MICROFILM 7 7 6 9 0 0 0 0 0 1

PLANNING SHEET

REFERENCE DOCUMENT	WSC	ED	CEI	JC NUMBER
S 6444 B-4	23A	S	FT-50	98096.00

TASK DESCRIPTION: SSV TCE AND DEBRIS ASSESSMENT

MOD

PROJECT WORK ORDER NO.	HAZARD	LSOC SAFETY	
	☒ YES ☐ NO	N/A TOTAL BOOK	☐ LOCAL COPY ☒ FIRING ROOM COPY

CRITICAL SKILLS: SEE APPLICABLE OMI'S	MATERIAL & EQUIPMENT:	MICR REQ'D
	☐ YES ☐ NO	☐ FLIGHT ☐ SUPPORT ☐ NONE

PERFORM THE FOLLOWING.

PRE OPS SETUPS

NUMBER	SEQ	STEPS	NUMBER	SEQ	STEPS
ALL	ALL	ALL			

OPS SUPPORT

NUMBER	SEQ	STEPS	NUMBER	SEQ	STEPS
N/A					

OPERATING INSTRUCTIONS

TASK NO.	SEQ	STEPS
	ALL	ALL

HI-LSO CM PROCESSING

CVA	MC	VADPS	DCMRP	OMMBPS
N/A TASK NO.				

POST OPS

NUMBER	SEQ	STEPS
ALL	ALL	ALL

APPENDICES

SEQ	STEPS
ALL	

SUBTASK OMI'S

NUMBER	SEQ	STEPS	NUMBER	SEQ	STEPS
N/A					

STS-50
#061, #1

PLANNER	EXT	QC CLOSURE	DATE	PAGE
[illegible]	[illegible]	[illegible]	[illegible]	1 OF 1

7 7 6 9 0 0 0 0 0 2

OMI TASK CLOSEOUT CHECKLIST

OMI NO.	RUN NO	CONTROL NO.
S 6444 B-4	1	98096.00
START DATE	**COMPLETION DATE**	**CLOSURE DATE**
6-24-92	① ~~6~~ 7-2-92	

		QC	DATE
1.	DEVIATION INDEX: VERIFY TOTAL NUMBER OF DEVIATIONS AGREE WITH INDEX.	ET 03	7-2-92
2.	DEVIATIONS: VERIFY PROPER APPROVAL SIGNATURES, OMI VOLUME, REV AND CONTROL NUMBER ARE RECORDED AND THAT ENTRY INTO OMI IS PROPER.	ET 03	7-2-92
3.	CONSTRAINTS LIST: VERIFY ALL CONSTRAINTS ARE ACCEPTED BY QC OR WAIVERED BY ENGINEERING. VERIFY THAT CONSTRAINTS LIST IS COMPLETE AND CLOSED.	N/A	
4.	IPR'S: VERIFY THAT IPR'S ARE CLOSED OR UPGRADED TO PROBLEM REPORTS OR DISPOSITIONED AS NO CONSTRAINT TO OMI CLOSURE AND INCORPORATED IN CENTRAL IPR SYSTEM AND A COPY OF THE CENTRAL IPR SORT ATTACHED.	ET 03	7-2-92
5.	VERIFY THAT MATERIAL AND EQUIPMENT REQUIREMENT LIST ENCLOSED (IF APPLICABLE).	ET 03	7-2-92
6.	OMI: VERIFY THAT ALL PAGES OR VERIFICATION SHEETS ARE COMPLETED, STAMPED, AND DATED IN THE LOWER LEFT/RIGHT HAND CORNERS.	ET 03	7-2-92
7.	OMI SECTION I OMRS LISTING STAMPED AND TRANSMITTED.	ET 03	7-2-92
8.	OMI: VERIFY THAT ALL MISCELLANEOUS DOCUMENTS/PROCEDURES HAVE SEQUENCE NUMBER REFERENCED AND STAMPED, E.G., PHOTOS, SAMPLE RESULTS, ETC.	ET 03	7-2-92
9.	TEST DATA SHEETS: WHEN REQUIRED BY OMI VERIFY THAT ALL DATA SHEETS ARE COMPLETED AND SIGNED.	N/A	
10.	PLANNED TASK/OMI SATISFACTORILY COMPLETED. OPR: Randy Hale 1.90C.56 ET 03 7-2-92		
11.	TIME & CYCLE DATA: VERIFY TIME/CYCLE DATA REPORTS ARE INCLUDED/UPDATED AS APPLICABLE.	N/A	
12.	INSTALLATION AND REMOVAL RECORDS COMPLETED PER OMI.	N/A	
13.	LSS REVIEW PRIOR TO CLOSURE FOR CIL OMI'S MMC _____ USBI _____ THIOKOL _____		

KSC FORM 8-471 (REV. 10/87)

*Contacted WC 118

QC FILE 7-2-92

7 7 6 0 0 0 0 0 0 0 3

DATE: 01-03-90

CHI NO. - S6444
REV. - B

Inc B-1
Inc B-2
Inc B-3
Inc B-4

```
*****************************************************************
*                                                               *
*              SSV ICE AND DEBRIS ASSESSMENT                    *
*                                                               *
*****************************************************************
* EFFECTIVITY                CATEGORY: B                        *
*                                      HS-STVBAD                *
*    CENTER:    KSC                                             *
*                               SYSTEM:   TPS                   *
*    SITE: LC 39                                                *
*                                                               *
*    VEHICLE:   ET 23 & SUBS                                    *
*                                                               *
*    FLOW: ALL                                                  *
*                                                               *
*   DESIGN CENTER CONCURRENCE:      MSFC/JSC                    *
*****************************************************************
```

THIS DOCUMENT CONTAINS HAZARDOUS OPERATIONS

NASA
National Aeronautics and Space Administration

Kennedy Space Center

SPACE SHUTTLE

KSC FORM 23-562C (REV. 6/90) PREVIOUS EDITIONS ARE OBSOLETE

7 7 6 9 0 1 0 0 7 4

OMI NO. - S6444
REV. - B-4

DATE: 10-23-91

LOCKHEED SPACE OPERATIONS COMPANY

```
*************************************************************
*                                                           *
*            SSV ICE AND DEBRIS ASSESSMENT                  *
*                                                           *
*************************************************************
*  EFFECTIVITY                CATEGORY: B                   *
*                                       HB-STVBAD           *
*    CENTER:    KSC                                         *
*                               SYSTEM:   TPS               *
*    SITE: LC 39                                            *
*                                                           *
*    VEHICLE:   ET 42 & SUBS                                *
*                                                           *
*    FLOW: ALL                                              *
*                                                           *
*   DESIGN CENTER CONCURRENCE:       MSFC/JSC               *
*************************************************************
```

-3

PREPARED BY:

Joanne M. Karas 10-24-91
SOC TEST DOCUMENTATION

APPROVED BY:

CONTRACTOR

H E Shaw 10/24/91
SPC SAFETY ENGINEERING

THIS PROCEDURE CONTAINS HAZARDOUS OPERATIONS

DATE: 08-16-91

OMI NO. - S6444
REV. - B-3

LOCKHEED SPACE OPERATIONS COMPANY

```
*****************************************************************
*                                                               *
*              SSV ICE AND DEBRIS ASSESSMENT                    *
*                                                               *
*****************************************************************
*  EFFECTIVITY                CATEGORY: B                       *
*                                       HB-STVBAD               *
*    CENTER:    KSC                                             *
*                             SYSTEM:   TPS                     *
*    SITE: LC 39                                                *
*                                                               *
*    VEHICLE:   ET 42 & SUBS                                    *
*                                                               *
*    FLOW: ALL                                                  *
*                                                               *
*   DESIGN CENTER CONCURRENCE:        MSFC/JSC                  *
*****************************************************************
```

-3

PREPARED BY:

Charles W. Hackney

LSOC TEST DOCUMENTATION

APPROVED BY:

CONTRACTOR

H E Shaw 9-4-91

SPC SAFETY ENGINEERING

THIS PROCEDURE CONTAINS HAZARDOUS OPERATIONS

7 7 6 0 0 0 0 0 0 6

DATE: 06-03-91

OMI NO. - S6444
REV. - B-2

LOCKHEED SPACE OPERATIONS COMPANY

****
*
* SSV ICE AND DEBRIS ASSESSMENT *
*
****
* EFFECTIVITY CATEGORY: B *
* HB-STVBAD *
* CENTER: KSC *
* SYSTEM: TPS *
* SITE: LC 39 *
* VEHICLE: ET 23 & SUBS *
* FLOW: ALL *
* DESIGN CENTER CONCURRENCE: MSFC/JSC *
****

PREPARED BY:

Charles A. Hrabowy

LSOC TEST DOCUMENTATION

APPROVED BY:

CONTRACTOR

Dennis E Thompson

SPC SAFETY ENGINEERING

THIS PROCEDURE CONTAINS HAZARDOUS OPERATIONS

7 7 6 9 1 1 9 1 7

DATE: 01-11-91

OMI NO. - S6444
REV. - B-1

LOCKHEED SPACE OPERATIONS COMPANY

SSV ICE AND DEBRIS ASSESSMENT

EFFECTIVITY

CATEGORY: B
HB-STVBAD

CENTER: KSC

SYSTEM: TPS

SITE: LC 39

VEHICLE: ET 23 & SUBS

FLOW: ALL

DESIGN CENTER CONCURRENCE: MSFC/JSC

PREPARED BY:

Charles W Harkins
LSOC TEST DOCUMENTATION

APPROVED BY:

CONTRACTOR

H.E. Shaw DOI 01-14-91
SPC SAFETY ENGINEERING

THIS PROCEDURE CONTAINS HAZARDOUS OPERATIONS

DATE: 01-03-90

OMI NO. - 66444
REV. - B

LOCKHEED SPACE OPERATIONS COMPANY

SSV ICE AND DEBRIS ASSESSMENT

EFFECTIVITY

CATEGORY: B
HB-STVBAD

CENTER: KSC

SYSTEM: TPS

SITE: LC 39

VEHICLE: ET 23 & SUBS

FLOW: ALL

DESIGN CENTER CONCURRENCE: MSFC/JSC

PREPARED BY:

LSOC TEST DOCUMENTATION

APPROVED BY:

CONTRACTOR

SPC SAFETY ENGINEERING

THIS PROCEDURE CONTAINS HAZARDOUS OPERATIONS

7769 0 0 9

31268

INSTRUCTION CHANGE REQUEST

(1) INSTRUCTION CHANGE REQUEST FOR:	(2) ICR NUMBER	(3) SHEET 1 OF 1
( ) OMI ( ) S/W	06/LSO-206	

(4) OMI/CAP NUMBER	(5) REV/EFFECTIVITY	(6)
S6444	B-3	THIS ICR DOES ( ) DOES NOT ( ) INCREASE HAZARD LEVEL OF OMI.

(7) SYSTEM	(8) DOCUMENTS AFFECTED?
ETM	OMP : YES ( ) NO ( ) OMRSD: YES ( ) NO ( )

(9) OMI/CAP TITLE: SSV ICE AND DEBRIS ASSESSMENT

(10) PAGE	(11) STEP	(12) CHANGE	(13) REASON
		INCORPORATE THE FOLLOWING PERMANENT DEVIATIONS:	1) KSC
		00-01, 03-01, APPR-01	2) PREVIOUS DEVIATIONS
		RUN: KS 10382	3) NONE
			4) LAST RUN
			5) MANDATORY
			6) NONE
			7) N/A
			8) USE:

APPENDIX 2 AFFECTED? ☐ YES ☐ NO

Signature:

(14) APPROVAL:

CONTRACTOR	DATE	GOVERNMENT	DATE	SAFETY	DATE
Janet Coleman CP	10-2-91	Tally Fall TV	10/2/91		
Randy Eale LSOC-SS	10-8-91				

KSC FORM 4-282 (REV. 10/86)

7 6 9 4607

INSTRUCTION CHANGE REQUEST

(1) INSTRUCTION CHANGE REQUEST FOR:	(2) ICR NUMBER	(3)
( ) OMI ( ) S/W	05/LS0-206	SHEET 1 OF 1

(4) OMI/CAP NUMBER	(5) REV/EFFECTIVITY	(6)
S-444	B-2	THIS ICR DOES ( ) DOES NOT (✓) INCREASE HAZARD LEVEL OF OMI.

(7) SYSTEM	(8) DOCUMENTS AFFECTED?
ETM	OMP : YES (✓) NO ( ) OMRSD: YES (✓) NO ( )

(9) OMI/CAP TITLE

SSV ZCC AND DEBRIS ASSESSMENT

(10) PAGE	(11) STEP	(12) CHANGE	(13) REASON
		INCORPORATE THE FOLLOWING PERMANENT DEVIATIONS:	1) KSC
		00-01, 00-02, 04-01	2) PREVIOUS
			DEVIATIONS
		INCORPORATE RCN KS10382, DEVS:	3) NONE
		00-01, 04-01	4) LAST RUN
			5) MANDATORY
			6) NONE
			7) N/A
			8) USE:

APPENDIX Z AFFECTED? ☐ YES ☒ NO

Signature:

(14) APPROVAL:

CONTRACTOR	DATE	GOVERNMENT	DATE	SAFETY	DATE
[illegible] CP	8-8-91	[illegible]	8-7-91		
Randy Scale	8-7-91				

KSC FORM 6-100 (REV. 10/88)

7 7 6 9 6 5 6 2

INSTRUCTION CHANGE REQUEST

(1) INSTRUCTION CHANGE REQUEST FOR: (X) OMI ( ) S/W

(2) ICR NUMBER: 04/LS0-206

(3) SHEET 1 OF 1

(4) OMI/CAP NUMBER: S-444

(5) REV/EFFECTIVITY: B-1

(6) THIS ICR DOES ( ) DOES NOT (✓) INCREASE HAZARD LEVEL OF OMI.

(7) SYSTEM: T09

(8) DOCUMENTS AFFECTED? OMP : YES ( ) NO (✓) OMRSD: YES ( ) NO (✓)

(9) OMI/CAP TITLE: SSV ICE AND DEBRIS ASSESSMENT

(10) PAGE	(11) STEP	(12) CHANGE	(13) REASON
		INCORPORATE THE FOLLOWING PERMANENT DEVIATIONS:	A) KSC
		00-01	B) PREVIOUS DEVIATIONS
			C) NONE
			D) LAST RUN
			E) MANDATORY
			F) NONE
			G) N/A
			H) N/A
			I) USE:

APPENDIX Z AFFECTED? ☐ YES ☑ NO

Signature

(14) APPROVAL:

CONTRACTOR	DATE	GOVERNMENT	DATE	SAFETY	DATE
OMI	5-20-91	TEAMS	5/22/91		
LSOC-SE	5-22-91				

KSC FORM 4-202 (REV. 10/88)

DATE: 10-23-91

OMI NO. - S6444
REV. - B-4

REVISION RECORD PAGE

REV-CHANGE	DATE	REASON	PAGES AFFECTED	EFFECTIVITY
BASIC	07-08-88	DC REVIEW RCN'S SS7490M1 SS7489M1 SS7406M KS7672M KS8202M	ALL	ET-23&SUBS
A	11-15-88	01/LS0437 MS7526M	ALL	ET-23&SUBS
B	01-03-90	02/LS0206 RCN MS8847M	ALL	ET-23&SUBS
B-1	01-11-91	03/LS0206 RCN KS9128M	45,46,46.1,46.251,52 52.1,52.2,63-68,83,84	ET-23&SUBS
B-2	06-03-91	04/LS0206	19,20	ET-23&SUBS
B-3	08-16-91	05/LS0206 RCN KS10382	11,11.1,11.2,12, 19-22,47,48	ET-42&SUBS
B-4	10-23-91	06/LS0206 RCN KS10382	19-22,43,43.1,43.2, 44,83,84	ET-42&SUBS

INSTRUCTION CHANGE REQUEST

(1) INSTRUCTION CHANGE REQUEST FOR: (X) OMI ( ) S/W

(2) ICR NUMBER: 03 /LSD-226

(3) SHEET 1 OF 1

(4) OMI/CAP NUMBER: S16444

(5) REV/EFFECTIVITY: B

(6) THIS ICR DOES ( ) DOES NOT ( ) INCREASE HAZARD LEVEL OF OMI.

(7) SYSTEM: TPS

(8) DOCUMENTS AFFECTED: OMP : YES ( ) NO (✓) OMRSD: YES ( ) NO (✓)

(9) OMI/CAP TITLE: ET-TPS OTV CAM/ICE INSP. DRNG. TUBING TST.

(10) PAGE	(11) STEP	(12) CHANGE	(13) REASON
		INCORPORATE THE FOLLOWING PERMANENT DEVIATIONS:	A)ESC
		04—01, 05—01, 05—02,	B)PREVIOUS
		APPA—01, 06-01, 06-02, APPG-01	DEVIATIONS
			C)NONE
			D)LAST RUN
		RCN KS9128M	E)MANDATORY
			F)NONE
			G)N/A
			H)N/A
			I)USE

APPENDIX Z AFFECTED? ☐ YES ☒ NO

Signature: Randy Sale LSOC-SE 10-5-90

(14) APPROVAL

CONTRACTOR	DATE	GOVERNMENT	DATE	SAFETY	DATE
Rajnish LSOC-SE	7/9/90	[illegible]	10-4-90		
Randy Sale	7-12-90				

KSC FORM 6-702 (REV. 10/86)

7769 1 0 0 1 4

INSTRUCTION CHANGE REQUEST

(1) INSTRUCTION CHANGE REQUEST FOR: (X) OMI ( ) S/W

(2) ICR NUMBER: 02/650206

(3) SHEET 1 OF 1

(4) OMI/CAP NUMBER: S6444

(5) ACTIVITY EFFECTIVITY: A

(6) THIS ICR DOES ( ) DOES NOT ( ) INCREASE HAZARD LEVEL OF OMI.

(7) SYSTEM: TPS

(8) DOCUMENTS AFFECTED: OMP : YES (✓) NO ( ) OMRSD: YES (✓) NO ( )

(9) OMI/CAP TITLE: SSV ICE + DEBRIS ASSESSMENT.

