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STS-037 (OV-104,FLT #8) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 1

IFA NUMBER> STS-37-B-01
TITLE:Left SRB Forward Skirt Buckled

0 MISSION CONSTRAINT: 39 SUBS
IFA TIME GMT: 000 : 00.00.00
IFA DATE: 04/16/1991
IFA STATUS: CLOSED : 04/19/1991
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-08-28
HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044828C
PHASE: POST LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A PV-4-030801 K A13731

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: R. RUNKLE/EE13
2:

0 DESCRIPTION:
The left SRB forward skirt skin panel (aft end) was buckled on both sides of the systems tunnel (-Y axis).

.

The structural damage is located between the aft ring of the forward skirt and the SRM connecting pins, extending approximately 129" (105 deg) and centered about the -Y axis. The "valley" areas of the dimple measure approximately 0.75" deep. All of the forward skirt TPS is intact with the exception of two pieces missing in the dimpled area. A crack was observed in the igniter heater cable feed-thru cover, and an L-bracket had separated from the systems tunnel.

.

All the pins from the left SRB forward skirt were removed, bagged, and tagged (with the direction of flight notes) and sent to MSFC for analysis. In addition, the MSA-2 was hydrolased off the dimpled area to enable SPAT engineers to accurately map the creases and ridges. The analysis and/or accelerometer data exhibit that buckling did not occur during ascent or SRB separation. Consequently, the time of occurrence has been confined to either descent or slapdown following water impact. A fault tree of all potential failure scenarios has been constructed. One scenario reqards the loads imposed at drogue parachute deployment. If the booster was positioned at approximately 90 degrees to the vertical, then negative margins of safety are possibly experienced against buckling. The design conditions to maintain positive margins of safety against buckling are limited to 62 degrees. A waiver (BI-1481R2) was approved in 1986 for this buckling condition since it is considered a descent related problem and influences attrition only.

.

No disposition for this problem currently exists in the Level III MSFC PRACA system.

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Flight Problem Report approved at Special Level II Daily PRCB on 4/19/91 (PRCBD# S044828C).

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STS-037 (OV-104,FLT #8) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 2

IFA NUMBER> STS-37-D-01
TITLE:TDRS East Support Loss

0 MISSION CONSTRAINT: 39 SUBS
IFA TIME GMT: 099 : 22.45.00
IFA DATE: 04/09/1991
IFA STATUS: CLOSED : 04/19/1991
ELAPSED TIME: 004 : 08.22.16

PRACA STATUS: UNKNOWN HOUSTON TIME: 17.45.00
PRCBD NUMBER: S044828B PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M STDN-01
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: A. DAVIS
2:
0 DESCRIPTION:
TDRS east earth sensor "A" anomaly caused loss of satellite attitude control. Loss of TDRS east support from orbit #68 through #74. WSGT switched satellite to earth sensor "B" and proceeded with recovery of satellite. Recovery complete and satellite back in service at 100:11:10 GMT. GSFC will track via TTR#13290. An operations incident review board has been convened at WSGT.
.
Flight Problem report was signed outside board (OSB) on 04/19/91 (PRCBD# S044828B).

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IFA NUMBER> STS-37-E-01
TITLE:HPFTP 6008 Thrust Ball Surface Cracks

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 08/22/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1991-11-12 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044829G PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A A030963 A A13928
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: C. PINSON/EE22
2:
0 DESCRIPTION:
This problem was declared an IFA at a Special Level II Daily PRCB on 07/19/91 per CR# S044829F.
.
During the disassembly inspection of HPFTP 6008 (ME-1, E-2019) at Canoga, cracks were found on the thrust bearing ball in the area of normal ball/insert wear.
.
The thrust bearing ball is used in the HPFTP thrust bearing assembly to provide a low friction surface between the HPFTP shaft and the thrust bearing. The shaft contains a thrust ball insert which provides the mating surface with the ball. The thrust ball is 0.875 inch diameter and fabricated from 440C CRES, heat treated and dry film lubed. The insert material is Haynes Stellite 6B which is also dry film lubed. During operation, the thrust ball absorbs the axial thrust during engine start and shutdown transients. With the pump in the vertical position, the shaft rests on the thrust ball. During operation, the axial position of the shaft is controlled by the balance cavity located upstream of the third stage impeller. During the engine start sequence, pressure forces separate the shaft and the ball and maintain separation until engine shut down, when the shaft returns to rest on the thrust ball. The thrust bearing assembly is removed after each test/flight to gain access for torque and shaft travel measurements. The post-test/flight procedures require visual inspection (un-aided eye) of the thrust ball and application of moly lube to minimize ear wear. Visible cracks or galling of the thrust ball is unacceptable and requires ball replacement before the next use of the turbopump.
.

The dry film lube was added to the thrust ball and insert to preclude excessive heat which welded the ball to the shaft nut in the early (pre-1980) development program. In 1980 to 1982, four cases of thrust ball cracks were documented. The cracks were thermally induced due to running. In all four cases, the ball continued to function with no detrimental loss of material. Moly lube was added to the post-test/ flight procedures to minimize ball/insert wear.

.

Most recently, cracks have been found in three thrust balls: the

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STS-037 (OV-104,FLT #8) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 4

IFA NUMBER> STS-37-E-01
TITLE:HPFTP 6008 Thrust Ball Surface Cracks

0 DESCRIPTION: (Continued from previous page).

subject flight unit (6008) and two development units. The contamination generated from the thrust ball is considered a criticality 1 condition. The potential exists for contamination of the HPFTP pump end bearing. Microvisual examination of HPFTP 6008 thrust ball found seven cracks, 0.020 to 0.118 inches long, all oriented perpendicular to the wear-track. Five of the cracks extended the full width of the wear-track. The longest crack was opened for analysis. The crack was cresent shaped with a maximum depth of 0.060 inches. The surface was austenitized and quenched, and the subsurface was overtempered. Microstructure and hardness values met design requirements. The cracks were similar to those observed prior to 1982.

.

In conclusion, analyses indicated that the cracks are caused by high thermal stresses from normal ball/insert rubbing which occurs during the start and cutoff transient. The condition is acceptable based on existing post-test/flight inspection procedures, which require the ball to be replaced if cracks or galling are found. The visual inspection is adequate to prevent thrust ball failure during engine start or shutdown. No thrust ball failures have occurred in the SSME program history which covers 1,040 tests and 353,650 seconds of operation.

.

This problem is deferred in the MSFC PRACA system for STS-43.

.

This problem was discussed at the STS-43 L-2. The Flight Problem Report was approved outside board (OSB) on 8/22/91 (PRCBD #S044829G).

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STS-037 (OV-104,FLT #8) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 5

IFA NUMBER> STS-37-M-01
TITLE:Right RSRM S&A Gasket Missing Cadmium Plating Up To Primary Seal Cushion

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 04/19/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1991-06-04 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044828D PHASE: POST LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
D SPR# DR4-5/205 K A13697
P CAAR# PV6-185374

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. THORNTON/EE52
2:

0 DESCRIPTION:

Postflight inspection of the right RSRM S&A gasket revealed missing

cadmium plating in several areas (aft and forward faces) from the retainer ID to the primary seal cushion.

.

The right RSRM S&A gasket was found to be in typical postflight condition, with soot on both forward and aft faces of the gasket up to the seal cushion. However, once the seal retainer was cleaned, the cadmium plating was found to be missing up to the seal cushion on both faces of the retainer. This violated the established PEEP limits requiring at least 8 mils of cadmium in front of the seal cushion. The exact locations of absent cadmium are as follows: forward face - 252 degrees intermittently through 324 degrees; aft face - 63 degrees through 106 degrees, 150 degrees and 279 degrees through 316 degrees. The cadmium loss is due to a corrosive action of the combustion products on the cadmium. This problem is considered a criticality 3. The purpose of the cadmium plating is to protect the metal gasket retainers from corrosion. The removal of cadmium during flight has no impact on the gasket performance. There is no evidence (nor has there ever been) of heat effects to the metal gasket or seal cushion material of the S&A's and/or igniters.

.

This condition has been observed on numerous past flights but came closer to the seal cushion than in previous observations. This same condition has been observed frequently in the ignitor gaskets and tracked twice as IFA's. The IFA investigations of the RSRM-9 (STS-36-M-1) igniter inner gasket and the RSRM-13(STS-41-M-1) igniter outer gasket concluded that the mechanism for cadmium removal is a reaction between the cadmium and the corrosive propellant gasses to form cadmium chloride. Consequently, this problem is not considered to be a flight safety concern since it is attributed to corrosion rather than erosion.

.

This problem was closed in the MSFC PRACA system for STS-40 and subs on 06/04/91.

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Flight Problem Report approved at Special Level II Daily PRCB on

IFA NUMBER> STS-37-M-01
TITLE:Right RSRM S&A Gasket Missing Cadmium Plating Up To Primary Seal Cushion
0 DESCRIPTION: (Continued from previous page).
4/19/91 (PRCBD# S044828D).

IFA NUMBER> STS-37-M-02
TITLE:Left RSRM Forward Segment Case Deflected

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 04/19/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1991-05-30 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044828E PHASE: POST LANDING

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
A	A13698	D	SPR# DR4-5/206

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. THORNTON/EE52
2:

0 DESCRIPTION:
Prior to the demate of the left RSRM forward field joint, postflight engineers at KSC noted that the case wall of the forward segment was

deflected inward.

