	$ PITCH +16	387C
239	22	19	40.2	8	16	$ PITCH -16	388C
239	22	21	3.6	12	0.0	$ SUNRISE ASV ORBIT 46	389C
239	22	24	23.0	13	0.0	$ SUNSET 46	390C
239	23	17	33.0	12	0.0	$ SUNRISE 46	391C
239	23	18	27.6	7	5.0	$ ROLL +5.0	392C
239	23	33	4.5	8	16.0	$ PITCH +16.0	393C
240	01	45	46.4	8	16.0	$ PITCH -16.0	394C
240	01	47	19.9	12	0.0	$ SUNRISE ASV	395C
240	02	32	14.0	7	5.0	$ ROLL +5.0	396C
240	02	41	35.6	7	5.0	$ ROLL -5.0	397C
240	02	42	21.6	7	5.0	$ ROLL -5.0	398C
240	02	43	45.0	12	0.0	$ SUNRISE 47	399C
240	02	45	2.6	7	5.0	$ ROLL -5.0	400C
240	02	48	56.4	8	16.0	$ PITCH +16.0	401C
240	03	50	13.8	8	16.0	$ PITCH -16.0	402C
240	04	22	26.0	12	0.0	$ SUNRISE ASV	403C
240	04	26	11.0	7	360.0	$ ROLL +360.0	404C
240	04	42	53.6	8	16.0	$ PITCH +16	405C
240	05	11	39.7	8	16.0	$ PITCH - 16 DEG.	406C
240	05	13	3.9	12	0.0	$ ASU - SUNRISE	407C
240	05	18	41.0	13	0.0	$ SUNSET	408C
240	05	52	0.0	7	12.0	$ ROLL NEG 12.0	409C

240	06	10	21.0	12	0.0	$ SUNRISE	410C
240	06	22	26.0	7	7.6	$ ROLL POS 7.6 A7	411C
240	06	23	35.0	9	12.8	$ YAW POS 12.8 A7	412C
240	06	24	53.0	8	12.9	$ PITCH NEG 12.9 A7	413C
240	06	30	39.0	8	12.9	$ PITCH POS 12.9 A7	414C
240	06	31	51.0	9	12.8	$ YAW NEG 12.8 A7	415C
240	06	33	11.0	7	7.6	$ ROLL NEG 7.6 A7	416C
240	06	34	32.0	12	0.0	$ ASU SUNRISE	417C
240	06	36	57.0	8	16.0	$ PITCH POS 16.0 THERMAL	418C
240	08	38	6.5	8	16.0	$ PITCH NEG 16.0 TO SUN	419C
240	08	39	29.6	12	0.0	$ ASU - SUNRISE	420C
240	08	45	0.0	13	0.0	$ SUNSET 49	421C
240	09	36	33.0	12	0.0	$ SUNRISE 49	422C
240	09	41	41.0	8	16.0	$ PITCH POS 16.0 THERMAL	423C
240	12	05	48.9	8	16.0	$ PITCH NEG 16.0 TO SUN	424C
240	12	07	11.5	12	0.0	$ ASU - SUNRISE	425C
240	12	11	18.0	13	0.0	$ SUNSET 50	426C
240	13	03	09.0	12	0.0	$ SUNRISE 50	427C
240	13	10	23.0	7	5.70	$ ROLL NEG 5.70 UPDATE	428C
240	13	24	13.0	8	16.0	$ PITCH POS 16.0 THERMAL	429C
240	15	31	7.2	8	16.0	$ PITCH MINUS 16.0	430C
240	15	32	30.6	12	0.0	$ ASU	431C
240	15	37	36.0	13	0.0	$ SUNSET 51	432C
240	16	28	47.0	12	0.0	$ SUNRISE 51	433C
240	16	36	43.9	8	16.0	$ PITCH PLUS 16.0 - THERMAL	434C
240	18	57	25.9	8	16.0	$ PITCH MINUS 16.0	435C
240	18	59	13.3	12	0.0	$ ASU	436C
240	19	03	55.0	13	0.0	$ SUNSET 52	437C
240	19	55	9.8	12	0.0	$ SUNRISE 52	438C
240	19	55	37.0	7	3.5	$ ROLL -3.5 DEG.	439C
240	20	18	57.0	8	34.0	$ PITCH +34 DEG	440C
240	22	23	0.0	8	34.0	$ PITCH -34 DEG	441C
240	22	30	0.0	13	0.0	$ SUNSET -ASU	442C
240	23	21	46.0	12	0.0	$ SUNRISE 53	443C
240	23	29	29.0	8	37.0	$ PITCH +37 DEG	444C
241	01	50	30.7	8	37.0	$ PITCH -37 DEG	445C
241	01	51	54.2	12	0.0	$ ACQUIRE SUN	446C
241	01	56	28.3	13	0.0	$ SUNSET 54	447C
241	02	45	8.4	7	7.0	$ ROLL -7.0 DEG	448C
241	02	47	59.0	12	0.0	$ SUNRISE 54 ACQ SUN	449C
241	03	19	36.7	8	37.0	$ PITCH +37.0 DEG	450C
241	05	16	39.2	8	37.0	$ PITCH -37.0 DEG	451C
241	05	19	0.7	12	0.0	$ ACUQIRE SUN	452C
241	05	22	45.0	13	0.0	$ SUNSET 55	453C
241	06	26	30.6	7	8.0	$ ROLLU+8.04 DEG SITE 8.1	454C
241	06	27	39.7	9	12.8	$ YAW +12.81 DEG	455C
241	06	28	55.8	8	11.3	$ PITCH -11.33 DEG	456C
241	06	34	11.9	8	11.3	$ PITCH +11.33 DEG	457C
241	06	35	29.4	9	12.8	$ YAW -12.81 DEG	458C
241	06	36	52.4	7	8.0	$ROLL - 8.04 DEG	459C
241	06	38	0.0	12	0.0	$ ACQUIRE SUN	460C
241	07	34	34.7	7	1.9	$ ROLL - 1.87	461C
241	08	49	2.2	13	0.0	$ SUNSET 56	462C
241	09	40	47.0	12	0.0	$ SUNRISE SUN LOOK 56	463C
241	09	51	17.6	7	8.1	$ ROLL +8.11 DEG SITE 9.2A	464C
241	09	52	29.4	9	12.8	$ YAW +12.81 DEG	465
241	09	53	52.2	8	6.9	$ PITCH -6.86 DEG	466
241	09	58	57.8	8	6.9	$ PITCH +6.86 DEG	467
241	10	00	10.2	9	12.8	$ YAW -12.81 DEG	468

241	10	01	33.2	7	8.1	$ ROLL -8.11 DEG	469C
241	10	02	40.0	12	0.0	$ ACQUIRE SUN	470C
241	11	10	17.8	7	1.6	$ ROLL -1.59 DEG UPDATE	471C
241	12	15	17.0	13	0.0	$ SUNSET 57	472C
241	13	06	59.0	12	0.0	$ SUNRISE 57	473C
241	13	17	56.0	7	8.2	$ ROLL +8.2 PHOTO	474C
241	13	19	12.0	9	12.8	$ YAW +12.8	475C
241	13	20	26.0	8	8.3	$ PITCH -8.3	476C
241	13	25	44.0	8	8.3	$ PITCH +8.3	477C
241	13	26	53.0	9	12.8	$ YAW -12.8	478C
241	13	28	41.0	7	8.2	$ ROLL -8.2	479C
241	13	30	12.0	8	33.8	$ PITCH +33.8	480C
241	15	33	35.0	8	33.8	$ PITCH -33.8	481C
241	15	40	20.0	13	0.0	$ SUNSET 58	482C
241	16	33	11.0	12	0.0	$ SUNRISE 58	483C
241	16	43	54.0	8	34.0	$ PITCH MINUS	484C
241	19	01	55.0	8	34.0	$ PITCH PLUS	485C
241	19	09	02.0	13	0.0	$ SUNSET 59	486C
241	20	00	10.0	12	0.0	$ SUNRISE 59	487C
241	20	10	11.0	8	15.0	$ PITCH MINUS	488C
241	22	28	0.0	8	15.0	$ PITCH PLUS	489C
241	22	28	40.0	12	0.0	$ ACQUIRE SUN	490C
241	22	34	0.0	13	0.0	$ SUNSET 60	491C
241	23	25	00	12	0.0	$ SUNRISE 60	492C
241	23	36	24.3	8	15.0	$ PITCH-15	493C
242	01	55	4.1	8	15.0	$ PITCH +15	494C
242	01	56	25.5	12	0.0	$ SUNRISE ASU	495C
242	02	1	10.5	13	0.0	$ SUNSET 61	496C
242	02	52	17	12	0.0	$ SUNRISE 61	497C
242	02	57	41.6	8	15.0	$ PITCH-15	498C
242	05	21	25.0	8	15.0	$ PITCH +15	499C
242	05	22	44.0	12	0.0	$ SUNRISE ASU	500C
242	05	27	31.0	13	0.0	$ SUNSET 62	501C
242	06	18	47.0	12	0.0	$ SUNRISE 62	502C

TRACKING DATA

Tracking data tapes for Mission I listed here include tapes in the JPL library, those sent to Langley, and those that are in the Boeing library. These tapes are the prime source of tracking data; however, tracking data could be obtained — although not in master file form — from three sources:

1) Magnetic log tape recorded on the 7040 computer in real time during the mission;

2) Paper tapes punched in Baudot teletype code;

3) Keypunch IBM cards from the teletype (TTY) line printout (this information is obtainable from the TDA report).

The preceding items are listed in order of increasing difficulty of their use. It should be recognized that magnetic tapes are generally good for a period of 1 to 6 months. It is expected that log tapes will be released some time after the mission. To decrease the chances of losing tracking data, it is mandatory to maintain B1 tapes and rewrite them periodically.

TRACKING DATA TAPES

L.O. LIBRARY (B1) TAPE NO.	TIME INTERVAL HHMMSS, DAY TO HHMMSS, DAY		LANGLEY (B1) TAPE NO.	TBC B1	TBC B2
-	-	-	LT01	-	-
8993	-	-	LT02	-	-
-	195800, 222	121100, 225	LT03	-	-
8429	195800, 222	104100, 226	LT04	-	-
9804	195800, 222	155802, 226	-	-	-
8768	195800, 222	162002, 226	-	7940	-
7310	154400, 226	103100, 227	LT05	-	-
8694	154400, 226	111300, 228	LT06	-	-
8691	154400, 226	120300, 229	LT07	-	-
8517	154400, 226	104100, 230	LT08	-	-
1383	154400, 226	105200, 231	LT09	-	-
9383	154400, 226	100900, 232	LT10	-	-
7394	154400, 226	102500, 233	LT11	9113	0275
9379	095000, 233	104200, 234	LT12	-	-
8312	095000, 233	093500, 235	LT13	-	-
9396	095000, 233	101100, 236	LT14	-	-
8967	095000, 233	104800, 237	LT15	-	-
2574	095000, 233	100600, 238	LT16	4747	-
9350	160200, 237	023300, 239	LT17	-	-
7410	160200, 237	111700, 239	LT18	-	-
7314	160200, 237	105100, 240	LT19	-	-
9099	160200, 237	185700, 241	LT20	-	-
8775	160200, 237	163700, 242	LT21	D193	-
Bad Tape			LT22		
			LT23		

MASTER FILE AND ODP FILE SUMMARIES

ETR FILE SUMMARY

MASTER FILE DATA SUMMARY

STA	COUNT	HHMMSS,	DAY	TO HHMMSS,	DAY
6	66	193218	222	193848	222
7	65	194806	222	195224	222
8	58	194712	222	200854	222
9	59	195712	222	200342	222
10	22	201154	222	201405	222
11	63	192906	222	193518	222

MASTER FILE AT MIDCOURSE

MASTER FILE DATA SUMMARY

STA	COUNT	HHMMSS,	DAY	TO HHMMSS,	DAY	ELAPSED HHMMSS,	DAYS
4	1384	201527	222	010202	224	044635	1
5	265	195857	222	072602	223	112705	0
12	682	114502	223	232902	223	114400	0
13	657	030702	223	162702	223	132000	0

ODP FILE AT MIDCOURSE

SUMMARY OF DATA TYPES ON THE ODP DATA FILE

PLEASE NOTE — END TIMES MAY BE IN ERROR BY TC/2

STA	START TIME	END TIME	DEC	HA	CC3	C3
4	201527.000.222	010202.000.224	741	741	995	17
5	024002.000.223	072602.000.223	173	173	0	159
12	114502.000.223	232902.000.223	606	606	421	182
13	030932.000.223	162702.000.223	475	475	384	185

MASTER FILE PRIOR TO DEBOOST

ODPL RUN 2212

TIME POINTS SENT TO MASTER FILES:	ACCEPTED	REPLACED
	8980	2734

MASTER FILE DATA SUMMARY

STA	COUNT	HHMMSS,	DAY	TO	HHMMSS,	DAY	ELAPSED HHMMSS,	DAYS
4	3105	201527	222		055802	226	094235	3
5	265	195857	222		072602	223	112705	0
12	3105	114502	223		235702	225	121200	2
13	2505	030702	223		122202	226	091500	3

ODP FILE PRIOR TO DEBOOST

PLEASE NOTE — DATA VALUES ADJUSTED BY POLY

SUMMARY OF DATA TYPES ON THE ODP DATA FILE

PLEASE NOTE — END TIMES MAY BE IN ERROR BY TC/2

STA	START TIME	END TIME	CC3	C3	RU
4	002832.000.224	055802.000.226	888	812	0
12	115832.000.224	235402.000.225	2106	274	184
13	033332.000.224	122202.000.226	1095	424	0

SOURCE DECK LISTINGS

The TDPX and ODGX source decks are listed that were used during Mission I. TDPX contains octal patches for correcting an error in the disk read-write routine. These corrections plus one additional patch that had to be inserted in the initial orbit phase are also in ODGX. The additional patch is the first one following ODGXLK2.

TDPX SOURCE DECK

```
*        DECK     TDPX
*        TDPLK1   *
(FILE1=4 MICODE=(LO/TBC)
36542/=002000065130/8
36543/=052000065137/8
367667=177777365134/8
65130/=053400737000/8
65131/=050000065136/8
65132/=060100700000/8
651337=002000036543/8
65134/=063400365137/8
651357=002000036767/8
65136/=400000000000/8
*        TDPLK2
52544/=002000065130/8
52545/=052000065137/8
52770/=177777365134/8
65130/=053400753002/8
65131/=050000065136/8
65132/=060100700000/8
65133/=002000052545/8
65134/=063400365137/8
65135/=002000052771/8
65136/=400000000000/8
*        END
```

```
*       DECK     ODGX
*       ODGLK1   *
FILE1=4
22670/=0020000054420/8
22671/=0520000054427/8
23114/=1777773544 24/8
54420/=0534007231 26/8
54421/=0500000054426/8
54422/=0601007000000/8
54423/=0020000022671/8
54424/=0634003544 27/8
54425/=0020000023115/8
54426/=4000000000000/8
* A     ODGLK2   B,B
33204/=4624274660 60/8
26370/=0020000054420/8
26371/=0520000054427/8
26614/=1777773544 24/8
54420/=0534007266 26/8
54421/=0500000054426/8
54422/=0601007000000/8
54423/=0020000026371/8
54424/=0634003544 27/8
54425/=0020000026615/8
54426/=4000000000000/8
* B     ODGLK1
22670/=0020000054420/8
22671/=0520000054427/8
23114/=1777773544 24/8
54420/=0534007231 26/8
54421/=0500000054426/8
54422/=0601007000000/8
54423/=0020000022671/8
54424/=0634003544 27/8
54425/=0020000023115/8
54426/=4000000000000/8
*       WANT     A,RETURN
*       GO       A
*       END
```

INPUT DECK LISTINGS

This appendix contains the TDPX and ODGX input deck listings. The transmitter-on times and frequency values contained in these listings are necessary for producing ODP files from the B1 tapes listed elsewhere in this appendix. There is nothing to prevent postmission analysts from removing, adding, or changing the control cards, other than transmitter-on times and frequencies, to make various ODP files.

```
CHANGE NEW ODP FILE
REMOVE ALL CONTROLS
CHANGE EXECUTE
SAMPLE TIME 60 STATION 6,7,8,9,10,11
END DATA
```

```
FILE DISPOSITION
(NEW EPOCH - DESTROY MASTER
EPOCH
660801019,2600000
END DATA
```

```
CHANGE CLEAR REJECTED DATA
CHANGE DAY RESET 222
CHANGE ID COLUMN 1 STATION 10
CHANGE ID COLUMN 1 STATION 11
CHANGE EXTERNAL 74 STATION 6
CHANGE EXTERNAL 79 STATION 7
CHANGE EXTERNAL 80 STATION 8
CHANGE EXTERNAL 76 STATION 9
CHANGE EXTERNAL 83 STATION 10
CHANGE EXTERNAL 82 STATION 11
FORMAT(L2,L1,1B,3L2,2(1B,G6.3),1B,G8.3)STATION 10,11
ASSIGN(ID,DC2,HR,MO
ASSIGN(ID,DC2,HR,MIN,SEC,AZ,EL,R)STATION 10,11
END DATA
```

```
CHANGE NOSORT
CHANGE CLEAR REJECTED DATA
FORMAT(3(L2,1B),4L1,1B,3L2,1B,L3,1B,L10,1B,Q10,K1,2(1B,F6.3)) NUMBER 2
END DATA                                                                (0
```

When receiving range data this alternate deck was used to process rejected data. The use of format cards in this manner allowed acceptance of all tracking data.

```
CHANGE REPROCESS REJECTED DATA
CHANGE NOSORT
FORMAT(3(L2,1B),4L1,1B,3L2,1B,L3,1B,L10,1B,K10,K1,2(1B,F6.3)) NUMBER 2
END DATA                                                                (0
```

TRANSLUNAR ODGX

```
CHANGE NEW ODP FILE
REMOVE ALL CONTROLS
CHANGE EXECUTE
ADJUST C3 BY -.040 FROM 030902,223,66 TO 045502,223,66,STATION 13
ADJUST C3 BY +.235 FROM 114502,223,66 TO 133902,223,66,STATION 12
ADJUST C3 BY +.075 FROM 024102,223,66 TO 035802,223,66,STATION 5
IGNORE          FROM 014700,223,66 TO 014800,223,66,STATION 4 $ BLUND
IGNORE          FROM 021800,223,66 TO 024000,223,66,STATION 4,5 $ TUNE
IGNORE          FROM 035900,223,66 TO 045400,223,66,STATION 4,5 $ TUNE
IGNORE          FROM 060200,223,66 TO 061500,223,66,STATION 5,13 $ TUNE
IGNORE          FROM 101700,223,66 TO 102900,223,66,STATION 13 $ MAN
IGNORE AT 105602,223,66,STATION 13
IGNORE FROM 110602,223,66 TO 110732,223,66,STATION 13
IGNORE FROM 142628,223,66 TO 142723,223,66,STATION 12,13
IGNORE FROM 164400,223,66 TO 164706,223,66,STATION 12,13
IGNORE CC3 FROM 221922,222,66 TO 222332,222,66 STATION 4
IGNORE CC3 BEFORE 212200,222,66 STATION 4
IGNORE STATIONS 6,7,8,9,10,11
IGNORE C1 STATIONS 4,5
IGNORE BEFORE 150000,226,66,STATIONS 4,5,12,13
IGNORE BEFORE 002800,224,66,STATIONS 4,5,12,13
TRANSMITTER ON  AT 202617,222,66,STATION 4
TRANSMITTER ON AT 050900,223,66 STATION 13
TRANSMITTER  ON  AT  134902,223,66,STATION 12
TRANSMITTER ON AT 214000,223,66,STATION 4
TRANSMITTER ON AT 043000,224,66,STATION 13
TRANSMITTER  ON  AT  124800,224,66,STATION 12
TRANSMITTER  ON  AT  231902,224,66,STATION 4
TRANSMITTER  ON  AT  044000,225,66,STATION 13
TRANSMITTER ON AT 142700,225,66 STATION 12
TRANSMITTER ON AT 221900,225,66,STATION 4
TRANSMITTER ON AT 052500,226,66,STATION 13
FREQ  20456500 AFTER 152500,226,66,STATION 12
TRANSMITTER ON AT 132500,226,66 STATION 12
L TO S BIAS 36325000 AFTER 195800,222,66 STATION 5
FREQ  20460100 AFTER 202617,222,66,STATION 4
FREQ  20459100 AFTER 225402,222,66,STATION 4
FREQ  20458700 AFTER 020600,223,66,STATION 4
FREQ  20456300 AFTER 195330,223,66,STATION 4
FREQ  20456400 AFTER 011000,224,66,STATION 4
FREQ  20456507 AFTER 042240,224,66,STATION 4
FREQ  20456400 AFTER 043230,224,66,STATION 4
FREQ  20456200 AFTER 201800,224,66,STATION 4
FREQ  20456000 AFTER 203402,225,66,STATION 4
```

```
FREQ  20456500 AFTER 112002,223,66,STATION 12
FREQ  20456300 AFTER 120500,224,66,STATION 12
FREQ  20456000 AFTER 120200,225,66,STATION 12
FREQ  20456200 AFTER 205000,225,66 STATION 12
FREQ  20456300 AFTER 120800,226,66 STATION 12
FREQ  20456000 AFTER 140400,226,66,STATION 12
FREQ  20458300 AFTER 030700,223,66,STATION 13
FREQ  20458200 AFTER 032700,223,66,STATION 13
FREQ  20456520 AFTER 051000,223,66,STATION 13
FREQ  20456630 AFTER 081100,223,66,STATION 13
FREQ  20456800 AFTER 111002,223,66,STATION 13
FREQ  20456200 AFTER 032500,224,66,STATION 13
FREQ  20456233 AFTER 034430,224,66,STATION 13
FREQ  20456200 AFTER 041600,224,66,STATION 13
FREQ  20456500 AFTER 115000,224,66,STATION 13
FREQ  20455900 AFTER 034100,225,66,STATION 13
FREQ  20456100 AFTER 062500,225,66,STATION 13
FREQ  20456500 AFTER 034400,226,66,STATION 13
FREQ  20456400 AFTER 140400,226,66,STATION 13
FREQ  20456900 AFTER 152500,226,66,STATION 13
ADJUST C3 BY -.18 AFTER 122500,226,66 STATION 13
ADJUST C3 BY -.18 AFTER 154330,226,66 STATION 13
PASSID 01/101 AFTER 201520,222,66,STATION 4
PASSID 01/102 AFTER 201720,222,66,STATION 4
PASSID 01/113 AFTER 032000,223,66,STATION 4
PASSID 02/111 AFTER 211600,223,66,STATION 4
PASSID 02/112 AFTER 212000,223,66,STATION 4
PASSID 02/123 AFTER 041400,224,66 STATION 4
PASSID 03/121 AFTER 201000,224,66,STATION 4
PASSID 03/122 AFTER 215500,224,66,STATION 4
PASSID 03/133 AFTER 041300,225,66 STATION 4
PASSID 04/131 AFTER 203000,225,66,STATION 4
PASSID 04/132 AFTER 220700,225,66,STATION 4
PASSID 04/133 AFTER 042600,226,66,STATION 4
PASSID 01/111 AFTER 114500,223,66,STATION 12
PASSID 01/112 AFTER 120300,223,66,STATION 12
PASSID 01/113 AFTER 230400,223,66,STATION 12
PASSID 03/131 AFTER 112000,225,66,STATION 12
PASSID 03/132 AFTER 122700,225,66 STATION 12
PASSID 03/133 AFTER 235000,225,66,STATION 12
PASSID 01/111 AFTER 030900,223,66,STATION 13
PASSID 01/112 AFTER 041000,223,66,STATION 13
PASSID 01/113 AFTER 144000,223,66,STATION 13
PASSID 02/121 AFTER 032000,224,66,STATION 13
PASSID 02/122 AFTER 043600,224,66,STATION 13
PASSID 02/123 AFTER 160100,224,66,STATION 13
PASSID 03/131 AFTER 033700,225,66,STATION 13
PASSID 03/132 AFTER 044300,225,66 STATION 13
PASSID 03/133 AFTER 163000,225,66,STATION 13
PASSID 04/141 AFTER 034400,226,66,STATION 13
CHANGE EXECUTE
PRINT  ALL CONTROLS
END DATA
C
```

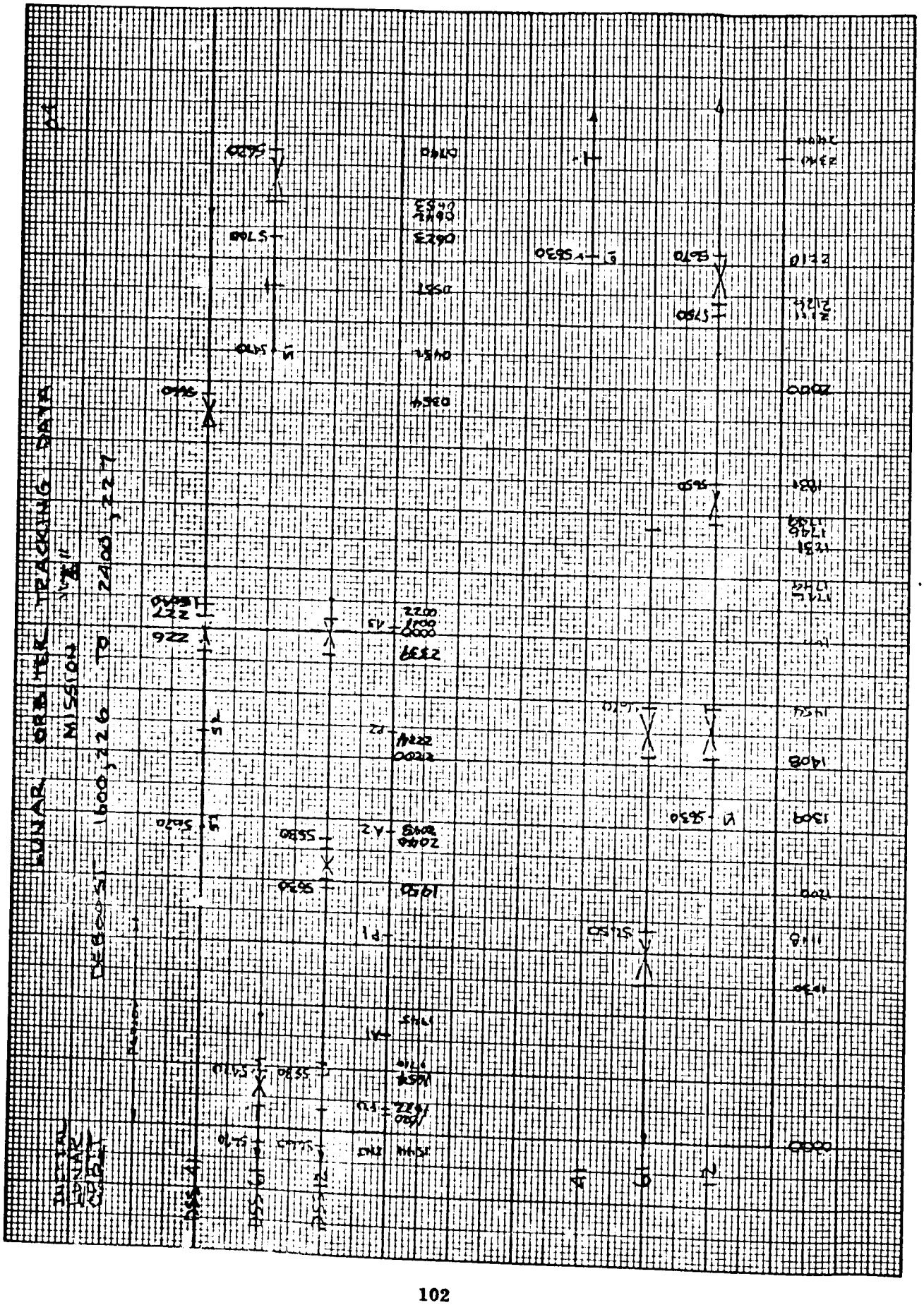
TRACKING DATA

This section contains the tracking data bar chart used during the mission to assist in visualization of the ODP file contents and regions of bad or unusable data. Shaded areas represent unusable data; a "T" implies the transmitter has been turned on, and an "X" implies occultation has occurred.

LUNAR ORBITER TRACKING DATA
MISSION
THRU
DAY 222
WHITE
BLUE
RED
LEGEND: T – ANTENNA
P – PASSID
B – BLANKER
VAR – IGNORE
OCCULT

LUNAR ORBITER TRACKING DATA
MISSION "H"
0400/224 THRU 1200/225
DSS-41
DSS-14
DSS-12
DSS-61
DSS-62
DSS-12
224
225
BLUE

LUNAR ORBITER TRACKING DATA
MISSION
1200, 225 THRU 2000, 226
GMT
DSS 51
DSS 61
DSS 12
DSS 14
DSS 42
DSS 62
DAY 225
DAY 226
BLUE
RISE
SET


LUNAR ORBITER TRACKING DATA
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ORBITER TRACKING DATA
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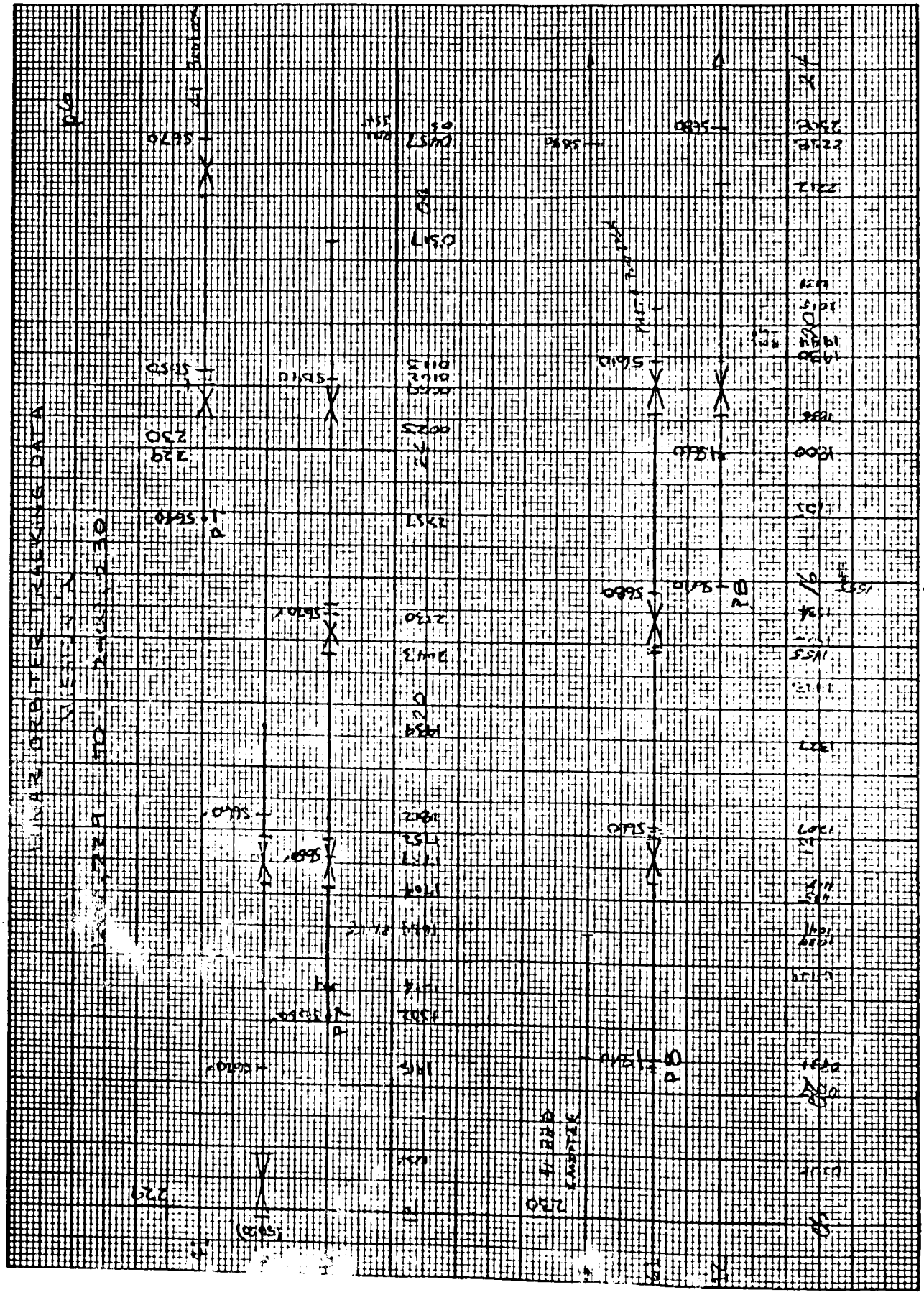
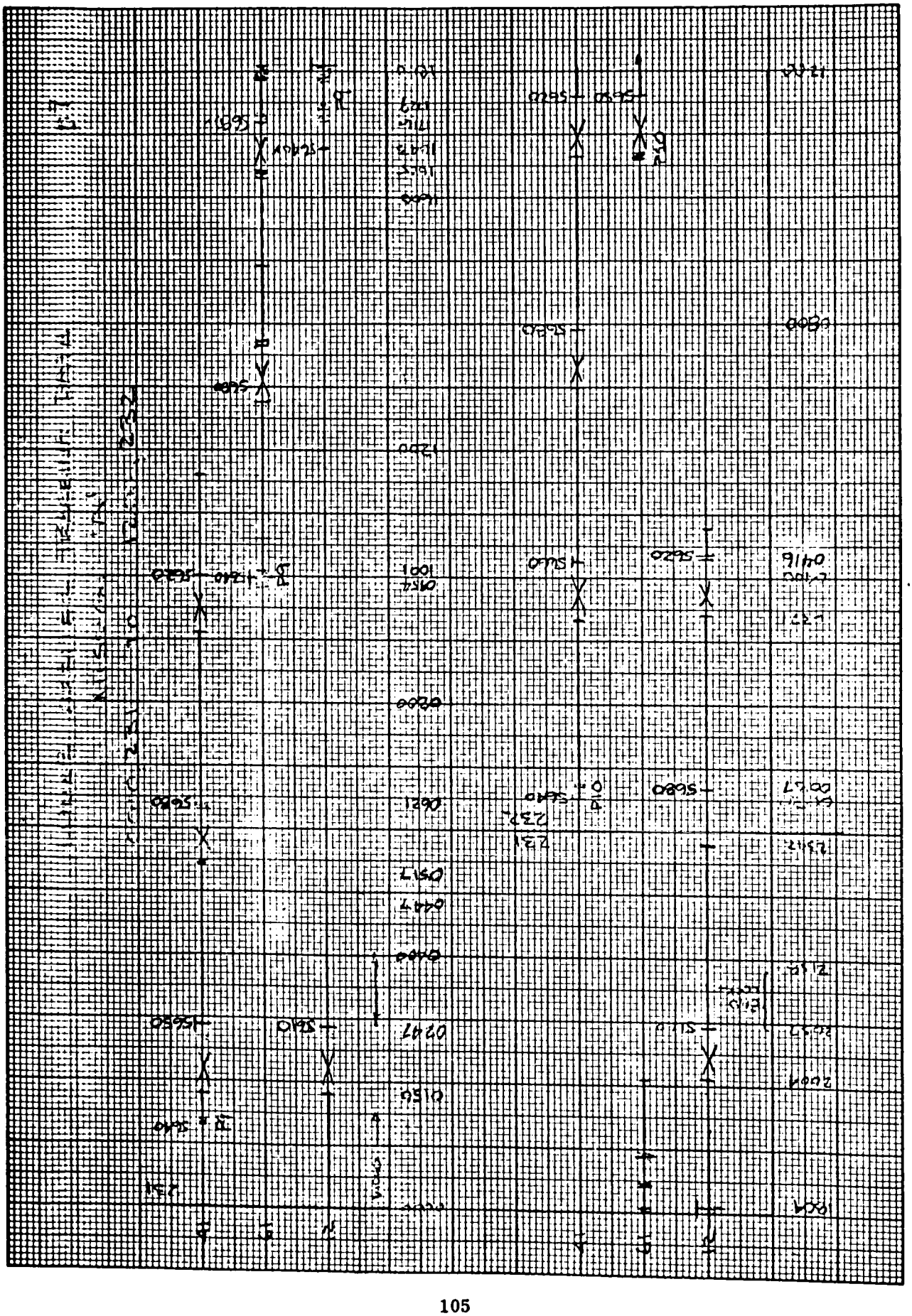
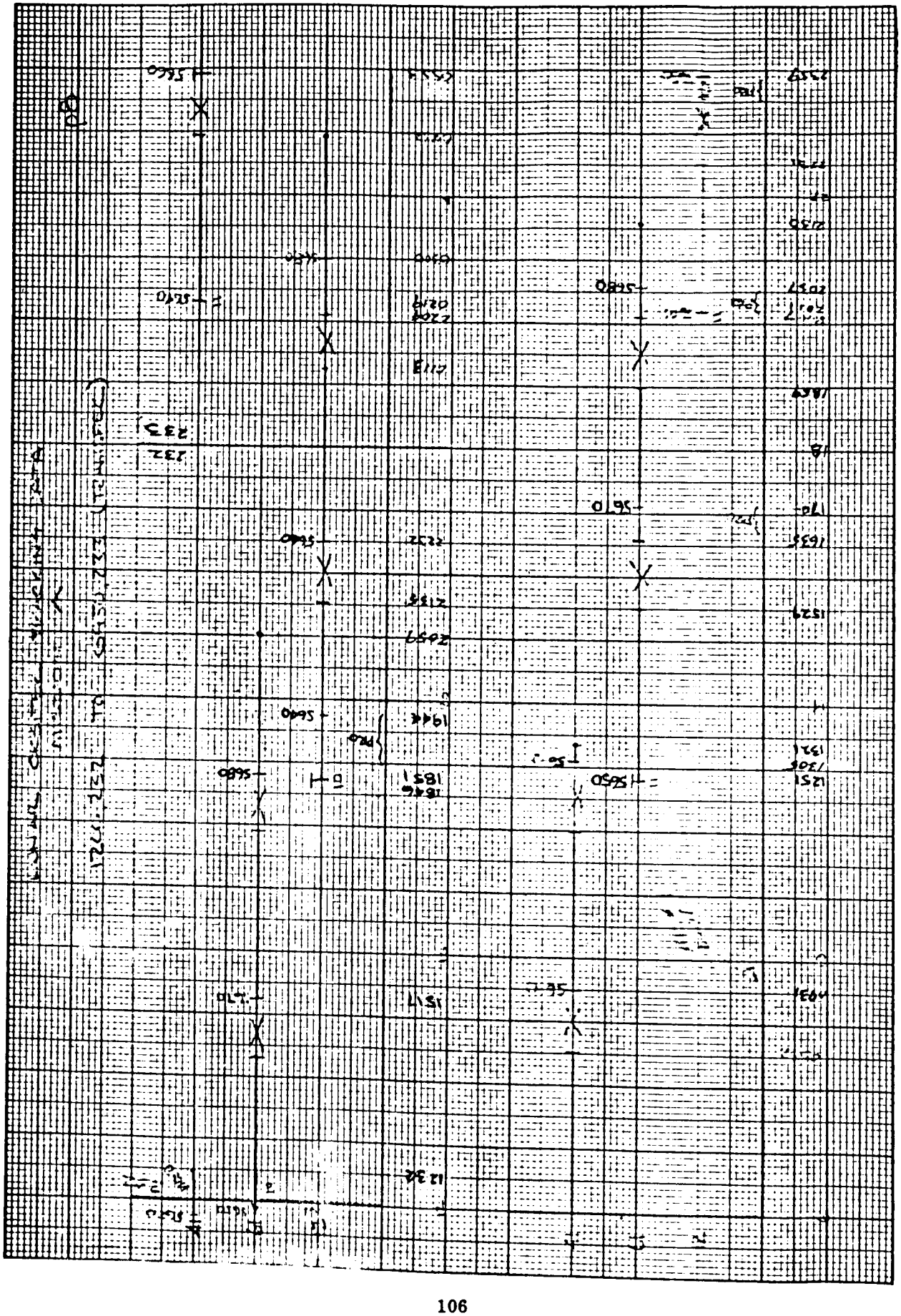
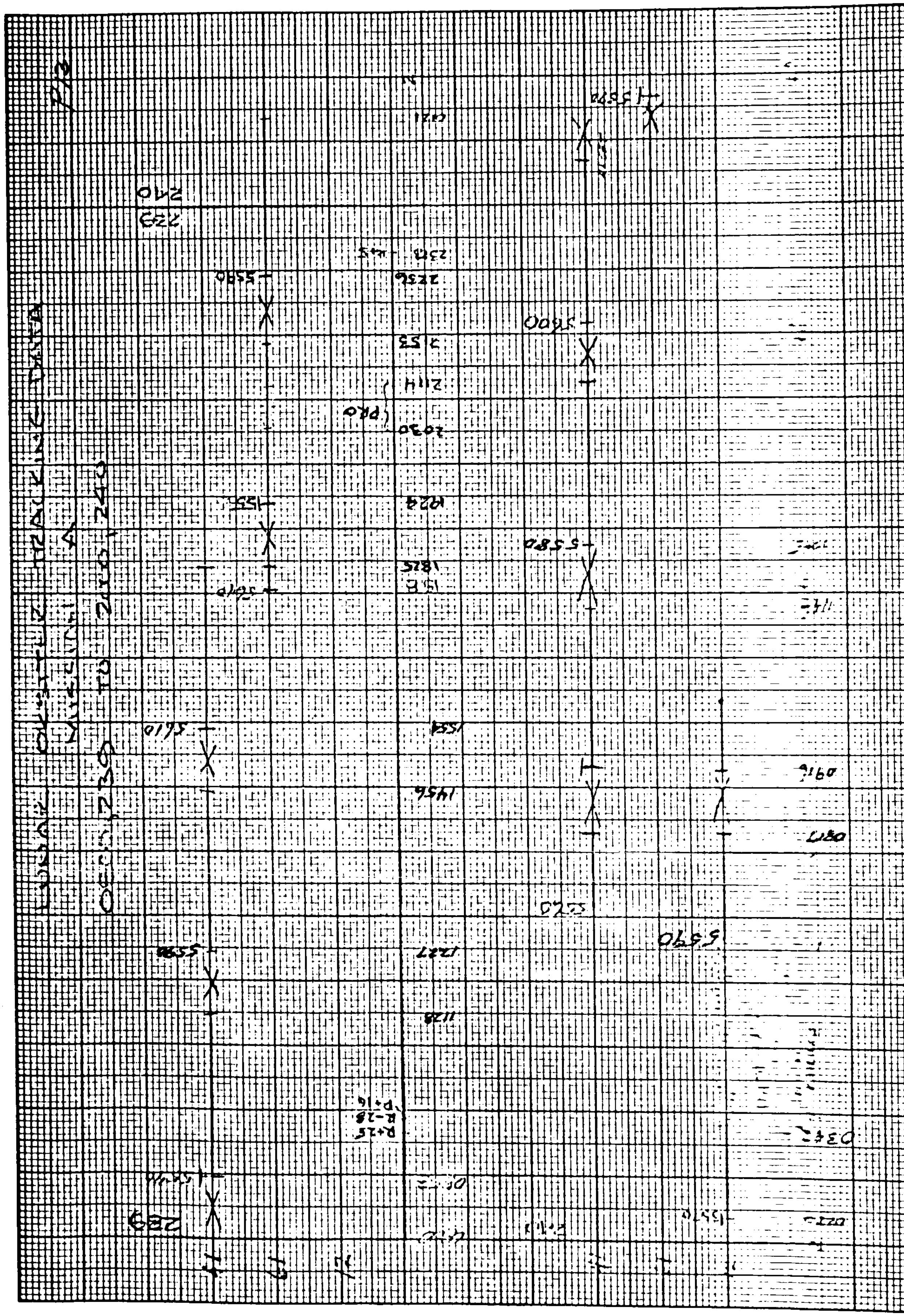

