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STS-045 (OV-104,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 1

IFA NUMBER> STS-45-V-01
TITLE:LH2 Leak During First Launch Attempt

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 083 : 05.10.00
IFA DATE: 03/22/1992
IFA STATUS: CLOSED : 06/01/1992 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 23.10.00
PRCBD NUMBER: S044860D PHASE: PRE-LAUNCH
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 45V-0138
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. MCMILLAN
2:

0 DESCRIPTION:
Aft H2 concentration rose to 750 ppm (LCC=500) 3.5 minutes into fast fill. Terminated fill. Could not reproduce. Within limits on second attempt.

The high aft-compartment H2 concentration observed during the first launch attempt was most probably caused by a temporary thermal distortion of the LH2 umbilical hardware sealing surfaces during the initial phase of LH2 tanking. By exposing these surfaces to a longer cryogenic conditioning time, the leak concentration during subsequent fill operations was reduced.

The prelaunch LH2 loading procedures have been modified to allow a longer chilldown period of the disconnect/seal hardware.

Flight Problem Report approved at a Special Level II Daily PRCB on 06/01/92 (PRCBD# S044860D).

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IFA NUMBER> STS-45-V-02
TITLE:LO2 Leak During First Launch Attempt

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 083 : 05.10.00
IFA DATE: 03/22/1992
IFA STATUS: CLOSED : 06/05/1992 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 23.10.00
PRCBD NUMBER: S044860K PHASE: PRE-LAUNCH
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 45V-0139
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. MCMILLAN
2:

0 DESCRIPTION:
Aft O2 concentration rose to 850 ppm (LCC=500) during slow fill. Later decreased. Exceeded limit on second attempt, but later stabilized.

The high aft-compartment O2 concentrations observed during the two launch attempts were most probably caused by a temporary thermal distortion of the LO2 umbilical hardware sealing surfaces during the initial phase of LO2 tanking. The leak concentrations reduced during continuing fill operations as the sealing surfaces became thermally stabilized at cryogenic temperature.

STS0045.txt

The Launch Commit Criteria were modified to state that temporary aft compartment concentration limit exceedences which later return to and remain within limits are allowable.

Flight Problem Report approved at Special Level II Daily PRCB on 06/05/92 (PRCBD# S044860K).

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IFA NUMBER> STS-45-V-04
TITLE:Fuel Cell 3 CPM Anomaly

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 083 : 14.22.00
IFA DATE: 03/23/1992
IFA STATUS: CLOSED : 06/05/1992 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1993-02-17 HOUSTON TIME: 08.22.00
PRCBD NUMBER: S044860L PHASE: PRE-LAUNCH
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 46V-0003 M EGIL-01
P CAR 45RF02
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. MCMILLAN
2:

0 DESCRIPTION:
Cell performance monitor hung up in 50 mv self-test mode for periods up to 3 minutes. No impact to fuel cell performance. Suspect leaky capacitor. Last recurrence was Flight Day 2.

The anomalous CPM self-test behavior was most probably caused by a component problem within the CPM circuitry.

The CPM was removed and replaced.

Flight Problem Report approved at Special Level II Daily PRCB on 06/05/92 (PRCBD# S044860L).

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IFA NUMBER> STS-45-V-05
TITLE:APU 1 GG Bed Heater System B Erratic

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 084 : 20.41.00
IFA DATE: 03/24/1992
IFA STATUS: CLOSED : 06/01/1992 ELAPSED TIME: 000 : 07.27.21
PRACA STATUS: CLOSED : 1992-07-16 HOUSTON TIME: 14.41.00
PRCBD NUMBER: S044860E PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 46V-0001 M MMACS-01
P CAR 45RF03
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: K. BROWN
2:

0 DESCRIPTION:
Heater B failed to respond when initially activated. Fuel pump/line heaters OK. Switched to Sys A and bed heater responded. Switched back to B. Initial erratic behavior, then became normal. Erratic behavior recurred on Flight Day 5. Data indicates abnormal fuel system heater operation also. Switched to Sys A on Flight Day 6. Possible controller problem, thermostat problem or aft LCA 2 problem.

STS0045.txt

A small segment of exposed wire was found in the fuel system heater wiring just upstream of the controlling thermostat (S17B). The exposed segment was located near a wire harness clamp. The location of the wire and clamp was such that electrical arcing occurred from the wire to clamp resulting in an intermittent short-to-ground condition. This affected both the GG and fuel system heaters due to the location of the short in the wiring system.

The damaged segment of the wire was cut out and the wire was respliced. Teflon tape was also wrapped around the wire to prevent this failure from recurring. A functional checkout of all the APU heater systems has been successfully completed.

Flight Problem Report approved at a Special Level II Daily PRCB on 06/01/92 (PRCBD# S044860D).

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IFA NUMBER> STS-45-V-07

TITLE:a)Ku-Band Antenna Loss Of Track In ACQ Mode
b)Ku-Band RF Power Out Intermittent Fail

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 085 : 16.24.00
IFA DATE: 03/25/1992
IFA STATUS: CLOSED : 06/02/1992 ELAPSED TIME: 001 : 03.10.21
PRACA STATUS: CLOSED : 1993-05-19 HOUSTON TIME: 10.24.00
PRCBD NUMBER: S044860H PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 46V-0008 M INCO-01
M INCO-04 P IM/45RF04

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: M. ENGLE
2:

0 DESCRIPTION:
Repeat of IFA STS-37-V-04 with DA 107. Loss of lock in ACQ mode. Normal ops in GPC DESIGNATE mode. Investigating effects of the characteristics of payload data transmitted via ku-Band Channel 3. Ku-Band required next flight of OV-104 (TSS mission).

Loss of lock possibly associated with RF power monitor problem. Observed on previous flight (CAR 37RF04).

KSC: Approximately 2 shifts OPF testing required prior to DA R&R. Spare available (S/N 102). OPF testing scheduled April 16. Post flight antenna inspection normal. Payload data not required for troubleshooting. OPF test data required to supplement vendor analysis. Coordinated test/troubleshooting plan in work. No chit required.

Postmission troubleshooting at KSC duplicated the angle tracking problem in both the communications mode and the radar mode, and the failure was isolated to the DA. The power monitor telemetry problem was intermittent and will be further investigated during failure analysis at the vendor.

Flight Problem Report approved at a Special Level II Daily PRCB on 06/02/92 (PRCBD# S044860H).

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IFA NUMBER> STS-45-V-08

TITLE:Damage On Right RCC Panel #10

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
 IFA DATE:
 IFA STATUS: CLOSED : 06/02/1992 ELAPSED TIME: 000 : 00.00.00
 PRACA STATUS: CLOSED : 1993-07-02 HOUSTON TIME: 00.00.00
 PRCBD NUMBER: S044860F PHASE: POST LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
 K PR-TES-4-12-0115 P IM/45RF05

0 CLOSURE INITIATED BY:
 RESPONSIBLE MANAGERS 1: K. BROWN
 2:

0 DESCRIPTION:
 Two gouges (1.9" x 1.6" and .4" x 1") noted on upper portion of right wing leading edge RCC panel #10. Substrate exposed. Not repairable. Panel removed, shipped to Downey.

Rockwell has completed the majority of their testing and analysis and has determined the most probable cause of the impact damage was debris on-orbit or during entry. JSC Engineering has not ruled out prelaunch or ascent debris as being the cause of the damage. RCC panel #10 has been replaced by a new panel and all RCC components are acceptable for flight.

Flight Problem Report approved at Special Level II Daily PRCB on 06/02/92 (PRCBD# S044860F).

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IFA NUMBER> STS-45-V-09
 TITLE:IMU 2 Z-Axis Accelerometer Bias Shift

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
 IFA DATE:
 IFA STATUS: CLOSED : 06/03/1992 ELAPSED TIME: 000 : 00.00.00
 PRACA STATUS: CLOSED : 1993-10-04 HOUSTON TIME: 00.00.00
 PRCBD NUMBER: S044860J PHASE: PRE-LAUNCH

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
 K IPR 46V-0012 P IM/45RF06

0 CLOSURE INITIATED BY:
 RESPONSIBLE MANAGERS 1: M. ENGLE
 2:

0 DESCRIPTION:
 HAINS S/N 203 experienced a Z-axis bias shift of 120 micro-g during ascent. (1 sigma = 30 micro-g). Suspect sensitivity to attitude. New compensation value uplinked for entry.

Accelerometer attitude sensitivity is the most likely cause of the error. The magnitude of S/N 203's error is outside the current HAINS specifications but is considered acceptable for flight.

Flight Problem Report approved at Special Level II Daily PRCB on 06/03/92 (PRCBD# S044860J).

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IFA NUMBER> STS-45-V-10
 TITLE:Water Spray Boiler 1 Overcooling On B Controller

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 093 : 11.00.00
 IFA DATE: 04/02/1992
 IFA STATUS: CLOSED : 05/28/1992 ELAPSED TIME: 008 : 21.46.21

STS0045.txt

PRACA STATUS: CLOSED : 1992-06-17 HOUSTON TIME: 06.00.00
PRCBD NUMBER: S044860C PHASE: ENTRY/LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
P CAR 45RF09-010
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: K. BROWN
2:

0 DESCRIPTION:

When cooling was initiated, lube oil return temp dropped from 249 deg F to 177 deg F over approx 5 1/2 minutes. Switched to A controller 1 1/2 minutes later when oil temp was 181 deg F. Violated OMRSD File IX requirement DV58AKO.050.

The APU/WSB 1 system was hot oil flushed because of the postflight lube oil sample being unsatisfactory and the entry overcooling anomaly. The WSB checkout and servicing requirements have been successfully completed. A WSB/APU integrated study plan has been initiated with the goal of providing explanations of overcoolings and undercoolings.

Flight Problem Report approved at a Special Level II Daily PRCB on 05/28/92 (PRCBD# S044860C).

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IFA NUMBER> STS-45-V-11
TITLE:APU 2 N2 Pressure Low

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 093 : 10.38.00
IFA DATE: 04/02/1992
IFA STATUS: CLOSED : 06/02/1991 ELAPSED TIME: 008 : 21.24.21
PRACA STATUS: CLOSED : 1993-08-09 HOUSTON TIME: 05.38.00
PRCBD NUMBER: S044860G PHASE: ENTRY/LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 46V-0006 M MMACS-03
P CAR 45RF10

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: K. BROWN
2:

0 DESCRIPTION:

Decayed from 15.5 to 11.5 between FCS C/O and APU start. Dropped to 7.5 after APU start. Two repressurizations during entry.

The most probable cause of the GN2 repressurization of the gearbox is a leak across the turbine seal allowing lube oil or GN2 to escape. The GN2 pressure transducer has been relocated near the suction side of the lube oil pump on the improved APU. This new location could be more sensitive to lube oil servicing/pump pressures near the low end of the lube oil quantity requirement compared to baseline APU's.

Lube oil servicing has been completed for the next flight with all quantities within specifications. KSC has implemented a longer stabilization period during lube oil loading due to the new gearbox pressure transducer location.

Flight Problem Report approved at a Special Level II Daily PRCB on 06/02/92 (PRCBD# S044860G).

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IFA NUMBER> STS-45-V-12

TITLE:EO3 Hole Plugger Jammed

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
 IFA DATE:
 IFA STATUS: CLOSED : 05/19/1992 ELAPSED TIME: 000 : 00.00.00
 PRACA STATUS: CLOSED : 1992-04-29 HOUSTON TIME: 00.00.00
 PRCBD NUMBER: S044860B PHASE: POST LANDING
 0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
 K PR PYR4-12-0150 P CAR 45RF07
 0 CLOSURE INITIATED BY:
 RESPONSIBLE MANAGERS 1: K. BROWN
 2:

0 DESCRIPTION:
 The postflight inspection at KSC revealed that the debris plunger in the EO-3 (L02) separation fitting debris container was caught by a booster cartridge and failed to seat properly. The other booster cartridge was found in the aft door drive mechanism and a connector backshell was missing from the canister.
 The EO-3 separation hole plugger was prevented from seating by the debris which lodged in its path during separation. The hole plugger partially accomplished its purpose; however several pieces of debris escaped outside of the containment canister.
 Fly-as-is. A design modification to improve the Orbiter/ET separation debris containment system has been approved.
 Flight Problem Report approved at Special Level II Daily PRCB on 05/19/92 (PRCBD# S044860B).

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IFA NUMBER> STS-45-V-13
 TITLE:SM Alert Time/Tone Audible Alarm Intermittent

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
 IFA DATE:
 IFA STATUS: CLOSED : 06/08/1992 ELAPSED TIME: 000 : 00.00.00
 PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
 PRCBD NUMBER: S044860M PHASE: ON-ORBIT
 0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
 * *****NONE FOUND***** * *****NONE FOUND*****
 0 CLOSURE INITIATED BY:
 RESPONSIBLE MANAGERS 1: W. LEVERICH
 2:

0 DESCRIPTION:
 The crew reported that on several occasions there was no audible tone when using the SM Alert as a time alert for maneuvers, etc. All other SM Alert indications were normal.
 The cause of this anomaly is presently unknown. The problem may be in the caution and warning hardware or in the comm hardware. The possibility of a software problem exists; however, this is the first reported occurrence of this anomaly.
 Flight Problem Report approved at a Special Level II Daily PRCB on 06/08/92 (PRCBD# S044860M).

-JFDPO12: NORMAL TERMINATION OF PROCESSING

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IFA NUMBER> STS-46-K-01
TITLE:Engine #1 H2 Burn Ignitor "A" Failed to Burn Full Duration

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE: 07/31/1992
IFA STATUS: CLOSED : 02/25/1993 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044864J PHASE: ASCENT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
* *****NONE FOUND***** * *****NONE FOUND*****
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: C. ABNER
2:

0 DESCRIPTION:
At T-10 seconds, the Engine #1 H2 burn ignitor "A" burn time was 1.3 seconds; should be 8-12 seconds. Potential engine nozzle damage and shelf life concern (PR-A70-0670-H-001-0445).

The cause of the H2 Burn Igniter rapid burn was determined to be a partial debond between the inhibitor and the propellant grain. A Materials Evaluation Branch report No.92-1037 revealed a glazed surface along a side and bottom of the igniter housing. There is normally a uniform sooty appearance. The mnaufacturers re-review of the failed igniters original (new) X-rays revealed a very small, difficult to see, crack in the propellant to inhibitor bonding material. The crack or partial debond enabled larger surface areas exposed to the flame and a faster burn.

The remaining H2 Burn Igniters in LOT #AAK were re-x-rayed and no propellant to inhibitor debonds were observed. Three of the re-x-rayed igniters showed a very faint but unexplainable shadowing and were taken out of the flight inventory.

Flight Problem Report approved at a Special Level II Daily PRCB on 02/25/93 (PRCBD# S044864J).

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IFA NUMBER> STS-46-P-01
TITLE:EURECA RF Data Did Not Maintain Lock With Orbiter When DHS Acitvated

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 214 : 02.35.00
IFA DATE: 07/31/1992
IFA STATUS: CLOSED : 04/02/1993 ELAPSED TIME: 000 : 12.38.12
PRACA STATUS: UNKNOWN HOUSTON TIME: 21.35.00
PRCBD NUMBER: S044864K PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M PYLD-03
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: J. ROYAL
2:

0 DESCRIPTION:
The EURECA RF data with the DHS activated does not maintain lock with the orbiter comm system for some DHS configurations. POCC command and data processing capability is intermittent via orbiter comm system with incompatable DHS configurations.

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Troubleshooting determined when the DHS is configured for large telemetry packets, the RF link is not maintained. Extended telemetry packets were inhibited by ESOC. The link was maintained and EURECA successfully deployed. ESOC ground stations can process all DHS configurations.

As soon as the threshold for error (regarding the phase transition density requirement) in the PSP was exceeded, the PSP concluded the signal to be bad and dropped lock. Threshold exceedence occurs in approximately 15 seconds. This conclusion was configured via a SAIL test in November 1992 using a tape of EURECA Telemetry generated from the ESA high-fidelity simulator.

For the retrieval mission (STS-57), the length of time that the 'bad' packets are active will be limited to less than 15 seconds (snapshot technique). There is a time, however, when the nominal value of several software parameters is zero, and snapshooting is not desirable. For this case, PSP loss of lock is expected. The flight or ground crews will send the command to restore data (deactivate 'bad' packets).

Flight Problem Report approved at a Special Level II Daily PRCB on 04/02/93 (PRCBD # S044864K).

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IFA NUMBER> STS-46-S-01
TITLE:U2 Umbilical Failed to Retract Upon Command

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 217 : 16.40.00
IFA DATE: 08/04/1992
IFA STATUS: CLOSED : 07/29/1994 ELAPSED TIME: 004 : 02.43.12
PRACA STATUS: UNKNOWN HOUSTON TIME: 11.40.00
PRCBD NUMBER: S044864L PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M PYLD-10
0 CLOSURE INITIATED BY: JSC-TC3/W. JORDAN
RESPONSIBLE MANAGERS 1: D. SMITH
2:

0 DESCRIPTION:
U2 Umbilical failed to retract when commanded by the crew. Umbilical puller motor was believed to be operating properly. It was assumed that the umbilical connector was jammed in the receiver on the satellite. Satellite could not be deployed at nominal time.

Several attempts were made to release U2 umbilical. Final attempt required an orbiter +Z translation combined with vernier motor clutch disengage, -511 pulse width generator mode and brake off while commanding retraction. This attempt was successful.

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IFA NUMBER> STS-46-S-02
TITLE:Tether Deploy Spool Stalled During Tether Operations

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 217 : 23.47.00
IFA DATE: 08/04/1992
IFA STATUS: CLOSED : 07/29/1994 ELAPSED TIME: 004 : 09.50.12
PRACA STATUS: UNKNOWN HOUSTON TIME: 18.47.00
PRCBD NUMBER: S044864M PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER

STS0046.txt

M PYLD-11

0 CLOSURE INITIATED BY: JSC-TC3/W. JORDAN
RESPONSIBLE MANAGERS 1: B. SWANSON
2:

0 DESCRIPTION:

At the tether length of 179 meters, the tether LDOT suddenly went to zero. A possible cause of this anomaly is that the tether is binding in the spool. The tether was reeled in 10 meters and then reeled out manually at a higher rate. The tether continued to reel out to a length of 257 meters, where again the LDOT went to zero. Tether deployment was not possible.

A number of explanations have been provided for the aforementioned failure cases. Post-flight analysis of the hardware is expected to aid in the troubleshooting.

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IFA NUMBER> STS-46-S-03
TITLE:Tether Jammed in UTCM (Upper Tether Control Mechanism)

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 218 : 14.28.00
IFA STATUS: CLOSED : 07/14/1995 IFA DATE: 08/05/1992
PRACA STATUS: UNKNOWN ELAPSED TIME: 005 : 00.31.12
PRCBD NUMBER: S044864N HOUSTON TIME: 09.28.00
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M PYLD-12

0 CLOSURE INITIATED BY: JSC-TC3/W. JORDAN |
RESPONSIBLE MANAGERS 1: T. BATTEN
2:

0 DESCRIPTION:

At a deployed length of 224 m, the tether jammed in the UTCM. This prevented the vernier motor from deploying tether and the reel motor from retrieving tether. This prevented deploy or retrieve of the satellite.

The jam was removed by retracting and re-extending the boom. The boom was retracted while reeling in on the tether, indicating that the jam was somewhere in the UTCM. The brake was then applied to prevent movement of the tether and the boom was re-extended. This applied a force of 45 N on the tether, ultimately removing the jam.

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IFA NUMBER> STS-46-v-01
TITLE:ME-3 H2 Flow Control Pressure Anomaly

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 213 : 13.58.00
IFA STATUS: CLOSED : 11/06/1992 IFA DATE: 07/31/1992
PRACA STATUS: CLOSED : 1995-05-29 ELAPSED TIME: 000 : 00.01.12
PRCBD NUMBER: S044864H HOUSTON TIME: 08.58.00
PHASE: ASCENT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR TBD-0002 M BSTR-01
P IM/46RF01

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. MCCORMACK
2:

0 DESCRIPTION:

Between T+90 and T+110 seconds, ME-3 GH2 outlet pressure (v41P1360A)

STS0046.txt

exhibited erratic pressure fluctuation up to 70 psi above the baseline pressure of 3100 psia. Simultaneously, the GH2 disconnect pressure (V41P1490A) dropped to 20 psia. A troubleshooting plan was developed and has been in work since 8/14. A chit was not required. No leaks were detected on the runway. An x-ray of FCV 3 was not definitive. The vendor removed the poppet/sleeve assembly. No visible contamination was noted.

The pressure spikes seen in the GH2 pressurization system are caused by changes in system flowrate. The inspections/testing performed have failed to identify a conclusive cause of the flowrate changes. The most probable cause is transient contamination is the FCB annular orifice. The ME-3 FCV poppet/sleeve assembly has been removed and inspected and it will be replaced. Also, CV 23 was removed and replaced.

Flight Problem Report approved at a Special Level II Daily PRCB on 11/06/92 (PRCBD# S044864H).

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IFA NUMBER> STS-46-V-04
TITLE:Avionics Bay 2A Smoke Detector Negative Excursions

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 214 : 20.32.00
IFA DATE: 08/01/1992
IFA STATUS: CLOSED : 10/07/1992 ELAPSED TIME: 001 : 06.35.12
PRACA STATUS: CLOSED : 1992-11-30 HOUSTON TIME: 15.32.00
PRCBD NUMBER: S044864B PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR ECL-4-13-0549 M EECOM-01
P IM/46RF03
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. DILLMAN
2:

0 DESCRIPTION:
Smoke concentration sensor V62G0608A exhibited several sproadic drops to -700 micrograms/m3. Perform self test on unit prior to vehicle going to Palmdale. A chit is not required.

The cause of the negative excursions in the avionics bay 2a measured smoke concentrations is unknown. The behavior is transient, recoverable, and the sensor is considered adequate to detect actual smoke concentrations. In the worst case, if the sensor should fail completely, a redundant smoke sensor is available in avionics bay 2.

Flight Problem Report approved at a Special Level II Daily PRCB on 10/07/92 (PRCBD# S044864B).

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IFA NUMBER> STS-46-V-05
TITLE:G02 Manifold Pressure Decay

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 213 : 14.10.00
IFA DATE: 07/31/1992
IFA STATUS: CLOSED : 11/06/1992 ELAPSED TIME: 000 : 00.13.12
PRACA STATUS: CLOSED : 1993-03-09 HOUSTON TIME: 09.10.00
PRCBD NUMBER: S044864G PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR MPS-4-13-0928 M BSTR-02
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P IM/46RF06

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. MCCORMACK
2:

0 DESCRIPTION:
PR MPS-4-13-0928

The GO2 disconnect pressure (V41P1590A) decayed to zero within a minute of MPS dump termination. The GO2 manifold pressure should decay slowly throughout the flight. Instead, its pressure tracked that of the LO2 manifold. This performance failed File IX requirement DV41AYO.210. with a successful dump and vacuum inert, this problem will pose no flight impact. A troubleshooting plan which included normal OMRSD tests was developed and has been in work since 8/14. A chit was not required. No audible leaks were detected on the runway. CV20 failed its leak test and has been removed for failure analysis.

Postflight troubleshooting identified the cause of the anomaly as leakage of the ME-3 isolation check valve (CV 20) due to contamination. Several inspections have failed to identify a source of the contamination. The valve was removed and replaced. CV 20 was returned to the vendor for failure analysis.

Flight Problem Report approved at a Special Level II Daily PRCB on 11/06/92 (PRCBD# S044864G).