.

Upon examination, it was observed that the deflection appeared to be greatest from 320 deg to 0 deg to 80 deg locations along the aft cylinder of the forward segment, and the forward cylinder of the forward center segment. A maximum inward deflection of 0.535" occurred at 0 deg, and a maximum outward deflection of 0.480" occurred at 50 deg. There was no evidence of external collision or impact damage to the field joint. The deformation extends to the forward segment cylinder-to-cylinder factory joint (0.326" inward deflection at 350 deg and 0.248" outward deflection at 60 deg). The deformation also extends to the factory joint of the center forward segment (0.296" inward deflection at 350 deg and 0.254" outward deflection at 50 deg). These out of roundness measurements were obtained using a sine bar tool at Hangar AF and include some distortion of the case due to its positioning in the chocks. Upon its return to TC/Utah, the hardware will be measured more precisely on a rotary table. The preflight hardware pedigree was reviewed and indicated a nominal assembly and hardware processing. The out of roundness values during mate were typical and within the 0.125" requirement. The structural assessment ruled out the ascent phase as a potential cause due to the high margins of safety. Also, the tensile pressurization loads during ascent preclude buckling (external loads would have to overcome high internal pressure loads). Two other loading conditions were considered as possibilities responsible for the observed deformation. The first involves the drogue parachute deployment at the most severe loading orientation. However, drogue chute loading would create a compressive buckling deformation in the motor case membrane, and none was observed/measured. The second item regards the slapdown loading during water impact. This scenario is most likely responsible, since high slapdown loads can create the out of round condition. This type deformation has been previously observed in the aft segments associated with cavity collapse loads. The SRB data confirmed that the slapdown loads for this booster were the highest ever recorded (92 G's versus the 12-40 G's historically measured).

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IFA NUMBER> STS-37-M-02
TITLE:Left RSRM Forward Segment Case Deflected

0 DESCRIPTION: (Continued from previous page).

.

In summation, the noted damage could not have occurred during ascent and is considered to have occurred after motor separation. Also, Rockwell C hardness tests of this segment were within the expected range, assuring that damage was not due to low yield strength of the case hardware. Historical observations and experience indicate that the slapdown loads affiliated with water impact is the most likely cause. Extensive analysis confirms that positive margins of safety exist for ascent motor operating conditions. Consequently, this problem is not a flight safety concern but is considered a refurbishment/reuse issue only.

.

This problem was closed in the MSFC PRACA system for STS-40 and subs on 05/30/91.

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Flight Problem Report approved at Special Level II Daily PRCB on 4/19/91 (PRCBD# S0448282E).

1

IFA NUMBER> STS-37-V-01
TITLE:Jet RIU Failed Off

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 095 : 14.31.00
IFA DATE: 04/05/1991
IFA STATUS: CLOSED : 06/12/1991
ELAPSED TIME: 000 : 00.08.16
PRACA STATUS: CLOSED : 1992-04-16
HOUSTON TIME: 09.31.00
PRCBD NUMBER: S044828W
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 43V-0005	M	PROP-01
P	CAR 37RF01		

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

0 DESCRIPTION:
Occurred on first firing attempt after ET sep. Suspect pilot valve only operation on oxidizer side.
.
Data confirms OX pilot valve opened but main valve did not.
.
Jet R&R complete on 05/11/91. Will send to White Sands for testing.
.
CAR Status: Explained closeout for all flights/all vehicles issued on 06/21/91. CAR submitted for closure by RI-DNY on 06/21/91. Updated explained closeout for all flights/all vehicles issued on 08/05/91. CAR resubmitted for closure by RI-DNY on 08/05/91.
.
Flight Problem Report approved at Special Level II Daily PRCB on 06/12/91. (PRCBD# S044828W).

1

IFA NUMBER> STS-37-V-03
TITLE:PRSD O2 Manifold Vlv 2 Failed To Close

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 096 : 22.00.00
IFA DATE: 04/06/1991
IFA STATUS: CLOSED : 06/10/1991
ELAPSED TIME: 001 : 07.37.16
PRACA STATUS: CLOSED : 1995-01-21
HOUSTON TIME: 17.00.00
PRCBD NUMBER: S044828Q
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 43V-0004	K	PR FCP-4-09-0130
M	EGIL-01	P	CAR 37RF03

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

0 DESCRIPTION:
Recurrence of IFA STS-34-12(UA-4-A0009). Successfully closed on Day 3. Troubleshooting at Dryden (Chit J-3542) found no problems. Wire wiggle tests to be performed at KSC (Chit J-3539). Unable to duplicate on ground. Suspect bulkhead connector. Rewired through a different connector and successfully retested.
.
CAR Status: Explained closeout for next three flights of OV-104, STS-43, -44, and -45, was issued on 05/01/91.
.
Flight Problem Report approved at Special Level II Daily PRCB on 06/10/91 (PRCBD# S044828Q).

1

IFA NUMBER> STS-37-V-04
TITLE:Ku Antenna Erratic in Auto Mode

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 096 : 13.42.00
IFA DATE: 04/06/1991
IFA STATUS: CLOSED : 06/06/1991
ELAPSED TIME: 000 : 23.19.16
PRACA STATUS: CLOSED : 1993-11-22
HOUSTON TIME: 08.42.00
PRCBD NUMBER: S044828N
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 43V-0006	K	PR V070-4-09-0330
M	INCO-03	P	IM/37RF04

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

0 DESCRIPTION:
Track error increases until loss of lock. Designate mode OK. Suspect control circuit problem. Worked OK on FD5.
.
Initial inspection completed. Found some small metal clips clinging to antenna dish. Chips appear to be aluminum and to have come from drilling. Troubleshooting on 05/01/91 did not repeat problem. Video of antenna feed being studied. Plan to have Hughes representative to inspect antenna.
.
Hughes has studied video and sees nothing wrong. Expect this IPR to close as a UA.
.
Flight Problem Report approved at Special Level II Daily PRCB on 06/06/91 (PRCBD# S044828N).

1

IFA NUMBER> STS-37-V-06
TITLE:EMU-1 Fail To Charge Battery (Post EVA)

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 098 : 00.13.00
IFA DATE: 04/07/1991
IFA STATUS: CLOSED : 05/23/1991
ELAPSED TIME: 002 : 09.50.16
PRACA STATUS: UNKNOWN
HOUSTON TIME: 19.13.00
PRCBD NUMBER: S044828F
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
M	EVA-01	P	FIAR# BEMU-300-F001

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

0 DESCRIPTION:
Crew reported not possible to charge EMU-1 battery. Possible battery charge line in DCM. Suits shipped from Dryden to FEPC. Unable to duplicate on ground. Suspect problem with power mode switch.
.
Flight Problem Report approved at Special Level II Daily PRCB on 05/23/91 (PRCBD# S044828F).

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IFA NUMBER> STS-37-V-07
TITLE:Temporary Loss of EMU Suit Parameters in Comm Mode A

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 097 : 11.33.00
IFA DATE: 04/07/1991
IFA STATUS: CLOSED : 06/03/1991
ELAPSED TIME: 001 : 21.10.16

PRACA STATUS: UNKNOWN HOUSTON TIME: 06.33.00
PRCBD NUMBER: S044828J PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR43V0007 K PR# COM-4-09-0102
M EVA-03 P FIAR# BFCE-029-F036

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

0 DESCRIPTION:
Loss data from both suits. Ground data systems adjusted to compensate for time shift in A. Suspect the FM discriminator in the Orbiter UHF transceiver.
.
Troubleshooting confirms bad UHF transceiver. R&R is complete. Retest was good (05/23/91).
.
Flight Problem Report approved at Special Level II Daily PRCB on 06/03/91 (PRCBD# S044828J).

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STS-037 (OV-104,FLT #8) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 14

IFA NUMBER> STS-37-V-08
TITLE:Low Pc Indications On Jets LIU & LIL during interconnect

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 099 : 15.40.00
IFA DATE: 04/09/1991
IFA STATUS: CLOSED : 06/17/1991 ELAPSED TIME: 004 : 01.17.16
PRACA STATUS: CLOSED : 1991-06-28 HOUSTON TIME: 10.40.00
PRCBD NUMBER: S044829E PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M PROP-02 P CAR 37RF07

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

0 DESCRIPTION:
Low Pc (20 psi low) noted while using right OMS to left RCS interconnect.
.
Re-evaluation of STS-37 and -38 data indicates low chamber pressure results from data sampling rate and system pressure drops during interconnect modes. Low chamber pressure indication for an 80 MSEC burn is considered to be normal.
.
Flight Problem Report approved at Special Level II Daily PRCB on 06/17/91 (PRCBD# S044829E).

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STS-037 (OV-104,FLT #8) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 15

IFA NUMBER> STS-37-V-09
TITLE:Prelaunch BFS Nav Anomaly

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 095 : 13.51.00
IFA DATE: 04/05/1991
IFA STATUS: CLOSED : 05/31/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 08.51.00
PRCBD NUMBER: S044828H PHASE: PRE-LAUNCH

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M NAV-01

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

0 DESCRIPTION:
BFS Z runway position diverged to 7700 ft in OPS 101. No effect to flight. OPS note and waiver in approval cycle. SCR in-work for OI-21.
.
Flight Problem Report approved at Special Level II Daily PRCB on 05/31/91 (PRCBD# S044828H).