LUNAR ORBITER TRACKING DATA







LUNAR ORBITER TRACKING DATA
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RESIDUAL PLOTS FOR OD 2104

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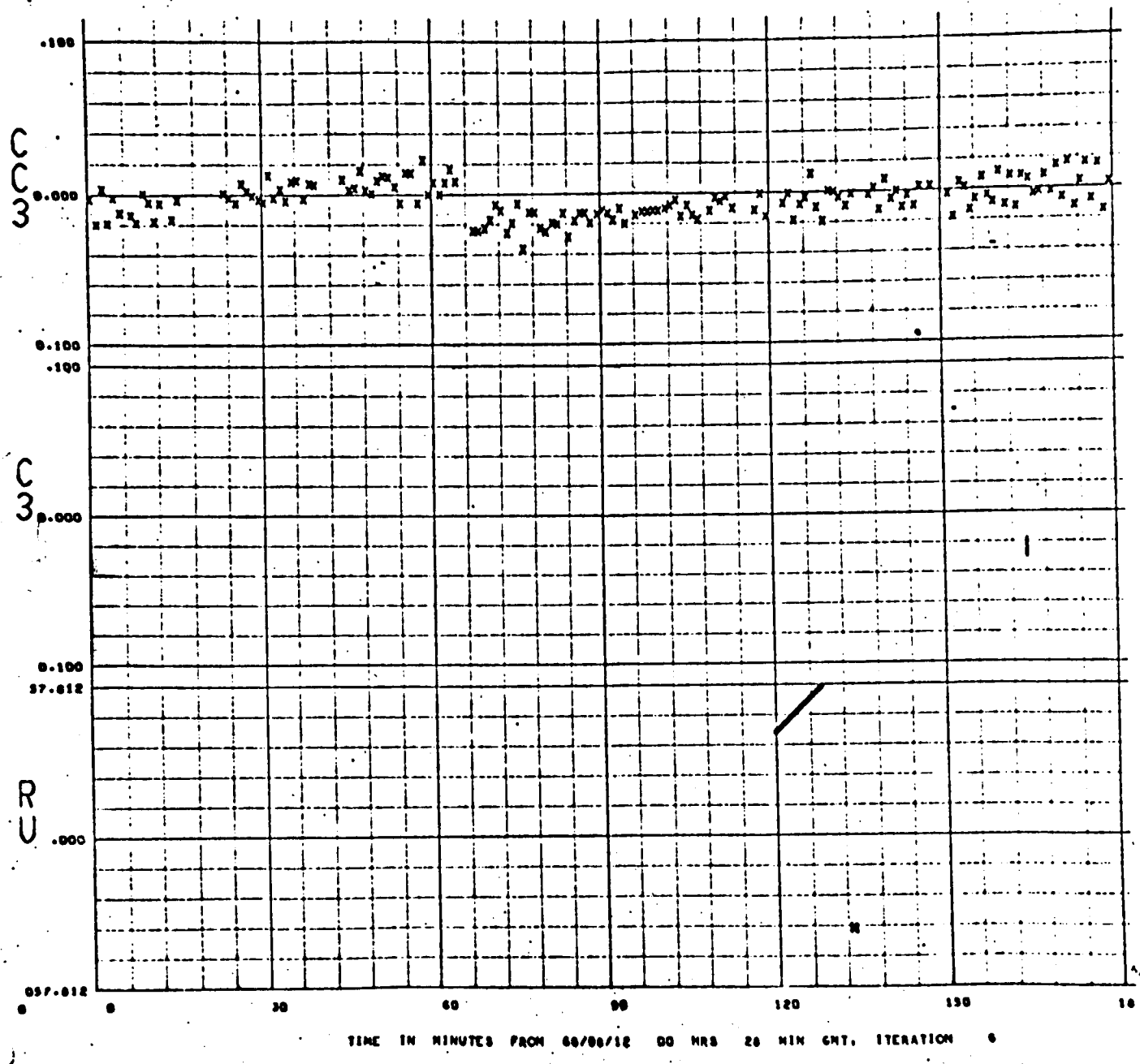
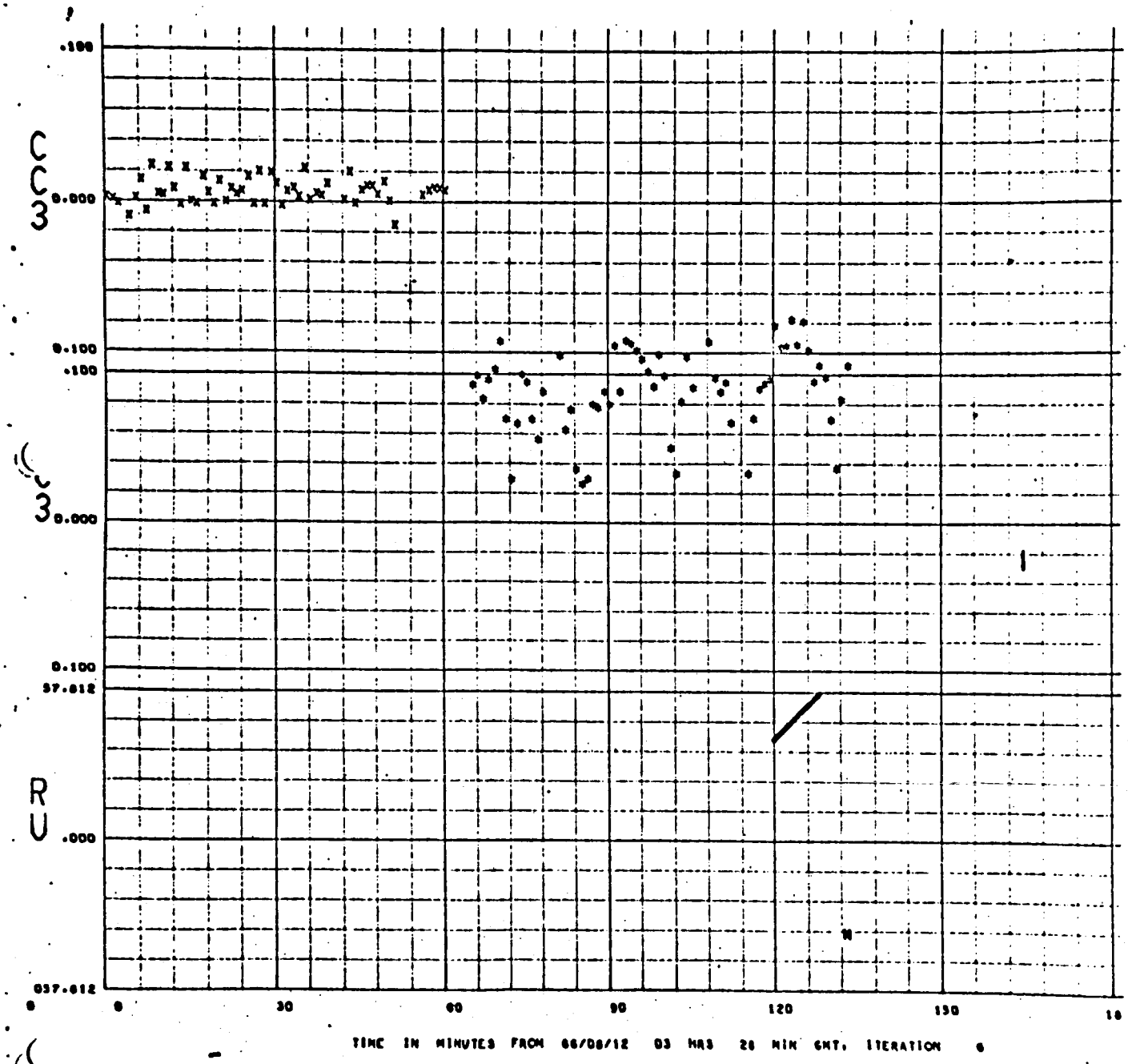
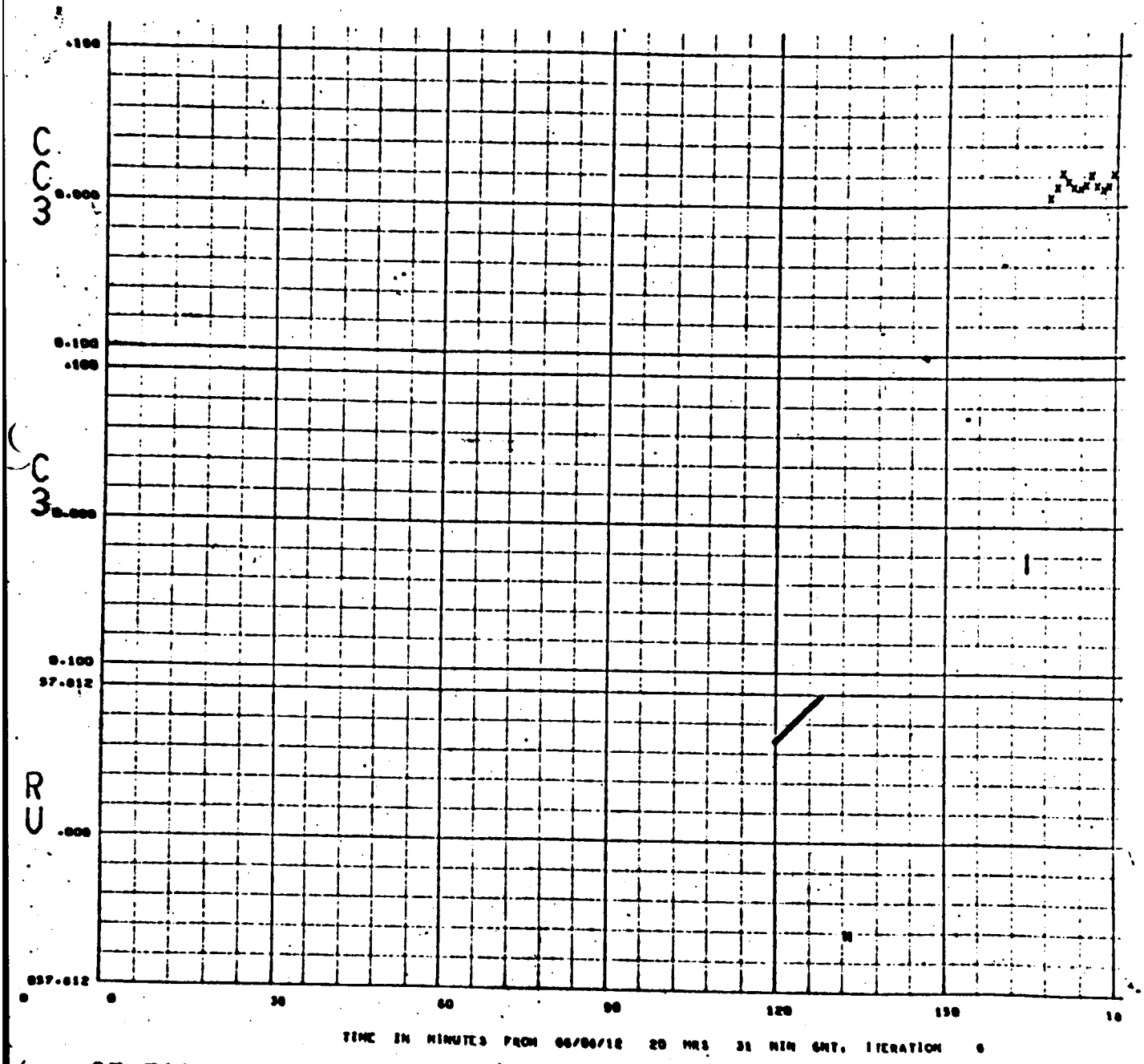


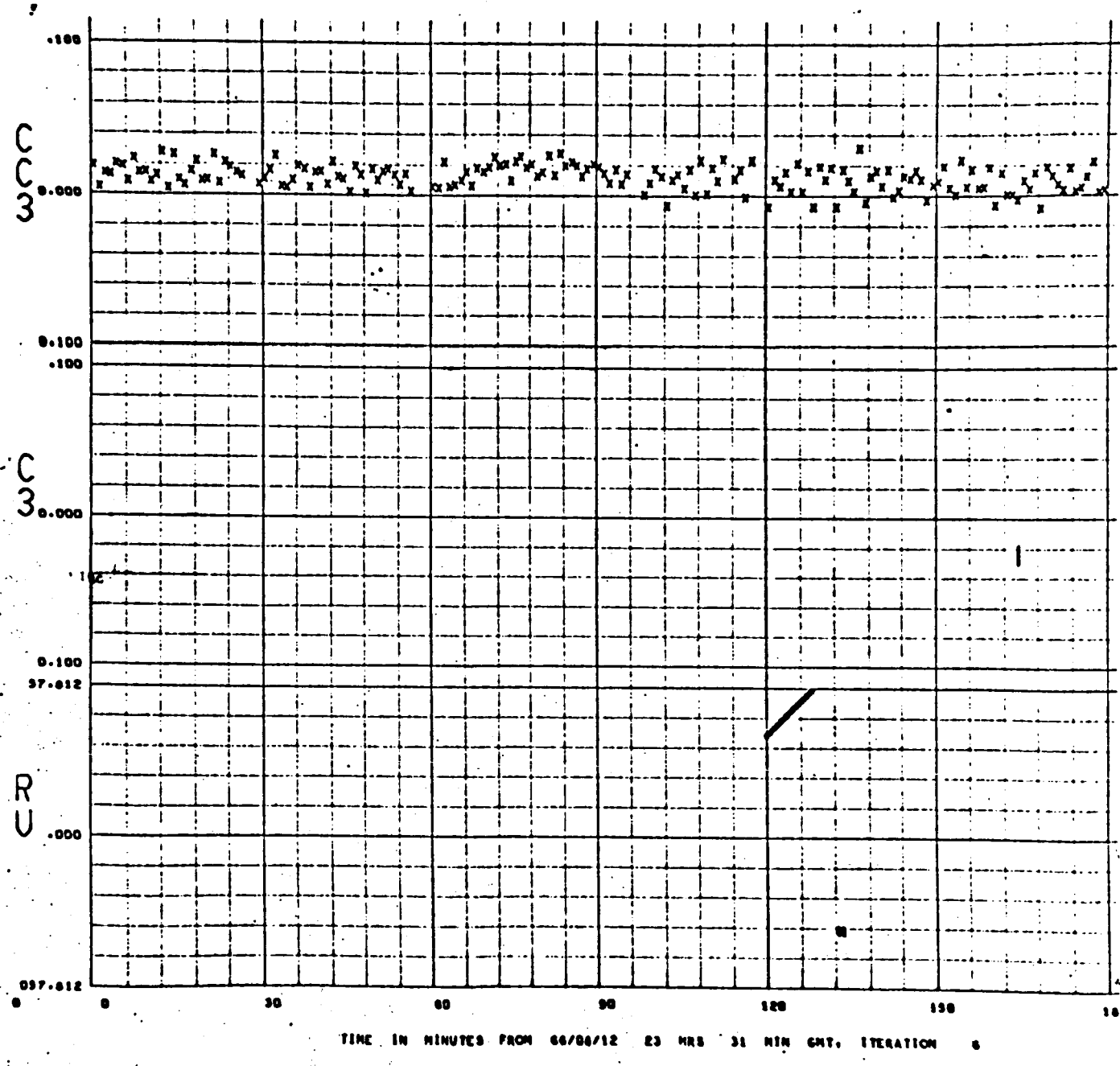
STATION 41 RESIDUALS PASS NUMBER 02/112



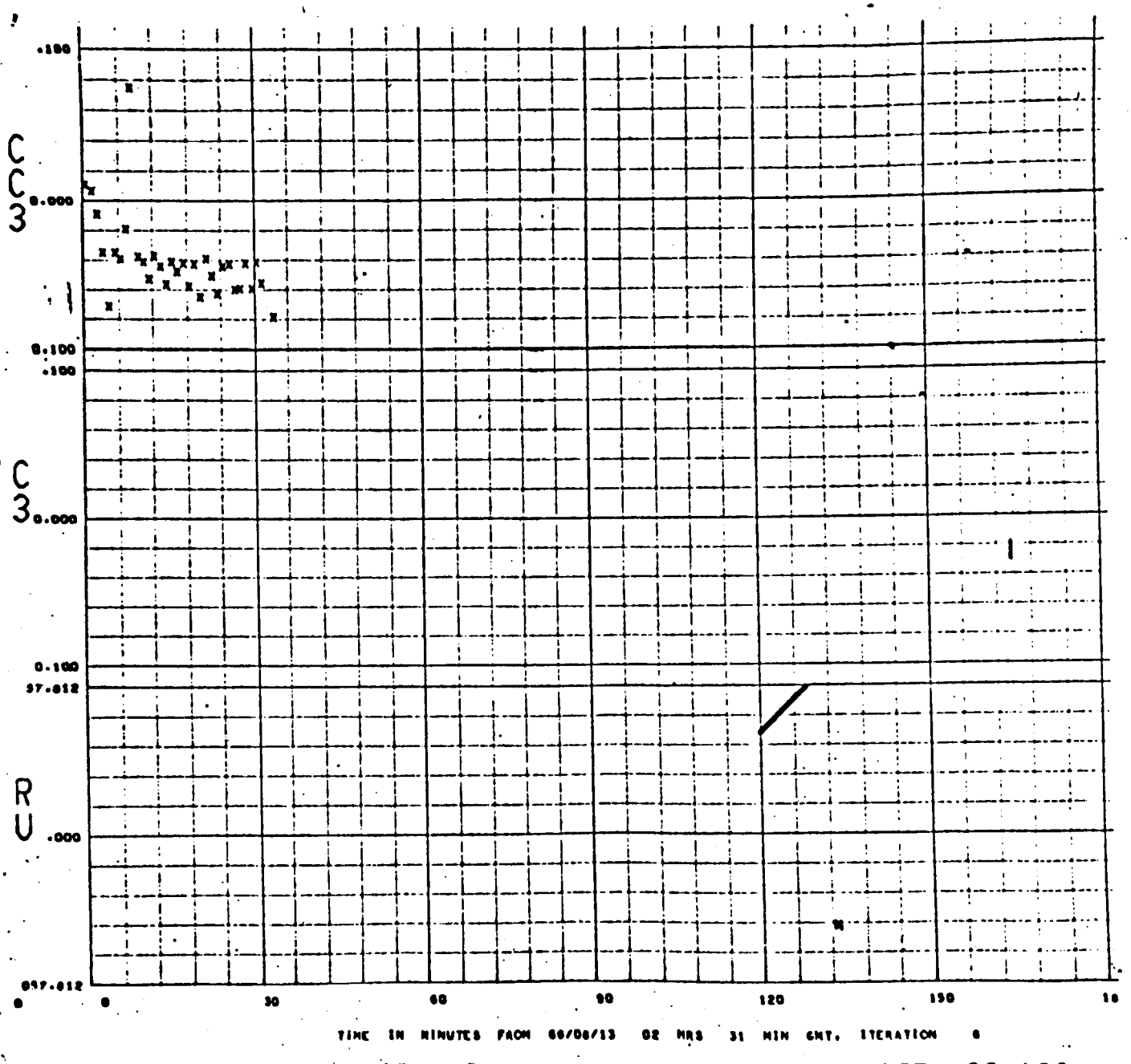
STATION 41 RESIDUALS PASS NUMBER 02/112



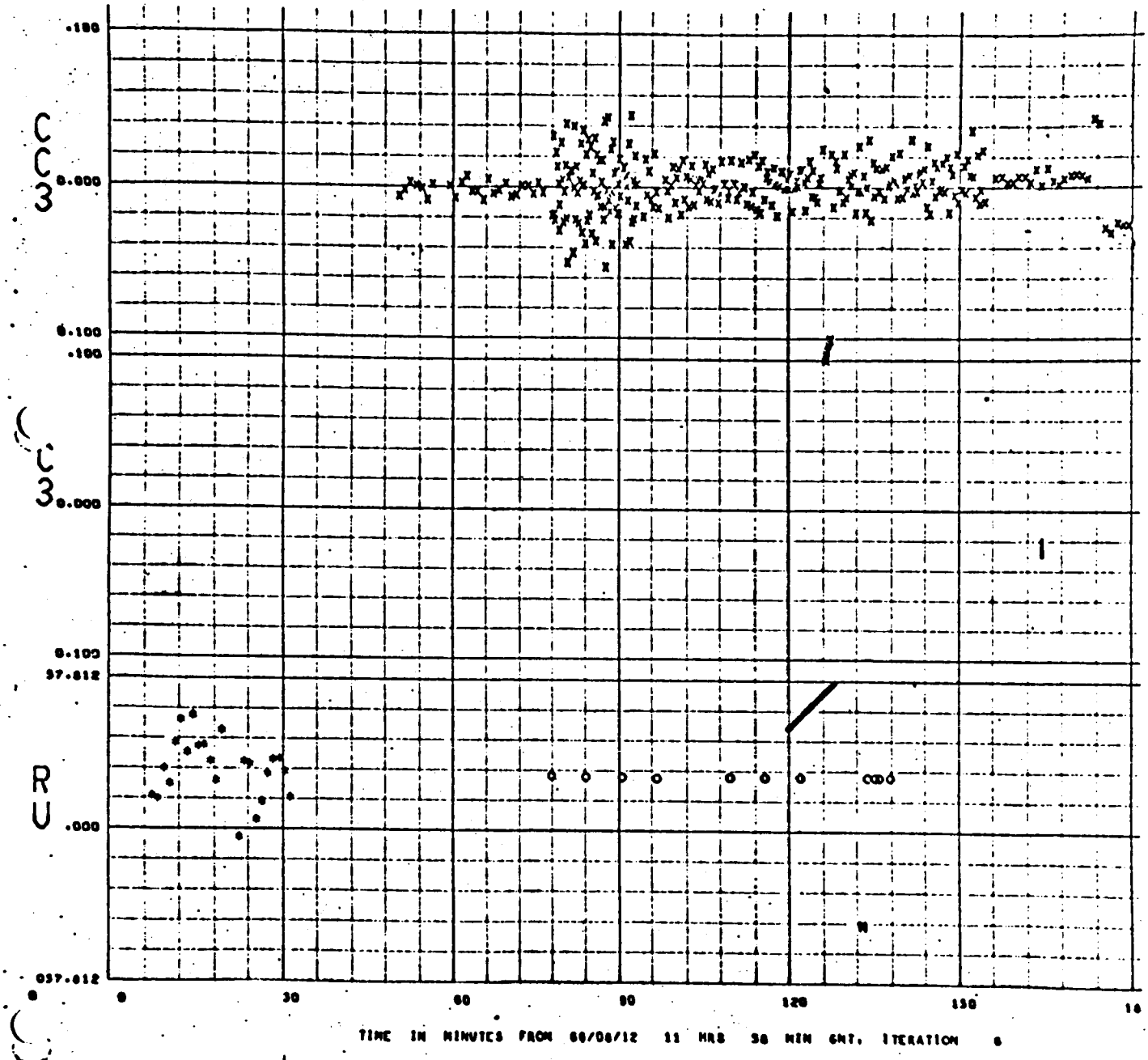
STATION '41 RESIDUALS PASS NUMBER 02/123



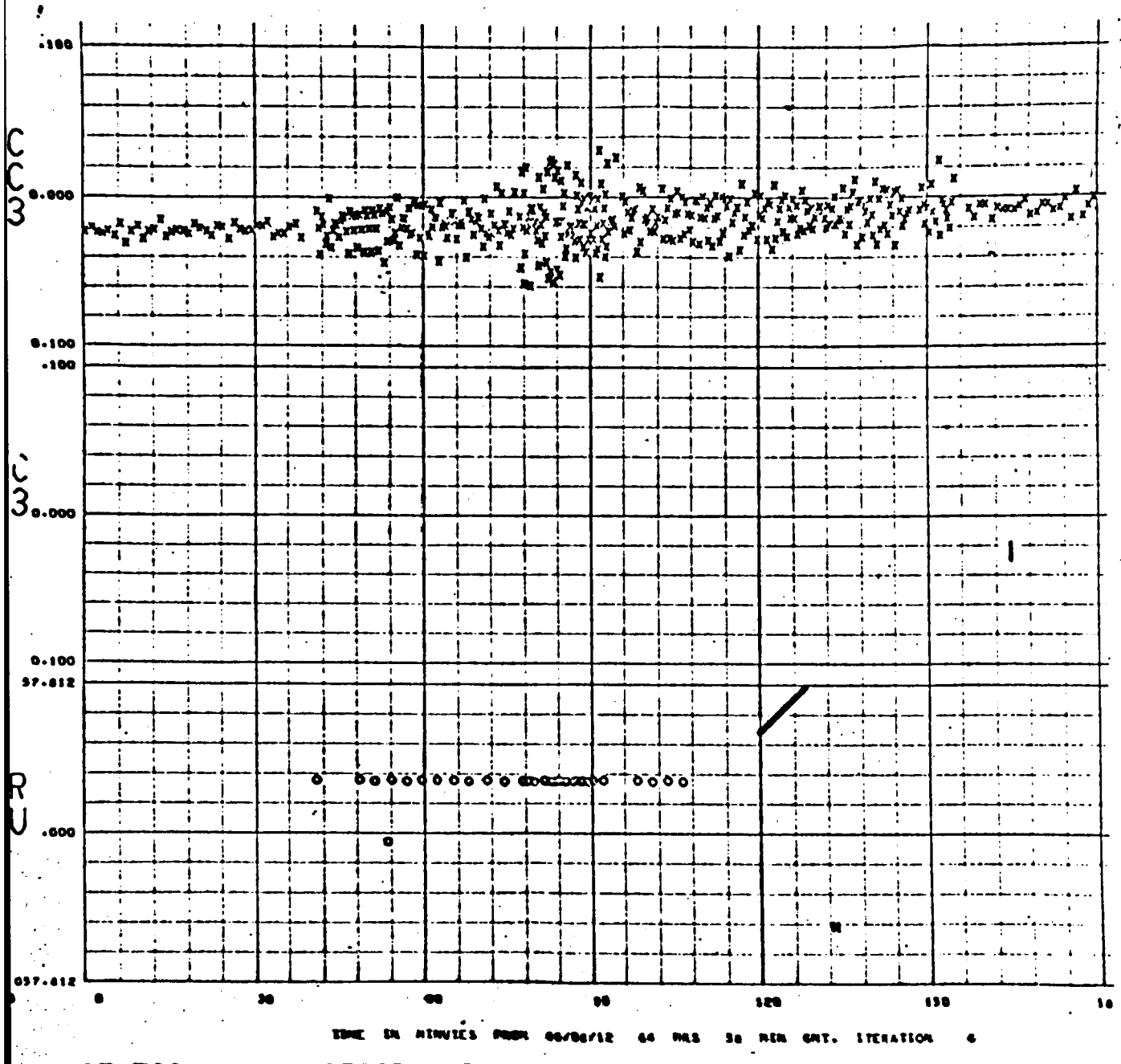
STATION 41 RESIDUALS PASS NUMBER 02/123



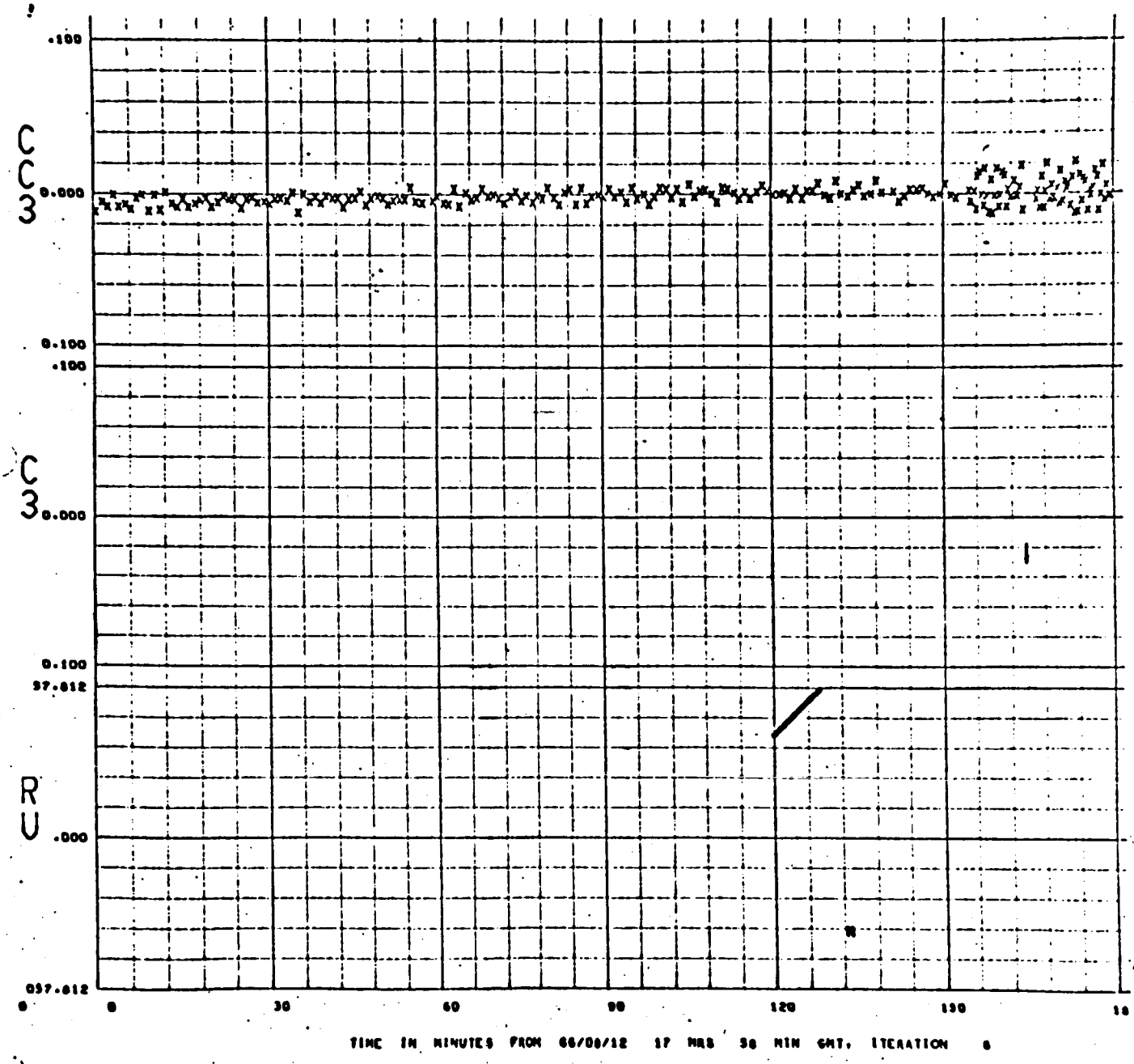
STATION 41 RESIDUALS PASS NUMBER 02/123



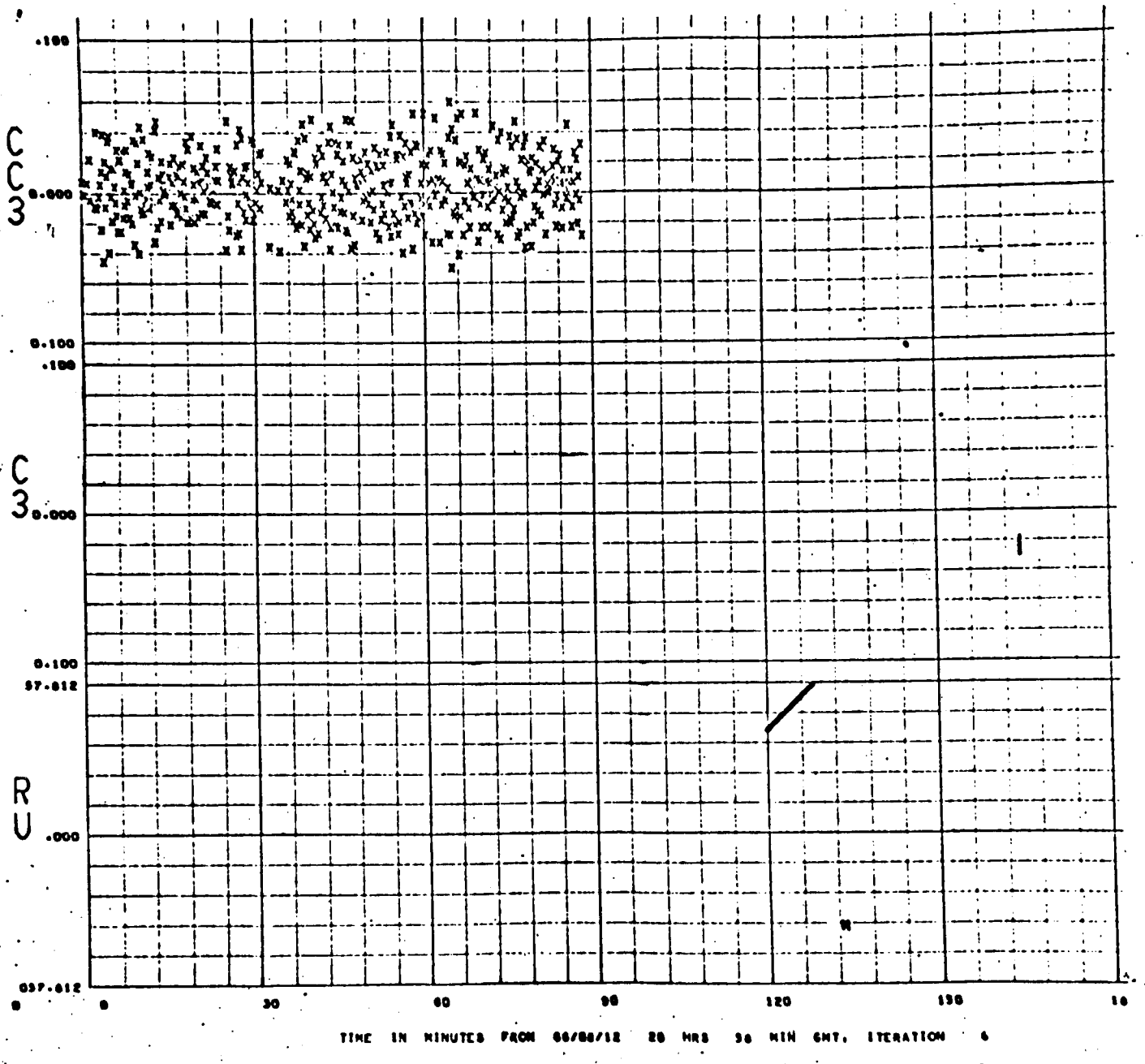
STATION 12 RESIDUALS PASS NUMBER 01/112



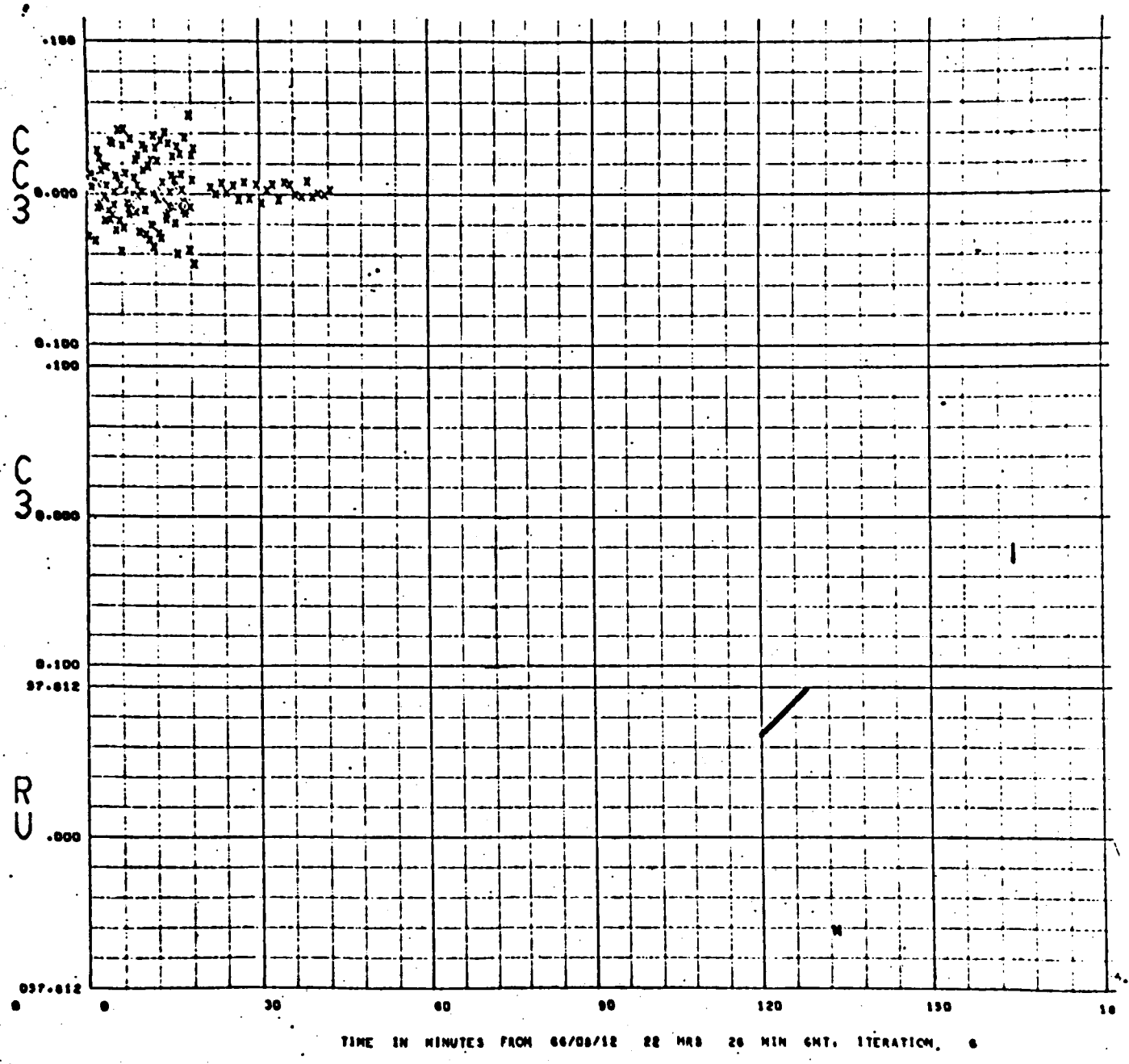
STATION 12 RESIDUALS PASS NUMBER 01/112



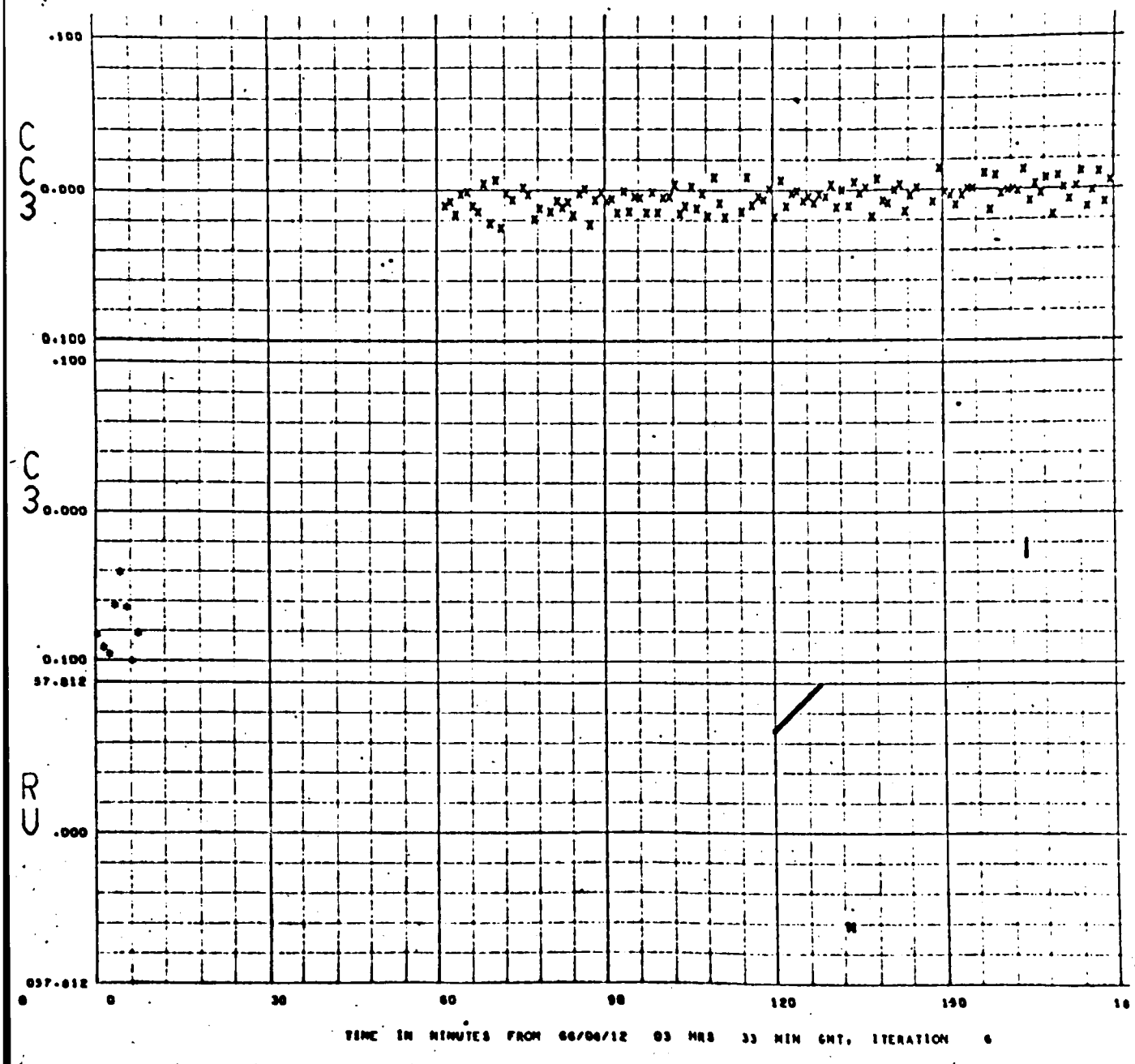
STATION 112 RESIDUALS PASS NUMBER 01/112