1 STS-046 (OV-104,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 08/17/95
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IFA NUMBER> STS-46-V-06
TITLE:Fan Sep 1 Stalled

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 216 : 05.23.00
IFA DATE: 08/03/1992
IFA STATUS: CLOSED : 10/07/1992 ELAPSED TIME: 002 : 15.26.12
PRACA STATUS: CLOSED : 1993-02-01 HOUSTON TIME: 00.23.00
PRCBD NUMBER: S044864C PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M EECOM-03 P IM/46RF04

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. DILLMAN
2:

0 DESCRIPTION:
Saw stall currents on Sep 1. Reran Sep and cleared flooding (216:06:49). At 216:07:45, saw stall currents again. IFM was run, fan sep 1 cleared, but stalled again after some usage. Second attempt to run IFM was unsuccessful. No definitive data to show flooding or mechanical failure. WCS has been removed and will be sent to JSC for troubleshooting.

Repetition of the stalling problem was not possible postflight. However, the most likely cause of the flight problem was an intermittent seizing of the contaminated bearing. The debris found around the bearing was the result of a flooding.

The fan separator was cleaned and the bearings removed and replaced as part of normal turnaround. The fan separator was successfully retested per acceptance test procedures, and returned to the inventory.

Flight Problem Report approved at a Special Level II Daily PRCB on 10/07/92 (PRCBD# S044864C).

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STS-046 (OV-104,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT

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IFA NUMBER> STS-46-V-10

TITLE:Over-Modulation of Ku-Band Channel 3

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 217 : 03.00.00
 IFA DATE: 08/04/1992
 IFA STATUS: CLOSED : 11/04/1992 ELAPSED TIME: 003 : 13.03.12
 PRACA STATUS: UNKNOWN HOUSTON TIME: 22.00.00
 PRCBD NUMBER: S044864E PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
 K IPR TBDV-0005 M INCO-05

0 CLOSURE INITIATED BY:
 RESPONSIBLE MANAGERS 1: B.J. ELIASON
 2:

0 DESCRIPTION:

During STS-46, intermittent distortion of the return link Shuttle Ku-Band signal spectrum was reported, also data loss on the Ku-Band channel 2 OPS recorder data (and less frequently on Ku-Band channel 1 OPS data) was reported while TV was being downlinked on channel 3. Postmission testing at KSC could not exactly reproduce this condition; however, the frequency stability of the Ku-Band signal processor assembly (SPA) intermediate frequency (IF) output was not within specification. Data will continue to be gathered from future flights. Ground stations have been set up to collect data in the event that the problem recurs.

All payload cameras can cause the condition which results in loss of channel 2 (OPS recorder dumps) and channel 1 (real-time data). A test matrix was developed to gather on-orbit data for troubleshooting.

Flight Problem Report approved at a Special Level II Daily PRCB on 11/04/92 PRCBD# s044864E.

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STS-046 (OV-104,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT

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IFA NUMBER> STS-46-V-11

TITLE:Manifold 5 LRCS Valves Failed to cycle

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 221 : 13.35.00
 IFA DATE: 08/08/1992
 IFA STATUS: CLOSED : 11/02/1992 ELAPSED TIME: 007 : 23.38.12
 PRACA STATUS: UNKNOWN HOUSTON TIME: 08.35.00
 PRCBD NUMBER: S044864F PHASE: POST LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
 K IPR TBDV-0013 M PROP-02

0 CLOSURE INITIATED BY:
 RESPONSIBLE MANAGERS 1: D. MCCORMACK
 2:

0 DESCRIPTION:

During the nominal post landing redundant circuit verifications, the LRCS manifold 5 valves failed to close when the crew cycled the switch. The RPC power indication was received. The valves operated nominally when cycled by the ground crew during OMS/RCS safing. The valves will be cycled for additional troubleshooting.

The most probable cause of the anomaly is contamination at the circuit breaker. This is a low-current circuit and contamination has caused problems similar to this in the past. Clearing contamination typically requires cycling the circuit breaker several times, although in this case, the circuit breaker was not cycled.

Flight Problem Report approved at a Special Level II Daily PRCB on 11/04/92 (PRCBD# S044864F).

1 STS-046 (OV-104,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 08/17/95
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IFA NUMBER> STS-46-V-12
TITLE:ADTA 1 and 3 Temperature Delta During FCS C/O

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 220 : 10.24.00
IFA STATUS: CLOSED : 10/21/1992 IFA DATE: 08/07/1992
PRACA STATUS: CLOSED : 1995-03-04 ELAPSED TIME: 006 : 20.27.12
PRCBD NUMBER: S044864D HOUSTON TIME: 05.24.00
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER PHASE: POST LANDING
K IPR TDBV-0018
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: B.J.ELIASON
2:

0 DESCRIPTION:
while in OPS 8 for FCS C/O, a 4.5 degree C temperature difference was indicated between the ADTA 1 and 3 temperature measurements. The temperatures normally track much closer and a difference of greater than 5 degree C would violate LCC GNC-75. This LCC utilizes these measurements as an indication of the health of the A/D converter, which also processes pressure measurements.

Flight data and postflight data indicate that the problem is generic to the newly-built ADTAs. The suspect area is the analog-to-digital conversion circuitry internal to the ADTA. This problem is not a constraint to flight. Failure analysis continues at the vendor. In addition, LCC GNC-75 is being readdressed. The problem affects only temperature data, which are not used by the onboard guidance, navigation, and control software. Temperature data are only used to determine the health of the ADTAs.

Flight Problem Report approved at a Special Level II Daily PRCB on 10/21/92 (PRCBD# S044864D).

-JFDPO12: NORMAL TERMINATION OF PROCESSING

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STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT

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IFA NUMBER> STS-47-D-01
TITLE:Loss Of MCC Power Buses (B1 & B2)

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 258 : 21.50.00
IFA DATE: 09/14/1992
IFA STATUS: CLOSED ELAPSED TIME: 002 : 07.27.00
CLOSED DATE: 10/01/1992 HOUSTON TIME: 16.50.00
PRCBD NUMBER: S044880 PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M MCC-01
0 RESPONSIBLE MANAGERS 1: D.WILLIAMS
2:

0 DESCRIPTION:
while switching from MCC diesel power to the HL&P Co. power feed (after inclement weather in the area had passed), circuit breaker B10 on transformer T1 in Bldg 48 failed (arced). This caused the loss of power to buses B1 & B2. The diesel generators power the COD bus B3 which feeds both B1 and B2 buses in the MCC. The impact was lost telemetry display and DVIS voice comm capabilities for 15 minutes, and lost flight support host (HOST-5) capabilities for 2 hrs & 30 min.

Resolutions are: 1) Restored diesel power until switching unit was repaired. 2) Replaced circuit breaker 10 to restore the HL&P power feed. 3) Corrected a MITS comserver switch setting to restore the flight support host.

This IFA presented and closed under PRCBD# S044880 at 10/01/92 PRCB.

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STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT

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PAGE 1

IFA NUMBER> STS-47-E-01
TITLE:Eng #1 HPOTP Secondary Seal Cavity Pressure Spike On Channel A

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 256 : 14.23.00
IFA DATE: 09/12/1992
IFA STATUS: CLOSED ELAPSED TIME: 000 : 00.00.00
CLOSED DATE: 10/20/1992 HOUSTON TIME: 09.23.00
PRCBD NUMBER: S044880B PHASE: ASCENT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
* *****NONE FOUND***** * *****NONE FOUND*****
0 RESPONSIBLE MANAGERS 1: P.SEITZ
2:

0 DESCRIPTION:
During STS-47 SSME start and mainstage phases, the ME-1, E2026 High Pressure Oxygen Turbopump (HPOTP) Secondary Turbine Seal Cavity Pressure Channel A exhibited numerous downward spikes. This sensor had experienced 7 starts and 2588 seconds, all on E2026. Close data review revealed approximately 46 spikes of which one occurred on successive Vehicle Data Tables suggesting the event lasted 40 milliseconds minimum, but not longer than 80 milliseconds. No spikes occurred during chill or shutdown phases. The most probable failure is in the sensor, possibly transient conductive contamination, wire fracture, resistor or grid network fracture. Design commonality between pressure sensor ranges implicates fleet.

The sensor was returned to CCC where vibration testing and tap checks were able to duplicate the failure. The failure repeated on the

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channel B bridge, not the channel A bridge as observed in flight. After several tap checks, the sensor short remained indicating a hard failure. Sensor teardown found four metallic particles in the sensor reference cavity. The largest was 0.200 inches long and indentified as pressure sensor failure where this contaminant was found in the reference cavity. The largest particle was capable of causing a short between the signal output header pin/wire in the case.

Flight Problem Report approved at a Special Level II Daily PRCB on 10/20/92 (PRCBD# S044880B).

1 STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT 06/08/94
PAGE 1

IFA NUMBER> STS-47-P-01
TITLE:LSLE Locker Doors (3) Opened On Landing

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 264 : 12.53.00
IFA STATUS: CLOSED IFA DATE: 09/20/1992
CLOSED DATE: 06/17/1992 ELAPSED TIME: 007 : 22.30.00
PRCBD NUMBER: S044880AA HOUSTON TIME: 07.53.00
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M PYLD-14 PHASE: ENTRY/LANDING

0 RESPONSIBLE MANAGERS 1: P.GRAF
2:

0 DESCRIPTION:
After landing three locker doors were found open. Some hardware stowed for landing stayed in place, some was hanging partially out of the lockers and some had fallen out of the lockers and was found on the module floor. The lockers with doors open are all of the same design and were built by JSC. The doors may have not closed and latched correctly. Training may not have adequately stressed the procedure for closing and latching the doors.

Flight Problem Report approved at Level II PRCB on 06/17/93,
(PRCBD # S0044880AA)

1 STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT 06/08/94
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IFA NUMBER> STS-47-T-01
TITLE:14 To 16-Inch Divot In The Intertank TPS

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA STATUS: CLOSED IFA DATE: 09/20/1992
CLOSED DATE: 10/16/1992 ELAPSED TIME: 000 : 00.00.00
PRCBD NUMBER: S044880A HOUSTON TIME: 00.00.00
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
* *****NONE FOUND***** * *****NONE FOUND*****

0 RESPONSIBLE MANAGERS 1: C.BRAMON
2:

0 DESCRIPTION:
During review of the orbiter umbilical camera film, a 14 to 16-inch divot on the intertank TPS was noticed centered between the left and right bipods, on the Z axis among other smaller divots.

Fault tree analysis was employed to identify possible causes of the divot on ET-45. Excessive flight environments, mechanical damage at MAF and KSC (both build and flight impact), processing anomaly (both MAF and KSC), material age, RSM plumes, venting and contamination have been considered. No positive cause of the divot has been

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identified. Three possible causes are: 1)momentary spray anomaly coupled with compression during fabrication and flight environments, 2)freon contamination of Isochem, 3)insufficient vent hole depth. None of the possible causes have been substantiated during the review.

The STS-47 tank (ET-42) configuration utilized the older TPS intertank application. As a result, this problem is not considered a constraint to the next mission (STS-52) since ET-55 uses the two-gun spray method of intertank TPS application.

Flight Problem Report approved at a Special Level II Daily PRCB on 10/16/92 (PRCBD# S044880A).

1 STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT 06/08/94
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IFA NUMBER> STS-47-V-01
TITLE:Aft H2 Concentration Exceeded 500 ppm Launch Commit Criterial Limit

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 256 : 07.00.00
IFA DATE: 09/12/1992
IFA STATUS: CLOSED ELAPSED TIME: 000 : 00.00.00
CLOSED DATE: 11/17/1992 HOUSTON TIME: 02.00.00
PRCBD NUMBER: S044880P PHASE: PRE-LAUNCH
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 54V-0003
0 RESPONSIBLE MANAGERS 1: S.MCMILLAN
2:

0 DESCRIPTION:
During initial LH2 fastfill prior to recirc pump activation, the aft compartment GH2 concentration peaked at 550 ppm (corrected), violating the LCC limit for OV-105 of 500 ppm. After transition to replenish the concentration decayed to 75-100 ppm, below the limit of 150 ppm.

Troubleshooting in work.

Although no conclusive source of the leakage could be determined, the high H2, concentration most probly resulted from minor leakage from on or more joints in the low pressure H2 system. The 17" disconnect boroscope inspection test port seal will be replaced. The FV4 relief valve seal was replaced as a precaution since it had been distrubed during this flow. Bolts exhibiting torques below specifications were retorqued. A LCC charge to raise the allowable aft H2 concentration limit from 500 to 600 ppm is in work.

Flight Problem Report approved at a Special Level II Daily PRCB on 11/17/92 (PRCBD# S044880P).

1 STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT 06/08/94
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IFA NUMBER> STS-47-V-02
TITLE:APU 3 FU Test Line Temperature Low (Prelaunch)

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 256 : 08.04.00
IFA DATE: 09/12/1992
IFA STATUS: CLOSED ELAPSED TIME: 000 : 00.00.00
CLOSED DATE: 11/10/1992 HOUSTON TIME: 03.04.00
PRCBD NUMBER: S044880E PHASE: PRE-LAUNCH
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR APU-A0004 P IM/47RF04
0 RESPONSIBLE MANAGERS 1: K. BROWN

2:

0 DESCRIPTION:

APU 3 test line temp 2 (V46T0384A) trended low during prelaunch. The temperature reached as low as 46 degree F. The LCC lower limit was waived from 48 degree F to 43 degree F.

An RCN is being generated to activate the system B heaters prelaunch instead of the system A. A review of the prelaunch data from previous flights indicates that the localized temperature around the temperature sensor 2 (which is located adjacent to the system B thermostat which it monitors) is slightly colder than the system A thermostat. Therefore, system B heaters will have a higher duty cycle and will increase the low peak temperature. This change will help prevent the LCC violation and FDA limit violations prelaunch.

Flight Problem Report approved at a Special Level II Daily PRCB on 11/10/92 (PRCBD# S044880E).

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STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT 06/08/94
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IFA NUMBER> STS-47-V-03
TITLE:RCS Jet L3A Failed Off

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 256 : 14.33.00
IFA DATE: 09/12/1992
IFA STATUS: CLOSED ELAPSED TIME: 000 : 00.10.00
CLOSED DATE: 11/06/1992 HOUSTON TIME: 09.33.00
PRCBD NUMBER: S044880D PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR LP03-14-0361 M PROP-01
P IM/47RF01

0 RESPONSIBLE MANAGERS 1: M. ENGLE
2:

0 DESCRIPTION:

L3A failed off when first commanded to fire after ET sep. Both OX and O2 tank 4 control pressure indicated off scale low. The crew checked the O2 tank 4 controller CB and found it closed. The crew cycled the CB ten times, but the controller output could not be recovered. O2 tank 4 does work with O2 tank 3 as a paired set. Normal reading returned 5 minutes prior to T/D (at TAEM). KSC will troubleshoot controller, wiring and transducer.

The most probable cause of the low chamber pressure reading is a failure of the oxidizer valve main stage to open due to iron nitrate-induced flow impedance in the pilot stage. KSC will remove and replace the thruster and transfer it to White Sands Test Facility for the thruster flush program.

Flight Problem Report approved at a Special Level II Daily PRCB on 11/06/92 (PRCBD# S044880D).

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STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT 06/08/94
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IFA NUMBER> STS-47-V-05
TITLE:WSB 1 OVERTEMP

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 256 : 14.34.00
IFA DATE: 09/12/1992
IFA STATUS: CLOSED ELAPSED TIME: 000 : 00.11.00
CLOSED DATE: 11/16/1992 HOUSTON TIME: 09.34.00
PRCBD NUMBER: S044880K PHASE: ASCENT

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0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR-HYD-5-03-0092 P IM/47RF12

0 RESPONSIBLE MANAGERS 1: K.BROWN
2:

0 DESCRIPTION:

During ascent, WSB 1 did not spray until APU 1 lube oil temp reached 280 degree F. Once cooling started, the WSB overcooled (to 236 degree F), then operated nominally. The File IX inflight checkout limit of 275 degree F was violated.

JSC will request hot flush.

The hot oil flush of this WSB has been completed for this flow. In addition, vendor testing will be reviewed and possibly modified to augment the KSC hot flush procedure to ensure adequate flushing of all WSB's. The current WSB/APU integrated study is expected to help in understanding the contribution of the various parameters involved in the WSB undercool.

Flight Problem Report approved at a Special Level II Daily PRCB on 11/16/92 (PRCBD# S044880K).

1 STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT 06/08/94
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IFA NUMBER> STS-47-V-06
TITLE:O2 Tank 4 Heater Control Pressure Offscale Low

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 256 : 15.30.00
IFA STATUS: CLOSED IFA DATE: 09/12/1992
CLOSED DATE: 11/17/1992 ELAPSED TIME: 000 : 01.07.00
PRCBD NUMBER: S044880Q HOUSTON TIME: 10.30.00
PHASE: ASCENT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 54-0007 M EGIL-01
P IM/47RF05

0 RESPONSIBLE MANAGERS 1: S.MCMILLAN
2:

0 DESCRIPTION:

O2 tank 4 control pressure indicated off scale low. The crew checked the O2 tank 4 controller CB and found it closed. The crew cycled the CB ten times, but the controller output could not be recovered. O2 tank 4 does work with O2 tank 3 as a paired set. Normal reading returned 5 minutes prior to T/D (at TAEM). KSC will troubleshoot controller, wiring and transducer.

The most probable cause of the off-scale-low reading was a transient open-circuit condition in the heater control circuitry. Since no cause of the anomaly could be identified, and the tank 4 heater is satisfactorily operated by the tank 3 cryo pressure controller should the malfunction recur, no corrective action was taken.

Flight Problem Report approved at a Special Level II Daily PRCB on 11/17/92 (PRCBD# S044880Q).

1 STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT 06/08/94
PAGE 1

IFA NUMBER> STS-47-V-07
TITLE:WSB 3 No Cooling

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 256 : 14.34.00
IFA DATE: 09/12/1992

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IFA STATUS: CLOSED ELAPSED TIME: 000 : 00.11.00
CLOSED DATE: 11/16/1992 HOUSTON TIME: 09.34.00
PRCBD NUMBER: S044880L PHASE: ASCENT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR-HYD-5-03-0094 P IM/47RF13

0 RESPONSIBLE MANAGERS 1: K.BROWN
2:

0 DESCRIPTION:

WSB 3 failed to cool on the A controller. Switched to B controller and cooling did not occur until 311 degree F, APU 3 was shutdown before WSB 3 was turned off. WSB 3 remained on for 2 more minutes. The WSB sprayed and cooled the APU 3 lube oil. JSC will request hot flush. Good FCS C/O on APU 3. WSB 3 cooled normally on both controllers A and B. Good cooling on B controller during entry.

The hot oil flush of this WSB has been completed for this flow. In addition, vendor testing will be reviewed and possibly modified to augment the KSC hot flush procedure to ensure adequate flushing of all WSB's. The current WSB/APU integrated study is expected to help in understanding the contribution of the various parameters involved in WSB undercools.

Flight Problem Report approved at a Special Level II Daily PRCB on 11/16/92 (PRCBD# S044880L).

1 STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT 06/08/94
PAGE 1

IFA NUMBER> STS-47-V-08
TITLE:Fuel Cell H2O Relief Line Temperature Erratic

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 256 : 18.09.00
IFA DATE: 09/12/1992
IFA STATUS: CLOSED ELAPSED TIME: 000 : 03.46.00
CLOSED DATE: 11/20/1992 HOUSTON TIME: 13.09.00
PRCBD NUMBER: S044880T PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 54V-0008 M EGIL-02

0 RESPONSIBLE MANAGERS 1: S.MCMILLAN
2:

0 DESCRIPTION:

The fuel cell water relief line temp dropped below the normal heater activation setpoint of 70 degree F. In addition, the Fuel Cell 3 water relief line temp appears to be dropping with the relief line temp. Most likely cause is a small amount of water dribbling through the fuel cell 3 water relief valve, resulting in a temp decrease. Spare relief valve panel is available at KSC. No water visible during postflight walkaround. JSC to perform troubleshooting.

The erratic temperature cycles experienced by the fuel cell water relief lines were most probably caused by a small leak in the fuel cell 3 water relief valve although no data have been obtained to prove it conclusively.

Flight Problem Report approved at a Special Level II Daily PRCB on 11/20/92 (PRCBD# S044880T).

1 STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT 06/08/94
PAGE 1

IFA NUMBER> STS-47-V-09
TITLE:L5D Low Chamber Press

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0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 259 : 20.15.00
IFA STATUS: CLOSED IFA DATE: 09/15/1992
CLOSED DATE: 11/16/1992 ELAPSED TIME: 003 : 05.52.00
PRCBD NUMBER: S044880M HOUSTON TIME: 15.15.00
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR LP03-14-0362 M PROP-02
P IM/47RF03
0 RESPONSIBLE MANAGERS 1: M.ENGLE
2:

0 DESCRIPTION:
L5D chamber pressure is consistently low (85 psia vs. 110 psia nominal). A 5 second hot-fire of the jet did not improve the chamber pressure. Analysis shows mixture ratios are very low. KSC inspect, R&R the jet (does not require removal of OMS pod). Spare jet A.O.S. Following PCS C/O, chamber pressure recovered to nominal levels (103 psi) with some intermittent pulses below nominal. R&R jet.

The most probable cause of this failure is an accumulation of contamination in one or more small cross-sectional locations in the oxidiser valve, resulting in restricted propellant flow.

Flight Problem Report approved at a Special Level II Daily PRCB on 11/16/92 (PRCBD# S044880M).

1 STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT 06/08/94
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IFA NUMBER> STS-47-V-10
TITLE:WSB 2 Regulator Outlet Pressure Erratic

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 256 : 14.24.00
IFA STATUS: CLOSED IFA DATE: 09/12/1992
CLOSED DATE: 11/20/1992 ELAPSED TIME: 000 : 00.01.00
PRCBD NUMBER: S044880U HOUSTON TIME: 09.24.00
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR-HYD-5-03-0093 PHASE: ASCENT
0 RESPONSIBLE MANAGERS 1: K.BROWN
2:

0 DESCRIPTION:
During ascent, the GN2 reg out P reading stuck at its initial reading while the actual pressure decreased. The reading unstuck and jumped to lower, correct reading. Troubleshooting will include cycling regulator 10 times (vs the usual 1 cycle).

The troubleshooting of the pressure transducer included the 10 crack-and-reseat cycles of the WSB relief valve with monitoring of the regulator outlet pressure using high-rate data. The testing was unable to reproduce the anomaly. It is recommended to fly-as-is because of the lack of spare units and the inability to reproduce the failure.

Flight Problem Report approved at a Special Level II Daily PRCB on 11/20/92. (PRCBD# S044880U).

1 STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT 06/08/94
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IFA NUMBER> STS-47-V-12
TITLE:LHOB Tire Pressure Bias

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 261 : 15.00.00
IFA DATE: 09/17/1992

STS0047.txt

IFA STATUS: CLOSED ELAPSED TIME: 005 : 00.37.00
CLOSED DATE: 11/10/1992 HOUSTON TIME: 10.00.00
PRCBD NUMBER: S044880F PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 54V-0014 P IM/47RF04
0 RESPONSIBLE MANAGERS 1: B.LEVERICH
2:

0 DESCRIPTION:

Both sensors 1 (V51P0570A) & 2 (V51P0572A) have an excessive bias with respect to the new cal curve used. All other tire pressure measurement biases are within specifications. KSC inspected sensors and recorded actual tire pressures. Data review in progress. Pressure transducer will be pulled and sent to RI/D for analysis

The excessive biases seen after the installation of the revised calibration curve on both LHOB tire-pressure sensors were present during the prelaunch period, and can most likely be attributed to a calibration problem with the sensor unit itself.