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STS-037 (OV-104,FLT #8) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 16

IFA NUMBER> STS-37-V-11
TITLE:Fuel Cell 3 pH High Indication Postlanding

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 101 : 14.11.00
IFA DATE: 04/11/1991
IFA STATUS: CLOSED : 06/05/1991
ELAPSED TIME: 005 : 23.48.16
PRACA STATUS: CLOSED : 1991-11-18
HOUSTON TIME: 09.11.00
PRCBD NUMBER: S044828M
PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 43V-0003 K PR FCP-4-09-0127
P IM/37RF10
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. DILLMAN
2:
0 DESCRIPTION:
FC3 pH sensor indicated high on an intermittent basis for approximately 10 minutes. The common water line pH sensor did not confirm the FC3 pH sensor indication. All FC3 performance parameters were nominal. Water samples at DFRC normal. FC3 R&R'd on 04/25/91.
.
Flight Problem Report approved at Special Level II Daily PRCB on 06/05/91 (PRCBD# S044828M).

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STS-037 (OV-104,FLT #8) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 17

IFA NUMBER> STS-37-V-12
TITLE:Water Spray Boiler 3A Overcool During Entry

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 101 : 13.25.00
IFA DATE: 04/11/1991
IFA STATUS: CLOSED : 06/13/1991
ELAPSED TIME: 005 : 23.02.16
PRACA STATUS: CLOSED : 1992-04-16
HOUSTON TIME: 08.25.00
PRCBD NUMBER: S044829A
PHASE: ENTRY/LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
P CAR 37RF11
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. GERLACH
2:
0 DESCRIPTION:
During entry two instances of overcooling were observed. The minimum lube oil return temp seen was 211 degree F. Hot oil flush planned.
.
WSB #3 flushed with hot oil per TPS APU-4-09-055 (06/07/91).
.
Flight Problem Report approved at Special Level II Daily PRCB on 06/13/91 (PRCBD# S044829A).

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STS-037 (OV-104,FLT #8) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 18

IFA NUMBER> STS-37-V-13

TITLE:LH2 ET Umbilical Fwd Lighting Contact Strip Debonded

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 06/13/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1993-02-12 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044829B PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR MPS-4-08-0759 P IM/37RF12
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. GERLACH
2:
0 DESCRIPTION:
Strip (approx. 3" x 14") found on runway after ET door opening.
Suspect faulty bonding.
.
Strip routed to RI-Downey for analysis. Analysis indicates incomplete adhesive cure. Design change in work.
.
Flight Problem Report approved at Special Level II Daily PRCB on 06/13/91 (PRCBD# S044829B).

1

IFA NUMBER> STS-37-V-14
TITLE:Abnormal O2 Concentration In Aft Fuselage

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE: 04/04/1991
IFA STATUS: CLOSED : 06/12/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1991-09-11 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044828U PHASE: PRE-LAUNCH
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
P IM/37RF13
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. MCMILLAN
2:
0 DESCRIPTION:
Reached 220 PPM (outside experience base). LCC limit is 500 PPM. Postflight analysis of aft air sample bottles showed no anomaly. Possible ground F&D hardware leak. No orbiter troubleshooting required.
.
Flight Problem Report approved at Special Level II Daily PRCB on 06/12/91 (PRCBD# S044828U).

1

IFA NUMBER> STS-37-V-15
TITLE:Hyd Sys 2 Priority Valve Lagged During Entry

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 101 : 13.11.00
IFA DATE: 04/11/1991
IFA STATUS: CLOSED : 06/13/1991 ELAPSED TIME: 005 : 22.48.16
PRACA STATUS: CLOSED : 1991-10-14 HOUSTON TIME: 08.11.00
PRCBD NUMBER: S044829C PHASE: ENTRY/LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 43V-0016 K PR# HYD-4-09-0340
P IM/37RF14
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. GERLACH

2:

0 DESCRIPTION:
Priority Valve took 4 seconds to open to equalize accumulator pressure with main pump pressure when NORM PRESS was commanded. S/B NMT 1 sec. R&R complete and retest was good (05/17/91).

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CAAR# PV-1-005245

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Flight Problem Report approved at Special Level II Daily PRCB on 06/13/91 (PRCBD# S044829C).

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STS-037 (OV-104,FLT #8) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 21

IFA NUMBER> STS-37-V-16
TITLE:-Z Star Tracker Failed Self-Test

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 096 : 03.00.00
IFA DATE: 04/05/1991
IFA STATUS: CLOSED : 06/04/1991
ELAPSED TIME: 000 : 12.37.16
PRACA STATUS: CLOSED : 1992-04-28
HOUSTON TIME: 22.00.00
PRCBD NUMBER: S044828L
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 43V-0009	K	PR# GNC-4-09-0088
M	GNC-01	P	CAR 37RF16

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

0 DESCRIPTION:
Failed first self-test, passed 2nd. Anomaly repeated during KSC ground self-tests (failed once out of 100 attempts). Data analysis indicates a probable hardware problem within the ST which could affect normal ST ops. Star Tracker R&R is complete and retest was good (05/03/91).

.

Flight Problem Report approved at Special Level II Daily PRCB on 06/04/91 (PRCBD# S044828L).

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STS-037 (OV-104,FLT #8) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 22

IFA NUMBER> STS-37-V-17
TITLE:RH Outbd 4 Brake Pressure Low

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 101 : 13.55.00
IFA DATE: 04/11/1991
IFA STATUS: CLOSED : 06/12/1991
ELAPSED TIME: 005 : 23.32.16
PRACA STATUS: CLOSED : 1991-07-22
HOUSTON TIME: 08.55.00
PRCBD NUMBER: S044828V
PHASE: ENTRY/LANDING

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 43V-0008	P	CAR 37RF17

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

0 DESCRIPTION:
Data shows brake pressure 4 approx. 100 psia below brake pressure 2.

.

Troubleshooting performed on 05/16/91 with new brakes and system bleed did not repeat anomaly. Data in review. Expect IPR to be closed as a UA.

.

IPR closure as a UA is in work. PAR to Downey. UA approved on 06/14/91.

.
CAR Status: Issued on 06/19/91. Explained closeout for all vehicles/all flights issued on 06/19/91. CAR submitted for closure by RI-DNY on 06/19/91.
.
Flight Problem Report approved at Special Level II Daily PRCB on 06/12/91 (PRCBD# S044828V).

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STS-037 (OV-104,FLT #8) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 23

IFA NUMBER> STS-37-V-18
TITLE:Aft Flight Deck Speaker Bad

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 06/12/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1991-11-15 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044829D PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 43V-0014 P IM/37RF18
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: B. SWAN
2:
0 DESCRIPTION:
Crew reported aft flight deck speaker overdriving, poor sound quality. Ground quality satisfactory during ground testing. UA closure being processed. PAR K1156 sent to Downey on 06/07/91. UA approved and deferred one flight.
.
Flight Problem Report approved a Special Level II Daily PRCB on 06/13/91 (PRCBD# S044829D)

1
STS-037 (OV-104,FLT #8) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 24

IFA NUMBER> STS-37-V-19
TITLE:EVA Glove Palm Bar Penetrated Restraint And Glove Bladder

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 05/23/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044828G PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
P FIAR# JEMU-106-F001
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: P. OLIVER
2:
0 DESCRIPTION:
Following second of two EVA's, EV2 noted cut on right hand. Postflight inspection revealed glove palm bar was penetrating through restraint and bladder about 3/8" into index finger side of glove.
.
Stitches added to prevent palm bar movement.
.
Flight Problem Report approved at Special Level II Daily PRCB on 05/23/91 (PRCBD# S044828G).

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STS-037 (OV-104,FLT #8) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 25

IFA NUMBER> STS-37-V-2A

TITLE:Water Spray Boiler 2A Temporary Spray Bar Freeze-up During Ascent

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 095 : 14.30.00
IFA DATE: 04/05/1991
IFA STATUS: CLOSED : 06/13/1991
ELAPSED TIME: 000 : 00.07.16
PRACA STATUS: CLOSED : 1991-04-23
HOUSTON TIME: 09.30.00
PRCBD NUMBER: S044828Z
PHASE: ASCENT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M MMACS-02 P CAR 37RF02
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. GERLACH
2:
0 DESCRIPTION:
L/O temp reached 280 degree F. post MECO. Switched to B controller, but temp was already going down. Switched back to A. Ops normal.
.
WSB #2 will fly as-is. No hot oil flush performed.
.
Flight Problem Report approved at Special Level II Daily PRCB on 06/13/91 (PRCBD# S044828Z).

