STS 51-C
National Space
Transportation Systems
Program Mission Report

March 1985

NASA
National Aeronautics and
Space Administration
Lyndon B. Johnson Space Center
Houston, Texas
STS 51-C
NATIONAL SPACE TRANSPORTATION SYSTEMS PROGRAM
MISSION REPORT

Michael A. Collins, Jr.
Manager, Shuttle Data
and Evaluation Office

A. D. Aldrich
Manager, Space Shuttle Projects

Glynn S. Lunney
Manager, National STS Program

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LYNDON B. JOHNSON SPACE CENTER
HOUSTON, TEXAS 77058

March 1985
## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION AND MISSION OBJECTIVES</td>
<td>1</td>
</tr>
<tr>
<td>MISSION SUMMARY</td>
<td>1</td>
</tr>
<tr>
<td>VEHICLE ASSESSMENT</td>
<td>3</td>
</tr>
<tr>
<td>SOLID ROCKET BOOSTER</td>
<td>3</td>
</tr>
<tr>
<td>EXTERNAL TANK</td>
<td>3</td>
</tr>
<tr>
<td>SPACE SHUTTLE MAIN ENGINE</td>
<td>3</td>
</tr>
<tr>
<td>MAIN PROPULSION SYSTEM</td>
<td>4</td>
</tr>
<tr>
<td>ORBITER</td>
<td>4</td>
</tr>
<tr>
<td>Improper Moding and Timing in BFS</td>
<td>4</td>
</tr>
<tr>
<td>TACAN 3 Failed to Lock Up During Entry</td>
<td>4</td>
</tr>
<tr>
<td>Radar Altimeter 2 Was Erratic At High Altitude</td>
<td>4</td>
</tr>
</tbody>
</table>
INTRODUCTION AND MISSION OBJECTIVES

The STS 51-C National Space Transportation System Program Mission Report contains a summary of the Orbiter, ET (external tank), SRB (solid rocket booster), and SSME (Space Shuttle main engine)/MPS (main propulsion system) systems operation for the fifteenth Space Shuttle mission, which was also the third flight of the Orbiter vehicle, Discovery (OV-103). Because of the security classification assigned to this mission, this report contains no discussion of any of the mission activities or accomplishments.

Table I contains a partial sequence of events, including only those activities that are unclassified. Additionally, this report contains a discussion of the most significant Orbiter problems/anomalies. Table II is a listing of all unclassified Orbiter problems/anomalies. Table III is the Marshall Space Flight Center problem tracking list.

MISSION SUMMARY

The STS 51-C mission was launched on January 24, 1985, at 19:50:00 G.m.t., 1 hour and 35 minutes into the 3-hour launch window. The flight was originally scheduled to be launched on January 23, 1985, but because the expected cold temperatures might cause ice formations on the vehicle, the launch was delayed until January 24, 1985.


The countdown phase was completed satisfactorily, however, two minor Orbiter problems were noted during that period. The first occurred during the T-3 hour hold and involved a force fight in the right inboard elevon actuator between channel 4 and channels 1, 2, and 3. The condition corrected itself within 22 seconds after APU (auxiliary power unit) start up at T-5 minutes. A similar problem with the same channels in the same actuator occurred on STS 41-D (first flight of this vehicle).

The second problem that was noted during the countdown phase was the high helium concentration in the Orbiter mid-body. A pressure decay test showed no significant system leakage. The high helium concentration disappeared when the MPS (main propulsion system) gaseous helium system was pressurized to the flight level.

