

TWR-63641

**STS-56, RSRM-031, 360L031
KSC PROCESSING CONFIGURATION
AND DATA REPORT**

8 December 1993

FINAL

Prepared for:

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GEORGE C. MARSHALL SPACE FLIGHT CENTER
MARSHALL SPACE FLIGHT CENTER, ALABAMA 35812**

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DR. No. 3-5

WBS.No. 4C102

***Thiokol* CORPORATION
SPACE OPERATIONS**

P.O. Box 707, Brigham City, UT 84302-0707 (801) 863-3511

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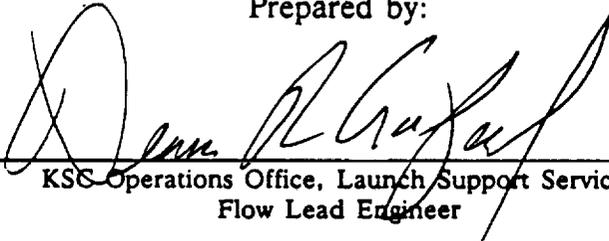


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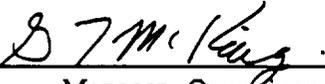


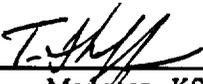
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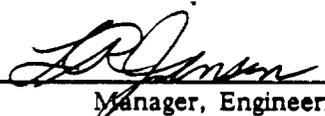
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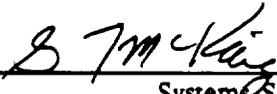

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Flow Lead Engineer

Approved by:


Manager, Operations Support

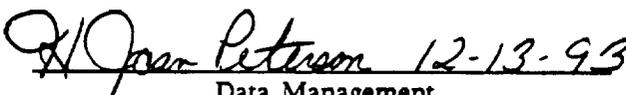

Manager, KSC Operations Office

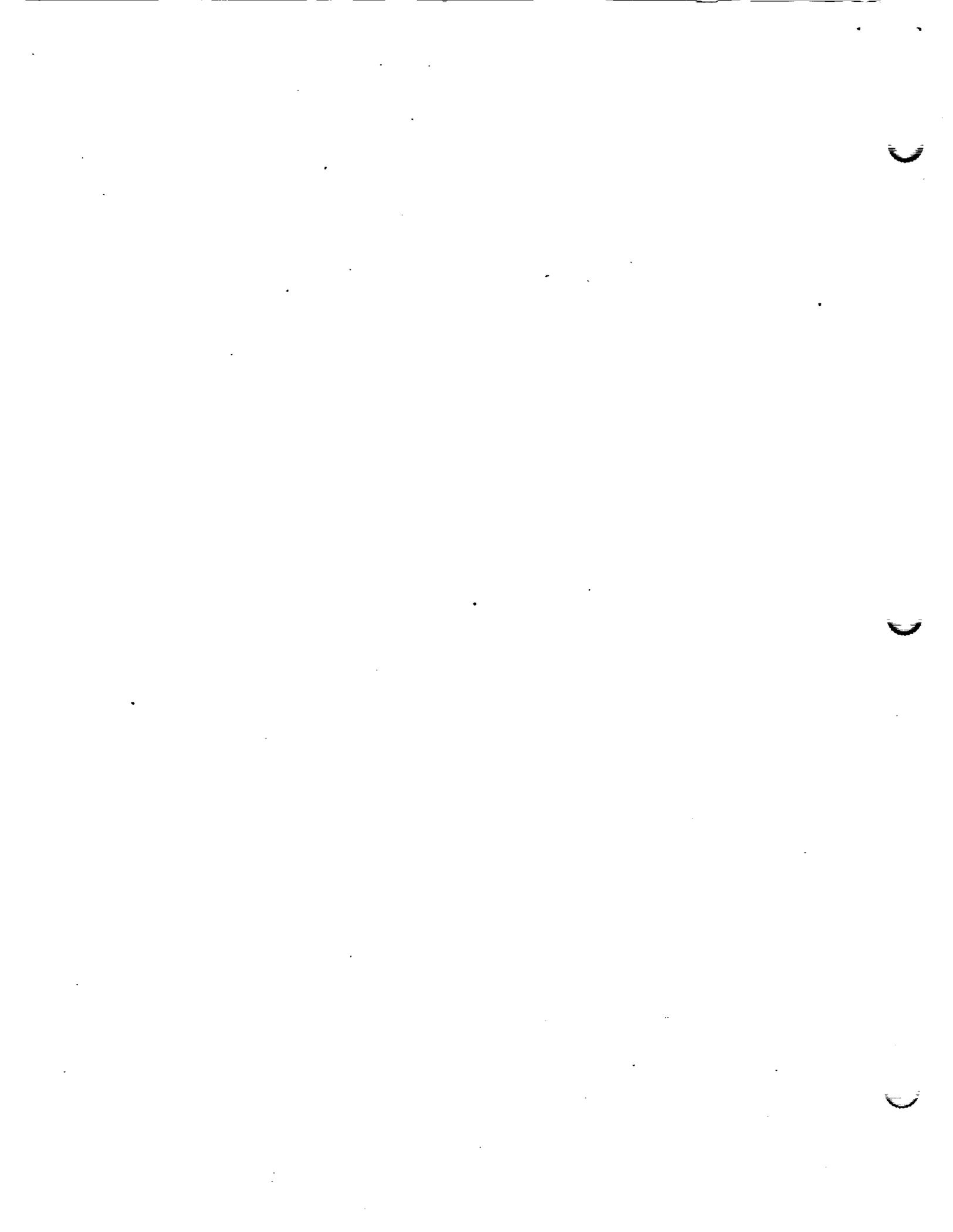

Manager, Engineering Support


Systems Safety


Quality Engineering

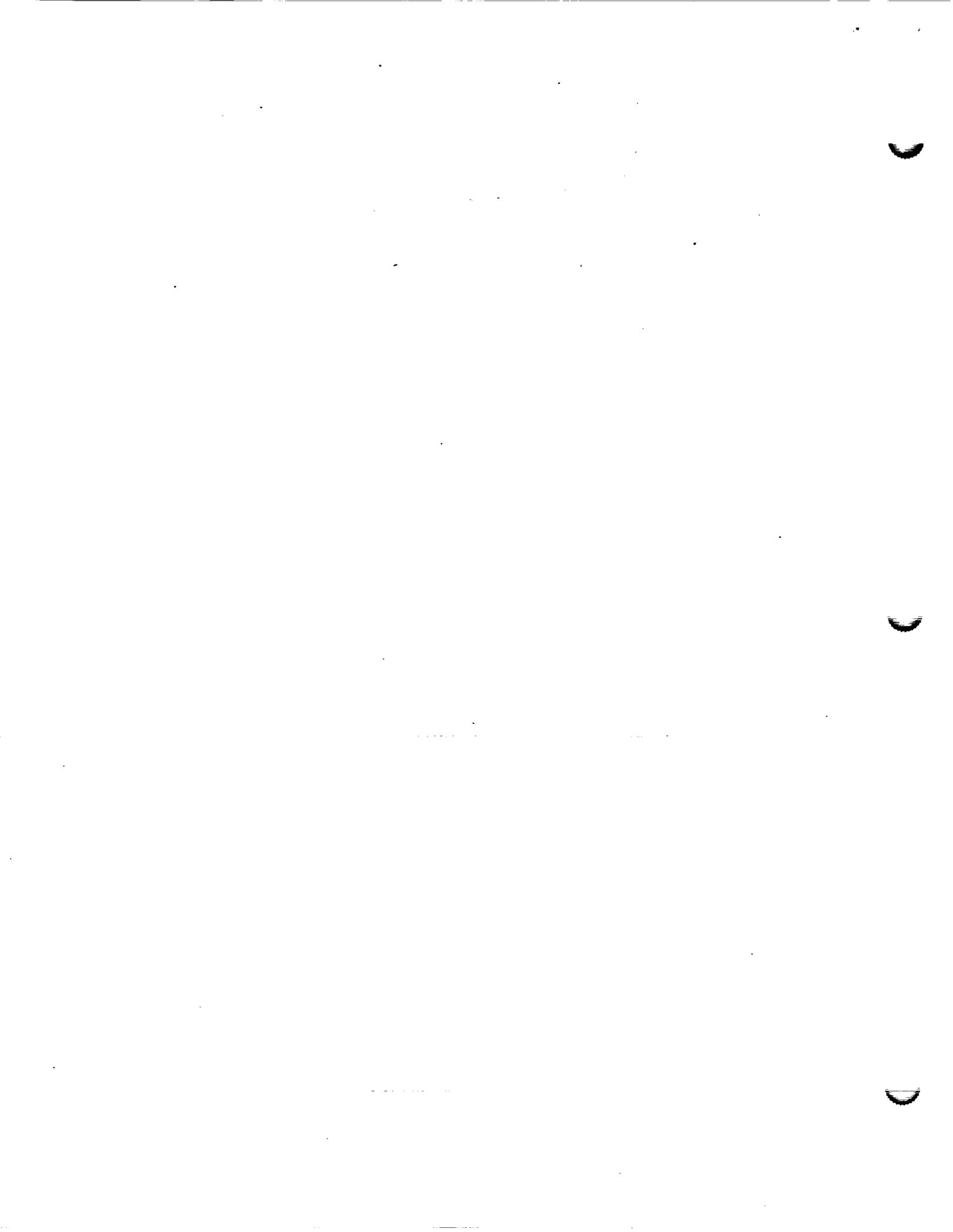
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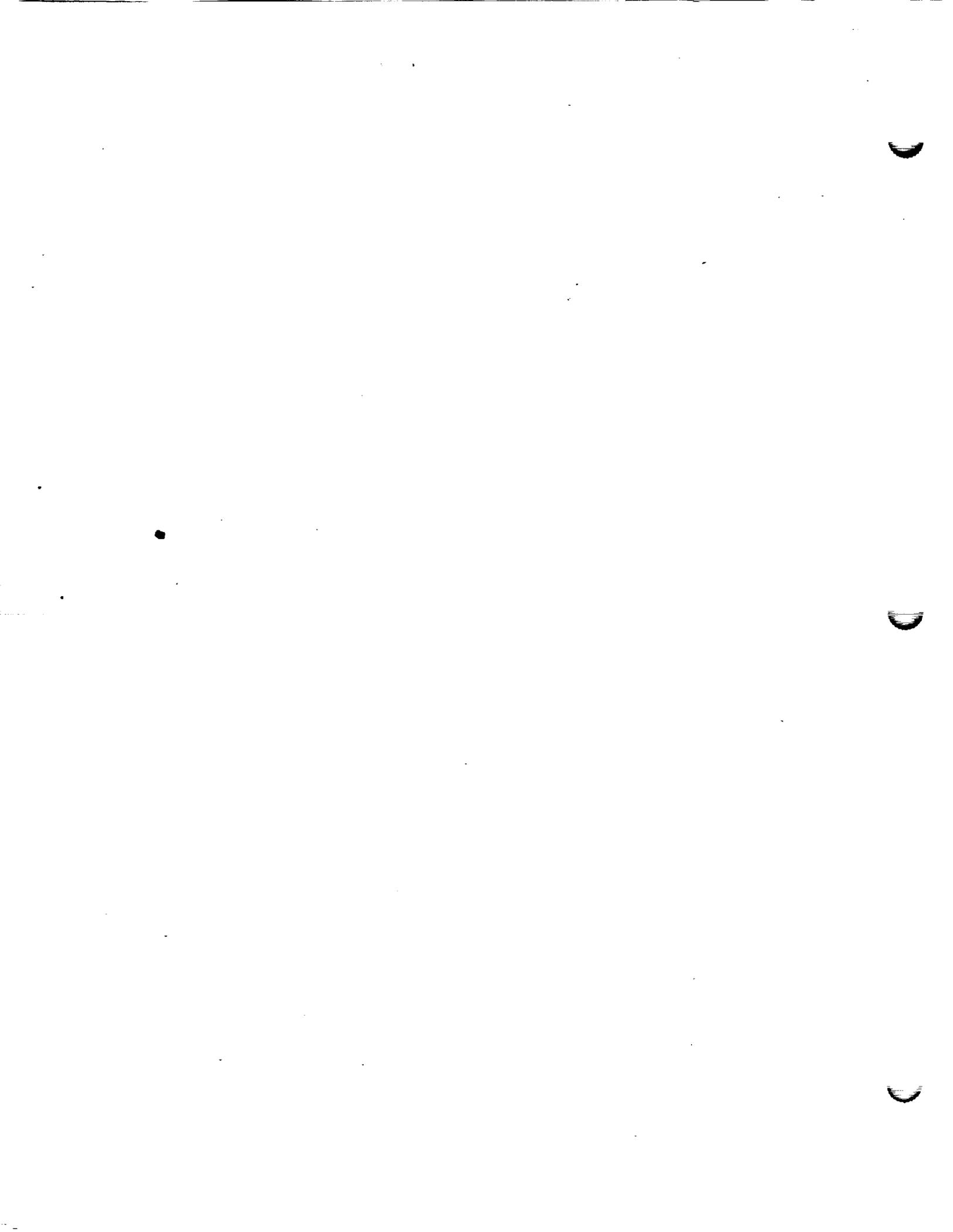
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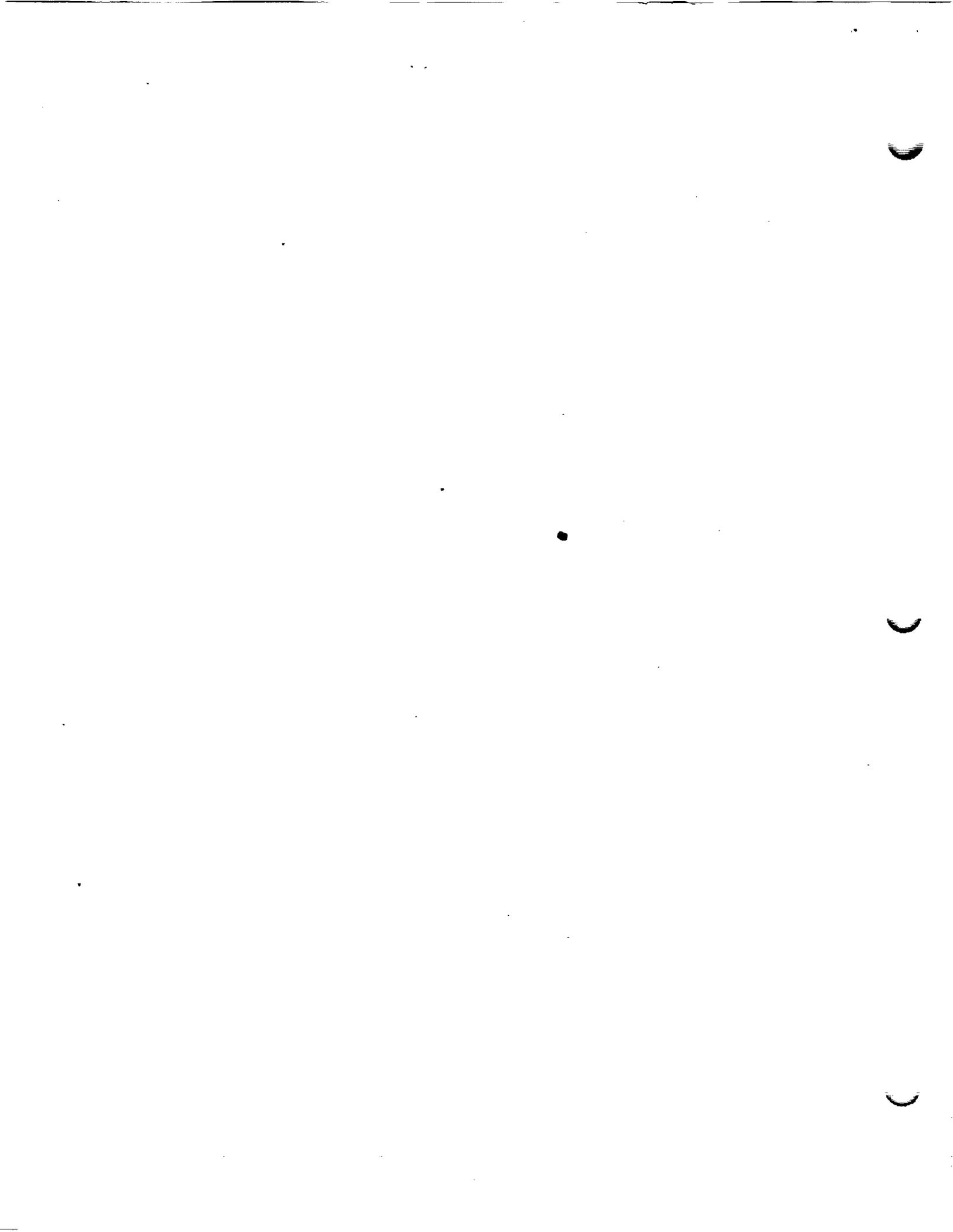


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1.0 INTRODUCTION

KSC Processing Configuration and Data Report is being provided as a historical document and as an enhancement to future RSRM manufacturing and processing operations. The following sections provide information on segment receipt, aft booster build-up, booster assembly and closeout for STS-56, RSRM flight set 360L031.

Section 2.0 contains an summary of RSRM-031 processing. Section 3.0 discusses any significant problems or special issues that require special attention.

Sections 4.0 through 6.0 contain narrative descriptions of all key events, including any related processing problems. Appendix A provides Engineering Specifications and Changes. A list and matrix of all Problem Reports (PRs) pertinent to this flight set is provided in Appendix B. The matrix was provided by the Thiokol LSS Quality Engineering office. Copies of the PRs generated during the processing of RSRM-031 will be provided upon request. Appendix C contains the Motor Set Status matrix, which provides milestone dates for the RSRM-031 flow.