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STS-037 (OV-104,FLT #8) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 26

IFA NUMBER> STS-37-V-2B
TITLE:WSB 2A Lube Oil Overcool During Entry

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 101 : 13.24.00
IFA DATE: 04/11/1991
IFA STATUS: CLOSED : 06/13/1991
ELAPSED TIME: 005 : 23.01.16
PRACA STATUS: CLOSED : 1991-05-11
HOUSTON TIME: 08.24.00
PRCBD NUMBER: S044829
PHASE: ENTRY/LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
P CAR 37RF15
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. GERLACH
2:
0 DESCRIPTION:
Five minutes into spray mode during entry lube oil overcooling was seen for about 4.5 minutes. Minimum overcool temp 189 degrees F.
.
WSB #2 will fly as-is. No hot oil flush performed.
.
CAR Status: This CAR was submitted for closure on 05/02/91 with all actions transferred to CAR 37RF11.
.
Flight Problem Report approved at Special Level II Daily PRCB on 06/13/91 (PRCBD# S044829).

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STS-037 (OV-104,FLT #8) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 27

IFA NUMBER> STS-37-V-5A
TITLE:Forward Bulkhead Flood Light Out

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 097 : 18.48.00
IFA DATE: 04/07/1991
IFA STATUS: CLOSED : 06/11/1991
ELAPSED TIME: 002 : 04.25.16
PRACA STATUS: CLOSED : 1992-04-09
HOUSTON TIME: 13.48.00
PRCBD NUMBER: S044828P
PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR DDC-4-09-0050 M EGIL-02
P IM/37RF05

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

0 DESCRIPTION:
EVA crew reported light not working. Switch cycled off for 10 minutes, then back on. Light did not come on.
.
Troubleshooting on 04/29/91 confirmed lamp failure. Lamp R&R is complete and retest is good (05/03/91).
.
Flight Problem Report approved at Special Level II Daily PRCB on 06/11/91 (PRCBD# S044828P).

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STS-037 (OV-104,FLT #8) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 28

IFA NUMBER> STS-37-V-5B
TITLE:Mid Port Flood Light Out

0 MISSION CONSTRAINT: SUBS
IFA STATUS: CLOSED : 06/12/1991
PRACA STATUS: CLOSED : 1993-03-03
PRCBD NUMBER: S044828P
IFA TIME GMT: 100 : 09.00.00
IFA DATE: 04/10/1991
ELAPSED TIME: 004 : 18.37.16
HOUSTON TIME: 04.00.00
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M EGIL-03 P CAR 37RF06

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

0 DESCRIPTION:
OK on both EVA's. Flickered when turned on for PLBD closure. Previous deferred UA.
.
Troubleshooting on 04/29/91 found lamp working. UA to be deferred again. UA deferred again on 06/14/91.
.
CAR Status: IM upgraded to CAR on 06/27/91. Explained closeout with action required for all vehicles /all flights issued on 07/16/91.
.
Flight Problem Report approved at Special Level II Daily PRCB on 06/11/91 (PRCBD# S044828P).

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STS-037 (OV-104,FLT #8) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 29

IFA NUMBER> STS-37-V-10A
TITLE:Instrumentation: Body Flap Lower Skin Temperature (V09T1026A) Failed

0 MISSION CONSTRAINT: SUBS
IFA STATUS: CLOSED : 06/12/1991
PRACA STATUS: CLOSED : 1991-07-10
PRCBD NUMBER: S044828Y
IFA TIME GMT: 000 : 00.00.00
IFA DATE: 04/11/1991
ELAPSED TIME: 000 : 00.00.00
HOUSTON TIME: 00.00.00
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 43V-0012 K PR OEL-4-09-0046
P IM/37RF08

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

0 DESCRIPTION:
Exhibited cold bias and intermittant off-scale low. Reads 40 deg F, should be ambient. Intermittent found at body flap interface vehicle side. Found damaged solder sleeve at body flap interface (50P688).

.
Flight Problem Report approved at Special Level II Daily PRCB on
06/12/91 (PRCBD# S044828Y).

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STS-037 (OV-104,FLT #8) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 30

IFA NUMBER> STS-37-V-10B
TITLE:Instrumentation: APU 2 Injector Tube Temperature (V46T0274A) failed

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 101 : 14.19.00
IFA DATE: 04/11/1991
IFA STATUS: CLOSED : 06/12/1991 ELAPSED TIME: 005 : 23.56.16
PRACA STATUS: CLOSED : 1991-07-10 HOUSTON TIME: 09.19.00
PRCBD NUMBER: S044828K PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 43V-0002 P IM/37RF09
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. CORCORAN
2:
0 DESCRIPTION:
Sensor went erratic during entry and then failed low. Injector wired
to back-up measurement.
.
Flight Problem Report approved at Special Level II Daily PRCB on
06/04/91 (PRCBD# S044828K).

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STS-037 (OV-104,FLT #8) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 31

IFA NUMBER> STS-37-V-20A
TITLE:EV1 Right Earphone Lost Comm

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 06/11/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044828T PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
* ********NONE FOUND******* * ********NONE FOUND*******
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: P. OLIVER
2:
0 DESCRIPTION:
EV1 reported loss of comm during airlock depress. Postflight test
found 10 dB below spec.
.
Flight Problem Report approved at Special Level II Daily PRCB on
06/11/91 (PRCBD# S044828T).

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STS-037 (OV-104,FLT #8) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 32

IFA NUMBER> STS-37-V-20B
TITLE:EV2 Left Earphone Lost Comm

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 06/11/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044828T PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
* ********NONE FOUND******* * ********NONE FOUND*******

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

0 DESCRIPTION:
EV2 reported loss of comm during airlock depress.
.
Flight Problem Report approved at Special Level II Daily PRCB on 06/11/91 (PRCBD# S044828T).

-JFDP012: NORMAL TERMINATION OF PROCESSING

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STS-038 (OV-104,FLT #7) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 1

IFA NUMBER> STS-38-B-01
TITLE:Unidentified debris observed between L+26-40 seconds from base region of both SRB's
0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 12/03/1990 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1991-01-07 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044832A PHASE: ASCENT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K A13336
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: R. RUNKLE/EE13
2:
0 DESCRIPTION:
Photographic analysis identified debris exiting from the base region of both SRBs during the period of L+26-40 seconds.
.
The potential SRB debris sources include the Viton coated nylon on the thermal curtains, layers of the thermal curtains themselves, and the aluminum glass laminate tape used for thermal curtain closeout. The thermal curtain layers are not considered a likely source as there is no known failure mechanism for the loss of thermal curtain layers during this phase of the mission. Postflight assessment of both aft skirts revealed nominal hardware conditions (no abnormal instafoam erosion, no evidence of localized heating, rain shield attachment strips intact, and TVC system in good condition) which confirmed proper retention and performance of the thermal curtains. Loss of a thermal curtain at any location would have produced severe localized ablation. Also, thermal curtain loss in the projected TVC area would have produced hydrazine detonation. The Viton coated nylon (outermost layer of the thermal curtain) is designed to provide structural support during the SRM ignition pulse, after which it burns away. The photographic and engineering assessments consider the aluminum tape as the most likely candidate, which by design is expended during ascent. The tape serves to prevent rain intrusion and to contain GN2 during the on-pad purge operations. Loss of this tape has been observed and identified on previous flights during the early ascent phase. In conclusion, there were no installation problems or hardware discrepancies associated with the STS-38 thermal curtains. A review of the STS-35 thermal curtain installation and closeout was performed to verify proper installation. Based on this successful review and the noted nominal condition of the STS-38 aft skirt hardware, there is no concern for flight.
.
This problem was closed in the MSFC PRACA system for STS-39 and subs on 1-07-91.
.
Flight Problem Report approved at the Level II Noon PRCB on 12/03/90. (PRCBD #S044832A)

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STS-038 (OV-104,FLT #7) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95

IFA NUMBER> STS-38-B-01
TITLE:Unidentified debris observed between L+26-40 seconds from base region of both SRB's
0 DESCRIPTION: (Continued from previous page).

1
STS-038 (OV-104,FLT #7) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 3

IFA NUMBER> STS-38-B-02
TITLE:Right SRB ETA ring missing section of Insta-Foam at forward face

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 12/03/1990
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1991-01-07
HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044832B
PHASE: ASCENT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A A13337
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: R. RUNKLE/EE13
2:
0 DESCRIPTION:
The forward face of the right SRB ETA Ring had two areas of Instafoam missing.
.
There is a 10 X 12 inch piece missing from the forward face of the right SRB ETA ring near the diagonal strut. There is also a 4 X 6 inch piece of foam missing above the IEA. Heat effects on the exposed surfaces caused by the loss of Instafoam is attributed to the reentry thermal environment (no evidence of SSME plume impingement). The loss of Instafoam on the ETA Ring is not predicted during ascent due to aerodynamic loads. However, should Instafoam be lost during ascent, debris damage is unlikely due to the aft location and low density of the foam. The Instafoam loss on STS-38 is attributed to voids in the material which were introduced during the two step foam application process at KSC (by the Shuttle Processing Contractor). The foam was laid up too thick which caused higher exothermic heating, thus creating voids within the applied layers. The layer thickness was determined by a dimensional inspection of cross sections of the foam which were removed at the locations where the foam was missing. As corrective action, a Technician's Bulletin will be issued to advise the technicians and inspectors responsible for Instafoam application of the criticality of applying the Instafoam layers to the proper thickness. Technician certification will be enhanced by requiring annual recertification which will require a technician to spray a test panel for evaluation by engineering. Adherence to the OMI relative to the thickness of applied layers should prevent the future loss of foam.
.
This problem was closed in the MSFC PRACA system for STS-39 and subs on 1-07-91.
.
Flight Problem Report approved at the Level II Noon PRCB on 12/03/90. (PRCBD #S044832B)

1
STS-038 (OV-104,FLT #7) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 4

IFA NUMBER> STS-38-D-01
TITLE:Unexpected GPC 3 Talkback Indication.