Flight Problem Report approved at a Special Level II Daily PRCS on 11/10/92 (PRCBD# S044880F)

1 STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT 06/08/94
PAGE 1

IFA NUMBER> STS-47-V-13
TITLE:RUDDER SPEEDBRAKE TPS DISPLACED

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 263 : 04.49.00
IFA DATE: 09/19/1992
IFA STATUS: CLOSED ELAPSED TIME: 006 : 14.26.00
CLOSED DATE: 11/23/1992 HOUSTON TIME: 23.49.00
PRCBD NUMBER: S044880V PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M EECOM-03
0 RESPONSIBLE MANAGERS 1: P.OLIVER
2:

0 DESCRIPTION:

The crew transmitted video showing a portion of the thermal barrier which appeared to be protruding. The debonded portion was described as extending 1.5 inches from the structure hinge line to 3 inches away at the trailing edge.

A review of photographs taken prior to STS-49 (first flight of OV-105) showed that the R/SE thermal barrier was protruding at that time. The amount of protrusion did not change during that flight or during STS-47. No damage was done to either the barrier or the surrounding structure during that flight. An inspection of the barrier following the STS-47 flight showed some minor fraying to the barrier, but no other significant damage.

Prior to the third flight of OV-105 (STS-54) the thermal barrier endcap and a 6-inch detachable section of the barrier will be removed and replaced.

Flight Problem Report approved at a Special Level II Daily PRCS on 11/23/92 (PRCBD# S044880V).

1 STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT 06/08/94
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IFA NUMBER> STS-47-V-16
TITLE:APU 1 Drain Line Temp 2 Low

STS0047.txt

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 257 : 00.23.00
IFA STATUS: CLOSED IFA DATE: 09/13/1992
CLOSED DATE: 12/08/1992 ELAPSED TIME: 000 : 10.00.00
PRCBD NUMBER: S044880Y HOUSTON TIME: 19.23.00
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 54V-0023 M MMACS-02
P IM/47RF06
0 RESPONSIBLE MANAGERS 1: K.BROWN
2:

0 DESCRIPTION:
Temp 2 measurement consistently decreased to 47 degree F before the thermostat turned on the heater. The FDA limit of 48 degree F was TMBU'd to 45 degree F for the remainder of the flight. (MSID V46T0170A). KSC will perform detailed inspection of the heater system.

The temperature signatures seen on the last two flights of OV-105 are believed to be due to configuration deviations from the design drawings. The drain line heater system including the thermal shunt, heater wrap, insulation and thermostat and sensor locations have all been returned to drawing configuration.

Flight Problem Report approved at a Special Level II Daily PRCB on 12/08/92 (PRCBD# S044880Y).

1 STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT 06/08/94
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IFA NUMBER> STS-47-V-17
TITLE:-Z Star Tracker Self-Test Failure

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 256 : 18.24.00
IFA STATUS: CLOSED IFA DATE: 09/12/1992
CLOSED DATE: 11/16/1992 ELAPSED TIME: 000 : 04.01.00
PRCBD NUMBER: S044880H HOUSTON TIME: 13.24.00
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 54V-0021 M GNC-01
P IM/47RF08
0 RESPONSIBLE MANAGERS 1: M.ENGLE
2:

0 DESCRIPTION:
-Z star failed first two self-tests during post insertion activation. Subsequent self-tests passed. An additional self-test failure occurred later in the flight. The ST operated nominally throughout the mission. KSC will perform a series of self-tests to troubleshoot.

No corrective action will be taken as the cost of implementing a change in either ST hardware or software is not justified since self-test failures do not impact normal STS operations.

Flight Problem Report approved at a Special Level II Daily PRCB on 11/16/92 (PRCBD# S044880H).

1 STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT 06/08/94
PAGE 1

IFA NUMBER> STS-47-V-19
TITLE:TACAN Bearing Excursion

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 264 : 12.46.00
IFA STATUS: CLOSED IFA DATE: 09/20/1992
CLOSED DATE: 11/16/1992 ELAPSED TIME: 007 : 22.23.00
HOUSTON TIME: 07.46.00

STS0047.txt
PRCBD NUMBER: S044880J PHASE: ENTRY/LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 54V-0029 P IM/47RF11
0 RESPONSIBLE MANAGERS 1: M.ENGLE
2:

0 DESCRIPTION:
During entry, the TACAN bearing indication experienced a 40 degree "excursion" for approximately 13 seconds. KSC will perform ground testing using bearing simulator. R&R TACAN 2. Return to vendor.

This TACAN has been removed and replaced, and bench tests will be performed on its line replaceable units to determine the effects of distorted radio-frequency-input signals on the TACAN bearing angle.

Flight Problem Report approved at a Special Level II Daily PRCB on 11/16/92 (PRCBD# S044880J).

1 STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT 06/08/94
PAGE 1

IFA NUMBER> STS-47-V-20
TITLE:WSB 1 Regulator Outlet Pressure Leakage

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 258 : 00.00.00
IFA STATUS: CLOSED IFA DATE: 09/14/1992
CLOSED DATE: 12/03/1992 ELAPSED TIME: 001 : 09.37.00
PRCBD NUMBER: S044880W HOUSTON TIME: 19.00.00
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR-HYD-5-03-0091

0 RESPONSIBLE MANAGERS 1:
2:

0 DESCRIPTION:
Regulator outlet pressure steadily increased throughout the flight, indicating leakage past the regulator.

The six hour decay test could not reproduce the in-flight anomaly. It is recommended to fly-as-is and closely monitor this system next flight for any unusual signatures.

Flight Problem Report approved at a Special Level II Daily PRCB on 12/03/92 (PRCBD# S044880W).

1 STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT 06/08/94
PAGE 1

IFA NUMBER> STS-47-V-21
TITLE:FES Temperature Oscillations

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 264 : 12.00.00
IFA STATUS: CLOSED IFA DATE: 09/20/1992
CLOSED DATE: 11/17/1992 ELAPSED TIME: 007 : 21.37.00
PRCBD NUMBER: S044880N HOUSTON TIME: 07.00.00
PHASE: ENTRY/LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
* *****NONE FOUND***** * *****NONE FOUND*****

0 RESPONSIBLE MANAGERS 1: P.OLIVER X33323
2:

0 DESCRIPTION:
Several oscillations in FES outlet temperature seen after FES startup. Similar signature seen on STS-49. Temperature sensors were repacked following STS-49. Checking repacking procedures.

STS0047.txt

The most probable cause of the FES temperature oscillations was a delayed response in the control sensor output caused by an air gap in the sensor. The sensors have been repacked using the improved packing procedures developed by the vendor's field rep. Another flight is required to determine the improvement, resulting from the repacked sensors.

Flight Problem Report approved at a Special Level II Daily PRCB on 11/17/92 (PRCBD# S044880N).

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STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT 06/08/94
PAGE 1

IFA NUMBER> STS-47-V-22

TITLE:Orbiter Pulled to Left After During Drag Chute De-Reef

**** DIRECTIVE DISAPPROVED ON 12/18/92 S044880Z ****

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 264 : 12.53.00
IFA DATE: 09/20/1992
IFA STATUS: CLOSED ELAPSED TIME: 007 : 22.30.00
CLOSED DATE: 03/14/1994 HOUSTON TIME: 07.53.00
PRCBD NUMBER: S044880AB PHASE: ENTRY/LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
* *****NONE FOUND***** * *****NONE FOUND*****

0 RESPONSIBLE MANAGERS 1: W.LEVERICH
2:

0 DESCRIPTION:

Following drag chute de-reef and prior to NGFD, the vehicle began to veer to the left.

Numerous actions to better understand the drag-chute offset phenomena have been or are in work in the areas of instrumenting other vehicles, reviewing wind tunnel data, and reviewing flight data.

Potential solutions being investigated are : closed speed brake operations, permanently reefed drag-chute, chute porosity, chute ride angle, chute reefing delay, riser length, multistage reefing, decreased maximum deploy speed and chute diameter.

The drag-chute offset phenomena are not specific to vehicle or crosswind. The cause of the offset is not completely understood. Flight experience has shown the vehicle to be controllable as a result of the drag-chute offset. The drag-chute offset phenomena is under a great deal of investigation.

Future corrective actions taken will be to limit deployment such that disreefing occurs at or subsequent to nose gear touchdown and maximum sustained crosswind of 5 knots. Continue to study the drag-chute offset phenomena until further analysis allows for the removal of the limitations and placards.

Flight Problem Report DISAPPROVED at a Special Level II Daily PRCB on 12/18/93 (S044880Z).

- CLOSURE RATIONAL:

Directive disapproved the closeout of S044880Z.

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STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT 06/08/94
PAGE 1

IFA NUMBER> STS-47-V-25

TITLE:MS3 LES O2 Hose

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 256 : 14.20.00
IFA DATE: 09/12/1992
IFA STATUS: CLOSED ELAPSED TIME: 000 : 00.00.00

STS0047.txt

CLOSED DATE: 11/13/1992

HOUSTON TIME: 09.20.00

PRCBD NUMBER: S044880G

PHASE: PRE-LAUNCH

0 TYPE TRACKING NUMBER
* *****NONE FOUND*****

TYPE TRACKING NUMBER
* *****NONE FOUND*****

0 RESPONSIBLE MANAGERS 1: P.OLIVER
2:

0 DESCRIPTION:

During pre-launch, MS3's LES O2 hose disconnected. MS3 could not locate and reconnect hose.

The actual cause of the disconnection cannot be determined. The most probable cause is that crewmember movement possibly combined with a lack of slack in the hose provided enough breakaway force to disconnect the hose. The ingress checklist has been modified so that the suit technicians reroute the O2 hose through an elastic keeper on the lap-belt harness. This change keeps the O2 hose within easy reach should it become disconnected from the suit.

Flight Problem Report approved at a Special Level II Daily PRCB on 11/16/92 (PRCBD# S044880G).

1 STS-047(OV-105,FLT #2)OFFICIAL INFLIGHT ANOMALY REPORT 06/08/94
PAGE 1

IFA NUMBER> STS-47-V-26
TITLE:Chin Panel Thermal Effects

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 264 : 13.00.00
IFA DATE: 09/20/1992
IFA STATUS: CLOSED ELAPSED TIME: 007 : 22.37.00
CLOSED DATE: 10/28/1992 HOUSTON TIME: 08.00.00
PRCBD NUMBER: S044880C PHASE: POST LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR-FWD-5-03-0453

0 RESPONSIBLE MANAGERS 1: K.BROWN
2:

0 DESCRIPTION:

An excessive gap between the nose cap expansion seal and the V070-399441 gap filler was discovered after landing. The gap width was 0.093 inch, which is much larger than the previous flight experience of 0.047 inch on OV-104. The design and certified gap width is zero. The gap between the chin panel and nose cone on OV-105 is slightly larger than the gaps on OV-102 and OV-104; however, the gap is within specification. The slightly larger gap increases the gap filler heating, this combined with gap excursions due to RCC expansions and contractions creates large gaps.

The removal of the chin panel is complete and gap filler removal and replacement has begun. The gap filler material is being changed from Nextel 312 to Nextel 440 and Orbiter mold line (OML) sleeving (the gap filler exterior material) fill density is being changed from 3 to 6 pounds per cubic foot. The material changes should reduce the amount of gap growth on subsequent flights.

Flight Problem Report approved at a Special Level II Daily PRCB on 10/26/92 (PRCBD# S044880C).

-JFDP012: NORMAL TERMINATION OF PROCESSING

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STS-048 (OV-103,FLT #13) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-48-B-01
TITLE:LH Frustrum Upper RH Booster Separation Motor (BSM) Aeroheat Shield
Cover Missing

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 11/04/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1991-11-22 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044868A PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A A14152 A PV 4031829
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: RL HENRY/EE11
2:

0 DESCRIPTION:

During SRB recovery operations, retrieval personnel noticed that the
-BSM aeroheat shield/hinge assembly and cover (located on the upper
right position of the BSM cluster) was missing from the left SRB.

Review of the SRB historical database revealed seven previous flights
with missing aeroheat shield cover(s) (STS-2, STS-3, STS-4, STS-41A,
STS-41B, STS-41G, and STS-28R). The BSM cover attach ring was
returned to USBI/Huntsville M&P for analysis, since part of the
fracture plane exhibited some sooting. The investigation consisted
of a complete material analysis of the attach ring, an investigation
into the impact mark discovered on the left SRB frustrum TPS, and an
interview with the range safety personnel who reported a slow moving
object (200-300 m/sec) at the time of SRB separation. The results of
the failure analysis support the BSM cover loss as a reentry/descent
event.

This occurrence is not an Orbiter debris concern as the hinge
assembly and cover became detached late during reentry (no earlier
than launch +280 seconds).

The problem as presented to the Level II PRCB (PRCBD# S044868A) on
10/25/91 but required additional information, forcing closure
signatures to be obtained outside the board on 11/04/91.

Closure rationale is currently under review for approval in the Level
II MSFC PRACA system for STS-44 and subs.

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STS-048 (OV-103,FLT #13) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-48-B-02
TITLE:RH Lower Strut Black Mark

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 11/08/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1991-12-17 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044868D PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A A14151 A PV 4031880
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: RL HENRY/EE11
2:

0 DESCRIPTION:

During postflight inspection of the right SRB lower strut, a black
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STS0048.txt

mark with flow lines was observed at the ET/SRB strut segment interface.

This was the first known postflight observation of this type occurrence. An investigation was performed to understand the failure mechanism and effects of this particular anomaly. The M&P examination concluded that the blackmark consisted of Conoco grease with a light coating of carbon, most probably induced by gas flow. Two concerns associated with this anomaly merit recognition. One is that this condition might degrade the ET side of the NSI conductor/jacket under prolonged circumstances, resulting in a loss of redundancy on one side. The other concern is that heating levels beyond the qualification limits of the separation bolt might exist. These concerns were addressed by a thermal analysis under worst case conditions (unrestricted flow impinging directly on the stated components and a double failure of the RTV seal). The results demonstrated that the NSI conductor/jacket does not see temperatures above vendor qualification limits. In addition, the separation bolt does not experience a temperature increase above the specified maximum operating condition. The strut performed its function of separation nominally. In conclusion, the strut was proven to be within safe operational limits under worst case conditions (heat and flow). As corrective action, technicians have been instructed on the importance of removal of residual grease from the strut interface surfaces.

Closed at the Level II PRCB (PRCBD# S044868D) on 11/08/91.

The problem report has been deferred in the Level II MSFC PRACA tracking system for STS-44, STS-42, STS-45 and STS-49.

The problem will be closed in the MSFC PRACA System.

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STS-048 (OV-103,FLT #13) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-48-V-01
TITLE:Smoke Detector B AV Bay 1 False Alarms

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 255 : 12.54.00
IFA DATE: 09/12/1991
IFA STATUS: CLOSED : 11/07/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1991-11-06 HOUSTON TIME: 07.54.00
PRCBD NUMBER: S044868B PHASE: PRE-LAUNCH
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR#ECL-3-A0039 M EECOM-01
P CAR 48RF01
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. DILLMAN
2:

0 DESCRIPTION:
Received several false smoke alarms. CB out during ascent and crew sleep. On-orbit at 1/21:16 MET, another false smoke alarm occurred. The CB was pulled by the crew to avoid nuisance alarms.

The cause of the false alarms is presently unknown. Smoke detector B in avionics bay 1 on OV-103 has been removed and replaced. The removed unit is undergoing failure analysis at the vendor. The replaced unit will be verified per OMRSD retest requirements prior to the next flight.

Flight Problem Report approved at Special Level II Daily PRCB on 11/07/91 (PRCBD# S044868B).

1 STS-048 (OV-103,FLT #13) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-48-V-02
TITLE:ET Door Centerline Latch 1 Motor 2 Phase B Failure

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 255 : 23.33.00
IFA DATE: 09/12/1991
IFA STATUS: CLOSED : 12/03/1991 ELAPSED TIME: 000 : 00.21.56
PRACA STATUS: CLOSED : 1992-05-20 HOUSTON TIME: 18.33.00
PRCBD NUMBER: S044868G PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 42V-0001 M MMACS-01
P CAR 48RF02

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: R. DAVIS
2:

0 DESCRIPTION:
During ET umbilical door closing, centerline latch 1 motor 2 showed no phase B operation. No impact to unlatching.

Troubleshooting was able to recreate the failure seen during flight and isolate its source to the aft motor control assembly 2 (AMCA 2). The most probable cause of the problem is a single-contact relay failure within AMCA 2. The AMCA 2 has been removed and replaced and returned to Rockwell/Downey for failure analysis and repair.

Flight Problem Report approved at Special Level II Daily PRCB on 12/03/91 (PRCBD# S044868G).

1 STS-048 (OV-103,FLT #13) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-48-V-03
TITLE:Fuel Cell 1 O2 Reactant Valve "Closed" Indication

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 257 : 00.14.00
IFA DATE: 09/13/1991
IFA STATUS: CLOSED : 11/27/1991 ELAPSED TIME: 001 : 01.02.56
PRACA STATUS: OPEN HOUSTON TIME: 19.14.00
PRCBD NUMBER: S044868F PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 42V-0004 M EGIL-01
P CAR 48RF03

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: F. PLAUCHE
2:

0 DESCRIPTION:
Valve status suddenly showed "closed" at the time listed. No corresponding decrease in O2 flow or fuel cell coolant pressure verified that valve was open. Main A and Main B busses tied together in case of hard failure. At 258:09:16 G.m.t., the talkback indicated OPEN (at the same time O2 MANF TK 1 was closed for pre-sleep). Crew confirmed the onboard talkback also indicated OPEN. Main A and Main B will remain tied together until deorbit prep.

The false fuel cell 1 O2 reactant valve close indication was most probably caused by a temporarily open condition in the valve status indicator circuit. The valve will be removed and replaced during the Orbiter maintenance down period following the next flight of OV-103.

Flight Problem Report approved at Special Level II Daily PRCB on
Page 3

11/27/91 (PRCBD# S044868F).

1 STS-048 (OV-103,FLT #13) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-48-V-04
TITLE:Supply water Dump Valve Leakage

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 259 : 11.10.00
IFA DATE: 09/16/1991
IFA STATUS: CLOSED : 11/07/1991 ELAPSED TIME: 003 : 11.58.56
PRACA STATUS: CLOSED : 1994-04-19 HOUSTON TIME: 06.10.00
PRCBD NUMBER: S044868C PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M EECOM-04 P CAR 48RF04
U UA-3-A0019

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. DILLMAN
2:

0 DESCRIPTION:
During the two post-bakeout periods following supply dump #5, the supply water line and nozzle temperatures indicated water leakage past the dump valve. Line purged downstream of isolation valve. Data evaluation also shows leakage following supply dump #4.

The cause of the supply water dump valve intermittent leakage is presently unknown. The OV-103 supply water dump line, valve, and nozzle have been removed and replaced. The removed unit will undergo testing and failure analysis at JSC. The replaced unit will be verified per OMRSD retest requirements prior to the next flight.

Flight Problem Report approved at Special Level II Daily PRCB on 11/07/91 (PRCBD# S044868C).

1 STS-048 (OV-103,FLT #13) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-48-V-05
TITLE:Hydraulic System 2 Unloader Valve Leakage

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 258 : 10.16.00
IFA DATE: 09/15/1991
IFA STATUS: CLOSED : 12/09/1991 ELAPSED TIME: 002 : 11.04.56
PRACA STATUS: UNKNOWN HOUSTON TIME: 05.16.00
PRCBD NUMBER: S044868J PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 42V-0007 M MMACS-02
P IM/4RF05

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: J.S-GRUSH
2:

0 DESCRIPTION:
Accumulator was recharged 4 times w/circ pumps & showed pressure decay as high as 369 psi/hr (spec = 48 psi/hr). Decay came back within spec after FCS checkout.

JSC has retested the unloader valve system per OMI V1010 during normal turnaround operations. The unloader valve failed the leakage specification and is being replaced. Improvements to the hydraulic bootstrap system which includes the unloader valve, to minimize susceptibility to contamination are currently being addressed on MCR 16598.

Flight Problem Report approved at Special Level II Daily PRCB on
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12/09/91 (PRCBD# S044868J).

1 STS-048 (OV-103,FLT #13) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-48-V-06
TITLE:FRCS Manifold Valve 2 Phase C Down

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 261 : 06.50.00
IFA DATE: 09/18/1991
IFA STATUS: CLOSED : 12/03/1991 ELAPSED TIME: 005 : 07.38.56
PRACA STATUS: UNKNOWN HOUSTON TIME: 01.50.00
PRCBD NUMBER: S044868H PHASE: ENTRY/LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 42V-0005 M PROP-01
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: R. KOWALSKI
2:

0 DESCRIPTION:
Forward Manifold 2 Iso Valves (LV127, LV128) cycled on two phase power. No current was shown on C phase for both open and close.
Troubleshooting was unable to repeat the problem seen during flight. The most likely cause of the problem was cb contamination. Previous experience has shown that in a low-current circuit, contamination can break continuity. Its an accepted procedure to cycle circuit breakers when contamination is suspected. Closed as an unexplained anomaly.
Flight Problem Report approved at Special Daily Level II PRCB on 12/03/91 (PRCBD# S044868H).

1 STS-048 (OV-103,FLT #13) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-48-V-07
TITLE:Extraneous Body Flap Motion

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 11/15/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044868E PHASE: ENTRY/LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
* *****NONE FOUND***** * *****NONE FOUND*****
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: M. HAMMERSCHMIDT
2:

0 DESCRIPTION:
Bodyflap motion caused by the OI-201-load designed to protect the engine belts from heating at a mid c.g. range. Expected motion.
Although this is not a safety of flight issue, this motion is not highly desirable. The body flap models will be reassigned and possible changes to the I-loads are being investigated.
This body flap motion cannot be absolutely predicted, but it is c.g. dependent. Only c.g.'s aft of approximately 1093 inches have the potential of producing this motion. Should, for unforeseen reasons, the oscillations become excessive in-flight, the body flap would be taken to manual control.

Flight Problem Report approved at Special Level II Daily PRCB on 11/15/91 (PRCBD# S044868E).

STS0048.txt

-JFDPO12: NORMAL TERMINATION OF PROCESSING

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STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT

01/31/95
PAGE 1

IFA NUMBER> STS-49-D-01
TITLE:TDRSS State Vector Propagation Errors

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 129 : 23.00.00
IFA DATE: 05/08/1992
IFA STATUS: CLOSED : 06/24/1992 ELAPSED TIME: 000 : 23.20.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 18.00.00
PRCBD NUMBER: S044872D PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M MCC-01
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: G. EGAN
2:

0 DESCRIPTION:
TDRSS vectors received from GSFC and propagated in the MOC did not compare with other non-MOC-generated vectors. Subsequent investigation revealed that the Sun/Moon Tables in the MOC were corrupted.

Old JPL tape (used since STS-45) contained Sun/Moon state vectors over a several-years period and 1992 was the last valid year. New JPL tape (used since STS-45) changed format and required computation of Sun/Moon vectors from polynomial coefficients. In modifying JPL software to fit the MOC environment, an inaccurate assumption about how the algorithm computes vector time input was made. This caused the state vectors to be in error for 1 day in every 32 days of the 404-day calculated Sun/Moon table.

Flight Problem Report approved at a Special Level II Daily PRCB on 06/24/92 (PRCBD# S044872D).