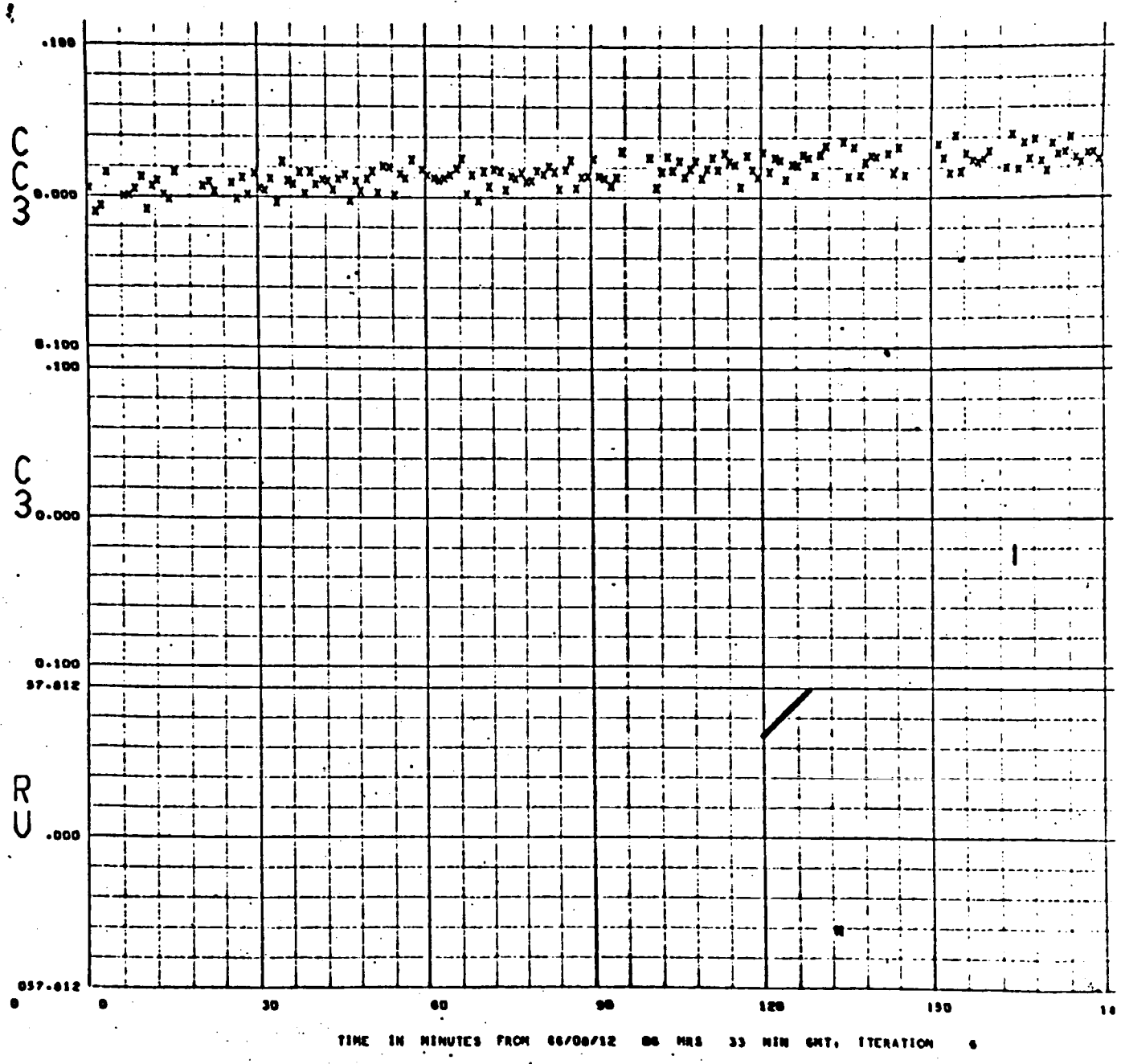
STATION 12 RESIDUALS PASS NUMBER 01/112



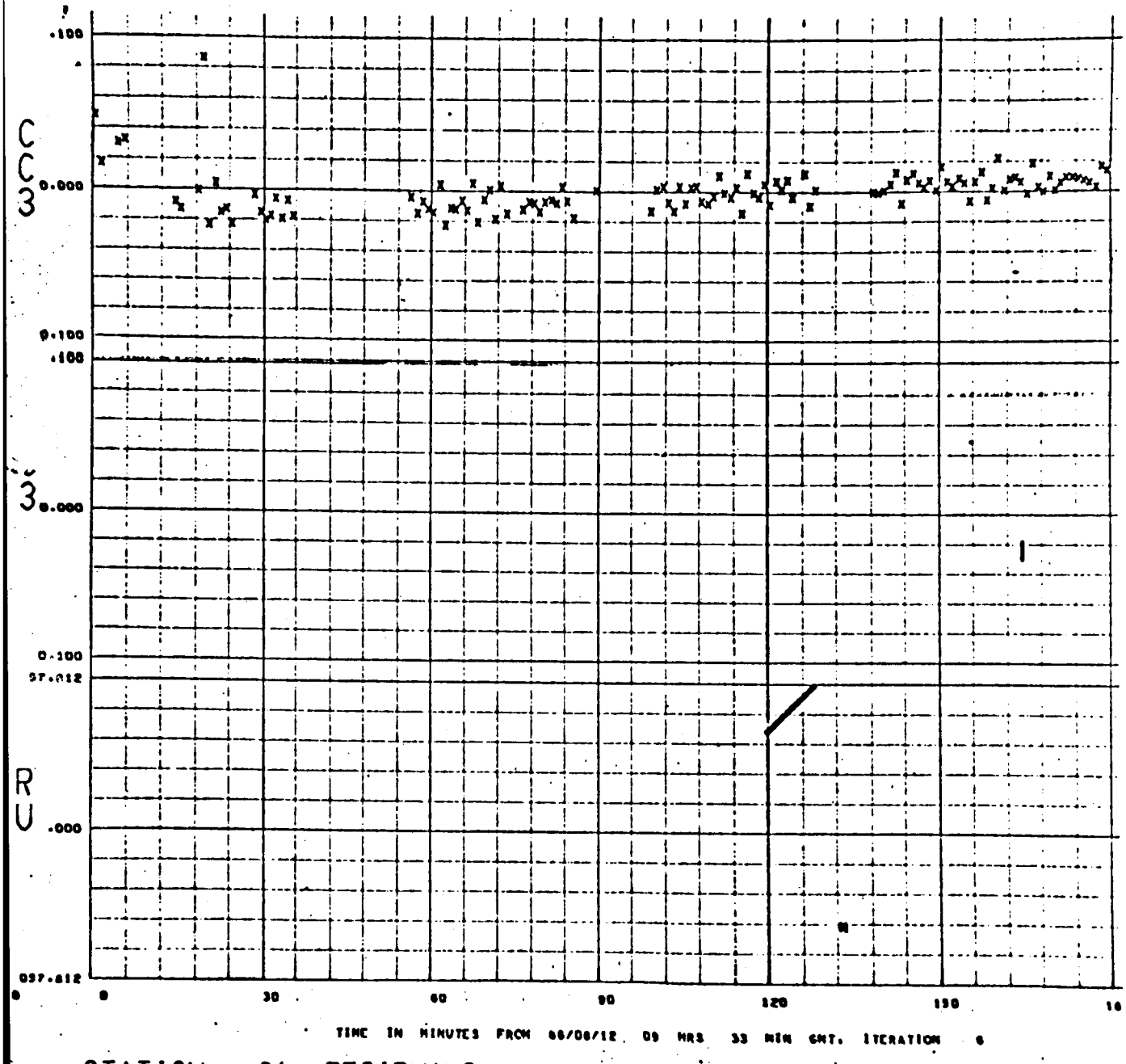
STATION 12 RESIDUALS PASS NUMBER 01/112



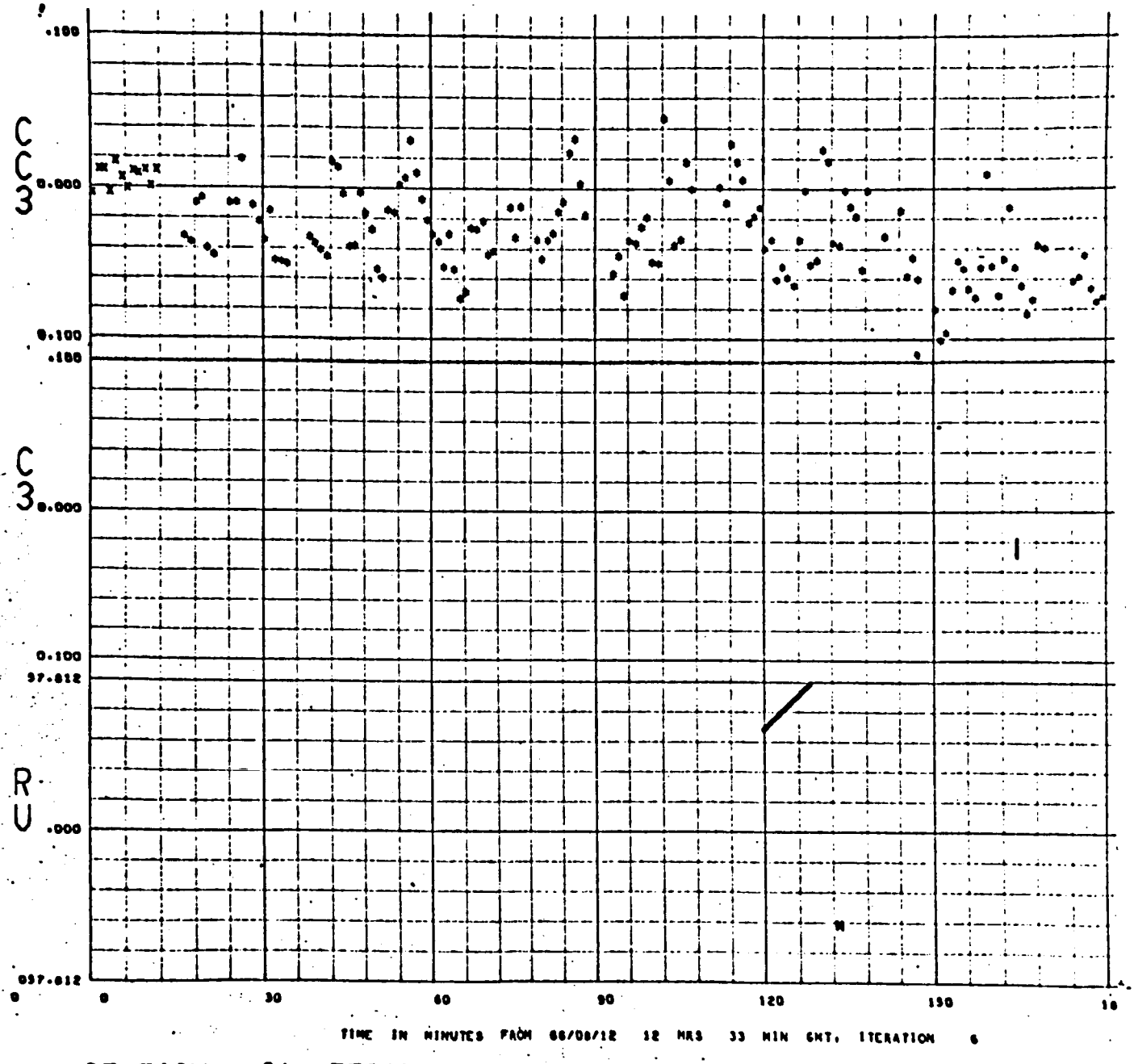
STATION '61 RESIDUALS PASS NUMBER 02/121



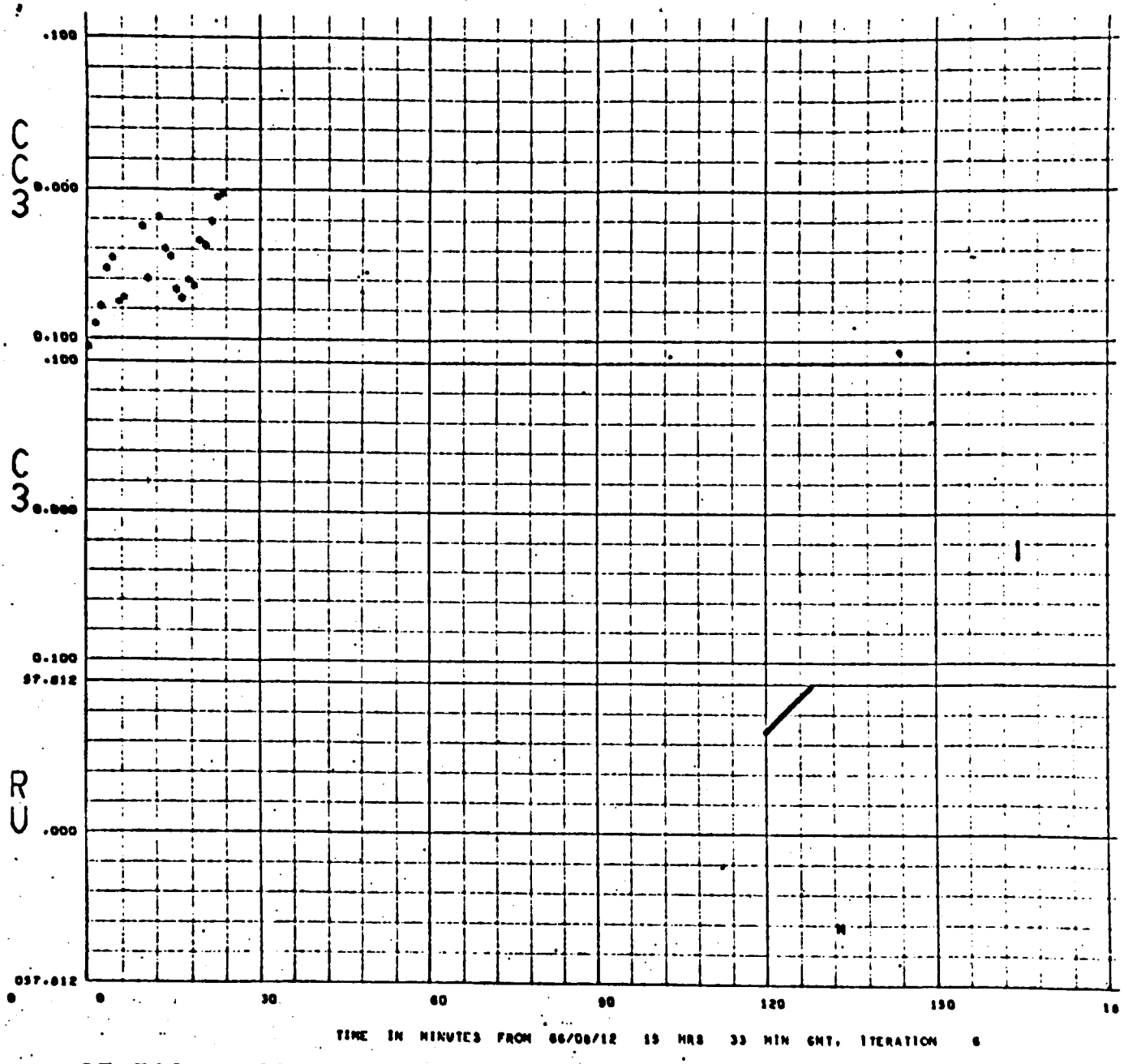
STATION: 61 RESIDUALS PASS NUMBER 02/122



STATION 61 RESIDUALS PASS NUMBER 02/122



STATION 61 RESIDUALS PASS NUMBER 02/122



STATION 61 RESIDUALS PASS NUMBER 02/122

ALL CISLUNAR ORBIT DETERMINATIONS

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE PRE-MIDCOURSE

OD IDENTIFICATION NUMBER 1100 ITEM NUMBER

EPOCH 66/08/10 $20^h\ 15^m\ 47.9^s$

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X	7710.8244	KM	0.746	KM	None	KM
Y	882.6120	KM	1.17	KM		KM
Z	-3610.8785	KM	2.58	KM		KM
DX	4.1789607	KM/SEC	0.26×10^{-2}	KM/SEC		KM/SEC
DY	8.5666580	KM/SEC	0.12×10^{-2}	KM/SEC		KM/SEC
DZ	0.2361783	KM/SEC	0.17×10^{-2}	KM/SEC		KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT
41	CC3	8/10 2026	8/10 2054	67	.166	$-.37 \times 10^{-1}$	.029
	HA	8/10 2017	8/10 2055	93	.012	.005	.00016
	DEC	8/10 2017	8/10 2055	96	.041	-.025	.0023

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS
None		

ENCOUNTER CONDITIONS AND STATISTICS

			σ	
B	15, 936.5	KM	273.5	KM
B·R	-2227.9	KM	152.0	KM
B·T	15,779.9	KM	227.4	KM

COMMENTS: The solution was run in JPL mode and used no time or frequency adjustments. Five iterations were used to achieve convergence; the final SOS was 64.5. The solution was mapped to encounter and to a possible midcourse time of 66/08/11 $11^h\ 15^m\ 00^s$.

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE PRE-MIDCOURSE

OD IDENTIFICATION NUMBER 1200 ITEM NUMBER

EPOCH 66/08/10 $20^h\ 15^m\ 47.9^s$

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X	7709.9810	KM	.235	KM	25	KM
Y	881.98095	KM	.566	KM	25	KM
Z	-3611.3308	KM	1.508	KM	25	KM
DX	4.1799654	KM/SEC	0.10×10^{-2}	KM/SEC	25×10^{-3}	KM/SEC
DY	8.5668529	KM/SEC	0.20×10^{-3}	KM/SEC	25×10^{-3}	KM/SEC
DZ	0.22947229	KM/SEC	0.62×10^{-3}	KM/SEC	25×10^{-3}	KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT
41	HA	8/10 2017	8/11 0018	360			
	DEC	8/10 2017	8/11 0018	365			
	CC3	8/10 2026	8/11 0017	232			

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS
None		

ENCOUNTER CONDITIONS AND STATISTICS

			σ	
B	15,670.6	KM	51.3	KM
B•R	-1924.4	KM	39.6	KM
B•T	15,552.0	KM	32.7	KM

COMMENTS: The solution converged leaving a SOS of 41.7 in 6 iterations. The final conditions were mapped to encounter and to 15, 25, and 40 hours past injection for guidance studies. ΔV vs T curves were generated to determine the advisability of an early midcourse maneuver. No time or frequency adjustments were made to the data and all "times two" data was ignored.

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE PRE-MIDCOURSE

OD IDENTIFICATION NUMBER 1300 ITEM NUMBER

EPOCH 66/08/10 $20^h\ 15^m\ 47.9^s$

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X	7710.5550	KM	0.317	KM	None	KM
Y	877.83328	KM	2.54	KM		KM
Z	-3602.8491	KM	2.48	KM		KM
DX	4.1860701	KM/SEC	0.19×10^{-2}	KM/SEC		KM/SEC
DY	8.5659717	KM/SEC	0.32×10^{-3}	KM/SEC		KM/SEC
DZ	0.23214645	KM/SEC	0.63×10^{-3}	KM/SEC		KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT
41	CC3	8/10 2122	8/10 2128	6	$.8 \times 10^{-2}$	$.3 \times 10^{-1}$	$.7 \times 10^{-3}$
	CC3	8/10 2129	8/10 2154	152	$.4 \times 10^{-1}$	$-.3 \times 10^{-2}$	$.2 \times 10^{-2}$
	CC3	8/10 2155	8/10 2223	20	$.1 \times 10^{-1}$	$-.2 \times 10^{-1}$	$.5 \times 10^{-3}$
	CC3	8/10 2223	8/10 2240	94	$.4 \times 10^{-1}$	$-.1 \times 10^{-1}$	$.2 \times 10^{-2}$
	CC3	8/10 2254	8/11 0357	227	$.9 \times 10^{-2}$	$.3 \times 10^{-2}$	$.8 \times 10^{-4}$
51	C3	8/11 0240	8/11 0725	159	$.1 \times 10^{-1}$	$-.8 \times 10^{-1}$	$.6 \times 10^{-2}$
61	CC3	8/11 0510	8/11 1015	214	$.2 \times 10^{-1}$	$-.5 \times 10^{-2}$	$.5 \times 10^{-3}$

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS
None		

ENCOUNTER CONDITIONS AND STATISTICS

			σ	
B	15,734.1	KM	72.1	KM
B·R	-1686.3	KM	71.8	KM
B·T	15,643.4	KM		KM

COMMENTS: The data included 10 second data and used no time or frequency adjustments. The solution converged in 3 iterations to a SOS of 11.1 and was mapped to encounter and 20,30,40, and 50 hours respectively. It appeared that the C3 data from station 51 had a bias of approximately -.078 cycles. The solution was used by Pathfinder to run INTL for 60 hours at 30 minute intervals, and for calculation of the midcourse maneuver.

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE PRE-MIDCOURSE

OD IDENTIFICATION NUMBER 1302 ITEM NUMBER

EPOCH 66/08/10 $20^h\ 15^m\ 47.9^s$

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X	7711.1286	KM	0.31	KM	None	KM
Y	876.74022	KM	0.93	KM		KM
Z	-3605.5524	KM	0.40	KM		KM
DX	4.1857973	KM/SEC	0.29×10^{-3}	KM/SEC		KM/SEC
DY	8.5651469	KM/SEC	0.33×10^{-3}	KM/SEC		KM/SEC
DZ	0.2312283	KM/SEC	0.28×10^{-3}	KM/SEC		KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT
41	CC3	8/10 2254	8/11 0357	229	.075	.022	.0062
61	CC3	8/11 0510	8/11 1338	355	.106	.0024	.011
12	CC3	8/11 1349	8/11 1413	24	.0042	-.126	.016

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS
None		

ENCOUNTER CONDITIONS AND STATISTICS

			σ	
B	None	KM		KM
B·R		KM		KM
B·T		KM		KM

COMMENTS: The solution converged in 8 iterations to a SOS of 567.0, however, the first four iterations did not contribute to the solution because an extremely small rejection sigma was used on the data. All 10 second data, "times 2" data and data during S/C maneuvers was eliminated but a blunder point of 1 cycle from Station 61 was not. Therefore, the fit of the data was not too good. Consequently, no mappings were made and the run was terminated.

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE PRE-MIDCOURSE

OD IDENTIFICATION NUMBER 1102 ITEM NUMBER

EPOCH 66/08/10 $20^h\ 15^m\ 47.9^s$

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X	7711.4622	KM	0.11	KM	None	KM
Y	874.68938	KM	0.30	KM		KM
Z	-3605.2923	KM	0.17	KM		KM
DX	4.1867375	KM/SEC	0.87×10^{-4}	KM/SEC		KM/SEC
DY	8.5647057	KM/SEC	0.11×10^{-3}	KM/SEC		KM/SEC
DZ	0.2309764	KM/SEC	0.11×10^{-3}	KM/SEC		KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT
41	CC3	8/10 2254	8/11 0357	229	.082	.019	.0071
61	CC3	8/11 0510	8/11 1338	353	.074	-.0062	.0056
12	CC3	8/11 1349	8/11 1621	149	.010	-.052	.0028

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS
None		

ENCOUNTER CONDITIONS AND STATISTICS

			σ	
B	15,744.7	KM	2.15	KM
B·R	-1725.08	KM	1.99	KM
B·T	15,649.9	KM	0.83	KM

COMMENTS: Three iterations were used to obtain convergence; the SOS was 392. Data with all S/C maneuvers removed was used in the determination and the blunder point discussed in OD #1302 edited out. Several subtle blunder points were still in the solution but subsequent solutions with these removed showed but slight differences in the encounter conditions. This solution was used for predicts sets 20 through 22.

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE PRE-MIDCOURSE

OD IDENTIFICATION NUMBER 1102 (Continued) ITEM NUMBER

EPOCH 66/08/10 $20^h\ 15^m\ 47.9^s$

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X	7712.1886	KM	.258	KM	None	KM
Y	872.49520	KM	.691	KM		KM
Z	-3606.2696	KM	.376	KM		KM
DX	4.1872968	KM/SEC	$.18 \times 10^{-3}$	KM/SEC		KM/SEC
DY	8.5639163	KM/SEC	$.27 \times 10^{-3}$	KM/SEC		KM/SEC
DZ	0.23027585	KM/SEC	$.24 \times 10^{-3}$	KM/SEC		KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT
41	CC3	8/10 2254	8/11 0357	229	.086	.023	.008
61	CC3	8/11 0510	8/11 1338	351	.072	.0041	.0052
12	CC3	8/11 1349	8/11 1621	149	.011	-.026	.00079

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS

ENCOUNTER CONDITIONS AND STATISTICS

			σ	
B	15,744.5	KM	2.15	KM
B·R	-1725.1	KM	1.99	KM
B·T	15,649.7	KM	0.83	KM

COMMENTS: This solution was obtained in 7 iterations after further editing of the data had been accomplished. The converged SOS was reduced to 364 but the encounter conditions were essentially unchanged.

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE POST-MIDCOURSE

OD IDENTIFICATION NUMBER 2100 ITEM NUMBER

EPOCH 66/08/12 00^h 00^m 00^s

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X	-60686.269	KM	1.0	KM	1.0	KM
Y	189100.43	KM	1.0	KM	1.0	KM
Z	81930.052	KM	1.0	KM	1.0	KM
DX	-0.62784017	KM/SEC	$.13 \times 10^{-2}$	KM/SEC	1×10^3	KM/SEC
DY	0.93431842	KM/SEC	$.45 \times 10^{-2}$	KM/SEC	1×10^3	KM/SEC
DZ	0.50298255	KM/SEC	$.91 \times 10^{-2}$	KM/SEC	1×10^3	KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT
41	CC3	8/12 0001	8/12 0103	242	0.142	.0014	.020

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS
None		

ENCOUNTER CONDITIONS AND STATISTICS

			σ	
B	14,322.4	KM	2195.3	KM
B·R	11,237.4	KM	2193.3	KM
B·T	8879.8	KM	92.7	KM

COMMENTS: Solution converged in 5 iterations to a SOS of 21.1 using all available data, including the 2 and 10 second data. The fit of the data was good but the 2 second data had a high noise level.

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE POST-MIDCOURSE

OD IDENTIFICATION NUMBER 2200 ITEM NUMBER

EPOCH 66/08/12 $00^h\ 00^m\ 00^s$

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X	-60794.882	KM	23.0	KM	25	KM
Y	189289.01	KM	10.1	KM	25	KM
Z	81817.819	KM	20.0	KM	25	KM
DX	-.66126397	KM/SEC	0.66×10^{-3}	KM/SEC	25×10^{-3}	KM/SEC
DY	.92405234	KM/SEC	0.90×10^{-3}	KM/SEC	25×10^{-3}	KM/SEC
DZ	.50169963	KM/SEC	0.18×10^{-2}	KM/SEC	25×10^{-3}	KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT
41	CC3	8/12 0001	8/12 0414	416	0.114	-.012	0.013
61	C3	8/12 0333	8/12 0414	8	0.019	-0.048	0.0027

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS
None		

ENCOUNTER CONDITIONS AND STATISTICS

			σ	
B	11,758.6	KM	448.8	KM
B·R	10,538.4	KM	445.3	KM
B·T	5216.0	KM	56.2	KM

COMMENTS: The solution converged in 5 iterations with a SOS of 53.9. The fit of the data was skewed slightly near the end of the pass from Station 41, but the rest of the fit was good. 2 and 10 second data was used in the solution as was C3 data. However, only 8 points were available, which was not enough to isolate possible frequency biases.

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE POST-MIDCOURSE

OD IDENTIFICATION NUMBER 2202 ITEM NUMBER

EPOCH 66/08/12 $00^h\ 00^m\ 00^s$

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X	-61133.200	KM	16.8	KM	25	KM
Y	189048.36	KM	6.64	KM	25	KM
Z	81647.574	KM	14.8	KM	25	KM
DX	-.66050147	KM/SEC	0.36×10^{-3}	KM/SEC	25×10^{-3}	KM/SEC
DY	.91476809	KM/SEC	0.56×10^{-3}	KM/SEC	25×10^{-3}	KM/SEC
DZ	.52265277	KM/SEC	1.30×10^{-3}	KM/SEC	25×10^{-3}	KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT
41	CC3	8/12 0028	8/12 0413	201	0.065	0.0054	0.0042
	C3	8/12 0433	8/12 0541	63	0.032	0.062	0.0048
	CC3	8/12 0414	8/12 0428	11	0.0085	-0.088	0.0078
61	C3	8/12 0333	8/12 0427	15	0.10	-0.25	0.070
	CC3	8/12 0434	8/12 0439	6	0.008	0.017	0.36×10^{-3}
	CC3	8/12 0440	8/12 0636	91	0.098	0.0017	0.0097

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS
None		

ENCOUNTER CONDITIONS AND STATISTICS

			σ	
B		KM		KM
B·R		KM		KM
B·T		KM		KM

COMMENTS: The solution was abandoned in an unconverged condition to allow processing of more data. In seven iterations the SOS had been reduced to 256.

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE POST-MIDCOURSE

OD IDENTIFICATION NUMBER 2204 ITEM NUMBER

EPOCH 66/08/12 $00^h\ 00^m\ 00^s$

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X	-61378.467	KM	9.9	KM	25	KM
Y	188910.01	KM	3.4	KM	25	KM
Z	81661.692	KM	15.0	KM	25	KM
DX	-.65872225	KM/SEC	0.37×10^{-3}	KM/SEC	25×10^{-3}	KM/SEC
DY	.90561932	KM/SEC	0.24×10^{-3}	KM/SEC	25×10^{-3}	KM/SEC
DZ	.54377542	KM/SEC	0.63×10^{-3}	KM/SEC	25×10^{-3}	KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT
41	CC3	8/12 0028	8/12 0413	201	$.42 \times 10^{-1}$	$.55 \times 10^{-2}$	$.18 \times 10^{-2}$
	C3	8/12 0433	8/12 0541	63	$.51 \times 10^{-1}$	$-.42 \times 10^{-1}$	$.43 \times 10^{-2}$
	CC3	8/12 0414	8/12 0428	11	$.17 \times 10^{-1}$	$-.94 \times 10^{-1}$	$.92 \times 10^{-2}$
61	CC3	8/12 0434	8/12 0439	6	$.48 \times 10^{-2}$	$.30 \times 10^{-1}$	$.93 \times 10^{-3}$
	CC3	8/12 0440	8/12 0820	202	$.18 \times 10^{-1}$	$.17 \times 10^{-2}$	$.34 \times 10^{-3}$

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS
None		

ENCOUNTER CONDITIONS AND STATISTICS

			σ	
B	6117.4	KM	148.7	KM
B·R	329.7	KM	146.5	KM
B·T	6108.6	KM	25.6	KM

COMMENTS: The solution converged in 5 iterations leaving a SOS of 58.2. The fit of the data was still not very good. It was concluded that the C3 data from Station 41 was possibly biased and causing the improper behavior of the residuals. It was decided to shift the data from this station by 10 milliseconds on the next solution. This solution was used for Predicts Set #25.

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE POST-MIDCOURSE

OD IDENTIFICATION NUMBER 2206 ITEM NUMBER

EPOCH 66/08/12 $00^h00^m00^s$

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X	-61467.633	KM	13.4	KM	0.5	KM
Y	188883.91	KM	4.5	KM	0.5	KM
Z	81788.208	KM	20.8	KM	0.5	KM
DX	-.65547349	KM/SEC	0.52×10^{-3}	KM/SEC	3×10^{-2}	KM/SEC
DY	.90454488	KM/SEC	0.26×10^{-3}	KM/SEC	3×10^{-2}	KM/SEC
DZ	.54831458	KM/SEC	0.76×10^{-3}	KM/SEC	3×10^{-2}	KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT
41	CC3	8/12 0028	8/12 0413	201	$.14 \times 10^{-1}$	$-.84 \times 10^{-3}$	$.20 \times 10^{-3}$
	C3	8/12 0433	8/12 0541	63	$.29 \times 10^{-1}$	$.298 \times 10^{-1}$	$.17 \times 10^{-2}$
	CC3	8/12 0414	8/12 0428	11	$.91 \times 10^{-2}$	$-.46 \times 10^{-1}$	$.22 \times 10^{-2}$
61	CC3	8/12 0434	8/12 0439	6	$.49 \times 10^{-2}$	$-.28 \times 10^{-2}$	$.32 \times 10^{-4}$
	CC3	8/12 0440	8/12 0819	201	$.94 \times 10^{-2}$	$-.28 \times 10^{-2}$	$.95 \times 10^{-4}$

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS
None		

ENCOUNTER CONDITIONS AND STATISTICS

			σ	
B	6381.2	KM	None	KM
B·R	-682.1	KM	Available	KM
B·T	6344.7	KM		KM

COMMENTS: To account for a possible timing bias, data from station 41 was shifted by +10 milliseconds. This produced a very favorable result: the residuals became small and noiselike and in 4 iterations, the solution converged leaving a SOS of 14.3.

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE POST-MIDCOURSE

OD IDENTIFICATION NUMBER 2300 ITEM NUMBER

EPOCH 66/08/12 00^h 00^m 00^s

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X	-61469.714	KM	0.48	KM	0.5	KM
Y	188877.28	KM	0.33	KM	0.5	KM
Z	81787.437	KM	0.49	KM	0.5	KM
DX	-.65549161	KM/SEC	0.16×10^{-4}	KM/SEC	3×10^{-2}	KM/SEC
DY	.90366616	KM/SEC	0.34×10^{-4}	KM/SEC	3×10^{-2}	KM/SEC
DZ	.55019560	KM/SEC	0.72×10^{-4}	KM/SEC	3×10^{-2}	KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT
41	CC3	8/12 0028	8/12 0413	201	0.045	0.019	0.0024
	CC3	8/12 0414	8/12 0428	11	0.0071	0.084	0.0071
61	CC3	8/12 0440	8/12 1244	397	0.072	-0.012	0.0053

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS
None		

ENCOUNTER CONDITIONS AND STATISTICS

			σ	
B	6471.0	KM	17.4	KM
B·R	-1136.0	KM	17.4	KM
B·T	6470.5	KM	1.3	KM

COMMENTS: As in OD No. 2206, a +10 millisecond time shift on Station 41 was used. However, this time the converged residuals were very high and a very poor fit of the data was evident. It was concluded that both the time shift and the tight a priori covariance matrix used, contributed to these results. Therefore, this run was considered to be a bad solution and was not used for further studies.