(10) PAGE	(11) STEP	(12) CHANGE	(13) REASON
		INCORPORATE ATTACHED PERMANENT DEVS.	A) LSOC PP&C
		GC-01, 00-01 THRU 00-04,	B) PREVIOUS
		02-01, 02-02, 03-01,	DEVIATIONS
		04-01, 05-01, 06-01,	C) OTHER DOC.
		APPG-01.	AFFECTED
			RCN LS 8847
			WAIVER
			OMI
			RUM
			D) DATE ORIG.
			E) MANDATORY
			F) PERM DEV ONLY
			ICR REQUIRES PP&C/NASA CHG SIG. FOR GSE ONLY.
			G) N/A
			H) N/A
		APPENDIX 2 AFFECTED? ☐ YES ☑ NO Signature:	I) N/A

(14) APPROVAL:

CONTRACTOR	DATE	GOVERNMENT	DATE	SAFETY	DATE
Dave Rajwani	12/11/89	Robert F. Lopez	12-15-89		
Randy Seale	12-15-89				

ASC FORM 4-202 (REV. 10/84)

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OBJECTIVE

PROVIDE NECESSARY TASKS THAT DOCUMENT, MONITOR AND EVALUATE ICE AND DEBRIS CONDITIONS TO ELIMINATE OR MINIMIZE DEBRIS CONCERNS OF THE INTEGRATED SSV DURING ET TANKING, FRF AND LAUNCH.

DESCRIPTION

1. THIS OMI IS PERFORMED AS SUBTASK TO S6007/S0014.

2. THIS OMI PROVIDES DOCUMENTATION OF ICE/DEBRIS ACTIVITIES:

   A. PRE-LAUNCH WEATHER BRIEFING

   B. PRE-LAUNCH DEBRIS INSPECTION

   C. COUNTDOWN - BASED TIMELINE EVALUATION MONITORING OF ET TPS SURFACES USING OTV

   D. OTV MONITORING OF SEAL/FLANGE AREAS FOR CRYOGENIC LEAKAGE

   E. SSV OTV MONITORING FOR DEBRIS CONDITIONS DURING COUNTDOWN

   F. CRYOGENIC REPLENISH INSPECTION FOR EVALUATION OF SSV AND FACILITY DEBRIS CONCERNS OR ANOMALIES

   G. EVALUATION OF CONCERNS/ANOMALIES IN THE EVENT OF ET DETANKING

   H. REVIEW OF ENGINEERING FILM DATA FOR LAUNCH OR SSME IGNITION

3. ORBITER LANDING DEBRIS INFORMATION IS CONTAINED IN THE NASA PUBLICATION FOR ICE, FROST, DEBRIS ASSESSMENT. THE REPORT IS INCLUDED IN THIS OMI AS CLOSEOUT DATA.

DATE: 7-23-90

OMI NO. - S6444
REV. - B

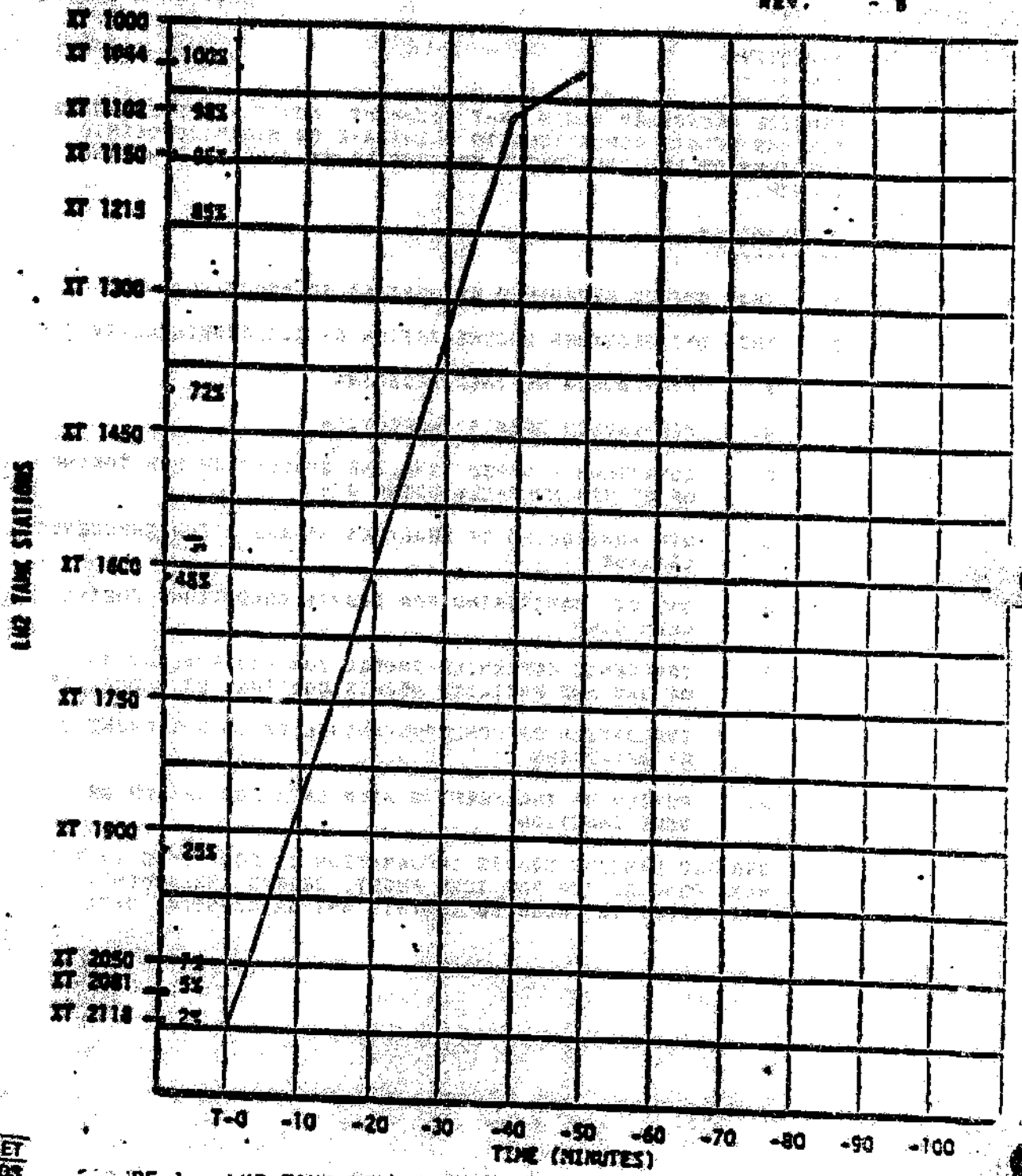

FIGURE 1 - LH2 TANK FILL RATE CHART, LOW PRESSURE FILL (S0014)
(FOR REFERENCE ONLY)

DATE: 01-03-90

OMI NO. - S6444
REV. - B

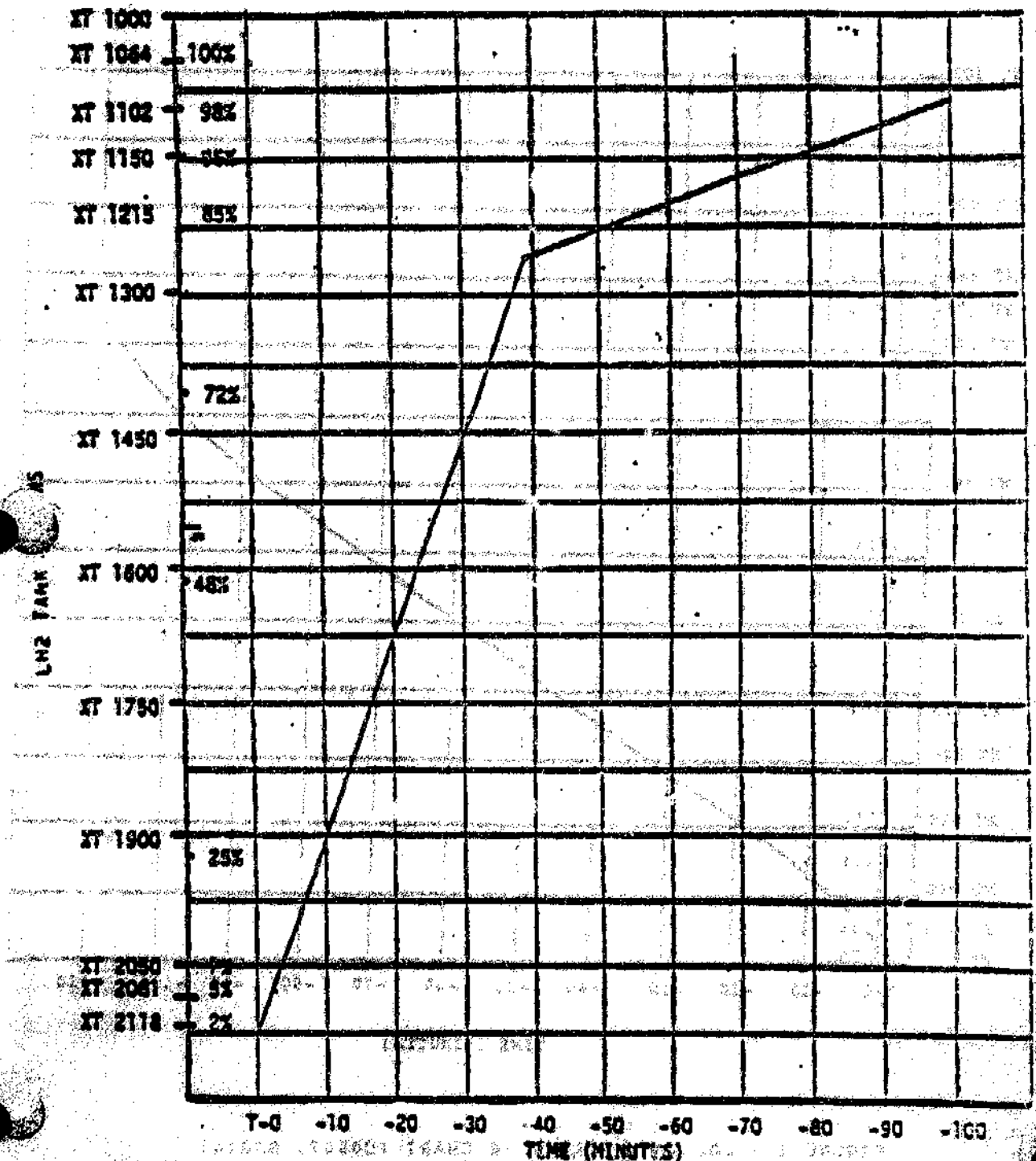

FIGURE 2 - LH2 TANK FILL RATE CHART, HIGH PRESSURE FILL (S0007)
(FOR REFERENCE ONLY)

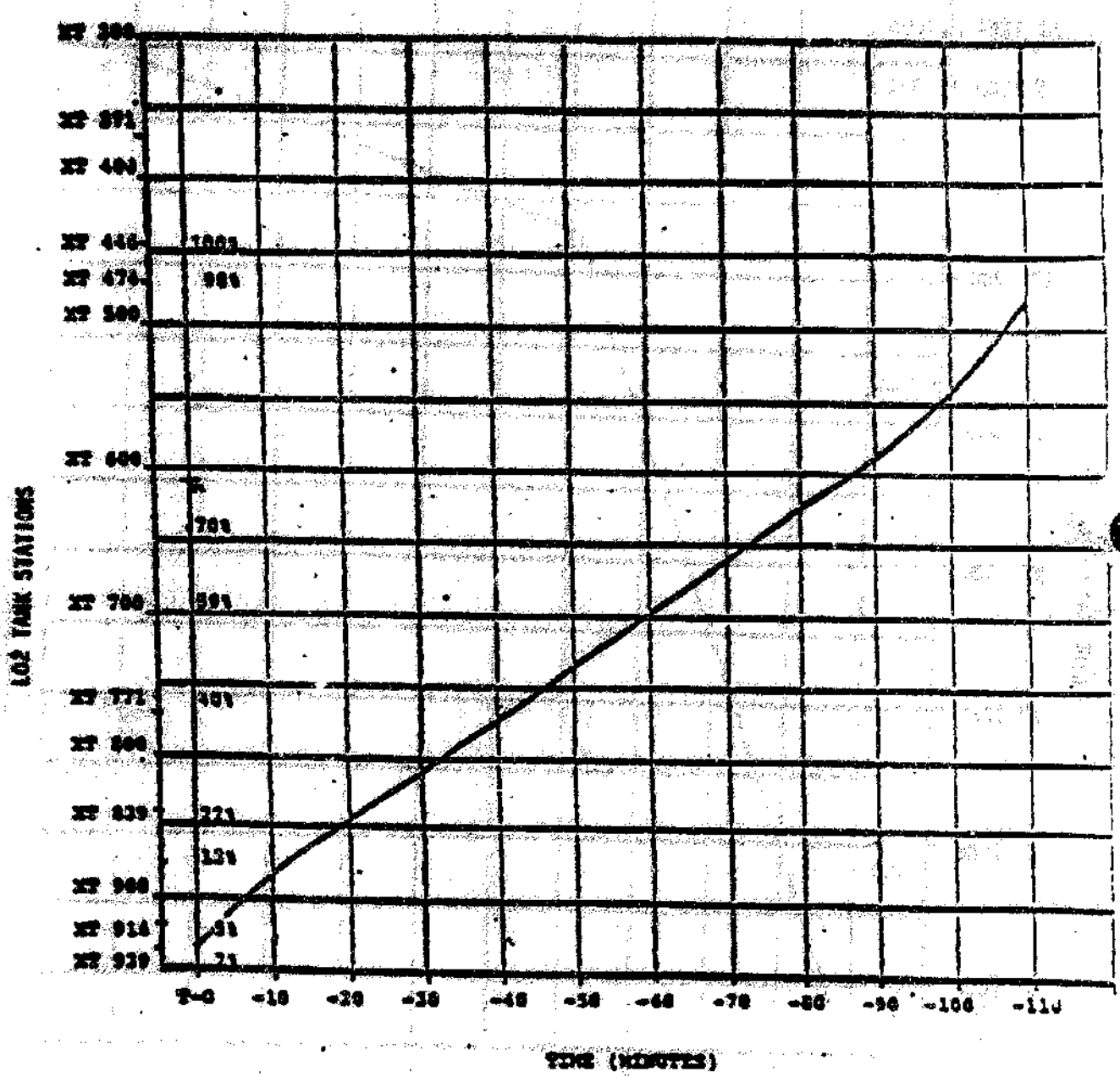

FIGURE 3 - LO2 TANK FILL RATE CHART (S0007, S0014)
(FOR REFERENCE ONLY)

DATE: 01-03-90

OMI NO. - S6444
REV. - B

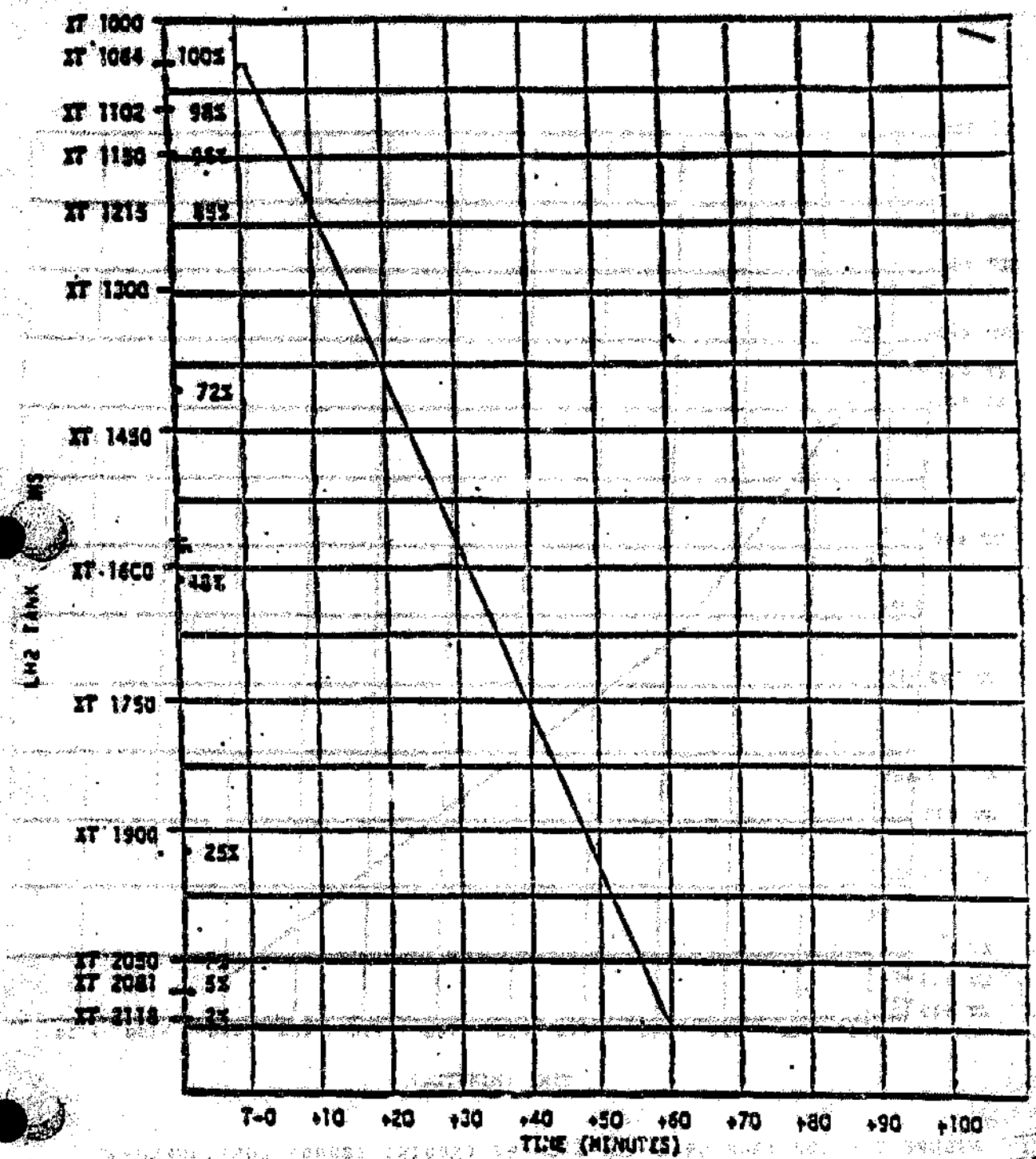

FIGURE 4 - LH2 TANK DRAIN RATE CHART (S0014) (S0007 CONTINGENCY)
(FOR REFERENCE ONLY)