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STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT

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IFA NUMBER> STS-49-I-01
TITLE:Orb Targeting Ti Computation Failure

0 MISSION CONSTRAINT: 51 SUBS IFA TIME GMT: 134 : 18.30.00
IFA DATE: 05/13/1992
IFA STATUS: CLOSED : 09/02/1992 ELAPSED TIME: 005 : 18.50.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 13.30.00
PRCBD NUMBER: S044872AM PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M RNDZ-01
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: C. MEYER
2:

0 DESCRIPTION:
Orbit Targeting Specialist function failed several times to compute a proper Ti targeting solution. The TARGETER alarm was set, the Ti displayed relative state was not updated, the maneuver solution was not updated on the display, and pred-match was set to 99999.

Flight software change or targeting I-loads changes will be required prior to next rendezvous flight.

The STS-49 anomaly has been isolated to the use of mixed precision parameters in the Lambert targeting convergence algorithm. A double
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precision mid-value select routine yielded erroneous results when comparing a double precision parameter (U) with single precision parameter (U_MIN and U_MAX). This can occur when the update to U is as small as it was on STS-49. Also contributing to the STS-49 anomaly was the use of tight Lambert convergence tolerances (I-loads) which result in small updates to U.

After assessing several options presented by the mode team, the SASCB has approved a flight software code change (CR 90701A) effective for OI-22 and subs to correct the mixed precision problem.

Flight Problem Report approved at a Special Level II Daily PRCB on 09/02/92 (PRCBD# S044872AM).

1 STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-49-I-02
TITLE: E3 Engine Nozzle Bluing

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 09/02/1992 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044872AN PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M RNDZ-01

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: R.G. GONZALES
2: C. MEYER

0 DESCRIPTION:
Coloration occurred from lower centerline to 12 degrees outboard.
Blue spot approximately 30 degrees inboard. Analysis based on
reconstructed flight entry conditions do not predict observed anomaly.

Further inspection by Rockwell/Rocketdyne at KSC.

Nozzle aft-closure metal was tested for indications of annealing by performing Oxalic acid etch tests and Rockwell C hardness tests. The nozzle was cleared for re-use since no damage was indicated. No near term corrective measures were taken since the nature and cause of the anomaly has not been characterized. Continued post-flight inspections per V41BU0.353 and hardness tests, if required, will continue to preclude any possibility of damaged nozzle re-use.

Flight Problem Report approved at a Special Level II Daily PRCB on 02/22/93 (PRCBD# S044872AN).

1 STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-49-I-03
TITLE: RMS False Alarms

0 MISSION CONSTRAINT: 46 SUBS IFA TIME GMT: 129 : 22.00.00
IFA DATE: 05/08/1992
IFA STATUS: CLOSED : 07/15/1992 ELAPSED TIME: 000 : 22.20.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 17.00.00
PRCBD NUMBER: S044872F PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
* *****NONE FOUND***** * *****NONE FOUND*****

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: R.G. GONZALES

2:

0 DESCRIPTION:

Control errors were experienced during RMS Checkout and again during INTELSAT capture attempt.

The cause of the control errors is suspected to be a false alarm caused by the parameters used in the Vernier Consistency Check. Vernier Consistency Check parameters values were GMEM'ed to their coarse values for all PL ID's, and the problem has not reoccurred. Analysis by A&RD/TRW (2 cases at 132:05:10 and 132:05:12) and IBM (case at 132:05:10) shows that the time-correlated rate envelope is exceeded by the rate response for 4 cycles during acceleration of the joint.

Continue to use coarse values for the vernier consistency check parameters until the RMS community completes their investigation which is scheduled for completion on 8/15/92.

Flight Problem Report approved at Special Level II Daily PRCB on 07/15/92 (PRCBD# S044872F).

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STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-49-I-04
TITLE:ET RSS Arm Command Transient

0 MISSION CONSTRAINT:	SUBS	IFA TIME GMT: 000 : 00.00.00
		IFA DATE:
IFA STATUS: CLOSED	: 06/23/1992	ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN		HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044872C		PHASE: ASCENT
0 TYPE TRACKING NUMBER	TYPE TRACKING NUMBER	
* *****NONE FOUND*****	* *****NONE FOUND*****	

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: J.MILLER
2:

0 DESCRIPTION:

STS-49 downlink and ops recorder data showed ET RSS arm command present at MET 285.0 sec for less than 80m sec. No RSS arm/fire signal was transmitted from RSO. An additional, spare, bit in the same MDM data word was also set, then cleared, coincident with the ET RSS command. No other instrumentation data supports an actual issuance of ET RSS arm. Problem has occurred on several previous flights with or without coincident setting of spare bits in the same data word. In each occurrence, there was no supporting indication of actual ET RSS command outputs.

Problem lies in Orbiter OI data system, not in ET RSS hardware. Data hits in orbiter OI data system are not uncommon.

Flight Problem Report approved at Special Daily Level II PRCB on 06/23/92 (PRCBD# S044872C).

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STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-49-I-05
TITLE:Anomalous Orbiter Data Frequencies

0 MISSION CONSTRAINT:	SUBS	IFA TIME GMT: 000 : 00.00.00
		IFA DATE:
IFA STATUS: CLOSED	: 03/11/1993	ELAPSED TIME: 000 : 00.00.00

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PRACA STATUS: UNKNOWN
PRCBD NUMBER: S044872AP

HOUSTON TIME: 00.00.00
PHASE: POST LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
* *****NONE FOUND***** * *****NONE FOUND*****

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: C. PINSON
2:

0 DESCRIPTION:
Post flight dynamic tests analysis identified anomalous frequencies present in the HPOTP strain gauge, HPOTP accelerometers, HPFTP accelerometers, and gimbel accelerometers on ME-2 and ME-3. The frequencies appear before engine start and after shutdown which indicates that the frequency source is not an SSME. This frequency could obscure a known HPOTP bearing generated frequency and result in the necessity of additional ground testing (screen run) to determine pump acceptability for future flight use.

It was concluded that no specific cause of this anomaly could be positively identified. Possible contributors could include low signal to noise ratios inherent to this data system (10% data vs 6% noise), noise added as part of the data dump, duplication, reduction process, data recorder anomaly, age and degeneration of the data recording system including flight and ground system components, or an unidentified vibration source.

The MADS/DFI working group members at JSC/MSFC/KSC/RI-Downey/Rocketdyne are investigating several data quality enhancement processes which could improve system performance. After engineering evaluation endorses these processes, they will be presented to the PRCB for recommended incorporation.

Flight Problem Report approved at a Special Level II Daily PRCB on 03/11/93 (PRCBD# S044872AP).

1 STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-49-P-01
TITLE:INTELSAT Failed To Deploy On First Attempt

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 135 : 04.40.00
IFA DATE: 05/14/1992
IFA STATUS: CLOSED : 06/05/1992 ELAPSED TIME: 006 : 05.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 23.40.00
PRCBD NUMBER: S044872A PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M PYLD-05

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: G. LAWS
2:

0 DESCRIPTION:
PPSU operation not as expected. It was determined that the PL AFT MNB Bus was wired to the PPSU B side and the PL AFT MNC Bus was wired to the PPSU A side. This configuration was not as expected preflight. The PPSU A side was fired with PL AFT MNC on. The payload was successfully deployed.

The deployment procedure as contained in the STS-49 Rendezvous checklist did not correctly reflect the as-built configuration of the orbiter integration hardware.

A process has been established that ensures communication between Cargo Engineering and Mission Operations relative to integration

hardware design/changes and how that design is reflected in the operation procedures.

Flight Problem Report approved at Special Level II Daily PRCB on 06/05/92 (PRCBD# S044872A).

1 STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-49-V-01
TITLE:Thruster F4R Heater Fail On

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 128 : 03.50.00
IFA DATE: 05/07/1992
IFA STATUS: CLOSED : 07/28/1992 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1993-08-26 HOUSTON TIME: 22.50.00
PRCBD NUMBER: S044872W PHASE: PRE-LAUNCH

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M PROP-01 O FRC5-A0002
P IM/49RF01

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. MCCORMACK X33337
2:

0 DESCRIPTION:

During the STS-49 prelaunch activities, it was determined that the heater on forward primary reaction control subsystem (RCS) thruster F4F was failed-on. A data review indicated that the heater had actually failed-on approximately two hours after the flight readiness firing and had gone undetected. At lift-off, the thruster injector temperatures were holding steady at about 116 degree F, which is approximately 15 degree F above the upper set point of the heater.

Thruster F4F was removed and the heater was repaired by the vendor on-the-bench at KSC. Following checkout of the heater, the thruster was returned to the vehicle. The failure of the heater controller was the cause of the anomaly. The failure analysis of the controller is being tracked on CAR 49RF01.

Flight Problem Report approved at a Special Level II Daily PRCB on 07/28/92 (PRCBD# S044872W).

1 STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-49-V-02
TITLE:O2 Manifold #1 Isolation Valve Failed Open

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 129 : 05.50.00
IFA DATE: 05/08/1992
IFA STATUS: CLOSED : 07/21/1992 ELAPSED TIME: 000 : 06.10.00
PRACA STATUS: OPEN HOUSTON TIME: 00.50.00
PRCBD NUMBER: S044872H PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 47V-0014 M EGIL-01
P IM/49RF02

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. DILLMAN
2:

0 DESCRIPTION:

The PRSD O2 manifold #1 isolation valve failed to close when commanded. An additional attempt to close on-orbit was unsuccessful.

Troubleshooting at KSC is complete. No anomaly found. Potential UA.
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Corrective action will be undertaken on the OV-105 valve if the results of the OV-104 valve investigation warrants action.

Flight Problem Report approved at a Special Level II Daily PRCBD on 07/21/92 (PRCBD# S044872H).

1 STS 049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-49-V-03
TITLE:FES Accumulator/Hi Load Line B Heater #1

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 129 : 08.30.00
IFA DATE: 05/08/1992
IFA STATUS: CLOSED : 08/13/1992 ELAPSED TIME: 000 : 08.50.00
PRACA STATUS: CLOSED : 1992-09-10 HOUSTON TIME: 03.30.00
PRCBD NUMBER: S044872AG PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 47V-0012 M EECOM-02
P IM/49RF03

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. DILLMAN
2:

0 DESCRIPTION:
The FES Accumu/Hi Load Line B Heater #1 appears to be failed on. Heater #2 has been selected. Indicative of a loose thermostat on the accumulator line.

At KSC, the thermostat was inspected and found to be securely clamped to the FES water line. The thermostat was removed and replaced with a new thermostat by Hamilton Standard and retested successfully. The removed thermostat will be tested by the vendor to determine the failure mode.

Flight Problem Report approved at a Special Level II Daily PRCB on 08/13/92 (PRCBD# S044872AG).

1 STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-49-V-05
TITLE:MEC 2 Bite Failure

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE: 05/07/1992
IFA STATUS: CLOSED : 07/22/1992 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1993-03-30 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044872K PHASE: PRE-LAUNCH

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 47V-0005 P IM/49RF21

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: B. ELIASON
2:

0 DESCRIPTION:
During the T-20 min preflight BITE READ of MEC 2, word 10 bit 9 was set to 1 when it should be 0. Two subsequent reads showed the bit to be 0. Flew as is due to no hard failure and adequate MEC redundancy. Plan for KSC troubleshooting has been developed. No chit required.

Replaced by EMEC per OEL-0683.

Based on the bit involved and the nominal subsequent reads performed

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prelaunch, it is assumed that an intermittent BITE circuitry failure occurred. Testing will continue under CAR 49RF21.

Flight Problem Report approved at a Special Level II Daily PRCB on 07/22/92 (PRCBD# S044872K).

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STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-49-V-07
TITLE:EV2 "Set Power SCU" Message (GFE)

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 131 : 21.15.00
IFA DATE: 05/10/1992
IFA STATUS: CLOSED : 07/28/1992 ELAPSED TIME: 002 : 21.35.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 16.15.00
PRCBD NUMBER: S044872AB PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M EVA-05 P FIAR B-EMU-300-F004
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. DILLMAN
2:

0 DESCRIPTION:
EV2 received an alert tone and the "SET PWR SCU" message on his DCM. This message was received 10 to 15 times during the EVA.

The cause of the repeated "Set Power SCU" messages during the first EVA is presently unknown. The most likely cause is an intermittent short circuit within the power mode switch.

Flight Problem Report approved at a Special Level II Daily PRCB on 07/28/92 (PRCBD# S044872AB).

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STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-49-V-08
TITLE:AV Bay 3 Delta P

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 128 : 23.57.00
IFA DATE: 05/07/1992
IFA STATUS: CLOSED : 07/28/1992 ELAPSED TIME: 000 : 00.17.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 18.57.00
PRCBD NUMBER: S044872U PHASE: ASCENT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 47V-0011 M EECOM-01
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. DILLMAN
2:

0 DESCRIPTION:
AV Bay 3 delta pressures indicating higher than expected values at 14.7 and 10.2 psia cabin pressure.

Postflight, the TACAN filter in avionics bay 3 was cleaned and the fan delta pressure returned to the preflight level of 4 inches of water. This demonstrated that the delta pressure rise was due to debris collecting on the small orifice filter restricting the flow.

The orifice on the avionics bay TACAN slot will be moved to the empty central processing unit (CPU) slot as done in avionics bay 2. A larger "hat" filter will be installed in its place which will be able to collect a larger amount of debris without affecting avionics bay delta pressure.

Flight Problem Report approved at a Special Level II Daily PRCB on 07/28/92 (PRCBD# S044872U).

1 STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-49-V-09
TITLE:WSB Sys 2 Reg Out Press Sensor (V58P0204A)

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 128 : 23.42.00
IFA DATE: 05/07/1992
IFA STATUS: CLOSED : 08/10/1992 ELAPSED TIME: 000 : 00.02.00
PRACA STATUS: CLOSED : 1993-02-17 HOUSTON TIME: 18.42.00
PRCBD NUMBER: S044872AE PHASE: ASCENT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR HYD-0066 M MMACS-01
P IM/49RF05

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. GERLACH
2:

0 DESCRIPTION:
The pressure sensor did not immediately respond to relief valve crack and reset. The sensor apparently hung up for one minute and then recovered.

Contamination of the resistive element inside the transducer is suspected to have inhibited brush arm movement during pressure changes.

The transducer was removed and returned to Hamilton-Standard for failure analysis. Hamilton-Standard also tested the replacement transducer to verify performance prior to installation into OV-105.

Flight Problem Report approved at a Special Level II Daily PRCB on 08/10/92 (PRCBD# S044872AE).

1 STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-49-V-10
TITLE:FES Temperature Oscillations

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 128 : 23.42.00
IFA DATE: 05/07/1992
IFA STATUS: CLOSED : 08/10/1992 ELAPSED TIME: 000 : 00.02.00
PRACA STATUS: CLOSED : 1992-10-07 HOUSTON TIME: 18.42.00
PRCBD NUMBER: S044872AF PHASE: ASCENT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 47V-0021 M EECOM-04
P IM/49RF06

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. DILLMAN
2:

0 DESCRIPTION:
There were small transient FES outlet temperature oscillations during ascent and entry, pri A and pri B controllers. Requires Hamilton-Standard on-site repacking sensors.

The mid-point sensor vendor has removed, repacked, and replaced the mid-point sensors. They will be retested as part of the normal vehicle turnaround flow.

Flight Problem Report approved at a Special Level II Daily PRCB on Page 8

08/10/92 (PRCBD# s044872AF).

1 STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-49-V-11
TITLE:Floodlight Failures

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 132 : 21.12.00
IFA DATE: 05/11/1992
IFA STATUS: CLOSED : 07/27/1992 ELAPSED TIME: 003 : 21.32.00
PRACA STATUS: CLOSED : 1994-05-10 HOUSTON TIME: 16.12.00
PRCBD NUMBER: S044872N PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR47V0007	M	EGIL-02
P	IM/49RF07	P	IM/49RF08
P	IM/49RF09	P	IM/49RF10

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: B.G. SWAN
2:

0 DESCRIPTION:

A. FWD PORT No. 1 Lamp. Fwd Port Floodlight would not illuminate at power up. Light will remain off for remainder of mission. EGIL-02.

B. FWD STARBOARD No. 2 Lamp. Fwd Starboard flickered and then failed to illuminate. Data indicated most likely cause is a malfunctioning lamp. EGIL-03

C. AFT STARBOARD No. 6 Lamp. Aft Starboard floodlight failed to illuminate when turned on. Analysis indicates that the associated RPC tripped off. Probably a short in the FEA caused the RPC to trip. EGIL-04

D. FWD BULKHEAD No. 7 FEA. The Fwd Bulkhead light signature had numerous spikes and did not come on. EGIL-04

Floodlights have been R/R. Retest on all floodlights complete/good.

Three changes have been identified to improve the reliability of the floodlights. Two of these have been approved and one is currently in review at JSC. The first change eliminates arcing in the floodlights by increasing the spacing between the support ring and the tripod. The second change increases the reliability of the FEA ballast by rerouting a wire, changing the duty-cycle of the power transformer, and performing extra testing to insure adequate output voltage margin. The third change imposes further screen testing on the floodlights to insure adequate starting margin.

Flight Problem Report approved at a Special Level II Daily PRCB on 07/27/92 (PRCBD# S044872N).

1 STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-49-V-13
TITLE:Engine 1 & 2 #2 Prevalve Pressure Drop Excessive

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 08/18/1992 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1993-04-06 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044872AK PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
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P IM/49RF11

K IPR 47V-0006
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. MCCORMACK
2:

0 DESCRIPTION:

Difference between manifold pressure and pressure downstream of the prevalve is larger than seen on previous flights. Suspect faulty transducers. Melon sample taken - results due back on 5/18.

Ducers R&R'd per IPR 0006 (Removed ducers sent to Downey for test and evaluation.)

The most probable cause of the anomalous pressure responses are problems with the pressure transducers. Prevalve screen blockage is considered highly unlikely, and no additional vehicle work is required.

The pressure transducers have been removed and replaced. The removed transducers have been sent to R/D for test and evaluation. The transducers should not be returned to service even if no anomalies are found.

Flight Problem Report approved at a Special Level II Daily PRCB on 08/18/92 (PRCBD# S044872AK).

1 STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-49-V-15
TITLE:Ku-Band Antenna Pointing Problem

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 135 : 17.00.00
IFA DATE: 05/14/1992
IFA STATUS: CLOSED : 08/05/1992 ELAPSED TIME: 006 : 17.20.00
PRACA STATUS: CLOSED : 1994-03-28 HOUSTON TIME: 12.00.00
PRCBD NUMBER: S044872P PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 47V-0031 M INCO-08
P IM/49RF12

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: B. SWAN
2:

0 DESCRIPTION:

The Ku-band antenna experienced pointing problems and after steering mode changes, an oscillation of the antenna started. Also, actual angles did not agree with the physical location of the antenna.

Beta motor binding. R&R'd DA per OMI-V5A51. EA1 to be R&R'd with OV-103 EA.

It is postulated that the overheating of the motor occurred when the antenna was being driven into the positive beta stop for approximately 54 minutes. This occurred when the Ku-band system was in the auto steering mode and the antenna was being commanded to remain inertially stabilized. A change to the Shuttle Operational Data Book (SODB) will be generated to document this occurrence and how to preclude it for future flights. Further analysis of the motor will be tracked on CAR 49RF12.

Flight Problem Report approved at a Special Level II Daily PRCB on 08/05/92 (PRCBD# S044872P).

1

IFA NUMBER> STS-49-V-16
TITLE:Cabin dp/dt Sensor slow Response

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 135 : 02.54.00
IFA STATUS: CLOSED : 07/28/1992 IFA DATE: 05/14/1992
PRACA STATUS: CLOSED : 1993-04-19 ELAPSED TIME: 006 : 03.14.00
PRCBD NUMBER: S044872V HOUSTON TIME: 21.54.00
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 47V-0022	M	EECOM-05
P	IM/49RF14		

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: B. SWAIN
2:

0 DESCRIPTION:

The cabin dp/dt sensor exhibited a slower response than expected. No spec on response rate, but data showing 3-4 times slower than inflight experience. Carlton Controls will R&R at KSC using sensor from spare panel. No chit required.

Postflight troubleshooting and data analysis confirmed that the dp/dt sensor had failed.

Flight Problem Report approved at a Special Level II Daily PRCB on 07/28/92 (PRCBD# S044872V).

1

IFA NUMBER> STS-49-V-17
TITLE:PRLA 4 Latch/Unlatch Indicator B Failed

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 134 : 22.16.00
IFA STATUS: CLOSED : 07/28/1992 IFA DATE: 05/13/1992
PRACA STATUS: UNKNOWN ELAPSED TIME: 005 : 22.36.00
PRCBD NUMBER: S044872Y HOUSTON TIME: 17.16.00
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 47V-0017	M	MMACS-05

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. MCCORMACK
2:

0 DESCRIPTION:

During ASEM bottom plane installation, power to the ASEM STBD AFT PRLA 4 microswitches became intermittent. PRLA operated nominally on both motors. PRLA wiring and connectors appear to be nominal. Test plan being developed for quick troubleshooting at KSC.

The anomaly seen was an intermittent condition in the system B microswitch circuit. Both motors in the PRLA operated nominally.

Flight Problem Report approved at a Special Level II Daily PRCB on 07/28/92 (PRCBD# S044872Y).

1

IFA NUMBER> STS-49-V-18
TITLE:Thruster L4L Leak

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 136 : 18.23.00
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IFA STATUS: CLOSED : 07/28/1992 IFA DATE: 05/15/1992
PRACA STATUS: CLOSED : 1992-07-06 ELAPSED TIME: 007 : 18.43.00
PRCBD NUMBER: S044872Z HOUSTON TIME: 13.23.00
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 47V-0015 M PROP-03
P IM/49RF15

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. MCCORMACK
2:

0 DESCRIPTION:
After firing jet L4L during the RCS hotfire, the OX injector temp cooled to 18 deg F. This violated the RCS RM OX Fail Leak limit of 30 deg F and jet L4L was declared fail leak. The jet stopped leaking, the injector temps warmed above 55 deg F, jet L4L was put in last priority and reselected. Fired 3 times during entry without leak. No vapors after landing. Slight leak seen after UTPA installation.

Based on previous flight experience, the most probable cause of the leak is iron nitrate or particulate contamination at the main or pilot poppet valve seats.

Thruster L4L is being monitored in the OPF. The current plan is to fly the thruster as-is. Primary thrusters have multiple redundancy for all nominal mission phases.

Flight Problem Report approved at a Special Level II Daily PRCB on 07/28/92 (PRCBD# S044872Z).

1 STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-49-V-19
TITLE:CRT 1 BITE

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 130 : 16.23.00
IFA DATE: 05/09/1992
IFA STATUS: CLOSED : 07/22/1992 ELAPSED TIME: 001 : 16.43.00
PRACA STATUS: CLOSED : 1993-05-19 HOUSTON TIME: 11.23.00
PRCBD NUMBER: S044872L PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M DPS-01 P IM/49RF16

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: B. ELIASON
2:

0 DESCRIPTION:
CRT 1 BITE message was annunciated by GPCs 1 & 2. Hardware status word 2 indicated keyboard adapter B bit set. CRT 1 recovered with DEU 1 H/W BITE Register clear command on the OTP display. DEU to be removed and replaced. Spares are available at KSC.

DEU No. 1 replaced per PR DIG-0024.

No cause is currently known. The DEU is assumed to have had a transient failure.

Flight Problem Report approved at a Special Level II Daily PRCB on 07/22/92. (PRCBD# S044872L).