Section 7.0 provides recommendations, if any, for the improvement of flight hardware processing. Section 8.0 contains data sheets that provide flight hardware parts and consumables information installed during the booster build-up and stacking operations by location, lot/serial number, expiration and cure dates/times, and installation dates.

The postflight recovery and disassembly assessment was performed in accordance with TWR-50050B, KSC Postflight Engineering Evaluation Plan and TWR-60617, Postflight Hardware Special Issues Report. All the information obtained during recovery and disassembly is documented in TWR-60677, KSC Ten-Day Postflight Hardware Evaluation Report.

2.0 SUMMARY

The stack of RSRM-031 started on January 11, 1993 and was completed on February 8, 1993. Thirteen PR's were generated against the SRM hardware. Four of the Thirteen PR's were Thiokol inspection responsibility and two were Thiokol engineering.

3.0 SPECIAL PROBLEMS

After the right fwd booster handling ring was removed a white powdery substance and oily liquid was found intermittently 360 degrees on the J-seal insulation. A sample of both materials were forwarded to Utah for analysis. The analysis identified the primary component in the liquid is calcium and carbon with traces of oxygen, silicon, sulfur and chloride. Not enough oily material was sampled so the laboratory could not determine the substance's component or components. The material was removed.

Corrosion was found on the left and right nozzle assembly radial and axial bolt heads in the VAB. The corrosion was first discovered on RSRM-32 radial and axial bolts during booster build-up in the RPSF. A sample of the corrosion was returned to the plant for examination. Research found that prior to nozzle installation in Utah the bolt heads were cleaned with a steel brush. Steel residue from the brush remained on the bolt heads. The contamination on the bolt heads was oxidation of the steel brush residue. In the VAB the corrosion was removed from the bolt heads with Scotch Brite pads, (Ref: PR SB-BI058L-0006 & SB-BI058R-0009).

While the flight set was at Pad B the Ice-Frost-Debris Team discovered a small mass of HD-2 grease 2 feet below the left center field joint at 45 degrees. The condition was not a debris concern. MRB approval was granted to accept this condition for "use-as-is", (Ref: PR SB-BI058L-0010).

4.0 SEGMENT/EXIT CONE RECEIPT AND INSPECTION

4.1 Left Hand

4.1.1 Exit Cone

The aft exit cone was off-loaded on November 19, 1992. The receiving inspection was completed on November 20, 1992. No problems were identified.

4.1.2 Aft Segment

The aft segment was received at KSC on November 18, 1992. The segment was off-loaded on November 9, 1992. No PR conditions were found on the hardware. The receiving inspection was completed on December 13, 1992.

4.1.3 Aft Center Segment

The aft center segment was received at KSC on November 18, 1992. Two cracks and one cut were found in the propellant aft face inspection. MR rational was approved to trim the propellant discrepancies, (Ref: PR SR-LAC-058-006-0001). The segment receiving inspection was completed on December 9, 1992.

4.1.4 Forward Center Segment

The forward center segment was received at KSC on November 18, 1992. The receiving inspection was completed on November 23, 1992 and no problems identified.

4.1.5 Forward Segment

The forward segment was received at KSC on November 18, 1992. The receiving inspection was completed on December 15, 1992. No problems were identified.

4.2 Right Hand

4.2.1 Exit Cone

The exit cone was received at KSC on November 9, 1992. The receiving inspection was completed on November 23, 1992. No problems were identified.

4.2.2 Aft Segment

The aft segment was received at KSC on November 18, 1992. The receiving inspection was completed on January 13, 1993. No problems were identified.

4.0 SEGMENT/EXIT CONE RECEIPT AND INSPECTION (continued)

4.2 Right Hand (continued)

4.2.3 Aft Center

The aft center segment was received a KSC on December 10, 1992. The receiving inspection was completed on January 12, 1993. No problems were identified.

4.2.4 Forward Center Segment

The forward center segment was received at KSC on December 10, 1992. The receiving inspection was completed on January 12, 1993. No problems were identified.

4.2.5 Forward Segment

The forward segment was received at KSC on December 10, 1992. The receiving inspection was completed on December 11, 1992. No problems were identified.

5.0 AFT BOOSTER BUILD-UP

5.1 Left Aft Booster

The aft booster skirt mate and aft booster build-up started on November 11, 1992. The aft exit cone mate to the aft segment was on November 23, 1992. Exit cone leak test was completed on November 24, 1992. The receiving inspection was completed on December 14, 1992.

5.2 Right Aft Booster

The right aft booster build-up started on December 2, 1992. The aft skirt mate was on December 2, 1992. Aft exit cone mate to the nozzle assembly was on December 15, 1992. During the exit cone leak test panel dead head test, the pressure line was connected to the joint. The line should have been sealed with a GSE plug. During panel dead head test the joint received 101 psig. STW7-3475 specifies joint test pressure is 83 \pm 10 psig. Wasatch was notified of the 101 psig pressure introduced to the joint. They allowed the leak test to continue. At completion of the joint leak test Wasatch reviewed the leak test data. Engineering concluded that the small over pressure of the joint during panel dead head did not adversely affect the joint configuration. MRB approval was granted to "Use-As-Is" (Ref: PR AB-BI058R-0001).

5.0 AFT BOOSTER BUILD-UP (continued)

5.2 Right Aft Booster (continued)

After removal of the fwd handling ring a liquid substance mixed with a powdery substance existed intermittently 360 degrees around the J-seal. An analysis of the materials in Utah indicated that the primary powder component is calcium and carbon with traces of silicon, sulfur and chloride. The liquid was not positively identified. The material was removed from the J-Seal. The PR was closed as insufficient data to determine the cause of the contamination, (Ref: PR AB-BI058R-0006).

6.0 SEGMENT ASSEMBLY AND CLOSEOUT

The ASSEMBLY AND CLOSEOUT section is separated into two parts. The mechanical stacking and mating operation (Assembly) and the joint protection system installation (Closeout).

6.1 Left Hand SRB Assembly

6.1.1 Aft Booster to Aft Center

The left aft booster was moved into the Vehicle Assembly Building (VAB) transfer aisle on January 7, 1993. The beam hook-up to the aft booster was delayed due to three PR's on the crane. The booster was lifted to High Bay 1 on January 11, 1993. The booster mate on the Mobile Launch Platform (MLP) was completed on January 12, 1993. Re-shimming of the holdown posts was required. The left aft center segment was moved into the transfer aisle and removed from the pallet on January 12, 1993. The segment was lifted into High Bay 1 on January 13, 1993. During segment lowering to the FJAF the hydroset fuse tripped, (Ref: PR SB-BI058L-0001). The fuse was replaced and failed again. Per recommendation from Utah joint mate was halted and the segment returned to the transfer aisle. The PR was changed to a GSE PR (Ref: H72-0828-11-001-0050). During ABC power phase verification three power lead connections were found to have poor contact. The leads were repaired and the segment mate operation resumed.

The Left Aft Center was lifted into High Bay 1 the second time on January 18, 1993. Segment mate was completed on January 19, 1993. During primary/barrier high pressure leak test TD9 exceeded 10 psig in less than 8 minutes. The requirement is not to exceed 10 psig within the 30 minute test. Leak test panel, serial number 003 was replaced with panel serial number 007. The primary/barrier high pressure leak test was performed. The leak test was completed, (Ref: PR SB-BI058L-0002).

6.0 SEGMENT ASSEMBLY AND CLOSEOUT (continued)

6.1 Left Hand SRB Assembly (continued)

6.1.2 Aft Center to Forward Center

The forward center was moved into the VAB on January 20, 1993. Mate of the Forward Center to the Aft Center was delayed due to the leak test PR on the left aft joint leak test. If the leak test was not successfully completed the possibility that the Right Center segment would be removed from the Left Aft segment, (Ref: PR SB-BI058L-0002). The problem was resolved and the segment was lifted into High Bay 1 on January 21, 1993. During primary and secondary O-Ring inspection both O-Rings were removed from the platform for suspect flat spots on the rubber. Replacement O-rings were installed. Joint mate was completed on January 24, 1993. A preliminary inspection of the O-Rings was conducted at Hangar AF, Cape Canaveral Air Force Station. The flat spots were identified as a buffing mark and a rework area. Both O-rings were shipped to Thiokol, Wasatch for further evaluation. The O-Ring diameters where the buffing mark and rework area is located were within acceptable values, 0.3856-0.2859 inch diameter, DWG 1U75150. The O-rings were then sent to Hydrapack. The suspect cross sectional locations were measured with a laser micrometer and again found to be within drawing requirements, (Ref: PR SB-BI058L-0003).

During joint leak test the primary to secondary low pressure volume determination temperature sensor read 119.43 deg f. (Ref: PR SB-BI058L-0004). The RTD connection was loose. The connection was tightened by hand and the PR constraint was lifted to allow completion of the primary to secondary low pressure test. The joint leak test was completed January 24, 1993.

6.1.3 Forward Center to Forward

The forward segment was moved into the VAB on January 25, 1993. The segment was lifted into High Bay 1 on January 25, 1993 and joint mate was accomplished on January 26, 1993. The joint leak test was completed on January 27, 1993.

6.1.4 Forward to Forward Assembly

The left forward assembly was lifted from the transportation dolly on January 27, 1993 and moved into High Bay 1. The forward assembly and the forward segment were mated the same day, January 27, 1993, with no problems.

6.1.5 Safe and Arm Device

The S&A was installed on February 23, 1993 with no problems. The leak test was performed on February 25, 1993.

6.0 SEGMENT ASSEMBLY AND CLOSEOUT (continued)

6.2 Left Hand SRB Closeout

6.2.1 Aft Joint

The aft joint closeout started on January 26, 1993 and was completed without problems. Splice plate installation and hypalon top coat cure was complete on February 2, 1993.

6.2.2 Center Joint

The center joint closeout started on January 28, 1993 and was completed without problems. Splice plate installation and joint closeout was complete on February 4, 1993.

6.2.3 Forward Joint

The center joint closeout started on January 28, 1993 and was completed without problems. Splice plate installed an the hypalon top coat cure complete on February 5, 1993.

6.2.4 Forward Assembly

The forward assembly closeout started on February 1, 1993. The splice plate and thermal barrier closeout was complete on February 4, 1993.

6.2.5 Systems Tunnel

The system tunnel closeout was complete on February 28, 1993. Two GEI temperature sensors at the nozzle flex bearing, B06T7011A and B06T047A, exceeded the allowable resistance in the sensor test. Real time trouble shooting was performed on both GEI sensors. Sensor B06T7011A was found pinned incorrectly. The sensor was repinned and the sensor resistance measurements were within expected values. GEI sensor B06T7047A did not read the expected values. GEI sensor B06T7047A was determined to be discrepant in Utah, reference DR 413126. Sensor B06T7047A is a preplanned contingency for LH nozzle-to-case joint temperature sensors, which are launch commit criteria. A waiver was approved to use sensor B06T7047A as is, (Ref: PR SB-BI058L-0005).

6.0 SEGMENT ASSEMBLY AND CLOSEOUT (continued)

6.3 Right Hand SRB Assembly

6.3.1 Aft Booster to Aft Center

The aft booster was moved into the VAB transfer aisle on January 22, 1993. The booster was lifted to High Bay 1 on January 22, 1993 and lowered to the holdown posts. Re-shimming of the holdown post was not required. The booster mate was completed on January 23, 1993. The aft center segment moved into the VAB on January 27, 1993.

The aft center segment was lifted into High Bay 1 on January 28, 1993. Joint mate was accomplished on January 29, 1993. During joint leak test two PR's were written: (Ref: PR SB-BI058R-0004). On leak test panel serial number 007, CV12 knob rotated freely during closure. Closure of the valve could not be verified. The panel was replaced with leak test panel Serial Number 003. During leak test the primary/barrier temp transducer reading was -327.9 Degree F (Ref: SB-BI058R-0005). The RTD is not used during this function of the test so it was not replaced. The joint leak test was completed and the 45 degree and 135 degree leak test plugs were installed on February 2, 1993.

6.3.2 Aft Center to Forward Center

The forward center segment was moved into the VAB transfer aisle on January 29, 1993. The segment was to the High Bay on January 30, 1993. The joint mate was accomplished on January 31, 1993. The joint leak test was completed and the 45 degree and 135 degree leak test plugs were installed on February 1, 1993.

On February 11, 1993 a PR was generated to investigate possible incorrect transducer calibration on the joint leak test panels. The incorrect transducer calibration effects the joint leak test results of the right aft and right center joint. The investigation findings indicated transducer calibrations had been updated on leak test computer serial number 003 but not leak test computer serial number 007. During the right aft joint leak test, panel serial number 007 control valve, CV12, rotated freely. Panel serial number 007 was replaced with panel serial number 003 which can be interchanged since the calibration data for all serial number panels are loaded into each panel. Leak test computer serial number 007 had the old transducer data. The right aft joint passed the leak test but with old transducer data. The right center joint passed leak test with the old data. The same configuration was used because leak test panel serial number 007 was still being repaired. Leak test values from each joint test were recalculated. Using the corrected transducer calibration data, all test were acceptable. The cause of the PR was GSE workmanship, (Ref: PR SB-BI958R-0007).

6.0 SEGMENT ASSEMBLY AND CLOSEOUT (continued)

6.3 Right Hand SRB Assembly (continued)

6.3.3 Forward Center to Forward

The forward segment was moved into the VAB transfer aisle on February 3, 1993. Tang inspections were completed and the segment was lifted into High Bay 1 on February 4, 1993. The segment joint mate was on February 5, 1993. The joint leak test was complete and the 45 degree and 135 degree leak test plugs were installed on February 8, 1993,

6.3.4 Forward to Forward Assembly

The forward assembly was lifted into High Bay 1 on 6 February 1993. The assembly was mated to the forward segment the same day with no problems.

6.3.5 Safe and Arm Device

The S&A was installed on January 23, 1993. Leak test was performed on February 25, 1993.

6.4 Right Hand SRB Closeout

6.4.1 Aft Joint

The aft joint closeout started on February 2, 1993. The splice plate and FJPS closeout was complete on February 8, 1993.

6.4.2 Center Joint

The center joint closeout started on February 2, 1993. The splice plate and thermal barrier closeout was complete on February 8, 1993.

6.4.3 Forward Joint

The fwd joint closeout started on February 8, 1993. The splice plate and thermal barrier closeout was complete on February 11, 1993.

6.4.4 Forward Assembly

The forward assembly closeout started on February 8, 1993. The splice plate was installed and joint closeout complete on February 10, 1993.

6.4.5 Systems Tunnel

The system tunnel closeout was completed on February 24, 1993.

6.0 SEGMENT ASSEMBLY AND CLOSEOUT (continued)

6.5 Integrated Testing and Launch

6.5.1 Joint Heater Functional Test

Igniter joint and field joint heaters were successfully tested during the SRB Electrical Check (B5307) on February 19, 1993. The performance of each heater is listed in the following table.

RSRM JOINT HEATER FUNCTIONAL TEST

Joint	Primary			Secondary		
	Max Voltage <u>vac</u>	Max Current <u>amps</u>	Max Power <u>watts</u>	Max Voltage <u>vac</u>	Max Current <u>amps</u>	Max Power <u>watts</u>
LH						
IGNITER	208.8	02.18	455	208.8	2.18	450
FWD FJ	207.6	16.96	3521	204.0	16.96	3460
CTR FJ	205.2	16.80	3447	206.4	16.40	3385
AFT FJ	206.4	16.48	3401	206.4	16.32	3368
RH						
IGNITER	208.8	2.18	455	207.6	21.4	444
FWD FJ	208.8	16.72	3458	205.2	16.48	3382
CTR FJ	206.4	16.48	3401	205.2	16.16	3356
AFT FJ	207.6	16.96	3521	207.6	16.16	3355

6.0 SEGMENT ASSEMBLY AND CLOSEOUT (continued)

6.5 Integrated Testing and Launch (continued)

6.5.3 Terminal Countdown Demonstration Test (continued)

<u>HEATER LOCATION</u>	<u>PRIMARY HR:MIN</u>	<u>SECONDARY HR:MIN</u>
Igniters	1:49	2:47
Field Joints	1:51	2:56

6.5.4 Ordnance Installation

During the ordnance installation procedure (S5009) conducted January 7, 1993, the Safe and Arm (S&A) devices were verified as operational by rotating each device from safe to armed and from armed back to safe ten (10) times.

The results of this verification are listed in the table below and indicate that all rotations were within the 2 minute maximum rotation time requirement.

<u>ROTATION</u>	<u>LH S&A S/N 039</u>		<u>RH S&A S/N 040</u>	
	<u>ARM</u>	<u>SAFE</u>	<u>ARM</u>	<u>SAFE</u>
1	0.813	0.733	0.693	0.813
2	0.813	0.693	0.693	0.773
3	0.773	0.853	0.653	0.733
4	0.733	0.813	0.813	0.653
5	0.693	0.733	0.773	0.873
6	0.773	0.733	0.653	0.813
7	0.773	0.693	0.653	0.773
8	0.733	0.813	0.653	0.693
9	0.813	0.853	0.693	0.733
10	0.773	0.853	0.653	0.733

6.5.5 Countdown To Launch

Due to a main engine valve problem, the countdown to launch on April 6, 1993 was stopped at T-11 sec. A second countdown to launch was picked up at T-11 hr on April 7, 1993.