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE POST-MIDCOURSE

OD IDENTIFICATION NUMBER 2302 ITEM NUMBER

EPOCH 66/08/12 00^h 00^m 00^s

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X	-61504.477	KM	1.94	KM	None	KM
Y	188870.47	KM	0.43	KM		KM
Z	81847.395	KM	2.84	KM		KM
DX	-.65398417	KM/SEC	0.71×10^{-4}	KM/SEC		KM/SEC
DY	.90411151	KM/SEC	0.13×10^{-4}	KM/SEC		KM/SEC
DZ	.55026728	KM/SEC	0.31×10^{-4}	KM/SEC		KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT
41	CC3	8/12 0028	8/12 0413	201	$.12 \times 10^{-1}$	$-.75 \times 10^{-3}$	$.16 \times 10^{-3}$
	CC3	8/12 0414	8/12 0428	11	$.73 \times 10^{-2}$	$.12 \times 10^{-1}$	$.20 \times 10^{-3}$
61	CC3	8/12 0434	8/12 0439	6	$.50 \times 10^{-2}$	$-.53 \times 10^{-2}$	$.53 \times 10^{-4}$
	CC3	8/12 0440	8/12 1244	397	$.14 \times 10^{-1}$	$.10 \times 10^{-2}$	$.20 \times 10^{-3}$
12	CC3	8/12 1248	8/12 1528	369	$.34 \times 10^{-1}$	$.58 \times 10^{-3}$	$.12 \times 10^{-2}$

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS
None		

ENCOUNTER CONDITIONS AND STATISTICS

B	6551.9	KM	7.26	KM
B·R	-1114.2	KM	6.0	KM
B·T	6456.5	KM	4.0	KM

COMMENTS: This was the first good post-midcourse orbit determination. Using 15 hours of CC3 data from all three stations, it converged in 6 iterations; the SOS was only 16.0. All residuals looked great; the effects of S/C pitch and yaw maneuvers was evident but residuals were very noiselike. This state vector was used for the preliminary deboost calculations. No time shifts or a priori covariance was used.

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE POST-MIDCOURSE

OD IDENTIFICATION NUMBER 2304 ITEM NUMBER

EPOCH 66/08/12 $00^h00^m00^s$

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X	-61503.860	KM	1.4	KM	None	KM
Y	188870.47	KM	0.38	KM		KM
Z	81846.263	KM	1.8	KM		KM
DX	-.65401323	KM/SEC	0.42×10^{-4}	KM/SEC		KM/SEC
DY	.90410847	KM/SEC	0.42×10^{-4}	KM/SEC		KM/SEC
DZ	.55025420	KM/SEC	0.22×10^{-4}	KM/SEC		KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT
41	CC3	8/12 002832	8/12 041332	201	.129-01	-819-03	.166-03
	CC3	8/12 041432	8/12 042832	11	.736-02	.126-01	.212-03
61	CC3	8/12 043432	8/12 043932	6	.502-02	-.521-02	.523-04
	CC3	8/12 044032	8/12 124432	397	.144-01	.109-02	.209-03
12	CC3	8/12 124832	8/12 193532	881	.244-01	-.683-03	.597-03

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS
None		

ENCOUNTER CONDITIONS AND STATISTICS

			σ	
B	6550.0	KM	5.4	KM
B·R	1111.9	KM	4.7	KM
B·T	6454.9	KM	2.6	KM

COMMENTS: This solution was also very good using 19 hours of CC3 data. Once again no time shifts were used nor was any a priori applied. SOS was equal to 18.7 at covergence in 3 iterations.

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE POST-MIDCOURSE

OD IDENTIFICATION NUMBER 2102 ITEM NUMBER

EPOCH 66/08/12 $00^h00^m00^s$

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X	-61504.532	KM	1.3	KM	None	KM
Y	188870.18	KM	0.24	KM		KM
Z	81847.826	KM	0.98	KM		KM
DX	-.65397698	KM/SEC	0.24×10^{-4}	KM/SEC		KM/SEC
DY	.90411319	KM/SEC	0.91×10^{-5}	KM/SEC		KM/SEC
DZ	.55026902	KM/SEC	0.17×10^{-4}	KM/SEC		KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT
41	CC3	8/12 002832	8/12 041332	201	.133-01	-.157-02	.179-03
	CC3	8/12 041432	8/12 042832	11	.728-02	.137-01	.241-03
12	CC3	8/12 124832	8/12 224217	1596	.227-01	-.178-02	.518-03
61	CC3	8/12 043432	8/12 043932	6	.511-02	-.873-02	.102-03
	CC3	8/12 044032	8/12 124432	397	.142-01	.228-02	.206-03

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS
None		

ENCOUNTER CONDITIONS AND STATISTICS

B	6552.8	KM	3.9^{σ}	KM
B·R	-1114.6	KM	3.7	KM
B·T	6457.3	KM	1.1	KM

COMMENTS: This solution once again yielded a good fit of the data. Six iterations were used for convergence. The SOS using 22 hours of data was 24.3.
No time shifts were applied to the data and no apriori was used.

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE POST-MIDCOURSE

OD IDENTIFICATION NUMBER 2104 ITEM NUMBER

EPOCH 66/08/12 $00^h00^m00^s$

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X	-61505.669	KM	1.05	KM	None	KM
Y	188870.24	KM	0.23	KM		KM
Z	81848.159	KM	0.88	KM		KM
DX	-.65395354	KM/SEC	0.17×10^{-4}	KM/SEC		KM/SEC
DY	.90410928	KM/SEC	0.84×10^{-5}	KM/SEC		KM/SEC
DZ	.55029345	KM/SEC	0.13×10^{-4}	KM/SEC		KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT
41	CC3	8/12 002832	8/12 041332	20 1	.114-01	-.252-02	.137-03
	CC3	8/12 041432	8/13 030432	22 6	..225-01	.397-02	.520-03
61	CC3	8/12 043432	8/12 043932	6	.987-02	-.846-02	.974-04
	CC3	8/12 044032	8/12 124432	39 7	.146-01	.531-02	.240-03
12	CC3	8/12 124832	8/12 230832	163 3	.232-01	-.276-02	.548-03

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS
None		

ENCOUNTER CONDITIONS AND STATISTICS

			σ	
B	6554.9	KM	3.1	KM
B·R	-1119.6	KM	3.0	KM
B·T	6458.5	KM	0.8	KM

COMMENTS: As in the three previous solutions, the fit of the data was good, perturbed only by S/C maneuvers. In 7 iterations convergence was achieved. SOS = 38.6. No time shifts were used. This solution was used to calculate the final deboost maneuver.

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE POST-MIDCOURSE

OD IDENTIFICATION NUMBER 2208 ITEM NUMBER

EPOCH 66/08/12 00^h 00^m 00^s

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X	-61501.855	KM	0.94	KM	none	KM
Y	188870.07	KM	0.21	KM		KM
Z	81846.154	KM	0.64	KM		KM
DX	-.65401050	KM/SEC	0.11×10^{-4}	KM/SEC		KM/SEC
DY	.90410053	KM/SEC	0.41×10^{-5}	KM/SEC		KM/SEC
DZ	.55027789	KM/SEC	0.88×10^{-5}	KM/SEC		KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT
61	CC3	8/12-043432	8/12-043532	2	.116-02	.141-01	.200-00
61	CC3	8/12-043632	8/12-124432	40 1	.123-01	.421-02	.169-00
61	CC3	8/13-044332	8/13-123332	35 2	.303-01	-.445-01	.198-00
12	CC3	8/12-124832	8/12-230832	166 5	.232-01	.782-02	
41	CC3	8/12-002832	8/12-041332	20 1	.214-01	-.222-01	.952-03
41	CC3	8/12-041432	8/12-042832	1 1	.751-02	.146-01	.271-03
41	CC3	8/12-231932	8/13-041232	27 6	.336-01	.399-01	.272-02
41	CC3	8/13-041332	8/13-043332	2 1	.100-01	.212-01	.449-03

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS
None		

ENCOUNTER CONDITIONS AND STATISTICS

B	6553.4	KM	1.	KM
B·R	-1117.2	KM	1.8	KM
B·T	6457.5	KM	0.6	KM

COMMENTS: The fit of the data in this solution was not very good. This condition might have been caused by bad Station 61 data but this was not substantiated. The TDA indicated that this data was somewhat suspect because counter errors were occurring occasionally.

Data from Station 41 was shifted by +1.332 milliseconds at TDA's recommendation.

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE POST-MIDCOURSE

OD IDENTIFICATION NUMBER 2310 ITEM NUMBER

EPOCH 66/08/12 $00^h\ 00^m\ 00^s$

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X	-61500.798	KM	0.74	KM	None	KM
Y	188869.15	KM	0.19	KM		KM
Z	81847.657	KM	0.58	KM		KM
DX	-.65400295	KM/SEC	0.76×10^{-5}	KM/SEC		KM/SEC
DY	.90410850	KM/SEC	0.33×10^{-5}	KM/SEC		KM/SEC
DZ	.55027008	KM/SEC	0.71×10^{-5}	KM/SEC		KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT
		SEE ATTACHED SHEET					

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS
DS(4)=.46720740 x 10^{-10}	0.45×10^{-11}	
DS(12)=-.78484380 x 10^{-10}	0.23×10^{-11}	

ENCOUNTER CONDITIONS AND STATISTICS

			σ	
B	6554.8	KM	1.9	KM
B·R	-1115.5	KM	1.5	KM
B·T	6459.2	KM	1.3	KM

COMMENTS: Since the deboost maneuver had been designed, this run was made to calculate the doppler biases of two stations with respect to the third. The earlier OD solutions had not utilized the C3 data available. The fit of the data was not as good as earlier runs had produced but this was probably due to the many S/C maneuvers. The biases obtained agreed quite well with values obtained independently by the JPL data validation work. 4 Iterations were used to converge; SOS=381. Data from Station 41 was shifted by +1.332 milliseconds.

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE POST-MIDCOURSE

OD IDENTIFICATION NUMBER 2112 ITEM NUMBER _____

EPOCH 66/08/12 00^h 00^m 00^s

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X		KM		KM		KM
Y		KM		KM		KM
Z		KM		KM		KM
DX		KM/SEC		KM/SEC		KM/SEC
DY		KM/SEC		KM/SEC		KM/SEC
DZ		KM/SEC		KM/SEC		KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS

ENCOUNTER CONDITIONS AND STATISTICS

B		KM		KM
B·R		KM		KM
B·T		KM		KM

COMMENTS: This OD run was made to generate residual plots of the #2104 solution (used for deboost maneuver calculations). One iteration was made and then a mapping to 66/08/13 00^h 00^m 00^s was done.

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE POST-MIDCOURSE

OD IDENTIFICATION NUMBER 2114 ITEM NUMBER

EPOCH 66/08/13 $00^h\ 00^m\ 00^s$

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X	-109709.59	KM	1.25	KM	NONE	KM
Y	245386.55	KM	0.54	KM		KM
Z	119662.77	KM	0.97	KM		KM
DX	-.47121058	KM/SEC	0.14×10^{-4}	KM/SEC		KM/SEC
DY	.45675109	KM/SEC	0.88×10^{-5}	KM/SEC		KM/SEC
DZ	.34535949	KM/SEC	0.14×10^{-4}	KM/SEC		KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT
12	CC3	8/13-142932	8/13-220832	44 2	.393-01	-.166-02	.146-02
41	CC3	8/13-000032	8/13-041232	23 7	.209-01	.312-02	.448-03
41	CC3	8/13-041332	8/13-043332	2 1	.978-02	.116-01	.230-03
41	CC3	8/13-221932	8/14-042532	33 1	.171-01	-.229-02	.296-03
41	CC3	8/14-042632	8/14-051932	4 7	.875-02	-.304-01	.100-02

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS
None		

ENCOUNTER CONDITIONS AND STATISTICS

			σ	
B	6562.6	KM	2.10	KM
B·R	-1126.3	KM	1.97	KM
B·T	6465.2	KM	0.72	KM

COMMENTS: The solution converged in 6 iterations leaving a SOS of 162. The fit of the data was slightly skewed. As before, data from Station 41 was time shifted by +1.332 milliseconds.

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE POST-MIDCOURSE

OD IDENTIFICATION NUMBER 2116 ITEM NUMBER

EPOCH 66/08/13 $11^h\ 00^m\ 00^s$

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X	-126912.16	KM	2.5	KM	None	KM
Y	260779.25	KM	0.87	KM		KM
Z	132020.49	KM	2.3	KM		KM
DX	-.39775437	KM/SEC	0.28×10^{-4}	KM/SEC		KM/SEC
DY	.32565456	KM/SEC	0.16×10^{-4}	KM/SEC		KM/SEC
DZ	.28037606	KM/SEC	0.26×10^{-4}	KM/SEC		KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT
41	CC3	8/13-221932	8/14-042532	33 1	.414-01	.124-01	.186-02
41	CC3	8/14-042632	8/14-051932	4 7	.984-02	-.716-01	.523-02
12	CC3	8/13-142932	8/13-220832	44 2	.355-01	.108-01	.137-02
61	CC3	8/13-110032	8/13-141632	18 4	.180-01	-.111-01	.448-03
61	CC3	8/14-052532	8/14-094232	23 2	.372-01	-.177-01	.170-02

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS
None		

ENCOUNTER CONDITIONS AND STATISTICS

			σ	
B	6559.7	KM	3.2	KM
B·R	-1110.1	KM	2.5	KM
B·T	6465.0	KM	2.0	KM

COMMENTS: In 4 iterations the solution converged with a SOS = 185. The fit of the data was again skewed, perhaps slightly more than usual. Once again a time shift of +1.332 milliseconds was used on Station 41 to correct the timing bias.

ORBIT DETERMINATION SUMMARY

FOR

MISSION PHASE POST-MIDCOURSE

OD IDENTIFICATION NUMBER 2210 ITEM NUMBER

EPOCH 66/08/13 $11^h\ 00^m\ 00^s$

CONVERGED SOLUTION AND STATISTICS (GEOCENTRIC TRUE OF DATE COORDINATES):

	STATE VECTOR		STANDARD DEVIATIONS		APRIORI STANDARS DEVIATIONS	
X	-126922.61	KM	1.5	KM	10	KM
Y	260779.49	KM	0.85	KM	10	KM
Z	132029.32	KM	1.6	KM	10	KM
DX	-.39763432	KM/SEC	0.17×10^{-4}	KM/SEC	10×10^{-3}	KM/SEC
DY	.32572721	KM/SEC	0.89×10^{-5}	KM/SEC	10×10^{-3}	KM/SEC
DZ	.28034897	KM/SEC	0.25×10^{-4}	KM/SEC	10×10^{-3}	KM/SEC

DATA SUMMARY:

STA #	DATA TYPE	START TIME	STOP TIME	NUMBER OF POINTS	STANDARD DEVIATIONS	FIRST MOMENT	SECOND MOMENT
12	CC3	8/13-142932	8/13-220832	44 1	.462-01	.763-02	.219-02
61	CC3	8/13-110032	8/13-141632	18 4	.147-01	-.517-02	.242-03
61	CC3	8/14-052532	8/14-122132	35 2	.267-01	-.167-01	.992-03
41	CC3	8/13-221932	8/14-042532	33 1	.429-01	.187-01	.219-02
41	CC3	8/14-042632	8/14-051932	4 7	.981-02	-.719-01	.526-02

OTHER PARAMETERS IN THE SOLUTION VECTOR

PARAMETER	STANDARD DEVIATION	APRIORI STANDARD DEVIATIONS
None		

ENCOUNTER CONDITIONS AND STATISTICS

			σ	
B	6552.9	KM	2.8	KM
B·R	-1111.2	KM	2.4	KM
B·T	6458.0	KM	1.4	KM

COMMENTS: This was the final OD run in the translunar phase. Four iterations were required for convergence; SOS = 223. The state was mapped forward and used to calculate the deboost predicts.

MIDCOURSE MANEUVER DATA

In designing the midcourse maneuver, variations in two parameters — midcourse time and arrival time — were examined for their effects on the mission.

The first parameter, midcourse time, was carried out with an earlier orbit determination solution than that used for the final design. The "nominal" arrival time suggested by actual launch conditions was held through the study. Midcourse times about 15, 25, and 40 hours after cislunar injection were examined. (See Figure B-1.)

The second parameter, arrival time, was studied assuming a midcourse maneuver 40 hours after injection. Arrival times that were different by 2 and 4 hours both sides of the "nominal" arrival time were investigated. (See Figure B-2.)

On the basis of the midcourse and arrival time studies, two conclusions were made:

1) The midcourse time desired by the mission advisors at the conference was satisfactory from the standpoint of ΔV required and visibility of the Moon by the Canopus sensor field of view.

2) An arrival time of August 14, 1966, 15:50:0.0 should be used to minimize fuel consumed.

The quantities input to MCIL that define final orbit design were all nominal. These final orbit conditions were projected backwards in time, through an impulsive Hohmann transfer, to an initial orbit at the time August 14 (also input). This is the desired initial orbit. The lunar approach parameters B·T, B·R, and TCA, over which the midcourse search has direct control, were chosen to minimize impulsive ΔV into the desired initial orbit. These lunar approach parameters were then used as desired final conditions for the midcourse maneuver. They are:

$$B \cdot T = 6402.4 \text{ km}$$

$$B \cdot R = 1171.4 \text{ km}$$

$$TCA = \text{August 14, 15:50:00}$$

The Moon-reference and the DSIF-reference maneuvers were both designed to produce the same aim point. A backup design was provided for 4 hours later, which used the same arrival time, but targeted to a different aim point.

A sketch of midcourse geometry is given in Figure B-3.

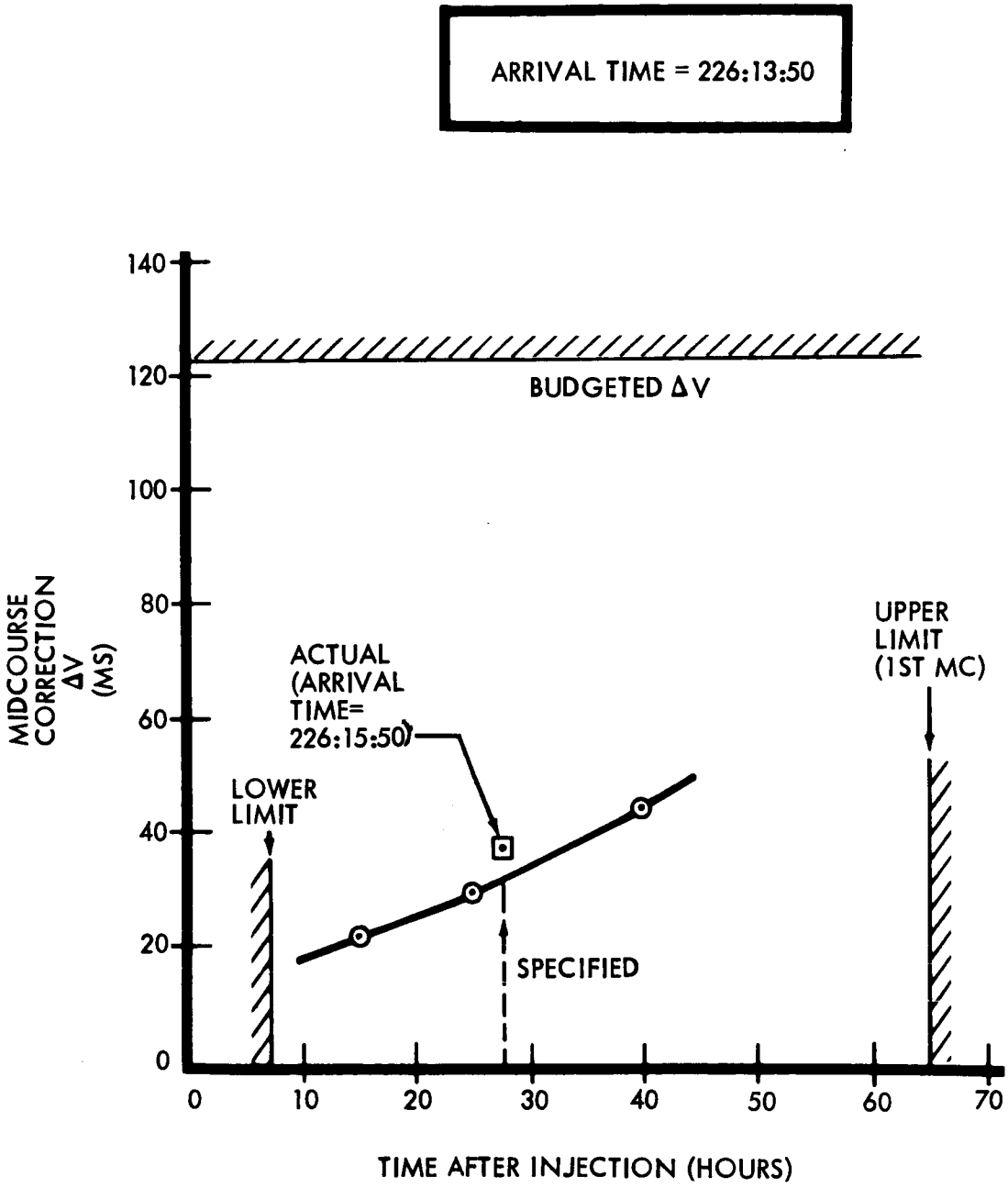


FIGURE B-1: MIDCOURSE TIME STUDY

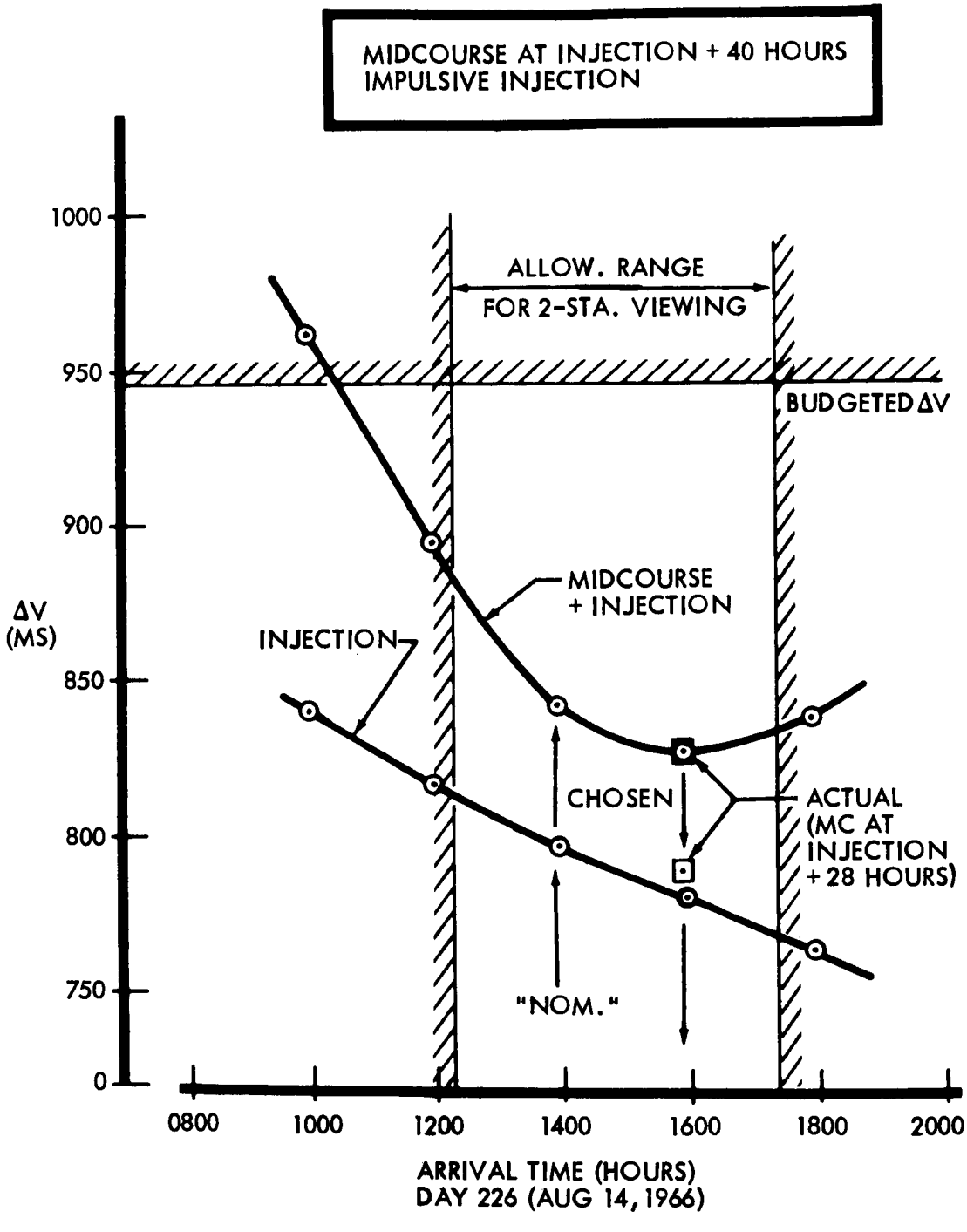


FIGURE B-2: ARRIVAL TIME STUDY

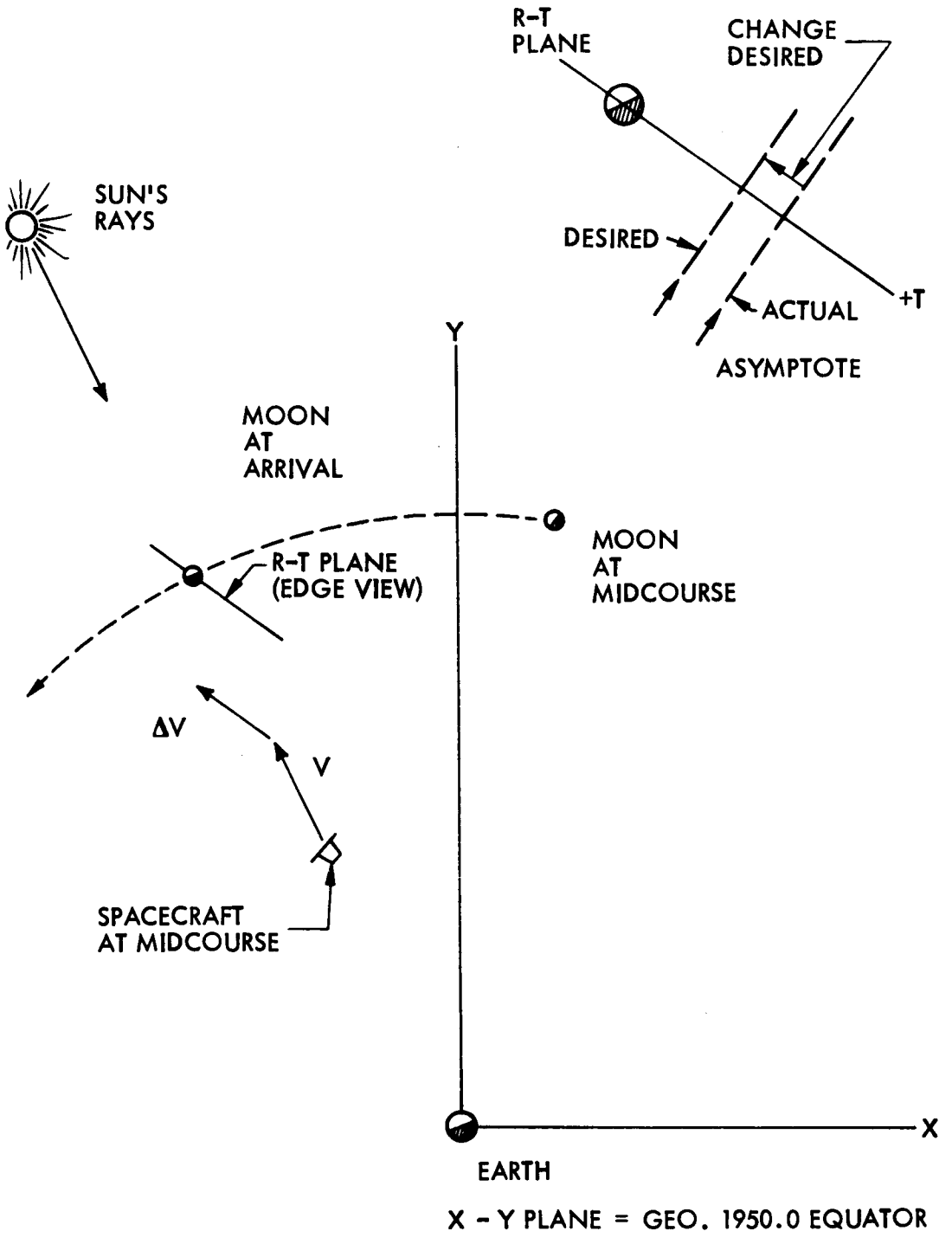


FIGURE B-3: SKETCH OF MIDCOURSE GEOMETRY

TDPX/ODGX INPUT DATA DECKS

```
CHANGE CLEAR REJECTED DATA
CHANGE NOSORT
FORMAT(3(L2,1B),4L1,1B,3L2,1B,L3,1B,L10,1B,Q10,K1,2(1B,F6.3)) NUMBER 2
END DATA                                                          (0
```

```
CHANGE REPROCESS REJECTED DATA
CHANGE NOSORT
FORMAT(3(L2,1B),4L1,1B,3L2,1B,L3,1B,L10,1B,K10,K1,2(1B,F6.3)) NUMBER 2
END DATA                                                          (0
```

FIRST ELLIPSE
~~INITIAL ORBIT~~ ODGX

```
REMOVE ALL CONTROLS
CHANGE NEW ODP FILE
CHANGE EXECUTE
SHIFT TIME .002095 STATION 4
SHIFT TIME -.007620 STATION 13
IGNORE ANGLES STATIONS 4,12,13
IGNORE          FROM 173000,226,66 TO 173200,226,66 STATION 13
IGNORE CC3 FROM 183502,226,66 TO 184202,226,66,STATION 12
IGNORE C3 AT 233602,226,66,STATION 4
IGNORE AT 225402,226,66,STATION 12
IGNORE AT 051802,227,66,STATION 4
IGNORE FROM 052000,227,66 TO 053000,227,66 STATION 4
IGNORE CC3 AT 054202,227,66,STATION 13
IGNORE CC3 AT 124502,227,66,STATION 13
IGNORE AT 140802,227,66,STATION 12
IGNORE FROM 162802,227,66 TO 163002,227,66,STATION 13
IGNORE AT 174702,227,66,STATION 12
IGNORE CC3 FROM 183100,227,66 TO 184232,227,66,STATION 12
IGNORE AT 202902,227,66,STATION 12
IGNORE AT 225402,227,66,STATION 12
IGNORE AT 233602,227,66,STATION 4
IGNORE CC3 FROM 073302,228,66 TO 073502,228,66,STATION 13
IGNORE      FROM 091200,228,66 TO 091900,228,66 STATION 13 $ BAD LOCK
IGNORE CC3 FROM 095402,228,66 TO 095602,228,66,STATION 13
IGNORE     FROM 144800,228,66 TO 145300,228,66,STATION 12,13 $ -6 ROLL
IGNORE FROM 201400,228,66 TO 201600,228,66 STATION 12
IGNORE AT 225302,228,66,STATION 4
IGNORE AT 031502,229,66,STATION 4
IGNORE FROM 113600,229,66 TO 113802,229,66,STATION 13
IGNORE FROM 114302,229,66 TO 114502,229,66,STATION 13
IGNORE FROM 121602,229,66 TO 121702,229,66,STATION 13
IGNORE AT 142306,229,66,STATION 13
IGNORE FROM 152602,229,66 TO 152802,229,66,STATION 12
IGNORE FROM 044000,230,66 TO 074000,230,66 STATION 4
IGNORE FROM 113700,232,66 TO 113830,232,66 STATION 13
IGNORE AT 120202,232,66 STATION 4
IGNORE AT 153002,232,66 STATION 13
IGNORE AT 111401,231,66,STATION 13
IGNORE FROM 164600,230,66 TO 164710,230,66 STATION 13
IGNORE FROM 180601,230,66 TO 180701,230,66,STATION 13
IGNORE FROM 194100,230,66 TO 203800,230,66 STATIONS 12,13
IGNORE FROM 231300,230,66 TO 000900,231,66 STATIONS 4,12
IGNORE FROM 025400,231,66 TO 034800,231,66 STATION 4
IGNORE FROM 100100,231,66 TO 105400,231,66 STATIONS 4,13
IGNORE FROM 134100,231,66 TO 143500,231,66 STATION 13
```

```
IGNORE FROM 151001,231,66 TO 151131,231,66,STATION 13
IGNORE FROM 155000,231,66 TO 155700,231,66 STATION 13
IGNORE FROM 174000,231,66 TO 174700,231,66 STATIONS 12,13
IGNORE AT 191601,231,66,STATION 13
IGNORE AT 041602,232,66,STATION 4
ADJUST RU BY -430.2 FROM 053000,228,66 TO 063500,228,66,STATION 4
ADJUST RU BY -401.2 FROM 063302,228,66 TO 073602,228,66,STATION 13
ADJUST RU BY -409.9 FROM 163500,228,66 TO 173000,228,66, STATION 13
ADJUST RU BY -433.4 FROM 173010,228,66  TO 183900,228,66, STATION 12
ADJUST RU BY -435.4 FROM 235600,228,66 TO 011500,229,66, STATION 12
ADJUST RU BY -422.9 FROM 011510,229,66, TO 020000,229,66, STATION 4
ADJUST C3 BY -.18 AFTER 154430,226,66 STATION 13
ADJUST C3 BY -.27 AFTER 204800,226,66,STATION 4
ADJUST C3 BY .27 AFTER 204000,226,66 STATION 12
ADJUST C3 BY -.09 AFTER 035000,227,66 STATION 4
ADJUST C3 BY  .09 AFTER 035000,227,66 STATION 13
ADJUST C3 BY  .18 AFTER 120000,227,66 STATION 12
ADJUST C3 BY -.18 AFTER 120000,227,66 STATION 13
ADJUST C3 BY -.27 AFTER 200000,227,66 STATION 4
ADJUST C3 BY  .27 AFTER 200000,227,66 STATION 12
ADJUST C3 BY -.27 AFTER 040000,228,66,STATION 4
ADJUST C3 BY +.27 AFTER 040000,228,66,STATION 12
ADJUST C3 BY +.18 AFTER 140000,228,66,STATION 12
ADJUST C3 BY -.18 AFTER 140000,228,66,STATION 13
ADJUST C3 BY -.27 AFTER 210000,228,66 STATION 4
ADJUST C3 BY  .27 AFTER 210000,228,66 STATION 12
ADJUST C3 BY -.09 AFTER 060000,229,66 STATION 13
ADJUST C3 BY  .09 AFTER 060000,229,66 STATION 4
ADJUST C3 BY -.18 AFTER 140000,229,66 STATION 13
ADJUST C3 BY  .18 AFTER 140000,229,66 STATION 12
ADJUST C3 BY -.27 AFTER 210000,229,66 STATION 4
ADJUST C3 BY  .27 AFTER 210000,229,66 STATION 12
ADJUST C3 BY -.09 AFTER 070000,230,66 STATION 13
ADJUST C3 BY  .09 AFTER 070000,230,66 STATION 4
ADJUST C3 BY  .18 AFTER 150000,230,66 STATION 12
ADJUST C3 BY -.18 AFTER 150000,230,66 STATION 13
ADJUST C3 BY -.27 AFTER 230000,230,66 STATION 4
ADJUST C3 BY  .27 AFTER 230000,230,66 STATION 12
ADJUST C3 BY -.09 AFTER 090000,231,66 STATION 4
ADJUST C3 BY  .09 AFTER 090000,231,66 STATION 13
ADJUST C3 BY -.18 AFTER 160000,231,66 STATION 13
ADJUST C3 BY  .18 AFTER 160000,231,66 STATION 12
ADJUST C3 BY -.27 AFTER 230000,231,66 STATION 4
ADJUST C3 BY  .27 AFTER 230000,231,66 STATION 12
ADJUST C3 BY -.09 AFTER 090000,232,66 STATION 13
ADJUST C3 BY  .09 AFTER 090000,232,66 STATION 4
ADJUST C3 BY -.18 AFTER 170000,232,66 STATION 13
ADJUST C3 BY  .18 AFTER 170000,232,66 STATION 12
ADJUST C3 BY -.27 AFTER 000000,233,66 STATION 4
ADJUST C3 BY  .27 AFTER 000000,233,66 STATION 12
ADJUST C3 BY -.09 AFTER 100000,233,66 STATION 13
ADJUST C3 BY  .09 AFTER 100000,233,66 STATION 4
TRANSMITTER ON AT 154409,226,66 STATION 12
TRANSMITTER ON AT 002300,227,66,STATION 4
TRANSMITTER ON AT 053700,227,66,STATION 13
TRANSMITTER ON AT 144402,227,66,STATION 12
TRANSMITTER ON AT 234000,227,66,STATION 4
TRANSMITTER ON AT 065200,228,66,STATION 13
TRANSMITTER ON AT 172500,228,66,STATION 12
```

```
TRANSMITTER ON AT 011500,229,66,STATION 4
TRANSMITTER ON AT 080000,229,66 STATION 13
TRANSMITTER ON AT 153400,229,66,STATION 12
TRANSMITTER ON AT 005800,230,66,STATION 4
TRANSMITTER ON AT 081800,230,66,STATION 13
TRANSMITTER ON AT 180000,230,66 STATION 12
TRANSMITTER ON AT 024000,231,66 STATION 4
TRANSMITTER ON AT 100000,231,66 STATION 13
TRANSMITTER ON AT 180300,231,66 STATION 12
TRANSMITTER ON AT 040900,232,66,STATION 4
TRANSMITTER ON AT 112800,232,66,STATION 13
TRANSMITTER ON AT 185000,232,66 STATION 12
TRANSMITTER ON AT 054500,233,66 STATION 4
FREQ  20456200 AFTER 204700,226,66,STATION 4
FREQ  20456400 AFTER 002000,227,66 STATION 4
FREQ  20456600 AFTER 040000,227,66 STATION 4
FREQ  20456300 AFTER 221000,227,66,STATION 4
FREQ  20456500 AFTER 015000,228,66,STATION 4
FREQ  20456700 AFTER 051500,228,66,STATION 4
FREQ  20456900 AFTER 221600,228,66,STATION 4
FREQ  20456400 AFTER 233500,228,66 STATION 4
FREQ  20456600 AFTER 031500,229,66 STATION 4
FREQ  20456400 AFTER 225700,229,66,STATION 4
FREQ  20456500 AFTER 005800,230,66,STATION 4
FREQ  20456300 AFTER 083000,230,66,STATION 4
FREQ  20456400 AFTER 233000,230,66,STATION 4
FREQ  20456500 AFTER 024800,231,66 STATION 4
FREQ  20456800 AFTER 062200,231,66 STATION 4
FREQ  20456200 AFTER 100200,231,66 STATION 4
FREQ  20456400 AFTER 003000,232,66,STATION 4
FREQ  20456600 AFTER 040900,232,66,STATION 4
FREQ  20456200 AFTER 112700,232,66,STATION 4
FREQ  20456400 AFTER 020700,233,66 STATION 4
FREQ  20456600 AFTER 054500,233,66 STATION 4
FREQ  20456800 AFTER 092300,233,66 STATION 4
FREQ  20456500 AFTER 154410,226,66,STATION 12
FREQ  20455300 AFTER 165400,226,66,STATION 12
FREQ  20456300 AFTER 195000,226,66,STATION 12
FREQ  20455300 AFTER 204000,226,66,STATION 12
FREQ  20457500 AFTER 230000,226,66 STATION 12
FREQ  20456300 AFTER 130402,227,66,STATION 12
FREQ  20456500 AFTER 183100,227,66,STATION 12
FREQ  20456700 AFTER 221000,227,66,STATION 12
FREQ  20456300 AFTER 132900,228,66,STATION 12
FREQ  20456400 AFTER 161600,228,66,STATION 12
FREQ  20456600 AFTER 195700,228,66 STATION 12
FREQ  20456800 AFTER 233500,228,66,STATION 12
FREQ  20456300 AFTER 150200,229,66,STATION 12
FREQ  20456500 AFTER 173700,229,66,STATION 12
FREQ  20456700 AFTER 213000,229,66,STATION 12
FREQ  20456900 AFTER 010200,230,66,STATION 12
FREQ  20456400 AFTER 160000,230,66 STATION 12
FREQ  20456600 AFTER 192400,230,66 STATION 12
FREQ  20456800 AFTER 231500,230,66,STATION 12
FREQ  20456100 AFTER 025100,231,66 STATION 12
FREQ  20456400 AFTER 164300,231,66 STATION 12
FREQ  20456600 AFTER 205700,231,66,STATION 12
FREQ  20456800 AFTER 003700,232,66,STATION 12
FREQ  20456200 AFTER 040900,232,66,STATION 12
```

```
FREQ  20456400 AFTER 185000,232,66 STATION 12
FREQ  20456600 AFTER 000000,233,66 STATION 12
FREQ  20456800 AFTER 020800,233,66 STATION 12
FREQ  20456900 AFTER 154410,226,66,STATION 13
FREQ  20454700 AFTER 165400,226,66,STATION 13
FREQ  20457000 AFTER 061600,227,66 STATION 13
FREQ  20456200 AFTER 073600,227,66 STATION 13
FREQ  20456500 AFTER 111602,227,66 STATION 13
FREQ  20456700 AFTER 145002,227,66 STATION 13
FREQ  20456200 AFTER 054700,228,66,STATION 13
FREQ  20456400 AFTER 091300,228,66,STATION 13
FREQ  20456600 AFTER 125200,228,66,STATION 13
FREQ  20456800 AFTER 162800,228,66,STATION 13
FREQ  20456400 AFTER 065000,229,66 STATION 13
FREQ  20456500 AFTER 103600,229,66 STATION 13
FREQ  20456700 AFTER 141500,229,66,STATION 13
FREQ  20456600 AFTER 181200,229,66,STATION 13
FREQ  20456400 AFTER 081800,230,66,STATION 13
FREQ  20456600 AFTER 120000,230,66 STATION 13
FREQ  20456800 AFTER 154400,230,66 STATION 13
FREQ  20456100 AFTER 192400,230,66 STATION 13
FREQ  20456400 AFTER 100000,231,66 STATION 13
FREQ  20456600 AFTER 134000,231,66 STATION 13
FREQ  20456800 AFTER 171500,231,66 STATION 13
FREQ  20457200 AFTER 103000,232,66 STATION 13
FREQ  20456500 AFTER 112800,232,66,STATION 13
FREQ  20456700 AFTER 151500,232,66 STATION 13
FREQ  20456800 AFTER 184700,232,66 STATION 13
PASSID 04/226 AFTER 154400,226,66 STATION 12
PASSID 04/226 AFTER 154400,226,66 STATION 13
PASSID 05/226 AFTER 200000,226,66 STATION 4
PASSID 05/227 AFTER 040000,227,66 STATION 13
PASSID 05/227 AFTER 130000,227,66 STATION 12
PASSID 06/227 AFTER 220000,227,66 STATION 4
PASSID 06/228 AFTER 040000,228,66 STATION 13
PASSID 06/228 AFTER 140000,228,66 STATION 12
PASSID 07/228 AFTER 220000,228,66 STATION 4
PASSID 07/229 AFTER 060000,229,66 STATION 13
PASSID 07/229 AFTER 150000,229,66 STATION 12
PASSID 08/229 AFTER 220000,229,66 STATION 4
PASSID 08/230 AFTER 080000,230,66 STATION 13
PASSID 08/230 AFTER 150000,230,66 STATION 12
PASSID 09/230 AFTER 230000,230,66,STATION 4
PASSID 09/231 AFTER 080000,231,66 STATION 13
PASSID 09/231 AFTER 160000,231,66 STATION 12
PASSID 10/231 AFTER 230000,231,66 STATION 4
PASSID 10/232 AFTER 090000,232,66 STATION 13
PASSID 10/232 AFTER 170000,232,66 STATION 12
PASSID 11/233 AFTER 000000,233,66 STATION 4
PASSID 11/233 AFTER 100000,233,66 STATION 13
PASSID 11/233 AFTER 180000,233,66 STATION 12
CHANGE EXECUTE
PRINT  ALL CONTROLS
END DATA
C
```

DATA FILE SUMMARIES

Master file and ODP file used for determining the first U.S. lunar satellite orbit.