1 STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 23

IFA NUMBER> STS-49-V-21
TITLE:WCS Fan Sep 1 Failed

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 137 : 16.25.00
IFA DATE: 05/16/1992
IFA STATUS: CLOSED : 07/27/1992 ELAPSED TIME: 008 : 16.45.00
PRACA STATUS: CLOSED : 1993-02-01 HOUSTON TIME: 11.25.00
PRCBD NUMBER: S044872T PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 47V-0025 M EECOM-07
P IM/49RF18

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. DILLMAN
2:

0 DESCRIPTION:

Several unsuccessful attempts were made to start WCS fan sep 1. The crew selected fan sep 2 and reported good air flow. Fan removal plan has been developed.

Fan Sep. removed from WCS prior to WCS removal from the orbiter. Will rework at the vendor.

Failure analysis of the WCS showed that a hair had gotten past all of the WCS screen filters and lodged in the dual check valve going towards the waste tank. This resulted in a slow dripping leak of about one drop a minute from the waste tank back into the WCS resulting in the flooding of fan separator 1. With the slow leak rate, a decrease in the waste tank quantity was not evident with the humidity separators and WCS continuing to put new liquid into the tank.

Flight Problem Report approved at a Special Level II Daily PRCB on 07/27/92 (PRCBD# S044872T).

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STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 24

IFA NUMBER> STS-49-V-22
TITLE:Port Aft Bulkhead PLBD Latch Indications Missing

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 137 : 17.37.00
IFA DATE: 05/16/1992
IFA STATUS: CLOSED : 07/28/1992 ELAPSED TIME: 008 : 17.57.00
PRACA STATUS: CLOSED : 1992-08-31 HOUSTON TIME: 12.37.00
PRCBD NUMBER: S044872AA PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 47V-0026 M MMACS-08
P IM/49RF13

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. MCCORMACK
2:

0 DESCRIPTION:

During PLBD closure, the port aft bulkhead PLBD latch indications were not obtained. After manually attempting to latch, the port PLBD closed indication was obtained.

PLBD/Latch functional successfully performed at RSC. LH door popped in place when latch was released.

The most likely cause of the problem was the result of binding of shear pin 5 in expansion joint 4 between PLBD panels 4 and 5. This binding prevented the expansion joint from allowing the door to adjust to a thermally induced dimensional change between the Orbiter

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midfuselage and the PLBD. As a result, the closing/latch loads deflected the door and forced the fore/aft alignment roller inboard of its guide hook thus holding the door in the mislocated position and preventing a full cycle of the latch. An inspection revealed that the binding at shear pin 5 was caused by a slight misalignment of the pin and its forward and aft bearings.

Flight Problem Report approved at a Special Level II Daily PRCB on 07/28/92 (PRCBD# S044872AA).

1 STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 25

IFA NUMBER> STS-49-V-23
TITLE:GPC AP101S Microcode Error

0 MISSION CONSTRAINT: 50 SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 06/24/1992 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044872E PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
* *****NONE FOUND***** * *****NONE FOUND*****

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. GERLACH
2:

0 DESCRIPTION:
During troubleshooting of orbit targeting failure, a problem was found in the AP101S microcode (firmware). Two microcode instructions, CED and CEDR, will compare equal, even with a difference in bit 40.

Constraint to STS-50 cleared.

Flight Problem Report approved at a Special Level II Daily PRCB on 06/24/92 (PRCBD# S044872E).

1 STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-49-V-25
TITLE:APU 3 Gearbox GN2 Pressure Low

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 137 : 20.50.00
IFA DATE: 05/16/1992
IFA STATUS: CLOSED : 08/20/1992 ELAPSED TIME: 008 : 21.10.00
PRACA STATUS: CLOSED : 1992-06-11 HOUSTON TIME: 15.50.00
PRCBD NUMBER: S044872AL PHASE: ENTRY/LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 47V-0019 P IM/49RF20

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. GERLACH
2:

0 DESCRIPTION:
APU 3 Gearbox GN2 pressure and lube oil out pressure were lower than normal during entry. A lube oil system ullage check will be recommended during KSC processing prior to lube oil off load.

Ullage check at KSC indicates that we have 110CC more oil in the box than prior to mission. Ullage check repeated. The results were within spec. Initial ullage check was not performed properly.

The most probable cause of the loss of gearbox lube oil is dynamic leakage across the turbine seal allowing lube oil and GN2 to escape.

Flight Problem Report approved at a Special Level II Daily PRCB on 08/20/92 (PRCBD# S044872AL).

1 STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 27

IFA NUMBER> STS-49-V-26
TITLE:APU 1 Injector Temperature Measurement Erratic

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 137 : 21.30.00
IFA DATE: 05/15/1992
IFA STATUS: CLOSED : 08/19/1992 ELAPSED TIME: 008 : 21.50.00
PRACA STATUS: CLOSED : 1992-09-02 HOUSTON TIME: 16.30.00
PRCBD NUMBER: S044872AC PHASE: ENTRY/LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 47V-0016 M MMACS-07

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. GERLACH
2:

0 DESCRIPTION:
APU 1 injector temperature measurement (V46T0174A) became erratic just prior to APU shutdown. Temperature dropped from about 1350 deg F to 750 deg F and stayed low after APU shutdown for 1 hour 25 minutes, then returned to normal.

Re-pinned connector J9 to backup sensor. Retest complete/good. (Primary Sensor De-bonded).

The exact cause of the erratic behavior associated with the injector tube temperature measurement was not determined due to its internal location within the APU. The most probable cause of the failure is that the sensor became temporarily debonded from the injector well wall due to the vibration associated with the operation of the APU.

Flight Problem Report approved at a Special Level II Daily PRCB on 08/19/92 (PRCBD# S044872AC).

1 STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-49-V-27
TITLE:EV3 "POWER RESTART" Message Frozen on DCM (GFE)

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 135 : 21.11.00
IFA DATE: 05/14/1992
IFA STATUS: CLOSED : 07/27/1992 ELAPSED TIME: 006 : 21.31.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 16.11.00
PRCBD NUMBER: S044872Q PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
E BMU 300-F002 M EVA-12

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. DILLMAN
2:

0 DESCRIPTION:
Immediately following selection of battery power, EV3 received a continuous "POWER RESTART" message on the EMU display. The DTE light and all tones cleared nominally.

The problem was duplicated on a breadboard test unit at the vendor. The cause of the breadboard test unit problem was isolated to the reset circuit of the microprocessor on the display/logic board of the DCM.

Flight Problem Report approved at a Special Level II Daily PRCB on 07/27/92 (PRCBD# S044872Q).

1 STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 29

IFA NUMBER> STS-49-V-28
TITLE:EV2 Loss of DCM Display (GFE)

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 135 : 02.10.00
IFA DATE: 05/14/1992
IFA STATUS: CLOSED : 07/13/1992 ELAPSED TIME: 006 : 02.30.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 21.10.00
PRCBD NUMBER: S044872J PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M EVA-09 P FIAR B-EMU-300-F002

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. DILLMAN
2:

0 DESCRIPTION:
When EV2 tried to check his EMU status during the third INTELSAT EVA, he was unable to read his display. Also reported during airlock ingress.

This anomaly was reproduced during postflight troubleshooting. The unreadable DCM display was unique to this particular DCM and did not affect successful completion of the EVA. This DCM unit has been returned to the vendor for complete failure analysis and corrective action.

Flight Problem report approved at a Special Level II Daily PRCB on 07/13/92 (PRCBD# S044872J).

1 STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
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IFA NUMBER> STS-49-V-29
TITLE:EMU Battery S/N 1181 Bad (GFE)

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 136 : 18.03.00
IFA DATE: 05/15/1992
IFA STATUS: CLOSED : 08/13/1992 ELAPSED TIME: 007 : 18.23.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 13.03.00
PRCBD NUMBER: S044872AH PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M EVA-15

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. DILLMAN
2:

0 DESCRIPTION:
Middeck and backup battery charges would not charge battery S/N 1181. It is assumed that the battery is failed.

No hardware-related cause of the failure-to-charge has been determined. The most likely cause of the failure is that battery S/N 1181 was outside the range of battery performance that the middeck charger could handle when the in-flight charging was attempted.

A middeck battery charger redesign is being considered to allow charging across the full range of battery performance. The middeck charger is not currently manifested for another flight.

Flight Problem Report approved at a Special Level II Daily PRCB on
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08/13/92 (PRCBD# S044872AH).

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STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT

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IFA NUMBER> STS-49-V-30
TITLE:TACAN #3 (Collins) self-Test Failure Identifications

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 137 : 17.55.00
IFA DATE: 05/16/1992
IFA STATUS: CLOSED : 07/22/1992 ELAPSED TIME: 008 : 18.15.00
PRACA STATUS: CLOSED : 1993-05-10 HOUSTON TIME: 12.55.00
PRCBD NUMBER: S044872M PHASE: ENTRY/LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M GNC-01 P 2M/49RF19

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: B. ELIASON
2:

0 DESCRIPTION:
TACAN #3 (Collins) data indicated intermittent self-test failure beginning about 3 hours prior to touchdown. Although TACAN range and bearing data looks good, data indicates a periodic self-test failure.
TACAN removed and sent to vendor for rework. TACANS back at KSC.
The self-test failure and the delayed range acquisition resulted from transistor Q5 not making good ground contact. The cause of this condition was a loose transistor mount screw.

Flight Problem Report approved at a Special Level II Daily PRCB on 07/22/92 (PRCBD# S044872M).

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STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT

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IFA NUMBER> STS-49-V-33
TITLE:APU 3 Fuel Test Line Temp

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE: 05/07/1992
IFA STATUS: CLOSED : 08/13/1992 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-11-11 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044872AJ PHASE: PRE-LAUNCH
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR49V0363 K PR APU-5-0047

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: C. ABNER
2:

0 DESCRIPTION:
After tanking, APU 3 Fuel Test Line Temp cycled below the LCC lower limit of 48 deg F. Thermostat and heater were verified to be operational. An LCC waiver was processed to allow the occasional lower limit violation.
The anomalous temperature reading was most likely caused by a combination of thermostat/sensor/heater location uncertainties, the anomalous resistance reading on the temp 2 sensor, and unknown insulation characteristics.

Both temperature sensors (1&2) were removed, replaced, and verified to be functioning properly. The temp 1 sensor was relocated closer to the controlling thermostat. The heater was rewrapped per print and reinsulated. The test line temperature LCC (SSID APU-14) is in

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engineering review to determine if the minimum redline may be lowered.

Flight Problem Report approved at a Special Level II Daily PRCB on 08/13/92 (PRCBD# S044872AJ).

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STS-049 (OV-105,FLT #1) OFFICIAL INFLIGHT ANOMALY REPORT

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IFA NUMBER> STS-49-V-36

TITLE:Window-1 Chipped On-Orbit

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 136 : 19.45.00
IFA STATUS: CLOSED : 08/03/1992 IFA DATE: 05/15/1992
PRACA STATUS: CLOSED : 1992-07-06 ELAPSED TIME: 007 : 20.05.00
PRCBD NUMBER: S044872AD HOUSTON TIME: 14.45.00
PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR TES-5-2-0011 M MMACS-09
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. GERLACH
2:

0 DESCRIPTION:

Crew photographed a chip in the upper right hand corner of the thermal window pane. Crew reported that impact occurred on or around flight day 8. Window assy has been removed from the vehicle and sent to the NSLD for thermal pane R&R. The window assy is back and ready for reinstallation.

The window damage is typical of that noted on previous flights.

Remove and replace the window.

Flight Problem Report approved at a Special Level II Daily PRCB on 08/03/92 (PRCBD# S044872AD).

-JFDPO12: NORMAL TERMINATION OF PROCESSING

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1STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
PAGE 1IFA NUMBER> STS-50-E-01
TITLE:HPFTP(2011) HPFTP Discharge Pressure Spike

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 177 : 16.16.28
 IFA DATE: 06/25/1992
 IFA STATUS: CLOSED : 08/21/1992 ELAPSED TIME: 000 : 00.04.06
 PRACA STATUS: CLOSED : 1992-08-19 HOUSTON TIME: 11.16.28
 PRCBD NUMBER: S044876H PHASE: ASCENT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
 A A031854 A A14804

0 CLOSURE INITIATED BY:
 RESPONSIBLE MANAGERS 1: L. GRANT EE23
 2:

0 DESCRIPTION:

During the SSME post-flight data review of ME-3 (Engine 2011), it was determined that the HPFTP discharge pressure spiked to -10600 psia at engine start +219.46 seconds and immediately recovered.

The spike was not evident during real-time operations. The real-time video displays do not update as quickly (1 sample/second) as the controller monitors the data (50 samples/second). Although the HPFTP discharge pressure is considered a maintenance parameter only (criticality 3 failure), the same sensor design is used for engine control and redline monitoring. A worst case manifestation of this failure could result in a pad abort due to loss of redundancy, Major Component Failure (MCF). Also, a premature shutdown during ascent could result from a redline violation if both channels registered three consecutive "strikes" at the same point in time, forcing two Failure Identifications (FIDs) to be registered. Only under these restrictive circumstances would the controller shut down an engine. It should be noted that both these scenarios are highly unlikely based on historical data (90% confidence level). The subject data signature had only two strikes on one channel.

Subsequent controller simulation tests duplicated the failed output values. The spike appeared to be transducer related, so the sensor was returned to the vendor for additional failure analysis. The failure was also duplicated at the vendor. Teardown analysis of the sensor revealed a solder ball and a metallic machining chip in the reference cavity. The particle is believed to have been generated during a cleaning operation which uses a drill bit to clean the holes of the hollow pins in order to permit routing of the lead wires. Although the contaminants were located within the cavity upon inspection, it was deduced that one of the contaminants (most likely the machining chip) lodged between the contacts to cause the observed condition.

This sensor has had 12 starts and 4,761 seconds of hotfire time, including STS-50.

The data spike was due to a short circuit in the sensor caused by a small tin chip left over from a manufacturing operation. This is a

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STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
PAGE 2IFA NUMBER> STS-50-E-01
TITLE:HPFTP(2011) HPFTP Discharge Pressure Spike0 DESCRIPTION: (Continued from previous page).
Page 1

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isolated occurrence on a older sensor configuration. An ECP was incorporated in 9/25/84, anticipating the potential for a contaminant to short the sensor. The ECP added a coating to the header surfaces to prevent this type of failure. Sensors that have this ECP incorporated have a -100 series part number designation. The -100 and -200 (older configuration) series sensors are allowable alternates per the drawing since they have an equivalent demonstrated reliability.

The problem report has been deferred in the Level III MSFC PRACA tracking system.

Flight Problem Report approved at a Special Level II Daily PRCB on 08/21/92 (PRCBD# S044876H).

1 STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-I-01
TITLE:ORBITER TPS DAMAGE

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 07/28/1992 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044876B PHASE: ASCENT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
* *****NONE FOUND***** * *****NONE FOUND*****
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: C. BRAMON
2:

0 DESCRIPTION:
STS-50 debris damage to orbiter was greater than average with total hits equaling 184 (average is 120). There were 45 hits greater than or equal to one inch (average is 22). An unusually large hit (9" x 4.5" x 0.5") on lower surface approximately 3' outboard of the LH2 ET/ORB umbilical. Preliminary assessment of Aero Flow Field indicates ET TPS debris anomalies could have contributed to orbiter lower surface tile damage. Detailed debris transport analysis in work.

Conclusions are: 1)Impact due to low density foam TPS resulted in shallow tile damage, 2)ET TPS failure was not a result of excessive aerodynamic loads, and 3)Per ET IFA closure (STS-50-I-01) TPS failure was due to inadequate venting of random voids in two-tone spray region.

1 STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-M-01
TITLE:Missing GEI Cork on Left RSRM Center Forward Segment

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 07/29/1992 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1993-01-21 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044876A PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A A14815 A PV6-222762
D DR4-5/230
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. THORNTON EE52
2:

0 DESCRIPTION:

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During the postflight inspection of the left RSRM center forward segment TPS, three areas of cork were recorded as missing on the aft Ground Environment Instrumentation (GEI) cork run (station 1099) at the 180, 186, and 192 degree locations.

The cause of the problem was identified during the failure investigation. An indiscriminate process review revealed there was a vacuum bag leak on the cork when it was first applied. By the time the vacuum bag leak was corrected, the potlife of the adhesive had expired. This resulted in numerous bondline voids which required extensive rework. This rework process created the potential for additional unbonds and voids due to cork buckling during the repair. Unbonds left after repair went undetected because no NDE was performed in the subject areas. Also, coupled with the loss of vacuum, is the difficulty involved with installing the cork at the 180 degree to 200 degree and the 340 degree to 360 degree locations due to the work stand configuration.

CORRECTIVE ACTIONS

1. Added a manufacturing requirement to tap test cork repairs (effective RSRM-26, STS-47).
2. Add a manufacturing requirement to record the time vacuum is pulled, ensuring potlife requirement is not exceeded (effective RSRM-31A C/A).
3. The vacuum bag integrity will be verified by an operator pull test (effective RSRM-31A aft).
4. An isolation test will be performed, placing a vacuum gauge inside the vacuum bag. Once the vacuum bag has been applied, the gauge will be read to confirm no leakage exists (effective RSRM-31B).
5. Add a manufacturing requirement to record location of all cork repairs (effective RSRM-31A C/A).
6. Improve access to 180 degree to 200 degree and 340 degree to 360 degree location in M-397 (effective RSRM-28, STS-53).

In addition to the corrective action listed above, a Level III Acceptance review action (53-MACC-01) affecting STS-53 has been

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STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
PAGE 5

IFA NUMBER> STS-50-M-01

TITLE:Missing GEI Cork on Left RSRM Center Forward Segment

0 DESCRIPTION: (Continued from previous page).

assigned by MSFC. This action requires TC to provide rationale to the RSRM Project regarding the noncritical process classification of all cork bonding operations that are in areas designated as debris zones. This response, due 08-14-92, and the resulting RSRM Project review will be used in addressing the most recent concerns expressed by Level II on the Integrated Hazard, INTG-037C "Degraded Functions of Orbiter TPS by SRB TPS".

An extensive review of all existing flight hardware confirmed that no other loss of vacuum occurred during the cork bonding process. The problem report has been deferred in the Level III MSFC PRACA tracking system. The IFA was presented to Level II on 07-24-92 for closure but was required to have an additional reference addressing criticality clarification.

Flight Problem Report approved at a Special Level II Daily PRCB on 07/28/92 (PRCBD# S044876A).

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STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
Page 3

IFA NUMBER> STS-50-P-01
 TITLE:GBA FPA #12, Group 7 Leak

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 181 : 00.26.00
 IFA DATE: 06/29/1992
 IFA STATUS: CLOSED : 07/29/1992 ELAPSED TIME: 003 : 08.13.38
 PRACA STATUS: UNKNOWN HOUSTON TIME: 19.26.00
 PRCBD NUMBER: S044876AF PHASE: ON-ORBIT
 0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
 M PYLD-14
 0 CLOSURE INITIATED BY:
 RESPONSIBLE MANAGERS 1: E. TERRELL
 2:

0 DESCRIPTION:
 A leak past the first level of containment (but not outside the FPA) was noticed for FPA #12, Group 7. This FPA contains level 2 material. Leakage of level 2 material into the crew environment would be a catastrophic hazard.

The FPA was placed in a bag and stowed.

Flight Problem Report approved at SSP PRCB on 07/06/93 (PRCBD# S044876AF).

1 STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-P-02
 TITLE:EDOMP AERIS Problem

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 185 : 16.45.00
 IFA DATE: 07/03/1992
 IFA STATUS: CLOSED : 06/20/1994 ELAPSED TIME: 008 : 00.32.38
 PRACA STATUS: UNKNOWN HOUSTON TIME: 11.45.00
 PRCBD NUMBER: S044876AG PHASE: ON-ORBIT
 0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
 M PYLD-26
 0 CLOSURE INITIATED BY:
 RESPONSIBLE MANAGERS 1: L. SHALINSKY
 2:

0 DESCRIPTION:
 The crew reported that the AERIS screen was flickering, the front panel was warm, and an odor was emanating that smelled like wire insulation. The impact is loss of onboard electrocardiographic data for LBNP ramps and soaks, and loss of ECG signals to the onboard imaging system. ECG still available to ground controllers. Crewmember powered down the AERIS, repowered it, and the smell continued. The AERIS was then powered down, and will not be used again.

- CLOSURE RATIONALE:
 Based on the results of both circuit and component level failure analysis, the cause of the AERIS anomaly was clearly established to be the failure of the capacitor (C2) on the AERIS power supply board. The original power supply board was a commercial off-the-shelf PC board fabricated by ESOTE Biomedica. Like the Biosound echocardiograph device from which the AERIS is fabricated, the power supply board used primarily commercial grade components. In order to increase the reliability and safety of the device, EDOMP has made modifications to the AERIS. Currently the AERIS has completed all recertification tests as agreed with SR&QA.

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IFA NUMBER> STS-50-S-01
TITLE:EPDB 2 AC Sensor Anomaly

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 186 : 14.00.00
IFA DATE: 07/04/1992
IFA STATUS: CLOSED : 09/11/1995 ELAPSED TIME: 008 : 21.47.38
PRACA STATUS: UNKNOWN HOUSTON TIME: 09.00.00
PRCBD NUMBER: S044876AH PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M EGIL-06
0 CLOSURE INITIATED BY: JSC-MT2/F. MORENO |
RESPONSIBLE MANAGERS 1: J. AZBELL
2:

0 DESCRIPTION:
Spacelab EPDB 2 AC Phase A Sensor has failed to an erroneous value (presently at 0.16 amps). Changes in load on this bus (EPDB 2 AC Phase A) are being reflected back on the experiment inverter phase A sensor. This discrepancy was noticed as early as 003/14:00.
Load changes on EPDB 2 AC Phase A can be monitored on the experiment inverter Phase A telemetry. All other buses individual phase telemetry are operating properly. Photo floodlight (AC utility outlet) is the only equipment operating on this bus.

- CLOSURE RATIONALE:
Problem may have been corrected by reseating of HMU232 connectors and there is no historical problems with EPDB Sensors. Extensive testing and analysis concluded that all integral hardware components and software is nominal. Additionally, no hardware damage will result if the anomaly reoccurs. Commanding capability is not affected and an EPDB2 AC output short can be detected at the Inverter AC Sensor. Malfunction procedures in place to troubleshoot either Sensor. EPDB2 load can still be calculated by subtracting other AC loads from Inverter AC Load.

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IFA NUMBER> STS-50-S-02
TITLE:Loss of Orbiter Master Alarm Audio on Spacelab Speaker

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 185 : 11.56.00
IFA DATE: 07/03/1992
IFA STATUS: CLOSED : 09/11/1995 ELAPSED TIME: 007 : 19.43.38
PRACA STATUS: UNKNOWN HOUSTON TIME: 06.56.00
PRCBD NUMBER: S044876AJ PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 52V-0022 M EGIL-04
0 CLOSURE INITIATED BY: JSC-MT2/F. MORENO |
RESPONSIBLE MANAGERS 1: N.ROY
2:

0 DESCRIPTION:
The orbiter master alarms are not being annunciated over the spacelab dedicated speaker. Result is a loss of redundancy. Master alarm audio is available in the orbiter.
Troubleshooting performed, determined failure to be panel R13 speaker/amplifier. Test during turnaround.

- CLOSURE RATIONALE:

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Troubleshooting indicated that the failure resulted from the Orbiter R13 Panel Caution & Warning Tone Volume adjustment. The system operated per design but the NSTS 21000-IDD-SL was in conflict with the design. Appropriate Panel redesign measures were taken to correct the anomaly. A transformer and resistor were installed in the CWFSS Panel to eliminate the anomaly and comply with NSTS 21000-IDD-SL.