System operations were all nominal during the ascent phase. SRB motor performance was near the predicted levels and well within the allowed envelopes. External tank and MPS performance was excellent with MECO (main engine cutoff) near the predicted time.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>G.M.T., hr:min:sec</th>
</tr>
</thead>
<tbody>
<tr>
<td>APU Activation (1)</td>
<td>024:19:45:08</td>
</tr>
<tr>
<td>(2)</td>
<td>024:19:45:09</td>
</tr>
<tr>
<td>(3)</td>
<td>024:19:45:10</td>
</tr>
<tr>
<td>SRB HPU activation command (LR-A2)</td>
<td>024:19:49:32:14</td>
</tr>
<tr>
<td>MPS start command sequence (engine 3)</td>
<td>024:19:49:53:44</td>
</tr>
<tr>
<td>SRB ignition command from GPC (lift-off)</td>
<td>024:19:50:00</td>
</tr>
<tr>
<td>MPS throttle-down to 92-percent (engine 3)</td>
<td>024:19:50:15:48</td>
</tr>
<tr>
<td>MPS throttle-down to 65-percent (engine 3)</td>
<td>024:19:50:29:4</td>
</tr>
<tr>
<td>Maximum dynamic pressure</td>
<td>024:19:50:52</td>
</tr>
<tr>
<td>MPS throttle-up to 104-percent (engine 3)</td>
<td>024:19:51:01:08</td>
</tr>
<tr>
<td>SRB separation command from GPC</td>
<td>024:19:51:32:07</td>
</tr>
<tr>
<td>MPS throttle-down from 3g acceleration (engine 3)</td>
<td>024:19:57:34:54</td>
</tr>
<tr>
<td>Main engine cutoff (MECO)</td>
<td>024:19:58:32</td>
</tr>
<tr>
<td>External tank separation</td>
<td>024:19:58:49</td>
</tr>
<tr>
<td>APU deactivation (1)</td>
<td>024:20:06:15</td>
</tr>
<tr>
<td>(2)</td>
<td>024:20:06:17</td>
</tr>
<tr>
<td>(3)</td>
<td>024:20:06:14</td>
</tr>
<tr>
<td>Flight control system checkout APU 2 start</td>
<td>026:22:15:02</td>
</tr>
<tr>
<td>Flight control system checkout APU 2 shutdown</td>
<td>026:22:20:20</td>
</tr>
<tr>
<td>APU 3 activation</td>
<td>027:20:11:03</td>
</tr>
<tr>
<td>APU activation (1)</td>
<td>027:20:39:29</td>
</tr>
<tr>
<td>(2)</td>
<td>027:20:39:28</td>
</tr>
<tr>
<td>Entry Interface</td>
<td>027:20:52:29</td>
</tr>
<tr>
<td>End blackout</td>
<td>027:21:08:16</td>
</tr>
<tr>
<td>Terminal area energy management (TAEM)</td>
<td>027:21:16:45</td>
</tr>
<tr>
<td>Main landing gear contact</td>
<td>027:21:23:23</td>
</tr>
<tr>
<td>Nose landing gear contact</td>
<td>027:21:23:35</td>
</tr>
<tr>
<td>Wheels stop</td>
<td>027:21:24:13</td>
</tr>
<tr>
<td>APU deactivation complete (3)</td>
<td>027:21:43:41</td>
</tr>
</tbody>
</table>
At external tank separation, the BFS (backup flight system) did not automatically proceed to major mode 104. The crew performed the necessary manual procedures, and the BFS operated satisfactorily until the deorbit maneuver when the BFS time for deorbit maneuver ignition was 8 seconds late. However, the BFS operated satisfactorily for entry.

The entry phase systems operations were satisfactory with the Orbiter landing on runway 15 at Kennedy Space Center at 027:21:23 G.m.t. (4:23 p.m.e.s.t.) on January 27, 1985. The rollout distance was 7352 ft. An inspection of the Orbiter after landing showed the vehicle to be in excellent condition.

VEHICLE ASSESSMENT

SOLID ROCKET BOOSTER

All SRB systems performed as expected. The SRB prelaunch countdown was nominal with no problems noted. Performance of both SRM's (solid rocket motors) was close to predicted values and well within the allowable envelopes.

The average head pressures during the first 20 seconds as well as the propellant burn rates were approximately 1.0-percent below predicted values, thus resulting in longer than predicted web and action times. Preliminary indications are that the SRB separation occurred approximately 1.7 seconds later than predicted. The SRB recovery system performed nominally, with both SRB's reported floating in the normal manner.

EXTERNAL TANK

All ET systems performed as expected. There were no ET preflight or flight anomalies. There was some ice/frost buildup observed as predicted, however, the vehicle was clean at lift-off.