DATE: 81-03-90

DMI NO. - S6444
REV. - B

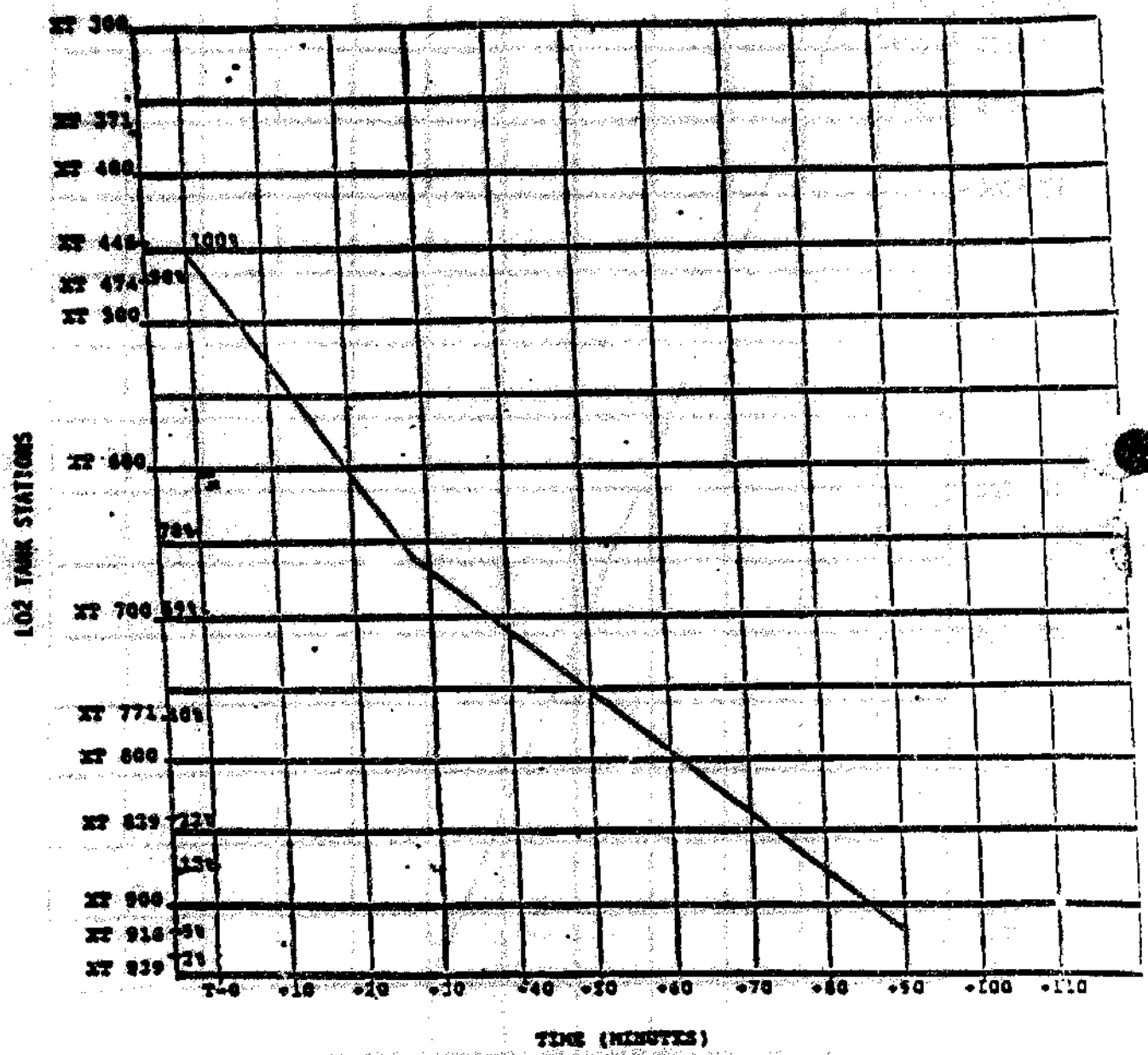

FIGURE 5 - LO2 TANK DRAIN RATE CHART (S0014) (S0007 CONTINGENCY)
(FOR REFERENCE ONLY)

DATE: 01-03-90

OMI NO. - S6444
REV. - B

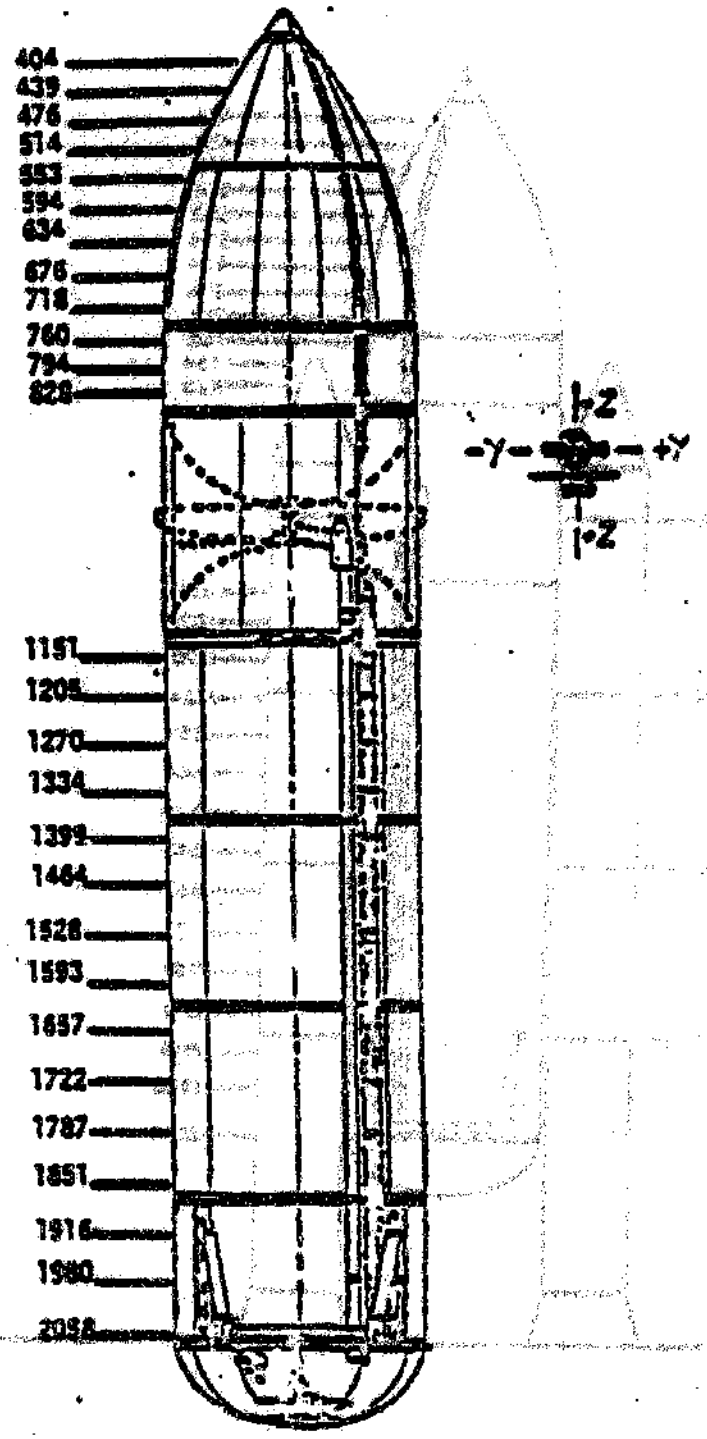

FIGURE 6 - ET MAP (FOR REFERENCE ONLY)

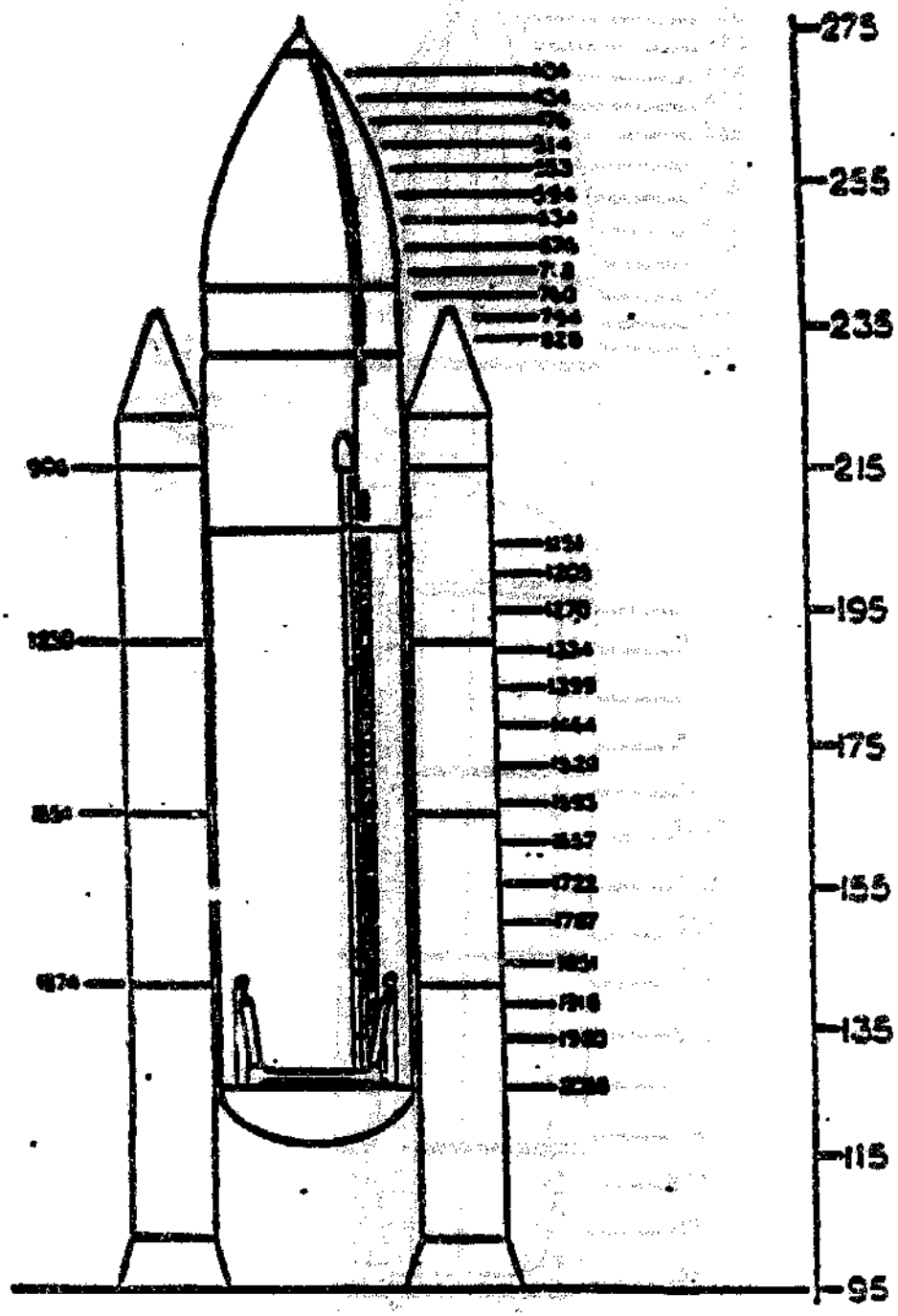

FIGURE 7 - ET/SRB LOCATOR MAP (FOR REFERENCE ONLY)

DATE: 01-03-90

OMI NO. - S6444
REV. - B

-HOURS-

S0007/S0014 TIMELINE

```
-9    -6  -4  -2  -1 0  +2  +4  +6
 ----- --- --- --- - --- --- ---

            XX  2 HOUR BUILT-IN HOLD

GENERAL
-------

 NNNNN  ET PRE-OP SETUPS 1, 2, 3, 4, 5 - WALKDOWN, OTV AND ICE/FROST
        MONITORING AREA PREPS (SEQ 02)
      V  START LOX CHILLDOWN
        V  START LOX TANK FAST FILL
      NNNNNNNNNNNNNNNNNNNNNNNNNN  LOX TANK OTV SCAN (SEQ 04)
      V  START LH2 CHILLDOWN
        V  START LH2 TANK FAST FILL
      NNNNNNNNNNNNNNNNNNNNNNNNNN  LH2 TANK OTV SCAN (SEQ 05, 06)
            V  ICE INSPECTION CREW TO PAD (S0014,S0007)
            HH  SSV VISUAL INSPECTION (SEQ 03, APPA)
             V  ICE INSPECTION CREW CLEAR PAD (S0014,S0007)
                   V  IGNITION
                     V  START LH2 AND LOX TANK DRAIN (S0014,
                        S0007 CONTINGENCY)
                       V  LH2 TANK DRAIN COMPLETE (S0014,
                          S0007 CONTINGENCY)
                         V  LOX TANK DRAIN COMPLETE (S0014,
                            S0007 CONTINGENCY)
                           N  SECURE OTV AND ICE/FROST MONITORING
                              AREA (SEQ 06)
                              ENGR FILM REVIEW (SEQ 06) START
                              APPROX +24 HOURS

-9    -6  -4  -2  -1 0  +2  +4  +6
 ----- --- --- --- - --- --- ---
SUPPORT
-------

  NNNN  OTV SETUPS (SEQ 01)
  NNNNNNNNNNNNNNNNNNNNNNNNNNNN  FR-2 OTV
```

BAR CHART

ET 03

SECTION I

INFORMATION

1.1 REFERENCED INSTRUCTIONS

1.1.1 DOCUMENTS

NUMBER	REV.	TITLE
GP-1098	LI	KSC GROUND OPERATIONS SAFETY PLAN (KSC)
KHB 1710.2	LI	KSC SAFETY PRACTICES HANDBOOK (KSC)
S0007	LI	SHUTTLE COUNTDOWN (LPS) (LSOC)
S0014	LI	FLIGHT READINESS FIRING (LPS) (LSOC)
S9908	LI	LAUNCH PADS (LC-39 A&B) EMERGENCY PROCEDURES DOCUMENT (LSOC)

1.1.2 DRAWINGS

NUMBER	REV.	TITLE
889-3770	LI	LAUNCH SUPPORT MANUAL - LWT THERMAL PROTECTION SYSTEM (MMC)
MSTS 08303	LI	MSTS PROGRAM ICE/DEBRIS INSPECTION CRITERIA

DATE: 08-16-91

OMI NO. - S6444
REV. - B-3

1.3 SPECIAL TOOLS, EQUIPMENT AND MATERIALS

1.3.2 EQUIPMENT

ISSUE/ RETURN	PART NO.	NOMENCLATURE	AVAIL	MAX KIT	QTY	FUNCTION
ET 03 / ET 03	NA	*BINOCULARS, 7X35 OR GREATER (UI=EACH)	____	1	1	POSU-ALL
			____		1	OI-ALL
			____		1	POI-ALL
ET 03 / ET 03	NSL	*COVERALLS, WHITE, BLUE COLLAR (UI=EACH)	____	1	1	POSU-ALL
			____		1	OI-ALL
			____		1	POI-ALL
ET 03 / ET 03	WAHL MODEL HSA-201 OR MIKRON 44 OR EQUAL	*TELEMATIC INFRARED THERMOMETER (UI=EACH)	____	1	1	POSU-ALL
			____		1	OI-ALL
			____		1	POI-ALL
ET 03 / ET 03	NA	*35MM SLR CAMERA, LENS AND ACCESSORIES (UI=EACH)	____	1	1	POSU-ALL
			____		1	OI-ALL
			____		1	POI-ALL
ET 03 / ET 03	NA	*DUPLEX QUESTAR 3-1/2 IN. TELESCOPE W/VARIOUS ATTACHMENTS AND TRIPOD (UI=EACH)	____	1	1	POSU-ALL
			____		1	OI-ALL
			____		1	POI-ALL
ET 03 / ET 03	NA	*ICICLE RETRIEVAL NET (UI=EACH)	____	1	1	POSU-ALL
ET 03 / ET 03	NA	*SELF-CONTAINED EMERGENCY LIFE SUPPORT APPARATUS (ELSA) BREATHING UNIT (UI=EACH)	____	1	1	OI-ALL
			____	1	1	POI-ALL

* SUPPLIED BY SHOP/ENGINEERING

ET 03

DATE: 08-16-91

CMI NO. - S6444
REV. - B-3

-3

ISSUE/ RETURN	PART NO.	NOMENCLATURE	AVAIL	MAX KIT	QTY	FUNCTION
ET 03 / ET 03	NA	* MSA-260 SYNTOX METER (UI=EACH)	____	1	1	OI-ALL
ET 03 / ET 03	NA	* SONY MAVICA STILL VIDEO CAMERA AND ACCESSORIES (UI=UNIT)	____	1	1	OI-ALL

ET 03

* SUPPLIED BY SHOP/ENGINEERING

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1.4 SUPPORT TOOLS, EQUIPMENT AND MATERIALS

1.4.2 COMMUNICATIONS (KSC) PER 72 HR 11 DAY KICS

1. VOICE RECORDING - CONTINUOUS WITH TIMING

   LC-39 OIS CHANNEL 222

2. CHANNELIZATION

   LC-39 OIS CHANNEL 222, 232 TO PAD
   OIS-A UNITS

1.4.3 OTV (KSC) PER 72 HR 11 DAY KICS

1. OTV CAMERAS TO BE RECORDED IN FIRING ROOM 2:

PAD A	PAD B
004	104
013	113
033	133
054	154
055	155
056	156
060	160
061	161
062	162
063	163
064	164
065	165
066	166
067	167

ET 03

2. OTV CAMERA OUTPUTS TO BE PATCHED TO FIRING ROOM 2 PATCH PANEL:

PAD A	PAD B
004	104
013	113
033	133
054	154
055	155
056	156
060	160
061	161
062	162
063	163
064	164
065	165
066	166
067	167
070	170

3. OTV CAMERA AVAILABILITY DURING TPS/ICE INSPECTION PERIOD:

DEDICATED TO TPS/ICE INSPECTION		TIME SHARED	
PAD A	PAD B	PAD A	PAD B
		009/109 AND	071/171
013	113	033	133
004	104	055	155
054	154	070	170
056	156		
060	160	#1TVM2112	#1TVM2112
061	161		
062	162	* NASA SELECT VIDEO	
063	163		
064	164		
065	165		
066	166		
067	167		
ESMS DATA	ESMS DATA		

4. LISTED BLACK AND WHITE OTV CAMERAS MUST HAVE 2X EXTENDERS.

5. OTV CAMERAS TO BE RECORDED IN LCC RM 1P2:

PAD A	PAD B
009/109	071/171
070	170

1.4.4 COUNTDOWN DISPLAY/STATUS

DISPLAY REQUIRED	BLDG	ROOM	OPERATION TIME
TIMING	LCC	FR2	DURATION OF TEST
COUNTDOWN AND GMT	LCC	FR2	DURATION OF TEST

1.4.8 SERVICES

SERVICE/SPECIAL REQUIREMENTS	LOCATION	PURPOSE
SPC SAFETY	LC-39 A&B	SAFETY SUPPORT

1.4.12 PROPELLANTS, GASES AND CHEMICALS

COMMODITY	SPEC NO.	QUAN	RCVR	LOCATION	MIN PRESS	DELV TIME
GH2	SJS-0073 -6.3-5	MIN 750 CU FT	TV-MSD-22 867-0886	PAD 39B CAMERA SITE 2	3000 PSI	1 WEF PRIOR T-0

1.6 SAFETY REQUIREMENTS

1.6.1 HAZARDS

1. LIVE ORDNANCE ABOARD SHUTTLE.
2. HAZARDOUS PROPELLANTS ABOARD SHUTTLE.
3. INERT GN2 ENVIRONMENT.
4. POSSIBLE FIRE/EXPLOSIONS.
5. HANDRAILS REMOVED FROM MLP, WORKING AT UNPROTECTED HEIGHTS.