6.0 SEGMENT ASSEMBLY AND CLOSEOUT (continued)

6.5 Integrated Testing and Launch (continued)

6.5.5 Countdown To Launch (continued)

Countdown No. 1

All T and L times in this section are based on the scheduled launch time of 05:32 GMT (1:32 AM EDT) on April 4, 1993. The prediction of the Propellant Mean Bulk Temperature (PMBT) prepared at L-9 days was 69 Degrees F, and at L-2 days and L-24 hours was 70 Degrees F.

At approximately L-18 hours the igniter heaters were powered up. The field joint heaters were powered up at approximately L-11.5 hours. All heaters operated properly on their primary circuits providing operational temperature ranges of 96-101 Degrees F at the igniter joint sensors and 89-113 Degrees F at the field joint sensors. The maximum voltage supplied to the heaters was 210.9 V. The ICD requirements at 208 V nominal with limits of 191 to 225 V, measured at the SRB Aft skirt feedthrough. The power statistics for each heater are listed in the following table.

Joint	Primary			Secondary		
	Max Voltage <u>vac</u>	Max Current <u>amps</u>	Max Power <u>watts</u>	Max Voltage <u>vac</u>	Max Current <u>amps</u>	Max Power <u>watts</u>
LH						
IGNITER	208.8	2.18	453	Secondary circuits not used.		
FWD FJ	208.8	16.56	3438			
CTR FJ	207.6	16.40	3352			
AFT FJ	207.6	15.84	3255			
RH						
IGNITER	210.0	2.18	455			
FWD FJ	208.8	16.40	3385			
CTR FJ	208.8	16.40	3385			
AFT FJ	208.8	16.80	3454			

The igniter heaters were activated at 095:11:31 GMT (04-05-93 07:31 EST), and were deactivated at the end of the T-9 minute hold which was 096:06:23 GMT (04-06-93 02:23 EST). The total activation time was 18 hours and 52 minutes, and power was applied to the heating elements an average of 55% of that time after the initial warm up. The field joint heaters were activated at 095:18:00 GMT (04-05-93 14:00 EST), and were deactivated at about T-1 minutes which was 096:06:31 GMT (04-06-93 02:31 EST). The total activation time was 12 hours and 31 minutes, and power was applied to the heating elements an average of 24% of the time after the initial warm up.

6.0 SEGMENT ASSEMBLY AND CLOSEOUT (continued)

6.5 Integrated Testing and Launch (continued)

6.5.5 Countdown To Launch (continued)

Countdown No. 2

All T and L times in this section are based on the scheduled launch time 05:29 FBT (1:29 AM EDT) on April 8, 1993.

The prediction of the propellant Mean Bulk Temperature (PMBT) prepared at L-2 days was 68 Degrees F. The post flight assessment indicates the actual PMBT at the time of launch was 66 Degrees F.

At approximately L-18 hours the igniter heaters were powered up. The field joint heaters were powered up at approximately L-11.5 hours. All heaters operated properly on their primary circuits providing operational temperature ranges of 96-101 Degrees F at the igniter joint sensors and 89-111 Degrees F at the field joint sensors. The maximum voltage supplied to heaters was 210.0 V. The ICD requirement is 208 V nominal with limits of 191 to 225 V, measured at the SRB Aft Skirt Feedthrough. The power statistics for each heater are listed in the following table.

<u>Joint</u>	<u>Primary</u>			<u>Secondary</u>		
	<u>Max Voltage vac</u>	<u>Max Current amps</u>	<u>Max Power watts</u>	<u>Max Voltage vac</u>	<u>Max Current amps</u>	<u>Max Power watts</u>
LH				Secondary circuits not used.		
IGNITER	208.8	2.16	451			
FWD FJ	208.8	16.56	3438			
CTR FJ	207.4	16.24	3316			
AFT FJ	207.6	15.84	3255			
RH						
IGNITER	210.0	2.16	454			
FWD FJ	208.8	16.32	3317			
CTR FJ	208.8	16.16	3319			
AFT FJ	208.8	16.62	3415			

The igniter heaters were activated at 097:11:31 GMT (4/07/93 EDT), and were deactivated at the end of the T-9 minute hold which was 098:05:19 GMT (4/08/93 01:19 EDT). The total activation time was 18 hours and 48 minutes, and power was applied to the heating elements an average of 57% of that time after the initial warm up. The field joint heaters were activated at 097:17:49 GMT (4/7/93 13:49 EDT), and were deactivated at about T-1 min which was 098:05:28 GMT (4/8 93 01:28 EDT). The total activation time was 11 hours and 39 minutes, and power was applied to the heating elements an average of 40% of the time after the initial warm up.

7.0 RECOMMENDATIONS

No recommendations for flight hardware processing improvement are noted.

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA

RSRM: 031 BIO: 58 STS: 56

8.1 Date Segments Received at KSC

	<u>AFT</u>	<u>AFT CENTER</u>	<u>FWD CENTER</u>	<u>FORWARD</u>
LH: DATE	10/09/92	11/18/92	11/18/92	11/18/92
P/N:	1U76957-06	1U76792-05	1U75791-05	1U76790-13
S/N:	0000005	0000006	0000006	0000006
R/R CAR #	CSXT600514	CSXT600512	FEC101	KCS-710016
RH: DATE	11/18/92	12/01/92	12/01/92	12/10/92
P/N:	1U76958-09	1U76792-06	1U76791-06	1U76790-14
S/N:	0000003	00000006	0000006	0000006
R/R CAR #	MP-859029	UP-50021	UP-50025	KCS-710032

8.2 Segment Off-load Dates

LH:	11/09/92	12/07/92	12/03/92	12/01/92
RH:	11/25/92	01/09/92	01/05/92	11/12/92

8.3 Date Exit Cone Received at KSC

	<u>DATE</u>	<u>PART NO.</u>	<u>SERIAL NO.</u>	<u>R/R CAR #</u>
LH:	10/09/92	1U76970-01	0000007	UP-57952
RH:	10/09/92	1U76970-02	0000015	UP-57952

8.4 Off-load Date of Exit Cone

LH:	11/18/92	RH:	11/18/92
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8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.5 Mate Aft Segment to Aft Skirt (LH/RH)

<u>LH AFT</u>			
	<u>PART NO.</u>	<u>SERIAL NO.</u>	<u>DATE</u>
	1U76957-06	0000005	11/11/92
<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NO.</u>	<u>QTY</u>
PINS	1U51055-02	ECL-0001	88
		ECL-0003	89
<u>LOCATION</u>	<u>DATE</u>	<u>TIME</u>	<u>DEGREE</u>
FIRST PIN:	11/11/92	09:21	178
LAST PIN:	11/11/92	07:33	324

AFT SEGMENT/SKIRT CLOSEOUT:

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NUMBER</u>
FIELD JOINT KIT (STRAP)	1U75345-07	0000173
INSULATOR	1U50746-03	0000138
ADHESIVE	STW5-3837	ECL-0021

RH AFT

	<u>PART NO.</u>	<u>SERIAL NO.</u>	<u>DATE</u>
	1U76958-09	0000003	11/30/92
<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NO.</u>	<u>QTY</u>
PINS	1U51055-02	ECL-0003	177
<u>LOCATION</u>	<u>DATE</u>	<u>TIME</u>	<u>DEGREE</u>
FIRST PIN:	11/30/92	10:37	214
LAST PIN:	11/30/92	10:58	82

AFT SEGMENT/SKIRT CLOSEOUT:

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NUMBER</u>
FIELD JOINT KIT (STRAP)	1U75345-07	00000161
INSULATOR	1U50746-03	00000138
ADHESIVE	STW5-3837	LOT0021

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.6 LH Stiffener Ring Installation

<u>LOCATION</u>	<u>PART NO.</u>	<u>SERIAL/LOT NUMBER</u>	<u>DATE</u>
FWD RING, INSUL	1U52501-01	0000300	12/09/92
FWD RING	1U52502-04	0000190	12/09/92
FWD RING, INSUL	1U52501-04	0000198	12/09/92
FWD RING	1U52502-07	0000141	12/09/92
FWD RING, INSUL	1U52501-05	0000199	12/09/92
FWD RING	1U52502-08	0000842R	12/09/92
BOLT	1U52510-01	ECL-0016 ECL-0021	12/09/92
MID RING, INSUL	1U52501-01	0000299	12/08/92
MID RING	1U52502-04	0000087R1	12/08/92
MID RING, INSUL	1U52501-04	0000199	12/08/92
MID RING	1U52502-07	0000140	12/08/92
MID RING, INSUL	1U52501-05	0000198	12/08/92
MID RING	1U52502-08	0000238	12/08/92
BOLT	1U52510-01	ECL-0021	12/08/92
AFT RING, INSUL	1U52501-01	0000302	12/08/92
AFT RING	1U52502-04	0000049R3	12/08/92
AFT RING, INSUL	1U52501-04	0000201	12/08/92
AFT RING	1U52502-07	0000171	12/08/92
AFT RING, INSUL	1U52501-05	0000201	12/08/92
AFT RING	1U52502-08	0000242	12/08/92
BOLT	1U52510-01	ECL-0021	12/08/92

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.7 RH Stiffener Ring Installation

<u>LOCATION</u>	<u>PART NO.</u>	<u>SERIAL/LOT NUMBER</u>	<u>DATE</u>
FWD RING, INSUL	1U52501-01	0000301	12/09/92
FWD RING	1U52502-04	0000067	12/09/92
FWD RING, INSUL	1U52501-04	0000200	12/09/92
FWD RING	1U52502-07	0000168	12/09/92
FWD RING, INSUL	1U52501-05	0000200	12/09/92
FWD RING	1U52502-08	0000241	12/09/92
BOLT	1U52510-01	ECL-0016 ECL-0021	12/09/92
MID RING, INSUL	1U52501-01	0000298	12/08/92
MID RING	1U52502-04	0000184	12/08/92
MID RING, INSUL	1U52501-04	0000197	12/08/92
MID RING	1U52502-07	0000137	12/08/92
MID RING, INSUL	1U52501-05	0000196	12/08/92
MID RING	1U52502-08	0000176	12/08/92
BOLT	1U52510-01	ECL-0021	12/08/92
AFT RING, INSUL	1U52501-01	0000297	12/08/92
AFT RING	1U52502-04	0000177	12/08/92
AFT RING, INSUL	1U52501-04	0000196	12/08/92
AFT RING	1U52502-07	0000136	12/08/92
AFT RING, INSUL	1U52501-05	0000197	12/08/92
AFT RING	1U52502-08	0000177	12/08/92
BOLT	1U52510-01	ECL-0021	12/08/92

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.8 LH Splice Plate Installation

FORWARD STIFFENER RING

<u>ITEM</u>	<u>LOCATION</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>
PLATE	210	1U52508-01	0000573
BOLT, SHOULDER	210	1U52734-02	ECL-0021
PLATE	330	1U52508-01	0000569
BOLT, SHOULDER	330	1U52734-02	ECL-0021
SPLICE PLATE	210	1U52506-02	0000573
BOLT, SHOULDER	210	1U52734-03	ECL-0004
SPLICE PLATE	330	1U52506-02	0000574
BOLT, SHOULDER	330	1U52734-03	ECL-0004
SPLICE PLATE	90	1U52506-03	0000192
BOLT, SHOULDER	90	1U52734-04	ECL-00005
ADAPT PLATE, UPPER	90	1U77164-01	0000195
ADAPT PLATE, LOWER	90	1U77164-01	0000194
BOLT, SHOULDER	90	1U52734-01	ECL-0004

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.8 LH Splice Plate Installation (continued)

CENTER STIFFENER RING

<u>ITEM</u>	<u>LOCATION</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>
PLATE	210	1U52508-01	0000570
BOLT, SHOULDER	210	1U52734-02	ECL-0019
PLATE	330	1U52508-01	0000568
BOLT, SHOULDER	330	1U52734-02	ECL-0019
SPLICE PLATE	210	1U52506-02	0000569
BOLT, SHOULDER	210	1U52734-03	ECL-0012
SPLICE PLATE	330	1U52506-02	0000572
BOLT, SHOULDER	330	1U52734-03	ECL-0012
SPLICE PLATE	90	1U52506-03	0000194
BOLT, SHOULDER	90	1U52734-04	ECL-0005
ADAPT PLATE, UPPER	90	1U77164-01	0000188
ADAPT PLATE, LOWER	90	1U77164-01	0000191
BOLT, SHOULDER	90	1U52734-01	ECL-0004

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.8 LH Splice Plate Installation (continued)

AFT STIFFENER RING

<u>ITEM</u>	<u>LOCATION</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>
PLATE	210	1U52508-01	0000572
BOLT, SHOULDER	210	1U52734-02	ECL-0019
PLATE	330	1U52508-01	0000571
BOLT, SHOULDER	330	1U52734-02	ECL-0019
SPLICE PLATE	210	1U52506-02	0000575
BOLT, SHOULDER	210	1U52734-03	ECL-0012
SPLICE PLATE	330	1U52506-02	0000578
BOLT, SHOULDER	330	1U52734-03	ECL-0012
SPLICE PLATE	90	1U52506-03	0000196
BOLT, SHOULDER	90	1U52734-04	ECL-0005
ADAPT PLATE, UPPER	90	1U77164-01	0000190
ADAPT PLATE, LOWER	90	1U77164-01	0000192
BOLT, SHOULDER	90	1U52734-01	ECL-0004

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.9 RH Splice Plate Installation

FORWARD STIFFENER RING

<u>ITEM</u>	<u>LOCATION</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>
PLATE	210	1U52508-01	0000575
BOLT, SHOULDER	210	1U52734-02	ECL-0019
PLATE	330	1U52508-01	0000578
BOLT, SHOULDER	330	1U52734-02	ECL-0019
SPLICE PLATE	210	1U52506-02	0000570
BOLT, SHOULDER	210	1U52734-03	ECL-0004
SPLICE PLATE	330	1U52506-02	0000571
BOLT, SHOULDER	330	1U52734-03	ECL0004
SPLICE PLATE	90	1U52506-03	00000571
BOLT, SHOULDER	90	1U52734-04	ECL-0004
ADAPT PLATE, UPPER	90	1U77164-01	0000186
ADAPT PLATE, LOWER	90	1U77164-01	LOT0005
BOLT, SHOULDER	90	1U52734-01	ECL-0004

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.9 RH Splice Plate Installation (continued)

CENTER STIFFENER RING

<u>ITEM</u>	<u>LOCATION</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>
PLATE	210	1U52508-01	0000567
BOLT, SHOULDER	210	1U52734-02	ECL-0019
PLATE	330	1U52508-01	0000574
BOLT, SHOULDER	330	1U52734-02	ECL-0019
SPLICE PLATE	210	1U52506-02	0000577
BOLT, SHOULDER	210	1U52734-03	ECL-0005
SPLICE PLATE	330	1U52506-02	0000568
BOLT, SHOULDER	330	1U52734-03	ECL-0005
SPLICE PLATE	90	1U52506-03	0000188
BOLT, SHOULDER	90	1U52734-04	ECL-0005
ADAPT PLATE, UPPER	90	1U77164-01	0000187
ADAPT PLATE, LOWER	90	1U77164-01	0000193
BOLT, SHOULDER	90	1U52734-01	ECL-0004

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.9 RH Splice Plate Installation (continued)

AFT STIFFENER RING

<u>ITEM</u>	<u>LOCATION</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>
PLATE	210	1U52508-01	0000576
BOLT, SHOULDER	210	1U52734-02	ECL-0019
PLATE	330	1U52508-01	0000577
BOLT, SHOULDER	330	1U52734-02	ECL-0019
SPLICE PLATE	210	1U52506-02	0000576
BOLT, SHOULDER	210	1U52734-03	ECL-0012
SPLICE PLATE	330	1U52506-02	0000574
BOLT, SHOULDER	330	1U52734-03	ECL-0012
SPLICE PLATE	90	1U52506-03	0000187
BOLT, SHOULDER	90	1U52734-04	ECL-0005
ADAPT PLATE, UPPER	90	1U77164-01	0000187
ADAPT PLATE, LOWER	90	1U77164-01	0000189
BOLT, SHOULDER	90	1U52734-01	ECL-0004

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.10 Exit Cone Installation (LH/RH)

LH:

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>	<u>EXP DATE</u>
EXIT CONE	1U76970-01	0000007	11/23/92	N/A
GREASE	1U51916-09	ECL-0072	11/23/92	8/20/94
O-RING, PRI	1U75801-03	0000364	11/23/92	12/15/92
O-RING, SEC	1U75801-04	0000364	11/23/92	1/07/93
STW5-2813	MIL-S-8802	ECL-165 ECL-166	11/25/92 11/25/92	1/01/93 3/04/93
BOLT	1U75756-10	ECL-0017	11/23/92	N/A

RH:

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>	<u>EXP DATE</u>
EXIT CONE	1U76970-02	0000015	12/10/92	N/A
GREASE	1U51916-09	ECL-0072	12/10/92	8/20/94
O-RING, PRI	1U75801-03	0000366	12/11/92	7/19/93
O-RING, SEC	1U75801-04	0000367	12/11/92	8/20/94
STW5-2813	MIL-S-8802	ECL-00165	12/15/92	1/01/93
BOLT	1U75756-10	ECL-0014 ECL-0017	12/15/92 12/15/92	N/A

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.11 Exit Cone Leak Check (LH/RH)

LH DATE: 11/24/92

PRIMARY TO		ALLOWED	ACTUAL RATE
SECONDARY	83 PSIG DECAY LEAK RATE	.029	0.0025 SCCS
CAVITY	30 PSIG DECAY LEAK RATE	.0082	0.0003 SCCS

P/S PRINTOUT PLACED IN DATA BOOK BY: BOB HILLARD

270 DEGREE LEAK CHECK PORT

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NO.</u>
PLUG	1U50159-02	ECL-0019
O-RING	1U50228-25	ECL-0067
GREASE	1U51916-09	ECL-0072