1 STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-S-03
TITLE:Subsystem Inverter Overvolt Shutdown Anomaly

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 190 : 13.14.00
IFA DATE: 07/08/1992
IFA STATUS: CLOSED : 09/11/1995 ELAPSED TIME: 012 : 21.01.38
PRACA STATUS: UNKNOWN HOUSTON TIME: 08.14.00
PRCBD NUMBER: S044876AK PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M EGIL-09
0 CLOSURE INITIATED BY: JSC-MT2/F. MORENO |
RESPONSIBLE MANAGERS 1: J. AZBELL
2:

0 DESCRIPTION:
An overvolt shutdown of the subsystem inverter occurred at 190:13:14 during spacelab reactivation. The shutdown occurred when the SL H2O loop pump was initially taken to on.

Power to the inverter was cycled (and the H2O loop pump switch was taken to off). All subsequent activities (H2O pump start, av fan start) were nominal.

- CLOSURE RATIONALE:
On USML-1 Inverter (Serial #5) experienced an Overvolt shutdown concurrently with the WPP "ON" command. The Inverter and WPP power were recycled with no further anomalies. The Inverter (Serial #5) was tested on EPDS Unit Tester without anomalies. The Inverter was also tested in a Flight Configuration Simulator with the engineering model WPP. The inflight anomaly was not produced during 250 WPP cycles and no potential shutdown effects were observed on the Inverter. Extensive testing and analysis concluded that all integral hardware components performed nominally. Additionally, no Inverter or WPP hardware damage will result if the anomaly reoccurs. Normal operations call for the WPP to be Turned off by the "MASTER ECS OFF" command that minimizes the possibility of the anomaly reoccurring.

1 STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-T-01
TITLE:ET TPS Missing on Left Bipod Ramp and Right Jackpad

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 08/06/1992 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-07-29 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044876C PHASE: ASCENT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A A14826 A T-063
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: C. BRAMON EE31
2:

0 DESCRIPTION:

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During postflight review of the ET-50 umbilical film and photographs, two areas of damage were observed at the forward bipod.

Approximately 60% (24" by 8") of the -Y bipod ramp (foam buildup), which is installed during manufacture of the ET at the Michoud Assembly Facility (MAF), was missing. Also missing was the +Y jackpad closeout (located just below the right bipod strut), which was completed at KSC following the Orbiter mate process.

This anomaly will be discussed in two parts based on the forementioned separate failures, with the missing foam adjacent to the -Y bipod fitting addressed first.

ET-50 was manufactured with the two-tone Spray On Foam Insulation (SOFI). Random divots have been experienced in the past for this configuration. Most notably, were the IFA occurrences documented on STS-32R (IFA No. STS-32-T-1) and STS-35 (STS-35-T-1). The divots were attributed to debonds/voids resulting from the heating of the unstable isochem as the CPR-488 was sprayed on the intertank region. Corrective actions resulted in 1/8" diameter holes on 3" center being drilled through the CPR and isochem, thus venting any potential voids. Also, numerous process and spray installation enhancements were made assuring proper application. These actions proved to be primarily effective against the debonding condition. However, the missing foam from the ET-50 left bipod was considered initiated in an area where no holes were drilled (by design). This area is 0"-6" forward of the bipod ramp and was not drilled to avoid potential damage to the ramp leading edge. This scheme results in approximately 8" of an unvented isochem layer. Therefore, it has been concluded that the probable cause of the bipod ramp missing foam is due to void(s) at the discussed unvented isochem layer. The void(s) experienced pressure build-up during ascent, propelling a divot and damaging the bipod ramp. Aerodynamic forces may then exasperate the noted damage.

Only three ETs with the two-tone intertank TPS configuration remain within the NASA inventory. Corrective action has been approved by

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STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT

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IFA NUMBER> STS-50-T-01

TITLE:ET TPS Missing on Left Bipod Ramp and Right Jackpad

0 DESCRIPTION: (Continued from previous page).

Level II (CR #S032688A) for MMMSS to enhance the configuration of ETs 48, 45, and 49 (STS-46, STS-47, and STS-53 respectively) by adding vent holes closer to the leading edge of the bipod ramps. For ET-51 and subs, the two-gun spray method has been implemented and eliminates the isochem layer between CPR-488 and BX-250.

The second discussion time regards the missing foam from just below the right bipod strut (+Y) at the jack pad closeout. The jack pad closeouts are 4.5" X 4.5" TPS areas, covering the tool attachments that are used during the ET/Orbiter mate. The Polymer Development Laboratories (PDL) closeout process included surface preparation/cleaning, tie-coat adhesive/imp. and fill. Loss of the jack pad closeout has occurred once previously during flight (STS-32R/ET-32). Consistent with the STS-32R occurrence, the evaluation of the STS-50 divot attributed the failure to substrate PDL void(s)/cryopumping. Because of the closeout orientation with respect to the vehicle and minimal debris potential, loss of this foam during ascent is not considered a flight or safety issue. Therefore, it was recommended to fly ET-48 and subsequent tanks as is. A paper review

STS0050.txt

of ET-48 revealed no KSC processing anomalies. The only concern for this condition is the possibility of ice formation during prelaunch, as established during the STS-40 system review. However, the prelaunch visibility provided by the red team walkdown is considered an adequate safeguard against this type condition going unnoticed.

The problem report was closed in the Level III MSFC PRACA tracking system for STS-46 and subs on 07/29/92.

Flight Problem Report approved at a Special Level II Daily PRCB on 08/06/92 (PRCBD# S044876C).

1 STS 050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-V-01
TITLE:RCS Jet LIU Heater Failed On

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 177 : 21.32.00
IFA DATE: 06/25/1992
IFA STATUS: CLOSED : 09/03/1992 ELAPSED TIME: 000 : 05.19.38
PRACA STATUS: CLOSED : 1992-07-22 HOUSTON TIME: 16.32.00
PRCBD NUMBER: S044876Q PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR LP05-0056 M PROP-01
P IM/50RF01

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: B. LEVERICH X30960
2:

0 DESCRIPTION:
Heater failed to turn off during first cycle. Manual control of heater in effect until temperature leveled out due to heater degradation.

The initial "fail on" condition was most likely caused by a component failure in the heater controller. The subsequent degradation in heater performance was most likely caused by a failed transistor in the controller switching circuit. Thruster LIU and associated heater controller have been removed and replaced. Should the failure recur, thruster temperatures may be maintained within operational limits by manual control of heater circuits via cockpit switches.

Flight Problem Report approved at a Special Level II Daily PRCB on 09/03/92 (PRCBD# S044876Q).

1 STS 050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-V-02
TITLE:RCS Shutdown

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 178 : 20.26.00
IFA DATE: 06/26/1992
IFA STATUS: CLOSED : 08/03/1992 ELAPSED TIME: 001 : 04.13.38
PRACA STATUS: CLOSED : 1992-09-17 HOUSTON TIME: 15.26.00
PRCBD NUMBER: S044876D PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR ECI-2-13-0824 M EECOM-02
P IM/50RF02

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: P. OLIVER X33323
2:

0 DESCRIPTION:

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RCRS failed off several times while operating on both controller 1 and controller 2. Repaired via IFM.

The RCRS shutdowns were caused by the actuator output bearing shorting-to-ground pins on both of the valve position indicator switches. The short eliminated the signals for the counter-clockwise indicator on controller 1 and the clockwise indicator on controller 2.

All RCRS actuators will be modified to include a non-metallic spacer installed between the actuator output bearing and the valve positions indicator switches. Shrink-wrap insulation will be installed to cover the pins on the valve position indicator switches. In addition, the CW VPI will be permanently bypassed in the actuator.

Flight Problem Report approved at a Special Level II Daily PRCB on 08/03/92 (PRCBD# S044876D).

1 STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-V-05
TITLE:02 TK2 Htr A2 Erratic

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 178 : 05.42.00
IFA DATE: 06/25/1992
IFA STATUS: CLOSED : 09/09/1992 ELAPSED TIME: 000 : 13.29.38
PRACA STATUS: CLOSED : 1993-11-15 HOUSTON TIME: 00.42.00
PRCBD NUMBER: S044876Z PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 52V-0005 M EGIL-02
P IM/50RF18

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. MCMILLAN X35913
2:

0 DESCRIPTION:
02 TK2 heater A2 indicator (V45X1211E) not on when heaters commanded on. Inconclusive if heater is working or not. Suspect problem in cryo control box.

The A2 heater discrete functioned normally during prelaunch operations. No anomalies were observed during postflight troubleshooting which included continuity checks, wire-wiggle tests, and connector inspections. The erratic operation was most probably caused by a loose connection in the heater or "ON" discrete electrical circuitry. The actual status of the A2 heater element during the mission was unable to be determined.

Flight Problem Report approved at a Special Level II Daily PRCB on 09/09/92 (PRCBD# S044876Z).

1 STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-V-06
TITLE:Right OMS TVC Yaw Movement During Ascent

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 177 : 18.20.00
IFA DATE: 06/25/1992
IFA STATUS: CLOSED : 09/03/1992 ELAPSED TIME: 000 : 00.07.38
PRACA STATUS: CLOSED : 1993-03-30 HOUSTON TIME: 11.20.00
PRCBD NUMBER: S044876N PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR-RP05-2-02-0047 M GNC-01

P IM/50RF03

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: W. LEVERICH X30960
2:

0 DESCRIPTION:
Right yaw actuator drifted from -6.060 degree to -5.815 degree (-.245 degree) during ascent. File IX limit is plus/minus .2 degree. First flight of this actuator. No flight impact for nominal burns.

The slippage observed on this device was not due to degradation or failure of any component, nor to a manufacturing anomaly. The slippage is most likely within the limits which may be expected from allowable manufacturing tolerances.

The right OMS yaw actuator has been removed and replaced with S/N 109. An OMRSD change to increase the allowable slippage is being considered.

Flight Problem Report approved at a Special Level II Daily PRCBD on 09/02/92 (PRCBD# S044876N).

1 STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-V-07
TITLE:Fuel Cell 3 O2 Purge Valve Leakage

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 181 : 11.43.00
IFA DATE: 06/29/1992
IFA STATUS: CLOSED : 08/20/1992 ELAPSED TIME: 003 : 19.30.38
PRACA STATUS: CLOSED : 1993-03-30 HOUSTON TIME: 06.43.00
PRCBD NUMBER: S044876E PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR FCP-2-13-0248 M EGIL-03
P IM/50RF04

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. MCMILLAN X35913
2:

0 DESCRIPTION:
When FC3 purge was terminated O2 flow only dropped from 7.2 to 6.5 lbs/hr. Purge valve was cycled manually and apparently sealed. Suspect contamination or corrosion on valve seat.

The fuel cell 3 purge valve leakage was most probably caused by the presence of fuel cell corrosion products under the valve seat. This corrosion cleared during the manual purge.

Flight Problem Report approved at a Special Level II Daily PRCB on 08/20/92 (PRCBD# S044876E).

1 STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-V-08
TITLE:O2 Tank 2 Leak

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 178 : 00.02.00
IFA DATE: 06/25/1992
IFA STATUS: CLOSED : 08/20/1992 ELAPSED TIME: 000 : 07.49.55
PRACA STATUS: CLOSED : 1993-08-06 HOUSTON TIME: 19.02.00
PRCBD NUMBER: S044876F PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 52V-0006 M EGIL-01

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0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. MCMILLAN X35913
2:

0 DESCRIPTION:
IM/50RF17 (cap), IM/50RF08 (poppet), PR FCP-2-13-0249

The O2 tank 2 pressure has been dropping at a rate of approximately 0.9 lb/hr throughout the mission. During KSC trouble shooting a leak was found at the quick disconnect poppet and at the flight cap.

The small on-orbit leak from O2 tank 2 was most probably caused by a damaged seal in the fill QD flight cap that was caused by improper torqueing of the flight cap after installation. The flight cap leakage prevented the within-specification QD poppet leakage from being sealed by the flight cap.

Leak check and cap installation procedures are being revised. The flight caps will be torqued as each one is installed instead of installing all flight caps and then torqueing them. The technicians will also be retrained on the proper techniques for performing bubble leak checks.

Flight Problem Report approved at a special Level II Daily PRCB on 08/20/92 (PRCBD# S044876F).

1 STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-V-09
TITLE:APU 3 Test Line Temperatures Out of Tolerance

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 178 : 13.57.00
IFA DATE: 06/26/1992
IFA STATUS: CLOSED : 09/08/1992 ELAPSED TIME: 000 : 21.44.38
PRACA STATUS: CLOSED : 1993-03-09 HOUSTON TIME: 08.57.00
PRCBD NUMBER: S044876U PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 52V-0003 M MMACS-01
P IM/50RF05

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: K. BROWN X33891
2:

0 DESCRIPTION:
T1 and T2 temps have both been going below C&W limit of 48 degree F. Limit TMBU'ed to 45 degree F. T2 also goes above upper C&W limit of 100 degree F, TMBU'ed to 120 degree F.

The thermostat B has been moved closer to the temperature sensor 2 (still leaving it within specification), the temperature sensors have been respliced, the heater rewrapped, and the insulation replaced. The system has been returned to drawing configuration and the retest is complete.

Flight Problem Report approved at a special Level II Daily PRCB on 09/08/92 (PRCBD# S044876U).

1 STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-V-10
TITLE:Circ Pump 2 Pressure Sensor Dropout

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 179 : 21.59.00
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IFA STATUS: CLOSED : 09/14/1992 IFA DATE: 06/27/1992
PRACA STATUS: CLOSED : 1993-03-04 ELAPSED TIME: 002 : 05.46.38
PRCBD NUMBER: S044876AB HOUSTON TIME: 16.59.00
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 52V-0015 M MMACS-02
P IM/50RF09

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: K. BROWN X33891
2:

0 DESCRIPTION:

At approximately 179:21:59 G.m.t. Circ pump 2 pressure transducer went to 0 psia indicated. The main pump filter module transducer continued to read approximately 200 psia indicating normal circ pump performance. The vehicle went LOS during this operation. While LOS the crew got an FDA alarm and turned off the circ pump. At 179:22:09:55 the circ pump 2 pressure transducer returned to a normal reading of 50 psia. Repeated during other operations of the circ pump. Suspect either transducer or instrumentation.

KSC wiggled cable T210A26 which is mated to the suspect pressure transducer with no change in output. A wiggle test was performed while the circulation pump was running and no erratic readings were observed. Connector to the pressure transducer was disconnected and inspected with no anomalies found.

The pressure transducer was removed and replaced with a retest to follow. The suspect sensor will be sent to Rockwell Int. for calibration testing. If the transducer passes calibration, then the unit will be returned to spares.

Flight Problem Report approved at a Special Level II Daily PRCB on 09/14/92 (PRCBD# S044876AB).

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IFA NUMBER> STS-50-V-12
TITLE:02 Tk 7 Check Valve Stuck Open

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 186 : 02.00.00
IFA DATE: 07/03/1992
IFA STATUS: CLOSED : 08/20/1992 ELAPSED TIME: 008 : 09.47.38
PRACA STATUS: CLOSED : 1993-11-15 HOUSTON TIME: 21.00.00
PRCBD NUMBER: S044876G PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR-EDO-1-2-0003 M EGIL-05
P IM/50RF06

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. MCMILLAN X35913
2:

0 DESCRIPTION:

O2 tank 7 heater control pressure began reflecting O2 manifold pressures. The heaters on O2 tank 7 were off, and O2 was being supplied from tank 8 and 9. This situation is indicative of a stuck check valve in O2 tank 7. Unstuck on FD 14.

No abnormalities were observed during postlanding deservicing or during prelaunch testing of the Extended Duration Orbiter pallet. The check valve will be removed and undergo failure analysis.

Flight Problem Report approved at a Special Level II Daily PRCB on 08/20/92 (PRCBD# S044876G).

1 STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-V-14
TITLE:OMS FU HI PT Bleedline Temp High On A Heaters Bulkhead Fuel V43T6234A

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 177 : 23.45.00
IFA DATE: 06/25/1992
IFA STATUS: CLOSED : 08/25/1992 ELAPSED TIME: 000 : 07.32.38
PRACA STATUS: CLOSED : 1993-02-01 HOUSTON TIME: 18.45.00
PRCBD NUMBER: S044876J PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 52V-0009 M PROP-02
P IM/50RF07
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. MCMILLAN X35913
2:

0 DESCRIPTION:
The bulkhead fuel high point bleedline temperature (V43T6234A) operated outside of its setpoint range while on the "A" heater and is possibly being controlled by the overtemp thermostat. The aft fuel high point bleedline temp (V43T6238A) was cycling high on "A" heater. The A heater upper limit is higher than normal.

The high operating range of the OMS bulkhead fuel hi-point bleedline temperature on the A heater system was most probably due to a failed-on condition in the control thermostat which caused the overtemp thermostat to assume control.

Flight Problem Report approved at a Special Level II Daily PRCB on 08/25/92 (PRCBD# S044876J).

1 STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-V-15
TITLE:Hydraulic System 2 Accumulator N2 Leak.

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 188 : 15.44.00
IFA DATE: 07/06/1992
IFA STATUS: CLOSED : 08/25/1992 ELAPSED TIME: 010 : 23.31.38
PRACA STATUS: CLOSED : 1995-03-04 HOUSTON TIME: 10.44.00
PRCBD NUMBER: S044876L PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 52V-0012 M MMACS-05
P IM/50RF10
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: K. BROWN X33891
2:

0 DESCRIPTION:
PR-HYD-2-13-0543

During the fifth recharge of the bootstrap accumulator by circ pump 2 at 188:15:44, it was noted that bootstrap accumulator pressure (V58P0267A) peaked at only 2356 psia, but reservoir pressure (V58P0231A) was 75 psia. The two signatures are indicative of an internal accumulator GN2 leak.

During turnaround activities, KSC technicians opened the dump valve which relieved the hydraulic pressure and allowed the remaining GN2 to expand into the preflight GN2 volume. The GN2 pressure in the accumulator was 640 psi, which is much lower than the precharge of 1700 +/- 50 psig, confirming an accumulator GN2 leak. The accumulator

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has been removed and replaced with a spare. A bellows-type accumulator design is being investigated as part of the Long Duration Orbiter program.

Flight Problem Report approved at a Special Level II Daily PRCB on 08/25/92 (PRCBD# S044876L).

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IFA NUMBER> STS-50-V-16
TITLE:Waste Water Dump Degraded

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 189 : 18.00.00
IFA DATE: 07/07/1992
IFA STATUS: CLOSED : 09/10/1992 ELAPSED TIME: 012 : 01.47.38
PRACA STATUS: UNKNOWN HOUSTON TIME: 13.00.00
PRCBD NUMBER: S044876AA PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K ECL-PR-2-i3-0825 M EECOM-04
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: P. OLIVER X33323
2:

0 DESCRIPTION:
AT 12/01:21 MET a waste water dump was initiated. The dump rate started at 2.1%/min and decreased to 0.7%/min. The crew was told to terminate the dump when EECOM observed the decreased dump rate. The dump was terminated at 12/01:29 MET with a final dump rate of 0.42%/min. A blockage of the waste water dump line is highly likely. Waste water liquid pressure readings after dump valve closure suggest that the blockage may be located in the dump line filter which is upstream of the contingency H2O crosstie. Therefore, an IFM that purges the line with air or water would not clear the blockage.

The urine solids filter became blocked with calcium-phosphate granules that formed in the waste water tank. A requirements change notice (RCN) is being processed that will have the urine solids filter replaced after every mission rather than the current three-flight interval. Acceptable methods of dissolving the calcium-phosphate granules in the waste tank without damaging the soft goods in the waste dump system is also under investigation.

Flight Problem Report approved at a Special Level II Daily PRCB on 09/10/92 (PRCBD# S044876AA).

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STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-V-18
TITLE:RCS Jet F2F Fail Off

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 190 : 07.50.00
IFA DATE: 07/08/1992
IFA STATUS: CLOSED : 08/31/1992 ELAPSED TIME: 012 : 15.37.38
PRACA STATUS: CLOSED : 1993-06-02 HOUSTON TIME: 02.50.00
PRCBD NUMBER: S044876M PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K RR ERC2-13-0326 M PROP-03
P IM/SURF11
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. MCMILLAN X35913
2:

0 DESCRIPTION:

STS0050.txt

During the nominal end-of-mission RCS Jet hotfire procedure, RM declared F2F fail-off, and it was auto-deselected. Ox and Fu injector temperatures appeared nominal. However, the analog chamber pressure never exceeded 6 psia, indicating either low performance or a sensor problem.

The most probable cause of the low chamber pressure reading is a failure of the oxidizer valve main stage to open due to iron nitrate-induced flow impedance in the pilot stage. KSC removed and replaced the thruster and transferred it to White Sands Test Facility for the thruster flush program. The primary thruster throat plugs are installed during turnaround to reduce the likelihood of moisture intrusion into the propellant system.

Flight Problem Report approved at a Special Level II Daily PRCB on 08/31/92 (PRCBD# S044876M).

1 STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-V-19
TITLE:Right OMS Fuel Total Quantity Bias High

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 190 : 15.09.00
IFA STATUS: CLOSED : 08/25/1992 IFA DATE: 07/08/1992
PRACA STATUS: CLOSED : 1993-08-09 ELAPSED TIME: 012 : 22.56.38
PRCBD NUMBER: S044876K HOUSTON TIME: 10.09.00
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 52V-0028 M PROP-05
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. MCMILLAN X35913
2:

0 DESCRIPTION:
During the orbit adjust burn, the ROMS fuel total quantity gage (V43Q5331C) value increase approximately 6 percent. This gauge counted down properly for the first 14 seconds of the burn and then jumped to a reading of 50.4 percent. IFA/PR to be upgraded for deferral to OMDP/opportunity for adjustment/repair.

The most probable cause of the erroneous fuel gage output was propellant leakage into the forward probe assembly. Replacement of the probe will be deferred until a non-interference replacement opportunity is available. During flight, the fuel quantity can be accurately determined by use of burn-time computations.

Flight Problem Report approved at a Special Level II Daily PRCB on 08/25/92 (PRCBD# S044876K).

1 STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-V-20
TITLE:O2 Tank 3 Quantity Transducer Erratic

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 189 : 11.35.00
IFA STATUS: CLOSED : 09/08/1992 IFA DATE: 07/07/1992
PRACA STATUS: CLOSED : 1994-07-19 ELAPSED TIME: 012 : 01.22.38
PRCBD NUMBER: S044876W HOUSTON TIME: 12.37.00
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 52V-0023 M EGIL-08
P IM/50RF19

STS0050.txt

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. MCMILLAN X35913
2:

0 DESCRIPTION:
At 189:17:35 G.m.t., cryo O2 tank 3 qty measurement V45Q1305A started shifting erratically from 80% to off scale high. The reading stabilized back to the normal quantity.

An open circuit in the cryogenic quantity measurement circuit results in an off-scale high reading. The erroneous reading was most probably the result of transient open-circuit conditions. Postflight continuity checks and wire wiggle checks did not reveal any anomalies.

Flight Problem Report approved at a Special Level II Daily PRCB on 09/08/92 (PRCBD# 5044870w).