1.6.2 REQUIREMENTS

1. IF LIGHTNING ACTIVITY IS FORECAST TO BE WITHIN 5 MILES OF LAUNCH PAD, NTD AND SPC SAFETY SHALL IMPLEMENT PROVISIONS OF ADVERSE/SEVERE WEATHER AND LIGHTNING POLICY CONTAINED IN GP-1098, KSC GROUND OPERATIONS SAFETY PLAN.
2. THERE ARE NO SAFING/SHUTDOWN OR EVACUATION STEPS REQUIRED IN THIS OMI. FOR EMERGENCY ACTION, USE EMERGENCY PROCEDURES DOCUMENT (EPD) S9908.

ET 03

1.7 SPECIAL INSTRUCTIONS

1. THIS OMI DELINEATES OTV CAMERA AND RECORDING REQUIREMENTS FOR FIRING ROOM 2 IN SUPPORT OF THE OTV INSPECTION OF THE ET THERMAL PROTECTION SYSTEM DURING PROPELLANT LOADING AND LAUNCH COUNTDOWN OPERATIONS.

2. THIS OMI IS AN ENGINEERING EVALUATION PROCEDURE FOR OTV COVERAGE OF THE ET THERMAL PROTECTION SYSTEM.

3. SUCCESSFUL COMPLETION OF THIS PROCEDURE WILL SATISFY THE OMRSD REQUIREMENTS LISTED IN 1.8.

4. CAMERAS CALLED OUT IN THIS PROCEDURE MAY REQUIRE SHARED USAGE. IF CAMERA IS REQUIRED FOR OTHER USE, LSOC LEAD ENGINEER WILL ANNOTATE WHERE USE WAS INTERRUPTED. WHEN CAMERA USE IS RESTORED, OPERATIONS WILL RESUME FROM THAT POINT.

5. VIDEO TAPE RECORDERS MAY BE TURNED OFF ANY TIME ASSOCIATED CAMERA IS NOT IN DIRECT SUPPORT OF THIS OPERATION.

6. THE FOLLOWING CALL SIGNS WILL BE USED:

CVM1	LSOC OTV MONITOR ENGR (GROUP I CAMERAS)
CVM2	LSOC OTV MONITOR ENGR (GROUP II CAMERAS)
CICE	NASA LEAD ICE/FROST ENGR, FR-2
CTIF	LSOC LEAD ICE/FROST ENGR, FR-2
PTIF	LSOC LEAD ICE/FROST ENGR, PAD
*ICE	NASA LEAD ICE/FROST ENGR, PAD
PIRS	LSOC IR SCANNER ENGR, PAD
PNIR	NASA IR SCANNER ENGR, PAD
JTV1	LSOC OTV OPERATOR (GROUP I CAMERAS)
JTV2	LSOC OTV OPERATOR (GROUP II CAMERAS)
CYVR	LSOC RECORDER OPERATOR, FR-2
CSTI	NASA THERMAL IMAGING ENGR, FR-2
PSTI	NASA THERMAL IMAGING ENGR, PAD
CIPC	NASA ICE/FROST PREDICTION ENGR, FR-2

7. IF A DEFECT IS DETECTED, PROCEED AS FOLLOWS

   A. STOP CAMERA ON DEFECT.

   B. NOTIFY LEAD ENGINEER.

   C. ISOLATE DEFECT AND DETERMINE LOCATION.

   D. DOCUMENT DEFECT ON ANOMALY SHEET AND RECORD DEFECT DESCRIPTION AND LOCATION.

   E. FORWARD ANOMALY SHEET TO LEAD ENGINEER AND RECORD ANOMALY ON TROUBLE TAPE WITH AUDIO DESCRIPTION.

8. TO DETERMINE DEFECT LOCATION, PROCEED AS FOLLOWS (OTV ONLY)

   A. ZOOM IN ON DEFECT FULLY AND CENTER DEFECT ON MONITOR SCREEN.

   B. VERIFY A SIGNIFICANT, IDENTIFIABLE VEHICLE FEATURE IS IN VIEW.

   C. IF A SIGNIFICANT, IDENTIFIABLE VEHICLE FEATURE IS NOT VISIBLE, CENTER DEFECT ON MONITOR SCREEN, ZOOM OUT UNTIL AN IDENTIFIABLE EXTERNAL TANK FEATURE CAN BE OBSERVED IN THE FIELD OF VIEW.

   D. IF A SIGNIFICANT, IDENTIFIABLE VEHICLE FEATURE IS STILL NOT VISIBLE, ZOOM IN ON DEFECT AND CENTER ON MONITOR SCREEN. PAN LEFT UNTIL IDENTIFIABLE FEATURE IS FOUND AND RETURN TO DEFECT. PAN RIGHT UNTIL IDENTIFIABLE FEATURE IS FOUND AND RETURN TO DEFECT. ELEVATE UNTIL IDENTIFIABLE ET FEATURE IS FOUND AND RETURN TO DEFECT. LOWER UNTIL AN IDENTIFIABLE ET FEATURE IS FOUND AND RETURN TO DEFECT. ZOOM CAMERA OUT TO MAXIMUM FIELD OF VIEW.

9. DEFECTS ARE TO BE CATEGORIZED AS FOLLOWS

CATEGORY	DEFINITION
1	DEFECT WITHIN ALLOWABLE CRITERIA. NO CONSTRAINT TO TEST/LAUNCH.
2	DEFECT EXCEEDS ALLOWABLE CRITERIA. NO CONSTRAINT TO TEST/LAUNCH.
3	DEFECT EXCEEDS CRITERIA, POTENTIAL FOR VEHICLE DAMAGE.

10. DEFECTS WHICH EXCEED ALLOWABLE CRITERIA WILL BE DOCUMENTED ON A PR FOR DISPOSITION.

11. OTV CAMERAS USED IN THIS OPERATION ARE IDENTIFIED IN GROUPS.

NOTE

FOR PAD B TESTS, ADD 100 TO EACH OTV CAMERA NUMBER.

GROUP I CONSISTS OF OTV CAMERAS 04, 013, 060, 061, 062, 063 AND 064.

GROUP II CONSISTS OF OTV CAMERAS 033, 054, 055, 056, 065, 066 AND 067.

12. ALL TROUBLESHOOTING TAPES FOR TPS INSPECTION WILL BE REVIEWED AND EVALUATED IN ACCORDANCE WITH THIS OMI.

13. ALL ANOMALIES WILL BE DOCUMENTED IN APPENDIX B. ADDITIONAL COPIES OF APPENDIX B MAY BE ADDED IF PROVIDED SUPPLY IS EXHAUSTED.

14. A COPY OF THE OTV TAPE LOG SHALL BE ATTACHED TO THE RECORD COPY OF THIS OMI.

15. MAINTAIN RECORD OF WEATHER CONDITIONS DURING VIDEO TAPE RECORDING OPERATIONS IN THIS OMI. INCLUDE THIS RECORD WITH VIDEO TAPE RECORDING LOG.

16. HAZADOUS MANLOADING FOR ICE/FROST INSPECTION TEAM IS DEFINED IN OMI'S S0007, AND S0014.

17. ANOMALY SHEETS, A TIME LINE DESCRIBING THE RUN AND A WALKDOWN REPORT WILL BE INCLUDED WITH THIS OMI'S CLOSEOUT DATA.

18. IF IPR CONDITION EXISTS, NOTIFY LEAD ENGINEER AND CONTACT TRC CHANNEL 134 FOR IPR NUMBER.

19. THIS OMI IS RUN AS A SUBTASK TO OMI'S S0007, AND S0014. ALL PAD CLEARING AND CONTROLLED ACCESS OPERATIONS WILL BE PERFORMED PER THOSE OMI'S.

20. THIS OMI IS PERFORMED AND VERIFIED BY LSOC ET ENG WHO IS THE ROR. NO CHQC VERIFICATION REQUIRED.

21. IN THE EVENT OF A 24-HOUR SCRUB/TURNAROUND, A RUN 2 OF THIS OMI WILL NOT BE ISSUED. DATA AND OMRS VERIFICATION FOR SEQUENCES WHICH MAY BE PERFORMED MULTIPLE TIMES WILL BE RECORDED IN APPENDIX G. ADDITIONAL COPIES OF APPENDIX G MAY BE ADDED IF PROVIDED SUPPLY IS EXHAUSTED.

22. IN THE EVENT OF A 48-HOUR, 72-HOUR, EXTENDED SCRUB/TURNAROUND, A RUN 2 OF THIS OMI WILL BE REQUIRED.

23. NO OPEN ITEM REVIEW (OIR) IS REQUIRED FOR THIS OMI. -2

1.8 OMRS REQUIREMENTS SATISFIED BY THIS TOP -4

VEHICLE/ELEMENT NO. ORB_____/FLT_____ ET_____ SRB_____ LH___ RH___

GROUND HARDWARE PMN/SN _____ COMPONENT/SEGMENT _____/FLT_____

SITE _____ TCN _____ DATE _____

TOP WAS RUN AS A STANDALONE YES _____ NO _____
TOP WAS RUN AS A SUBTASK TO TOP _____.

OMRS NO./CIL NO	NOMENCLATURE/ EFFECTIVITY	SEQ-STEP (CAP)	QC/ENG VERIF
S00E00.021	ET TPS MON DURING DETANK TAF;C	04-010	_____
		05-009	_____
S00E00.031	POST DETANK ET TPS INSPECT TAF;C	06-013	_____
S00FA0.600 (1)	RSRM PhBT B025,027-090;C	02-003	_____
S00FA0.900	PRELAUNCH WEATHER BRIEFING (L-1 DAY) VAF1-90	02-002	_____
S00FB0.005 (1)	ET TPS SURFACE MONITORING T23,27-29,31-90	04-004	_____
		05-004	_____
S00FB0.350 (1)	MONITOR GO2 VENT HOOD VAF1-90	04-011	_____
S00FB0.360 (1)	MONITOR ET/ORB MPS FOR LEAKAGE VAF1-90	04-004	_____
		05-004	_____
S00FF0.098 (1)	INSPECT TUMBLE VALVE RAIN SHIELD T42-45,47-90	04-006	_____
S00J00.126	TPS IR SCAN VAF1 V03F7	03-023A	_____
S00L00.150 (1)	HIGH WIND ET NOSE INSPECTION (KSC) SAF;C	04-005	_____
S00U00.[illegible]0 (1	POST LAUNCH SHUTTLE/PAD AREA INSPECTION SAF1-90	06-01B	_____

DATE: 10-23-91

OMI NO. - S6444
REV. - B-4

1.8 OMRS REQUIREMENTS SATISFIED BY THIS TOP -4

VEHICLE/ELEMENT NO. ORB_____/FLT_____ ET_____ SRB_____ LH___ RH___

GROUND HARDWARE PMN/SN _____ COMPONENT/SEGMENT _____/FLT_____

SITE _____ TCN _____ DATE _____

TOP WAS RUN AS A STANDALONE YES _____ NO _____
TOP WAS RUN AS A SUBTASK TO TOP _____.

OMRS NO./CIL NO	NOMENCLATURE/ EFFECTIVITY	SEQ-STEP (CAP)	QC/ENG VERIF
S00U00.011 (1)	ENGR REVIEW & ANALYSIS OF LAUNCH FILM SAF1-90	06-021	_____
S00U00.020-A (1)	AN ENGINEERING DEBRIS INSPECTION TEAM SAF1-90	03-023	_____
S00U00.020-B (1)	IR SCAN SAF1-90	03-023	_____
S00U00.030 (1)	PRELAUNCH SHUTTLE/PAD AREA INSPECTION SAF1-90	02-006	_____

ET 03

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SECTION II

PRE-OPERATION SETUP INSTRUCTIONS

SEQ	CMD	RESP	DESCRIPTION	VERIF.
01-000			PRE-OPERATION SETUPS - SUPPORT	
01-001			PRE-OPERATION SETUP 1 - SUPPORT PREPARATIONS	
01-002	STM 138	JYVO	VERIFY PAD OTV SYSTEM IS CONFIGURED TO SUPPORT S6444 AS SCHEDULED.	34-02
			NOTE FUNCTIONAL CHECKS OF PAN, TILT AND ZOOM CAPABILITIES REQUIRED FOR CAMERAS LISTED IN PARAGRAPH 1.4.	
01-003	STM 111 JSTC 114	JSTC *SCB	VERIFY EIGHT 10-MINUTE ELSA GAS MASKS AVAILABLE AT ROADBLOCK A/B-11 FOR USE BY INSPECTION TEAM PERSONNEL. (REF S0007/S0014)	EG&G-632
01-004	STM 232 NTD	NTD TBC	VERIFY A SUPPLY OF AT LEAST 750 CUBIC FEET OF KSC SPEC SES 0073-6.3-5 GN2, REGULATED TO BETWEEN 3000 AND 3400 PSI, IS IN PLACE AT PAD B CAMERA SITE 2 AND IS ACCOMPANIED BY THE NECESSARY FLEXLINES AND RESTRAINTS TO SUPPORT OPERATION OF THE SHUTTLE THERMAL IMAGER (REF KPRD SECTION 5310 ITEM N31E 016103).	
01-005	STM 136	TBC	SUPPORT PRE-OPERATION SETUP 1 - SUPPORT PREPARATIONS COMPLETE.	

ET 03

PRE-OPERATION SETUP INSTRUCTIONS

SEQ	CMD	RESP	DESCRIPTION	VERIF.

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Thiokol CORPORATION
SPACE OPERATIONS

24 June 1992
E600-FY92-236

George C. Marshall Space Flight Center
National Aeronautics & Space Administration
Marshall Space Flight Center, AL 35812

Attention Mr. V. K. Henson, SA51

Gentlemen:

Subject: 360T024 (STS-50) Transmittal of L-24 Hour PMBT Prediction

This letter officially transmits the L-24 hour propellant mean bulk temperature (PMBT) predicted for STS-50, scheduled for launch on 25 June 1992. The PMBT at the time of launch has not changed from the L-2 day prediction and remains at 78°F which is within the 44° to 86°F requirement. This temperature matches the 33 year average at KSC.

Very truly yours,

G. C. Alford

GCA:JHK/lh

cc: G. Alford, E60
L. Bailey/S. Kulkarni, L00
D. Blackwell, EP55
F. Brasfield, Thiokol/MSFC
B. Barsh/KSC, LSO 251
C. Houston/W. Coiner, KSC, SK
R. Lindstrom, A10
J. Lombardo, A10A
H. Mango/KSC, TV-PEO-2
J. McKellar, Thiokol/KSC
G. Ricks/A. Neilson, L87
R. Rasmussen/D. Nicongar, E62B
S. Hinkson, E68
P. Rosado/KSC, TV-MSD-22
H. Sherard, Thiokol/KSC
E. Skrobiszewski, K68
A. Shorr/J. Trenkle, HE52

P.O. Box 707, Brigham City, UT 84302-0707 (801)863-3974

JN 25 92

ET 03

DATE: 01-03-90

OMI NO. - S6444
REV. - B

PRE-OPERATION SETUP INSTRUCTIONS

SEQ	CMD	RESP	DESCRIPTION	VERIF.
02-000			PRE-OPERATION SETUPS - ET	
			NOTE THIS SEQUENCE (INCLUDING PRE-OPERATION SETUPS 1 THRU 5) MAY BE PERFORMED MULTIPLE TIMES. RECORD DATA AND OMRS VERIFICATIONS IN APPENDIX G.	
02-001			PRE-OPERATION SETUP 1 - WEATHER BRIEFING	
			NOTE THIS PRE-OPERATION SETUP IS PERFORMED AT L-1 DAY.	
02-002			CICE CONDUCT L-1 DAY WEATHER BRIEFING WITH LAUNCH DIRECTOR. OMRSD S00FA0.900	
			NOTE FOLLOWING STEP IS PERFORMED FOR LAUNCH COUNTDOWN ONLY.	
02-003			VERIFY PREDICTED RSRM PMBT AT TIME OF LAUNCH (PROVIDED BY THE RSRM CONTRACTOR) IS ACCEPTABLE. 44 DEGREES F (MIN) AND 86 DEGREES F (MAX). RSRM PMBT 78 DEGREES F OMRSD S00FA0.600-1 NOT PERFORMED N/A	
02-004			ET PRE-OPERATION SETUP 1 - LAUNCH DIRECTOR WEATHER BRIEFING COMPLETE.	