SPACE SHUTTLE MAIN ENGINE

The SSME performance data during prelaunch, mainstage, shutdown and propellant dump looked good, following trends which were similar to those observed during previous flights. Predicted data for engines 1 and 3 were very good, however, engine 2 HPOTP (high pressure oxidizer turbopump) turbine discharge temperatures during mainstage were slightly higher than the predicted values.

MAIN PROPULSION SYSTEM

Overall performance of the MPS was excellent. Liquid oxygen and liquid hydrogen loading was accomplished as planned. Ascent performance appeared to be normal with MECO near the predicted time.

ORBITER

All Orbiter systems operated very satisfactorily with only two minor anomalies occurring during the flight. A discussion of each of these is contained in the following paragraphs, and a complete listing of all problems and anomalies is contained in Table II.
Improper Moding and Timing in BFS

The BFS did not automatically proceed to major mode 104 after ET separation. The condition was noted, and the crew manually made the mode change. The criteria for the mode change is a 3.6 ft/sec velocity change after receiving the ET separation indication. Assuming worst case timing and maximum acceleration in the early portion of the separation maneuver, analysis indicates that the BFS sensed only 3.5 of the required 3.6 ft/sec velocity change. For STS 51-E, no change will be made to the software and the crew will be instructed to manually proceed to the major mode 104, if the same problem recurs.

Also, the BFS TIG (ignition time) for the deorbit maneuver was 8 seconds later than the PASS (primary avionics software system). The TIG for the deorbit maneuver ended on an even minute and the zero seconds were not entered by the crew. As a result, the burn time for a previous maneuver which occurred 8 seconds after the even minute was still present in the register. The crew will be instructed to enter all digits of maneuver times.

TACAN 3 Failed to Lock Up During Entry

During entry, TACAN 3 was operating in the search mode, but failed to lock up on the selected ground station. Postflight tests at Kennedy Space Center revealed reduced receiver sensitivity.