Note: All cislunar tracking data was still in the master file, although only a few points are in the ODP file. The B1 tape number is 8768 in the JPL Lunar Orbiter library.

TAPE B1 — 8768

This tape contains the entire cislunar phase plus deboost.

MASTER FILE DATA SUMMARY

STA	COUNT	HHMMSS,	DAY	TO	HHMMSS,	DAY	ELAPSED HHMMSS,	DAYS
4	3089	201527	222		052702	226	091135	3
5	265	195857	222		072602	223	112705	0
12	3461	114502	223		160702	226	042200	3
13	2708	030702	223		162002	226	131300	3

ODPL RUN 4200 — SUMMARY OF DATA TYPES ON THE ODP DATA FILE

STA	START TIME	END TIME	R	DR	EL	AZ	DEC	HA	C1	CC3	C3
12	150232.000.226	160702.000.226	0	0	0	0	0	0	0	198	0
13	150132.000.226	162002.000.226	0	0	0	0	0	0	0	0	191

ODP file used by ODPL and LHDL for determining lunar harmonic set number 4138.

PLEASE NOTE — DATA VALUES ADJUSTED BY POLY

SUMMARY OF DATA TYPES ON THE ODP DATA FILE

PLEASE NOTE — END TIMES MAY BE IN ERROR BY TC/2

STA	START TIME	END TIME	CC3	C3	RU
4	213032.000.226	012402.000.231	1024	577	18
12	154415.000.226	012602.000.231	1682	550	12
13	154433.000.226	194002.000.230	1407	663	11

The master file summary for all initial orbit tracking data follows:

MASTER FILE DATA SUMMARY

STA	COUNT	HHMMSS,	DAY	TO	HHMMSS,	DAY	ELAPSED HHMMSS,	DAYS
4	3026	213002	226		102582	233	125500	6
12	3179	154410	226		045102	233	130652	6
13	2888	154408	226		205902	232	051454	6

The ODP file for all initial orbit tracking data follows:

SUMMARY OF DATA TYPES ON THE ODP DATA FILE

PLEASE NOTE — END TIMES MAY BE IN ERROR BY TC/2

STA	START TIME	END TIME	CC3	C3	RU
4	213032.000.226	102502.000.233	1923	877	18
12	154415.000.226	045002.000.233	2374	604	13
13	154433.000.226	205902.000.232	1795	816	12

PHOTO READOUT TIMES

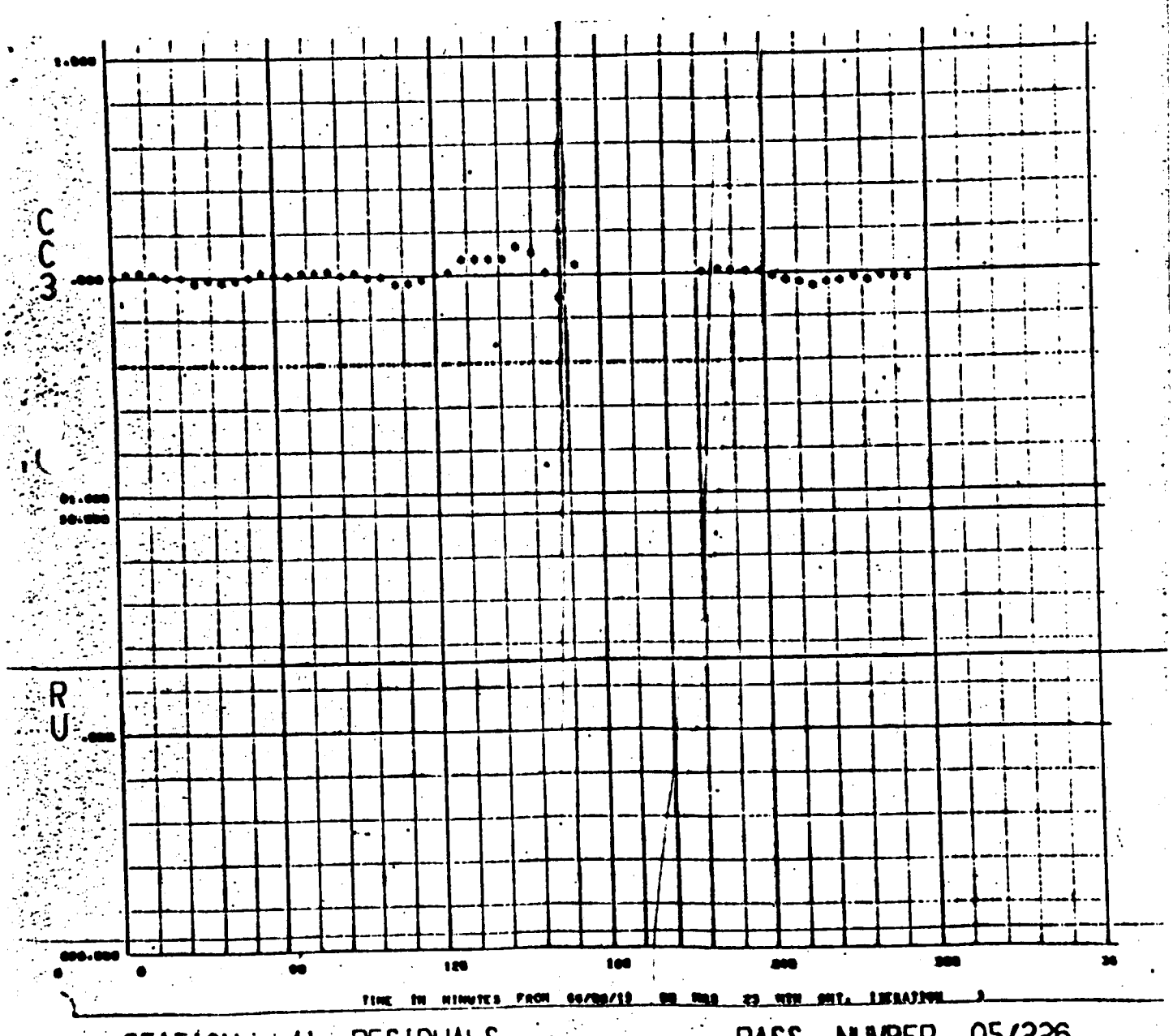
NO.	START TIME HHMMSS, DDD	END TIME HHMMSS, DDD	STATION NO. PRIME - SECOND
001	151240, 227	153540, 227	12 - 61
002	193904, 230	203202, 230	12 - 61
003	231314, 230	000900, 231	12 - 41
004	025400, 231	034711, 231	41 - 61
005	100100, 231	105400, 231	41
006	134100, 231	143455, 231	61
007	205800, 231	215300, 231	12
008	004300, 232	013454, 232	12 - 41
009	113400, 232	122655, 232	61 - 41
010	185200, 232	193952, 232	12 - 61
011	021000, 233	025600, 232	12 - 41
012	163400, 233	170600, 233	61
013	201218, 233	203400, 233	12 - 61
014	233516, 233	235700, 233	12
015	064000, 234	065300, 234	41
016	101027, 234	103901, 234	41
017	001200, 235	003150, 235	12
018	122326, 235	125809, 235	41
019	154342, 235	162300, 235	61
020	191252, 235	200424, 235	61
021	224100, 235	233209, 235	12
022	022700, 236	030209, 236	12
023	053800, 236	063010, 236	12 - 41
024	124031, 236	132810, 236	41
025	161232, 236	170200, 236	61
026	024501, 237	033601, 237	12
027	094728, 237	103800, 237	41
028	164839, 237	174001, 237	61

NO.	START TIME HHMMSS, DDD	END TIME HHMMSS, DDD	STATION NO. PRIME - SECOND
029	201013, 237	211201, 237	61
030	001038, 238	004501, 238	12
031	025000, 238	032641, 238	12
032	100800, 238	105801, 238	41
033	132535, 238	141800, 238	41
034	164313, 238	173400, 238	41
035	031900, 239	041000, 239	12
036	062400, 239	071401, 239	12 - 41
037	094400, 239	104500, 239	41
038	131527, 239	140800, 239	41
039	202619, 239	211209, 239	61
040	133112, 240	142017, 240	41
041	071237, 240	080501, 240	12
042	203840, 241	212415, 241	61
043	235231, 241	004421, 242	41
044	032017, 242	041201, 242	61
045	101800, 242	110702, 242	12
046	133900, 242	142802, 242	41
047	171900, 242	180202, 242	41
048	203800, 242	212212, 242	61
049	000144, 243	014200, 243	61
050	034949, 243	052326, 243	12
051	070758, 243	085035, 243	12
052	102658, 243	121500, 243	12
053	135611, 243	152602, 243	41
054	172612, 243	185200, 243	41
055	204052, 243	221802, 243	61

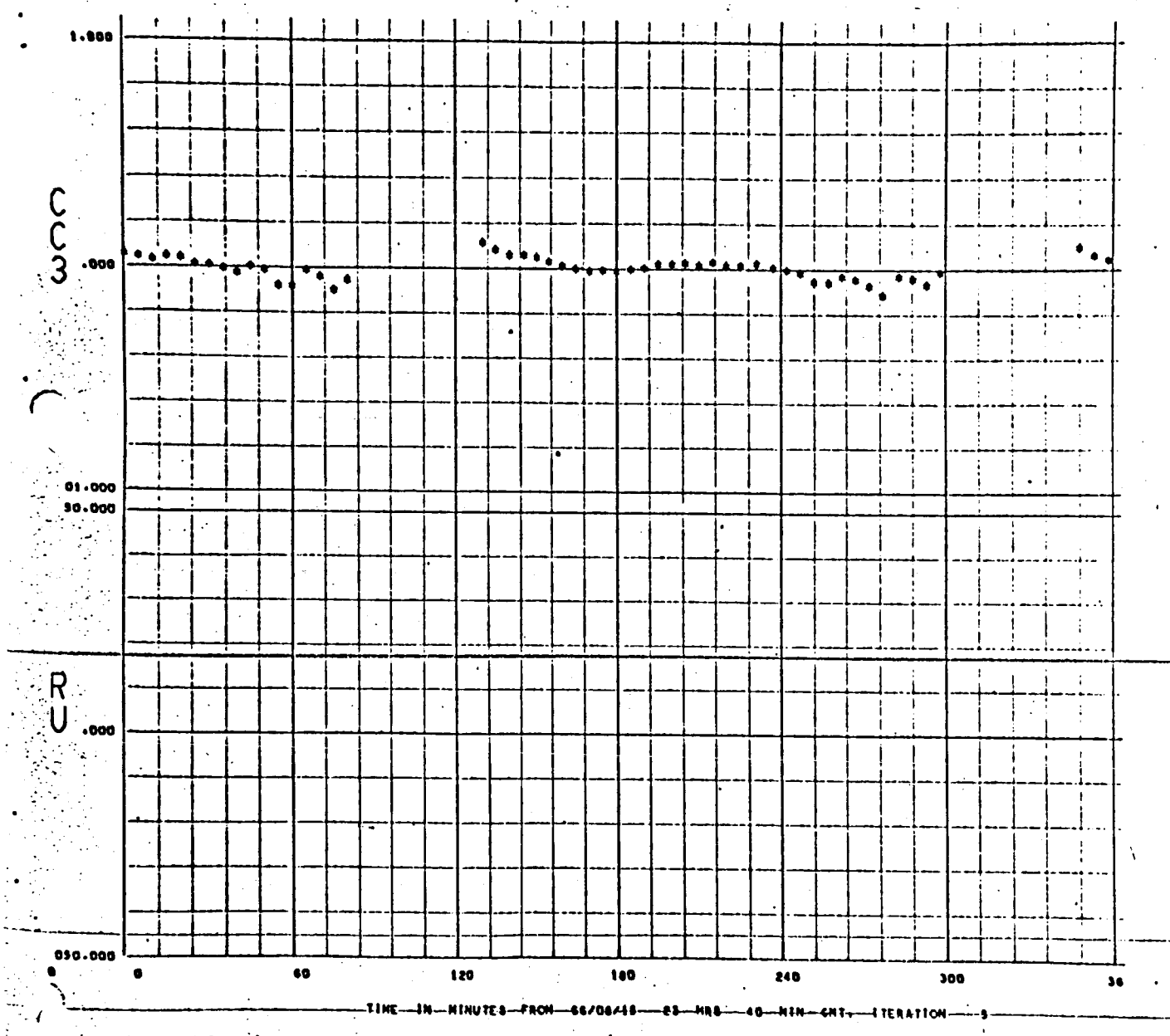
ODPL 4138 E

DELT=4000 R

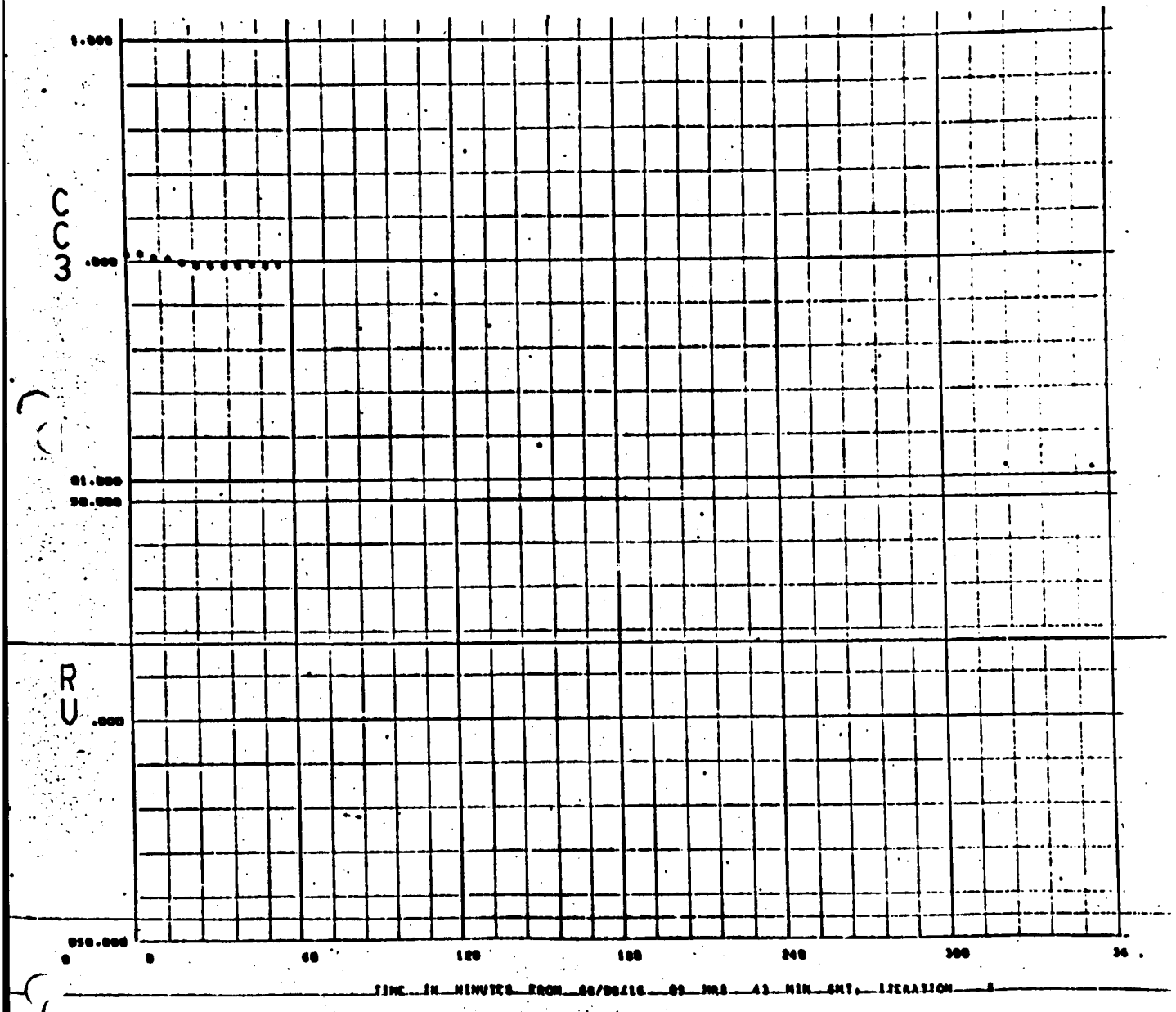
ITEM 1692; TAPE



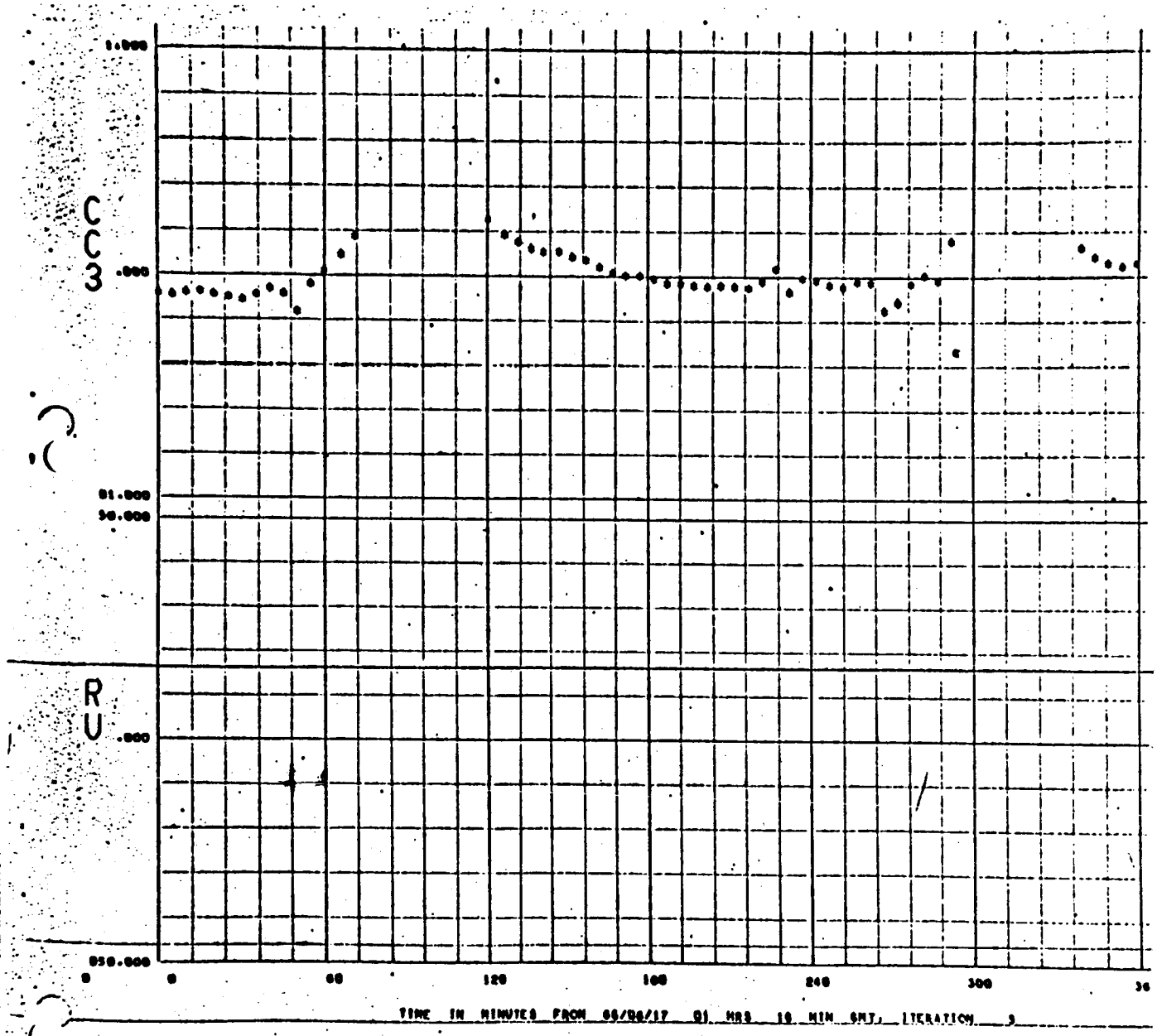
STATION 41 RESIDUALS PASS NUMBER 05/226



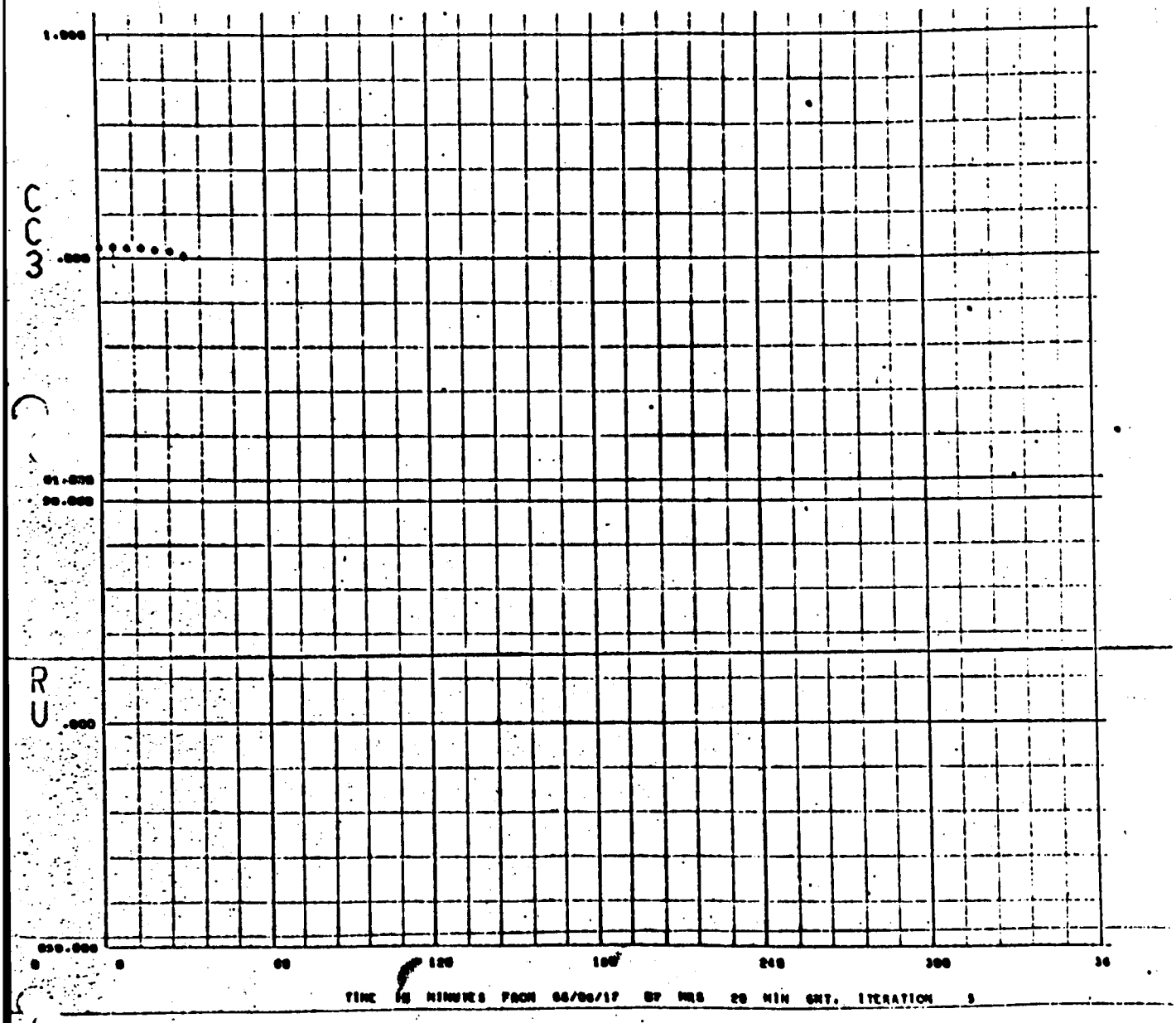
STATION 41 RESIDUALS PASS NUMBER 06/227



STATION 41 RESIDUALS PASS NUMBER 06/227



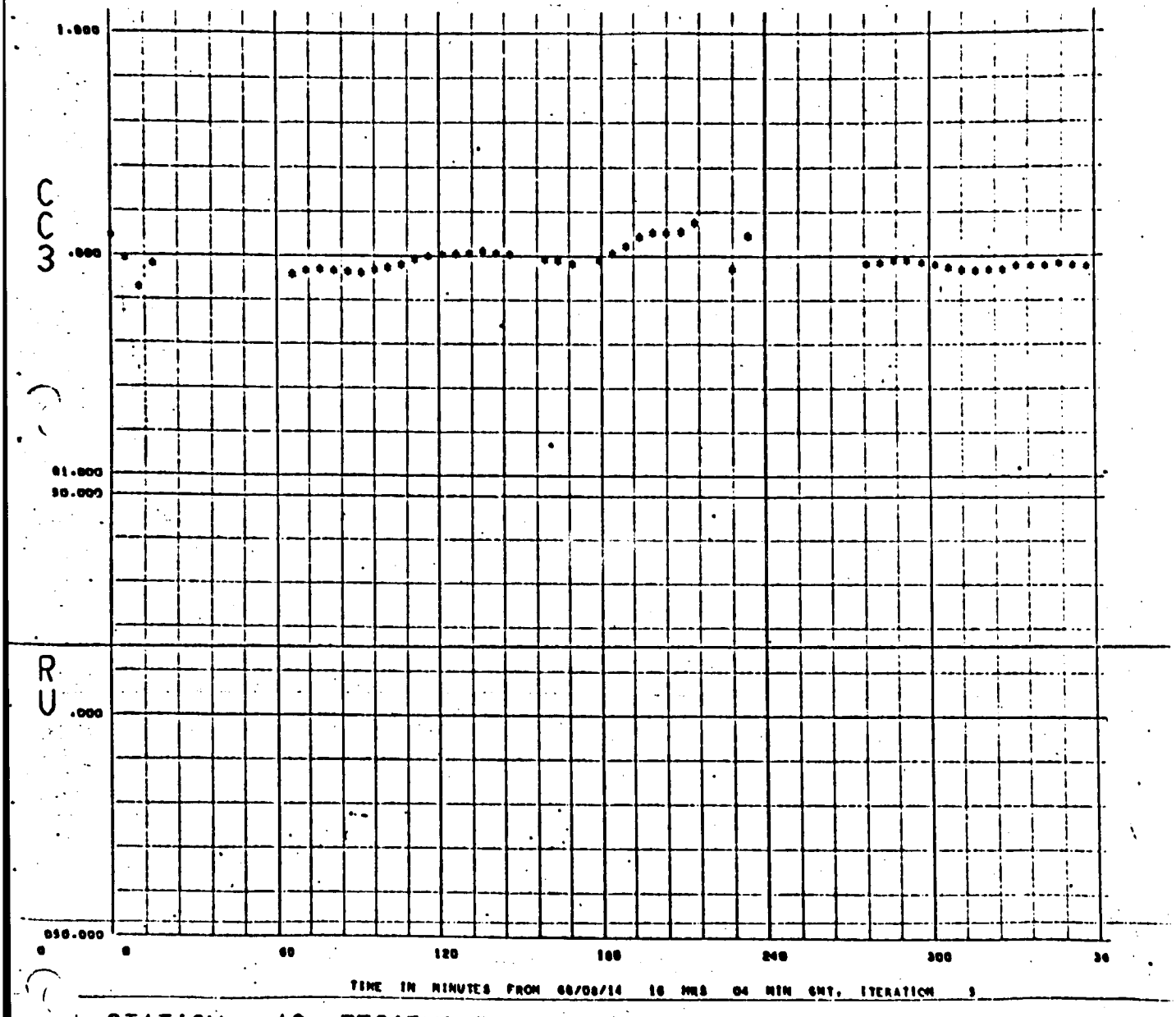
STATION 41 RESIDUALS PASS NUMBER 07/228



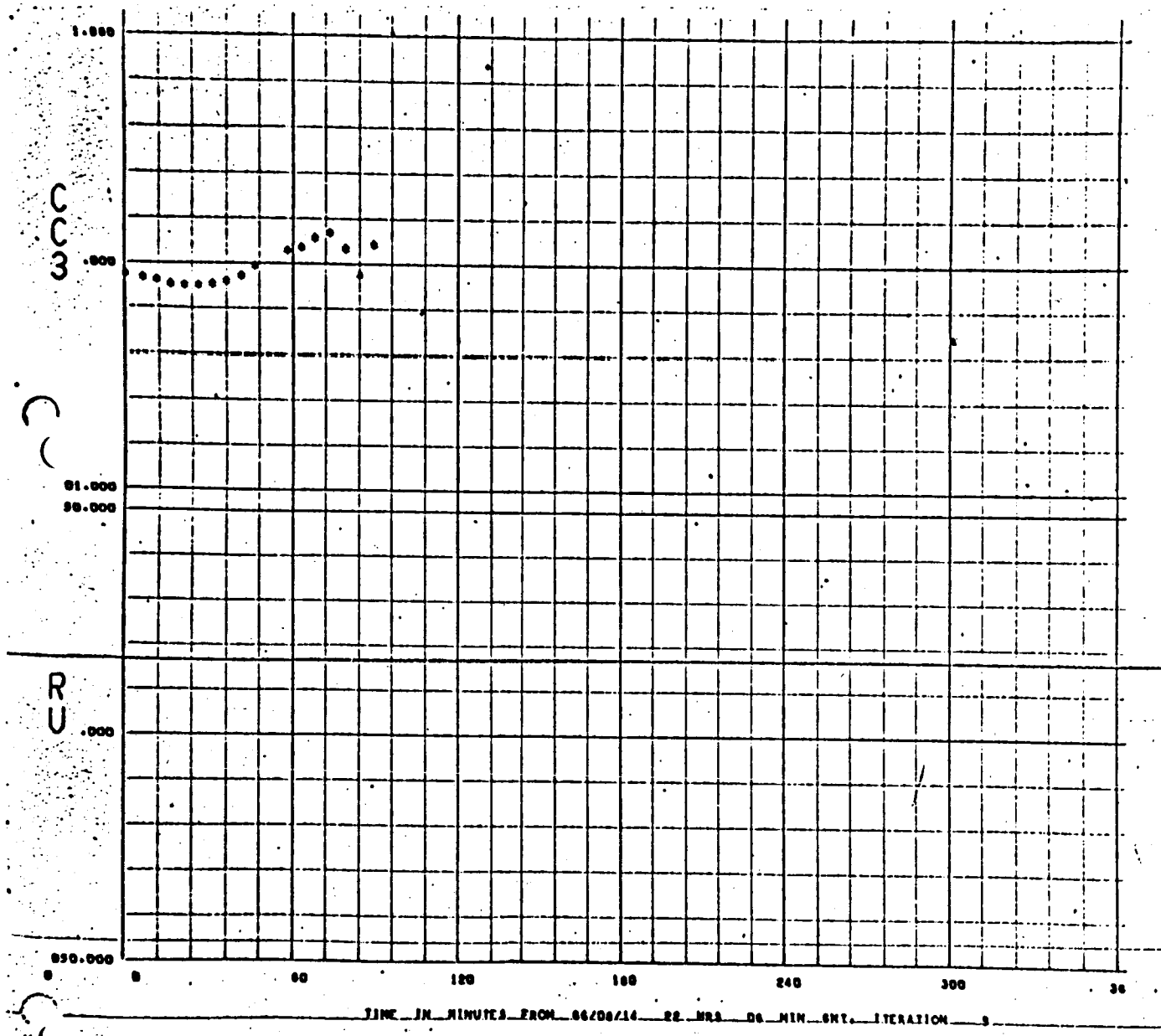
STATION 41 RESIDUALS PASS NUMBER 07/228

ODPL 4138 E

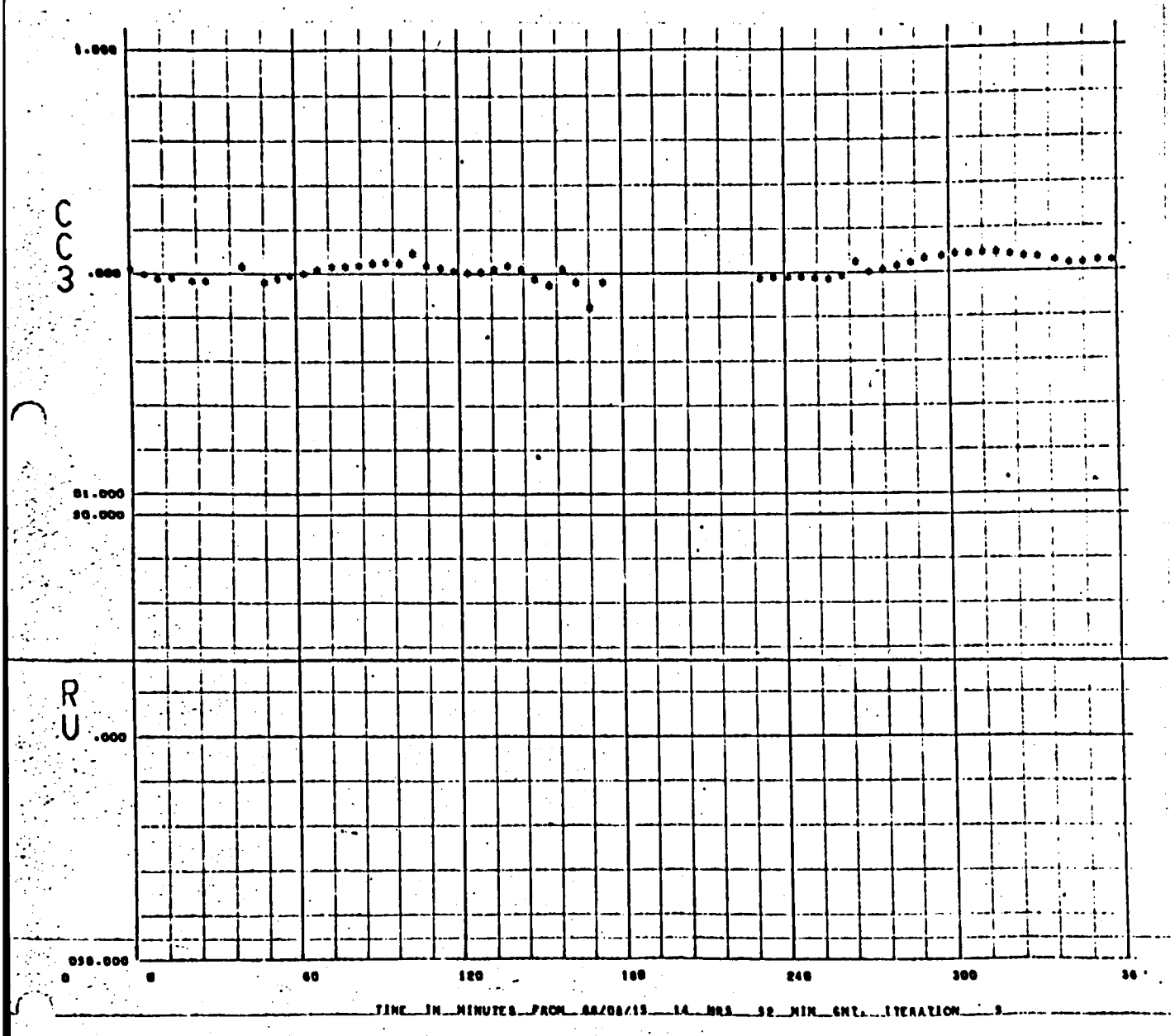
DELT=4000 R



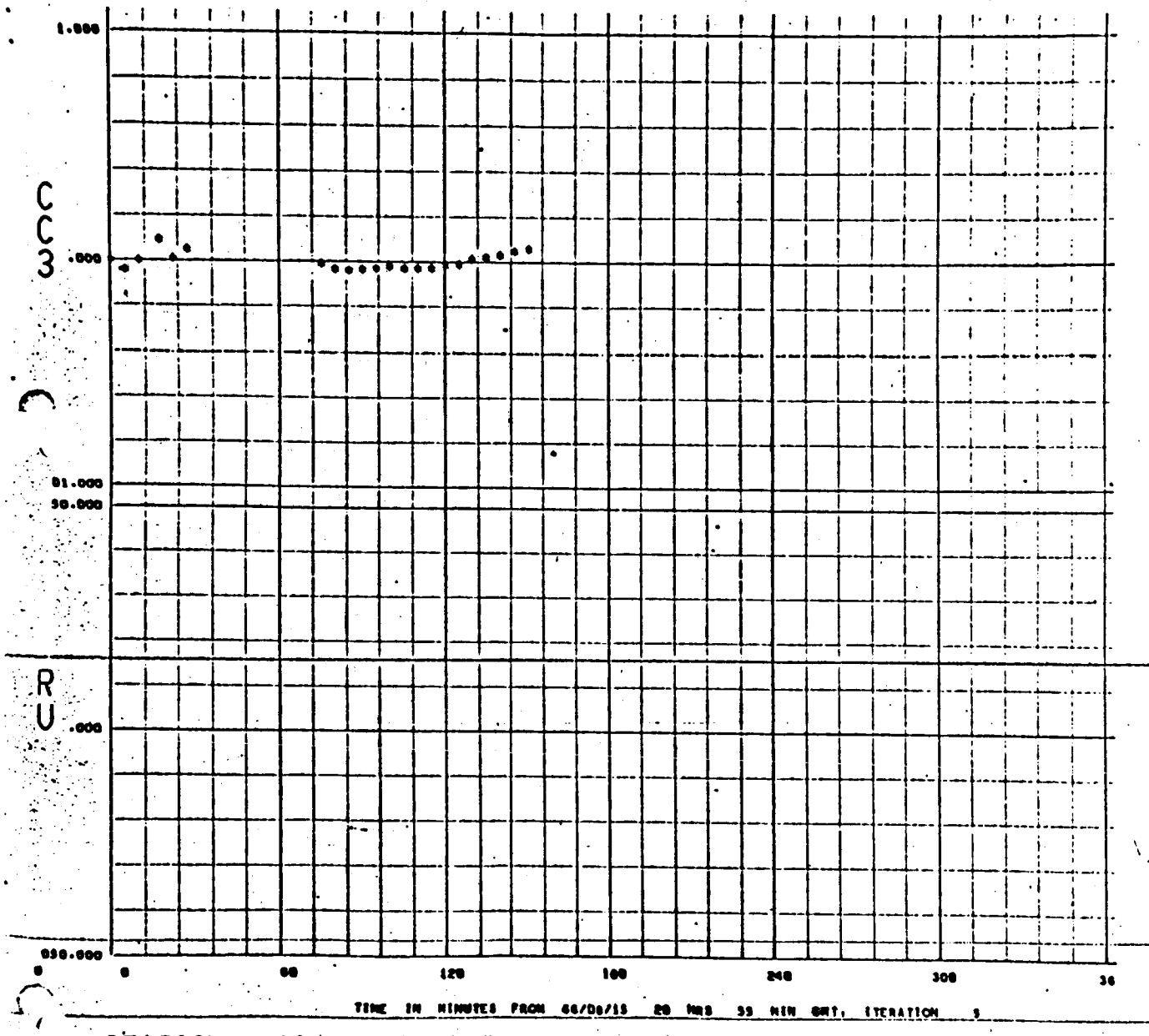
STATION 12 RESIDUALS PASS. NUMBER 04/226