270 DEGREE PLUG INSTALLATION VERIFIED BY: BOB HILLARD

RH DATE: 12/15/92

PRIMARY TO		ALLOWED	ACTUAL RATE
SECONDARY	83 PSIG DECAY LEAK RATE	.029	0.000889 SCCS
CAVITY	30 PSIG DECAY LEAK RATE	.0082	0.000363 SCCS

P/S PRINTOUT PLACED IN DATA BOOK BY: JEFF COOK

270 DEGREE LEAK CHECK PORT

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NO.</u>
PLUG	1U50159-02	ECL-0019
O-RING	1U50228-25	ECL-0067
GREASE	1U51916-09	ECL-0072

270 DEGREE PLUG INSTALLATION VERIFIED BY: JEFF COOK

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.12 LH Field Joint Mate

LH AFT FIELD JOINT MATE (2nd attempt)

SINE BAR DATA PLACED IN DATA BOOK BY: RAY HASKELL

AFT BOOSTER CLEVIS DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0069	5/14/94	1/19/93 ,10:17
O-RING, PRI	1U75801-01	0001164	2/21.93	1/19/93 ,14:22
O-RING, SEC	1U75801-01	0001158	2/20/93	1/19/93 ,14:10
J-SEAL ADH.	STW5-3479	ECL-0037	1/31/93	1/19/93 ,15:26

AFT CENTER TANG DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0069	6/14/93	1/19/93 ,12:10
		ECL-0075	1/10/93	1/19/93 ,12:10
V-2 FILLER	STW3-3353	ECL-0018	N/A	1/19/93 ,12:40
O-RING, CAP	1U75801-02	0000515	5/24/93	1/19/93 ,12:45
J-SEAL ADH.	STW5-3479	ECL-0037	1/31/93	1/19/93 ,13:45

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.12 LH Field Joint Mate (continued)

LH AFT FIELD JOINT MATE (continued)

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PINS	1U51055-12	ECL0040	95
		ECL0017	53
		ECL0008	29

	<u>DATE</u>	<u>TIME</u>	<u>DEGREE LOCATION</u>
FIRST PIN:	1/19/93	20:53	358
LAST PIN:	1/19/93	21:03	172

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PIN RETAINER	1U51899-12	ECL-0009	1
		ECL-0012	29
		ECL-0030	147

DASH NO. OF WEDGE USED (IF ANY): N/A

DEGREE LOCATIONS USED AT: N/A

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>
RETAINER BAND	1U82840-02	0001850	0001838	0001855
BAND JOINT LOCATIONS (DEG):		30-150	150-270	270-30

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.12 LH Field Joint Mate (continued)

LH CENTER FIELD JOINT MATE

SINE BAR DATA PLACED IN DATA BOOK BY: RAY HASKELL

AFT CENTER CLEVIS DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0072	8/20/94	1/12/93 , 13:30
O-RING, PRI	1U75801-01	0001207	4/15/93	1/12/93 , 22:10
O-RING, SEC	1U75801-01	0001208	5/18/93	1/21/93 , 22:30
J-SEAL ADH.	STW5-3479	ECL-0038	3/23/93	1/21/93 , 23:00

FORWARD CENTER TANG DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0072	4/20/94	2/21/94, 14:15
V-2 FILLER	STW3-3353	ECL-0018	N/A	1/21/93, 15:00
O-RING, CAP	1U75801-02	0000501	* 2/03/93	1/21/93, 16:05
J-SEAL ADH.	STW5-3479	ECL-0038	3/23/93	1/21/93, 17:00

REMARKS: The Primary & Secondary O-Rings initially issued were removed from the level for suspect flat spots on the radius, PR SB-BIO58L-0003.

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.12 LH Field Joint Mate (continued)

LH CENTER FIELD JOINT MATE (continued)

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PINS	1U51055-12	ECL-0001	001
		ECL-0006	120
		ECL-0007	55
		ECL-0017	001

	<u>DATE</u>	<u>TIME</u>	<u>DEGREE LOCATION</u>
FIRST PIN:	1/22/93	9:21	92
LAST PIN:	1/22/93	9:40	30

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PIN RETAINER	1U51899-13	ECL-0001	35
		ECL-0014	132
		ECL-0020	10

DASH NO. OF WEDGE USED (IF ANY): -01

DEGREE LOCATIONS USED AT: 24-40, 354-320

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>
RETAINER BAND	1U82840-02	0001840	00001839	0001847
BAND JOINT LOCATIONS (DEG):		30-150	150-270	270-30

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.12 LH Field Joint Mate (continued)

LH FORWARD FIELD JOINT MATE

SINE BAR DATA PLACED IN DATA BOOK BY: R. HASKELL

FORWARD CENTER CLEVIS DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0072	8/20/944	1/26/93 02:15
O-RING, PRI	1U75801-01	0001165	2/21/93	1/26/93 08:17
O-RING, SEC	1U75801-01	0001156	2/19/93	1/26/93 08:08
J-SEAL ADH.	STW5-3479	ECL-0030	3/23/93	1/26/93 09:40

FORWARD TANG DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0027	8/20/94	1/26/93, 04:00
V-2 FILLER	STW3-3353	ECL-0018	N/A	1/26/93, 04:55
O-RING, CAP	1U75801-02	0000502	1/30/93	1/26/93, 05:10
J-SEAL ADH.	STW5-3479	ECL-0030	3/23/93	1/26/93, 07:00

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.12 LH Field Joint Mate (continued)

LH FORWARD FIELD JOINT MATE (continued)

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PINS	1U51055-12	ECL-0001	67
		ECL-0004	1
		ECL-0008	11
		ECL-0013	1
		ECL-0018	1
		ECL-0025	96

	<u>DATE</u>	<u>TIME</u>	<u>DEGREE LOCATION</u>
FIRST PIN:	1/26/93	14:35	232
LAST PIN:	1/26/93	14:49	344

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PIN RETAINER	1U51899-11	ECL-0006	177

DASH NO. OF WEDGE USED (IF ANY): N/A

DEGREE LOCATIONS USED AT: N/A

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>
RETAINER BAND	1U82840-02	0001848	0001842	0001853
BAND JOINT LOCATIONS (DEG):		30-150	150-270	270-30

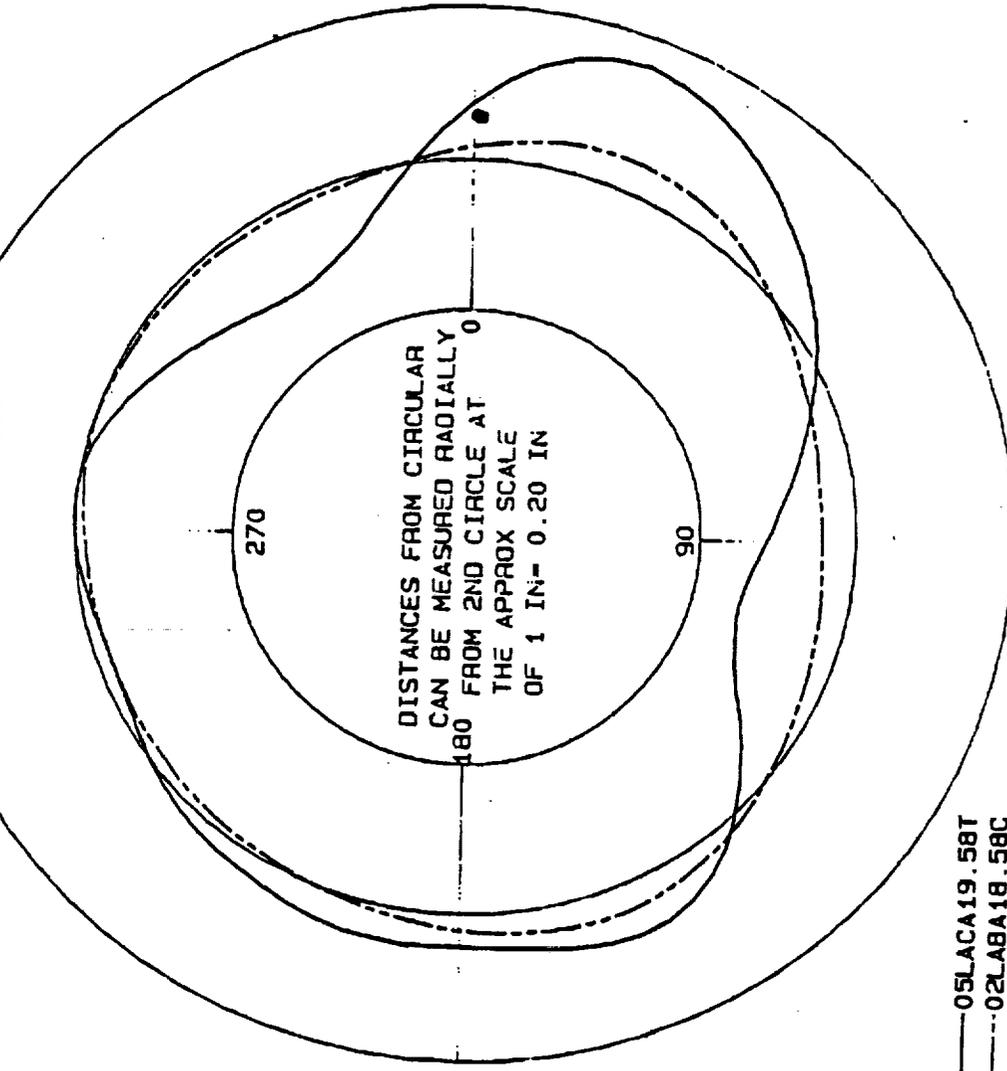
LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.13 LH Sine Bar Data

ANGLE DIFF	ANGLE DIFF	ANGLE DIFF
0	0.057	320 -0.099
10	0.107	330 -0.098
20	0.121	340 -0.068
30	0.104	350 -0.011
40	0.079	
50	0.056	
60	0.030	
70	-0.003	
80	-0.038	
90	-0.071	
100	-0.099	
110	-0.105	
120	-0.080	
130	-0.035	
140	0.009	
150	0.035	
160	0.035	
170	0.023	
180	0.023	
190	0.036	
200	0.042	
210	0.035	
220	0.029	
230	0.021	
240	0.005	
250	-0.003	
260	0.005	
270	0.013	
280	0.002	
290	-0.024	
300	-0.052	
310	-0.080	

LAC TANG VS LAB CLEVIS B1058L VAB XFER AISLE 1-19-93
0-180-151K 90-270-163K SB S/N 002 0030HRS
* Delta difference greater than 0.125



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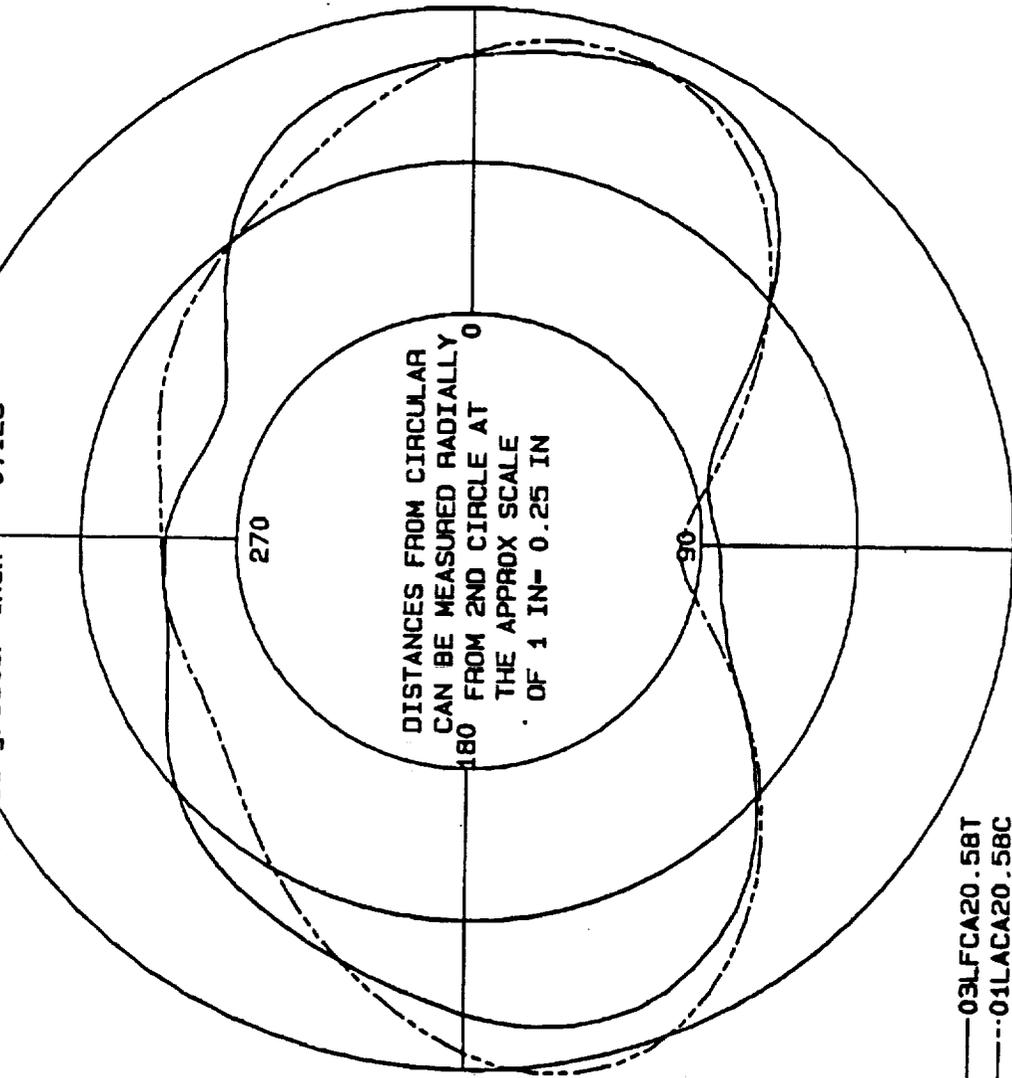
LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.13 LH Sine Bar Data (continued)

DIFF IN DELTAS FROM CIRC	
ANGLE DIFF	ANGLE DIFF
0	-0.005
10	-0.020
20	-0.006
30	0.020
40	0.027
50	0.004
60	-0.027
70	-0.025
80	0.022
90	0.062
100	0.057
110	0.023
120	-0.063
130	-0.011
140	-0.018
150	-0.042
160	-0.070
170	-0.080
180	-0.067
190	-0.031
200	0.018
210	0.065
220	0.099
230	0.100
240	0.060
250	0.016
260	0.000
270	-0.006
280	-0.035
290	-0.083
300	-0.108
310	-0.077

LFC TANG v.s LAC CLEVIS B1658 VAB 20 JAN 93 18:55HRS.
0-180=239.3K 90-270=91.3K LLO=-20 LL270=520
* Delta difference greater than 0.125



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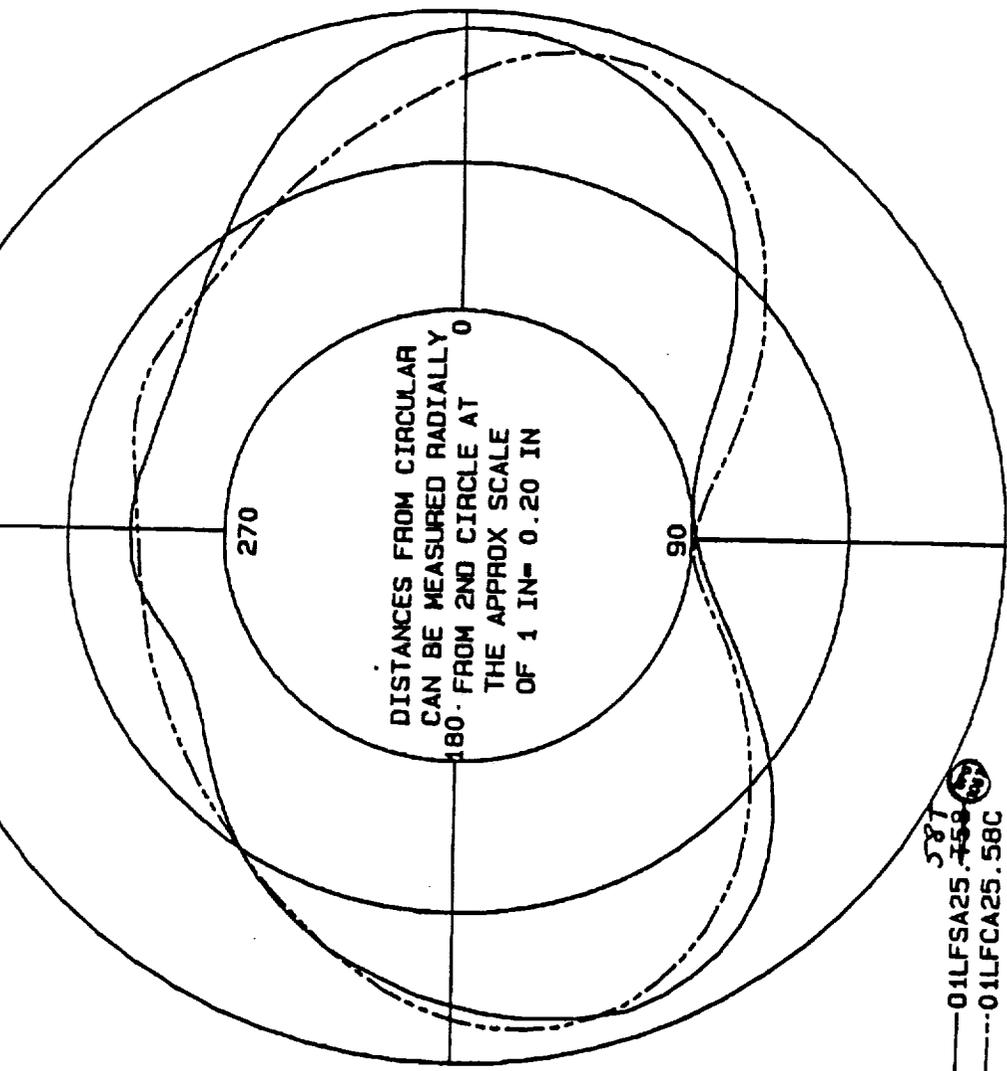
LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.13 LH Sine Bar Data (continued)