Radar Altimeter 2 Was Erratic At High Altitude

During the descent phase, RA (radar altimeter) 2 did not lock on the ground until the vehicle reached an altitude of 2300 feet. Normally, ground-lock occurs at about 5000 feet. Between 2300 and 1400 feet, ground-lock was intermittent. From 1400 feet through landing, ground-lock was solid and the difference in the RA 1 and RA 2 altitude readings was within acceptable limits. Postflight troubleshooting indicated that the unit was marginal with the lock-loop sensitivity being 3 to 4 dB less than that observed for RA 1. RA 2 was removed, replaced, and returned to the vendor for a loop sensitivity (far range) checks and possible re-adjustment. For the next flight of OV-103, RA 1 will be flown in slot 2 and the spare RA will be flown in slot 1.
<table>
<thead>
<tr>
<th>NO.</th>
<th>TITLE</th>
<th>TIME, G.M.T.</th>
<th>COMMENTS</th>
<th>RESP. MGR.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RIGHT INBOARD ELEVON CHANNEL 4</td>
<td>PRELAUNCH</td>
<td>FORCE FIGHT CLEARED DURING PRELAUNCH PROFILE.</td>
<td>J. VERNON</td>
</tr>
<tr>
<td></td>
<td>SECONDARY DELTA PRESSURE FORCE</td>
<td></td>
<td>SAME CHANNEL AND SAME ACTUATOR HAD A FORCE</td>
<td>CAR 20F001</td>
</tr>
<tr>
<td></td>
<td>FIGHT.</td>
<td></td>
<td>FIGHT PRELAUNCH ON FIRST FLIGHT OF OV103, BUT</td>
<td>CLOSED</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IT CLEARED JUST PRIOR TO PRELAUNCH PROFILE.</td>
<td>02/20/85</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SRR ACTUATOR. CAUSE UNKNOWN.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>HELIUM LEAK IN MIDBODY FROM UNK</td>
<td>PRELAUNCH</td>
<td>MASS SPEC IN MIDBODY INDICATED 11,200 PPM OR</td>
<td>P. COTA</td>
</tr>
<tr>
<td></td>
<td>KNOWN SOURCE.</td>
<td></td>
<td>ABOUT 0.36 #/MIN. MPS PRESSURE DECAY TEST</td>
<td>CLOSED</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SHOWED NO LEAK. MPS PRESSURES NORMAL DURING</td>
<td>02/20/85</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>LAUNCH. PROBABLE INTERFACE SEAL LEAK AT GUE QD</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ON LH2 T401 UMBILICAL.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>INSTRUMENTATION FAILURES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>APU 1 EXHAUST GAS TEMPERATURE 2</td>
<td>LAUNCH</td>
<td>READ OFF SCALE HIGH AND THEN FAILED LOW. SAME</td>
<td>W. SCOTT</td>
</tr>
<tr>
<td></td>
<td>(V46T0146A) FAILED.</td>
<td>APU START</td>
<td>MEASUREMENT FAILED OFF SCALE LOW LAST FLIGHT 5</td>
<td>CAR 20F004</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>MINUTES BEFORE TOUCHDOWN. SENSOR WAS REPLACED</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PRIOR TO S1+6. REMOVED AND REPLACED.</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>SSME 2 CH2 OUTLET TEMPERATURE</td>
<td>LAUNCH</td>
<td>READ OFF SCALE HIGH A FEW MINUTES AFTER LIFTOFF</td>
<td>P. COTA</td>
</tr>
<tr>
<td></td>
<td>(V41T2616A) FAILED.</td>
<td></td>
<td>TRANSDUCER FAILED. REMOVED AND REPLACED.</td>
<td>CAR 20F003</td>
</tr>
<tr>
<td>C</td>
<td>MAIN BUS &quot;B&quot; FORWARD POWER COMP.</td>
<td>FLIGHT DAY 1</td>
<td>READ BETWEEN 105 AND 155 AMPS FOR 3 MINUTES.</td>
<td>R. EDUSQUIZA</td>
</tr>
<tr>
<td></td>
<td>TROLLER AMMETER (V76C3076A) VERY</td>
<td></td>
<td>FUEL CELL AND OTHER FORWARD POWER CONTROLLER AMPS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MOIST.</td>
<td></td>
<td>NORMAL. CAUSE UNKNOWN. FLY AS IS.</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>LH2 100 PERCENT LIQUID LEVEL</td>
<td>LAUNCH</td>
<td>READING WAS ERRATIC. PROBABLE TRANSDUCER</td>
<td>R. EDUSQUIZA</td>
</tr>
<tr>
<td></td>
<td>POINT SENSOR (T41X1718E) ERRATIC.</td>
<td></td>
<td>FAILURE.</td>
<td>CLOSURE IN PROCESS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>STS 4+D CARRYOVER:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>LEFT OMS FUEL TOTAL QUANTITY</td>
<td>LAUNCH</td>
<td>STOPPED AT INTERMEDIATE POSITION AFTER OMS+1</td>
<td>J. HOOPER</td>
</tr>
<tr>
<td></td>
<td>(V43Q3331) FAILED.</td>
<td>STS 4ID8</td>
<td>SIMILAR TO THE LAST FLIGHT WHEN PROBE ELECTRONICS</td>
<td>CAR 14FO05</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>WERE REPLACED POSTFLIGHT. FLY AS IS.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO.</td>
<td>TITLE</td>
<td>TIME, G.M.T.</td>
<td>COMMENTS</td>
<td>RESP. MGR.</td>
</tr>
<tr>
<td>-----</td>
<td>------------------------------------------------</td>
<td>---------------</td>
<td>--------------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>8</td>