ET 03

PRE-OPERATION SETUP INSTRUCTIONS

SEQ	CMD	RESP	DESCRIPTION	VERIF.

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DATE: 01-03-90

GMI NO. - S6444
REV. - B

PRE-OPERATION SETUP INSTRUCTIONS

SEQ	CMD	RESP	DESCRIPTION	VERIF.
02-005			PRE-OPERATION SETUP 2 - PRELAUNCH WALKDOWN	
			NOTE THIS PRE-OPERATION SETUP IS PERFORMED AT T-20 HOURS.	
02-006			DEBRIS INSPECTION TEAM PERFORM FOLLOWING: 1. INSPECT THE SHUTTLE AND LAUNCH PAD AREA TO IDENTIFY AND/OR RESOLVE POTENTIAL DEBRIS SOURCES. 2. DOCUMENT AND PHOTOGRAPH THE CONFIGURATION. RECORD FOLLOWING: WORK ORDER NO. E106 OMRSD S00U00.030-1	
02-007			ET PRE-OPERATION SETUP 2 - PRELAUNCH WALKDOWN COMPLETE.	

ET 03

PRE-OPERATION SETUP INSTRUCTIONS

SEQ	CMD	RESP	DESCRIPTION	VERIF.

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PRE-OPERATION SETUP INSTRUCTIONS

SEQ	CMD	RESP	DESCRIPTION	VERIF.
02-008			PRE-OPERATION SETUP 3 - PRE-MAPPING	
			NOTE RSS MUST BE RETRACTED FOR COMPLETION OF THIS PRE-OPERATION SETUP. STEPS MAY BE PERFORMED OUT OF SEQUENCE AS REQUIRED. FOR PAD B TESTS, ADD 100 TO EACH OTV NUMBER LISTED.	
02-009	CVM1 224	CYVR	TURN ON RECORDER FOR CAMERA 004.	
02-010	CVM1 223	JTV1	OTV CAMERA 004 SET FIELD OF VIEW TO MINIMUM (MAXIMUM ZOOM IN). CONDUCT PRE-MAPPING SCAN OF VISIBLE ET SURFACES.	
02-011	CVM1 224	CYVR	TURN OFF RECORDER FOR CAMERA 004.	
02-012	CVM1 224	CYVR	TURN ON RECORDER FOR CAMERA 013. RSS BLOCKED	
02-013	CVM1 223	JTV1	OTV CAMERA 013 SET FIELD OF VIEW TO MINIMUM (MAXIMUM ZOOM IN). CONDUCT PRE-MAPPING SCAN OF VISIBLE ET SURFACES.	
02-014	CVM1 224	CYVR	TURN OFF RECORDER FOR CAMERA 013.	
02-015	CVM1 224	CYVR	TURN ON RECORDER FOR CAMERA 060.	
02-016	CVM1 223	JTV1	OTV CAMERA 060 SET FIELD OF VIEW TO MINIMUM (MAXIMUM ZOOM IN). CONDUCT PRE-MAPPING SCAN OF VISIBLE ET SURFACES.	
02-017	CVM1 224	CYVR	TURN OFF RECORDER FOR CAMERA 060.	
02-018	CVM1 224	CYVR	TURN ON RECORDER FOR CAMERA 061.	

DATE: 91-03-90

OMI NO. - S6444
REV. - B

PRE-OPERATION SETUP INSTRUCTIONS

SEQ	CMD	RESP	DESCRIPTION	VERIF.
02-019	CVM1 223	JTV1	OTV CAMERA 861 SET FIELD OF VIEW TO MINIMUM (MAXIMUM ZOOM IN). CONDUCT PRE-MAPPING SCAN OF VISIBLE ET SURFACES.	
02-020	CVM1 224	CYVR	TURN OFF RECORDER FOR CAMERA 861.	
02-021	CVM1 224	CYVR	TURN ON RECORDER FOR CAMERA 862.	
02-022	CVM1 223	JTV1	OTV CAMERA 862 SET FIELD OF VIEW TO MINIMUM (MAXIMUM ZOOM IN). CONDUCT PRE-MAPPING SCAN OF VISIBLE ET SURFACES.	
02-023	CVM1 224	CYVR	TURN OFF RECORDER FOR CAMERA 862.	
02-024	CVM1 224	CYVR	TURN ON RECORDER FOR CAMERA 863.	
02-025	CVM1 223	JTV1	OTV CAMERA 863 SET FIELD OF VIEW TO MINIMUM (MAXIMUM ZOOM IN). CONDUCT PRE-MAPPING SCAN OF VISIBLE ET SURFACES.	
02-026	CVM1 224	CYVR	TURN OFF RECORDER FOR CAMERA 863.	
02-027	CVM1	CYVR	TURN ON RECORDER FOR CAMERA 864.	
02-028	CVM1 223	JTV1	OTV CAMERA 864 SET FIELD OF VIEW TO MINIMUM (MAXIMUM ZOOM IN). CONDUCT PRE-MAPPING SCAN OF VISIBLE ET SURFACES.	
02-029	CVM1 224	CYVR	TURN OFF RECORDER FOR CAMERA 864.	
02-030	CVM2 224	CYVR	TURN ON RECORDER FOR CAMERA 833.	
02-031	CVM2 225	JTV2	OTV CAMERA 833 SET FIELD OF VIEW TO MINIMUM (MAXIMUM ZOOM IN). CONDUCT PRE-MAPPING SCAN OF VISIBLE ET SURFACES.	

ET 03

DATE: 01-03-90

OMI NO. - S6444
REV. - B

PRE-OPERATION SETUP INSTRUCTIONS

SEQ	CMD	RESP	DESCRIPTION	VERIF.
02-032	CVM2 224	CYVR	TURN OFF RECORDER FOR CAMERA 033.	
02-033	CVM2 224	CYVR	TURN ON RECORDER FOR CAMERA 054.	
02-034	CVM2 225	JTV2	OTV CAMERA 054 SET FIELD OF VIEW TO MINIMUM (MAXIMUM ZOOM IN). CONDUCT PRE-MAPPING SCAN OF VISIBLE ET SURFACES.	
02-035	CVM2 224	CYVR	TURN OFF RECORDER FOR CAMERA 054.	
02-036	CVM2 224	CYVR	TURN ON RECORDER FOR CAMERA 055.	
02-037	CVM2 225	JTV2	OTV CAMERA 055 SET FIELD OF VIEW TO MINIMUM (MAXIMUM ZOOM IN). CONDUCT PRE-MAPPING SCAN OF VISIBLE ET SURFACES.	
02-038	CVM2 224	CYVR	TURN OFF RECORDER FOR CAMERA 055.	
02-039	CVM2 224	CYVR	TURN ON RECORDER FOR CAMERA 056.	
02-040	CVM2 225	JTV2	OTV CAMERA 056 SET FIELD OF VIEW TO MINIMUM (MAXIMUM ZOOM IN). CONDUCT PRE-MAPPING SCAN OF VISIBLE ET SURFACES.	
02-041	CVM2 224	CYVR	TURN OFF RECORDER FOR CAMERA 056.	
02-042	CVM2 224	CYVR	TURN ON RECORDER FOR CAMERA 065.	
02-043	CVM2 225	JTV2	OTV CAMERA 065 SET FIELD OF VIEW TO MINIMUM (MAXIMUM ZOOM IN). CONDUCT PRE-MAPPING SCAN OF VISIBLE ET SURFACES.	
02-044	CVM2 224	CYVR	TURN OFF RECORDER FOR CAMERA 065.	
02-045	CVM2 224	CYVR	TURN ON RECORDER FOR CAMERA 066.	

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PRE-OPERATION SETUP INSTRUCTIONS

SEQ	CMD	RESP	DESCRIPTION	VERIF.
02-046	CVM2 225	JTV2	OTV CAMERA 066 SET FIELD OF VIEW TO MINIMUM (MAXIMUM ZOOM IN). CONDUCT PRE-MAPPING SCAN OF VISIBLE ET SURFACES.	
02-047	CVM2 224	CYVR	TURN OFF RECORDER FOR CAMERA 066.	
02-048	CVM2 224	CYVR	TURN ON RECORDER FOR CAMERA 067.	
02-049	CVM2 225	JTV2	OTV CAMERA 067 SET FIELD OF VIEW TO MINIMUM (MAXIMUM ZOOM IN). CONDUCT PRE-MAPPING SCAN OF VISIBLE ET SURFACES.	
02-050	CVM2 224	CYVR	TURN OFF RECORDER FOR CAMERA 067.	
02-051	CVM1 CVM2 222	CTIF	ET PRE-OPERATION SETUP 3 - PRE-MAPPING COMPLETE.	

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PRE-OPERATION SETUP INSTRUCTIONS

SEQ	CND	RESP	DESCRIPTION	VERIF.
02-052			PRE-OPERATION SETUP 4 - GROUP I OTV PREPARATIONS	
			(CVM1)	
			NOTE FOR PAD-B TESTS, ADD 100 TO EACH OTV CAMERA NUMBER LISTED	
02-053	CVM1 224	CYVR	TURN ON VIDEO RECORDER FOR OTV CAMERA 061.	
02-054	CVM1 223	JTV1	OTV CAMERA 061 ESTABLISH INITIAL POSITION AS FOLLOWS: 1. SET FIELD OF VIEW TO MINIMUM (MAXIMUM ZOOM IN). 2. ADJUST FIELD OF VIEW UNTIL ET LOX TANK TO INTERTANK SPLICE IS CENTERED VERTICALLY AND VIEW IS PERPENDICULAR TO ET. 3. PAN UNTIL RIGHT EDGE OF ET COMES INTO VIEW (LOX TANK MAY DROP OUT OF VIEW).	
02-055	CVM1 224	CYVR	TURN OFF VIDEO RECORDER FOR OTV CAMERA 061.	
02-056	CVM1 224	CYVR	TURN ON VIDEO RECORDERS FOR OTV CAMERAS 013, 060 AND 062	
02-057	CVM1 223	JTV1	OTV CAMERAS 013, 060 AND 062 ESTABLISH INITIAL POSITION AS FOLLOWS. 1. SET FIELD OF VIEW TO MINIMUM (MAXIMUM ZOOM IN). 2. POSITION CAMERAS 013 AND 060 ON -Y VENT LOUVER, CENTERED WITH SMALLEST FRAME SIZE. 3. POSITION CAMERA 062 ON +Y VENT LOUVER, CENTERED WITH SMALLEST FRAME SIZE.	
02-058	CVM1 224	CYVR	TURN OFF VIDEO RECORDER FOR OTV CAMERAS 013, 060, AND 062.	

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PRE-OPERATION SETUP INSTRUCTIONS

SEQ	CMD	RESP	DESCRIPTION	VERIF.
02-059	CVM1 224	CYVR	TURN ON VIDEO RECORDER FOR OTV CAMERA 004.	
02-060	CVM1 223	JTV1	OTV CAMERA 004 ESTABLISH INITIAL POSITION AS FOLLOWS. 1. SET FIELD OF VIEW TO MINIMUM (MAXIMUM ZOOM IN). 2. SIGHT CAMERA SO GUCP IS APPROXIMATELY CENTERED IN FRAME.	
02-061	CVM1 224	CYVR	TURN OFF VIDEO RECORDER FOR OTV CAMERA 004.	
02-062	CVM1 224	CYVR	TURN ON VIDEO RECORDER FOR OTV CAMERA 063.	
02-063	CVM1 223	JTV1	OTV CAMERA 063 ESTABLISH INITIAL POSITION AS FOLLOWS. SIGHT CAMERA SO THAT ET/ORBITER LH2 UMBILICAL IS IN THE CENTER OF THE SCREEN AND BUTCHER PAPER GH2 FIRE DETECTORS ARE VISIBLE.	
02-064	CVM1 224	CYVR	TURN OFF VIDEO RECORDER FOR OTV CAMERA 063.	
02-065	CVM1 224	CYVR	TURN ON VIDEO RECORDER FOR OTV CAMERA 064.	
02-066	CVM1 223	JTV2	OTV CAMERA 064 ESTABLISH INITIAL POSITION AS FOLLOWS. SIGHT CAMERA SO PICTURE EXTENDS FROM 3 FT ABOVE XT2858 TO 2 FT BELOW ET LH2 AFT DOME. THE ORBITER WING AND SRB WILL BE IN VIEW.	
02-067	CVM1 224	CYVR	TURN OFF VIDEO RECORDER FOR OTV CAMERA 064.	
02-068	CVM1 222	CTIF	ET PRE-OPERATION SETUP 4 - GROUP I OTV PREPARATIONS COMPLETE.	

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PRE-OPERATION SETUP INSTRUCTIONS

SEQ	CMD	RESP	DESCRIPTION	VERIF.
02-069			PRE-OPERATION SETUP 5 - GROUP II OTV PREPS (CVM2)	
			NOTE FOR PAD-B TESTS, ADD 100 TO EACH OTV CAMERA NUMBER LISTED.	
02-070	CVM2	CYVR 224	TURN ON VIDEO RECORDER FOR OTV CAMERA 065.	
02-071	CVM2	JTV2 225	OTV CAMERA 065 ESTABLISH INITIAL POSITION AS FOLLOWS. 1. SET CAMERA FOR MAXIMUM FIELD OF VIEW. NOTE FIELD OF VIEW OF THE ET LH2 AFT DOME WILL BE OBSCURED BY THE MLP. 2. SIGHT CAMERA TO VIEW LOWER PART OF ET WITH BOTTOM OF FRAME APPROXIMATELY 2 FEET BELOW ET LH2 AFT DOME.	
02-072	CVM2	CYVR 224	TURN OFF VIDEO RECORDER FOR OTV CAMERA 065.	
02-073	CVM2	CYVR 224	TURN ON VIDEO RECORDER FOR OTV CAMERA 067.	
02-074	CVM2	JTV2 225	OTV CAMERA 067 ESTABLISH INITIAL POSITION SO LOWER EDGE OF FRAME ENCOMPASSES ET LH2 TANK AFT DOME AND UPPER PART OF FRAME INCLUDES SECOND BLACK RING ON SRB ABOVE XT2058.	
02-075	CVM2	CYVR 224	TURN OFF VIDEO RECORDER FOR OTV CAMERA 067.	
02-076	CVM2	CYVR 224	TURN ON VIDEO RECORDER FOR OTV CAMERA 054.	

PRE-OPERATION SETUP INSTRUCTIONS

SEQ	CMD	RESP	DESCRIPTION	VERIF.
02-077	CVM2 225	JTV2	OTV CAMERA 054 ESTABLISH INITIAL POSITION AS FOLLOWS. ADJUST CAMERA FIELD OF VIEW UNTIL FRAME EXTENDS FROM 3 FEET ABOVE XT2058 TO 2 FEET BELOW ET LH2 AFT DOME. THE ORBITER WING AND SRB SHOULD BE IN VIEW.	
02-078	CVM2 224	CYVR	TURN OFF VIDEO RECORDER FOR OTV CAMERA 054.	
02-079	CVM2 225	CYVR	TURN ON VIDEO RECORDER FOR OTV CAMERA 055.	
02-080	CVM2 225	JTV2	OTV CAMERA 055 ESTABLISH INITIAL POSITION ON NORTH BRIDGE LH2 PIPELINE FLANGE.	
02-081	CVM2 224	CYVR	TURN OFF VIDEO RECORDER FOR OTV CAMERA 055.	
02-082	CVM2 224	CYVR	TURN ON VIDEO RECORDER FOR OTV CAMERA 056.	
02-083	CVM2 225	JTV2	OTV CAMERA 056 ESTABLISH INITIAL POSITION AS FOLLOWS. 1. ADJUST FIELD OF VIEW UNTIL FRAME EXTENDS FROM 3 FEET ABOVE XT2058 TO 2 FEET BELOW ET LH2 AFT DOME. 2. PAN CAMERA RIGHT UNTIL SRB IS APPROXIMATELY IN CENTER OF FRAME. 3. PAN CAMERA LEFT UNTIL RIGHT EDGE OF ET IS NEAR LEFT EDGE OF FRAME. 4. VERIFY UPPER EDGE OF FRAME IS APPROXIMATELY 3 FEET ABOVE XT2058 AND LOWER EDGE IS APPROXIMATELY 2 FEET BELOW ET LH2 AFT DOME.	
02-084	CVM2 224	CYVR	TURN OFF VIDEO RECORDER FOR OTV CAMERA 056.	

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PRE-OPERATION SETUP INSTRUCTIONS

SEQ	CMD	RESP	DESCRIPTION	VERIF.
02-085	CVM2 224	CYVR	TURN ON VIDEO RECORDER FOR OTV CAMERA 033.	
02-086	CVM2 225	JTV2	OTV CAMERA 033 ESTABLISH INITIAL POSITION AS FOLLOWS. 1. WITH CAMERA PERPENDICULAR TO ET, SIGHT SO TOP OF FRAME IS LEVEL WITH TOP OF INTERTANK AND BOTTOM OF FRAME IS LEVEL WITH BOTTOM OF INTERTANK. 2. LOWER FIELD OF VIEW UNTIL XT2058 FRAME IS APPROXIMATELY CENTERED IN FRAME.	
02-087	CVM2 224	CYVR	TURN OFF VIDEO RECORDER FOR OTV CAMERA 033.	
02-088	CVM2 224	CYVR	TURN ON VIDEO RECORDER FOR OTV CAMERA 066.	
02-089	CVM2 225	JTV2	OTV CAMERA 066 ESTABLISH INITIAL POSITION AS FOLLOWS. 1. WITH CAMERA PERPENDICULAR TO ET, SIGHT SO TOP OF FRAME IS LEVEL WITH TOP OF INTERTANK AND BOTTOM OF FRAME IS LEVEL WITH BOTTOM OF INTERTANK. 2. LOWER FIELD OF VIEW UNTIL INTERSECTION OF ORBITER WING AND SRB IS IN LOWER RIGHT CORNER OF FRAME.	
02-090	CVM2 224	CYVR	TURN OFF VIDEO RECORDER FOR OTV CAMERA 066.	
02-091	CVM2 222	CTIF	ET PRE-OPERATION SETUP 5 - GROUP II OTV PREPS COMPLETE.	