DIFF IN DELTAS FROM CIRC	
ANGLE DIFF	ANGLE DIFF
0	0.063
10	0.014
20	-0.022
30	-0.036
40	-0.042
50	-0.051
60	-0.056
70	-0.044
80	-0.019
90	0.003
100	0.011
110	0.013
120	0.022
130	0.037
140	0.044
150	0.033
160	0.008
170	-0.012
180	-0.017
190	-0.008
200	0.005
210	0.005
220	-0.012
230	-0.035
240	-0.043
250	-0.023
260	0.005
270	0.010
280	-0.009
290	-0.032
300	-0.033
310	-0.009

LFS TANG VS LFC CLEVIS B1058 VAB XFER AISLE 25 JAN 93
 0-180=173.8K 90-270=186.7K, LL0=-34, LL270=-370 10:45
 * Delta difference greater than 0.125



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8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.14 RH Field Joint Mate

RH AFT FIELD JOINT MATE

SINE BAR DATA PLACED IN DATA BOOK BY: MICHAEL GOODWIN

AFT BOOSTER CLEVIS DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0072	8/20/94	1/29/93 ,04:55
O-RING, PRI	1U75801-01	0001213	5/18/93	1/29/93 ,05:10
O-RING, SEC	1U75801-01	0001209	5/25/93	1/29/93 ,05:23
J-SEAL ADH.	STW5-3479	ECL-0037	1/31/93	1/29/93 ,22:30

AFT CENTER TANG DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0072	8/20/94	1/29/93 ,02:15
V-2 FILLER	STW3-3353	ECL-0018	N/A	1/29/93 ,02:45
O-RING, CAP	1U75801-02	0000513	5/20/93	1/29/93 ,03:05
J-SEAL ADH.	STW5-3479	ECL-0038	3/23/93	1/29/93 ,04:42

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.14 RH Field Joint Mate (continued)

RH AFT FIELD JOINT MATE (continued)

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PINS	1U51055-12	ECL-0001	66
		ECL-0002	36
		ECL-0012	22
		ECL-0016	53

	<u>DATE</u>	<u>TIME</u>	<u>DEGREE LOCATION</u>
FIRST PIN:	1/29/93	10:53	20
LAST PIN:	1/29/93	11:08	92

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PIN RETAINER	1U51899-12	ECL-0023	177

DASH NO. OF WEDGE USED (IF ANY): N/A

DEGREE LOCATIONS USED AT: N/A

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>
RETAINER BAND	1U82840-02	0001845	0001851	0001363
BAND JOINT LOCATIONS (DEG):		30-150	150-270	270-30

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.14 RH Field Joint Mate (continued)

RH CENTER FIELD JOINT MATE

SINE BAR DATA PLACED IN DATA BOOK BY: MIKE GOODWIN 2/12/90

AFT CENTER CLEVIS DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0072	8/20/94	1/30/93 ,19:10
O-RING, PRI	1U75801-01	0001214	5/30/93	1/30/93 ,22:05
O-RING, SEC	1U75801-01	0001212	5/16/93	1/30/93 ,21:55
J-SEAL ADH.	STW5-3479	ECL-0038	3/23/93	1/30/93 ,22:30

FORWARD CENTER TANG DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0072	8/20/94	1/30/93 ,20:20
V-2 FILLER	STW3-3353	ECL-0018	N/A	1/30/93 ,20:45
O-RING, CAP	1U75801-02	0000512	5/20/93	1/30/93 ,21:00
J-SEAL ADH.	STW5-3479	ECL-0038	3/23/93	1/30/93 ,21:40

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.14 RH Field Joint Mate (continued)

RH CENTER FIELD JOINT MATE (continued)

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PINS	1U51055-12	ECL-0008	171
		ECL-0025	5
		ECL-0029	1

	<u>DATE</u>	<u>TIME</u>	<u>DEGREE LOCATION</u>
FIRST PIN:	1/31/93	03:45	86
LAST PIN:	1/31/93	03:57	170

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PIN RETAINER	1U51899-12	ECL-0023	177

DASH NO. OF WEDGE USED (IF ANY): N/A

DEGREE LOCATIONS USED AT: N/A

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>
RETAINER BAND	1U82840-02	0001969	0002012	0001993
BAND JOINT LOCATIONS (DEG):		30-150	150-270	270-30

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.14 RH Field Joint Mate (continued)

RH FORWARD FIELD JOINT MATE

SINE BAR DATA PLACED IN DATA BOOK BY: MIKE NOWLING

FORWARD CENTER CLEVIS DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0075	3/10/95	2/04/93, 22:20
O-RING, PRI	1U75801-01	0001206	5/20/93	2/05/93, 00:52
O-RING, SEC	1U75801-01	0001215	6/30/93	2/05/93, 00:44
J-SEAL ADH.	STW5-3479	ECL-0038	5/23/93	2/05/93, 01:50

FORWARD TANG DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>EXP DATE</u>	<u>DATE/TIME</u>
GREASE	1U51916-09	ECL-0075	5/05/95	2/04/93, 20:30
V-2 FILLER	STW3-3353	ECL-0018	N/A	2/04/93, 22:30
O-RING, CAP	1U75801-02	0000514	5/24/93	2/04/93, 00:25
J-SEAL ADH.	STW5-3479	ECL-0038	5/23/93	2/05/93, 00:25

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.14 RH Field Joint Mate (continued)

RH FORWARD FIELD JOINT MATE (continued)

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PINS	1U51055-12	ECL-0025	177

	<u>DATE</u>	<u>TIME</u>	<u>DEGREE LOCATION</u>
FIRST PIN:	2/05/93	6:46	88
LAST PIN:	2/05/93	6:56	350

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PIN RETAINER	1U51899-12	ECL-0023	88
		ECL-0033	89

DASH NO. OF WEDGE USED (IF ANY): N/A

DEGREE LOCATIONS USED AT: N/A

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>	<u>SERIAL NO.</u>
RETAINER BAND	1U82840-02	0001857	0001859	0001844
BAND JOINT LOCATIONS (DEG):		30-150	150-270	270-30

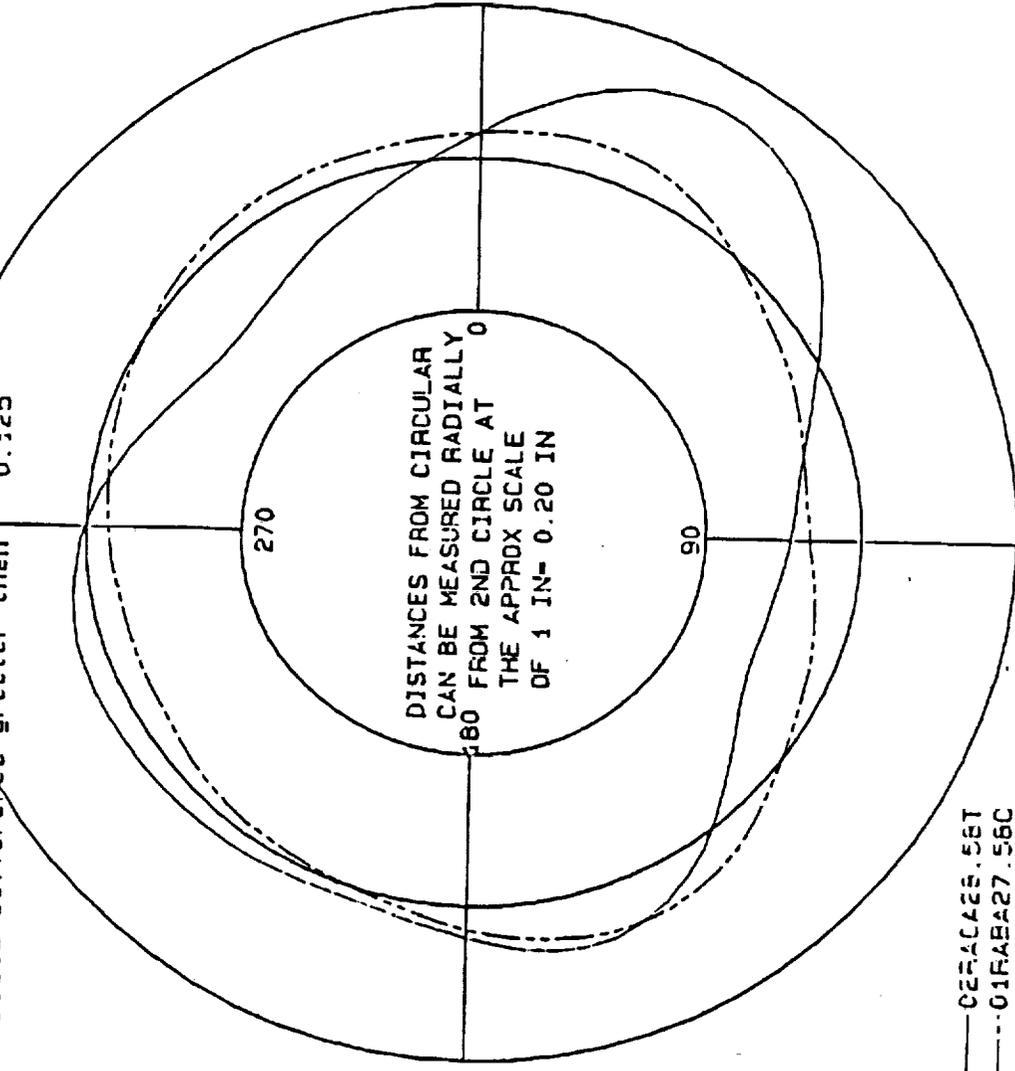
LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.15 RH Sine Bar Data

ANGLE DIFF	ANGLE DIFF	DIFF IN DELTAS FROM CIRC
0	0.000	320 -0.108
10	0.047	330 -0.092
20	0.089	340 -0.067
30	0.118	350 -0.037
40	0.125	
50	0.095	
60	0.045	
70	0.007	
80	-0.012	
90	-0.027	
100	-0.050	
110	-0.073	
120	-0.079	
130	-0.070	
140	-0.047	
150	-0.015	
160	0.009	
170	0.014	
180	0.011	
190	0.011	
200	0.018	
210	0.029	
220	0.041	
230	0.054	
240	0.067	
250	0.070	
260	0.055	
270	0.030	
280	-0.007	
290	-0.052	
300	-0.089	
310	-0.109	

FAC TANG VS RAB CLEVIS BROSS VAP AFTER AISLE 1-28-93
 C-160=46..5K 90-270=275.2K LL 0=1:16 LL270=57.0505
 * Delta difference greater than 0.125



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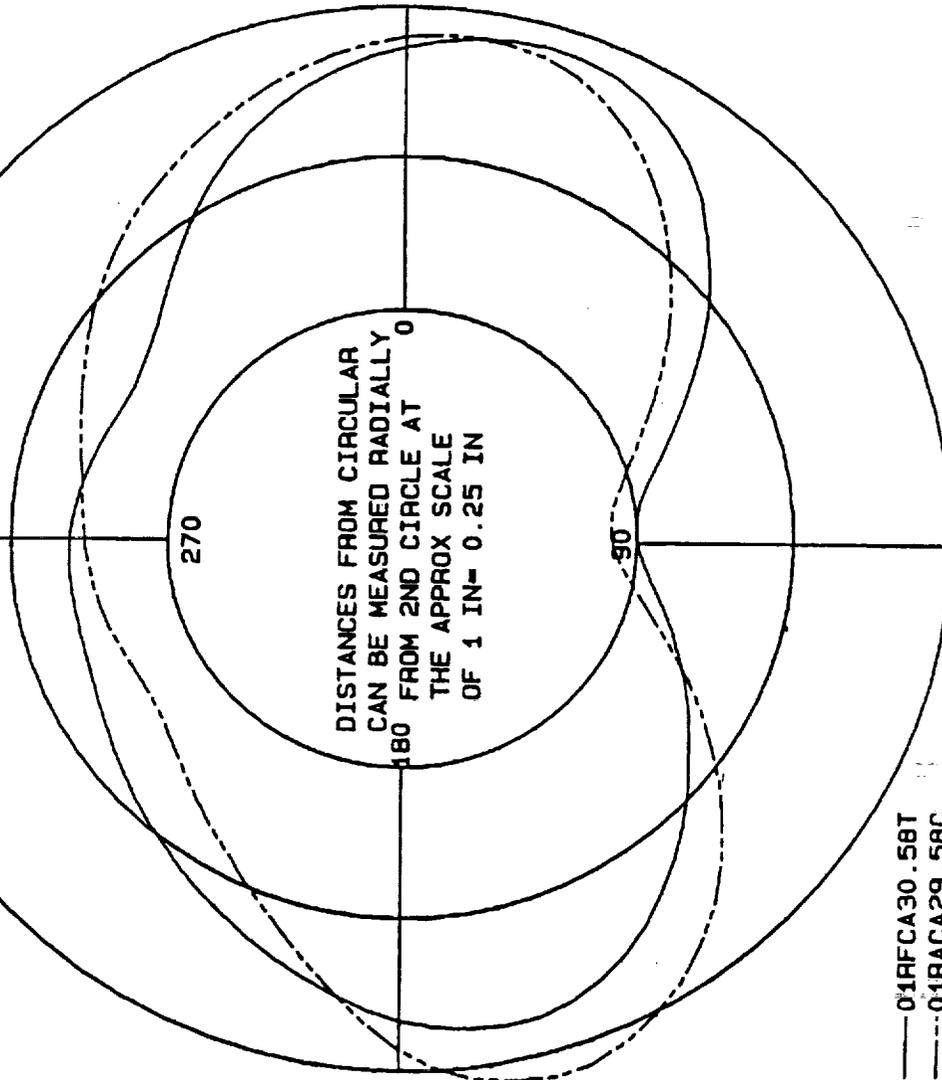
LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.15 RH Sine Bar Data (continued)

DIFF IN DELTAS FROM CIRC	
ANGLE DIFF	ANGLE DIFF
0	-0.016
10	0.002
20	0.031
30	0.062
40	0.083
50	0.085
60	0.074
70	0.057
80	0.042
90	0.039
100	0.038
110	0.019
120	-0.024
130	-0.071
140	-0.101
150	-0.110
160	-0.107
170	-0.089
180	-0.046
190	0.014
200	0.059
210	0.081
220	0.094
230	0.095
240	0.078
250	0.052
260	0.035
270	0.024
280	0.000
290	-0.044
300	-0.090
310	-0.115

RFC TANG VS. RAC CLEVIS BI056 X FER AISLE 1-30-93
 0-180-167.35K; 90-270-167.80K LL 0-70 LL 270-250 0023 HRS.
 * Delta difference greater than 0.125



— 01RFCA30.58T
 - - - 01RACA29.58C

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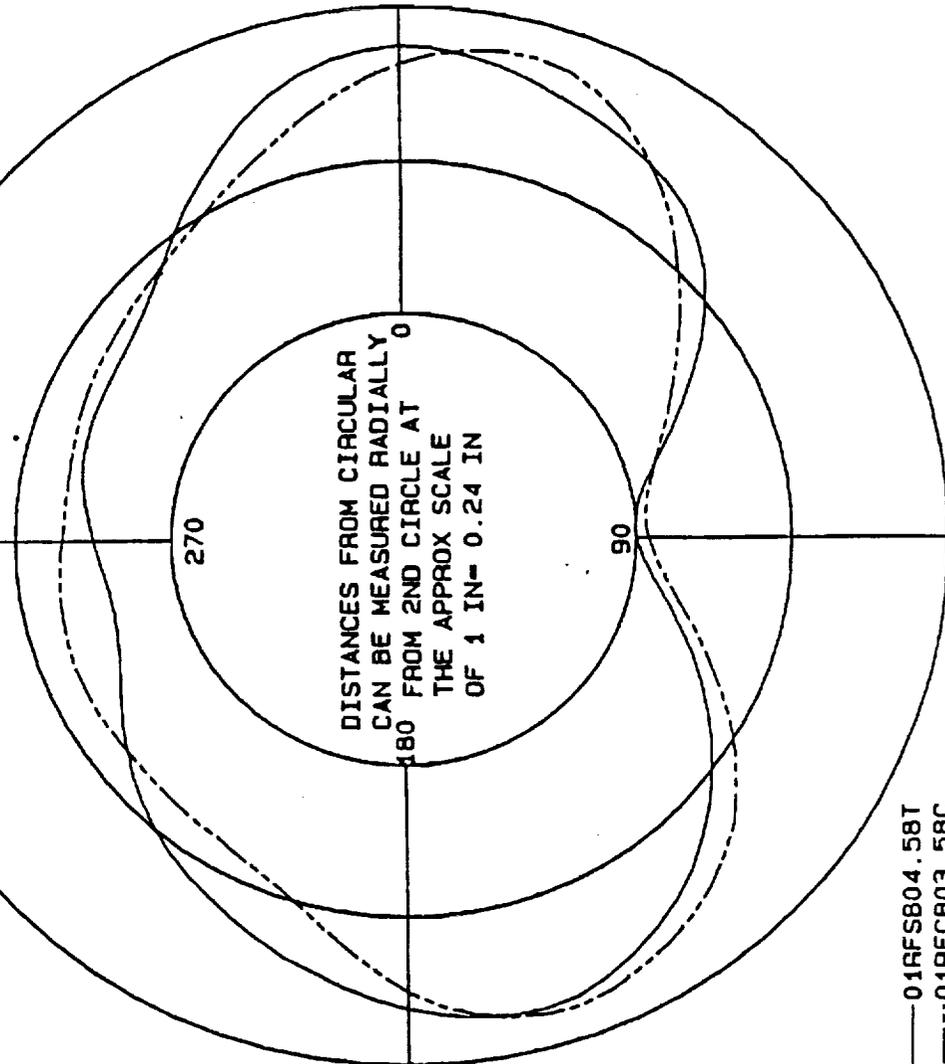
LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.15 RH Sine Bar Data (continued)