<td>RIGHT OMS FUEL TOTAL QUANTITY</td>
<td>PRELAUNCH</td>
<td>FAILED PRIOR TO FIRST FLIGHT ON OV-103 AND HAS NEVER BEEN REPAIRED. FLY AS IS.</td>
<td>J. HOOPER</td>
</tr>
<tr>
<td></td>
<td>(V43Q5331C) FAILED.</td>
<td>STS+6ID</td>
<td></td>
<td>CAR 19F013</td>
</tr>
<tr>
<td>7</td>
<td>AC 1 PHASES &quot;A&quot; AND &quot;B&quot; LOW CURRENT TRANSIENTS ON WCS PAN SEPARATOR</td>
<td>DEORBIT</td>
<td>BFS WAS OPERATIONAL FOR ENTRY. CREW DID NOT ENTER 00 SECONDS FOR DEORBIT TIC LEAVING 08 SECONDS FROM LAST ENTRY. CHIT J=1507.</td>
<td>S. MURRAY</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PROCESS</td>
</tr>
<tr>
<td>6</td>
<td>OXYGEN TANK 2 HEATER CONTROL PRESSURE</td>
<td>FLIGHT DAY 2</td>
<td>SIMILAR TO PROBLEM STS+51A+16 EXCEPT SIGNATURE IS ALSO ON PHASE &quot;B&quot;. NO IMPACT ON WCS OPERATION. IN+FLIGHT TROUBLESHOOTING FOUND LOW CURRENT CORRELATED WITH OPERATION OF PANEL LIGHTS. NO ACTION REQUIRED.</td>
<td>R. EGUSQUIZA</td>
</tr>
<tr>
<td></td>
<td>(V43P1210A) FAILED MOMENTARILY.</td>
<td></td>
<td></td>
<td>02/20/85</td>
</tr>
<tr>
<td>8</td>
<td>STAR TRACKER +Y AND +Z SHUTTER CLOSURES.</td>
<td>FLIGHT DAY 1</td>
<td>TARGET SUPPRESS BIT WAS SET SEVERAL TIMES WITHOUT EFFECT.</td>
<td>I. SAULETIS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>FLIGHT DAY 2</td>
<td>OPEN SHUTTERS AND ST OPERATION CONTINUED. ST (+2) SHUTTER LATCHED UP LAST FLIGHT. SEE STS+51A+21. FOUND CONTAMINATION ON LIGHT SHADES.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5A</td>
<td>BACKUP FLIGHT SYSTEM DID NOT PROCEED TO MAJOR MODE 104 AFTER ET SEPARATION.</td>
<td>LAUNCH</td>
<td>CREW MODER MANUALLY. WORST CASE TIMING DELAYS WITH ACCELERATION VARIATIONS COULD CAUSE LOW BFS SEPARATION VELOCITY INTEGRATION. CHANGE INTEGRATION CONSTANT. FLY AS IS FOR 51E.</td>
<td>S. MURRAY</td>
</tr>
<tr>
<td>5B</td>
<td>BACKUP FLIGHT SYSTEM DEORBIT IGNITION TIME WAS 8 SECONDS LATE.</td>
<td>DEORBIT</td>
<td>BFS WAS OPERATIONAL FOR ENTRY. CREW DID NOT ENTER 00 SECONDS FOR DEORBIT TIC LEAVING 08 SECONDS FROM LAST ENTRY. CHIT J=1507.</td>
<td>S. MURRAY</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PROCESS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO.</td>
<td>TITLE</td>
<td>TIME, G.M.T.</td>
<td>COMMENTS</td>
<td>RESP. MGR.</td>
</tr>
<tr>
<td>-----</td>
<td>--------------------------------------------</td>
<td>--------------</td>
<td>----------</td>
<td>------------</td>
</tr>
<tr>
<td>9</td>
<td>TACAN 3 DID NOT LOCK UP.ENTRY</td>
<td></td>
<td>USED TACANS 1 AND 2. KSC FOUND LOW RECEIVER E. LATIER SENSITIVITY. R&amp;R.</td>
<td>E. LATIER CAR 20F002 CLOSURE IN PROCESS</td>
</tr>
<tr>
<td>10</td>
<td>THERMAL PROTECTION SYSTEM HAD A LONG GOUGE UNDER THE LEFT WING. LAUNCH</td>
<td></td>
<td>GOUGE WAS ABOUT 5 FEET LONG, 3/8 INCH WIDE AND 1/4 INCH DEEP AND LOCATED OUTBOARD OF LEFT MAIN LANDING GEAR DOOR. CAUSE UNKNOWN. TILE REPAIRED. E. LATIER</td>
<td>J. SMITH CLOSURE IN PROCESS</td>
</tr>
<tr>
<td>11</td>
<td>RADAR ALTIMETER 2 ERRATIC AT HIGH ALTITUDE. ENTRY</td>
<td></td>
<td>JSC DATA ANALYSIS. INTERMITTENT GROUND LOCK FROM 2300 TO 1400 FEET. T/S FOUND MARCIAL LOOP SENSITIVITY ON FAR RANGE. R&amp;R WITH RA 1. PLACED SPARE IN RA 1. E. LATIER</td>
<td>D. RHOADES CAR 20FG005 CLOSURE CLOSED 02/20/85</td>
</tr>
<tr>
<td>12</td>
<td>RIGHT GMS FUEL AND OXIDIZER QUANTITY GAGES WENT TO ZERO DURING ENTRY. ENTRY</td>
<td></td>
<td>FOUND FUSES BLOWN AND AN INTERNAL SHORT ON BOTH BUSSES. TRACED TO TOTALIZER INPUT POWER CIRCUITRY. R&amp;R TOTALIZER. E. LATIER</td>
<td>J. HOOPER CAR 20FG006 CLOSURE CLOSED 02/20/85</td>
</tr>
<tr>
<td>13</td>
<td>FORWARD RCS DILEMMA DURING DEORBIT. DEORBIT</td>
<td></td>
<td>PREFLIGHT WAIVER DUE TO SLOW ACTIVATION OF AC MOTOR VALVE MANIFOLD 4 OX PRELAUNCH T/S SNIPED OX FUMES. R&amp;R MANIFOLD 4 OX VALVE. E. LATIER</td>
<td>G. CRUSH CAR AC 9013 CLOSURE IN PROCESS 02/25/85</td>
</tr>
<tr>
<td>14</td>
<td>AC PHOTO FLOODLIGHT FAILED. ON ORBIT</td>
<td></td>
<td>FUSE BLOWN IN OLD FLOODLIGHT. SEE PROBLEM STS+4ID=19. WILL USE NEW TUBE+TUBE COLOR BALANCED FLORESCENT FLOODLIGHT ON STS 51+E AND SUBS. R&amp;R</td>
<td>D. YEATES CLOSURE IN PROCESS</td>
</tr>
<tr>
<td>15</td>
<td>FORWARD DAP PANEL (C3) ROTATION ON ORBIT</td>
<td></td>
<td>CREW REPORTED LIGHT FAILED BUT DAP NODE WORKED PROPERLY. POSTFLIGHT T/S FOUND ACA 1 LIGHT CONTROL CIRCUIT INTERMITTENT. R&amp;R WITH ACA FROM 04+102. SEE PROBLEM STS+4ID=29. E. LATIER</td>
<td>R. BURGDUFF CAR 14P024 CLOSURE IN PROCESS</td>
</tr>
</tbody>
</table>