1 STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-V-21
TITLE:Starboard Forward PLB Light Fail off

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 191 : 07.52.00
IFA DATE: 07/09/1992
IFA STATUS: CLOSED : 09/03/1992 ELAPSED TIME: 013 : 15.39.38
PRACA STATUS: CLOSED : 1993-04-06 HOUSTON TIME: 02.52.00
PRCBD NUMBER: S044876T PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 52-0036 M EGIL-11
P IM/50RF12

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: B. LEVERICH X30960
2:

0 DESCRIPTION:
After PLB door closing, the crew reported that the forward starboard floodlight flickered, but did not come on.

The failure was caused by arcing around the support ring due to loss of backfill, which was the result of incorrect assembly procedures at the vendor. Corrective action has previously been initiated to minimize the possibility of arcing. A design change is being implemented to increase the spacing between the support ring and the tripod. Vendor procedures will be reviewed to assure adherence to correct shimming and torquing specification.

Flight Problem Report approved at a Special Level II Daily PRCB on 09/03/92 (PRCBD# S044876T).

1 STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-V-22
TITLE:APU 1 Gearbox N2 Pressure Low During Entry

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 191 : 11.29.00
IFA DATE: 07/09/1992
IFA STATUS: CLOSED : 09/08/1992 ELAPSED TIME: 013 : 10.14.33
PRACA STATUS: CLOSED : 1992-10-22 HOUSTON TIME: 06.29.00
PRCBD NUMBER: S044876V PHASE: ENTRY/LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 52V-0010 M MMACS-08
P IM/50RF13

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: K. BROWN X33891

2:

0 DESCRIPTION:

APU 1 Gearbox N2 pressure decreased to the repressure value. After the gearbox was repressurized to 20 psia, the gearbox N2 pressure transducer (V46P0151A) cycled erratically during entry and postlanding. During entry the gearbox N2 press transducer cycled below the repress value at least 6 times, and the gearbox N2 tank pressure (V46P0152A) continued to decrease until APU shutdown.

The cause of the anomalous condition has not yet been determined; however, the gearbox pressure transducer, the associated APU wire harness, the wire harness from the APU to the controller, and the controller all have been removed and replaced. The pressure transducer was sent to Statham and the APU wire harness and controller were sent to Sundstrand for failure analysis. Following the installation of the new transducer and wire harness on the APU, a decision was made to remove the APU due to another problem.

Flight Problem Report approved at a Special Level II Daily PRCB on 09/08/92 (PRCBD# S044876V).

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STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-V-25

TITLE:Excessive Temperature in System 2 and Hydraulic Inter-System Leakage

0 MISSION CONSTRAINT:

SUBS

IFA TIME GMT: 189 : 16.30.00

IFA DATE: 07/07/1992

IFA STATUS: CLOSED : 09/02/1992

ELAPSED TIME: 012 : 00.17.38

PRACA STATUS: CLOSED : 1995-03-04

HOUSTON TIME: 11.30.00

PRCBD NUMBER: S044876P

PHASE: ON-ORBIT

0 TYPE

TRACKING NUMBER

TYPE

TRACKING NUMBER

P IM/50RF15

0 CLOSURE INITIATED BY:

RESPONSIBLE MANAGERS 1: K. BROWN X33891

2:

0 DESCRIPTION:

During a long run of circ pump 2 in order to recharge the accumulator, intersystem leakage from system 2 into system 2 and 3 was seen. Circ pump 3 was later run to return some fluid to system 1 and 2. No KSC activity required.

Manual control of the circulation pump may be required if a GN2 leak occurs with a heavy heat load on the Freon system or high intersystem leakage. If GN2 leak occurs and management of the bootstrap pressure, circulation pump temperature, or intersystem leakage is unsuccessful, the early termination of the mission is possible due to loss of associated hydraulic system.

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STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-V-26

TITLE:ROB Brake Pressure Lag

0 MISSION CONSTRAINT:

SUBS

IFA TIME GMT: 191 : 11.42.36

IFA DATE: 07/08/1992

IFA STATUS: CLOSED : 09/14/1992

ELAPSED TIME: 013 : 19.30.13

PRACA STATUS: UNKNOWN

HOUSTON TIME: 06.42.35

PRCBD NUMBER: S044876AC

PHASE: POST LANDING

0 TYPE

TRACKING NUMBER

TYPE

TRACKING NUMBER

K IPR 52V-0011

M MMACS-09

0 CLOSURE INITIATED BY:
 RESPONSIBLE MANAGERS 1: W. LEVERICH X30960
 2:

0 DESCRIPTION:
 Brake pressure didn't respond to 8-9 seconds following braking initiation, then lagged for remainder of braking phase.
 The anomaly was most likely caused by intermittent fluid contamination in the servo valve module. The module has been removed and replaced.
 Flight Problem Report approved at a Special Level II Daily PRCB on 09/14/92 (PRCBD# S044876AC).

1 STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-V-27
 TITLE:Protruding PLBD Dogbone Seal

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
 IFA DATE: 07/08/1992
 IFA STATUS: CLOSED : 09/08/1992 ELAPSED TIME: 000 : 00.00.00
 PRACA STATUS: CLOSED : 1992-08-18 HOUSTON TIME: 00.00.00
 PRCBD NUMBER: S044876Y PHASE: POST LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
 K PR-STRUC-2-13-3652 P IM/50RF16

0 CLOSURE INITIATED BY:
 RESPONSIBLE MANAGERS 1: S. MCMILLAN X35913
 2:

0 DESCRIPTION:
 The "dogbone" seal on the left PLBD near panel 1 is protruding. The dogbone seal will be rebonded. KSC will do an analysis to determine why it debonded.

The debonded dogbone environmental seal was most probably caused by the unbonding of the seal due to normal expansion/contraction of the PLBD segments. The OV-102 seal installation is known to be less secure than that of other Orbiters.

Flight Problem Report approved at a Special Level II Daily PRCB on 09/08/92 (PRCBD# S044876Y).

1 STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 09/19/95
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IFA NUMBER> STS-50-V-28
 TITLE:Excessive Aileron Trim During Entry

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 191 : 11.30.00
 IFA DATE: 07/09/1992
 IFA STATUS: CLOSED : 06/24/1993 ELAPSED TIME: 013 : 19.17.38
 PRACA STATUS: UNKNOWN HOUSTON TIME: 06.30.00
 PRCBD NUMBER: S044876AE PHASE: ENTRY/LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
 M GNC-03

0 CLOSURE INITIATED BY:
 RESPONSIBLE MANAGERS 1: M. ENGEL X30000
 2:

0 DESCRIPTION:
 During entry at around Mach 15, while DTO 251 (Entry Aerodynamic Control Surfaces Test - Alternate Elevon Schedule) was being performed, the Orbiter aileron roll trim started a slow ramp from 0.5 degree deflection to a maximum deflection of 1.7 degrees. At Mach 8,

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the trim reached the flight rule limit of 1.5 degrees, at which point the DTO's programmed test inputs (PTIs) were terminated per the flight rule, and the elevon schedule was switched to AUTO. Following PTI termination, the trim continued to increase to 1.7 degrees and then stabilized with isolated spikes to 2.2 degrees. The excessive trim was taken out by using the reaction control system (RCS) jets.

Several courses of action have been pursued in an attempt to understand this problem. First, the Orbiter aerodynamic model was exhaustively tested to ensure that aileron trim was correctly modeled. These tests proved the validity of the aerodynamic model, which had predicted a roll trim angle of no greater than 0.5 degree for this flight.

The elevon actuators were also calibrated postflight, and the results verify that they were not a causative factor in the excessive aileron trim. Also, data from thermocouples on the Orbiter's lower surface were analyzed to determine whether there was flow separation at the time of the aileron trim excursion. The data indicate that there was no corresponding flow separation. The thermocouples are only located on one side of OV-102 which makes determination of asymmetric flow separation impossible. At this time there are three possible explanations to account for this anomaly:

1. This is an STS-50 unique event, i.e., a combination of factors (weight, center of gravity, aerothermodynamic environment) that led to the excessive trim values.
2. The anomaly is vehicle-dependent (OV-102 only). Repeating the DTO on STS-52 should validate or disprove this possibility.
3. The anomaly is configuration-dependant, i.e., it is indicative of the Orbiter's flight characteristics at up-elevon positions.

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STS-050 (OV-102,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT

09/19/95
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IFA NUMBER> STS-50-V-28

TITLE:Excessive Aileron Trim During Entry

0 DESCRIPTION: (Continued from previous page).

This DTO will be flown again on STS-47 and STS-52, and the results from these flight will help to better define and understand this problem. Crew procedures have been updated to include more frequent propellant checks and the PTI Monitor Cue Card has been modified to account for possible aileron trim excursions. The results from STS-47 and STS-52 should also help to define whether or not this is a vehicle-specific problem, or a generic Orbiter response when operating in this particular flight envelope (i.e., forward c.g. and Mach 15 - 18).

If excessive aileron trim is encountered on either of these flights, the PTI's can be inhibited and RCS jets will be used to take out the trim. Adequate propellant will be budgeted to ensure that the RCS jets can provide the proper retrim.

Flight Problem Report approved at a Special Level II Daily PRCB on 09/15/92 (PRCBD# S044876AD).

Flight Problem Report Conclusion - 05/27/93

Because of the similarity seen between the motion on the four flights mentioned earlier (STS-41G, STS-28, STS-48, STS-50), it has been determined that the anomaly seen on STS-50 was probably caused by

STS0050.txt

asymmetric boundary layer transition. Asymmetric boundary layer transition occurs whenever the boundary layer is disturbed (e.g., by rough thermal protection system surfaces or by protruding gap filler) on only one side of the vehicle. This phenomenon was not caused by the up-elevon schedule required by the DTO. Additional RCS fuel must be budgeted to account for this phenomenon.

-JEDP012: NORMAL TERMINATION OF PROCESSING

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STS-051 (OV-103,FLT #17) INFLIGHT ANOMALY REPORT

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PAGE 1

IFA NUMBER> STS-51-B-01

TITLE:SRB RH TILT APU UNDERSPEED

0 MISSION CONSTRAINT:	SUBS	IFA TIME GMT: 000 : 00.00.00
		IFA DATE: 07/24/1993
IFA STATUS: CLOSED	: 10/15/1993	ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED	: 1994-02-01	HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044894A		PHASE: PRE-LAUNCH

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
A	A15531	A	PV403-4938

0 CLOSURE INITIATED BY:

RESPONSIBLE MANAGERS 1: L. MORTON USBI
 2: S. PATTERSON SA45

0 DESCRIPTION:

During launch count-down the RH tilt SRB APU S/N 189 experienced an underspeed redline violation at approximately T-20 seconds.

The most probable cause of the APU underspeed is believed to be particulate contamination in the fuel pump start bypass valve. The failure effects of a turbine underspeed during countdown result in a launch abort up to T-0 second timeframe. If this condition occurs during flight and is sufficient to cause the hydraulic pressure to drop below 2,200 psi (lower limit), the redundant system will crossover and supply hydraulic pressure through the servoactuator switching/bypass valve. This action satisfies all mission requirements for success and safety.

the 'new' Booster Trowellable Ablator (BTA) material, especially since this condition has been randomly observed on current/previous TPS configurations. The current TPS configurations limit BTA to the aft skirts only (next 3 missions: STS-58, STS-61, and STS-60), therefore, no hypalon debris or flight safety concerns exist. Effective STS-62 (BI-064), BTA is scheduled for flight on the forward assemblies of the SRB. The potential of hypalon debris from the forward areas is being evaluated, and the results will be reported when available.

- CLOSURE RATIONALE:

Postflight inspection reports show that blistered Hypalon has not been responsible for debris damage to the Orbiter. This data review supports the conclusion of the STS-27R Orbiter debris evaluation team which stated that Hypalon is not considered a culpable debris source. This investigation has established that Hypalon blistering is expected, but that it does not present a debris concern to the Orbiter.

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STS-051 (OV-103,FLT #17) INFLIGHT ANOMALY REPORT

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IFA NUMBER> STS-51-D-01

TITLE:S-BAND XPND/PI INTERFERENCE

0 MISSION CONSTRAINT:	SUBS	IFA TIME GMT: 255 : 19.14.00
		IFA DATE: 09/12/1993
IFA STATUS: OPEN		ELAPSED TIME: 000 : 07.29.00
PRACA STATUS: UNKNOWN		HOUSTON TIME: 14.14.00
PRCBD NUMBER: S044894		PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
M	INCO-01		

0 CLOSURE INITIATED BY:

RESPONSIBLE MANAGERS 1: M.HENDERSON JSC-DA8

2: F. MACFARLANE

0 DESCRIPTION:

The crew activated the payload interrogator (pi) channel 581, power output medium. The S-band PM system was in high frequency. Upon activation, the S-band PM transponder receiver broke lock on the TDRS-W forward link and locked up on the PI transmitter signal for a loss of orbiter forward link for about 45 minutes.

The crew ran comm malfunction procedures, ending up in malf 2.3a, block 7 (crew switched to low frequency). Upon reconfiguring the TDRS network to low frequency, the S-band PM forward link was regained. The ACTS/TOS deploy was performed one rev late with the S-band PM system in freq lo. No further PI/XPDR lockups occurred

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STS-051 (OV-103,FLT #17) INFLIGHT ANOMALY REPORT

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PAGE 4

IFA NUMBER> STS-51-E-01

TITLE:ME-1 LPFTP DISCHARGE TEMP CHANNEL B EXHIBITED NEGATIVE SPIKING

0 MISSION CONSTRAINT:	SUBS	IFA TIME GMT: 000 : 00.00.00
		IFA DATE: 09/12/1993
IFA STATUS: CLOSED	: 03/30/1994	ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED	: 1994-02-15	HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044894Q		PHASE: ASCENT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
A	A032664	A	A15613

0 CLOSURE INITIATED BY:

RESPONSIBLE MANAGERS 1: P. JONES RKDN
2: W.TRAVIS EE22

0 DESCRIPTION:

Sts0051.txt

The ME-1 E2031 Low Pressure Fuel Turbopump (LPFTP) discharge temperature channel B exhibited negative spiking beginning at 11 seconds after engine start. A FID was posted by the engine controller at 23.4 seconds, thereby disqualifying channel B output. This temperature sensor had experienced 12 starts and 6393 seconds, including 8 flights. The observed condition could have resulted from a problem in either the sensor, harness, or controller. The sensor is the most likely cause and will be returned to the vendor for failure analysis.

- CLOSURE RATIONALE:

IFA closed 03/30/1994.

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STS-051 (OV-103,FLT #17) INFLIGHT ANOMALY REPORT

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IFA NUMBER> STS-51-E-02

TITLE:ME-2 HPFT DISCHARGE TEMP SENSOR (CHANNEL B) FAILED HIGH

0 MISSION CONSTRAINT:	SUBS	IFA TIME GMT: 000 : 00.00.00
		IFA DATE: 09/12/1993
IFA STATUS: CLOSED	: 11/10/1993	ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED	: 1994-11-09	HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044894D		PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
A	A032663	A	A15612

0 CLOSURE INITIATED BY:

RESPONSIBLE MANAGERS 1: P. JONES RKDN

2: W. TRAVIS EE22

0 DESCRIPTION:

The Me-2 E2034 High Pressure Fuel Turbine Discharge Temperature Sensor channel B failed high and was disqualified 412.05 seconds after engine start. The failure cause could be in the sensor, the harness or the

Sts0051.txt

controller. The measurement briefly recovers during engine shutdown which can be indicative of sensor element wire 'open' scenario. The sensor will be returned to the vendor for failure analysis. It had experienced 7 starts and 2045 seconds, including 3 flights and 1 FRF. If confirmed, this will be the fourth failure of the RE7013-01 hot gas temperature sensors with this being the first in the flight program.

- CLOSURE RATIONALE:

Failure of the HPFTP discharge temperature was the result of sensor element wire fracture. Reliability of the RE7013-01 has dropped below that of the previous design, the RES7004-91, and the RE7013-01 sensor will not be used in turbine discharge temperature locations.

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STS-051 (OV-103,FLT #17) INFLIGHT ANOMALY REPORT

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IFA NUMBER> STS-51-E-03

TITLE:ME-2 FUEL FLOW SENSOR (CHANNEL A2) INTRACHANNEL FLOW RATE LIMIT

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
 IFA DATE: 09/12/1993
IFA STATUS: CLOSED : 11/10/1993 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1993-09-29 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044894E PHASE: PRE-LAUNCH

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
 A A032605 A A15563

0 CLOSURE INITIATED BY:

RESPONSIBLE MANAGERS 1: P. JONES RKDN
 2: W. TRAVIS EE22

0 DESCRIPTION:

The fuel flow sensor channel A2 on ME-2 E2033 failed the 1800 GPM

Sts0051.txt

Intrachannel limit 1.34 seconds after engine start. A FID was posted by the main engine controller and the engine commanded to shutdown at 1.50 seconds due to lack of critical sensor redundancy prior to SRB ignition. The subsequent failure investigation found the failure to be a fractured coil lead wire located under an axial potting crack.

- CLOSURE RATIONALE:

The failure of a fuel flow sensor was caused by coil wire fracture resulting from potting material cracks in the sensor. There have been 9 failures of this type in program history, and a design change is in place to correct the potting material. A sensor redundancy management improvement has been incorporated into flight software which dramatically improves launch probability, while only slightly reducing the probability of mission success. A change in fuel flow sensor potting material has been initiated to eliminate potting cracks. Certification of the sensor change will be completed by January, 1994.

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STS-051 (OV-103,FLT #17) INFLIGHT ANOMALY REPORT

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PAGE 7

IFA NUMBER> STS-51-I-01

TITLE:GPC 3 FAIL-TO-SYNC AT TRANSITION OPS

0 MISSION CONSTRAINT:	SUBS	IFA TIME GMT: 264 : 06.17.00
		IFA DATE: 09/21/1993
IFA STATUS: CLOSED	: 11/10/1993	ELAPSED TIME: 008 : 18.32.00
PRACA STATUS: UNKNOWN		HOUSTON TIME: 01.17.00
PRCBD NUMBER: S044894B		PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
M	DPS-03		

0 CLOSURE INITIATED BY:

RESPONSIBLE MANAGERS 1: M.HENDERSON JSC-DA8

2: K. AKAGI

0 DESCRIPTION:

AT the OPS 3 redundant set (RS) expansion to include GPC 3 and GPC4, GPC 3 failed to sync (FTS). GPCs 1,2 and 4 annunciated a 'GPC 3' fault message. A GPC sync fail pointer, 8F05, indicates that an 'I/O sync point' caused GPC 3 to FTS. GPC 3 is considered transient per Flight Rule 7-13A.

GPC 3 recovered with an IPLAT approximately 264:06:25:00. The GMEM for STS-51 MMU ops overlay timing problem was reapplied to GPC 3 at 265:02:25:43. A deorbit stringing of 1243 will be implemented per decision made at the 6:00 p.m. MER meeting 9/21/93.

- CLOSURE RATIONALE:

No cause of the FTS has been determined and none of the potential areas of concern (procedural, software, or hardware) have or can be eliminated. A determination of a most probable cause of the FTS has no straightforward approach because without further data (of which none exists) none of the potential cause categories can be eliminated. No additional specific element testing can be identified which would yield meaningful results. However, runtime confidence testing to acquire extensive time exercising the integrated DPS system is considered productive "testing". The FTS was caused by some transient effect and its effects were limited to a single GPC during RS expansion. Without a substantial cause, the removal of any hardware within the subsystem is not recommended.

No corrective action will be implemented due to the problem being closed as a Unexplained Anomaly. However, KSC will exercise GPC 3 and its associated hardware in the vehicle during ground activities to obtain at least 500 hours of run time. This is not a constraint for the next

launch and the GPC will remain in the vehicle.

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STS-051 (OV-103,FLT #17) INFLIGHT ANOMALY REPORT

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IFA NUMBER> STS-51-K-01

TITLE:HDP AND VENT ARM SYSTEM B PRIMARY AND REDUNDANT PIC CAP BOLTS INDICATED
ARMED

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE: 07/17/1993
IFA STATUS: CLOSED : 01/13/1995 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044894U PHASE: PRE-LAUNCH

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER

K IPR-51V-093

0 CLOSURE INITIATED BY: J. SILVIANO KSC-TV-ETD-6

RESPONSIBLE MANAGERS 1: C. ABNER KSC-PEO

2:

0 DESCRIPTION:

At approximately T-1 1/2 hrs, the HDP and Vent Arm System B Primary and Redundant PIC Cap Volts indicated armed. PIC racks were powered down. MEC preflight bite tests indicated no arm commands had been issued. The decision was made to scrub. Subsequent analysis revealed a short in a transistor in an electronic switch circuit.

- CLOSURE RATIONALE:

The failure with the .5 amp driver card, which caused the 8 HDP and ETVAS PC's of system B to charge prematurely, was determined to be caused by an transistor failure on the circuit board. The .5 amp driver card was removed from the CPA. The suspect card was sent to the Malfunction Analysis Lab for testing. The Malfunction Analysis Lab was able to reproduce the failure and isolate the problem to a transistor on

sts0051.txt

the circuit board. A new card was installed in the CPA and a contingency procedure has been developed for S0007 vol v which can be implemented if a similar situation occurs.

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STS-051 (OV-103,FLT #17) INFLIGHT ANOMALY REPORT

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IFA NUMBER> STS-51-P-01

TITLE:TOS SUPER*ZIP CONTAINMENT TUBE PARTIALLY SEPARATED FROM THE AFT ASE

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 256 : 07.39.00
 IFA DATE: 09/13/1993
IFA STATUS: CLOSED : 02/22/1994 ELAPSED TIME: 000 : 19.54.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 02.39.00
PRCBD NUMBER: S044894P PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
 M PYLD-06

0 CLOSURE INITIATED BY:

RESPONSIBLE MANAGERS 1: F.PARKERJSC-TJ4
 2: K. JONES

0 DESCRIPTION:

After deployment of ACTS/TOS it was noted that the Super*Zip containment tube had partially separated from the aft ASE. Review of video and TOS engineering drawings indicated that both Super*Zip detonating cords fired simultaneously. SSP integration and operations has formed an investigation team to review the processes of design, manufacturing, and controls utilized in preparing TOS Super*Zip for launch.

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to the antenna pattern. work around solutions are available which minimize the risk of no lock to acceptable limits.

1

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IFA NUMBER> STS-51-V-01

TITLE:ENGINE 2 LH2 INLET PRESSURE FAILURE/FA2 MDM ANALOG INPUT BITE

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 255 : 11.49.00
IFA DATE: 09/12/1993
IFA STATUS: CLOSED : 12/02/1993 ELAPSED TIME: 000 : 00.04.00
PRACA STATUS: CLOSED : 1994-10-31 HOUSTON TIME: 06.49.00
PRCBD NUMBER: S044894J PHASE: ASCENT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 60V-0004	M	BSTR-03
M	DPS-01	P	IM/51RF09

0 CLOSURE INITIATED BY:

RESPONSIBLE MANAGERS 1: B. ELIASON JDC-VF3

2:

0 DESCRIPTION:

An FA2 MDM Analog Input BITE bit was set, indicating a problem with FA2 card 14 channel 16. Simultaneously the Engine 2 LH2 inlet pressure (V41P1200C) which came through channel 16 failed off scale high.

KSC troubleshooting determined that the transducer failed. The MDM (FA2), the dedicated signal conditioner, and the wiring were exonerated. Transducer has been R/R'd and test successfully.