DIFF IN DELTAS FROM CIRC	
ANGLE DIFF	ANGLE DIFF
0	0.028
10	-0.016
20	-0.038
30	-0.016
40	0.032
50	0.054
60	0.036
70	0.006
80	-0.013
90	-0.019
100	-0.020
110	-0.024
120	-0.037
130	-0.048
140	-0.042
150	-0.027
160	-0.015
170	-0.001
180	0.027
190	0.066
200	0.088
210	0.081
220	0.053
230	0.010
240	-0.041
250	-0.076
260	-0.074
270	-0.046
280	-0.021
290	-0.018
300	-0.025
310	-0.023

RF TANG VS RFC CLEVIS VAR X ATISLE 2-04-93 B1058R
0-180-182.2K; 90-270-189.5K LL0-044 LL270-087 0631HRS
* Delta difference greater than 0.125



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8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.16 LH Joint Leak Checks & 45 Deg Plug

LH AFT FIELD JOINT

DATE: 1/22/93

PRIMARY TO		ALLOWED	ACTUAL RATE	
SECONDARY	1000 PSIG DECAY LEAK RATE	.10	0.0177	SCCS
CAVITY	30 PSIG DECAY LEAK RATE	.0082	0.00003	SCCS

DATE: 1/22/93

			ALLOWED	ACTUAL RATE	
PRIMARY TO BARRIER	100 PSIG	DECAY LEAK RATE	.037	0.0048	SCCS
		PRESS RISE RATE	.037	0.0005	SCCS
CAVITY	30 PSIG	DECAY LEAK RATE	.0082	0.0006	SCCS
		PRESS RISE RATE	.0082	0.0003	SCCS

PRINTOUT PLACED IN DATA BOOK BY: MIKE NOWLING

DATA DISK RETRIEVED BY: MIKE GOODWIN

45 DEGREE LEAK CHECK PORT

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NO.</u>
PLUG	1U100269-03	ECL-0020
O-RING	1U50228-15	ECL-0116
GREASE	1U51916-09	ECL-0075

45 DEGREE PLUG INSTALLATION VERIFIED BY: BOB HILLARD

135 DEGREE PLUG INSTALLATION VERIFIED BY: RAY HASKELL

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.16 LH Joint Leak Checks & 45 Deg Plug (continued)

LH CENTER FIELD JOINT

DATE: 1/23/93

PRIMARY TO		ALLOWED	ACTUAL RATE
SECONDARY	1000 PSIG DECAY LEAK RATE	.10	0.01331 SCCS
CAVITY	30 PSIG DECAY LEAK RATE	.0082	-0.00042 SCCS

DATE: 1/23/93

			ALLOWED	ACTUAL RATE
PRIMARY TO	100 PSIG	DECAY LEAK RATE	.037	0.020254 SCCS
		PRESS RISE RATE	.037	0.000395 SCCS
BARRIER	30 PSIG	DECAY LEAK RATE	.0082	0.000466 SCCS
		PRESS RISE RATE	.0082	0.000328 SCCS
CAVITY				

PRINTOUT PLACED IN DATA BOOK BY: CHET COOPER

DATA DISK RETRIEVED BY: CHET COOPER

45 DEGREE LEAK CHECK PORT

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NO.</u>
PLUG	1U100269-03	ECL-0020
O-RING	1U50228-15	ECL-0116
GREASE	1U51916-09	ECL-0072

45 DEGREE PLUG INSTALLATION VERIFIED BY: BOB HILLARD

135 DEGREE PLUG INSTALLATION VERIFIED BY: BOB HILLARD

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.16 LH Joint Leak Checks & 45 Deg Plug (continued)

LH FORWARD FIELD JOINT

DATE: 1/27/93

PRIMARY TO		ALLOWED	ACTUAL RATE
SECONDARY	1000 PSIG DECAY LEAK RATE	.10	0.0244 SCCS
CAVITY	30 PSIG DECAY LEAK RATE	.0082	0.000857 SCCS

DATE: 1/27/93

			ALLOWED	ACTUAL RATE
PRIMARY TO	100 PSIG	DECAY LEAK RATE	.037	0.008293 SCCS
		PRESS RISE RATE	.037	0.000306 SCCS
BARRIER	30 PSIG	DECAY LEAK RATE	.0082	0.000165 SCCS
		PRESS RISE RATE	.0082	0.000149 SCCS
CAVITY				

PRINTOUT PLACED IN DATA BOOK BY: CHET COOPER

DATA DISK RETRIEVED BY: MIKE GOODWIN

45 DEGREE LEAK CHECK PORT

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NO.</u>
PLUG	1U100269-03	ECL-0020
O-RING	1U50228-15	ECL-0116
GREASE	1U51916-09	ECL-0075

45 DEGREE PLUG INSTALLATION VERIFIED BY: CHET COOPER

135 DEGREE PLUG INSTALLATION VERIFIED BY: CHET COOPER

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.17 RH Joint Leak Checks & 45 Deg Plug

RH AFT FIELD JOINT

DATE: 1/31/93

PRIMARY TO		ALLOWED	ACTUAL RATE
SECONDARY	1000 PSIG DECAY LEAK RATE	.10	0.015 SCCS
CAVITY	30 PSIG DECAY LEAK RATE	.0082	-0.000092 SCCS

DATE: 1/31/93

			ALLOWED	ACTUAL RATE
PRIMARY TO	100 PSIG	DECAY LEAK RATE	.037	0.017227 SCCS
		PRESS RISE RATE	.037	0.000287 SCCS
CAVITY	30 PSIG	DECAY LEAK RATE	.0082	0.000607 SCCS
		PRESS RISE RATE	.0082	0.000223 SCCS

PRINTOUT PLACED IN DATA BOOK BY: B. HILLARD

DATA DISK RETRIEVED BY: M. GOODWIN

45 DEGREE LEAK CHECK PORT

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NO.</u>
PLUG	1U100269-03	ECL-0020
O-RING	1U50228-15	ECL-0116
GREASE	1U51916-09	ECL-0075

45 DEGREE PLUG INSTALLATION VERIFIED BY: R. KRETZ

135 DEGREE PLUG INSTALLATION VERIFIED BY: R. KRETZ

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.17 RH Joint Leak Checks & 45 Deg Plug (continued)

RH CENTER FIELD JOINT

DATE: 2/1/93

PRIMARY TO		ALLOWED	ACTUAL RATE
SECONDARY	1000 PSIG DECAY LEAK RATE	.10	0.01893 SCCS
CAVITY	30 PSIG DECAY LEAK RATE	.0082	0.000077 SCCS

DATE: 2/1/93

			ALLOWED	ACTUAL RATE
PRIMARY TO	100 PSIG	DECAY LEAK RATE	.037	0.0209 SCCS
		PRESS RISE RATE	.037	0.00035 SCCS
BARRIER	30 PSIG	DECAY LEAK RATE	.0082	0.000507 SCCS
		PRESS RISE RATE	.0082	0.000136 SCCS
CAVITY				

PRINTOUT PLACED IN DATA BOOK BY: B. HILLARD

DATA DISK RETRIEVED BY: M. GOODWIN

45 DEGREE LEAK CHECK PORT

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NO.</u>
PLUG	1U100269-03	ECL-0022
O-RING	1U50228-15	ECL-0116
GREASE	1U51916-09	ECL-0069

45 DEGREE PLUG INSTALLATION VERIFIED BY: B. KRETZ

135 DEGREE PLUG INSTALLATION VERIFIED BY: B. DRETZ

Thiokol CORPORATION
SPACE OPERATIONS

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.17 RH Joint Leak Checks & 45 Deg Plug (continued)

RH FORWARD FIELD JOINT

DATE: 2/05/93

PRIMARY TO		ALLOWED	ACTUAL RATE
SECONDARY	1000 PSIG DECAY LEAK RATE	.10	0.0212 SCCS
CAVITY	30 PSIG DECAY LEAK RATE	.0082	-0.00004 SCCS

DATE: 2/05/93

			ALLOWED	ACTUAL RATE
PRIMARY TO	100 PSIG	DECAY LEAK RATE	.037	0.00993 SCCS
		PRESS RISE RATE	.037	0.000229 SCCS
BARRIER	30 PSIG	DECAY LEAK RATE	.0082	0.000995 SCCS
		PRESS RISE RATE	.0082	0.000102 SCCS

PRINTOUT PLACED IN DATA BOOK BY: J. COOK

DATA DISK RETRIEVED BY: M. GOODWIN

45 DEGREE LEAK CHECK PORT

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NO.</u>
PLUG	1U100269-03	ECL-0022
O-RING	1U50228-15	ECL-0116
GREASE	1U51916-09	ECL-0075

45 DEGREE PLUG INSTALLATION VERIFIED BY: M. NOWLING

135 DEGREE PLUG INSTALLATION VERIFIED BY: M. NOWLING

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.18 LH 135 Vent Plug & Leak Check (continued)

LH FORWARD FIELD JOINT 135 DEGREE VENT PORT PLUG LEAK CHECK

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>
GREASE	1U51916-09	ECL-0075
PLUG, BOTTOM	1U76425-01	ECL-0014
PLUG, TOP	1U76425-03	ECL-0021
PLUG, CLOSURE	1U50159-02	ECL-0007
O-RING, PRIMARY	1U50228-44	ECL-0015
O-RING, SECONDARY	1U50228-15	ECL-0116
O-RING, CLOSURE	1U50228-25	ECL-0067

LEAK TEST DATA

1. START TIME (TO THE SECOND): 18:28:00
2. INITIAL ISOLATION PRESSURE:

990.00	PSIG
+ 14.696	
1004.696	= P1
3. INITIAL ISOLATION TEMPERATURE:

60.900	DEGREES F
+ 459.7	
520.600	= T1
4. STOP TIME (TO THE SECOND): 18:41:00 (MINUTES * 60)
 ELAPSED TIME IN SECONDS: 900 = T (PLUS SECONDS)
5. FINAL ISOLATION PRESSURE:

978.000	PSIG
+ 14.696	
992.696	= P2
6. FINAL ISOLATION TEMPERATURE:

60.900	DEGREES F
+ 459.7	
520.600	= T2

V = 1.4

CALCULATE THE LEAK RATE PER THE FOLLOWING:

$$\text{LEAK RATE} = \frac{579.478 (1.4)}{T} \quad (P1/T1 - P2/T2)$$

LEAK RATE = 0.0208 SCCS

V = 1.4

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.20 LH Field Joint Closeout

AFT FIELD JOINT CLOSEOUT

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>
JOINT HEATER	1U77252-01	0000164	1/26/93
SENSOR ASSY	1U77076-01	0000083	1/26/93
SENSOR ASSY	1U77076-02	0000110	1/26/93
THERMAL BAR.	1U77157-01	ECL0129	1/26/93
HEATER STRAP	1U77114-01	0000195	1/28/93
LINK	1U77119-01	0000197	1/28/93
CLIP	1U77120-01	0000164	1/28/93
AFT CORK STRIP	1U77160-01	ECL-0102 10ea ECL-0117 2ea	1/29/93 1/29/93
FWD CORK STRIP	1U77160-02	ECL-0108 10ea ECL-0085 2ea	1/29/93 1/29/93

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.20 LH Field Joint Closeout (continued)

CENTER FIELD JOINT CLOSEOUT

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>
JOINT HEATER	1U77252-01	00000162	1/29/93
SENSOR ASSY	1U77076-01	0000092	1/29/93
SENSOR ASSY	1U77076-02	0000109	1/29/93
THERMAL BAR.	1U77157-01	0000125	1/30/93
HEATER STRAP	1U77114-01	0000184	1/30/93
LINK	1U77119-01	0000196	1/30/93
CLIP	1U77120-01	0000163	1/30/93
AFT CORK STRIP	1U77160-01	ECL-0106 2ea	2/01/93
		ECL-0119 10ea	2/01/93
FWD CORK STRIP	1U77160-02	ECL-0094 12ea	2/01/93

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.20 LH Field Joint Closeout (continued)

FORWARD FIELD JOINT CLOSEOUT

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>
JOINT HEATER	1U77252-01	0000157	2/01/93
SENSOR ASSY	1U77076-01	0000081	2/01/93
SENSOR ASSY	1U77076-02	0000080	2/01/93
THERMAL BAR.	1U77157-01	0000139	2/01/93
HEATER STRAP	1U77114-01	0000192	2/02/93
LINK	1U77119-01	0000188	2/02/93
CLIP	1U77120-01	00000196	2/02/93
AFT CORK STRIP	1U77160-01	ECL-0111 2ea ECL-0118 10ea	2/02/93
FWD CORK STRIP	1U77160-02	ECL-0096 2ea ECL-0098 10ea	2/02/93

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.21 RH Field Joint Closeout

AFT FIELD JOINT CLOSEOUT

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>
JOINT HEATER	1U77252-01	0000161	2/02/93
SENSOR ASSY	1U77076-01	0000093	2/02/93
SENSOR ASSY	1U77076-02	0000103	2/02/93
THERMAL BAR.	1U77157-01	ECL-0131	2/02/93
HEATER STRAP	1U77114-01	0000197	2/02/93
LINK	1U77119-01	0000149	2/02/93
CLIP	1U77120-01	0000182	2/02/93
AFT CORK STRIP	1U77160-01	ECL-0076 7ea ECL-0121 5ea	2/02/93
FWD CORK STRIP	1U77160-02	ECL-0090 2ea ECL-0112 10ea	2/02/93

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.21 RH Field Joint Closeout (continued)

CENTER FIELD JOINT CLOSEOUT

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>
JOINT HEATER	1U77252-01	0000132	2/02/93
SENSOR ASSY	1U77076-01	0000091	2/02/93
SENSOR ASSY	1U77076-02	0000102	2/02/93
THERMAL BAR.	1U77157-01	ECL-0130	2/03/93
HEATER STRAP	1U77114-01	0000191	2/03/93
LINK	1U77119-01	0000154	2/03/93
CLIP	1U77120-01	0000181	2/03/93
AFT CORK STRIP	1U77160-01	ECL-0097 1 EA -0110 1 EA -0107 1 EA -0109 2 EA -0114 3 EA -0120 2 EA	2/03/93
FWD CORK STRIP	1U77160-02	ECL-0068 2 EA -0071 1 EA -0087 2 EA -0091 2 EA -0093 2 EA -0113 1 EA	2/03/93

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.21 RH Field Joint Closeout (continued)

FORWARD FIELD JOINT CLOSEOUT

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>
JOINT HEATER	1U77252-01	0000168	2/08/93
SENSOR ASSY	1U77076-01	0000090	2/08/93
SENSOR ASSY	1U77076-02	0000087	2/08/93
THERMAL BAR.	1U77157-01	0000128	2/09/93
HEATER STRAP	1U77114-01	0000196	2/09/93
LINK	1U77119-01	0000152	2/09/93
CLIP	1U77120-01	0000183	2/09/93
AFT CORK STRIP	1U77160-01	ECL-0084 1 EA -0116 5 EA -0096 1 EA -0087 2 EA -0102 3 EA	2/09/93
FWD CORK STRIP	1U77160-02	ECL-0086 1 EA -0099 11 EA	2/09/93

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.22 Forward Assembly Installation (LH/RH)

LH DATE: 1/27/92

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PINS	1U51055-03	ECL-0003	195

STRAPPING KIT	1U75345-07	0000171	1
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RH DATE: 2/06/93

<u>ITEM</u>	<u>PART NO.</u>	<u>LOT NUMBER</u>	<u>QTY</u>
PINS	1U51055-03	ECL-0008	56
	1U51055-03	ECL-0002	139

STRAPPING KIT	1U75345-07	0000166	1
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8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.23 LH Safe and Arm Installation

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>
SAFE & ARM	1U52295-08	0000001	2/23/93
GASKET	1U77464-01	0000026	2/23/93
BOLTS	1U51569-02	ECL-0011	2/23/93
WASHER	MS21206-C6	ECL-0018	2/23/93

LEAK CHECK DATA

DATE: 2/23/93

<u>PRIMARY TO</u>		<u>ALLOWED</u>	<u>ACTUAL RATE</u>
<u>SECONDARY</u>	1000 PSIG DECAY LEAK RATE	.10	-0.000381 SCCS
<u>CAVITY</u>	30 PSIG DECAY LEAK RATE	.0082	-0.000036 SCCS

PRINTOUT PLACED IN DATA BOOK BY: D. CRAWFORD

LEAK CHECK PORT PLUG DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>
O-RING	1U50228-25	ECL-0068	2/23/93

PLUG INSTALLATION VERIFIED BY: D. CRAWFORD

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.24 RH Safe and Arm Installation

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>
SAFE & ARM	1U52295-08	0000002	2/23/93
GASKET	1U77464-01	0000028	2/23/93
BOLTS	1U51569-02	ECL-0011	2/23/93
WASHER	MS21206-C6	ECL-0018	2/23/93