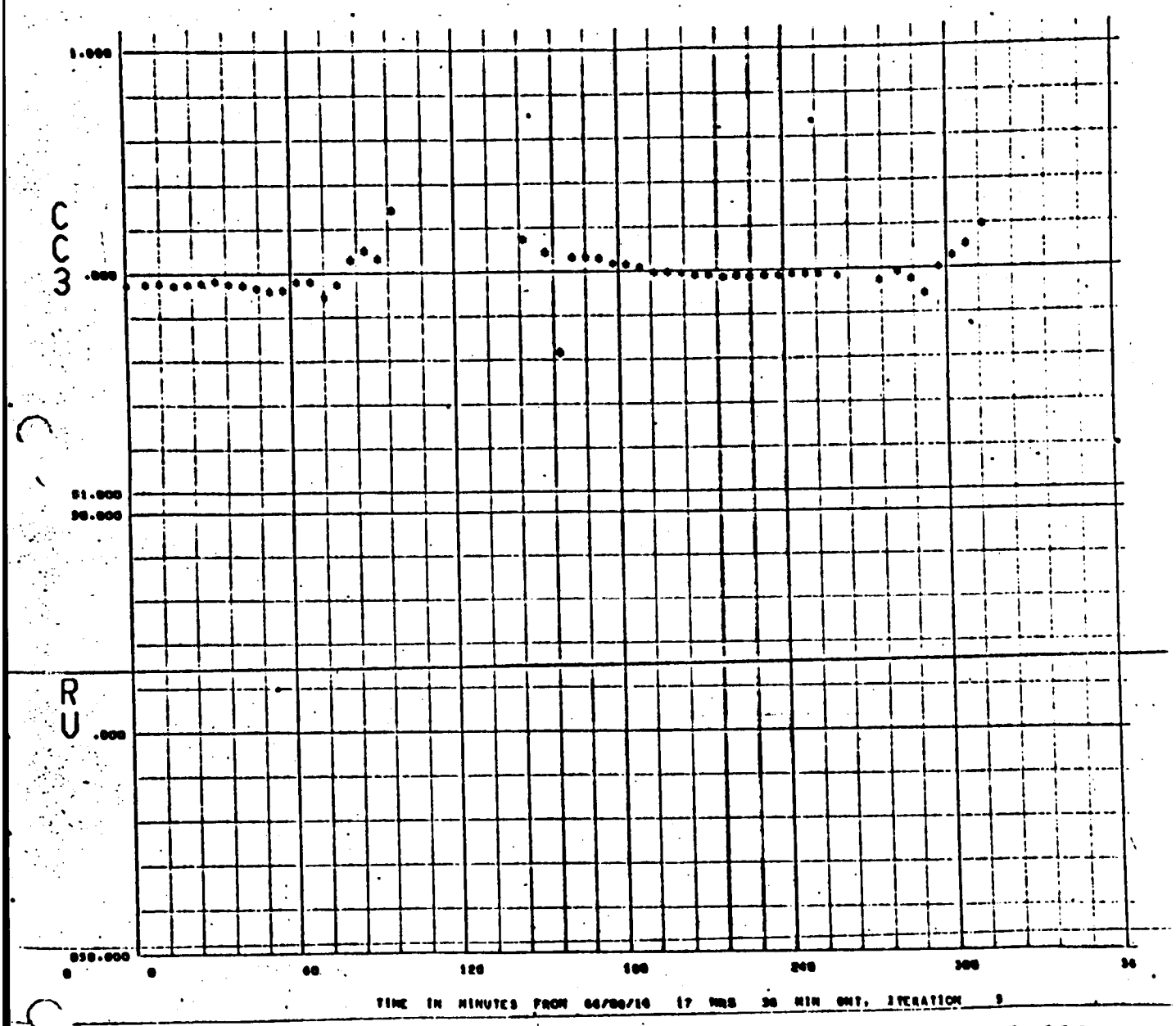
STATION 12 RESIDUALS PASS NUMBER 04/226



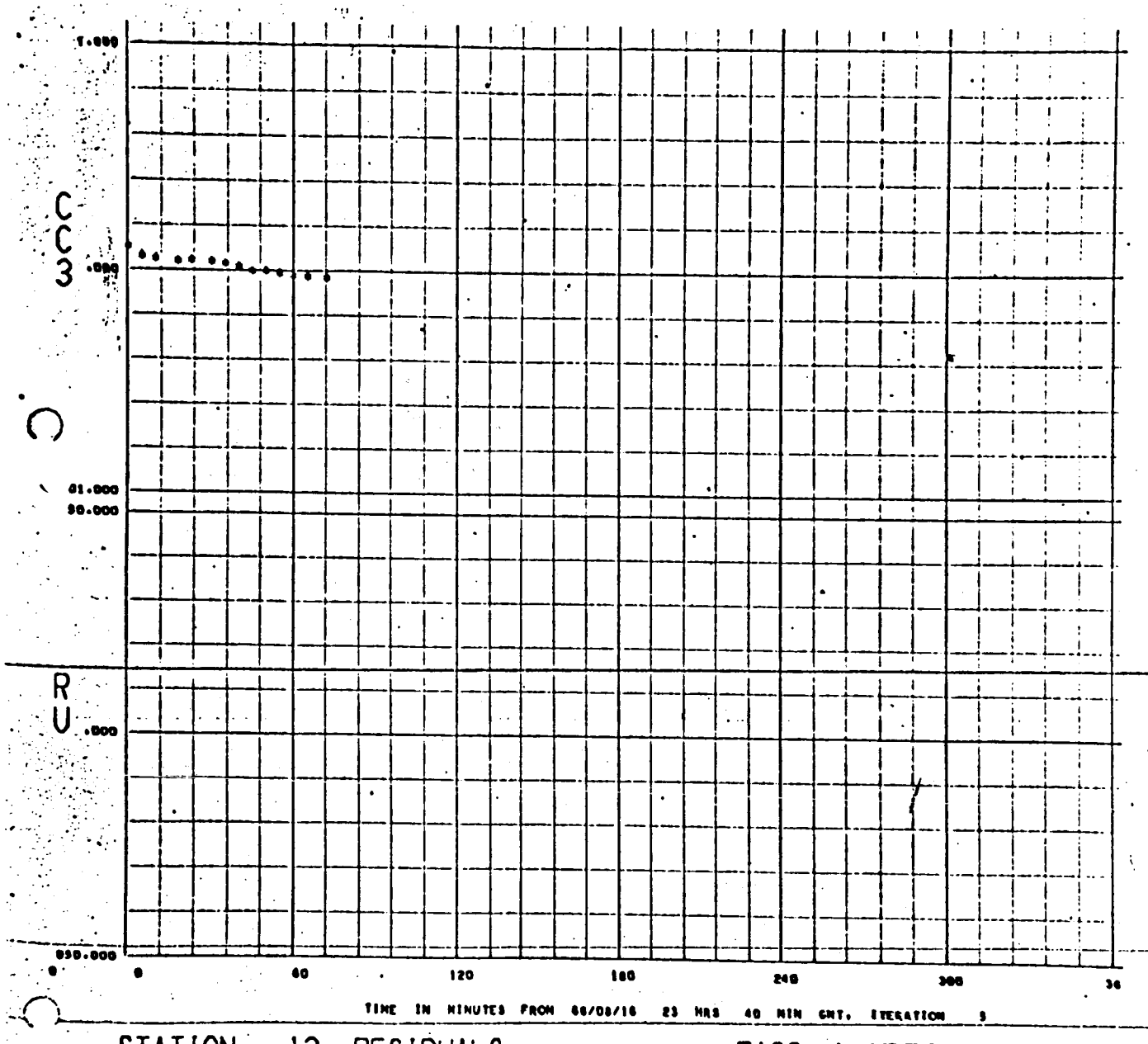
STATION 12 RESIDUALS PASS NUMBER 05/227



STATION 12 RESIDUALS PASS NUMBER 05/227



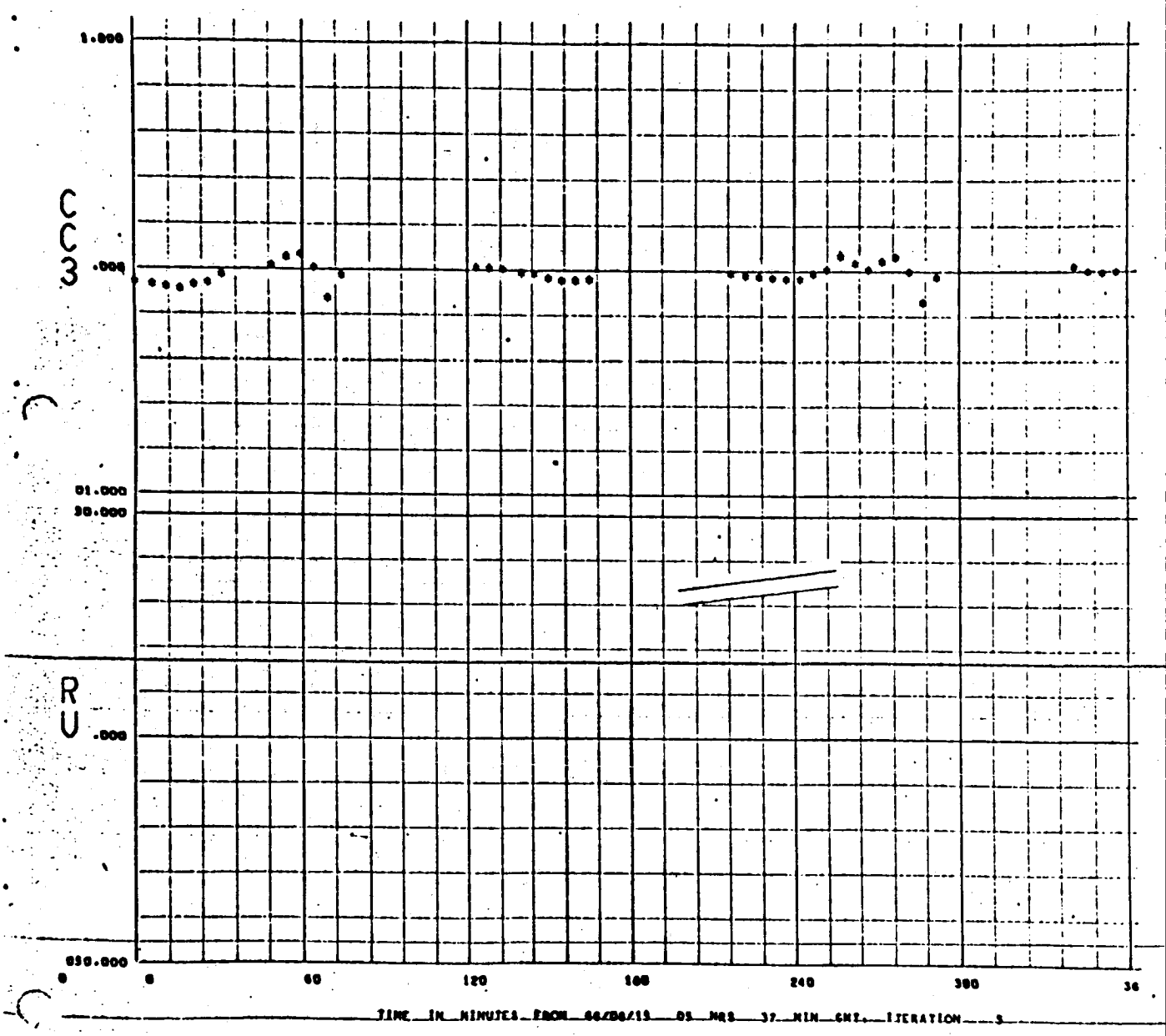
STATION 12 RESIDUALS PASS NUMBER 06/228



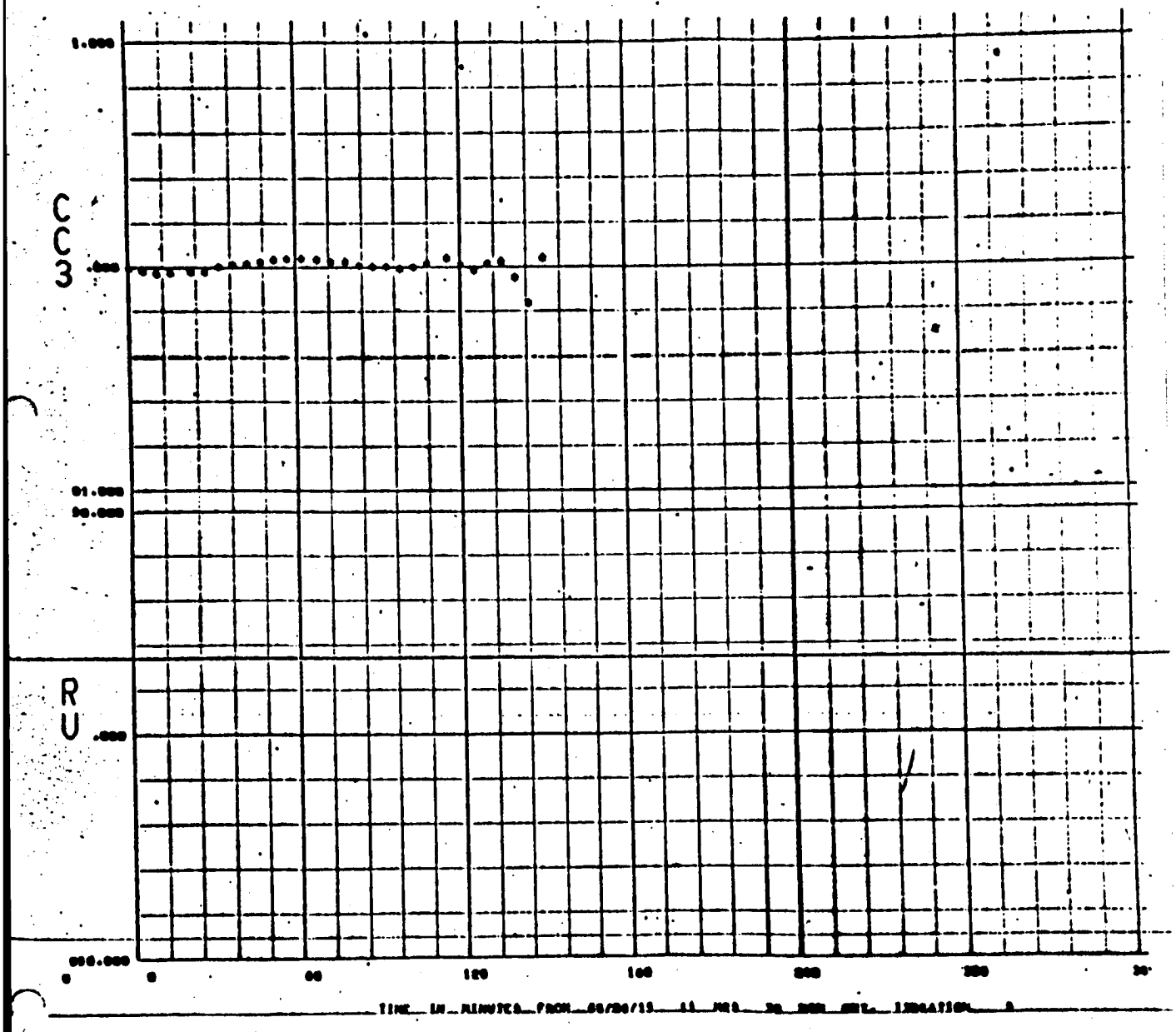
STATION 12 RESIDUALS PASS NUMBER 06/228

ODPL 4138 E

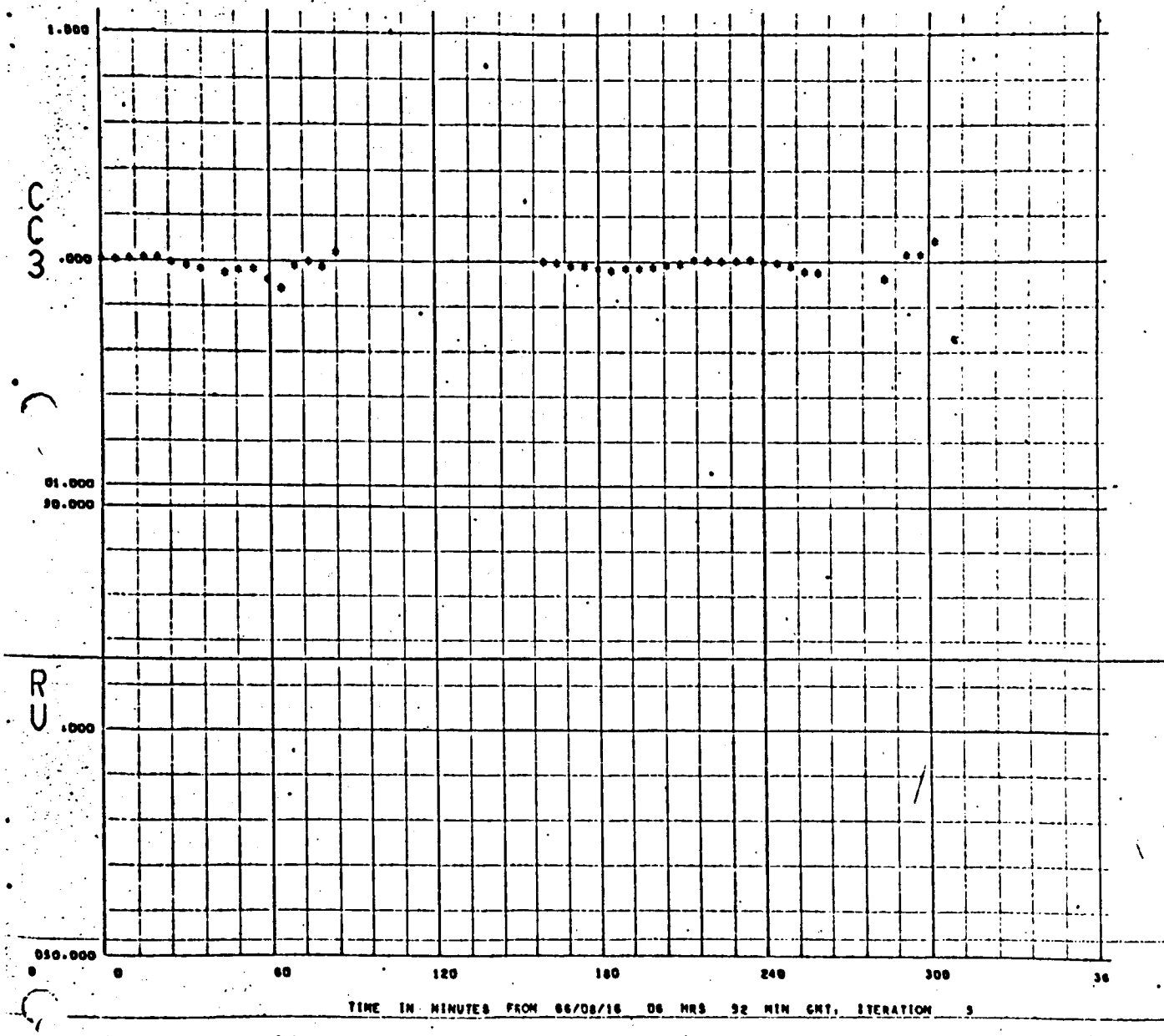
DELT=4000 R



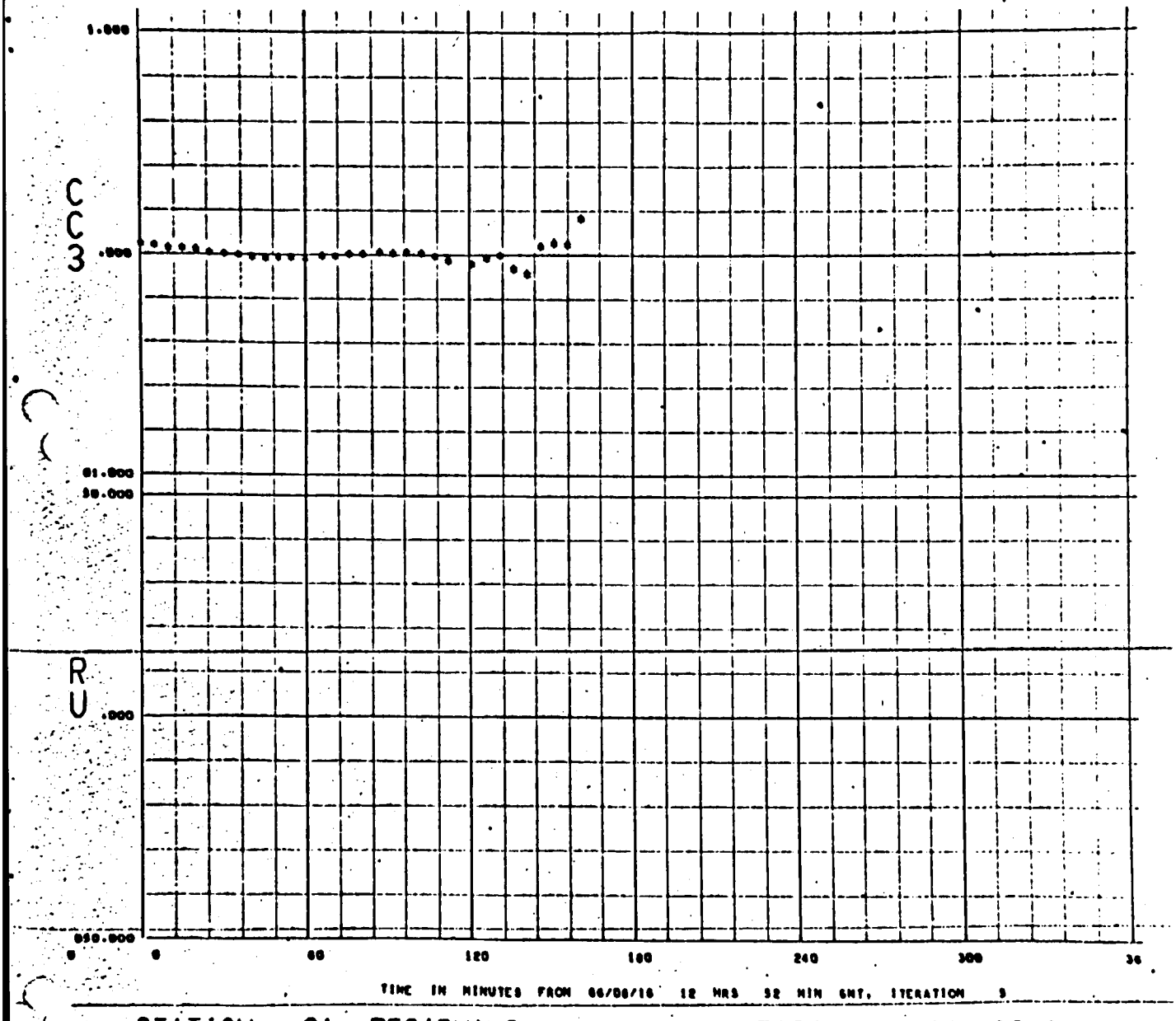
STATION : 61 RESIDUALS PASS NUMBER 05/227



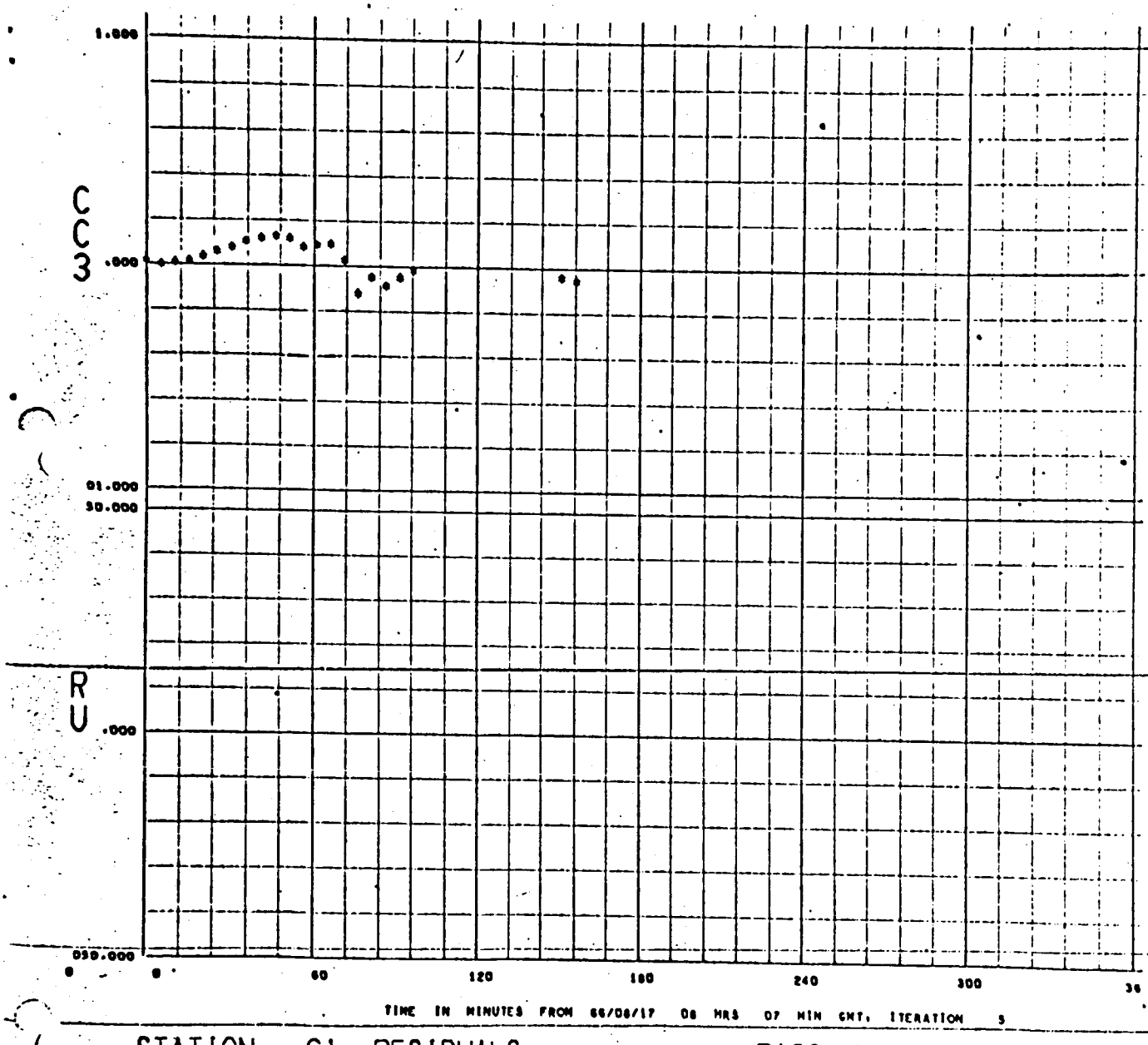
STATION 61 RESIDUALS PASS NUMBER 05/227



STATION 61 RESIDUALS PASS NUMBER 06/228



STATION 61 RESIDUALS PASS NUMBER 06/228



STATION 61 RESIDUALS PASS NUMBER 07/229

ODPL 4138 E

DELT=4000 R

SUMMARY OF FIRST-ELLIPSE STATE VECTOR DETERMINATIONS

It is evident from the following orbit determination summaries that there are large time gaps between the orbit solutions during which no orbit solutions were obtained. This is due to the fact that these orbit solutions were used primarily to determine the lunar harmonics by means of the element plotting method and it was not necessary to determine a solution for each and every orbit to use this method. Also, the length of time required to run the ODPL would have been far too great to obtain a solution for each orbit.

Note that the first orbit determination summary is for OD 4138. The epoch for OD 4138 is at the beginning of the first orbit, but the data arc for this solution covers a period of 2 days, 18-2/3 hours. Obviously this time span far exceeds one orbit of data, which would be approximately 3.6 hours. This is because OD 4138 is the orbit determination direct method solution for the lunar harmonics.

ORBIT DETERMINATION SUMMARY FOR _____ ELLIPSE

OD Identification Number 4138 - 1ST Orbit Solution
A3 Tape Number _____
Item Number _____
Epoch 66/08/14 16^h 03^m 52.013^s
State Vector (Selenographic True of Date Orbital Elements)

a	2765.3814	KM	Ω	325.93317	DEG
e	0.30315584		i	12.155804	DEG
ω	180.28010	DEG	T_p	-1637.5836	SEC

Data Arc 66-2/3 Hrs Station Numbers 41, 61, 12

ORBIT DETERMINATION SUMMARY FOR _____ ELLIPSE

OD Identification Number 4th Orbit Solution
A3 Tape Number 8186
Item Number 1404
Epoch 66/08/15 06^h 16^m 52.013^s
State Vector (Selenographic True of Date Orbital Elements)

a	2765.7764	KM	Ω	317.96408	DEG
e	0.30197710		i	12.187705	DEG
ω	180.78547	DEG	T_p	-2665.1748	SEC

Data Arc 2 Hrs Station Numbers 41, 61

ORBIT DETERMINATION SUMMARY FOR _____ ELLIPSE

OD Identification Number 4112A- 7th Orbit Solution
A3 Tape Number _____
Item Number _____
Epoch 66/08/15 13^h 29^m 52.013^s
State Vector (Selenographic True of Date Orbital Elements)

a	2765.9354	KM	Ω	313.81331	DEG
e	0.30137684		i	12.181490	DEG
ω	181.12466	DEG	T_p	-2787.8781	SEC

Data Arc 2 Hrs Station Numbers 12, 61

ORBIT DETERMINATION SUMMARY FOR _____ ELLIPSE

OD Identification Number 9th Orbit Solution
A3 Tape Number _____
Item Number _____
Epoch 66/08/16 00^h 24^m 52.013^s
State Vector (Selenographic True of Date Orbital Elements)

a	2765.9132	KM	Ω	307.67121	DEG
e	0.30042293		i	12.181862	DEG
ω	181.50206	DEG	T_p	-2641.6704	SEC

Data Arc 2 Hrs Station Numbers 12, 41

ORBIT DETERMINATION SUMMARY FOR _____ ELLIPSE

OD Identification Number 11th Orbit Solution
A3 Tape Number _____
Item Number _____
Epoch 66/08/16 $07^h\ 24^m\ 52.012^s$
State Vector (Selenographic True of Date Orbital Elements)

a	2765.5153	KM	Ω	303.40746	DEG
e	0.29974370		i	12.133380	DEG
ω	182.09460	DEG	T_p	-3543.8819	SEC

Data Arc _____ Hrs Station Numbers _____

ORBIT DETERMINATION SUMMARY FOR _____ ELLIPSE

OD Identification Number 17th Orbit Solution
A3 Tape Number _____
Item Number _____
Epoch 66/08/17 $05^h\ 03^m\ 52.012^s$
State Vector (Selenographic True of Date Orbital Elements)

a	2765.8100	KM	Ω	290.98982	DEG
e	0.29806085		i	12.141983	DEG
ω	182.90436	DEG	T_p	-3904.7417	SEC

Data Arc _____ Hrs Station Numbers _____

ORBIT DETERMINATION SUMMARY FOR _____ ELLIPSE

OD Identification Number 4252 45th. Orbit Solution
A3 Tape Number 7696
Item Number 1940
Epoch 66/08/21 $09^h\ 50^m\ 58.090^s$
State Vector (Selenographic True of Date Orbital Elements)

a	2765.5600	KM	Ω	235.03208	DEG
e	0.29694114		i	12.089080	DEG
ω	184.19583	DEG	T_p	-6465.1906	SEC

Data Arc 17 Hrs Station Numbers 12, 61

ORBIT DETERMINATION SUMMARY FOR _____ ELLIPSE

OD Identification Number _____
A3 Tape Number _____
Item Number _____
Epoch _____
State Vector (Selenographic True of Date Orbital Elements)

a		KM	Ω		DEG
e			i		DEG
ω		DEG	T_p		SEC

Data Arc _____ Hrs Station Numbers _____

CALCULATIONS MADE FOR ELEMENT PLOTTING

Presented in this appendix is the detailed work done for estimating J_{30} and J_{40} by element plotting. This includes:

1) Calculations of perturbations caused by J_{30} and J_{40};

2) First-element plotting solution calculations;

3) Second-element plotting solution.

PERTURBATION COEFFICIENTS FOR J_{30} AND J_{40}

1) $$\dot{e}_{J_{30}} = \frac{3\, n\, R^3\, J_{30} \sin i}{2\, a^3\, (1 - e^2)^2} \left(\frac{5}{4} \sin^2 i - 1\right) \cos \omega$$

$$n = \left(\frac{\mu}{a^3}\right)^{1/2}$$

$$a = 2766.0600$$

$$a^3 = 21.2 \times 10^9$$

$$\mu = 4902.5800$$

$$n = \left(\frac{4.9026 \times 10^3}{2.766^3 \times 10^9}\right)^{1/2}$$

$$= \left(\frac{4.903 \times 10^3}{21.2 \times 10^9}\right)^{1/2}$$

$$= 0.482 \times 10^{-3}$$

$$R = 1738.09$$

$$R^3 = 5.25 \times 10^9$$

$$i = 12.187$$

$$\sin i = 0.212$$

$$\sin^2 i = 0.045$$

$$e = 0.30331$$

$$e^2 = 0.092$$

$$\omega = 180.16761$$

$$\cos \omega = -1.00$$

$$\dot{e}_{J_{30}} = \frac{(3)\,(0.482 \times 10^{-3})\,(5.25 \times 10^9)\,(0.212)}{(2)\,(21.2 \times 10^9)\,(1 - 0.092)^2} \times \left[(1.25)\,(0.045) - 1\right] (-1)$$

$$= \frac{1.61 \times 10^6}{34.9 \times 10^9} \left[+ 0.9438\right]$$

$$= 0.0435 \times 10^{-3} \text{ rad/sec}$$

$$= 0.261 \times 10^{-2} \text{ rad/min}$$

$$\dot{h}_p = - \dot{e}\, a$$

$$\boxed{\dot{h}_p = -7.23 \times J_{30} \text{ km/min}} \quad \text{or} \quad \dot{h}_p = -4.338 \times 10^2 \times J_{30} \text{ km/hr}$$

2) $$\dot{\omega}_{J_{30}} = \frac{3\, n\, R^3\, J_{30}}{2\, a^3\, e\, (1 - e^2)^3} \left\{(1 + 4\, e^2) \sin i \left(\frac{5}{4} \sin^2 i - 1\right)\right.$$

$$\left. - e^2 \frac{\cos^2 i}{\sin i} \left(\frac{15}{4} \sin^2 i - 1\right)\right\} \sin \omega$$

$$\sin i = 0.212.$$

$$\cos i = 0.9774$$

$$\dot{\omega}_{J_{30}} = \frac{(3)\ (0.482 \times 10^{-3})\ (5.25 \times 10^9)}{(2)\ (21.2 \times 10^9)\ (0.3033)\ (0.908)^3}$$

$$\left\{\left[1 + (4)\ (0.092)\right]\ (0.212)\ \left[(1.25)\ (0.045) - 1\right]\right.$$

$$\left. - (0.092) \frac{(0.977)^2}{(0.212)} \left[(3.75)\ (0.045) - 1\right]\right\} (\approx 0)$$

$$= 7.90 \times 10^{-3} \left[-0.2735 + 0.344\right]^{x \approx 0} = 0.624 \times 10^{-3}\ x \approx 0$$

$$\therefore \quad \boxed{\dot{\omega}_{J_{30}} = 0}$$

3) $$\bar{\dot{\omega}}_{J_{40}} = \frac{-35}{8} \frac{n}{a^4} \frac{J_4\, R_M^4}{(1 - e^2)^2} \left\{\left(\frac{12}{7} - \frac{93}{14} \sin^2 i + \frac{21}{4} \sin^4 i\right)\right.$$

$$+ e^2 \left(\frac{27}{14} - \frac{27}{4} \sin^2 i + \frac{81}{16} \sin^4 i\right) + \frac{3}{28} (6 \sin^2 i - 7 \sin^4 i) \cos 2\omega$$

$$\left. - e^2 \left(\frac{9}{14} - \frac{15}{4} \sin^2 i + \frac{27}{8} \sin^4 i\right) \cos 2\omega\right\}$$

$i = 12.187$: $\sin i = 0.211$

$\sin^2 i = 0.0445$

$\sin^4 i = 0.00198$

$$e = 0.303, \quad e^2 = 0.0915$$

$$2\omega = 360.33522 \quad \therefore \cos 2\omega = \cos (0.335°) = 0.9999$$

$$A = 1.715 - 0.2955 + 0.0104 = 1.429$$

$$B = 0.0915\ (1.930 - 0.300 + 0.010) = 0.0915 \times 1.640 = 0.150$$

$$C = \frac{3}{28}\ (0.2665 - 0.0139)\ 0.9999 = \frac{3}{28}\ (0.2526) - 0.02705$$

$$D = -0.0915\ (0.642 - 0.1670 + 0.00670) = -0.0915 \times 0.482 = -0.0441$$

$$\begin{aligned} A+B+C &= 1.429 \\ &\ 0.150 \\ &\ \underline{0.027} \\ &\ 1.606 \end{aligned} \qquad \begin{aligned} A+B+C+D &= 1.606 \\ &\ \underline{-0.044} \\ &\ 1.562 \end{aligned}$$

$$n = \sqrt{\frac{\mu}{a^3}} = \sqrt{\frac{4902.58}{(2766)^3}} = \sqrt{\frac{4.902 \times 10^3}{21.2 \times 10^9}} = \sqrt{0.231 \times 10^{-6}}$$

$$a^4 = 58.4 \times 10^{12}$$

$$R^4 = 9.12 \times 10^{12}$$

$$(1 - e^2)^4 = (0.9085)^4 = 0.680$$

$$\therefore K = \frac{-35}{8} \times \frac{0.482 \times 10^{-3}}{} \times \left(\frac{9.12}{58.4}\right) J_{40} = 0.485 \times 10^{-3}\ J_{40}$$

$$\therefore \dot{\bar{\omega}}_{J_{40}} = (0.485 \times 10^{-3})\ (1.562)\ J_{40} = 0.759 \times 10^{-3}\ J_{40}$$

$$\therefore \boxed{\dot{\bar{\omega}}_{J_{40}} = 0.759 \times 10^{-3}\ J_{40} \quad \text{rad/sec}} \quad \text{or}$$

$$\dot{\omega}_{J_{40}} = 0.759 \times 10^{-3} \times 60 \times 57.3 \text{ deg/min}$$

$$= 4.55 \text{ rad/min} \times 57.3 \text{ deg/rad} \times 10^{-2}$$

$$\boxed{\dot{\omega}_{J_{40}} = 2.61 \times J_{40} \text{ deg/min}}$$

FIRST-ELEMENT PLOTTING SOLUTION (BASED ON ODPL SOLUTION 4118)

$\underline{J_{40}}$

No estimate for J_{40} because of $\Delta\omega$ data. Best guess is that it is ~ 0.