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 323 : 18.45.00
IFA DATE: 11/19/1990
IFA STATUS: CLOSED : 02/15/1991
ELAPSED TIME: 003 : 18.56.45
PRACA STATUS: UNKNOWN
HOUSTON TIME: 12.45.00
PRCBD NUMBER: S044832K
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M DPS-01
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: G. SHAM
2:
0 DESCRIPTION:
During execution of block 11 (OPS entry config) of the D/O checklist, the crew brought GPC 3's mode switch from halt to stby. However, the talkback indication remained barberpole instead of going to run as expected.
.
Impact: None
.
Resolution: The GPC 3 HISAM dump analysis revealed that a proper put away of software was not performed during the G3FD procedure in the post insertion. GPC 3 was re-ipl'ed and rejoined the redundant set. During backout, GPC 3 was made the G3FD. GPC 3 will be used per nominal procedures. Procedural change will be made.
.
Flight Problem Report approved at Special Lv. II PRCB on 2/15/91 (PRCBD# S044832K).

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STS-038 (OV-104,FLT #7) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 5

IFA NUMBER> STS-38-I-01
TITLE:Forward Orbiter Attach Point Stop Bolt Bent

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 02/21/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044832D PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
* ********NONE FOUND******* * ********NONE FOUND*******
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1:
2:
0 DESCRIPTION:
Post-flight analysis of Orbiter Forward Separation Assembly revealed a bent stop bolt. A similar condition has been observed on other missions, STS-32 and STS-34 (IFAs were baselined for these flights). The cause of this condition is not understood.
.
Presentation made to Level II PRCB on 1/31/91. IFA was closed (PRCBD# S044832D).

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STS-038 (OV-104,FLT #7) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 6

IFA NUMBER> STS-38-V-01
TITLE:Water Spray Boiler (WSB) 2 not cooling while on CNTLR A

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE: 11/15/1990
IFA STATUS: CLOSED : 02/15/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-04-28 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044832M PHASE: ASCENT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR HYD-4-08-0324 M MMACS-01
P CAR 38RF01
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. GERLACH

2:

0 DESCRIPTION:
WSB 2 A failed to cool APU lube oil after end of the pool boiling period during ascent. WSB was switched to B controller and APU 2 was left on after APU 1 and 3 were shut down. Effective lube oil cooling was seen 1 minute 6 seconds after the switch to B controller. Performed nominally during entry. Apparent spray bar freeze-up. Problem seen on STS-4.
.
Controller "A" R&R'd, per CHIT J3480, completed on 1/12/91. Unit is at Vendor (1-28-91).
.
KSC LSOC Tracking Number(s): PV-6-177739
.
CAR Status: Issued on 1/17/91. CAR's 35RF09-010 and 35RF11-010 will be tracked under this CAR. Explained closeout for OV-102, Flt #11 (STS-40); OV-103, Flt #12 (STS-39); and OV-104, Flt #8 (STS-37) issued on 1-30-91.
.
Flight Problem report approved at Special Lv. II Daily PRCB on 2/15/91 (PRCBD# S044832M).

1

IFA NUMBER> STS-38-V-02
TITLE:FES Water Supply Accumulator Heater System Biased Low

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 320 : 02.00.00
IFA DATE: 11/15/1990
IFA STATUS: CLOSED : 02/13/1991
ELAPSED TIME: 000 : 02.11.45
PRACA STATUS: UNKNOWN
HOUSTON TIME: 20.00.00
PRCBD NUMBER: S044832E
PHASE: ASCENT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 37V-0014	K	PR ECL-4-08-0462
M	EECOM-01	P	CAR 38RF02

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

0 DESCRIPTION:
Heater 1 did not cycle on within its prescribed range of 55-75 deg F. When temp reached 49 deg, string 2 was activated. String 2 cycled between 48-54 deg F range with normal appearing duty cycles. String 1 reactivated and cycled like string 2. Suspect temp sensor (V63T1760A) debonding problem.
.
Temp sensor found debonded, to be repaired. Vendor scheduled to be on-site on 1/29/91, repair is complete (2-04-91).
.
CAR Status:
.
Flight Problem Report approved at Special Lv. II Daily PRCB on 2/13/91 (PRCBD# S044832E).

1

IFA NUMBER> STS-38-V-05
TITLE:APU Intrumentation Interaction

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 321 : 23.48.00
IFA DATE: 11/17/1990
IFA STATUS: CLOSED : 02/15/1991
ELAPSED TIME: 001 : 23.59.45
PRACA STATUS: CLOSED : 1991-02-07
HOUSTON TIME: 17.48.00

PRCBD NUMBER: S044832N PHASE: ON-ORBIT

	TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
0	K	IPR 37V-0007;-0008	K	PR APU-4-08-0228
	M	MMACS02	M	MMACS03
	M	MMACS04	M	MMACS06

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

0 DESCRIPTION:
APU 2 EGT's 1 & 2 (V46T0242A & V46T0240A) and APU 2 and APU 3 Injector Tube Temps (V46T0274A and V46T0374A) became erratic during launch. Analysis shows momentary shorting-to-ground of EGT's drove tube temps erratic. No problem with injector measurement, only EGT's.
.
Troubleshooting indicates EGT's are shorted to ground. Repairs are complete (2-05-91).
.
CAR 38RF05 Status: Issued on 1/22/91. Explained closeout for all flights issued on 1/22/91. CAR submitted for closure on 1/22/91. Explained closeout summary revised on 1-31-91.
.
Flight Problem Report approved at Special Lv. II Daily PRCB on 2/15/91 (PRCBD# S044832N). Action assigned to Orbiter and GFE Projects Office to return to a PRCB in two weeks with the current status of EGT's.
.
Action response was presented to Level II PRCB on 03/07/91.
Additional actions assigned to KSC-TM and JSC-VA per PRCBD S044832NR1.

1

IFA NUMBER> STS-38-V-06
TITLE:Right Vent Door 1, 2 Purge Position Failure

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 324 : 22.06.00
IFA DATE: 11/20/1990
IFA STATUS: CLOSED : 02/15/1991
ELAPSED TIME: 004 : 22.17.45
PRACA STATUS: CLOSED : 1992-01-30
HOUSTON TIME: 16.06.00
PRCBD NUMBER: S044832P
PHASE: POST LANDING

	TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
0	K	PR MEQ-4-08-0319	K	PR STR-2-11-2705
	M	MMACS-09	P	CAR 38RF06

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

0 DESCRIPTION:
During Postlanding Vent Door Purge positioning operation, the right vent door 1 and 2 drove to the closed position instead of the purge position. Purge could not be performed via R vents 1 and 2.
.
Problem found in PDU; PDU replacement/retest completed (2/05/91).
.
CAR Status: Issued on 1/21/91. No impact statement for OV-103, Flt #12 (STS-39), issued on 1/21/91. Explained closeout for OV-102, flt #11 (STS-40); OV-103, flt #12 (STS-39); and OV-104, flt #8 (STS-37) was issued on 03/21/91.
.
Flight Problem Report approved at Special Lv. II Daily PRCB on 2/15/91 (PRCBD# S044832P).

1

IFA NUMBER> STS-38-V-07

TITLE:Thruster R1U Low Pc

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 324 : 19.57.00
IFA DATE: 11/20/1990
IFA STATUS: CLOSED : 02/13/1991
ELAPSED TIME: 004 : 20.08.45
PRACA STATUS: CLOSED : 1991-05-20
HOUSTON TIME: 13.57.00
PRCBD NUMBER: S044832F
PHASE: ENTRY/LANDING

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 37V-0013	K	IPR 39V-0093
M	PROP-01	P	CAR 38RF08

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: T. WELCH
2:

0 DESCRIPTION:
R1U showed a degraded Pc by approximately 20 psi. Degraded jet performance or possible instrumentation bias. R1U was placed in last priority.
.
Pod, RP03, now on OV-103. Testing will be performed on that vehicle.
.
Mass spec. completed, no leakage found. Nine point cal. and Borescope inspection are complete, no problems found (1/29/91).
.
CAR Status: Issued on 1/25/91. No impact statement for OV-103, Flt #12 (STS-39) issued on 1/30/91. Closeout for all flights, all vehicles issued on 03/01/91. CAR submitted for closure on 03/01/91. All action transferred to CAR 37RF07. CAR resubmitted for closure on 05/02/91.
.
Flight Problem Report approved at Special Lv.II Daily PRCB on 2/13/91 (PRCBD# S044832F). Revision to FPR issued on 03/13/91 per PRCBD# S07699A.