LEAK CHECK DATA

DATE: 2/25/93

<u>PRIMARY TO</u>		<u>ALLOWED</u>	<u>ACTUAL RATE</u>
<u>SECONDARY</u>	1000 PSIG DECAY LEAK RATE	.10	0.00053 SCCS
<u>CAVITY</u>	30 PSIG DECAY LEAK RATE	.0082	-0.00311 SCCS

PRINTOUT PLACED IN DATA BOOK BY: THI LSS QUALITY

LEAK CHECK PORT PLUG DATA

<u>ITEM</u>	<u>PART NO.</u>	<u>SERIAL/LOT NO.</u>	<u>DATE</u>
O-RING	1U50228-25	ECL-0068	2/25/93

PLUG INSTALLATION VERIFIED BY: T. WHITE

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.25 LH Verification of Leak Check/Vent Port Plug Installation

<u>ITEM</u>	<u>PHOTO REVIEWED BY</u> <u>FLOW LEAD (INITIALS)</u>	<u>DATE</u>
SAFE & ARM 306 DEG. LK CK PORT PLUG	DRC	3-11-93
FORWARD JOINT 135 DEG. VENT PORT PLUG	DRC	4-20-93
FORWARD JOINT 45 DEG. LK CHECK PORT PLUG	DRC	3-11-93
CENTER JOINT 135 DEG. VENT PORT PLUG	DRC	3-11-93
CENTER JOINT 45 DEG. LK CHECK PORT PLUG	DRC	4-2-93
AFT JOINT 135 DEG. VENT PORT PLUG	DRC	4-20-93
AFT JOINT 45 DEG. LK CHECK PORT PLUG	DRC	4-20-93
AFT EXIT CONE 270 DEG. LEAK CHECK PORT PLUG	DRC	3-11-93

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.26 RH Verification of Leak Check/Vent Port Plug Installation

<u>ITEM</u>	<u>PHOTO REVIEWED BY</u> <u>FLOW LEAD (INITIALS)</u>	<u>DATE</u>
SAFE & ARM 306 DEG. LK CK PORT PLUG	DRC	3-11-93
FORWARD JOINT 135 DEG. VENT PORT PLUG	DRC	4-20-93
FORWARD JOINT 45 DEG. LK CHECK PORT PLUG	DRC	4-20-93
CENTER JOINT 135 DEG. VENT PORT PLUG	DRC	3-11-93
CENTER JOINT 45 DEG. LK CHECK PORT PLUG	DRC	4-2-93
AFT JOINT 135 DEG. VENT PORT PLUG	DRC	4-20-93
AFT JOINT 45 DEG. LK CHECK PORT PLUG	DRC	4-2-93
AFT EXIT CONE 270 DEG. LEAK CHECK PORT PLUG	DRC	4-12-93

8.0 LSS ENGINEERING AS-BUILT CONFIGURATION DATA (cont.)

RSRM: 031 BIO: 58 STS: 56

8.27 Roll to Pad Date: 3/15/93

8.28 Launch Date: 4/08/93

8.29 Segment Return to Utah:

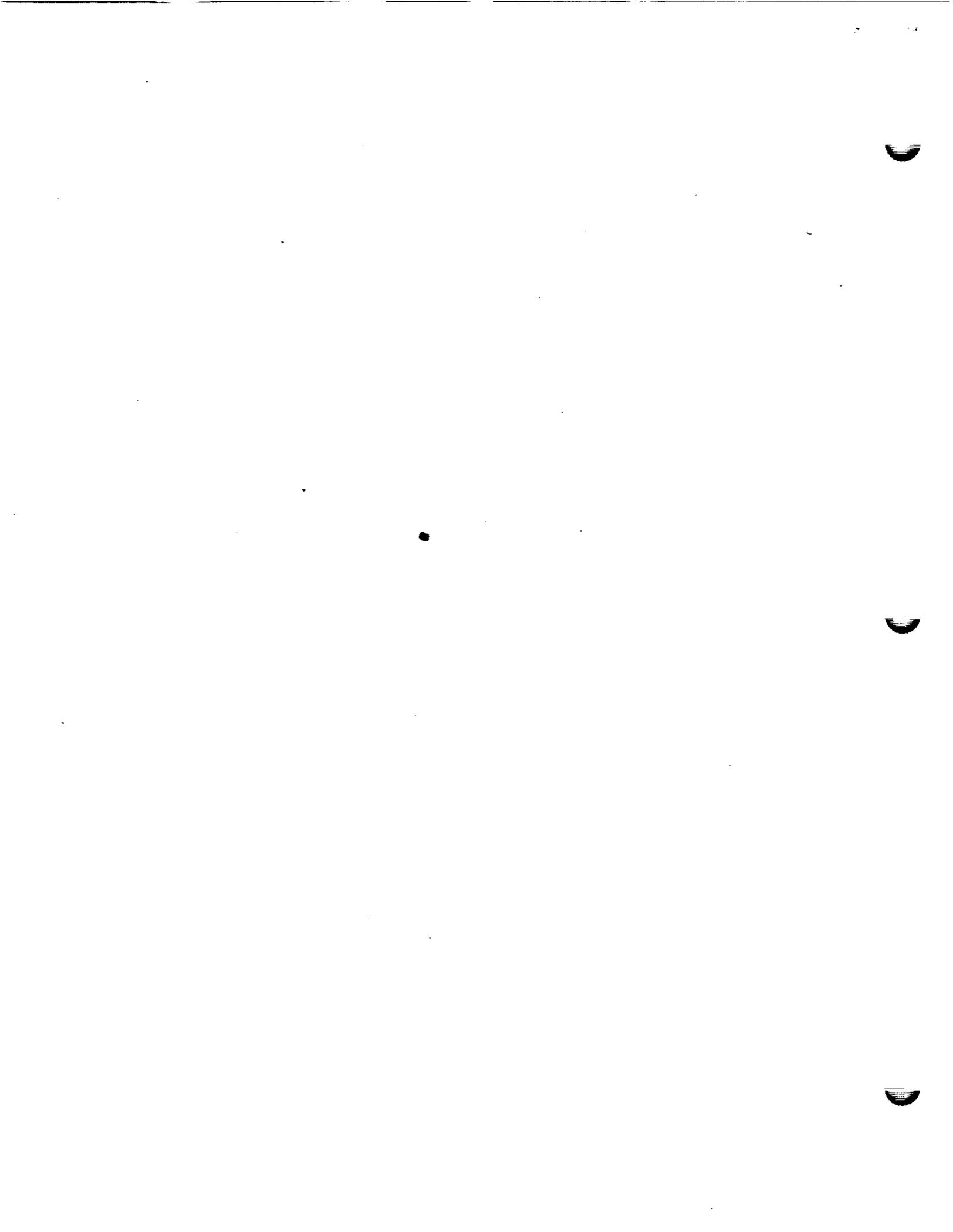
	<u>AFT SEG</u>	<u>AFT CTR SEG</u>	<u>FWD CTR SEG</u>	<u>FWD SEG</u>
LH: DATE	4/22/93	4/22/93	4/22/93	4/22/93
R/R CAR #	UP50024	UP50020	KCS710008	UP50027
RH: DATE	4/22/93	4/22/93	4/22/93	4/22/93
R/R CAR #	UP50022	CSXT600510	KCS719941	FEC101

8.30 Exit Cone Return to Utah:

LH: DATE	4/14/93	RH: DATE	4/14/93
TRANS CO:	YOWELL TRK CO.	TRANS CO:	YOWELL TRK CO.
SHIPPING No:	TRAILER 149L	SHIPPING No:	TRAILER 149L

8.31 Nozzle Return to Utah

LH: DATE	4/15/93	RH: DATE	4/15/93
TRANS CO:	YOWELL TRK CO.	TRANS CO:	YOWELL TRK CO.
SHIPPING No:	TRAILER 5836	SHIPPING No:	TRAILER 5836



APPENDIX A

Engineering Specifications and Changes

AFT BOOSTER BUILD-UP DRAWING: 1U76950-03 REVISION: A ECO: 2,3,5,6

ASSEMBLY AND CLOSEOUT DRAWING: 1U77426-02 REVISION: A ECO: 7

STACKING SPECIFICATION: STW9-3835 REVISION: L SCN: 17A

FECs APPLICABLE TO THIS FLOW:

FEC RSRM-093 Application of a continuous coat of lubricant to the back outside surface of all RSRM Joint volume filler sections prior to installation.

TCTIs APPLICABLE TO THIS FLOW:

N/A

SPECIAL ACTION REQUEST (CHIT) APPLICABLE TO THIS FLOW:

N/A

APPENDIX A

Engineering Specifications and Changes (continued)

The following list provides the OMI title, OMI number, and OMI Revision as it applied to RSRM-031 (STS-56):

<u>OMI Title</u>	<u>OMI No.</u>	<u>OMI Rev.</u>
Stacking and Alignment Operations	B5303	T
SRB System Mate and Closeout	B5304	N
Aft Booster Assembly Electrical Buildup	B5305	R
SRB Ordnance Connection and Pad Closeout	B5306	K
SRB Cable Installation and Checkout and Prepower Electrical Checks	B5307	Q
SRB RPSF Operations	B5308	P
Aft Booster Assembly (RPSF)	B5309	Q
SRB Standard Technical Practices	B5311	H

APPENDIX B
Problem Reports (PRs)

The following pages represent Problem Reports (PRs) that were initiated during the operational flow of RSRM-031, STS-56.

REVISION _____

DOC NO.	TWR-63641	VOL
SEC	PAGE	B1

PROBLEM REPORT COUNT

RSRM-031
STS-56

	TOTAL PR'S	SRM ONLY	SRM OPEN	WASATCH RESP.	PRs SENT TO WAS.	TAIR LOG STATUS
	-----	-----	-----	-----	-----	-----
LEFT						

SR-LF-58-006 (R&I FORWARD)	0	0	0	0	0	CLOSED
SR-LFC-58-006 (R&I CTR. FORWARD)	0	0	0	0	0	CLOSED
SR-LAC-58-006 (R&I CTR. AFT)	1	1	0	1	1	CLOSED
SR-LA-58-005 (R&I AFT)	0	0	0	0	0	CLOSED
SR-EC-58L-007 (R&I EXIT CONE)	0	0	0	0	0	CLOSED
AB-BI058L (AFT BUILDUP)	4	0	0	0	0	CLOSED
SB-BI058L (ASSEMBLY)	9	6	0	3	5	
RIGHT						

SR-RF-58-006 (R&I FORWARD)	0	0	0	0	0	CLOSED
SR-RFC-58-006 (R&I CTR. FORWARD)	0	0	0	0	0	CLOSED
SR-RAC-58-006 (R&I CTR. AFT)	0	0	0	0	0	CLOSED
SR-RA-58-003 (R&I AFT)	0	0	0	0	0	CLOSED
SR-EC-58R-015 (R&I EXIT CONE)	0	0	0	0	0	CLOSED
AB-BI058R (AFT BUILDUP)	6	2	0	1	2	CLOSED
SB-BI058R (ASSEMBLY)	10	4	0	1	4	
GENERAL						

AB-BI058 (AFT BUILDUP)	0	0	0	0	0	CLOSED
SB-BI058 (ASSEMBLY)	4	0	0	0	0	

TOTAL	34	13	0	6	12	

NOTE: TOTAL PR'S OPEN (INCLUDING THIOKOL & USBI) = 0

04/22/93 TAIR COUNT AT 0543 HOURS.

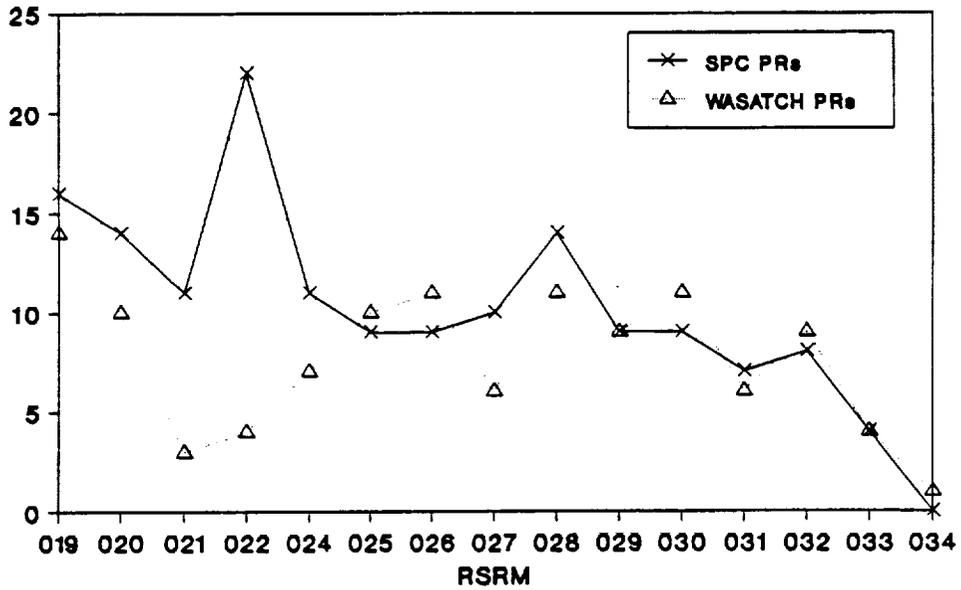
PR CLOSURE COUNT IS SUBJECT TO ENGINEERING EVALUATION
AND IS BASED ON THE PREMISE THAT WORK IS 'COMPLETE'.

Thiokol LSS Quality Engineering

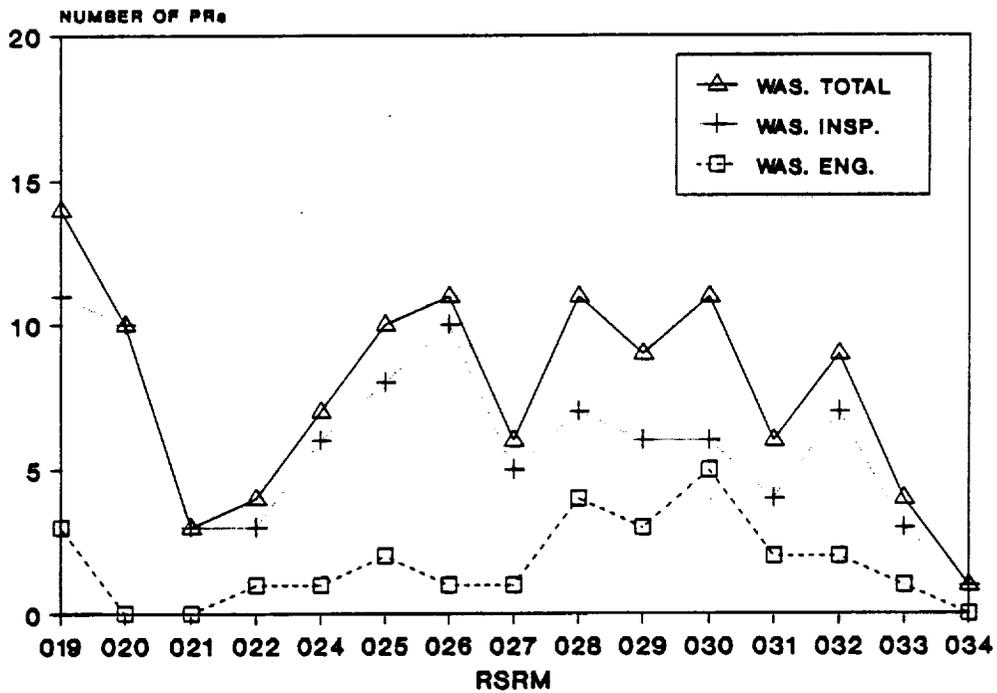
TWR-63641

B2

WASATCH/SPC PR TRENDS



WASATCH PRs



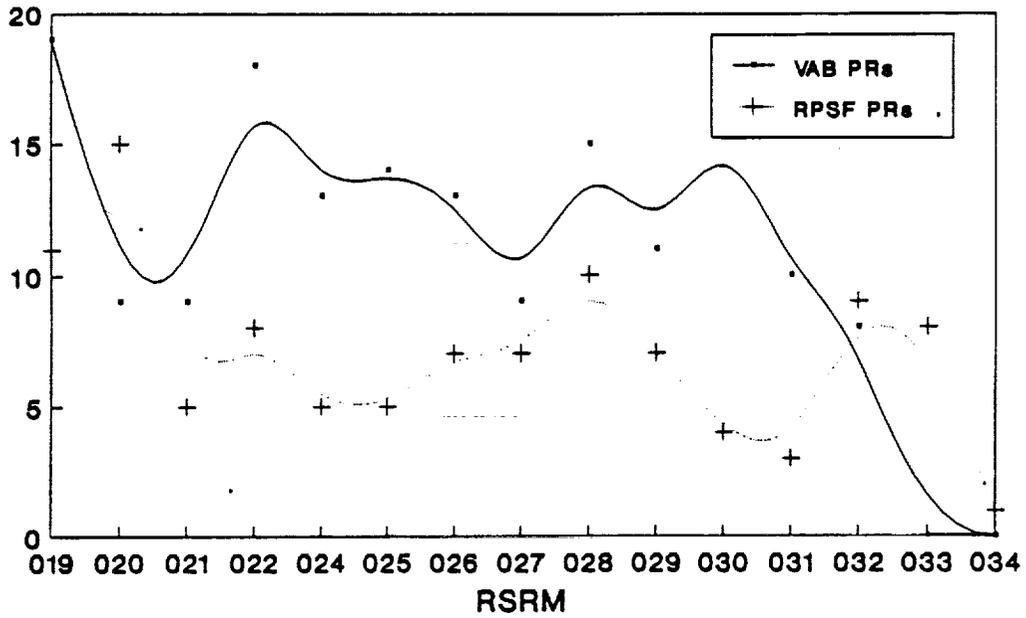
OPEN CAARS

FLIGHT	CAAR NUMBER	CAR NUMBER	DATE ISSUED	DAYS OPEN	RESP. ORGAN.
--------	----------------	---------------	----------------	--------------	-----------------