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PRE-OPERATION SETUP INSTRUCTIONS

SEQ	CMD	RESP	DESCRIPTION	VERIF.

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SECTION IV

OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
03-000				STATION CALL AND CONTROL SEQUENCE FOR OTV OPERATIONS	
				NOTE THIS SEQUENCE MAY BE PERFORMED MULTIPLE TIMES. RECORD DATA AND OMRS VERIFICATION IN APPENDIX G. UNTIL OTHERWISE INDICATED, ALL TIMES ARE REFERENCED TO S0007 AND S0014 TIMELINES.	
03-001	-07H00M00S	NTD 232 TBC 136	TBC CTIF	PERFORM OTV AND ICE/FROST MONITORING AREA SETUPS FR-2.	
03-002		CTIF 222	CVM1	VERIFY GROUP I OTV CAMERAS ON.	
03-003		CTIF 222	CVM2	VERIFY GROUP II OTV CAMERAS ON.	
03-004		CTIF 136 TBC NTD 232	TBC NTD STN	VERIFY SUPPORT PRE-OPERATION SETUP 1 - SUPPORT PREPARATIONS COMPLETE.	
03-005	CTIF CVM1 222 CVM2	VERIFY ET PRE-OPERATION SETUP 3 - PRE-MAPPING COMPLETE.			
03-006		CTIF 222	CVM1 JTV1	VERIFY ET PRE-OPERATION SETUP 4 - GROUP I OTV PREPS ON CHANNEL 223/224. REPORT COMPLETION.	
03-007		CTIF 222	CVM2 JTV2	VERIFY ET PRE-OPERATION SETUP 5 - GROUP II OTV PREPS ON CHANNEL 224/225. REPORT COMPLETION.	

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OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
03-008		CVM1 222	CTIF	ET PRE-OPERATION SETUP 4 - GROUP I OTV PREPS COMPLETE.	
03-009		CVM2 222	CTIF	ET PRE-OPERATION SETUP 5 - GROUP II OTV PREPS COMPLETE.	
03-010		CTIF 222		ALL PERSONNEL PARTICIPATING IN OTV OPERATIONS, REPORT TEST READY STATUS.	
			CVM1 JTV1 CVM2 JTV2	LCC FR-2, OTV MONITOR ENGR (LSOC) LCC, OTV CAMERA OPERATOR (LSOC) LCC FR-2, OTV MONITOR ENGR (LSOC) LCC, OTV CAMERA OPERATOR (LSOC)	
				NOTE OTV CAMERAS SHOULD SCAN ET TO GREATEST EXTENT POSSIBLE. USE FILLRATE CHARTS AS GUIDES DURING FILL AND DRAIN OPERATIONS. WHILE SCANNING, ALL FRAMES TO INCLUDE 1/3 FRAME OVERLAP.	
03-011	-06H30M00S	CTIF 134 TBC 232	TBC NTD	ICE/FROST MONITORING AREA SETUPS FOR OTV SCANNING COMPLETE.	

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OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
				NOTE	
				PERFORM FOLLOWING STEPS AT START OF SLOW FILL. TIME INDICATED IS REFERENCED TO S0007/S0014 APPROXIMATE TIMELINE.	
03-012	-05H30M00S	CTIF 222	CVVR	START ALL FR-2 OTV RECORDERS (EXCLUDING TROUBLE TAPE RECORDER).	
				CAMERA GROUP I	
				NOTE	
				T-0 IS START OF LOX TANK FAST FILL WHICH OCCURS AT APPROXIMATELY -05H15M IN S0007/S0014 TIMELINE.	
03-013		CTIF 222	CVM1	START GROUP I OTV TIMING INDICATOR ON MARK.	
				3, 2, 1, MARK	
				T-0, START OF LOX TANK FAST FILL.	
03-014		CTIF 222 CVM1 JTV1 223	CVM1	PROCEED WITH GROUP I LOX TANK FAST FILL CAMERA OPERATIONS PER SEQ 04 ON CHANNEL 223.	
				NOTE	
				T-0 IS START OF LH2 TANK FAST FILL, WHICH OCCURS AT APPROXIMATELY -05H20M IN S0007/S0014 TIMELINE.	
03-015		CTIF 222	CVM2	START GROUP II OTV TIMING INDICATOR ON MARK.	
				3, 2, 1, MARK	
				T-0, START OF LH2 TANK FAST FILL	

OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
03-016		CTIF 222	CVH2	APPROXIMATELY ONCE PER HOUR, OBTAIN THE BEST POSSIBLE VIEWS OF THE LH2 RECIRCULATION LINE BELLOWS SHIELDS, THE +Y AND -Y LONGERONS AT THE THRUST STRUTS, THE +Y THRUST STRUT AT THE CABLE TRAY, PURGE VENTS AND UMBILICAL CABLE TRAYS AS FAR AS POSSIBLE. RECORD THESE AREAS ON TROUBLESHOOTING TAPE AS REQUIRED.	
03-017		CTIF 222 CVH2 225	CVH2 JTV2	PROCEED WITH GROUP II LH2 TANK FAST FILL CAMERA OPERATIONS PER SEQ 05 ON CHANNEL 225.	
03-018		CTIF 222	CVH2	APPROXIMATELY ONCE PER HOUR, OBTAIN THE BEST POSSIBLE VIEWS OF THE LO2 FEEDLINE BRACKETS AND BELLOWS AND THE LO2 FEEDLINE FLANGE AT INTERTANK SPLICE. RECORD THESE AREAS ON TROUBLESHOOTING TAPE AS REQUIRED.	
				NOTE AFTER BUILT-IN HOLD AT -03H00M00S OF S0007/ S0014 TIMELINE, ICE INSPECTION CREW STARTS ENTRY THROUGH ROADBLOCKS TO ENTER PAD AREA. NOTED REQUIREMENT IS SATISFIED BY COMPLETION OF THE FOLLOWING FOUR STEPS. OMRS S80U00.020-A-1 OMRS S80U00.020-B-1	
03-019		TBC 136 CTIF 222	CTIF CICE	PERFORM ICE/FROST INSPECTIONS PER APPENDIX A WHEN CALLED FOR IN S0007/ S0014.	
03-020				PERFORM VEHICLE ICE/FROST TEMPERATURE MEASUREMENTS USING IR GUN(S). REFERENCE APPENDIX D FOR TEMPERATURE LOCATIONS AND DATA PAGE.	

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OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
03-021				PHOTOGRAPH ET/SRB/ORBITER PER APPENDIX E DURING ICE/FROST INSPECTION WALKDOWN.	
03-022				DURING SHUTTLE WALKDOWN, INSPECT ORBITER AFT ENGINE COMPARTMENT (EXTERNALLY) FOR WATER CONDENSATION AND/OR ICE FORMATION IN OR BETWEEN AFT COMPARTMENT TILES. INSPECT ET TPS WHICH CANNOT BE OBSERVED BY OTV SYSTEM.	
03-023				COMPLETION OF THE PREVIOUS FOUR STEPS SATISFIES NOTED OMRS REQUIREMENT OMRSD S00U00.020-A-1 OMRSD S00U00.020-B-1	
				NOTE	-4
				FOLLOWING STEP PERFORMED DURING FRF ONLY. FOLLOWING STEP IS PERFORMED DURING FRF T-3 HOUR HOLD ICE INSPECTION.	
03-023A				PERFORM IR SCANNER OF ET TPS AND SRM SEGMENTS VISIBLE SURFACES FOR APPROXIMATELY 1 HOUR. OMRSD S00J00.126 NOT PERFORMED	-4

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OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
				NOTE	-4
				FOLLOWING STEPS TAKE PLACE AFTER T-9 MINUTE STATUS CHECK IN S0007 TIMELINE.	
03-024	-00H09M00S (HOLDING)	CTIF 222	CVM1	PROCEED WITH PREPARATION FOR IGNITION OPERATIONS FOR GROUP I PER SEQ 04 ON CHANNEL 223. REPORT COMPLETION.	
03-025	-00H09M00S (HOLDING)	CTIF 222	CVM2	PROCEED WITH PREPARATION FOR IGNITION OPERATIONS FOR GROUP II PER SEQ 05 ON CHANNEL 225. REPORT COMPLETION.	
03-026	-00H05M00S	CTIF 222	CVM1 JTV1 CVM2 JTV2	WITHIN 3 TO 5 MINUTES AFTER LAUNCH SCAN MLP WITH ALL CAMERAS AND REPORT ANY DAMAGE, FIRE OR DEBRIS SIGHTED.	

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OPERATION INSTRUCTIONS

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OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
				NOTE	
				T-0 IS START OF LH2 TANK DRAIN. THE FOLLOWING THREE STEPS ARE PERFORMED AT +00H07M00S OF S0014 TIMELINE AND IS A CONTINGENCY OPERATION IN EVENT OF S0007 SCRUB.	
03-027	+00H00M00S	CTIF 222	CVM1 CVM2	START GROUP I AND GROUP II OTV TIMING INDICATORS ON MARK.	
				3, 2, 1, MARK	
				T-0, START OF LH2 TANK DRAIN	
				NOT PERFORMED	ET 03
03-028		CTIF	CVM1 JTV1	PROCEED WITH GROUP I LOX TANK DRAIN CAMERA OPERATIONS PER SEQ 04 ON CHANNEL 223.	
				NOT PERFORMED	ET 03
03-029		CTIF 222	CVM2 JTV2	PROCEED WITH GROUP II LH2 TANK DRAIN CAMERA OPERATIONS PER SEQ 05 ON CHANNEL 225.	
				NOT PERFORMED	ET 03
				NOTE	
				UNLESS OTHERWISE INDICATED, ALL TIMES ARE REFERENCED TO S0007/S0014 TIMELINE.	
03-030	+04H30M00S	CTIF 222	CVM1 CVM2	TERMINATE SCANNING OPERATIONS.	
03-031		CTIF 222	CVM1 CVM2	PERFORM POST OPERATION INSTRUCTION 1 - SECURING.	
03-032				STATION CALL AND CONTROL SEQUENCE FOR OTV OPERATIONS COMPLETE.	

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OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
04-000				GROUP I OTV CAMERA OPERATIONS FOR LOX, I/T, BIPOD SYSTEM OPERATIONS	

NOTE

THIS SEQUENCE PROVIDES OTV CAMERA POSITIONING/ MONITORING FOR LOX FAST FILL, FIRING AND TANK DRAIN OPERATIONS.

OTV CAMERA 013 OR 042 WILL VIEW THE GO2 VENT HOOD AT ALL TIMES. AT NO TIME WILL BOTH CAMERAS BE OFF THE GO2 VENT HOOD.

PERIODICALLY OR WHEN NEED ARISES:

SCAN OTV CAMERA 013 TO OBSERVE LO2 TANK AND BIPOD STRUTS, ALWAYS RETURNING TO GO2 VENT HOOD.

SCAN OTV CAMERA 040 TO OBSERVE LO2 TANK, ALWAYS RETURNING TO GO2 VENT HOOD.

SCAN OTV CAMERA 004 TO OBSERVE LO2 TANK, ALWAYS RETURNING TO INITIAL POSITION.

SCAN OTV CAMERA 063 TO OBSERVE I/T, BIPOD STRUTS AND +Z AXIS ABOVE BIPOD, ALWAYS RETURNING TO THE ET/ORB LH2 UMBILICAL SO THAT BAGGIE AND BUTCHER PAPER CAN BE OBSERVED.

FOR PAD-B TESTS, ADD 100 TO EACH OTV CAMERA NUMBER LISTED.

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OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
				NOTE	
				THIS SEQUENCE MAY BE PERFORMED MULTIPLE TIMES. RECORD DATA AND OMRS VERIFICATION IN APPENDIX G.	
				NOTED REQUIREMENTS ARE SATISFIED BY COMPLETION OF THE FOLLOWING THREE STEPS.	
				OMRS S00F30.005-1 OMRS S00F30.360	
04-001				FROM THE START OF PROPELLANT LOADING UNTIL PRE-PRESSURIZATION:	
				1. MONITOR/VIDEOTAPE RECORD ET TPS SURFACES AND GO2 VENT AREA, LH2 DOME, LH2 BARREL INTERTANK (EXTERIOR), LO2 TANK, GOX VENT AREA AND PERTRUBERANCES.	
				NOTE	-1
				EXCESSIVE VAPORS ARE DEFINED AS BEING MORE SEVERE THAN THOSE DESCRIBED TO NSTS 08303 OR THE LCC (NSTS 16007-HAZ GAS SUBSYSTEM).	
				* 2. MONITOR LO2 FEEDLINE, LH2 FEEDLINE, LH2 RECIRCULATION LINE, LH2 AFT DOME MANHOLE COVERS, ET/ORB AND TSM LO2/LH2 UMBILICALS. NO VISIBLE CRYOGENIC LIQUID OR EXCESSIVE VAPORS ALLOWED.	

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OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
				LOX TANK FAST FILL	-1
				NOTE T-0 IS START OF LOX TANK FAST FILL.	
04-002		CVM1 223	JTV1	OTV (CAMERAS 004, 013, 060, 061, 062, 063 AND 064). PROCEED WITH GROUP I OTV CAMERA OPERATIONS FOR LO2 TANK FAST FILL. SCAN LO2 TANK WITH CAMERAS USING LO2 FILLRATE CHART AS A GUIDE (SEE FIGURE 3). ALTERNATE CAMERAS AND SCAN FROM BOTTOM OF LO2 TANK TO APPROXIMATE LIQUID LEVEL PER FILLRATE CHART. OBSERVE NOTES ON PRECEDING PAGE.	

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OPERATION INSTRUCTIONS

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OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
				LO2 STABLE REPLENISH	
04-003		CVM1 222	JTV1	OT CAMERAS 004, 013, 060, 061, 062, 063 AND 064 SCAN LO2 TANK WITH CAMERAS AS REQUIRED TO MAINTAIN LO2 TANK SURVEILLANCE.	
04-004				COMPLETION OF PREVIOUS THREE STEPS SATISFIES NOTED OMRS REQUIREMENTS. OMRSD S00FB0.005-1 OMRSD S00FB0.360-1	
04-005				IN CASE OF HIGH WINDS 38 KTS OR GREATER +/- 30 DEGREES FROM NORTH AS MEASURED AT 60 FT LEVEL, USE CAMERA 013 OR 062 TO VERIFY NO ICE, NO DAMAGE AND NO GOX LEAKAGE IN AREA OF ET/GOX VENT INTERFACE (TPS/GOX VENT SEALS). OMRSD S00L00.150-1 NOT PERFORMED	ET 03
				NOTE FOLLOWING STEP IS PERFORMED FOR LAUNCH COUNTDOWN ONLY.	
04-006	-02H00M	CTIF 222	CVM1 CICE	VERIFY TUMBLE VALVE RAIN SHIELD HAS MAINTAINED FLIGHT CONFIGURATION (DISPLACED INTO NOZZLE). OMRSD S00FF0.098-1 NOT PERFORMED	-3 N/A

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OPERATION INSTRUCTIONS

SEC	TIME	CMD	RESP	DESCRIPTION	VERIF.
				CAMERA POSITIONS FOR IGNITION	
04-007		CVMI 223	JTVI	NO LATER THAN 5 MINUTES PRIOR TO IGNITION, SIGHT CAMERAS FOR IGNITION AS FOLLOWS.	
				OTV CAMERAS 061 AND 062	
				POSITION CAMERA FOR BEST OBSERVATION OF THE GOX VENT SEALS/LOUVERS.	
				OTV CAMERA 004	
				FOR VERIFICATION OF NOSE CONE LOUVER AT GOX VENT HOOD RETRACT, POSITION CAMERA SO NOSE CONE LOUVER IS IN RIGHT CENTER OF FRAME AND TOP OF SPIKE IS NEAR TOP OF FRAME OR SET FIELD OF VIEW TO HALF ZOOM. AFTER NOSE CONE LOUVER VERIFICATION, POSITION CAMERA SO GUCP IS AT TOP CENTER OF FRAME.	
				OTV CAMERA 060	
				OPEN ZOOM TO LARGEST FRAME. POSITION CAMERA SO BOTTOM OF FRAME IS AT ET XT540 AND THE ET IS CENTERED SUCH THAT THE -Z AXIS WILL RISE NEAR THE RIGHT EDGE OF FRAME.	
				OTV CAMERA 064	
				POSITION CAMERA BETWEEN ET AND ORBITER SO END OF CROSS BEAM IS TOP CENTER OF FRAME, +Y SRB IS JUST AT LEFT EDGE OF FRAME AND LOWER EDGE OF ORBITER WING AT BOTTOM RIGHT.	
				OTV CAMERA 063	
				POSITION CAMERA BETWEEN ET AND ORBITER SO -Y SRB HOLDDOWN POST IS AT BOTTOM CENTER OF FRAME AND LO2 UMBILICAL IS AT TOP RIGHT OF FRAME.	