1

IFA NUMBER> STS-38-V-08
TITLE:Continuous "Tire Press" FDA Messages Postlanding

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 324 : 21.50.00
IFA DATE: 11/20/1990
IFA STATUS: CLOSED : 02/13/1991
ELAPSED TIME: 004 : 22.01.45
PRACA STATUS: UNKNOWN
HOUSTON TIME: 15.50.00
PRCBD NUMBER: S044832J
PHASE: POST LANDING

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
M	MMACS-08	P	IM/38RF09

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

0 DESCRIPTION:
Continuous "tire press" FDA messages were seen following landing gear safing procedures postlanding. One set of messages is expected after removal of the landing gear "arm" flag during the procedure. Continuous messages were noted.
.
KSC inspection of tire pressure connectors show no problem.
.
Flight Problem Report approved at Special Lv. II Daily PRCB on 2/13/91 (PRCBD# S044832J).

1

IFA NUMBER> STS-38-V-09
TITLE:Smoke Detector Transient Event Indications Mission Duration

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 02/15/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1991-02-04 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044832G PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 37V-0014	K	PR ECL-4-08-0460
P	CAR 38RF10		

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

0 DESCRIPTION:
Several smoke detectors had event indicators go high but not high enough to trigger alarm. No corresponding increase in smoke concentrations noted. Will pull smoke detector from cabin HX for analysis in conjunction with CAR for STS-32 smoke detector anomaly.
.
Flight Problem Report approved at Special Lv. II Daily PRCB on 2/15/91 (PRCBD# S044832G).

1

IFA NUMBER> STS-38-V-3A
TITLE:Instrumentations: PRSD H2 Tank 3 Quantity Transducer Fail Off-Scale

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 320 : 07.05.00
IFA DATE: 11/16/1990
IFA STATUS: CLOSED : 02/13/1991 ELAPSED TIME: 000 : 07.16.45
PRACA STATUS: CLOSED : 1991-09-30 HOUSTON TIME: 01.05.00
PRCBD NUMBER: S044832H PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 37V-0005	K	PR FCP-4-08-0124
M	EGIL-02	P	CAR 38RF03

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

0 DESCRIPTION:
Transducer went from 97% to off-scale during LOS. Crew verified panel meter reading off-scale, too.
.
Signal Conditioner (S/C) sent to Vendor (Ball) for TT&E. ATP completed on 1/4/91. Ambient shift found in S/C, but not cause of IFA.
.
Programmatic decision made to not replace tank. New S/C installation in-work (1/16/91). First S/C had zero offset problem, 2nd S/C installation complete; retest complete and good.
.
CAR Status: Issued on 1/17/91. No impact statement for OV-103, Flt #12 (STS-39), issued on 1/17/91.
.
Flight Problem Report approved at Special Lv. II Daily PRCB on 2/13/91 (PRCBD# S044832H).

1

IFA NUMBER> STS-38-V-3B
TITLE:Instrumentation: APU 3 X-Axis Accelerometer Erratic

```
0 MISSION CONSTRAINT:            SUBS          IFA TIME GMT: 324 : 21.10.00
                                               IFA DATE:     11/20/1990
  IFA STATUS:   CLOSED   : 02/15/1991          ELAPSED TIME: 004 : 21.21.45
  PRACA STATUS: UNKNOWN                        HOUSTON TIME: 15.10.00
  PRCBD NUMBER: S044832H                       PHASE:        ENTRY/LANDING
0 TYPE      TRACKING NUMBER          TYPE      TRACKING NUMBER
   K   PR APU-4-08-0223               K   PR INS-4-08-0232
   P   CAR 38RF04
0 CLOSURE INITIATED BY:
  RESPONSIBLE MANAGERS 1: M. ENGLE
                       2:
0 DESCRIPTION:
   Acceleration trace erratic during Entry.  KSC to check connectors.
   APU 3 being R/R due to life/time cycle.
   .
   APU #3 removed, vehicle wiring T/S'ing found broken coaz (5OP3 Pin A).
   .
   Flight Problem Report approved at Special Lv.II Daily PRCB on 2/13/91
   (PRCBD# S044832H).

1
        STS-038 (OV-104,FLT #7) OFFICIAL INFLIGHT ANOMALY REPORT     01/31/95
                                                                     PAGE 15
  IFA NUMBER> STS-38-V-3C
  TITLE:Instrumentation:  MNA MPC1 Amps Transducer Failure

0 MISSION CONSTRAINT:            SUBS          IFA TIME GMT: 324 : 21.41.00
                                               IFA DATE:     11/20/1990
  IFA STATUS:   CLOSED   : 02/13/1991          ELAPSED TIME: 004 : 21.52.45
  PRACA STATUS: UNKNOWN                        HOUSTON TIME: 15.41.00
  PRCBD NUMBER: S044832H                       PHASE:        ENTRY/LANDING
0 TYPE      TRACKING NUMBER          TYPE      TRACKING NUMBER
   K   IPR 37V-0012                   K   PR EPD-4-08-0864
   M   EGIL-03                       P   CAR 38RF07
0 CLOSURE INITIATED BY:
  RESPONSIBLE MANAGERS 1: M. ENGLE
                       2:
0 DESCRIPTION:
   One minute prior to TD, the MNA MPC1 current dropped to zero
   (V76C3085A).  No change in FC1 amps detected.  OPS STATS did not go to
   zero.
   .
   Current sensor replacement completed.  Retest completed and data
   review was good.  PR to be closed.
   .
   Flight Problem Report approved at Special Lv.II Daily PRCB on 2/13/91
   (PRCBD# S044832H).

1
        STS-038 (OV-104,FLT #7) OFFICIAL INFLIGHT ANOMALY REPORT     01/31/95
                                                                     PAGE 16
  IFA NUMBER> STS-38-V-4A
  TITLE:GFE: Vacuum Cleaner Short Circuit

0 MISSION CONSTRAINT:            SUBS          IFA TIME GMT: 321 : 02.29.00
                                               IFA DATE:     11/16/1990
  IFA STATUS:   CLOSED   : 02/15/1991          ELAPSED TIME: 001 : 02.40.45
  PRACA STATUS: UNKNOWN                        HOUSTON TIME: 20.29.00
  PRCBD NUMBER: S044832L                       PHASE:        ON-ORBIT
0 TYPE      TRACKING NUMBER          TYPE      TRACKING NUMBER
   M   MMACS-05                      P   EPD-4-08-184
   P   FIAR BFCE-213-F005
```

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

0 DESCRIPTION:
When crew turned vacuum cleaner on, CB 29 on panel L4 was popped open by a current surge. No further use of utility outlet M013Q for remainder of flight. KSC to perform OMRSD V76AW0.030-B to verify no damage to outlet. Outlet test completed. Vacuum cleaner removed and shipped to JSC/FEPC on 11/21/90.
.
Troubleshooting at FEPC found short of Phase B to case in the vacuum cleaner.
.
Flight Problem Report approved at Special Lv. II Daily PRCB on 2/15/91 (PRCBD# S044832L).

1
STS-038 (OV-104,FLT #7) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 17

IFA NUMBER> STS-38-V-4B
TITLE:GFE: Closed Circuit TV Monitor 2 Fault Light ON

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 321 : 19.52.00
IFA DATE: 11/17/1990
IFA STATUS: CLOSED : 02/15/1991
ELAPSED TIME: 001 : 20.03.45
PRACA STATUS: UNKNOWN
HOUSTON TIME: 13.52.00
PRCBD NUMBER: S044832L
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	PR COM-4-08-0094	M	INCO-04
P	FIAR BFCE-029-F020	P	37V-0001

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

0 DESCRIPTION:
Fault light came on indicating monitor overtemp or undervoltage. Crew performed mal procedure and fault light didn't clear. Monitor 2 powered off for remainder of mission unless monitor 1 fails.
.
Failure was reproduced at KSC. Monitor R&R completed on 1/16/91. Retest per OMI V1256 complete (2/8/91).
.
Flight Problem Report approved at Special Lv. II Daily PRCB on 2/15/91 (PRCBD# S044832L).

1
STS-038 (OV-104,FLT #7) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 18

IFA NUMBER> STS-38-V-4C
TITLE:GFE: Camera C - Failed To Focus

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 320 : 03.51.00
IFA DATE: 11/15/1990
IFA STATUS: CLOSED : 02/15/1991
ELAPSED TIME: 000 : 04.02.45
PRACA STATUS: UNKNOWN
HOUSTON TIME: 21.51.00
PRCBD NUMBER: S044832L
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
M	INCO-01	P	FIAR BFCE 029-F021

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

0 DESCRIPTION:
During first attempt to use Camera C, the crew was unable to focus the camera. Camera C focus capability was regained when CCTV system was

power cycled.
.
Flight Problem Report approved at Special Level II Daily PRCB on 02/15/91 (PRCBD# S044832L).

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STS-038 (OV-104,FLT #7) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 19

IFA NUMBER> STS-38-V-4D
TITLE:GFE: Camera D - No Power

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 320 : 03.51.00
IFA DATE: 11/15/1990
IFA STATUS: CLOSED : 02/15/1991
ELAPSED TIME: 000 : 04.02.45
PRACA STATUS: UNKNOWN
HOUSTON TIME: 21.51.00
PRCBD NUMBER: S044832L
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 37V-0024	M	INCO-02
P	FIAR BFCE 029-F023		

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

0 DESCRIPTION:
When crew powered up Camera D, there was no indication of power to the camera (i.e. no lights for ALC or gamma). Crew power-cycled the CCTV system and Camera D and recovered the camera for the remainder of the flight. Postflight, crew commented that a similar problem was seen during preflight testing. Test plan in work.
.
Flight Problem Report approved at Special Level II Daily PRCB on 02/15/91 (PRCBD# S044832L).