$\underline{J_{30}}$

$$J_{30} = \frac{\dot{h}_p}{-7.23 \times 60}$$

$$\dot{h}_p = \frac{1.8 - 0.05}{30} \text{ km/hr}$$

$$= \frac{1.75}{30}$$

$$= 0.0583 \text{ km/hr}$$

$$J_{30} = \frac{-5.83 \times 10^{-2}}{4.338 \times 10^{2}}$$

$$= \underline{\underline{-1.35 \times 10^{-4}}}$$

SECOND-ELEMENT PLOTTING SOLUTION

$\underline{J_{40}}$

$$\frac{\Delta\omega}{\Delta t} = \frac{0.10 + .045 \text{ deg}}{33.5 \text{ hr}}$$

$$= .433 \times 10^{-2} \text{ deg/hr}$$

$$J_{40} \cong \frac{\dot{\omega}}{2.61 \times 60}$$

$$= \frac{0.433 \times 10^{-2}}{0.1566 \times 10^{3}}$$

$$= 2.77 \times 10^{-5}$$

$$= \underline{\underline{+0.277 \times 10^{-4}}}$$

$\underline{J_{30}}$

$$\frac{\Delta h_p}{\Delta t} = \frac{2.25 - 0.12}{44.5} \text{ km/hr}$$

$$= \frac{2.13}{44.5}$$

$$= 0.048 \text{ km/hr}$$

$$J_{30} \approx \frac{4.8 \times 10^{-2}}{-4.34 \times 10^{-2}}$$

$$= \underline{\underline{-1.10 \times 10^{-4}}}$$

Note: These estimates are based on one-orbit solutions.

ELEMENT PLOTTING SOLUTION BASED ON SOLUTION 4118

Time	Orbit	h_{p1}	h_{p2}	$h_{p1}-h_{p2}$	ω_1	ω_2	$\omega_1-\omega_2$
27.3_m	0	188.97	188.89	0.08	180.154	180.212	-0.058
$4_h\ 5_m$	1	189.73	189.45	0.28	180.305	180.347	-0.042
$7_h\ 42_m$	2	190.52	190.03	0.49	180.452	180.480	-0.028
$11_h\ 20_m$	3	191.34	190.64	0.70	180.594	180.612	-0.018
$14_h\ 57_m$	4	192.17	191.26	0.91	180.732	180.742	-0.010
$18_h\ 35_m$	5	193.01	191.90	1.11	180.864	180.871	-0.007
$22_h\ 12_m$	6	193.88	192.55	1.33	180.991	180.998	-0.007
$25_h\ 50_m$	7	194.75	193.21	1.54	181.114	181.123	-0.009
$29_h\ 28_m$	8	195.64	193.87	1.77	181.230	181.246	-0.016
$33_h\ 5_m$	9	196.53	194.53	2.00	181.342	181.367	-0.025

SECOND-ELEMENT PLOTTING SOLUTION

Time	Orbit	$^{*}h_{p_1}$	$^{**}h_{p_2}$	$h_{p_1}-h_{p_2}$	$^{*}\omega_1$	$^{**}\omega_2$	$\omega_1-\omega_2$
(0.455 hr)							
27.3_m	0	189.0	188.89	+0.11	180.168	180.212	-0.044
$4_h\ 5_m$	1		189.45			180.347	
$7_h\ 42_m$	2		190.03			180.480	
$11_h\ 20_m$	3		190.64			180.612	
$14_h\ 57_m$	4	192.068	191.26	+0.81	180.745	180.742	+0.003
$18_h\ 35_m$	5		191.90			180.871	
$22_h\ 12_m$	6	193.883	192.55	+1.33	181.071	180.998	+0.073
$25_h\ 50_m$	7		193.21			181.123	
$29_h\ 28_m$	8		193.87			181.246	
$33_h\ 5_m$	9	196.391	194.53	+1.86	181.4661	181.367	+0.099
$36_h\ 43_m$	10		195.191			181.487	
$40_h\ 20_m$	11		195.839			181.604	
$43_h\ 58_m$	12		196.472			181.719	
51.23_h	13	199.262	197.68	+1.58	182.318	181.913	+0.375
62.08_h	14	203.340	199.285	+4.06	182.904	182.869	+0.035

* Information obtained from "One-Orbit Solutions"

** Information obtained from SPACL TRAJ with Lunar Model KM, J20, C22

LHDL OPERATIONAL SEQUENCE

	Data Arc Lengths	No. of Iterations	Final Sum of Squares	Comment
	45 min	6	3.60	Solve for X, C44, S44, DS(13)
	227	8	788	X, C44, S44, C43, S43, DS(13) C33, S33
(D)*				
	45	3	0.235	Solve X, DS(13)
	227	4	0.786	X, CS44, CS43, CS33, DS(13)
(A)				
	227	2	0.1963E4	Solve X, CS44, CS43, CS33, DS(13)
(D)				
	227	5	1.8	Solve X, CS44, CS43, CS33, DS(13)
(D)				
	1085	4	0.465E3	Solve all except GM, S_x
(B)				
	1085	5	0.465E3	Solve all except GM, DS_x, CS_{i1}, CS_{i2}
(B)				
	1085	1	0.250E3	Delete GM, DS_x
	1302	3	0.243E5	Delete GM, J20, C22, DS_x
(A)				
	1302	2	0.22E6	Delete GM, J20
(C)				
	1302	3	0.13307E3	
	2000	6	0.239E6	Delete GM, J20, C22, DS_x
(D)				
	2000	1		
(B)				

*The broken line indicates an interruption in the use of the computer due to one of four sources A, B, C, D below:

A. Preemption by Pioneer, FPAC, or other activity during the first 2 days in initial orbit.

B. Hardware deficiencies such as faulty tape units, faulty card reader, bad data tapes, etc.

C. Card input errors owing to carelessness or fatigue on the part of the operations personnel.

D. Miscellaneous causes such as erroneous data due to presence of a maneuver, divergence of the solution, blunder prints in data, etc.

	Data Arc Lengths	No. of Iterations	Final Sum of Squares	Comment
	2000	3	0.256E5	Delete GM, J20, C22, DS_x
(D)				
	1650	1	0.180E5	
(C)				
	1302	2	0.152E3	Delete GM, J20, C21, C22, S21, DS_x
	1519	3	0.143E3	Delete GM, J20, C21, C22, S21, DS_x
	1736	2	0.300E3	Delete GM, J20, C21, C22, S21, DS_x
	1953	5	0.289E3	Delete GM, J20, C21, C22, S21, DS_x
	2170	3	0.9571E5	Delete GM, J20, J40, C22, DS_x
(D)				
	2170	6	0.2013E3	Delete all C3 data
	2387	5	0.2604E3	
**	2604	3	0.29181E3	
	2821	2	0.18399E4	
(B)				
	2821	2	0.123E5	Delete GM, J20, C22, C21, S21, DS_x
(D)				
	2712	1	0	All data rejected
(C)				
	2712	2	0.597E4	
(D)				

**A solution obtained in this series was delivered to and used by ODPL.

	Data Arc Lengths	No. of Iterations	Final Sum of Squares	Comments
	2604	4	0.522E4	
(B)				
	2604	1	0.445E4	
(B)				
	2604	2	0.630E4	
(D)				
	2604	1	0.3458E3	
(D)				
	3200	5	0.4768E4	
(D)				
	3200	1	0.258E2	Most data rejected
(C)				
	3200	2	0.3349E3	Solve for state alone
	4000	1	0.4028E3	Solve for state alone
	6000	3	0.376E3	Solve for state alone
	6000	1	0.380E3	Solve for GM, J20, J40, C22
	6000	1	0.390E3	Delete state

Most data rejected.

The inner and outer Sun bands are defined by the locus of points on the lunar surface where the angle between the local vertical and the Sun line is 50 degrees and 70 degrees, respectively. The region defined by these bounds constitutes the area of the lunar surface where the lighting is satisfactory for near vertical photography. The AM side of the lighting band is defined as the half where the Sun is rising and the PM side as the half where the Sun is setting. Figure B-4 is a sketch of the inner and outer Sun bands on the lunar surface at some instant of time. Three orbit traces are also shown. For simplicity, the assumption is made that the Moon is not rotating about its axis or with respect to the Sun, but that the orbit plane is simply rotating about a fixed moon. By plotting longitude and latitude of the intersection of the orbit trace and Sun bands for successive orbit passes, a definition of the portion of the orbit where satisfactory lighting conditions exist is generated.

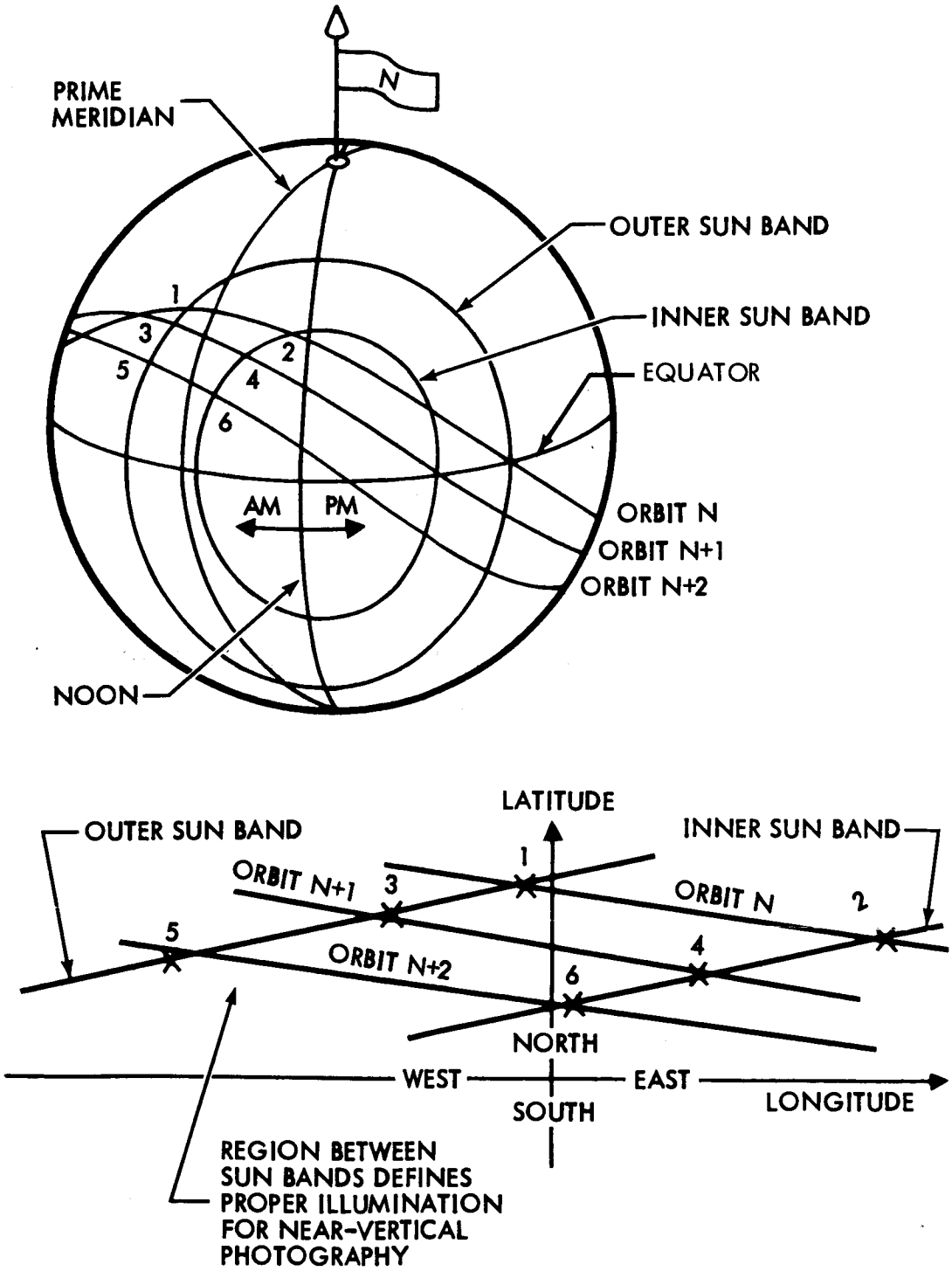


FIGURE B-4: LIGHTING BAND GEOMETRY

TDPX/ODGX INPUT DECK LISTINGS FOR SECOND ELLIPSE

SECOND ELLIPSE

TDPX ~~FINAL ORBIT 1~~

```
CHANGE CLEAR REJECTED DATA
CHANGE NOSORT
FORMAT(3(L2,1B),4L1,1B,3L2,1B,L3,1B,L10,1B,K10,K1,2(IB,F6.3)) NUMBER 2
END DATA                                                                10
```

SECOND ELLIPSE
~~FINAL ORBIT 1~~ ODGX

```
REMOVE ALL CONTROLS
CHANGE NEW ODP FILE
CHANGE EXECUTE
SHIFT TIME .002095 STATION 4
SHIFT TIME -.007620 STATION 13
IGNORE ANGLES STATIONS 4,12,13
IGNORE RU STATIONS 4,12,13
ADJUST C3 BY  .09 AFTER 120000,233,66 STATION 13
ADJUST C3 BY -.09 AFTER 120000,233,66 STATION 4
ADJUST C3 BY -.18 AFTER 190000,233,66 STATION 13
ADJUST C3 BY  .18 AFTER 190000,233,66 STATION 12
ADJUST C3 BY -.27 AFTER 010000,234,66 STATION 4
ADJUST C3 BY  .27 AFTER 010000,234,66 STATION 12
ADJUST C3 BY +.09 AFTER 130000,234,66,STATION 13
ADJUST C3 BY -.09 AFTER 130000,234,66,STATION 4
ADJUST C3 BY +.18 AFTER 200000,234,66,STATION 12
ADJUST C3 BY -.18 AFTER 200000,234,66,STATION 13
ADJUST C3 BY -.27 AFTER 030000,235,66,STATION 4
ADJUST C3 BY +.27 AFTER 030000,235,66,STATION 12
ADJUST C3 BY +.09 AFTER 140000,235,66,STATION 13
ADJUST C3 BY -.09 AFTER 140000,235,66,STATION 4
ADJUST C3 BY +.18 AFTER 212300,235,66,STATION 12
ADJUST C3 BY -.18 AFTER 212300,235,66,STATION 13
ADJUST C3 BY -.27 AFTER 040000,236,66,STATION 4
ADJUST C3 BY  .27 AFTER 040000,236,66,STATION 12
ADJUST C3 BY  .09 AFTER 150000,236,66,STATION 13
ADJUST C3 BY -.09 AFTER 150000,236,66,STATION 4
ADJUST C3 BY -.27 AFTER 050000,237,66,STATION 4
ADJUST C3 BY +.27 AFTER 050000,237,66,STATION 12
TRANSMITTER ON AT 095000,233,66 STATION 4
TRANSMITTER ON AT  130000,233,66,STATION 13
TRANSMITTER ON AT 200000,233,66 STATION 12
TRANSMITTER ON AT 030700,234,66,STATION 4
TRANSMITTER ON AT 134300,234,66,STATION 13
TRANSMITTER ON AT 203000,234,66,STATION 12
TRANSMITTER ON AT 071400,235,66 STATION 4
TRANSMITTER ON AT 143600,235,66,STATION 13
TRANSMITTER ON AT 213900,235,66,STATION 12
TRANSMITTER ON AT 053400,236,66,STATION 4
TRANSMITTER ON AT 155500,236,66,STATION 13
TRANSMITTER ON AT 225700,236,66,STATION 12
FREQ  20456800 AFTER 095000,233,66 STATION 4
FREQ  20456100 AFTER 130000,233,66,STATION 4
FREQ  20456700 AFTER 014600,234,66,STATION 4
```

```
FREQ  20456400 AFTER 030700,234,66,STATION 4
FREQ  20456500 AFTER 071400,235,66 STATION 4
FREQ  20456700 AFTER 103400,235,66,STATION 4
FREQ  20456200 AFTER 050800,236,66,STATION 4
FREQ  20456400 AFTER 075200,236,66,STATION 4
FREQ  20456600 AFTER 112200,236,66,STATION 4
FREQ  20455800 AFTER 054500,237,66 STATION 4
FREQ  20456000 AFTER 082600,237,66 STATION 4
FREQ  20456200 AFTER 115600,237,66 STATION 4
FREQ  20456400 AFTER 200000,233,66 STATION 12
FREQ  20456600 AFTER 233000,233,66 STATION 12
FREQ  20456800 AFTER 030100,234,66,STATION 12
FREQ  20456300 AFTER 203000,234,66,STATION 12
FREQ  20456500 AFTER 000000,235,66 STATION 12
FREQ  20456700 AFTER 034400,235,66 STATION 12
FREQ  20456200 AFTER 212300,235,66,STATION 12
FREQ  20456400 AFTER 004000,236,66,STATION 12
FREQ  20456600 AFTER 041600,236,66,STATION 12
FREQ  20455900 AFTER 222000,236,66,STATION 12
FREQ  20456000 AFTER 012000,237,66,STATION 12
FREQ  20456500 AFTER 130000,233,66,STATION 13
FREQ  20456700 AFTER 162500,233,66 STATION 13
FREQ  20456800 AFTER 200000,233,66 STATION 13
FREQ  20456400 AFTER 134300,234,66,STATION 13
FREQ  20456600 AFTER 170900,234,66,STATION 13
FREQ  20456700 AFTER 203[illegible],234,66,STATION 13
FREQ  20456300 AFTER 143600,235,66,STATION 13
FREQ  20456500 AFTER 174000,235,66,STATION 13
FREQ  20455850 AFTER 211000,235,66,STATION 13
FREQ  20455800 AFTER 213100,235,66,STATION 13
FREQ  20456600 AFTER 214200,235,66,STATION 13
FREQ  20456200 AFTER 153300,236,66,STATION 13
FREQ  20456400 AFTER 182000,236,66,STATION 13
FREQ  20456200 AFTER 214000,236,66,STATION 13
FREQ  20455580 AFTER 224800,236,66,STATION 13
PASSID 11/233 AFTER 095000,233,66 STATION 4
PASSID 11/233 AFTER 120000,233,66 STATION 13
PASSID 11/233 AFTER 190000,233,66 STATION 12
PASSID 12/234 AFTER 010000,234,66 STATION 4
PASSID 12/234 AFTER 130000,234,66 STATION 13
PASSID 12/234 AFTER 200000,234,66 STATION 12
PASSID 13/235 AFTER 020000,235,66 STATION 4
PASSID 13/235 AFTER 140000,235,66,STATION 13
PASSID 13/235 AFTER 210000,235,66,STATION 12
PASSID 14/236 AFTER 000000,236,66,STATION 4
PASSID 14/236 AFTER 150000,236,66,STATION 13
PASSID 14/236 AFTER 220000,236,66,STATION 12
CHANGE EXECUTE
PRINT  ALL CONTROLS
END DATA
```

MASTER FILE SUMMARIES — SECOND-ELLIPSE TRACKING DATA

B1 = 2574

LIBRARY TAPE (LT) NO. 1b sent to Langley.

MASTER FILE DATA SUMMARY

STA	COUNT	HHMMSS,	DAY	TO	HHMMSS,	DAY	ELAPSED HHMMSS,	DAYS
4	4495	095810	233		100632	238	000822	5
12	3029	200502	233		074042	238	113540	4
13	2431	130102	233		001302	238	111200	4

PHOTO READOUT TIMES — SECOND ELLIPSE

NO.	START TIME HHMMSS, DDD	END TIME HHMMSS, DDD	STATION NO. PRIME — SECOND
012	163400, 233	170600, 233	61
013	201218, 233	203400, 233	12 - 61
014	233516, 233	235700, 233	12
015	064000, 234	065300, 234	41
016	101027, 234	103901, 234	41
017	001200, 235	003150, 235	12
018	122326, 235	125809, 235	41
019	154342, 235	162300, 235	61
020	191252, 235	200424, 235	61
021	224100, 235	233209, 235	12
022	022700, 236	030209, 236	12
023	053800, 236	063010, 236	12 - 41
024	124031, 236	132810, 236	41
025	161232, 236	170200, 236	61
026	024501, 237	033601, 237	12
027	094728, 237	103800, 237	41

ORBIT DETERMINATION RUN SUMMARIES — SECOND ELLIPSE

ORBIT DETERMINATION SUMMARY FOR SECOND ELLIPSE

OD Identification Number 5300
A3 Tape Number 8533
Item Number 1990
Epoch 66/08/21 $9^h\ 50^m\ 8.094^s$
State Vector (Selenographic True of Date Orbital Elements)

a	2692.4149	KM	Ω	234.07611	DEG
e	0.33362282		i	11.911426	DEG
ω	181.39976	DEG	T_p	-6013.6779	SEC

Data Arc 0.75 Hrs Station Numbers 41

ORBIT DETERMINATION SUMMARY FOR SECOND ELLIPSE

OD Identification Number 5302
A3 Tape Number 9396
Item Number 1994
Epoch 66/08/21 $9^h\ 50^m\ 8.094^s$
State Vector (Selenographic True of Date Orbital Elements)

a	2693.3790	KM	Ω	234.38704	DEG
e	.33323767		i	11.986299	DEG
ω	181.04524	DEG	T_p	-6014.5503	SEC

Data Arc 1.35 Hrs Station Numbers 41

ORBIT DETERMINATION SUMMARY FOR SECOND ELLIPSE

OD Identification Number 5304
A3 Tape Number 9382
Item Number 2000
Epoch 66/08/21 $9^h\ 50^m\ 8.094^s$
State Vector (Selenographic True of Date Orbital Elements)

a	2693.4571	KM	Ω	230.45452	DEG
e	.33319497		i	12.853764	DEG
ω	185.10836	DEG	T_p	-6014.62	SEC

Data Arc 2.1 Hrs Station Numbers 41

ORBIT DETERMINATION SUMMARY FOR SECOND ELLIPSE

OD Identification Number 5306
A3 Tape Number 9393
Item Number 2008
Epoch 66/08/21 $9^h\ 50^m\ 8.094^s$
State Vector (Selenographic True of Date Orbital Elements)

a	2693.4131	KM	Ω	232.71635	DEG
e	.33318565		i	12.337085	DEG
ω	182.76921	DEG	T_p	-6014.6463	SEC

Data Arc 3.72 Hrs Station Numbers 41, 61

ORBIT DETERMINATION SUMMARY FOR SECOND ELLIPSE

OD Identification Number 5208
A3 Tape Number 8672
Item Number 2039
Epoch 66/08/21 9^h 50^m 8.094^s
State Vector (Selenographic True of Date Orbital Elements)

a	2693.4116	KM	Ω	232.63166	DEG
e	.33318278		i	12.354656	DEG
ω	182.85614	DEG	T_p	-6014.6375	SEC

Data Arc 3.87 Hrs Station Numbers 41, 61

ORBIT DETERMINATION SUMMARY FOR SECOND ELLIPSE

OD Identification Number 5212
A3 Tape Number 3439
Item Number 2097 and 2098
Epoch 66/08/21 20^h 30^m 8.094^s
State Vector (Selenographic True of Date Orbital Elements)

a	2693.1796	KM	Ω	228.62346	DEG
e	.33373822		i	11.879296	DEG
ω	181.05891	DEG	T_p	-5239.1372	SEC

Data Arc .87 Hrs Station Numbers 12, 61

ORBIT DETERMINATION SUMMARY FOR SECOND ELLIPSE

OD Identification Number 5314
A3 Tape Number 8655
Item Number 2145
Epoch 66/08/22 3^h 6^m 59^s
State Vector (Selenographic True of Date Orbital Elements)

a	2693.4473	KM	Ω	224.42985	DEG
e	.33376370		i	12.073992	DEG
ω	181.71469	DEG	T_p	6031.9990	SEC

Data Arc 2.37 Hrs Station Numbers 12,41

ORBIT DETERMINATION SUMMARY FOR SECOND ELLIPSE

OD Identification Number 5118
A3 Tape Number 8928
Item Number 2270
Epoch 66/08/22 22^h 12^m
State Vector (Selenographic True of Date Orbital Elements)

a	2694.2870	KM	Ω	~~327.19116~~ 213.65728	DEG
e	~~.33517542~~ .33517529		i	~~24.481004~~ 11.924365	DEG
ω	~~115.41331~~ 182.27066	DEG	T_p	-521.21971	SEC

Data Arc 1.37 Hrs Station Numbers 12, 41

ORBIT DETERMINATION SUMMARY FOR SECOND ELLIPSE

OD Identification Number 5320
A3 Tape Number 9155, 9690, 9393, 8320, 8073
Item Number 2621, 2427, 2432, 2436, 2440
Epoch 66/08/23 10^h 39^m
State Vector (Selenographic True of Date Orbital Elements)

a	2693.3625	KM	Ω	206.56686	DEG
e	.33503359		i	12.081879	DEG
ω	182.78021	DEG	T_p	-5872.7517	SEC

Data Arc 5.82 Hrs Station Numbers 41, 61

ORBIT DETERMINATION SUMMARY FOR SECOND ELLIPSE

OD Identification Number 5122
A3 Tape Number 9377
Item Number 2466
Epoch 66/08/23 22^h 51^m
State Vector (Selenographic True of Date Orbital Elements)

a	2693.8358	KM	Ω	199.59587	DEG
e	.33564217		i	12.102043	DEG
ω	183.29269	DEG	T_p	419.45829	SEC

Data Arc 0.9 Hrs Station Numbers 12, 61

ORBIT DETERMINATION SUMMARY FOR SECOND ELLIPSE

OD Identification Number 5326
A3 Tape Number 2518, 8646, 8816, 7315, 7690, 7316, 8742, 8614
Item Number 2536, 2546, 2548, 2562, 2572, 2599, 2604, 2607
Epoch 66/08/24 04^h 11^m 00^s
State Vector (Selenographic True of Date Orbital Elements)

a	2693.3238	KM	Ω	197.19954	DEG
e	.33550106		i	12.242447	DEG
ω	182.86588	DEG	T_p	-5466.0428	SEC

Data Arc 3.75 Hrs Station Numbers 12, 41

ORBIT DETERMINATION SUMMARY FOR _____ ELLIPSE

OD Identification Number _____
A3 Tape Number _____
Item Number _____
Epoch _____
State Vector (Selenographic True of Date Orbital Elements)

a		KM	Ω		DEG
e			i		DEG
ω		DEG	T_p		SEC

Data Arc _____ Hrs Station Numbers _____

ORBIT DETERMINATION RUN SUMMARIES — THIRD ELLIPSE

ORBIT DETERMINATION SUMMARY FOR THIRD ELLIPSE

OD Identification Number 6300
A3 Tape Number 9345, 8536, 8488
Item Number 2787, 2789, 2810
Epoch 66/08/25 16h 2m
State Vector (Selenographic True of Date Orbital Elements)

a	2666.6580	KM	Ω	176.15057	DEG
e	.33304620		i	11.744087	DEG
ω	186.19570	DEG	T_p	-1853.3036	SEC

Data Arc 1.0 Hrs Station Numbers 41, 61

ORBIT DETERMINATION SUMMARY FOR THIRD ELLIPSE

OD Identification Number 6106
A3 Tape Number 9177
Item Number 2889
Epoch 66/08/26 4h 19m
State Vector (Selenographic True of Date Orbital Elements)

a	2669.7949	KM	Ω	325.39450	DEG
e	.33346388		i	24.845634	DEG
ω	119.79942	DEG	T_p	5232.2793	SEC

Data Arc 4.2 Hrs Station Numbers 12, 61

ORBIT DETERMINATION SUMMARY FOR THIRD ELLIPSE

OD Identification Number 6210
A3 Tape Number 7315
Item Number 2943
Epoch 66/08/25 23h 59m
State Vector (Selenographic True of Date Orbital Elements)

a	2669.4484	KM	Ω	172.23250	DEG
e	.33350180		i	11.625832	DEG
ω	185.93438	DEG	T_p	2011.4728	SEC

Data Arc 7.67 Hrs Station Numbers 12, 41

ORBIT DETERMINATION SUMMARY FOR Third ELLIPSE

OD Identification Number 6212
A3 Tape Number 7315, 9393, 7669, 2607, 8580
Item Number 2943, 2947, 2977, 2981, 2986, 2990
Epoch 66/08/26 5h 19m
State Vector (Selenographic True of Date Orbital Elements)

a	2670.0212	KM	Ω	169.78020	DEG
e	.33346714		i	12.061071	DEG
ω	185.52911	DEG	T_p	-3545.7317	SEC

Data Arc 2.33 Hrs Station Numbers 12, 41

ORBIT DETERMINATION SUMMARY FOR THIRD ELLIPSE

OD Identification Number 6114
A3 Tape Number 8642, 2539, 7937, 8464, 8791
Item Number 3016, 3021, 3043, 3047, 3090
Epoch 66/08/26 20^h 30^m
State Vector (Selenographic True of Date Orbital Elements)

a	2669.8872	KM	Ω	161.27963	DEG
e	.33356190		i	11.979195	DEG
ω	186.00848	DEG	T_p	1603.3628	SEC

Data Arc 4.5 Hrs Station Numbers 12, 61

ORBIT DETERMINATION SUMMARY FOR Third ELLIPSE

OD Identification Number 6142
A3 Tape Number 7573, 8466, 8350, 8568, 8319, 8565
Item Number 3736, 3752, 3756, 3765, 3768, 3778
Epoch 66/08/31 10^h 4^m
State Vector (Selenographic True of Date Orbital Elements)

a	2670.0115	KM	Ω	113.40167	DEG
e	.33115044		i	12.852070	DEG
ω	174.24863	DEG	T_p	4.8541475	SEC

Data Arc 3.5 Hrs Station Numbers 12

ORBIT DETERMINATION SUMMARY FOR Third ELLIPSE

OD Identification Number 6146
A3 Tape Number 9388, 9367, 2607
Item Number 3969, 3976, 3982
Epoch 66/09/2 3^h 39^m
State Vector (Selenographic True of Date Orbital Elements)

a	2670.7289	KM	Ω	74.87351	DEG
e	.33207900		i	11.885016	DEG
ω	191.35825	DEG	T_p	1202.5526	SEC

Data Arc 2.3 Hrs Station Numbers 12, 61

ORBIT DETERMINATION SUMMARY FOR Third ELLIPSE

OD Identification Number 6248
A3 Tape Number 8489
Item Number 4125
Epoch 66/09/3 14^h
State Vector (Selenographic True of Date Orbital Elements)

a	2670.2495	KM	Ω	57.754426	DEG
e	.33338267		i	11.531475	DEG
ω	190.05574	DEG	T_p	1109.6295	SEC

Data Arc 5.9 Hrs Station Numbers 12, 41

ORBIT DETERMINATION SUMMARY FOR Third ELLIPSE

OD Identification Number 6150
A3 Tape Number 9040
Item Number 4356, 4364
Epoch 66/09/4 20^h 58^m
State Vector (Selenographic True of Date Orbital Elements)

a	2669.8754	KM	Ω	39.317787	DEG
e	.33492729		i	11.449386	DEG
ω	192.02711	DEG	T_p	1208.6471	SEC

Data Arc 2.5 Hrs Station Numbers 41

ORBIT DETERMINATION SUMMARY FOR Third ELLIPSE

OD Identification Number 6152
A3 Tape Number 8882, 8938, 7690, 7311
Item Number 4378, 4382, 4388, 4391
Epoch 66/09/6 7^h 21^m
State Vector (Selenographic True of Date Orbital Elements)

a	2669.6387	KM	Ω	15.786084	DEG
e	.33711784		i	13.021039	DEG
ω	197.61935	DEG	T_p	1223.0301	SEC

Data Arc 2.6 Hrs Station Numbers 12

ORBIT DETERMINATION SUMMARY FOR Third ELLIPSE

OD Identification Number 6154
A3 Tape Number 7393, 9737 9683, 9341, 9388
Item Number 4466, 4475, 4478, 4483, 4486
Epoch 66/09/7 7^h 25^m
State Vector (Selenographic True of Date Orbital Elements)

a	2669.5889	KM	Ω	4.5376608	DEG
e	.33853051		i	11.026293	DEG
ω	196.26649	DEG	T_p	1222.3500	SEC

Data Arc 6.1 Hrs Station Numbers 12, 61

ORBIT DETERMINATION SUMMARY FOR Third ELLIPSE

OD Identification Number 6156
A3 Tape Number 7316
Item Number 4579
Epoch 66/09/8 14^h 21^m
State Vector (Selenographic True of Date Orbital Elements)

a	2669.7011	KM	Ω	346.71754	DEG
e	.33871590		i	12.095823	DEG
ω	197.90060	DEG	T_p	1182.6432	SEC

Data Arc 2.75 Hrs Station Numbers 12

ORBIT DETERMINATION SUMMARY FOR Third ELLIPSE

OD Identification Number 6158
A3 Tape Number 9392, 8262
Item Number 4744, 4747
Epoch 66/09/9 16^h 15^m
State Vector (Selenographic True of Date Orbital Elements)

a	2669.6677	KM	Ω	331.86888	DEG
e	.33828918		i	12.260779	DEG
ω	199.37988	DEG	T_p	-4603.1968	SEC

Data Arc 4.3 Hrs Station Numbers 12, 41

ORBIT DETERMINATION SUMMARY FOR Third ELLIPSE

OD Identification Number 6160
A3 Tape Number 8470, 8655
Item Number 4750, 4754
Epoch 66/09/11 2^h 50^m
State Vector (Selenographic True of Date Orbital Elements)

a	2669.6661	KM	Ω	312.01129	DEG
e	.33690485		i	12.210178	DEG
ω	201.68877	DEG	T_p	-3891.1769	SEC

Data Arc .83 Hrs Station Numbers 41, 61

ORBIT DETERMINATION SUMMARY FOR Third ELLIPSE

OD Identification Number 6162
A3 Tape Number 7409, 9585
Item Number 163, 167
Epoch 66/09/13 6^h 20^m
State Vector (Selenographic True of Date Orbital Elements)

a	2669.7663	KM	Ω	283.72080	DEG
e	.33263495		i	12.260399	DEG
ω	203.20958	DEG	T_p	-4157.5762	SEC

Data Arc 4.4 Hrs Station Numbers 61

ORBIT DETERMINATION SUMMARY FOR _____ ELLIPSE

OD Identification Number _____
A3 Tape Number _____
Item Number _____
Epoch _____
State Vector (Selenographic True of Date Orbital Elements)

a		KM	Ω		DEG
e			i		DEG
ω		DEG	T_p		SEC

Data Arc _____ Hrs Station Numbers _____

POST-FLIGHT ORBIT DETERMINATION RESULTS FOR PHOTO SITE I-O

1. ODPL RESULTS (O.D. # 10A[illegible])

EPOCH: Aug 12 '66 08h 30m 59.534s

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = 2410.2346

y = -1529.7475

z = -1209.6808

ẋ = 0.41417405

ẏ = -1.0591760

ż = -0.30925012

HARMONICS USED: OD 4138

DATA USED:

STATION	DATA TYPE	FROM HRS MINS SECS, DAYS	TO HRS MINS SECS, DAYS
41	C3	08 31 32, 8/18	10 26 53, 8/18
12	C3, CC3	08 31 32, 8/18	22 11 32, 8/18
61	C3, CC3	08 31 31, 8/18	19 39 31, 8/18

2. RESULTS OF MAPPING

(ABOVE STATE VECTOR TO PREDICTED ACTUAL CAMERA-ON TIME - 1 MINUTE)

EPOCH: Aug 12 '66 14h 41m 45.560s

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = 546.38257

y = 1702.5318

z = 803.63953

ẋ = -1.7020047

ẏ = 0.53140546

ż = -0.22316317

HARMONICS USED: OD 4138

POST-FLIGHT ORBIT DETERMINATION RESULTS FOR PHOTO SITE II-3

1. ODPL RESULTS (O.D. # 70A1A2) (SAME AS SITE I-1)

EPOCH: AUG 22 '66 03h 07m 03.000

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = -546.470637

y = -3263.5294

z = -1393.0961

ẋ = 0.91473053

ẏ = -0.24130534

ż = 0.13219125

HARMONICS USED: 9/4/66 120

DATA USED:

STATION	DATA TYPE	FROM HRS MINS SECS, DAYS	TO HRS MINS SECS, DAYS
41	CC3	03 07 32, 8/22	12 30 32, 8/22
12	C3, CC3	03 09 32, 8/22	23 03 32, 8/22
61	C3, CC3	13 44 31, 8/22	22 01 31, 8/22

2. RESULTS OF MAPPING

(ABOVE STATE VECTOR TO PREDICTED-ACTUAL CAMERA-ON TIME - 1 MINUTE)

EPOCH: AUG 22 '66 08h 23m 13.002s

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = 304.23436

y = 1623.5385

z = 700.76356

ẋ = -1.8385494

ẏ = 0.42483012

ż = -0.28933572

HARMONICS USED: 9/4/66 420

POST-FLIGHT ORBIT DETERMINATION RESULTS FOR PHOTO SITE I-1

1. ODPL RESULTS (O.D. # [illegible])

EPOCH: AUG 21 '66 03h 07m 00.000s

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = -5740.47039

y = -3763.5294

z = -1823.0961

ẋ = 0.91423053

ẏ = -0.24130534

ż = 0.13319125

HARMONICS USED: 9/4/66 LRC

DATA USED:

STATION	DATA TYPE	FROM HRS MINS SECS, DAYS	TO HRS MINS SECS, DAYS
41	CC3	03 07 32, 8/22	12 30 32, 8/22
12	C3, CC3	03 09 32, 8/22	23 03 32, 8/22
61	C3, CC3	13 44 31, 8/22	22 01 31, 8/22

2. RESULTS OF MAPPING

(ABOVE STATE VECTOR TO PREDICTED ACTUAL CAMERA-ON TIME - 1 MINUTE)

EPOCH: AUG 22 '66 15h 21m 58.001s

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = 226.52631

y = 1640.1911

z = 686.95430

ẋ = -1.8484601

ẏ = 0.36554830

ż = -0.31492896

HARMONICS USED: 9/4/66 LRC

POST-FLIGHT ORBIT DETERMINATION RESULTS FOR PHOTO SITE I-2

1. ODM. RESULTS (O.D. # 90A142) (SAME AS SITE I-1)

EPOCH: AUG 22 '66 08h 07m 00.000s

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = -540.47039

y = -3263.5294

z = -1393.0961

ẋ = 0.91422053

ẏ = -0.24130534

ż = 0.13219125

HARMONICS USED: 9/4/66 LPC

DATA USED:

STATION	DATA TYPE	FROM HRS MINS SECS, DAYS	TO HRS MINS SECS, DAYS
41	C03	08 07 32, 8/22	12 30 32, 8/22
12	C3, C03	08 09 32, 8/22	23 03 32, 8/22
61	C3, C03	13 44 31, 8/22	22 01 31, 8/22

2. RESULTS OF MAPPING

(ABOVE STATE VECTOR TO PREDICTED ACTUAL CAMERA-ON TIME - 1 MINUTE)

EPOCH: AUG 22 '66 18h 49m 45.000s

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = 363.64969

y = 1609.1369

z = 708.27581

ẋ = -1.8299780

ẏ = 0.46803246

ż = -0.27114015

HARMONICS USED: 9/4/66 LPC

POST-FLIGHT ORBIT DETERMINATION RESULTS FOR PHOTO SITE I-3

1. ODPL RESULTS (O.D. # 90A3)

EPOCH: AUG 22 '66 $20^h 50^m 00^s.000$

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = +467.13190

y = -3316.7954

z = -1180.00202

ẋ = +0.91912761

ẏ = +0.14469007

ż = +0.27385334

HARMONICS USED: LRC 9/4/66

DATA USED:

STATION	DATA TYPE	FROM HRS MINS SECS, DAYS	TO HRS MINS SECS, DAYS
41	CC3	07 15 02.8/23	11 44 32 .8/23
12		20 52 32.8/22	06 04 02 .8/23
61		20 52 31 .8/22	21 49 31 .8/22

2. RESULTS OF MAPPING

(ABOVE STATE VECTOR TO PREDICTED ACTUAL CAMERA-ON TIME - 1 MINUTE)