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OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
				NOTE	
				CAMERA 13 SHALL REMAIN POSITIONED ON NOSE CONE LOUVER UNTIL VENT ARM ROTATES OUT OF FIELD OF VIEW.	
04-008	-00H02M50S	CVM1 223	JTV1	OTV CAMERA 013	
				POSITION CAMERA SO GOX VENT ARM LATCHBACK MECHANISM (EAST SIDE OF FSS ON APPROXIMATE 263' LEVEL) IS IN VIEW. AFTER VENT ARM RETRACT IS COMPLETE, POSITION CAMERA SO -Y VENT LOUVER IS IN LEFT SIDE OF FRAME AND NOSE CONE FAIRING IS ON RIGHT SIDE.	
04-009		CVM1 223	JTV1	WITHIN 3 TO 5 MINUTES AFTER LAUNCH, SCAN MLP WITH ALL GROUP I CAMERAS AND REPORT ANY DAMAGE, FIRE OR DEBRIS SIGHTED.	
				NOTE	
				FOLLOWING STEP IS PERFORMED IN EVENT OF DRAIN.	
				DRAIN OPERATIONS FOR LOX TANK	
04-010		DVM1 223	JTV1	OTV CAMERAS 004, 013, 060, 061, 062 AND 064	
				PROCEED WITH LO2 TANK DRAIN GROUP I CAMERA OPERATIONS. FOLLOW LIQUID LEVEL USING LO2 DRAIN CHART (SEE FIGURE 5). CONTINUE MONITOR UNTIL 1.5 HOURS AFTER SENSORS DRY.	
				NOT PERFORMED	ET 03 JAN 2 1 92

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OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
				CAUTION	
				IF DOCK SEAL FRETTING OR CONTINUOUS GAS ESCAPE IS DETECTED, NOTIFY CNEC ON OIS CHANNEL 136 FOR GOX VENT HOOD REMOVAL.	
				NOTE	
				MONITOR GO2 VENT HOOD SEAL FOR GO2 LEAKAGE.	
04-011				OTV CAMERA 013 OR 062 SHALL BE ON GO2 VENT HOOD SEAL AT ALL TIMES UNTIL RETRACTED TO MONITOR FOR FRETTING BETWEEN DOCK SEAL AND TPS DURING DETANKING.	
				(MRSD S88F30.350-1	
04-012				GROUP I OTV CAMERA OPERATIONS FOR LOX, I/T, BIPOD SYSTEM OPERATIONS COMPLETE.	

DATE: 01-11-91

OMI NO. - S6444
REV. - B-1

OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
05-000				GROUP II OTV CAMERA OPERATIONS FOR LH2 SYSTEM OPERATIONS	

NOTE

THIS SEQUENCE PROVIDES OTV CAMERA POSITIONING/ MONITORING FOR LH2 FAST FILL, TIRING AND TANK DRAIN OPERATIONS.

OTV CAMERA 055 IS SHARED AND THE INITIAL POSITION IS ON THE NORTHBRIDGE LH2 PIPELINE FLANGE. WHEN TIME PERMITS RETURN OTV CAMERA 055 TO INITIAL POSITION ON THE NORTH BRIDGE LH2 PIPELINE FLANGE.

FOR PAD-B TESTS, ADD 100 TO EACH OTV CAMERA NUMBER LISTED.

OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
				NOTE	
				THIS SEQUENCE MAY BE PERFORMED MULTIPLE TIMES. RECORD DATA AND OMRS VERIFICATION IN APPENDIX G.	
				NOTED REQUIREMENTS ARE SATISFIED BY COMPLETION OF THE FOLLOWING THREE STEPS.	
				OMRS S08FB0.005-1 OMRS S08FB0.360	
05-001				FROM THE START OF PROPELLANT LOADING UNTIL PRE-PRESSURIZATION:	
				1. MONITOR/VIDEOTAPE RECORD ET TPS SURFACES AND GO2 VENT AREA, LH2 DOME, LH2 BARREL INTERTANK (EXTERIOR), LO2 TANK, GOX VENT AREA AND PERTRUBERANCES.	
				NOTE	-1
				EXCESSIVE VAPORS ARE DEFINED AS BEING MORE SEVERE THAN THOSE DESCRIBED TO NSTS 08303 OR THE LCC (NSTS 16007-NAZ GAS SUBSYSTEM).	
				2. MONITOR LO2 FEEDLINE, LH2 FEEDLINE, LH2 RECIRCULATION LINE, LH2 AFT DOME MANHOLE COVERS, ET/ORB AND TSM LO2/LH2 UMBILICALS. NO VISIBLE CRYOGENIC LIQUID OR EXCESSIVE VAPORS ALLOWED.	-1

ET 03

DATE: 01-11-91

OMI NO. - S6444
REV. - B-1

OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
					-1
				LH2 TANK FAST FILL	
				NOTE T-0 IS START OF LH2 TANK FAST FILL.	
05-002		CVM2 225	JTV2	OTV CAMERAS 033, 054, 055, 056, 065, 066 AND 067	
				PROCEED WITH GROUP II OTV CAMERA OPERATION FOR LH2 TANK FAST FILL. SCAN LH2 TANK WITH CAMERAS USING LH2 FILLRATE CHART AS A GUIDE (SEE FIGURE 1 OR 2). ALTERNATE CAMERAS AND SCAN FROM BOTTOM OF LH2 TANK TO APPROXIMATE LIQUID LEVEL PER FILL RATE CHART.	

DATE: 01-11-91

CMI NO. - S6444
REV. - B-1

OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.

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DATE: 01-03-90

OMI NO. - S6444
REV. - B

OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
				LH2 STABLE REPLENISH	
05-003		CVM2 225	JTV2	SCAN LH2 TANK WITH CAMERAS AS REQUIRED TO MAINTAIN LH2 TANK SURVEILLANCE.	
05-004				COMPLETION OF PREVIOUS THREE STEPS SATISFIES NOTED OMRS REQUIREMENTS.	
				OMRSD S00FB0.005-1 OMRSD S00FB0.360	
				CAMERA POSITIONS FOR IGNITION	
05-005		CVM2 225	JTV2	NO LATER THAN 5 MINUTES PRIOR TO IGNITION, SIGHT CAMERAS AS FOLLOWS.	
				OTV CAMERA 054	
				OPEN ZOOM TO LARGEST FRAME. POSITION CAMERA SO TRAILING EDGE OF ORBITER IS AT NEAR BOTTOM OF FRAME AND ORBITER/ET UMBILICAL CONNECTIONS ARE AT APPROXIMATE FRAME CENTER.	
				OTV CAMERA 055	
				POSITION CAMERA SO BOTTOM OF FRAME IS AT MLP DECK (0 LEVEL) AND BOTTOM OF AFT DOME OF ET IS NEAR FRAME TOP AND +Y SRB IS IN LEFT SIDE OF FRAME.	
				OTV CAMERA 056	
				POSITION CAMERA SO BOTTOM OF FRAME IS AT MLP DECK (0 LEVEL) AND BOTTOM OF AFT DOME OF ET IS NEAR FRAME TOP AND -Y SRB IS IN RIGHT SIDE OF FRAME.	
				OTV CAMERA 065	
				OPEN ZOOM TO LARGEST FRAME. POSITION CAMERA SO ORBITER NOSE IS AT TOP OF FRAME AND ET/ORBITER IS CENTERED IN VIEW.	

ET 03

OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
05-005 CON'T				GTV CAMERA 067	
				OPEN ZOOM TO LARGEST FRAME. POSITION CAMERA SO BOTTOM OF FRAME IS AT MLP DECK (0 LEVEL) AND ET IS CENTERED IN VIEW.	
				GTV CAMERA 033	
				OPEN ZOOM FOR LARGEST FRAME SIZE, POSITION CAMERA SO ET IS CENTERED IN VIEW AND BOTTOM OF FRAME IS AT MLP DECK (0 LEVEL).	
				GTV CAMERA 066	
				POSITION CAMERA SO LO2 FEEDLINE BELLOWS XY1104 IS AT CENTER TOP OF FRAME AND SECOND BERRYMOUNT FROM BELLOWS AT BOTTOM OF FRAME.	
05-006		CVM2 225	JTV2	WITHIN 3 TO 5 MINUTES AFTER LAUNCH, SCAN MLP WITH ALL GROUP II CAMERAS AND REPORT ANY DAMAGE, FIRE OR DEBRIS SIGHTED.	
				ENGINE CUTOFF OPERATION FOR LH2 TANK	
				NOTE ALL TIMES ARE FROM ENGINE CUTOFF UNTIL OTHERWISE NOTED.	
05-007	+00H02M00S	CVM2 225	JTV2	RESIGHT GTV CAMERAS 054, 055 AND 056 TO INITIAL DOME POSITION.	
05-008	+00H04M00S	CVM2 225	JTV2	SCAN TANK STARTING AT DOME. CONTINUE SCAN UNTIL 5 MINUTES PRIOR TO DRAIN THEN PLACE ALL CAMERAS IN DRAIN POSITION.	

OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
				LH2 TANK DRAIN OPERATIONS	
05-009		CVH2 225 225	JTV2	OTV CAMERAS 053, 054, 055, 056, 065, 066 AND 067 PROCEED WITH LH2 TANK DRAIN GROUP II CAMERA OPERATIONS. FOLLOW LIQUID LEVEL USING LH2 DRAIN CHART (SEE FIGURE 4). CONTINUE MONITOR UNTIL 1.5 HOURS AFTER SENSORS DRY. OMRSD S00E00.021 NOT PERFORMED	ET 03
05-010				GROUP II OTV CAMERA OPERATIONS FOR LH2 SYSTEM OPERATIONS COMPLETE.	JAN 2 5 '90

JAN 2 5 '90

ET 03

OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.

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SECTION V

POST OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
06-000				POST OPERATION INSTRUCTIONS - ET	
				NOTE POST OPERATION INSTRUCTIONS 1, 2, & 3 MAY BE PERFORMED MULTIPLE TIMES. RECORD DATA AND OMRS VERIFICATIONS IN APPENDIX G.	
06-001				POST OPERATION INSTRUCTION 1 - SECURING	
06-002		CTIF 136 TBC 232	TBC NTD	OTV SUPPORT FOR ET THERMAL PROTECTION SYSTEM EVALUATION NO LONGER REQUIRED.	
06-003		CTIF 222	CVVR	1. TURN OFF VIDEO RECORDERS. 2. REMOVE TAPE CARTRIDGES.	
06-004		CTIF 222	CVM1 CVM2	1. SECURE CONSOLES. 2. REPORT COMPLETION.	
06-005		CTIF 136 TBC 232	TBC NTD	FIRING ROOM 2, ICE FROST MONITORING AREA, EQUIPMENT SECURING COMPLETE.	
06-006				ET POST OPERATION INSTRUCTION I - SECURING COMPLETE.	

ET 03

POST OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.

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DATE: 01-03-90

OMI NO. - S6444
REV. - B

POST OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
06-007				POST OPERATION INSTRUCTION 2 - OTV TAPE	
06-008				AS SOON AS POSSIBLE AFTER DETANKING OR LAUNCH, A SUMMARY TAPE SHALL BE PREPARED TO INCLUDE, BUT NOT LIMITED TO, REPORTED ANOMALIES.	
06-009				ET POST OPERATION INSTRUCTION 2 - OTV TAPE COMPLETE.	

ET 03

DATE: 81-03-06

ORI WO. - S6444
REV. - B

POST OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.

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DATE: 01-03-90

OMI NO. - S6444
REV. - B

POST OPERATION INSTRUCTIONS

SEQ	TIME	CND	RESP	DESCRIPTION	VERIF.
06-010				POST OPERATION INSTRUCTION 3 - POST PROPELLANT DRAIN WALKDOWN	
06-011	+03H00M00S			VERIFY FOLLOWING PERSONNEL ON STATION AND READY TO PROCEED WITH POST PROPELLANT DRAIN WALKDOWN.	
			WPSE	SPC SAFETY ENGINEER	
			PTIF	LEAD ICE/FROST ENGR (LSOC) (WILL REPORT FOR 4 OTHER LSOC ENGINEERS)	
			PICE	LEAD ICE/FROST ENGR, PAD (NASA) (WILL REPORT FOR 4 OTHER NASA ENGINEERS)	
06-012				VERIFY PERSONNEL HAVE FLAME RETARDANT BLUE COLLAR COVERALLS AND EMERGENCY LIFE SUPPORT APPARATUS (ELSA).	
06-013	+03H30M00S			PERFORM POST PROPELLANT DRAIN WALKDOWN. VISUALLY INSPECT ET TPS EXT SURFACES AFTER DETANKING AND WARMUP (APPROX T+4 HOURS).	
				HANDS-ON INVESTIGATION REQUIRED OF ALL ET TPS DEFECTS SUSPECTED OF VIOLATING MSTS 08303.	
				OMRSD S00E00.031	
				NOT PERFORMED	
06-014				ET POST OPERATION INSTRUCTION 3 - POST PROPELLANT DRAIN WALKDOWN COMPLETE.	

POST OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.

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DATE: 01-11-91

OMI NO. - S6444
REV. - B-1

POST OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
06-015				POST OPERATION INSTRUCTION 4 - POST LAUNCH WALKDOWN	
06-016	+03H00M00S			VERIFY FOLLOWING PERSONNEL ON STATION AND READY TO PROCEED WITH POST LAUNCH WALKDOWN.	
			*PSE	SPC SAFETY ENGINEER	
			PTIF	LEAD ICE/FROST ENGR (LSOC) (WILL REPORT FOR 4 OTHER LSOC ENGINEERS)	
			PICE	LEAD ICE/FROST ENGR, PAD (NASA) (WILL REPORT FOR 4 OTHER NASA ENGINEERS)	
06-017				VERIFY PERSONNEL HAVE FLAME RETARDANT BLUE COLLAR COVERALLS AND EMERGENCY LIFE SUPPORT APPARATUS (ELSA).	
06-018	+03H30M00S			PERFORM POST LAUNCH WALKDOWN. VISUALLY INSPECT POST LAUNCH PAD/AREA TO IDENTIFY ANY LOST FLIGHT OR GROUND SYSTEMS HARDWARE AND DEBRIS SOURCES.	
				DOCUMENT/PHOTOGRAPH LAUNCH PAD AREA AREA CONFIGURATION.	
				ROLL NO. 1 NEG NO. 1-24	
				WORK ORDER NO. E-108	
				OMSD S00000.010-1	
				"NOT PERFORM" ONLY AFTER LAUNCH SCRUB	-1
				NOT PERFORMED	N/A
06-019				POST OPERATION INSTRUCTION 4 - POST LAUNCH WALKDOWN COMPLETE.	

6-25-92
63

DATE: 01-11-91

OMI NO. - S6444
REV. - B-1

POST OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.

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DATE: 01-11-91

OMI NO. - S6444
REV. - B-1

POST OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.
06-020				POST OPERATION INSTRUCTION 5 - ENGINEERING FILM DATA REVIEW	
				NOTE THIS POST OPERATION INSTRUCTION COMMENCES AT LAUNCH +24 HR TIME FRAME.	
06-021				REVIEW ENGINEERING FILM DATA PER APPENDIX F. OMRSD S00U00.011-1 "NOT PERFORM" ONLY AFTER LAUNCH SCRUB	-1
				NOT PERFORMED	N/A
06-022				POST OPERATION INSTRUCTION 5 - ENGINEERING FILM DATA REVIEW COMPLETE.	

ET 08

7-2-92

DATE: 01-11-91

OMI NO. - S6444
REV. - 3-1

POST OPERATION INSTRUCTIONS

SEQ	TIME	CMD	RESP	DESCRIPTION	VERIF.

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DATE: 01-11-91

ONI NO. - S6444
REV. - B-1

APPENDIX A

TANKING INSPECTION AREAS/STAY TIMES

WARNING

HAZARDOUS OPERATIONS FOLLOW DUE TO POSSIBLE PERSONNEL EXPOSURE TO CATASTROPHIC CONDITIONS AND WORKING ON MLP "0" LEVEL WITHOUT PROTECTION OF SAFETY HANDRAILS. (REF ONI S0007, VL4/S0014,VL4 ICE/FROST INSPECTION). DURING HAZARDOUS OPERATIONS, BUDDY SYSTEM WILL BE IN EFFECT.

AREAS	APPROX STAY TIME (MINUTES)
0 LEVEL	20
LH2 AFT DOME	
ET/ORBITER ATTACHMENT BOTTOM VIEW	
UMBILICALS (LOX & LH2)	
ET/SRB AFT ATTACHMENTS BOTTOM VIEW	
ORBITER ENGINES CLOSEOUT AREAS	
ORBITER TILES	
ET ACREAGE AROUND +Z AXIS	
LOX FEEDLINE	
ET ACREAGE AROUND -Z AXIS	
VISIBLE SRB SURFACES	
SRB IGNITION OVERPRESSURE WATER BAGS	-1
135 FEET LEVEL	10
GH2 PRESS LINE	
ET/ORBITER ATTACHMENTS TOP VIEW	
ET ACREAGE BETWEEN -Y AND +Z AXIS	
ET/ORBITER BIPOD BOTTOM VIEW	
ORBITER TILES	
LOX FEEDLINE	
GO2 PRESS LINE AND CABLE TRAY	
VISIBLE SRB SURFACES	

ET 03

APPENDIX A

195 FEET LEVEL (OAA) 10

GH2 PRESS LINE SIDE AND TOP VIEW
ET/ORBITER BIPOD SIDE AND BOTTOM VIEW
ET/SRB FORWARD ATTACHMENT BOTTOM VIEW
ET/SRB AFT ATTACHMENT TOP VIEW
I/T SPLICE AREA
ET ACREAGE BETWEEN -Y AND +Z AXIS
ORBITER TILES
VISIBLE SRB SURFACES

215 FEET LEVEL 5

ET GH2 UMBILICAL
ET ACREAGE AREA BETWEEN -Z AND -Y AXIS
GOX VENT AREA
ORBITER TILES
TUMBLE VALVE COVER
VISIBLE SRB SURFACES

255 FEET LEVEL 5

ET ACREAGE
GO2 PRESS LINE AND CABLE TRAY
VISIBLE SRB SURFACES

0 LEVEL 5

GENERAL OBSERVATION FOR DIFFERENCES FROM
EARLIER INSPECTION

THE BUDDY SYSTEM HAS BEEN IN EFFECT; TWO OR MORE ESSENTIAL PERSONNEL, WORKING TOGETHER AT ALL TIMES DURING PERFORMANCE OF APPENDIX A, HAZARDOUS OPERATIONS, AS MONITORED BY SPC SAFETY.

NOTE

HAZARDOUS OPERATIONS COMPLETE.