-JFDPO12: NORMAL TERMINATION OF PROCESSING

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1
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STS-039 (OV-103,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 1

IFA NUMBER> STS-39-D-01
TITLE:Orbiter State Vector GMT Time Tag Error

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 122 : 01.03.00
IFA DATE: 05/22/1991
IFA STATUS: CLOSED : 07/23/1991 ELAPSED TIME: 003 : 13.29.46
PRACA STATUS: UNKNOWN HOUSTON TIME: 20.03.00
PRCBD NUMBER: S044844V PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M FDO-01
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: T. BROWN
2:
0 DESCRIPTION:
Approximately 30 minutes prior to the CRO-C deploy (MET 3/13:30), it was determined that the orbiter state vector would require updating. The on-board state had drifted during the initial SPAS deploy (approx. 50,000 ft downtrack), and it was desirable to correct the error prior to starting the far field/near field transition. NAV provided a solid SPAS state vector based on ground tracking. This vector, along with the current downlinked orbiter and target state vectors were transferred to the FDO workstation (technique was approved pre-flight). Workstation software was used to generate an inertial orbiter state vector based on the ground SPAS vector which gave the same relative offset position as the on-board vectors. The new state vector was then manually input into the MOC. The vector was displayed and input correctly by comparing it to the hard copy. In addition, the relative offsets of this new orbiter vector with the ground SPAS vector were computed and verified to be identical to the on-board offsets. Both orbiter and target state command loads were generated and uplinked with FD concurrence. Both two stage commands were successfully transmitted. The on-board target state updated as expected. However, no update of the orbiter state occurred. A second update was suggested, but FDO did not wish to send the command again until the error was determined. Instead, the radar was used to re-converged the orbiter state. This took approx 5 minutes.
.
Impact: None
.
Resolution: After the on-board state had been squared away, FDO and dynamics began investigating what went wrong. After approx 20 minutes, it was found that the command load (which had to be manually built) had a GMT time tag error. The GMT day had been set to 22 instead of 122. This typo had escaped FDO's QA of the command load. Since the vector was so far in the past, on-board NAV had rejected it.
.
Flight Problem Report approved at Special Level II Daily PRCB on 07/23/91 (PRCBD# S044844V).

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STS-039 (OV-103,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 2

IFA NUMBER> STS-39-D-02
TITLE:Incorrect SPAS Recovery Attitude

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 121 : 11.36.00
IFA DATE: 05/01/1991
IFA STATUS: CLOSED : 07/30/1991 ELAPSED TIME: 003 : 00.02.46

PRACA STATUS: UNKNOWN HOUSTON TIME: 06.36.00
PRCBD NUMBER: S044844Y PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
M	FAO-01		

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

0 DESCRIPTION:
During the initial sun sensor ops, the sun sensor caused a SPAS attitude reference error. (It is believed that the sun sensor interpreted the sun position incorrectly.) The pointers computed a "fake" attitude to send to the SPAS in order to reinitialize the attitude reference. The attitude error (from SPAS telemetry) was input incorrectly into the (SPAS-ERROR) program, which caused an incorrect "fake" attitude to be sent to the crew. An ACS INIT was performed in this attitude. When it was realized that this was the case, a new attitude was generated to account for the total error. This time, a correct attitude was computed, however, it was transcribed into an incorrect euler sequence. The SPAS was maneuvered to this attitude which did not appear to be correct either. After evaluating the sequence and all attitudes, the error was found and we were able to account for all data that were being seen. The attitude was sent to the SPAS (in the correct euler sequence), the ACS INIT was done, and the attitude reference was re-established.
.
Impact: Improper SPAS attitude resulting in delay of deployed operations until attitude reference re-established.
.
Resolution: After evaluating the sequence of events and all attitudes, the error was found and a new recovery attitude was computed, re-establishing a proper attitude reference.
.
Flight Problem Report approved at Special Level II Daily PRCB on 07/30/91 (PRCBD# S044844Y).

1

IFA NUMBER> STS-39-E-01
TITLE:ME-3 HPOTP Secondary Seal Cavity Pressure Transducer Anomaly

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE: 04/23/1991
IFA STATUS: CLOSED : 05/17/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044844A PHASE: PRE-LAUNCH

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
A	PV-6-186781	A	PV-6-186782
A	UCR A013729	A	UCR A030780
K	IPR 39V-0247	K	IPR 39V-0253
K	PR ME2029-0191	K	PR ME2029-0192

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: C. PINSON/EE23
2:

0 DESCRIPTION:
During the STS-39 propellant loading phase, an LCC violation occurred on the ME-3 (E-2029) HPOTP secondary seal cavity pressure measurement at Channel A.
.
This LCC violation resulted in a scrubbed first attempt to launch STS-39 on 04-23-91. The HPOTP secondary seal cavity pressure sensor has qualification limits of 4 psia minimum and 20 psia maximum. Both Channel A and Channel B must remain within these limits before engine start can be given. This is to ensure proper sensor function and

redundancy for the redline paramenter during ascent. Channel A drifted high and violated the 20 psia LCC limit during LH2 reduced fast fill (at approximately 4:13:30 GMT). Channel B was nominal. Sensor (S/N 48956) and Channel A controller harness were removed from E-2029 and sent to the Huntsville Simulation Laboratory for failure analysis. The failure was duplicated and isolated to the sensor by a series of chill tests. A new sensor and Channel A harness were installed on E-2029 for the STS-39 launch on 04-28-91. Harness S/N 4872342 is currently under re-evaluation for further flight use and the failed pressure sensor was returned to the vendor for teardown.

.

Disassembly at the vendor revealed a fracture in the resistor grid trace on the impedance board. SEM analyis identified 3 defects on the impedance board: 1)pre-existing foil damage, 2)trace(s) lifted from board, and 3) no epoxy overcoat. The observed damage made the sensor vulnerable to the aft compartment environment. Analysis and lab test showed no evidence of a generic design problem. No failure occurred during thermal cycling of ten (10) impedance boards from various lots. Nineteen (19) sensors from the same impedance board lot have accumulated 580 starts and 229,313 seconds. Nine (9) units have flown a total of 43 flights.

.

In conclusion, this was the only impedance board failure in the program history of these transducers. Also, there is no evidence of a generic design probem. An endorsement of these conclusions is

1

IFA NUMBER> STS-39-E-01
TITLE:ME-3 HPOTP Secondary Seal Cavity Pressure Transducer Anomaly

0 DESCRIPTION: (Continued from previous page).
founded on the total board exposure of 3,250,000 seconds, flight exposure of 750,000 seconds, MFV loacation exposure of 68,065 seconds, and 254 total chill cycles on 34 units.

.

KSC CAAR Tracking Numbers: PV-6-186781 and PV-6-186782

.

Contractor Tracking Numbers: UCR's A030780 and A013729

.

This problem has been closed in the Level III MSFC PRACA system for STS-40 and subs on 05/15/91.

.

Flight Problem Report submitted for OSB closure on 05/14/91 (PRCBD# S044844A). Directive signed 05/17/91.

1

IFA NUMBER> STS-39-G-01
TITLE:STP-1 COMMAND PROBLEM

0 MISSION CONSTRAINT: SUBS

IFA TIME GMT: 119 : 03.43.00
IFA DATE: 04/28/1991
IFA STATUS: CLOSED : 09/20/1991
ELAPSED TIME: 000 : 16.09.46
PRACA STATUS: UNKNOWN
HOUSTON TIME: 22.43.00
PRCBD NUMBER: S044845
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M PYLD-05

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

0 DESCRIPTION:

STP-1 avionics failed to respond to commands. PSP did not record a reject of the command. The command was then sent two-stage to verify that it was getting onboard. It got onboard, but STP-1 still didn't respond. INCO sent 2 dummy (reconfig.) loads to the PSP to check the link from the GPC. The PSP responded properly. After this point, STP-1 began responding to commands. Unable to tell if the problem was with STP-1 or orbiter hardware.

.

Impact: None

.

Resolution: Believe problem may have been that PSP was not configured for STP-1 command.

.

This IFA was tranferred from MOD, STS-39-D-03, on 07/03/91 per PRCBD# S044844R2 (CR S044844H).

1

IFA NUMBER> STS-39-I-01
TITLE:ISP Effects on Abort Region Determinator (ARD) Calculations

0 MISSION CONSTRAINT: SUBS
IFA STATUS: CLOSED : 05/31/1991
PRACA STATUS: UNKNOWN
PRCBD NUMBER: S044844D
IFA TIME GMT: 000 : 00.00.00
IFA DATE: 04/28/1991
ELAPSED TIME: 000 : 00.00.00
HOUSTON TIME: 00.00.00
PHASE: ASCENT

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

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

0 DESCRIPTION:
During STS-39 second stage ascent, the ARD identified a 4000 pound performance trend which caused the first TAL call to occur 3 seconds later than predicted and the PTA call was 14 seconds later. MECO occurred 1.1 seconds later than predicted.

.

Flight Problem Report was approved at the Level II PRCB on 05/31/91 (PRCBD# S044844D).