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IFA NUMBER> STS-51-V-03

TITLE:HUMIDITY SEPARATOR B WATER CARRYOVER

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 259 : 15.10.00
 IFA DATE: 09/16/1993
IFA STATUS: CLOSED : 12/09/1993 ELAPSED TIME: 004 : 03.25.00
PRACA STATUS: CLOSED : 1994-09-28 HOUSTON TIME: 10.10.00
PRCBD NUMBER: S044894N PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	PR ECL-3-18-0966	M	ECCOM-02
P	IM/51RF03		

0 CLOSURE INITIATED BY:

RESPONSIBLE MANAGERS 1: K. BROWN X33891

2:

0 DESCRIPTION:

The crew found approximately 4 tablespoons of water on the outlet screen of hum sep B during both the post-sleep and pre-sleep checks on flight day 4. Each time the crew soaked up the water. During pre-sleep on flight day 5, about 3/4 of a cup of water was found on the side of the hum sep controller. The crew soaked up the water and switched to hum sep A. R&R of hum sep.

- CLOSURE RATIONALE:

The water carryover on humidity separator B was caused by a gradual accumulation of debris in the pitot tube.

The humidity separator was replaced and sent to NSLD for refurbishment.

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After completion of the refurbishment process, the humidity separator will be placed back into service. An OMRSD requirement has recently been implemented to remove and refurbish humidity separators at each Orbiter maintenance down period (OMDP), so other units will not experience as much use as this unit did. The composition and source of the debris, as well as final corrective action will be documented on CAR 51RF03-010.

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IFA NUMBER> STS-51-V-04

TITLE:AFT RCS THRUSTER R1R PRESSURE TRANSDUCER ABNORMALITY

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 263 : 06.50.00
IFA DATE: 09/20/1993
IFA STATUS: CLOSED : 12/02/1993 ELAPSED TIME: 007 : 19.05.00
PRACA STATUS: CLOSED : 1995-04-21 HOUSTON TIME: 01.50.00
PRCBD NUMBER: S044894F PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR RPO-19-0614 M PROP-02
P IM/51RF04

0 CLOSURE INITIATED BY:

RESPONSIBLE MANAGERS 1: D. MCCORMACK X33327

2:

0 DESCRIPTION:

During RCS hotfire, the chamber pressure indication for ARCS thruster R1R prematurely stepped down from the nominal chamber pressure and remained at 15 psia after the pulse. The thruster was re-hot fired and the chamber pressure was 48-49 psi. The pressure transducer is either failed or biased.

Sts0051.txt

KSC will troubleshoot the wiring and signal conditioner. If nothing found, the thruster will be R&R'd.

- CLOSURE RATIONALE:

Thruster R1R probably experienced a failure of its chamber pressure transducer. The failure signature has never been seen previously and the specific failure mode is not known at this time.

KSC has removed and replaced thruster R1R. The thruster has been returned to the vendor where the transducer will be removed and a failure analysis will be performed.

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IFA NUMBER> STS-51-V-05

TITLE:AFT RCS THRUSTER L3L FAIL-OFF

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 263 : 06.50.00
IFA DATE: 09/20/1993
IFA STATUS: CLOSED : 12/02/1993 ELAPSED TIME: 007 : 19.05.00
PRACA STATUS: CLOSED : 1994-03-30 HOUSTON TIME: 01.50.00
PRCBD NUMBER: S044894G PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
 K PR LPO-21-0594 M PROP-01
 P IM/51RF05

0 CLOSURE INITIATED BY:

RESPONSIBLE MANAGERS 1: D.MCCORMICK 33327

2:

0 DESCRIPTION:

ARCS Thruster L3L failed-off when it was commanded during RCS hotfire.

Sts0051.txt

The Pc reached on 2.5 psia which is indicative of failure of either the oxidize or fuel valve main stage. Temperature data indicate at least some pilot stage flow through both ox and fuel valves. Thruster was deselected. The thruster will be R/R.

- CLOSURE RATIONALE:

The most probable cause of the thruster fail-off was iron nitrate contamination in the oxidizer-valve pilot-stage that prevented its proper operation.

KSC has replaced thruster L3L and it will be transferred to the WSTF for the thruster-flush program. The primary thruster oxidizer and fuel valves have pressure-operated main stages and are susceptible to failure due to iron nitrate contamination. Iron nitrate formation is assisted by the presence of water (moisture) in the oxidizer valve. Therefore, the primary thruster throat plugs are installed during turnaround to reduce the likelihood of moisture intrusion into the propellant system. Also, a program to develop a direct-acting valve, which would be less susceptible to failure from iron nitrate contamination, is currently in progress.

Results of the thruster flush at the WSTF and any necessary failure analysis will be documented in CAR 51RF05.

1

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IFA NUMBER> STS-51-V-07

TITLE:MDM PF2 I/O ERROR

0 MISSION CONSTRAINT:

SUBS

IFA TIME GMT: 265 : 04.59.00

IFA DATE: 09/21/1993

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Sts0051.txt

IFA STATUS: CLOSED : 12/09/1993 ELAPSED TIME: 009 : 17.14.00

PRACA STATUS: CLOSED : 1994-07-26 HOUSTON TIME: 23.59.00

PRCBD NUMBER: S044894M PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 60V-0009	M	DPS-02
P	IM/51RF07		

0 CLOSURE INITIATED BY:

RESPONSIBLE MANAGERS 1: B. ELIASON 36037

2:

0 DESCRIPTION:

The BFS GPC, GPC 5, bypassed the PF2 MDMs (S/N 27). The BFS annunciated an I/O error fault message. An I/O reset was unsuccessful and another I/O error fault message was received. The port mode to the secondary port was successful.

Postflight the MDM was power cycled and the I/O problem cleared. The MDM will be R/R'd.

- CLOSURE RATIONALE:

The MDM experienced an SCU halt. This conclusion is based on previous similar failures witnessed on this particular unit.

The MDM was removed and replaced and sent to the NSLD.

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IFA NUMBER> STS-51-V-08

TITLE:APU 3 BEARING TEMP 2 FAILED OFF SCALE HIGH

0 MISSION CONSTRAINT:

SUBS

IFA TIME GMT: 265 : 07.22.00

Sts0051.txt

IFA DATE: 09/22/1993

IFA STATUS: CLOSED : 12/07/1993

ELAPSED TIME: 009 : 19.37.00

PRACA STATUS: CLOSED : 1994-03-30

HOUSTON TIME: 02.22.00

PRCBD NUMBER: S044894K

PHASE: ENTRY/LANDING

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 60V-0008	M	MMACS-0
P	IM/51RF08		

0 CLOSURE INITIATED BY:

RESPONSIBLE MANAGERS 1: K. BROWN 33891

2:

0 DESCRIPTION:

During entry, 11 minutes after APU 3 was started, the bearing temperature 2 (V46T0362A) measurement went off-scale. The rapid failure is indicative of an open circuit in the sensor. The sensor will be checked out and replaced, if required.

- CLOSURE RATIONALE:

The off-scale high failure mode of the APU 3 gearbox bearing temperature measurement is an open circuit within the temperature sensor. The open circuit in the sensor could have been a result of an wire fracture caused by vibration due to inadequate epoxy potting.

The ground troubleshooting was able to determine the APU 3 gearbox bearing temperature sensor had failed. The sensor has been replaced and verification testing was successfully completed.

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IFA NUMBER> STS-51-V-11

TITLE:MPS CENTER ENGINE GHE REG PRESS METER OFF FLAG SET

Sts0051.txt

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 265 : 06.30.00
IFA DATE: 09/22/1993
IFA STATUS: CLOSED : 12/09/1993 ELAPSED TIME: 009 : 18.45.00
PRACA STATUS: CLOSED : 1994-01-11 HOUSTON TIME: 01.30.00
PRCBD NUMBER: S044894L PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 6-V-0014	M	BSTR-04

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D MCCORMICK 33327
2:

0 DESCRIPTION:
During TIG 25 procedures, the crew reported the MPS Center Engine Ghe Reg Pressure Meter on Panel F7 had its off flag in view when data indicated meter should be operational.

KSC troubleshooting the problem.

Troubleshooting has not reproduced the problem. Wiring to the meter has been verified and also the meter resistance has been verified.

- CLOSURE RATIONALE:
The center engine pressure meter failed during deorbit preparations and recovered shortly after the deorbit burn. Troubleshooting could not duplicate the anomaly. A possible cause of the anomaly is that one pole of the MPS helium tank/regulator pressure switch (S1 on panel F7) initially failed to make contact.

Troubleshooting performed on the vehicle and on the meter at the NSLD was unable to duplicate the anomaly. The meter was acceptance tested and returned to the vehicle.

Sts0051.txt

-JFDPO12: NORMAL TERMINATION OF PROCESSING

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STS NUMBER> 0052 ELEMENT> I IFA NO> 001

TITLE:Data Spikes on Block 1 and Block 2 Controllers

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00

IFA DATE:

IFA STATUS: CLOSED

ELAPSED TIME: 000 : 00.00.00

CLOSED DATE: 06/02/1993

HOUSTON TIME: 00.00.00

PRCBD NUMBER: S044884A

PHASE:

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER

* *****NONE FOUND***** * *****NONE FOUND*****

0 RESPONSIBLE MANAGERS 1: J. VAUTIN - RKDYN

2:

0 DESCRIPTION:

Data spikes have been observed in various pressure measurements from 60 to 368 seconds on both Block I and Block II controller flights. The data spikes were initially observed on recent flights because the resolution is 4 times greater on Block II than Block I making the spikes much more obvious. No similar spikes have been observed in ground-test data for either type of controller. Lab tests and analysis to date have not identified a cause for these spikes. The data spikes are single events of low magnitude (maximum of 2.2% of full scale) and are not considered a Safety-of-Flight issue. work is continuing to identify the source of the spikes.

Flight Problem Report approved at a Special Level II Daily PRCB on 06/02/93 (S044884A).

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KSC removed and replaced the thruster and transferred it to the White Sands Test Facility for the thruster flush program. Iron-nitrate formation is assisted by the presence of water (moisture) in the oxidizer valve. Therefore, the primary thruster throat plugs are installed during ferry and turnaround to reduce the likelihood of moisture intrusion into the propellant system.

Flight Problem Report approved at a Special Level II Daily PRCB on 01/21/93. (PRCBD # S044884G).

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STS NUMBER> 0052 ELEMENT> V IFA NO> 002

TITLE:Engine 2 LOX Inlet Temp Sensor Failed

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 296 : 17.10.00
IFA DATE: 10/22/1992
IFA STATUS: CLOSED ELAPSED TIME: 000 : 00.00.21
CLOSED DATE: 01/22/1993 HOUSTON TIME: 11.10.00
PRCBD NUMBER: S044884J PHASE: ASCENT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 55V-0003	M	BSTR-01
P	IM/52RF02		

0 RESPONSIBLE MANAGERS 1: D. MCCORMACK X33327
2:

0 DESCRIPTION:
Transducer failed off-scale high at 25 seconds into the flight.
Recovered post-MECO. Transducer R & R'd.

Sts0052.txt

The most probable cause of the erratic temperature response was an intermittent open in the temperature probe wiring. Inspection indicated that no mechanical failure of the probe occurred.

Troubleshooting did not repeat the anomaly. The temperature probe was removed and replaced and sent to R/I for further testing.

Flight Problem Report approved at a Special Level II Daily PRCB on 01/22/93 (PRCBD # S044884J).

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STS NUMBER> 0052 ELEMENT> V IFA NO> 004

TITLE:PRSD(Power Reactant Supply & Distribution) O2 Tank 2 Heater A2 Erratic

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 298 : 01.22.00
IFA DATE: 10/23/1992
IFA STATUS: CLOSED ELAPSED TIME: 001 : 08.12.21
CLOSED DATE: 01/05/1993 HOUSTON TIME: 19.22.00
PRCBD NUMBER: S044884C PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M EGIL-03 O UA-2-12-0015
P IM/50RF18

0 RESPONSIBLE MANAGERS 1: D. DILLMAN X31733
2:

0 DESCRIPTION:

Heater A2 activates approximately 70 seconds after A1 and B heaters. When activated, heater current ramps up instead of step change. Similar problem on STS-50 (STS-50-V-05), did not repeat on ground. R&R cryo heater control box, ship to NSLD for failure analysis. Spare available.

.
KSC troubleshooting recreated problem on first attempt. Second troubleshooting attempt, problem did not reappear.

.
The O2 tank 2 heater A2 lag was caused by a problem within either RPC's 9 or 10 in the tank 2 heater controller. The controller has been removed and replaced. The removed unit will undergo failure analysis under the listed CAR. The replaced unit will be verified through OMRSD retest requirements. Even if the problem should recur prior to the completion of failure analysis, the tank can still be utilized with the redundant heater system.

.
Flight Problem Report approved at a Special Level II Daily PRCB on 01/05/92 (PRCBD# S044884C).

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STS NUMBER> 0052 ELEMENT> V IFA NO> 006

TITLE:Fuel Cell 1 Cell Performance Monitor (CPM) Hang Up

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 297 : 10.30.00

IFA DATE: 10/23/1992

IFA STATUS: CLOSED

ELAPSED TIME: 000 : 17.20.21

CLOSED DATE: 01/05/1993

HOUSTON TIME: 04.30.00

PRCBD NUMBER: S044884D

PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER

K PR FCP-2-14-0257

M EGIL-02

P IM/52RF03

0 RESPONSIBLE MANAGERS 1: D. DILLMAN X31733

2:

Sts0052.txt

0 DESCRIPTION:

FC1 CPM hung up at 44 mV for extended periods of time. Hang up voltage has slowly drifted to 50 mV (self test voltage). Same CPM showed similar behavior on 51J and 61B.

CPM R&R'd, vendor will do failure analysis.

The cause of the hang up in the CPM S/N J346 subtrack 3 delta voltage reading is unknown. This behavior has not been seen on any other CPM. The CPM has been removed and replaced on OV-102. All of the components of the CPM S/N J346 that affect the substack 3 measurement (power supply card feeding all 3 measurements, substack 3 measurement card, motherboard, substack 3 measurement input and output connectores, and the electromagnetic interface filter on the input connector) will be removed and replaced. CPM J346 will be reacceptance tested and returned to the flight inventory.

Flight Problem Report approved at a Special Level II Daily PRCB on 01/05/93 (PRCBD# S044884D).

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IFA SPECIFIC INFORMATION

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STS NUMBER> 0052 ELEMENT> V IFA NO> 007

TITLE:ROMS GN2 Low Pressure System Leak

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 298 : 13.00.00
IFA DATE: 10/24/1992
IFA STATUS: CLOSED ELAPSED TIME: 001 : 19.50.21
CLOSED DATE: 01/22/1993 HOUSTON TIME: 07.00.00
PRCBD NUMBER: S044884K PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER

Sts0052.txt

K IPR 55-V-0004

M PROP-02

P IM/52RF06

0 RESPONSIBLE MANAGERS 1: D. MCCORMACK X33327

2:

0 DESCRIPTION:

Accumulator pressure slow decrease after each repress. Leak rate from 100 down to 50 scch. System repressed prior to each crew sleep.

Troubleshooting plan in place at KSC.

.

The right OME GN2 low pressure system experienced a slow leak throughout the STS-52 mission and repressurizations once every 24 hours were sufficient to maintain system pressure above the 299-psia FDA limit. The most probable cause of the leak was transient contamination at one of the two engine control valves. Troubleshooting of the system was unable to reproduce the leak.

.

The right OME GN2 low pressure system was leak checked and no out-of-specification leakage was identified. The engine will be flown as-is.

.

Flight Problem Report approved at a Special Level II Daily PRCB on 01/22/93 (PRCBD # S044884K).

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STS NUMBER> 0052 ELEMENT> V IFA NO> 011

TITLE:S-Band PM Low Frequency Loss-of-Lock

0 MISSION CONSTRAINT:

SUBS

IFA TIME GMT: 298 : 02.02.00

IFA DATE: 10/23/1992

Sts0052.txt

IFA STATUS: CLOSED

ELAPSED TIME: 001 : 08.52.21

CLOSED DATE: 12/18/1992

HOUSTON TIME: 20.02.00

PRCBD NUMBER: S044884B

PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
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K IPR 55V-0006

M INCO-01

0 RESPONSIBLE MANAGERS 1: B. SWAN X32528

2:

0 DESCRIPTION:

Lost lock on revs 20w, 22-24w, 26w, 26E, and 27w. Switched to high frequency and no loss-of-lock occurred. On-orbit troubleshooting revealed problem within the S-Band pre-amp or the low frequency cable between the pre-amp and the antenna switch assembly.

KSC troubleshooting verified low frequency connector between pre-amp and antenna switch heating up to ~270 deg. Will R & R antenna switch & coax cable (545) between pre-amp & antenna switch.

The problem is a faulty coaxial cable. The coaxial cable and the antenna switch assembly have been removed and replaced. The cable was sent to R/D for failure analysis. The antenna switch assembly has been sent to the vendor to determine if the excessive temperature caused any damage to the mating connector.

Flight Problem Report approved at a Special Level II Daily PRCB on 12/18/92 (PRCBD# S044884B).

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STS NUMBER> 0052 ELEMENT> V IFA NO> 012

TITLE:FES Feedline A Fwd Heater System 2 Fail

Sts0052.txt

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 304 : 17.05.00
IFA DATE: 10/30/1992
IFA STATUS: CLOSED ELAPSED TIME: 007 : 23.55.21
CLOSED DATE: 01/12/1993 HOUSTON TIME: 11.05.00
PRCBD NUMBER: S044884E PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M EECOM-02

0 RESPONSIBLE MANAGERS 1: D. DILLMAN X31733
 2:

0 DESCRIPTION:

Heater failed to cycle on at noted time. Had previously been cycling normally. Redundant heater activated and cycled normally.

.

Heater worked during KSC troubleshooting. Further troubleshooting inwork.

.

Troubleshooting at KSC revealed that the thermostat for this heater (40V63S10) would not close when chilled below its setpoint. The thermostat has been removed and replaced and will undergo failure analysis at the JSC Analysis and Testing Lab.

.

Flight Problem Report approved at a Special Level II Daily PRCB on 01/12/93 (PRCBD# S044884E).

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IFA SPECIFIC INFORMATION

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STS NUMBER> 0052 ELEMENT> V IFA NO> 013

TITLE:FRCS Fuel Manifold 3 Microswitch Closed Indication Failed ON

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 306 : 10.28.00
IFA DATE: 11/01/1992

Sts0052.txt

IFA STATUS: CLOSED ELAPSED TIME: 009 : 17.18.21

CLOSED DATE: 01/21/1993 HOUSTON TIME: 04.28.00

PRCBD NUMBER: S044884H PHASE: ENTRY/LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER

M PROP-03 P IM/52RF08

0 RESPONSIBLE MANAGERS 1: D. MCCORMACK X33327

2:

0 DESCRIPTION:

Subject indicator (V42X1329X) suddenly showed "close." Other indicators verified that the valve was still open. KSC cycled actuator 10 times, could not repeat anomaly. Actuator to be R&R'd. Microswitch has not been PIND tested.

The most probable cause of the anomaly was contamination in the actuator limit switch module. This condition has been seen in the past with non-PIND tested switches. The FRCS manifold-3 fuel-isolation valve actuator was removed and replaced with an actuator with a PIND-tested switch. Upon removal, the actuator was shipped to the vendor for failure analysis.

Flight Problem Report approved at a Special Level II Daily PRCB on 01/21/93. (PRCBD # S044884H).

1

IFA SPECIFIC INFORMATION

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STS NUMBER> 0052 ELEMENT> V IFA NO> 014

TITLE:Surface Position Indicator (SPI) Failed Off.

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 306 : 13.32.00

IFA DATE: 11/01/1992

IFA STATUS: CLOSED ELAPSED TIME: 009 : 20.22.21

Sts0052.txt

CLOSED DATE: 01/27/1993

HOUSTON TIME: 07.32.00

PRCBD NUMBER: S044884M

PHASE: ENTRY/LANDING

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 55V-0010	M	GNC-01
P	IM/52RF09		

0 RESPONSIBLE MANAGERS 1: B. SWAN X32528
2:

0 DESCRIPTION:

Crew reported that they saw the SPI "OFF" flag and that the needles were not visible. Panel F6 Instrument Power switch was cycled and the SPI recovered. Approximately 6 minutes later the SPI "OFF" flag reappeared and only a portion of the SPI indicators appeared to be working.

SPI worked ok in KSC troubleshooting. R&R complete.

The most likely cause is a power supply problem within the SPI since the original problem affected more than one channel.

The SPI, s/n 8 has been removed and replaced with s/n 5. Troubleshooting and corrective action will continue under CAR 52RF09.

Flight Problem Report approved at a Special Level II Daily PRCB on 01/27/93 (PRCBD # S044884M).

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STS NUMBER> 0052 ELEMENT> V IFA NO> 016

TITLE:RHIB Brake Rotor 2 Rivets Overheated

Sts0052.txt
 0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
 IFA DATE: 11/01/1992
 IFA STATUS: CLOSED ELAPSED TIME: 000 : 00.00.00
 CLOSED DATE: 01/21/1993 HOUSTON TIME: 00.00.00
 PRCBD NUMBER: S044884F PHASE: POSTFLIGHT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
 K PRMEQ-2-14-0509 P IM/52RF10

0 RESPONSIBLE MANAGERS 1: D. GERLACH X33337
 2:

0 DESCRIPTION:

Postflight inspection revealed signs of overheating of the rivets on RHIB rotor 2. Brake temperatures and energies nominal. Brake R&R'd & sent to vendor for failure analysis.

The melting experienced is theorized to be a result of local rotor/stator contact producing instantaneous heating concentrated on the contacting surfaces. This condition is a known phenomena on carbon brakes and has been observed on test hardware and other carbon brakes in the field. Through analysis and testing, the vendor has determined that the brake functional capability is unaffected by the flash heating effects and the melting in the observed areas should be expected an future flights.

The observed conditions can be expected on future flights and is not a constraint to re-use for carbon brakes. Future flight disposition for this condition is to fly-as-is.

Flight Problem Report approved at a Special Level II Daily PRCB on 01/21/93 (PRCBD # S044884F).

01/27/93 (PRCBD # S044884L).

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IFA SPECIFIC INFORMATION

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STS NUMBER> 0052 ELEMENT> V IFA NO> 018

TITLE:Left Main Gear Outboard Heater Overtemp

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 306 : 12.21.00
IFA DATE: 11/01/1992
IFA STATUS: CLOSED ELAPSED TIME: 009 : 19.11.21
CLOSED DATE: 01/28/1993 HOUSTON TIME: 06.21.00
PRCBD NUMBER: S044884N PHASE: ENTRY/LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M MMACS-04

0 RESPONSIBLE MANAGERS 1: D. GERLACH X33337
2:

0 DESCRIPTION:

Temperature (V58T1702A) reached 231 deg F before the "A" heater was deselected. Similar phenomenon on OV-105 (STS-49 and 47) and previous flight of OV-102 (STS-50). OV-102 heater reworked post STS-50, still have overheating problem.

Discovered left side hydraulic lines shortened 20" during OMPD with no change to heater wrap. Analysis continuing whether hardware or procedural changes needed.

The brake lines in the left and right wheel wells of all vehicles will be rewrapped with the specification black Kapton tape, if required. Subsequently, the heater on the modified left brake line will be shortened or replaced if the STS-55 flight experiences excessive temperatures.

Sts0052.txt

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The Mission Operations Directorate will monitor the heater systems during deorbit preparation and entry to ensure that the 250 deg F temperature is not violated.

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A crew procedure change is being developed to delete the step to turn on the heaters in the Deorbit Preparation Entry Forward Flight Deck Configuration procedures.

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Flight Problem Report approved at a Special Level II Daily PRCB on 01/28/93 (PRCBD # S044884N).

-JFDPO12: NORMAL TERMINATION OF PROCESSING