PREPARED BY: m/JMW ! Date 02/25/85 ! Date
ROBERT J. WARD

APPROVED BY: s/JEM ! Date 02/25/85 ! Date
JOSEPH E. MECHELAY
<table>
<thead>
<tr>
<th>NO.</th>
<th>TITLE</th>
<th>GMT</th>
<th>COMMENTS</th>
<th>PROJECT CONTACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HPFTP Discharge Temperature Failure</td>
<td>24:19:52</td>
<td>ME-2 (2018) HPFTP discharge temperature (Channel B) drifted below the lower limit at approximately 137 seconds after liftoff and became erratic for the rest of the flight. Failure analysis revealed a crack of the coax tube. Sensor has been replaced. A design process change will be incorporated on a later flight for this sensor. Controller software disqualifies a failed sensor. CLOSED for STS-51E.</td>
<td>SSME R. Bledsoe/EE21</td>
</tr>
<tr>
<td>2</td>
<td>Controller MFV Servoactuator Self Test Failure</td>
<td>24:19:54</td>
<td>ME-2 controller (F9) failed MFV servoactuator self test (Channel B) at approximately 331 seconds after liftoff. Controller has been returned to Honeywell for testing. The problem was isolated to an intermittent hang up of a DG 140 solid state switch. No other failures of this nature have been observed in the history of the SSME program. This problem is considered a random piece part failure. CLOSED</td>
<td>SSME R. Bledsoe/EE21</td>
</tr>
</tbody>
</table>