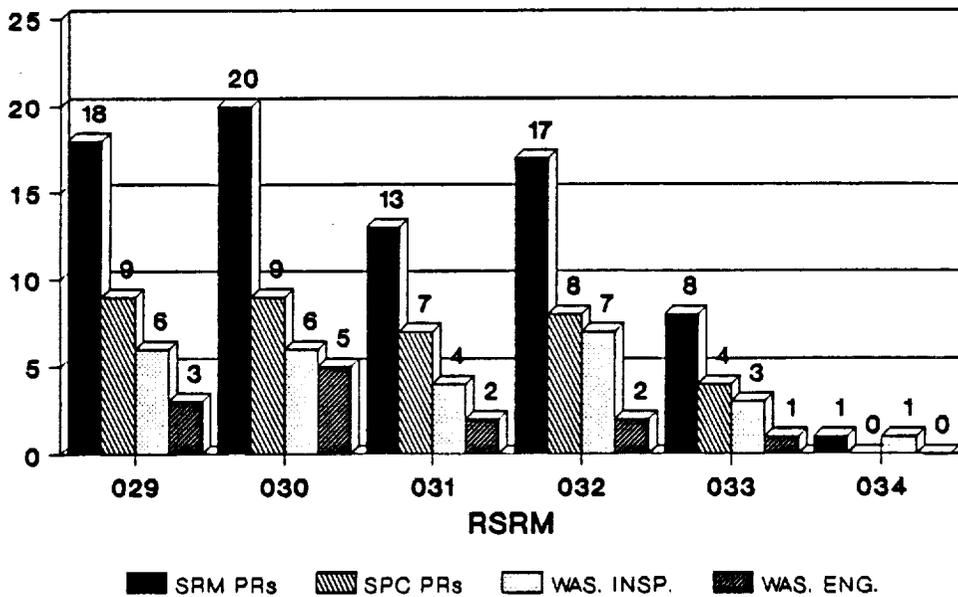
CAAR DATA

ACTIVITY	TOTAL CAAR'S	OPEN CAAR'S
RSRM-028	1	0
RSRM-029	0	0
RSRM-030	1	0
RSRM-031	1	0
RSRM-032	1	0
RSRM-033	0	0
RSRM-034	0	0
MISCELLANEOUS	11	0

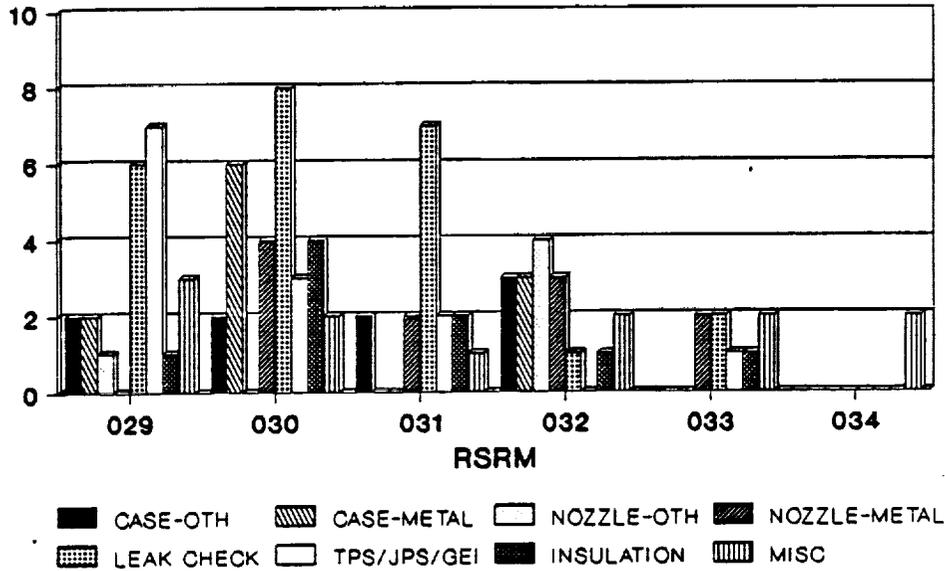
VAB & RPSF PR TREND



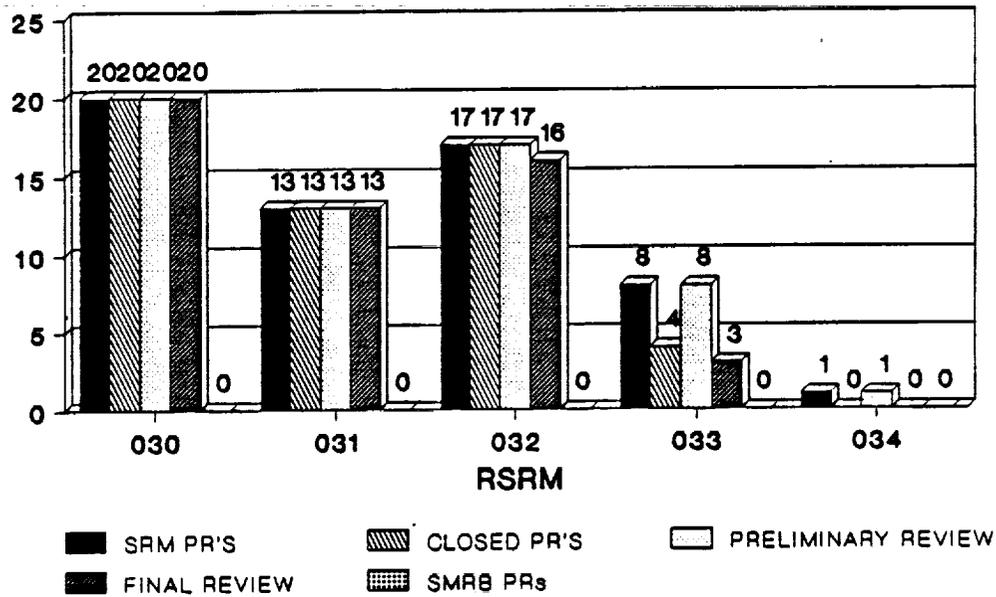
RESPONSIBILITY BREAKDOWN



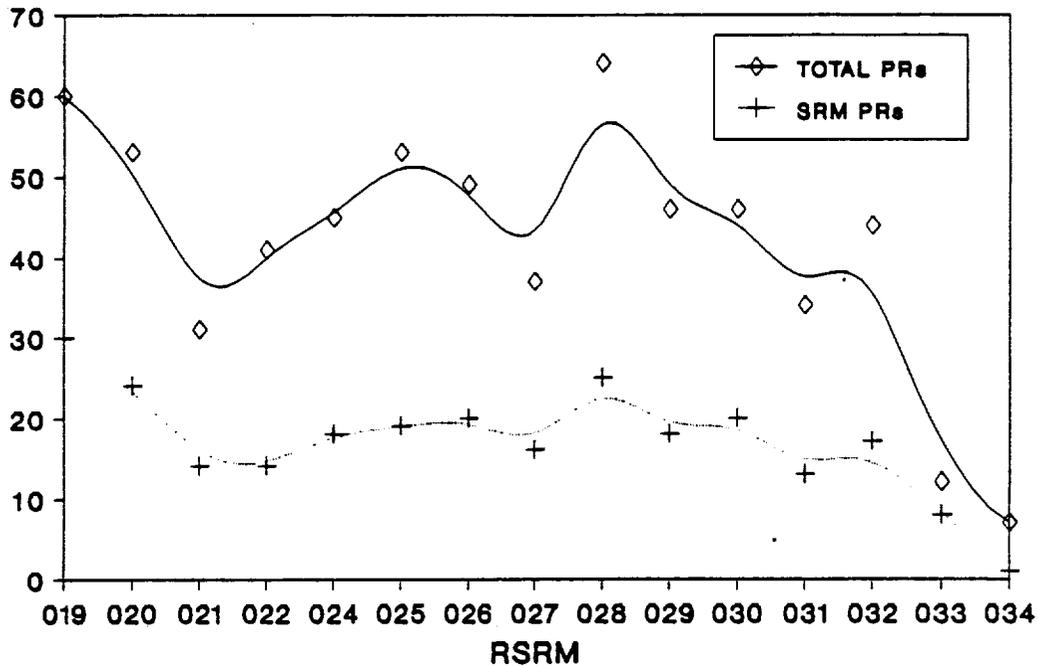
DISCREPANCY BREAKDOWN



PR SMRB ASSESSMENT

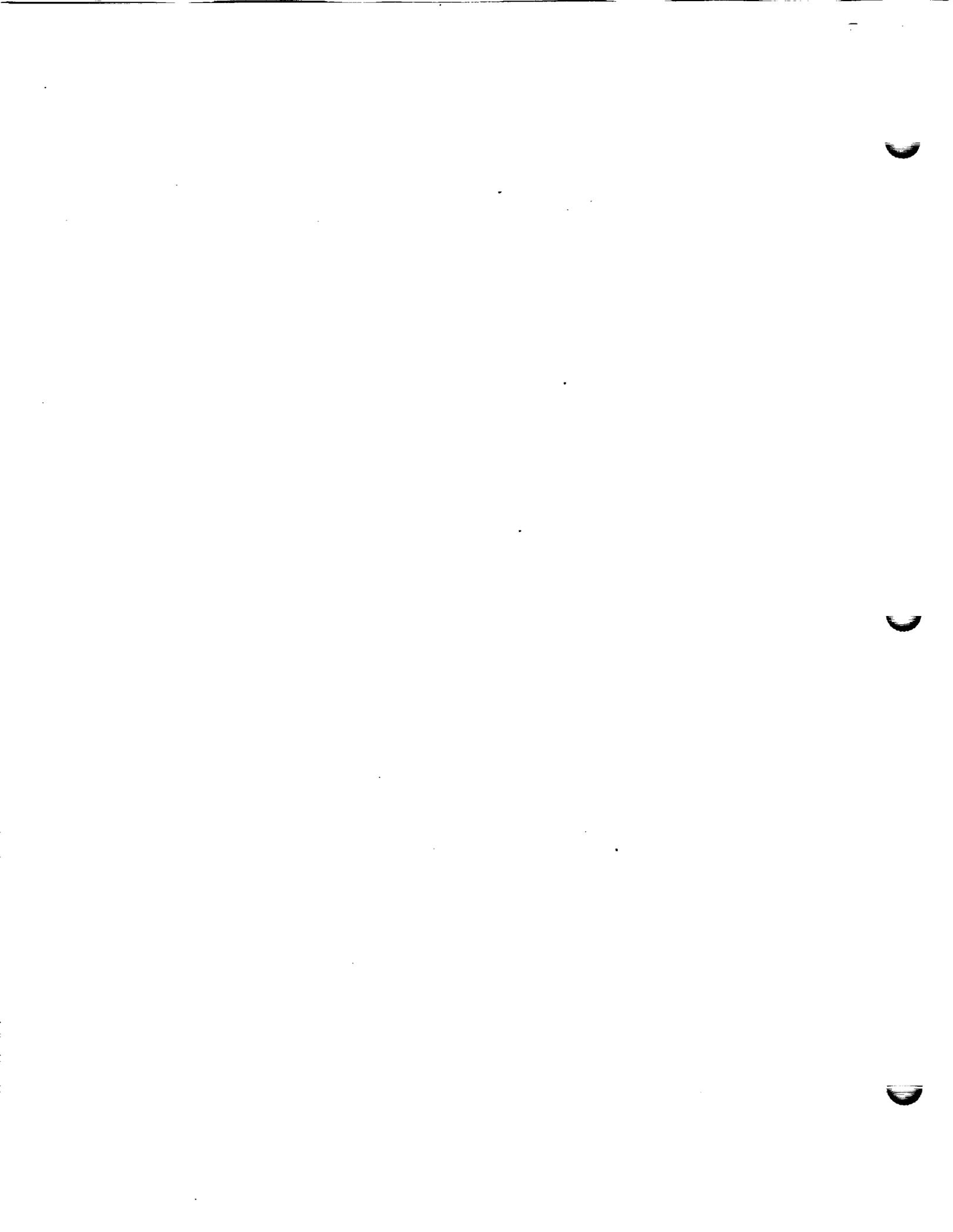


PR TREND



ASSEMBLY DATA

FLIGHT	TOTAL PR'S	SRM PR'S	CLOSED PR'S
RSRM-019	60	30	30
RSRM-020	53	24	24
RSRM-021	31	14	14
RSRM-022	41	14	14
RSRM-024	45	18	18
RSRM-025	53	19	19
RSRM-026	49	20	20
RSRM-027	37	16	16
RSRM-028	64	25	25
RSRM-029	46	18	18
RSRM-030	46	20	20
RSRM-031	34	13	13
RSRM-032	44	17	17
RSRM-033	12	8	4
RSRM-034	7	1	0



APPENDIX C

The Motor Set Status can be found on the following page.

REVISION _____

DOC NO.	TWR-63641	VOL
SEC	PAGE	C1

MOTOR SET STATUS

STS-56 BIO-58 360L031

AS OF 26 APRIL 1993

A (LH)		B (RH)		ON DOCK KSC	OFF LOAD	RECEIVING INSPECTION	LOCATION	JOINT MATE	LEAK CHECK	HEATER INSTALL	JOINT CLOSEOUT	CABLE INSTALL	HEATER CHECKOUT
1U52295-08		43R2		A 11 JAN 93		20 JAN 93	PAD B	A	25 FEB 93				
S & A		46R4		B 11 JAN 93		CHECKOUT 20 JAN 93	PAD B	B					
0000001 0000002		17R2											
10R5		73R4		A 18 NOV 92	1 DEC 92	2 DEC 92	PAD B	A	27 JAN 93	1 FEB 93	2 FEB 93	10 FEB 93	19 FEB 93
68R5 FWD SEG		55R1		B 10 DEC 92	11 DEC 92	14 DEC 92	PAD B	B	6 FEB 93	8 FEB 93	11 FEB 93	16 FEB 93	19 FEB 93
24R1		77		A 18 NOV 92	3 DEC 92	5 DEC 92	PAD B	A	23 JAN 93	29 JAN 93	1 FEB 93	10 FEB 93	19 FEB 93
12R5 FWD CTR SEG		58R1		B 10 DEC 92	5 JAN 93	7 JAN 93	PAD B	B	1 FEB 93	2 FEB 93	3 FEB 93	16 FEB 93	19 FEB 93
77		10R4		A 18 NOV 92	7 DEC 92	9 DEC 92	PAD B	A	22 JAN 93	26 JAN 93	29 JAN 93	10 FEB 93	19 FEB 93
40R5 AFT CTR SEG		58R1		B 10 DEC 92	9 JAN 93	12 JAN 93	PAD B	B	1 FEB 93	2 FEB 93	3 FEB 93	16 FEB 93	19 FEB 93
20R3		30R3		A 6 NOV 92	9 NOV 92	16 DEC 92	PAD B	A	31 JAN 93	26 JAN 93	29 JAN 93	10 FEB 93	19 FEB 93
48		56R2		B 18 NOV 92	25 NOV 92	14 JAN 93	PAD B	B	29 JAN 93	2 FEB 93	3 FEB 93	16 FEB 93	19 FEB 93
95		47R3											
94		30R4		A 6 NOV 92	18 NOV 92	20 NOV 92	PAD B	A	24 NOV 92				
61R16		48R3		B 6 NOV 92	18 NOV 92	20 NOV 92	PAD B	B	16 DEC 92				
132		AFT SKT		A 11 NOV 92				A	12 JAN 93				
AFT SKT		SHEET MATE		B 30 NOV 92				B	22 JAN 93				

Legend

- ON DOCK KSC — RALCARS PHYSICALLY ON KSC
- OFFLOAD — SEGMENT LIFTED FROM THE RALCAR
- REC / INSP — COMPLETE WHEN WEATHER COVER INST
- FWD JOINT/AFT SKIRT MATE — LAST PIN INSTALLED
- AFT BOOSTER ON MLP — BEAM DISCONNECT
- AEG MATED — LAST BOLT TORQUED
- LEAK CHECK — VENT AND LK CK PLUGS INSTALLED
- HEATER INSTALL — HEATER INSTALLED ON SEGMENT
- CABLE INSTALL — ALL HEATER CABLES CONNECTED
- JOINT CLOSEOUT — ALL JPS PAINT TOP COAT INSTALLATION COMPLETE
- HEATER CHECKOUT, FIELD JOINT AND IGNITER — BS307 TASK 5 COMPLETED
- FORWARD ASSEMBLY MATE — LAST PIN INSTALLED
- ET / SRB MATE — BEAM DISCONNECTED FROM ET
- ORBITER MATE — BEAM DISCONNECTED FROM ORBITER
- ROLL TO PAD — FIRST MOTION IN THE VAB
- FWD SKT CLOSEOUT — FORWARD SKIRT DOOR INST



Launch 8 APRIL 93

FORWARD ASSEMBLY MATE LH 27 JAN 93 RH 6 FEB 93
 ET/SRB MATE 10 FEB 93 ORBITER MATE 3 MAR 93
 ROLL TO PAD 15 MAR 93 FWD SKT CLOSEOUT LH 5 APR 93 RH 5 APR 93

Thiokol CORPORATION

KSC Operations
 LSS FLOW ENGINEER - D. Crawford
 (407) 867-2704

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RETURN ADDRESS CN22D 000002444