EPOCH: AUG 23 '66 $08^h 45^m 03^s.000$

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = +450.96029

y = 1583.6238

z = 720.94648

ẋ = -1.8186804

ẏ = +0.52530529

ż = -0.22679557

HARMONICS USED: LRC 9/4/66

POST-FLIGHT ORBIT DETERMINATION RESULTS FOR PHOTO SITE II-5

1. ODPL RESULTS (O.D. # 70A425[illegible]2)

EPOCH: AUG 23 '66 21^h 20^m $00.^s000$

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = + 846.89508

y = - 3245.5720

z = - 1002.7054

$\dot{x}$ = + 0.88189008

$\dot{y}$ = + 0.29342669

$\dot{z}$ = + 0.34159402

HARMONICS USED: LPC 9/4/66

DATA USED:

STATION	DATA TYPE	FROM HRS MINS SECS, DAYS	TO HRS MINS SECS, DAYS
41	C3,CC3	05 09 22, 8/24	15 39 32, 8/24
12	C3,CC3	21 28 42, 8/23	06 39 42, 8/24
61	C3, CC3	21 20 11, 8/23	17 31 31, 8/24

2. RESULTS OF MAPPING

(ABOVE STATE VECTOR TO PREDICTED ACTUAL CAMERA-ON TIME - 1 MINUTE)

EPOCH: AUG 23 '66 22^h 38^m $56.^s000$

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = + 686.36361

y = + 1501.9973

z = + 745.87070

$\dot{x}$ = - 1.7470104

$\dot{y}$ = + 0.70955952

$\dot{z}$ = - 0.19000827

HARMONICS USED: LPC 9/4/66

POST-FLIGHT ORBIT DETERMINATION RESULTS FOR PHOTO SITE I-5

1. ODPL RESULTS (O.D. # 70A1B507)

EPOCH: AUG 23 '66 21h 20m 00s.000

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = +846.89508

y = −3245.5770

z = −1002.7054

ẋ = +0.88189008

ẏ = +0.29342669

ż = +0.34159402

HARMONICS USED: LRC 9/4/66

DATA USED:

STATION	DATA TYPE	FROM HRS MINS SECS, DAYS	TO HRS MINS SECS, DAYS
41	C3, CC3	05 09 22, 8/24	15 39 32, 8/24
12	C3, CC3	21 28 42, 8/23	06 39 42, 8/24
61	C3, CC3	21 20 11, 8/23	17 31 31, 8/24

2. RESULTS OF MAPPING

(ABOVE STATE VECTOR TO PREDICTED ACTUAL CAMERA-ON TIME - 1 MINUTE)

EPOCH: AUG 24 '66 09h 08m 30s.000

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = +421.17582

y = +1594.0828

z = +709.48688

ẋ = −1.8160797

ẏ = +0.51509567

ż = −0.28201244

HARMONICS USED: LRC 9/4/66

POST-FLIGHT ORBIT DETERMINATION RESULTS FOR PHOTO SITE II-7

1. ODTL RESULTS (O.D. # 2044)

EPOCH: Aug 23 '66 21h 20m 00.000s

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = +846.89508

y = -3245.5720

z = -1002.7054

ẋ = +0.88189008

ẏ = +0.27342664

ż = +0.34159402

HARMONICS USED: LRC 9/4/66

DATA USED:

STATION	DATA TYPE	FROM HRS MINS SECS, DAYS	TO HRS MINS SECS, DAYS
41	C3, CC3	05 09 22, 8/24	15 31 32, 8/24
12	C3, CC3	21 28 42, 8/23	06 37 42, 8/24
61	C3, CC3	21 20 11, 8/23	17 31 31, 8/24

2. RESULTS OF MAPPING

(ABOVE STATE VECTOR TO PREDICTED ACTUAL CAMERA-ON TIME - 1 MINUTE)

EPOCH: Aug 24 '66 16h 03m 03.000s

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = +795.27514

y = +1456.7385

z = +754.84489

ẋ = -1.79091441

ẏ = +0.78330990

ż = -0.15380016

HARMONICS USED: LRC 9/4/66

POST-FLIGHT ORBIT DETERMINATION RESULTS FOR PHOTO SITE I-5

1. ODPL RESULTS (O.D. # 90A5)

EPOCH: AUG 25 '66 $05^h 00^m 00^s.000$

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = +1777.3293

y = -2659.7390

z = -567.50575

ẋ = +0.68623552

ẏ = +0.72547320

ż = +0.44783657

HARMONICS USED: LRC 9/4/66

DATA USED:

STATION	DATA TYPE	FROM HRS MINS SECS, DAYS	TO HRS MINS SECS, DAYS
41	C3, CC3	06 35 22, 8/25	15 59 49, 8/25
12	CC3	05 00 22, 8/27	07 16 22, 8/25
61			

2. RESULTS OF MAPPING

(ABOVE STATE VECTOR TO PREDICTED CAMERA-ON TIME - 1 MINUTE)

EPOCH: AUG 25 '66 $13^h 01^m 03^s.300$

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = +385.36103

y = +1603.4329

z = +705.08439

ẋ = -1.8285610

ẏ = +0.47683880

ż = -0.27697562

HARMONICS USED: LRC 9/4/66

POST-FLIGHT ORBIT DETERMINATION RESULTS FOR PHOTO SITE II-6

1. ODPL RESULTS (O.D. #70AC3760)

EPOCH: AUG 26 '66 $17^h 34^m 00.^s 000$

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = -2261.8518

y = -1705.3230

z = -1177.4661

ẋ = +0.45237010

ẏ = -1.0368625

ż = -0.28315136

HARMONICS USED: LRC 9/4/66

DATA USED:

STATION	DATA TYPE	FROM HRS MINS SECS, DAYS	TO HRS MINS SECS, DAYS
41	C3, CC3	17 34 07 .8/26	11 28 17 .8/27
12	C3, CC3	00 15 37 .8/27	07 59 07 .8/27
61	C3, CC3	17 40 46 .8/26	00 43 56 .8/27

2. RESULTS OF MAPPING

(ABOVE STATE VECTOR TO PREDICTED ACTUAL CAMERA-ON TIME - 1 MINUTE)

EPOCH: AUG 26 '66 $23^h 31^m 35.^s 790$

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = -173.34692

y = +1674.9096

z = +588.22698

ẋ = -1.8639559

ẏ = +0.02503921

ż = -0.43234553

HARMONICS USED: LRC 9/4/66

POST-FLIGHT ORBIT DETERMINATION RESULTS FOR PHOTO SITE H9A

1. ODPL RESULTS (O.D. # 70A6B7010)

EPOCH: AUG 26 '66 $17^h 34^m 00^s.000$

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = -2261.8518

y = -1705.3230

z = -1177.4661

ẋ = +0.45237010

ẏ = -1.0368625

ż = -0.2831

HARMONICS USED: LRC 9/4/66

DATA USED:

STATION	DATA TYPE	FROM HRS MINS SECS, DAYS	TO HRS MINS SECS, DAYS
41	C3, CC3	17 34 07, 8/26	11 28 17, 8/27
12	C3, CC3	00 15 37, 8/27	07 59 07, 8/27
61	C3, CC3	17 40 46, 8/26	00 43 56, 8/27

2. RESULTS OF MAPPING

(ABOVE STATE VECTOR TO PREDICTED ACTUAL CAMERA-ON TIME - 1 MINUTE)

EPOCH: AUG 27 '66 $02^h 52^m 45^s.000$

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = 397.10786

y = 1600.0111

z = 694.76863

ẋ = -1.8339983

ẏ = 0.46231852

ż = -0.26116740

HARMONICS USED: LRC 9/4/66

POST-FLIGHT ORBIT DETERMINATION RESULTS FOR PHOTO SITE II-10

1. ODPL RESULTS (O.D. [illegible])

EPOCH: AUG 26 '66 17h [illegible]m 00s.000

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = -2267.8518

y = -1705.3230

z = -1177.4661

ẋ = +0.45237010

ẏ = -1.03688625

ż = -0.28315136

HARMONICS USED: LPC 9/4/66

DATA USED:

STATION	DATA TYPE	FROM HRS MINS SECS, DAYS	TO HRS MINS SECS, DAYS
41	C3,CC3	17 34 07 ,8/26	11 28 17 ,8/27
12	C3,CC3	00 15 37 ,8/27	07 59 07 ,8/27
61	C3,CC3	17 40 46 ,8/26	00 43 56 ,8/27

2. RESULTS OF MAPPING

(ABOVE STATE VECTOR TO PREDICTED ACTUAL CAMERA-ON TIME - 1 MINUTE)

EPOCH: AUG 27 05h 17m 36s.000

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = +552.82559

y = +1555.9404

z = +714.66053

ẋ = -1.7992132

ẏ = +0.57674245

ż = -0.21026311

HARMONICS USED: LPC 9/4/66

POST-FLIGHT ORBIT DETERMINATION RESULTS FOR PHOTO SITE II-9B

1. CDPL RESULTS (O.D. # 70AC[illegible])

EPOCH: AUG 26 '66 $17^h 34^m 00^s.000$

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = -2261.8518

y = -1705.3230

z = -1177.4661

ẋ = +0.45237010

ẏ = -1.03686 25

ż = -0.28315136

HARMONICS USED: LRC 9/4/66

DATA USED:

STATION	DATA TYPE	FROM HRS MINS SECS, DAYS	TO HRS MINS SECS, DAYS
41	C3, CC3	17 34 07, 8/26	11 28 17, 8/27
12	C3, CC3	00 15 37, 8/27	07 59 07, 8/27
61	C3, CC3	17 40 46, 8/26	00 43 56, 8/27

2. RESULTS OF MAPPING

(ABOVE STATE VECTOR TO PREDICTED ACTUAL CAMERA-ON TIME - 1 MINUTE)

EPOCH: AUG 27 '66 $09^h 46^m 24^s.000$

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = +277.87362

y = +1627.8741

z = +675.93054

ẋ = -1.8524193

ẏ = +0.37149457

ż = -0.30022137

HARMONICS USED: LRC 9/4/66

POST-FLIGHT ORBIT DETERMINATION RESULTS FOR PHOTO SITE II-11

1. ODPL RESULTS (O.D. # 90131A7)

EPOCH: 66080271 7,4100000

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = -2163.8794

y = -1895.6565

z = -1227.0327

ẋ = .52258430

ẏ = -.98310221

ż = -.24303919

HARMONICS USED: LANGLEY 9/4/66

DATA USED:

STATION	DATA TYPE	FROM HRS MINS SECS, DAYS	TO HRS MINS SECS, DAYS
41	C3, CC3	17 41 17.239	13 10 47.240
12	C3, CC3	02 20 57.240	09 24 27.240
61	C3, CC3	18 16 16.239	01 20 46.240

2. RESULTS OF MAPPING

(ABOVE STATE VECTOR TO PREDICTED ACTUAL CAMERA-ON TIME - 1 MINUTE)

EPOCH: 66080272 3,2954000

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = 452.73849

y = 1587.9349

z = 701.74333

ẋ = -1.8208368

ẏ = .50250819

ż = -.24789405

HARMONICS USED: LANGLEY 9/4/66

POST-FLIGHT ORBIT DETERMINATION RESULTS FOR PHOTO SITE H-7

1. ODPL RESULTS (O.D. # 90B11A7)

EPOCH: 66080271 7,4100000

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = -2163.8794

y = -1895.6565

z = -1227.0327

$\dot{x}$ = .52258430

$\dot{y}$ = -.98310221

$\dot{z}$ = -.24303919

HARMONICS USED: LANGLEY 9/4/66

DATA USED:

STATION	DATA TYPE	FROM HRS MINS SECS, DAYS	TO HRS MINS SECS, DAYS
41	C3, CC3	17 41 17.239	13 10 47.240
12	C3, CC3	02 20 57.240	09 24 27.240
61	C3, CC3	18 16 16.239	01 20 46.240

2. RESULTS OF MAPPING

(ABOVE STATE VECTOR TO PREDICTED ACTUAL CAMERA-ON TIME - 1 MINUTE)

EPOCH: 66080280 6,2700000

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = -53.688237

y = 1673.8085

z = 611.55214

$\dot{x}$ = -1.86675288

$\dot{y}$ = .11546498

$\dot{z}$ = -.40431089

HARMONICS USED: LANGLEY 9/4/66

POST-FLIGHT ORBIT DETERMINATION RESULTS FOR PHOTO SITE I-8.1

1. ODPL RESULTS (O.D. # 96A89)

EPOCH: 66080290030000

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = -2349.7105

y = -1420.0877

z = 1121.8696

ẋ = 0.34973363

ẏ = -1.11142411

ż = -0.33439001

HARMONICS USED: LRC 9/4/66

DATA USED:

STATION	DATA TYPE	FROM HRS MINS SECS, DAYS	TO HRS MINS SECS, DAYS
41	CC3	10 30 37 ,8/29	18 57 17 ,8/29
12	CC3	03 25 27 ,8/29	08 33 37 ,8/29
61	CC3	00 30 16 ,8/29	01 13 46 ,8/29

2. RESULTS OF MAPPING

(ABOVE STATE VECTOR TO PREDICTED ACTUAL CAMERA-ON TIME - 1 MINUTE)

EPOCH: AUG 29, '66 06h 30m 56s

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = -60.766561

y = 1673.2379

z = 618.17669

ẋ = -1.8625322

ẏ = 0.11556696

ż = -0.42923121

HARMONICS USED: LRC 9/4/66

POST-FLIGHT ORBIT DETERMINATION RESULTS FOR PHOTO SITE I-9.1A

1. ODTL RESULTS (O.D. # 90A7A9)

EPOCH: AUG 29 '66 $00^h 30^m 00.^s000$

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = -2349.7105

y = -1420.0877

z = 1121.8696

ẋ = 0.34993363

ẏ = -1.11142241

ż = -0.33439001

HARMONICS USED: LRC 9/4/66

DATA USED:

STATION	DATA TYPE	FROM HRS MINS SECS, DAYS	TO HRS MINS SECS, DAYS
41	CC3	10 30 37, 8/29	18 15 17, 8/29
12	CC3	03 25 27, 8/29	08 38 37, 8/29
61	CC3	00 30 16, 8/29	01 13 46, 8/29

2. RESULTS OF MAPPING

(ABOVE STATE VECTOR TO PREDICTED FUTURE CAMERA-ON TIME - 1 MINUTE)

EPOCH: AUG 29 '66 $09^h 55^m 40^s.002$

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = 111.02669

y = 1656.8418

z = 654.18166

ẋ = -1.8602602

ẏ = 0.24771987

ż = -0.36890757

HARMONICS USED: LRC 9/4/66

POST-FLIGHT ORBIT DETERMINATION RESULTS FOR PHOTO SITE I-9.1B

1. ODPL RESULTS (O.D. # 900847)

EPOCH: AUG 29 '66 00^h 30^m 00.000^s

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = -2349.7105

y = -1420.0877

z = 1121.8696

ẋ = 0.34993363

ẏ = -1.11142141

ż = -0.33439001

HARMONICS USED: LRC 9/4/66

DATA USED:

STATION	DATA TYPE	FROM HRS MINS SECS, DAYS	TO HRS MINS SECS, DAYS
41	CC3	10 30 37, 8/29	18 15 17, 8/29
12	CC3	03 25 27, 8/29	08 33 37, 8/29
61	CC3	00 30 16, 8/29	01 13 46, 8/29

2. RESULTS OF MAPPING

(ABOVE STATE VECTOR TO PREDICTED FUTURE CAMERA-ON TIME - 1 MINUTE)

EPOCH: AUG 29 '66 13^h 22^m 19.002^s

STATE VECTOR: (SELENOCENTRIC 1950.0) (KM, KM/SEC)

x = 68.574071

y = 1662.4940

z = 645.27078

ẋ = -1.8618088

ẏ = 0.21457257

ż = -0.38214458

HARMONICS USED: LRC 9/4/66

STATE VECTORS USED FOR LOW-PRIORITY PHOTOS
(SELENOCENTRIC 1950.0)

State Vector For	Position (X, Y, Z) Velocity ($\dot{X}$, $\dot{Y}$, $\dot{Z}$)	Epoch
4150	-1789.0002, 1261.4638, 40.484551 -1.1387988, -0.97979935, -0.67035881	8/19/66, 09:13:52.012
Predicted Post-1st Transfer	-92.069352, -3340.5609, -1308.0707 0.93040545, -0.0719151855, 0.20423912	8/21/66, 09:50:58.094
Predicted Post-2nd Transfer	2342.1634, -393.973573, 432.05288 -0.3424879, 1.3840836, 0.43881577	8/25/66, 16:01:29.151

LRC HARMONICS

Dated 9-4-66

KM = 4902.78

J_{20}	0.2048	-3			
J_{30}	-0.9048	-4			
J_{40}	-0.2055	-4			
C_{21}	-0.1398	-4	S_{21}	-0.6512	-5
C_{31}	0.2358	-4	S_{31}	0.1555	-4
C_{41}	-0.7139	-5	S_{41}	-0.9304	-5
C_{22}	0.2445	-4	S_{22}	-0.3747	-5
C_{32}	0.3840	-5	S_{32}	0.1339	-4
C_{42}	0.2229	-5	S_{42}	0.2928	-5
C_{33}	0.1888	-5	S_{33}	-0.7343	-6
C_{43}	0.1073	-5	S_{43}	0.6450	-6
C_{44}	-0.2428	-7	S_{44}	-0.3438	-6

FRAME SEQUENCE, EXPOSURE, AND TIME

FRAME	SITE	ORBIT/ SEQUENCE	SHUTTER SPEED	S/C TIME	EXPOSURE TIME (GMT)
5	I-0	26/ 1/16	1/50	45244.2	230:14:42:49.9
6		2/16		45254.1	230:14:42:59.8
7		3/16		45264.0	230:14:43:09.7
8		4/16		45273.8	230:14:43:19.5
9		5/16		45283.5	230:14:43:29.2
10		6/16		45293.5	230:14:43:39.2
11		7/16		45303.4	230:14:43:49.0
12		8/16		45313.2	230:14:43:58.9
13		9/16		45323.0	230:14:44:08.7
14		10/16		45332.8	230:14:44:18.5
15		11/16		45342.7	230:14:44:28.4
16		12/16		45352.4	230:14:44:38.1
17		13/16		45362.2	230:14:44:47.9
18		14/16		45372.0	230:14:44:57.7
19		15/16		45381.7	230:14:45:07.4
20		16/16		45391.5	230:14:45:17.2
21		1/4		45477.0	230:14:46:42.7
22		2/4		45487.1	230:14:46:52.8
23		3/4		45497.3	230:14:47:03.0
24	I-0	4/4		45507.4	230:14:47:13.1
25	FS (Film Set)	28/ 1/1		71259.3	230:21:56:25.0
26	FS	30/ 1/1		97350.5	231:05:11:16.2
27	FS	31/ 1/1		05541.4	231:08:48:44.6
28	Farside	33/ 1/1		35337.7	231:17:05:21.0
29	FS	35/ 1/1		57728.5	231:23:18:31.8
30	Farside	37/ 1/1	1/50	87517.6	232:07:35:00.8
31	Film Advance	39/ 1/1	1/25	04978.5	232:13:46:59.3

FRAME	SITE	ORBIT/ SEQUENCE	SHUTTER SPEED	S/C TIME	EXPOSURE TIME (GMT)
32	Film Advance	39/ 1/1	1/25	05012.4	232:13:47:33.2
33		1/1		05131.0	232:13:49:31.8
34	Film Advance	1/1	1/25	05156.2	232:13:49:57.0
35	BS	39/ 1/4	1/50	08880.2	232:14:52:01.0
36		2/4		08893.4	232:14:52:14.2
37		3/4		09009.1	232:14:54:09.9
38		4/4		09022.3	232:14:54:23.1
39		1/2		09240.3	232:14:58:01.1
40	BS	2/2		09448.7	232:14:58:09.5
41	FS	41/ 1/1		30996.0	232:21:00:36.9
42	FS	43/ 1/1		57040.0	233:04:14:40.8
43	FS	1/1	1/50	No Time Code	(Door Closed)
44	FS	1/ 1/1	1/25	83039.5	233:11:28:00.3
45	FS	1/1	1/50	No Time Code	(Door Closed)
46	FS	3/ 1/1	1/50	03084.3	233:18:23:02.7
47	FS	1/1	1/50	03091.2	233:18:23:09.6
48	B-2	5/ 1/1	1/25	28272.5	234:01:22:50.9
49	B-2	1/1	1/25	28285.6	234:01:23:04.0
50	FS	7/ 1/1	1/50	53554.8	234:08:24:13.1
51	FS	1/1		53561.5	234:08:24:19.8
52	I-1	9/ 1/16		78680.2	234:15:22:58.6
53		2/16		78682.6	234:15:23:01.0
54		3/16		78685.0	234:15:23:03.4
55		4/16		78687.4	234:15:23:05.8
56		5/16		78689.8	234:15:23:08.2
57		6/16		78692.3	234:15:23:10.7
58		7/16		78694.7	234:15:23:13.1
59	I-1	8/16	1/50	78697.1	234:15:23:15.5

FRAME	SITE	ORBIT/ SEQUENCE	SHUTTER SPEED	S/C TIME	EXPOSURE TIME (GMT)
60	I-1	9/ 9/16	1/50	78699.6	234:15:23:18.0
61		10/16		78702.0	234:15:23:20.4
62		11/16		78704.5	234:15:23:22.9
63		12/16		78706.9	234:15:23:25.3
64		13/16		78709.4	234:15:23:27.8
65		14/16		78711.8	234:15:23:30.2
66		15/16		78714.3	234:15:23:32.7
67	I-1	16/16		78716.8	234:15:23:35.2
68	I-2	10/ 1/16		91146.9	234:18:50:45.2
69		2/16		91149.3	234:18:50:47.6
70		3/16		91151.7	234:18:50:50.0
71		4/16		91154.1	234:18:50:52.4
72		5/16		91156.5	234:18:50:54.8
73		6/16		91158.9	234:18:50:57.2
74		7/16		91161.3	234:18:50:59.6
75		8/16		91163.7	234:18:51:02.0
76		9/16		91166.1	234:18:51:04.4
77		10/16		91168.5	234:18:51:06.8
78		11/16		91170.9	234:18:51:09.2
79		12/16		91173.3	234:18:51:11.6
80		13/16		91175.7	234:18:51:14.0
81		14/16		91178.1	234:18:51:16.4
82		15/16		91180.5	234:18:51:18.8
83	I-2	16/16	1/50	91182.9	234:18:51:21.2
84	FS	12/ 1/1	1/25	11110.4	235:01:44:26.3
85	I-3	14/ 1/16		36425.4	235:08:46:21.3
86		2/16		36427.9	235:08:46:23.8
87		3/16		36430.3	235:08:46:26.2
88	I-3	4/16	1/25	36432.8	235:08:46:28.7

FRAME	SITE	ORBIT/ SEQUENCE	SHUTTER SPEED	S/C TIME	EXPOSURE TIME (GMT)
89	I-3	14/ 5/16	1/25	36435.2	235:08:46:31.1
90		6/16		36437.7	235:08:46:33.6
91		7/16		36440.1	235:08:46:36.0
92		8/16		36442.6	235:08:46:38.5
93		9/16		36445.0	235:08:46:40.9
94		10/16		36447.5	235:08:46:43.4
95		11/16		36449.9	235:08:46:45.8
96		12/16		36452.3	235:08:46:48.2
97		13/16		36454.8	235:08:46:50.7
98		14/16		36457.2	235:08:46:53.1
99		15/16		36459.6	235:08:46:55.5
100	I-3	16/16	1/25	36462.1	235:08:46:58.0
101	FS	15/ 1/1	1/100	No Time Code	(Door Closed)
102	Earth	16/ 1/1	1/100	64627.8	235:16:36:23.6
103	B-5	18/ 1/1	1/25	86441.0	235:22:39:56.8
104	Test	19/ 1/1	1/50	No Time Code	(Door Closed)
105	I-4	21/ 1/8		19358.2	236:09:09:31.6
106		2/8		19367.5	236:09:09:40.9
107		3/8		19376.7	236:09:09:50.1
108		4/8		19385.8	236:09:09:59.2
109		5/8		19394.9	236:09:10:08.3
110		6/8		19403.9	236:09:10:17.3
111		7/8		19412.9	236:09:10:26.3
112	I-4	8/8	1/50	19422.0	236:09:10:35.4
113	B-7	23/ 1/1	1/25	44229.6	236:16:04:03.1
114	B-7	1/1	1/25	44236.3	236:16:04:09.8
115	B-5	25/ 1/1	1/50	No Time Code	237:00:05:55.0 (Predicted)
116	B-5	1/1	1/50	73367.5	237:00:09:40.9

FRAME	SITE	ORBIT/ SEQUENCE	SHUTTER SPEED	S/C TIME	EXPOSURE TIME (GMT)
117	Earth	27/ 1/1	1/50	98887.5	237:07:15:00.9
118	I-5	29/ 1/16		14854.1	237:13:02:05.0
119		2/16		14856.3	237:13:02:07.2
120		3/16		14858.6	237:13:02:09.5
121		4/16		14860.9	237:13:02:11.8
122		5/16		14863.2	237:13:02:14.1
123		6/16		14865.4	237:13:02:16.3
124		7/16		14867.7	237:13:02:18.6
125		8/16		14869.9	237:13:02:20.8
126		9/16		14872.2	237:13:02:23.1
127		10/16		14874.5	237:13:02:25.4
128		11/16		14876.7	237:13:02:27.6
129		12/16		14879.0	237:13:02:29.9
130		13/16		14881.2	237:13:02:32.1
131		14/16		14883.4	237:13:02:34.3
132		15/16		14885.7	237:13:02:36.6
133	I-5	16/16	1/50	14887.8	237:13:02:38.7
134	B-8	31/ 1/1	1/25	39629.9	237:19:55:00.8
135	B-8	32/ 1/1	1/25	52027.9	237:23:21:38.8
136	BS	33/ 1/1	1/50	68044.8	238:03:48:35.7
137	-36° Pitch	34/ 1/1	1/50	76800.0	238:06:14:30.9
138	FS	35/ 1/1	1/50	89225.0	238:09:41:35.9
139	FS	37/ 1/1	1/50	09150.5	238:16:34:39.0
140	FS	38/ 1/1	1/50	21543.0	238:20:01:11.5
141	I-6	39/ 1/8	1/100	34216.2	238:23:32:24.7
142		2/8	1/100	34224.9	238:23:32:33.4
143		3/8	1/100	34233.7	238:23:32:42.2
144		4/8	8 Slow	34242.6	238:23:32:51.06
145	I-6	5/8	1/100	34251.7	238:23:33:00.2

FRAME	SITE	ORBIT/ SEQUENCE	SHUTTER SPEED	S/C TIME	EXPOSURE TIME (GMT)
146	I-6	39/ 6/8	1/100	34261.0	238:23:33:09.5
147		7/8	8 Slow	34270.7	238:23:33:19.2
148	I-6	8/8	1/100	34280.4	238:23:33:28.9
149	B-9	40/ 1/1	1/50	46288.7	239:02:53:37.1
150	B-10	41/ 1/1	1/50	58589.8	239:06:18:38.3
151	B-10	42/ 1/1	1/50	71116.5	239:09:47:24.9
152	FS	44/ 1/1	D.C.	99472.4	(Door Closed)
153	B-11	46/ 1/4	1/25	15668.7	239:23:30:54.7
154		2/4	4 Slow	15678.7	239:23:31:04.7
155		3/4		15688.6	239:23:31:14.6
156	B-11	4/4	1/25	15698.6	239:23:31:24.6
157	I-7	48/ 1/16	1/50	40712.3	240:06:28:18.3
158		2/16		40714.5	240:06:28:20.5
159		3/16		40716.7	240:06:28:22.7
160		4/16		40718.8	240:06:28:24.8
161		5/16		40721.0	240:06:28:27.0
162		6/16		40723.2	240:06:28:29.2
163		7/16		40725.5	240:06:28:31.5
164		8/16		40727.7	240:06:28:33.7
165		9/16	16 Fast	40729.9	240:06:28:35.9
166		10/16		40732.1	240:06:28:38.1
167		11/16		40734.4	240:06:28:40.4
168		12/16		40736.6	240:06:28:42.6
169		13/16		40738.9	240:06:28:44.9
170		14/16		40741.2	240:06:28:47.2
171		15/16		40743.5	240:06:28:49.5
172	I-7	16/16	1/50	40745.8	240:06:28:51.8
173	FS	50/ 1/1	1/50	65532.6	240:13:21:58.6
174	FS Term.	52/ 1/1	1/25	89714.8	240:20:06:00.8

FRAME	SITE	ORBIT/ SEQUENCE	SHUTTER SPEED	S/C TIME	EXPOSURE TIME (GMT)
175	FS	54/ 1/1	1/50	10092.3	241:03:05:35.9
176	I-8.1	55/ 1/8	1/50	22475.5	241:06:31:59.1
177		2/8		22477.7	241:06:32:01.3
178		3/8		22480.0	241:06:32:03.6
179		4/8		22482.2	241:06:32:05.8
180		5/8	8 Fast	22484.5	241:06:32:08.1
181		6/8		22486.7	241:06:32:10.3
182		7/8		22489.0	241:06:32:12.6
183	I-8.1	8/8	1/50	22491.3	241:06:32:14.9
184	I-9.2a	56/ 1/16	1/50	34760.3	241:09:56:43.8
185		2/16		34762.4	241:09:56:45.9
186		3/16		34764.5	241:09:56:48.0
187		4/16		34766.6	241:09:56:50.1
188		5/16		34768.7	241:09:56:52.2
189		6/16		34770.8	241:09:56:54.3
190		7/17		34772.9	241:09:56:56.4
191		8/16		34775.0	241:09:56:58.5
192		9/16	16 Fast	34777.1	241:09:57:00.6
193		10/16		34779.2	241:09:57:02.7
194		11/16		34781.3	241:09:57:04.8
195		12/16		34783.4	241:09:57:06.9
196		13/16		34785.5	241:09:57:09.0
197		14/16		34787.6	241:09:57:11.1
198		15/16		34789.8	241:09:57:13.3
199	I-9.2a	16/16	1/50	34791.9	241:09:57:15.4

FRAME	SITE	ORBIT/ SEQUENCE	SHUTTER SPEED	S/C TIME	EXPOSURE TIME (GMT)
200	I-9.2b	57/ 1/16	1/50	47167.0	241:13:23:30.5
201		2/16		47169.1	241:13:23:32.6
202		3/16		47171.2	241:13:23:34.7
203		4/16		47173.3	241:13:23:36.8
204		5/16		47175.5	241:13:23:39.0
205		6/16		47177.7	241:13:23:41.2
206		7/16	16 Fast	47179.8	241:13:23:43.3
207		8/16		47182.0	241:13:23:45.5
208		9/16		47184.2	241:13:23:47.7
209		10/16		47186.3	241:13:23:49.8
210		11/16		47188.5	241:13:23:52.0
211		12/16		47190.6	241:13:23:54.1
212		13/16	1/50	47192.8	241:13:23:56.3
213		14/16		47194.9	241:13:23:58.4
214		15/16		47197.1	241:13:24:00.6
215	I-9.2b	16/16	1/50	47199.3	241:13:24:02.8

Appendix C

MISSION SEQUENCE OF EVENTS

The following lists the significant events that occurred during Mission I.

DAY	GMT	EVENT	REMARKS
222	08:30:00.00	FPAC began prelaunch checkout of software system	
222	10:36:00.00	Countdown started	T-455
222	11:07:00.00	Spacecraft power turned on	
222	11:30:36.00	Inertial REF unit turned on	
222	12:03:14.00	Accelerometer turned on	
222	14:05:21.00	Velocity control system test	
222	15:23:00.00	Air conditioner unit supplying air to spacecraft malfunctioned	T-170
222	15:31:00.00	Equipment mounting deck temperature 54.5°F	Equipment mounting deck temperature continued to cycle into alarm area during countdown due to faulty Lockheed cooler.
222	15:37:00.00	Equipment mounting deck temperature 57.0°F	
222	16:04:00.00	Began tower removal	T-125
222	16:05:00.00	Tower removal deferred until EMD temperature problem solved	
222	16:30:00.00	10-minute hold	
222	16:36:00.00	Countdown resumed after 6-minute hold	T-95
222	16:43:00.00	Equipment mounting deck temperature at 51.0°F	
222	17:07:00.00	Resumed tower removal	
222	17:29:00.00	Equipment mounting deck temperature 49.5°F and climbing	System was reestablished and temperature began to drop.

DAY	GMT	EVENT	REMARKS
222	17:30:00.00	Humidity level on air conditioner exceeded limit	Operator dumped air conditioner air and went on N_2 purge.
222	17:41:00.00	Again lost cooler	
222	17:55:00.00	Held count	
222	18:01:00.00	Resumed count	T-60
222	18:09:00.00	Equipment mounting deck temperature 47.0°F	
222	18:26:00.00	Held count to permit pressurizing of Agena fuel tanks	
222	18:34:00.00	Additional 10-minute hold begun	
222	18:39:00.00	Count resumed	T-35
222	17:03:00.00	Verified launch plan 10H loaded — azimuth 99.9 degrees	T-11
222	19:09:00.00	10-minute hold	T-7
222	19:23:00.00	Spacecraft clock started	
222	19:25:00.00	All systems GO	T-1
222	19:26:00.71	Liftoff	
222	19:28:09.50	Booster engine cutoff	
222	19:28:12.50	Jettison booster	
222	19:30:31.90	Start D-timer	
222	19:30:51.60	Sustainer engine cutoff	
222	19:31:12.68	Atlas vernier engine cutoff	
222	19:31:15.00	Jettison shroud	
222	19:31:17.18	Atlas-Agena separation	
222	19:32:09.00	Agena first burn	154.5-second duration
222	19:34:43.00	Parking orbit injection	
222	19:58:17.00	DSS-51 one-way lock	
222	20:02:35.00	Agena second burn	89-second duration
222	20:04:02.95	Cislunar injection	
222	20:06:48.00	Spacecraft separation	

DAY	GMT	EVENT	REMARKS
222	20:06:51.00	Agena Yaw Maneuver	
222	20:13:38.00	DSS-41 one-way lock	
222	20:15:08.00	High-gain antenna deployed	
222	20:15:54.00	Low-gain antenna deployed Solar panels deployed	
222	20:22:03.00	Initial Sun acquisition	
222	20:25:00.00	DSS-41 two-way lock	
222	20:45:00.00	First real-time command sent and executed	
222	21:15:00.00	Press conference at AFETR	
222	21:45:00.00	4-hour drift test began	
222	21:51:00.00	Spacecraft producing 390 watts Batteries charging normally	
223	02:16:00.00	Star tracker turned on by stored command. Roll initiated.	
223	02:14:57.00	Canopus tracker on	
223	07:21:29.00	Initial Canopus acquisition attempt	Failed, as did all subsequent attempts until spacecraft in Moon's shadow
223	15:09:00.00	Canopus tracked and acquired the Moon	
223	23:00:30.40	Began maneuvers for first midcourse correction	
224	00:00:12.80	Started burn for first midcourse maneuver	ΔV: 37.83 m/sec. Roll: +73.35 degrees Pitch: -25.24 degrees Maneuver successful to high degree making 32.1 sec midcourse burn as required
224	00:00:44.90	Ended midcourse burn	
224	13:00:00.00	First successful ranging	

DAY	GMT	EVENT	REMARKS
225	06:55:00.00	Bright-object sensor of Canopus tracker closed, indicating that tracker was functioning properly	
226	15:28:18.00	Began maneuvers for lunar orbit injection	
226	14:34:28.00	Began burn for initial lunar orbit injection	
226	15:37:07.10	Ended burn for initial lunar orbit injection	First readings indicated: Perilune: 203.21 km Apolune: 1852.10 km Period: 217.58 min
227	15:09:09.00	Readout began on test pattern	Framelets 505-553 readout
230	14:37:37.00	Began attitude maneuvers for Site I-0 photo sequence	+3.6-degree Roll +12.5-degree Yaw -8.1-degree Pitch
230	14:40:18.00	Ended attitude maneuver	
230	14:41:04.00 14:42:49.90 14:46:52.76	Opened camera door Exposed Frame 5 Exposed Frame 22	Altitude 214 km
230	14:47:59.00	Closed camera door	
230	14:48:02.00	Began reverse maneuver	
230	14:50:34.00	Completed reverse maneuver	
230	19:50:42.00	Began initial priority readout	DSS-12, 61
230	19:51:00.00	DSS-61 receiving good picture quality as of Site I-0	
231	10:12:00.00	Priority readout sequence 5, Orbit 31-32, received DSS-61 NOTE: Priority readouts continued intermittently throughout entire mission. Results were excellent for medium-resolution frames, poor for high-resolution frames, for reasons noted in the body of this report.	

DAY	GMT	EVENT	REMARKS
231	17:05:20.85	Exposed Frame 28 for photo of farside of Moon	
233	09:41:58.00	Began altitude maneuver for transfer from first to second ellipse.	ΔV: 40.2 m/sec Roll: +43.4 degrees Pitch: +25.3 degrees
233	09:49:58.70	Began engine burn for orbit transfer	
233	09:50:71.10	Ended engine burn for orbit transfer	First readings indicated: Perilune: 57.92 km Apolune: 1857.82 km Period: 209.00 min Inclination: 12.35 degrees
233	09:33:10.00	Began reverse maneuver	
233	09:54:52.00	Ended reverse maneuver	
234	15:22:56.80	Exposed Frame 52 beginning of Site I-1 pass	Altitude 54.28 km
234	15:23:35.20	Exposed Frame 67, end of Site I-1 pass	
234	18:50:45.20	Exposed Frame 68, beginning Site I-2 pass	Altitude 53.62 km
234	18:51:21.20	Exposed Frame 83, end of Site I-2 pass	
235	08:46:21.30	Exposed Frame 85, beginning of Site I-3 pass	Altitude 54.08 km
235	08:46:58.00	Exposed Frame No. 100 End of Site I-3 pass	
235	16:36:23.60	Exposed Frame 102 from farside photography lunascape and planet Earth	
235	22:39:56.80	Exposed Frame 103 over Site B-5	
236	09:09:31.10	Exposed Frame 105, beginning of Site I-4 pass	Altitude 52.4 km
236	09:10:26.30	Exposed Frame 112, end of Site I-4 pass	
236	16:04:03.1	Exposed Frame 113 and (6.7 seconds later) Frame 114 over Site B-7	

DAY	GMT	EVENT	REMARKS
237	07:15:00.90	Exposed Frame 117 for second Earth photo	
237	13:02:05.00	Exposed Frame 118, beginning of Site I-5 pass	Altitude 50.4 km
237	13:02:38.70	Exposed Frame 133, end of Site I-5 pass	
237	15:44:29.30	Began attitude maneuver to transfer to lower orbit to attempt a maximum V/H of 70.050 rod/sec	
237	16:09:58.6	Ended attitude maneuver	ΔV: -5.43 m/sec Roll: +34.2 degrees Pitch: -129.7 degrees
238	23:32:24.70	Exposed Frame 141, beginning of Site I-6 pass	Altitude 51.1 km
238	23:33:28.90	Exposed Frame 148, end of Site I-6 pass	
240	06:28:18.30	Exposed Frame 157, beginning of Site I-7 pass	Altitude 49.7 km
240	06:28:51.80	Exposed Frame 172, end of Site I-7 pass	
241	06:31:59.1	Exposed Frame 176, beginning of Site I-8.1 pass	Altitude 49.2 km
241	06:32:14.90	Exposed Frame 183, end of Site I-8.1 pass	
241	09:56:43.80	Exposed Frame 184, beginning of Site I-9.2a pass	Altitude 46.5 km
241	09:57:15.40	Exposed Frame 199, end of Site I-9.2a pass	
241	13:23:30.50	Exposed Frame 200, beginning of Site I-9.2b pass	Altitude 47.5 km
241	13:24:02.80	Exposed Frame 215, end of Site I-9.2b pass	
242	18:14:39.00	Bimat cut	
242	18:23:46.00	Bimat cleared	
242	20:46:14.00	Final readout began at Goldstone	MR Frame 215
257	02:59:40.00	Final readout of actual photos completed at Goldstone	HR Frame 6 (Double exposure)

DAY	GMT	EVENT	REMARKS
257	20:02:02.00	Goldstone readout of pre-exposed test strip	
258	15:30:01.00	End of takeup	
260	12:23:00	Start of Extended Mission	

Appendix D

ASSESSMENT SUMMARY OF LUNAR ORBITER I ANOMALIES

These data were presented at the flight readiness review of the second flight spacecraft held at Cape Kennedy on October 17, 18, and 19, 1966. They are presented here by agreement between C. Nelson, NASA, and R. J. Helberg, Boeing, as a record of that meeting.

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APPENDICES
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The Boeing Company
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Pages ii and iii: In the Contents, delete the last four lines on page ii and all of page iii, inasmuch as appendices D and E are not included in this volume.