OMRS S00U00.020-A-1

ET 03

DATE: 01-03-90

OMI NO. - 34444
REV. - B

APPENDIX B

ANOMALY SHEET

TAPE REVIEWED BY N/A

CAMERA NO. _____

ANOMALY TIME _____ DATE _____

ANOMALY DESCRIPTION/LOCATION _____

ACTION TAKEN: PR NO. _____

ANOMALIES BEGIN
ON PG 71

DATE: 01-03-90

DMI NO. - S6444
REV. - B

APPENDIX B

TAPE REVIEWED BY N/A

CAMERA NO._____

ANOMALY TIME _____ DATE _____

ANOMALY DESCRIPTION/LOCATION_____

ACTION TAKEN: PR NO._____

ET 09

DATE: 01-03-90

001

OMI NO. - S6444
REV. - B

APPENDIX B

TAPE REVIEWED BY Speece

CAMERA NO. 63

ANOMALY TIME 15:10 DATE 6-25-92

ANOMALY DESCRIPTION/LOCATION THERE IS A CRACK ON THE FORWARD SIDE OF THE -Y VERTICAL SPLIT CAUL THAT FAIRING

ACTION TAKEN: PR NO. ET-SO-TS-0025

OBSERVED ALSO BY ICE INSPECTION TEAM
PR DOCUMENTS MRB-USE-AS-IS

James J Cawley 6/25/92
Pedro J. Rosado TVMSD22 6/25/92
Jack Ryan SSP END INTEG 6/25/92
D. Cossey 6/25/92 MMC
J.W. McReynolds 6/25/92 RI

7 7 6 9 7 7

002

DATE: 01-03-90

DMI NO. - S6444
REV. - B

APPENDIX B

TAPE REVIEWED BY Steece

CAMERA NO. 56

ANOMALY TIME _____ DATE 6-25-92

ANOMALY DESCRIPTION/LOCATION ICE/FROST SPOTS IN INTERTANK STRINGER VALLEYS AT BOTH LO2/LH2 TANK CLOSEOUTS

ACTION TAKEN: PR NO. N/A

ACCEPTABLE PER NSTS 08303 REF PARA 2.3
PHOTO'S 2.3.8 - 2.3.9
THESE AREAS ARE LOCATED ON -Z SIDE OF TANK, OUTSIDE OF DEBRIS ZONE

James J. Cawley 6/25/92
Peter J. Rosado TUMSDEL 6/25/92
SSP ENG INTEG
Jack D. Bryan 6/25/92
D. Capez 6/25/92 MMC
J.W. McClymonds 6/25/92 RI

ET 03

005

DATE: 01-03-90

OMI NO. - S6444
REV. - B

APPENDIX B

TAPE REVIEWED BY S/Beck

CAMERA NO. 54

ANOMALY TIME _____ DATE 6-25-92

ANOMALY DESCRIPTION/LOCATION ICE/FROST FORMATION IN LO2 FEEDLINE BELLOWS AND SUPPORT BRACKETS

ACTION TAKEN: PR NO. N/A

ACCEPTABLE PER NSTS 08303 REF PARA. 2.1
PHOTO'S 2.1.1 — 2.1.10

James J Cawley 6/25/92
Robert J Woods TVM3022 6/25/92
SSP ENG INTEG
Jack Opt Bryan 6/25/92
D. Copsey 6/25/92 MMC
J W McReynolds 6/25/92 RZ

004

DATE: 01-03-90

OMI NO. - S6444
REV. - B

APPENDIX B

TAPE REVIEWED BY SLEECE

CAMERA NO. 33/54 64/63

ANOMALY TIME _____ DATE 6-25-92

ANOMALY DESCRIPTION/LOCATION ICE/FROST FORMATIONS AT LO2 AND LH2 UMBILICALS - AT PYRO CAN PORCH (FROM FWD'S AFT 5" AND-
LO2: ICE/FROST AT SECONDARY/UMBILICAL INTERFACE AFT OF LOWER BLOCK
LH2: ICE/FROST AT SECONDARY/UMBILICAL INTERFACE, FROM LINE BELOWS AND BEST DECS
AND AFT PYRO CAN BOTTLINE

ACTION TAKEN: PR NO. N/A

ACCEPTABLE PER NSTS 08303 REF PARA 3.2
PHOTOS 3.2.1 — 3.2.4

James J Cawley 6/25/92
Pedro J Rosado TVMIOII 6/25/92
Jack A Ryan SSP ENG-INTEG 6/25/92
D. Lopez 6/25/92 MMC
J.W. McClymonds 6/25/92 RI

ET 03

JUN 25 '92

7769

OCF.

DATE: 01-03-90

OMI NO. - S6444
REV. - B

APPENDIX B

TAPE REVIEWED BY SPEECE

CAMERA NO. S6

ANOMALY TIME _____ DATE 6-25-92

ANOMALY DESCRIPTION/LOCATION 4 AREAS OF 'FROTH' FORMATION AT LH2 AFT DOME - E MANHOLE COVER

ACTION TAKEN: PR NO. N/A

ACCEPTABLE PER NSTS 08303 - REF PHOTO 2.2.23

James J. Cowley 6/25/92

Robert J. Rosado TVMSDCC 6/25/92

SSP ENG INTEG 6/25/92

6/25/92 MMC

J.W. McCormack 6/25/92 RI

ET 03

DATE: 01-03-90

OMI NO. - 86444
REV. - B

APPENDIX B

TAPE REVIEWED BY N/A

CAMERA NO. _____

ANOMALY TIME _____ DATE _____

ANOMALY DESCRIPTION/LOCATION _____

ACTION TAKEN: PR NO. _____

005 IS LAST ANOMALY

ET 03

APPENDIX B

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APPENDIX C

FR-2 WEATHER/ICE/CONDITION DATA

REF NASA TECHNICAL MEMORANDUM
TM 107550 FOR DATA

APPENDIX C

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DATE: 01-03-90

CMI NO. - S6444
REV. - B

APPENDIX D

INFRA-RED SCANNER SSV MAPPING PLAN

NOTE

THIS GENERALIZED PLAN
MAY BE ALTERED BASED
ON REAL-TIME DECISIONS
OF ICE INSPECTION TEAM.

REF NASA TECHNICAL
MEMORANDUM TM 107550
FOR SSV MAP

ET
03
7-2-92

APPENDIX D

APPENDIX E

SSV PHOTOGRAPHIC PLAN

NOTE

THIS GENERALIZED PLAN
MAY BE ALTERED BASED
ON REAL-TIME DECISIONS
OF ICE INSPECTION TEAM.

REF NASA TECHNICAL
MEMORANDUM TM 107550
FOR SSV PHOTOS

APPENDIX E

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APPENDIX E

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APPENDIX E

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DATE: 01-03-90

OMI NO. - E6444
REV. - B

APPENDIX F

ENGINEERING FILM REVIEW

NOTE

AS SOON AS POSSIBLE AFTER LAUNCH, AN ENGINEERING FILM DATA REVIEW WILL OCCUR WITH REPORT INCLUDED AS CLOSEOUT DATA TO THIS OMI.

OMRS S00U00.011

REF NASA TECHNICAL MEMORANDUM TM 107550 FOR FILM REVIEW REPORT.

7-2-92
ET
D3

APPENDIX F

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DATE: 10-23-91

OMI NO. - S6444
REV. - B-4

APPENDIX G

DATA SHEET AND OMRS VERIFICATION RECORD FOR
SEQUENCES WHICH MAY BE PERFORMED MULTIPLE TIMES

RUN 1

STEP	RQMT NO.	DATE	ENG VERIF	RECORDED DATA	
02-002	S00FA0.900	6/24/92	ME 03 6/24/92	N/A	
02-003	S00FA0.600	6/24/92	ME 03 6/24/92	78 L-G F RSRM PMBT	
02-006	S00U00.030	6/24/92	ME 03 6/24/92	E.106 WORK ORDER	
03-023	S00U00.020-A	JUN 25 92	ET 03 JUN 25 92	N/A	
03-023	S00U00.020-B	JUN 25 92	ET 03 JUN 25 92	N/A	
03-023A	S00J00.126	NOT PERFORMED	ET 03 JUN 25 92	N/A	-4
04-004	S00FB0.005	JUN 25 92	ET 03 JUN 25 92	N/A	
04-004	S00FB0.360	JUN 25 92	ET 03 JUN 25 92	N/A	
04-005	S00L00.150	NOT PERFORMED	JUN 25 92 ET 03	N/A	
04-006	S00FF0.098-1	JUN 25 92	ET 03 JUN 25 92	N/A	-4
04-010	S00E00.021	NOT PERFORMED	ET 03 JUN 25 92	N/A	
04-011	S00FB0.350	JUN 25 92	ET 03 JUN 25 92	N/A	
05-004	S00FB0.005	JUN 25 92	ET 03 JUN 25 92	N/A	
05-004	S00FB0.360	JUNE 25 92	ET 03 JUN 25 92	N/A	
05-009	S00E00.021	NOT PERFORMED	ET 03 JUN 25 92	N/A	
06-013	S00E00.031	NOT PERFORMED	ET 03 JUN 25 92	N/A	
06-018	S00U00.010-1	6-25-92	ET 03 6-25-92	N/A	-1
	WORK ORDER NO. E-108				
06-021	S00U00.011-1	7-2-92	ET 03 7-2-92	N/A	-1

7-2-92 ET 03

APPENDIX G

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APPENDIX G

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APPENDIX G

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END OF OMI

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*****************************************************
*                                                   *
*        PROGRAM PRA120 SELECTION CRITERIA          *
* -------------------------------------------------- *
*                                                   *
*        RPT TYPE: IPR                              *
*                                                   *
*        PR GROUP:                                  *
*                                                   *
*    MOSC AREA CD:                                  *
*                                                   *
*      PR ELEM CD:                                  *
*                                                   *
*          STS NO:                                  *
*                                                   *
* Starting RPT DT: 07/02/91                         *
*                                                   *
*   Ending RPT DT: 07/02/92                         *
*                                                   *
*  LRU or Non-LRU: B                                *
*                                                   *
*    PRACA EFF CD:                                  *
*                                                   *
*            EICN:                                  *
*                                                   *
*      RPT STATUS: OP                               *
*                                                   *
* DETECTED DURING: S6444                            *
*                                                   *
* -------------------------------------------------- *
* Sorted by DETECTED DURING, PR ELEM CD, and EICN   *
*                                                   *
*****************************************************
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7.2.92

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*************************************************
*                                               *
* NO DATA FOUND ON THE DATABASE FOR THE SELECTED PARAMETERS *
*                                               *
*************************************************
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*****************
*               *
* END OF REPORT *
*               *
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7.2.92

DEVIATION INDEX

☒ PERMANENT ☐ TEMPORARY ☐ TEMP - RECYCLE

7 7 6 S 6 4 4 4 2 3

WAD NO.

TASK NO./REQ. NO. CO

DEV NO.	REQ/ STEP	EFFECTIVITY	QC/ PP&C	DATE	REMARKS
~~00~~/01	1.7	~~ET 37 / SUBS~~	[illegible]	5-12-91	Inc. into B-2
00/02	1.4.3	STS 45 & Subs	[illegible]	1-30-92	
00/03	1.4.3	45 + subs	[illegible]	2/11/92	

7-2-92

KSC FORM 4-470 (REV. 2/87)

U.S. Government Printing Office: 1990-731-017/21015

DEVIATION

PAGE 1 OF 1

WAD NO. S6444 REV B-4	SYSTEM ENGINEER R. SEALE LSOC-SE 2-7-92	GOVT SYSTEMS ENGINEER 2/7/92
TITLE SSV ICE AND DEBRIS ASSESSMENT	TEST CONDUCTOR TBL	GOVT TEST DIRECTOR
SYSTEM TPS	TPE 3/7/92	GOVT PROJECT ENGINEER 3/10/92
AFFECTED: DESIGN RQMTS. ☒ NO ☐ YES; OMRS/OMP ☒ NO ☐ YES	QUALITY ENGINEER 2/7/92	OTHER
	OTHER PHILLIP F. HARNER 2/7/92	OTHER
HAZARDOUS SEQ AFFECTED ☒ NO ☐ YES	CONTRACTOR SAFETY	OTHER

EFFECTIVITY: ☐ SRB BI- ☐ ET ☐ ORB/FLT ☐ PAYLOAD ☐ GSE ☒ STS 45 ☒ AND SUBS

DEV.	PAGE	SEQ	CHANGE – REASON
00/03			~~NOTE~~
			~~THIS DEV IN EFFECT REPLACES DEV~~
	13	1.4.3	DELETE CAMERAS 009/109 AND 071/171 FROM
			S/S 3 "DEDICATED TO TPS/ICE INSPECTION" LIST.
	13	1.4.3	ADD CAMERAS 009/109 AND 071/171 TO S/S 3
			"TIME SHARED" LIST.
			REASON: TECHNICAL CHANGE — PREVIOUS DEV
			LISTED CAMERAS 009/109 AND
			071/171 AS "DEDICATED". THESE
			CAMERAS ARE ACTUALLY "TIME
			SHARED" WITH CLHY AND SCC
			RESPECTIVELY — MAINTAIN S6444
			CONSISTENT WITH SOOOT VL2
			FIGURE 4 CAMERA USAGE MATRIX

ET 03

ORIGINATOR (print)	PHONE	ORGANIZATION	DATE	
R SEALE LSOC-SE	1-6501	17-40	2-7-92	☒ PERM ☐ TEMP ☐ TEMP-RECYCLE

KSC FORM 8-30A (REV. 3/87)

*U.S. GPO: 1989-631-015/80987

DEVIATION

PAGE 1 OF 1

WAD NO. S6444 REV B-4	SYSTEM ENGINEER R SEALE LSOC-SE 1-24-92	GOVT SYSTEMS ENGINEER
MI TITLE SSV ICE AND DEBRIS ASSESSMENT	TEST CONDUCTOR	GOVT TEST DIRECTOR 1-27-92
SYSTEM TPS	TPE	GOVT PROJECT ENGINEER OPS
AFFECTED DESIGN RQMTS. ☒ NO ☐ YES OMRS/OMP ☒ NO ☐ YES	QUALITY ENGINEER	OTHER
	OTHER	OTHER
HAZARDOUS SEQ AFFECTED ☒ NO ☐ YES	CONTRACTOR SAFETY	OTHER

EFFECTIVITY: ☐ SRB BI ____ ☐ ET ____ ☐ ORB/FLT ____ ☐ PAYLOAD ☐ GSE ☒ STS 45 ☒ AND SUBS

DEV.	PAGE	SEQ	CHANGE – REASON
00/02	13	1.4.3	ADD CAMERAS 009/109 AND 071/171 TO
			S/S 3 "DEDICATED TO TPS/ICE INSPECTION."
			~~LIST~~ AND TO S/S 5.
			REASON: TECHNICAL CHANGE – SET S6444
			CAMERA CALLOUTS CONSISTENT
			WITH S0007 VL2 FIGURE 4
			CAMERA ALLOCATIONS

ORIGINATOR (print)	PHONE	ORGANIZATION	DATE	
R SEALE LSOC-SE	1-6501	17-40	1-24-92	☒ PERM ☐ TEMP ☐ TEMP RECYCLE

KSC FORM 4-30A (REV. 3/87)

*U.S. GPO: 1991-531-017/21064

WAD NO. S6444

TASK NO./SEQ. NO. 03

DEVIATION INDEX

☒ PERMANENT ☐ TEMPORARY ☐ TEMP. RECYCLE

DEV NO.	SEQ/ STEP	EFFECTIVITY	QC/ PP&C	DATE	REMARKS
03/01	03-023	STS 99 & SUBS	ET 03	9-18-91	Chg in B-4

ET 03

9-23-91

ET 03

KSC FORM 4-470 (REV. 3/87)

DEVIATION INDEX

☒ PERMANENT ☐ TEMPORARY ☐ TEMP - RECYCLE

WAD NO. S6444 B

TASK NO./SEQ. NO. 04

DEV NO.	SEQ/ STEP	EFFECTIVITY	QC/ PP&C	DATE	REMARKS
~~04/01~~	~~04-001~~	~~ALL~~	~~WC QAZ STC~~	~~[illegible] 1991~~	~~INC SEQ B-1~~
~~04/02~~	~~04-006~~	~~ALL~~	~~WC QAO SEC~~	~~7-20-91~~	~~INC IN B-3~~

7 7 6 7 . 7 1

DEVIATION INDEX

☒ PERMANENT ☐ TEMPORARY ☐ TEMP - RECYCLE

WAD NO: S6444 B

TASK NO /SEQ. NO.: 05

DEV NO.	SEQ/ STEP	EFFECTIVITY	QC/ MP&C	DATE	REMARKS
05/01	05-001	ALL	WC 047 SPC	[illegible] 1990	[illegible] B-1
05/02	05-001	ALL	WC 047 SPC	[illegible] 1990	[illegible] B-1

ET 03

WAD NO. 56444 B

TASK NO./SEQ. NO.

DEVIATION INDEX

☒ PERMANENT ☐ TEMPORARY ☐ TEMP. RECYCLE

DEV NO	SEQ/ STEP	EFFECTIVITY	OC/ PF&C	DATE	REMARKS
01/01	06-018	ET 34 & subs		[illegible]	close in B.1
06/02	06-021	ET 34 & subs		[illegible]	close in B.1

JUN 2 [illegible]

ET 03

DEVIATION INDEX

☒ PERMANENT ☐ TEMPORARY ☐ TEMP RECYCLE

WAD NO. 56444 B

TASK NO./SEQ NO. Sg. Rec A

DEV NO.	SEQ/ STEP	EFFECTIVITY	QC/ PP&C	DATE	REMARKS
~~APPA 01~~	~~APPENDIX A~~	~~9JRMCO/ET 35~~	[illegible]	[illegible]	chg in B-1 p 67

JA 2 5

ET 03

KSC FORM 4-470 (REV. 3/82)

*U.S. GPO: 1990-731-017/60760

WAD NO. 56444

TASK NO./SEO NO.

DEVIATION INDEX

☒ PERMANENT ☐ TEMPORARY ☐ TEMP. RECYCLE

DEV NO.	SEQ/ STEP	EFFECTIVITY	QC/ PP&C	DATE	REMARKS
~~BPG~~ A1	APT C	ET34 & subs	(illegible)	[illegible]	clue in B-3

ET 03

7 7 6 9 0 1 2 0 8 3 1

PEN AND INK CHANGE RECORD

WAO NO./REVISION: S6444 B-4 RUN 1

EFFECTIVITY: STS 50 / ET-50

NO.	PAGE	SEQ-STEP	CHANGE	APPROVAL OE/ENG

KSC FORM 09-510 (REV. 8/88) PREVIOUS EDITION MAY BE USED