1

IFA NUMBER> STS-39-K-01
TITLE:APU 2 Lube Oil Outlet Pressure Low

0 MISSION CONSTRAINT: SUBS
IFA STATUS: CLOSED : 08/20/1991
PRACA STATUS: UNKNOWN
PRCBD NUMBER: S044844Z
IFA TIME GMT: 126 : 18.11.00
IFA DATE: 05/06/1991
ELAPSED TIME: 008 : 06.37.46
HOUSTON TIME: 13.11.00
PHASE: ENTRY/LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 48V-0007 M MMACS-03
P IM/39RF09

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

0 DESCRIPTION:
APU 2 lube oil outlet pressure was lower than normal during entry. Ran as low as 25 psia.

.

Visual inspection of aft compartment at KSC showed no indication on a

leak. Ullage test and catch bottle inspection in work. Ullage check shows ullage is high. Low oil quantity occurred prior to flight during OPF ullage check processing. Will re-fly APU.

.

This IFA was transferred from ORB, STS-39-V-11, on 07/03/91 per PRCBD# S044844R2 (CR S044844H).

.

Flight Problem Report, with changes, was approved at Special Level II Daily PRCB on 08/20/91 (PRCBD# S044844Z).

1

IFA NUMBER> STS-39-M-01
TITLE:Excess Erosion on Right RSRM Nozzle Cowl And Outer Boot Ring(OBR)

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 05/21/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-04-15 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044844C PHASE: POST LANDING

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
A	A13762	D	SPR# DR4-5/208

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. THORNTON/EE53
2:

0 DESCRIPTION:
The right RSRM nozzle cowl and OBR showed wedgeouts that occurred during motor operation and eroded wash areas in the insulation that were more extensive than commonly observed.

.

The right RSRM nozzle cowl displayed unusual erosion patterns. This cowl had erratic erosion, ply lifting , and atypical short ply wedgeouts during motor operation. Postflight inspections of the nozzle flight hardware have typically shown that erosion washout areas are commonly seen. Although this condition is an expected event, rationale is neccessitated in explaining this more extensive case of erosion. The deep cowl wash/erosion areas on STS-39 resulted in two-sided heating on the OBR, causing unusual forward side wedgeouts. The OBR wedgeouts showed evidence of erosion, confirming this condition occurred during motor operation. Core samples revealed that the worst case wash out erosion of 0.42" deep occurred at 80 degrees with a positive margin of safety of 0.15 (minimum) above the required 1.5 factor of safety CEI requirement. This value is within the TC experience database. The worst case wash out erosion occurred on PV-1 and measured 0.51" deep.

.

The largest STS-39 wedgeout measured was 1.15" radially and occurred at 300 degrees. This value is also within the TC experience database. The worst case wedgeout occurred on STS-41 (RSRM-13B) and measured 1.45" radially. Postburn wedgeouts in the cowl and OBR are common observations. To date, nineteen out of 28 postflight cowls have had wedgeouts. Also, twelve out of 28 OBR's have shown wedgeouts. Positive margins of safety have been demonstrated on all RSRM cowls.

.

A statistical correlation based on TC data revealed that a decrease in the permeability of Carbon Cloth Phenolic (CCP) increased the chance of postburn wedgeouts. However, these wedgeouts have never exceeded material depths prohibitively, as all RSRM cowls and OBR's have consistently demonstrated positive margins of safety.

.

As corrective action, a design change is being pursued to change the cowl ring liner ply angle from 0 degrees to 50 degrees. This will improve erosion consistency and reduce ply lifting and wedgeout

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STS-039 (OV-103,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 9

IFA NUMBER> STS-39-M-01
TITLE:Excess Erosion on Right RSRM Nozzle Cowl And Outer Boot Ring(OBR)

0 DESCRIPTION: (Continued from previous page).
potential. This change has been successfully demonstrated on TEM-06 and TEM-07. The qualification process for flight is planned for TEM-08. Implementation decision will be assessed subsequent to the qualification completion.
.
The STS-39 erosion/wash areas did not violate CEI char erosion requirements or performance margins of safety. A completed review of the materials and processing logs did not identify any unusual differences or discrepancies on other motors. In addition, the permeability data for the STS-40 cowl is substantially higher than the STS-39 values and higher than five other successfully flown cowls. A statistical assessment of the RSRM flight database concludes that there is a high probability of meeting a 1.5 factor of safety for the cowl (99.2%) and for the OBR (96%) on future flights. Also, the probability of violating a 1.0 factor of safety is less than 0.01% for both components. Based on this rationale, the next mission (STS-40) is considered safe for flight.
.
This problem remains open in the Level III MSFC PRACA tracking system.
.
Flight Problem Report approved at Special Level II Daily PRCB on 05/21/91 (PRCBD# S044844C).

1
STS-039 (OV-103,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 10

IFA NUMBER> STS-39-P-01
TITLE:CHEMICAL RELEASE OBSERVATION (CRO) LAUNCHER B FAILURE

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 122 : 18.03.00
IFA DATE: 05/02/1991
IFA STATUS: CLOSED : 02/07/1992
ELAPSED TIME: 004 : 06.29.46
PRACA STATUS: UNKNOWN
HOUSTON TIME: 13.03.00
PRCBD NUMBER: S044845A
PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M PYLD-15
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: N. KEEGAN
2:
0 DESCRIPTION:
When CRO "B" launch was first attempted, the SPASP "LNCHR SEL B" talkback did not operate when select switches were properly set (S2 up-S1 down). Also, when "Prearm" was switched, the Prearm T/B did not operate. On a second attempt, both talkbacks operated properly and subsat launch was successful.
.
Impact: None
.
Resolution: Failure suspected to be due to high resistance switch contact on SPASP, causing excessive voltage drop from launcher battery power supply (12V). Final resolution pending post-flight testing/analysis.
.
CHIT J3567 approved at PRCB on 05/12/91. Troubleshooting is complete.
.

Flight Problem Report approved at a Special Level II Daily PRCB on 09/20/92 (PRCBD# S044845A).

1

IFA NUMBER> STS-39-P-02
TITLE:SPAS Battery C - Unexpectly Turned Off

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 122 : 23.43.00
IFA DATE: 05/02/1991
IFA STATUS: CLOSED : 02/07/1992
ELAPSED TIME: 004 : 12.09.46
PRACA STATUS: UNKNOWN
HOUSTON TIME: 18.43.00
PRCBD NUMBER: S044845B
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
M	PYLD-16		

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

0 DESCRIPTION:
When the panel activate switch was turned on during In Bay OPS, the battery C power was switched off, unexpectedly. During SPAS grapple for SPAS/RMS operations, when the panel activate switch was turned off the battery C power was switched off. The crew turned the panel activate switch and battery C switch back on, respectively. When the crew turned panel activate switch off, battery C power remained on.
.
Impact: Batt C can be turned back on by the appropriate commands. No restrictions upon system operations.
.
Resolution: Believe the anomaly was caused by capacitance in the cable between SPAS and SSP (Standard Switch Panel) when the pnl activated sw was placed in the ON position.
.
Troubleshooting at KSC per CHIT J3567, approved on PRCBD S052912AR1 (06/05/91), is complete.
.
Flight Problem Report approved at a Special Level II Daily PRCB on 02/07/92 (PRCBD# S044845B).

1

IFA NUMBER> STS-39-V-01
TITLE:FES Feedline A System 2 Heater Failure

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 118 : 06.00.00
IFA DATE: 04/28/1991
IFA STATUS: CLOSED : 07/17/1991
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1991-08-15
HOUSTON TIME: 01.00.00
PRCBD NUMBER: S044844K
PHASE: PRE-LAUNCH

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 48V-0002	K	PR OEL-3-12-0085
M	EECOM-01	P	CAR 39RF01

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

0 DESCRIPTION:
Before launch, feedwater A line heater #2 failed, most likely because of a short, causing the fuse to open. Heater 1 was activated for remainder of mission.
.
Trouble-shooting at KSC verified zero voltage at ALCA #2. Heater

check complete and good. Additional troubleshooting to isolate cause in work. Failed meggar check-short circuit downstream of 55P316. ALCA #2 changeout complete (06/05/91).

.

FES heater checked out okay. Troubleshooting harness from avionics bay #5 to FES is complete. Found several locations in the FES heater circuit where the wire was damaged or shorted. FES heater circuit wires were replaced from the avionics bay 5 interface to the splice at the FES heater.

.

CAR Status: IM upgraded to CAR on 06/21/91. Explained closeout for all vehicles/all flights issued on 08/01/91. CAR submitted for closure by RI/DNY on 08/02/91.

.

Flight Problem Report approved at Special Level II Daily PRCB on 07/17/91 (PRCBD# S044844K).

1

IFA NUMBER> STS-39-V-02
TITLE:APU 2 Fuel Pump/GGVM Coolant Sys A Valve Did Not Operate

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 118 : 11.50.00
IFA DATE: 04/28/1991
IFA STATUS: CLOSED : 07/17/1991
ELAPSED TIME: 000 : 00.16.46
PRACA STATUS: CLOSED : 1991-12-16
HOUSTON TIME: 06.50.00
PRCBD NUMBER: S044844L
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 48V-0009	K	PR APU-3-13-0284
M	MMACS-02	P	IM/39RF02

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

0 DESCRIPTION:
After APU shutdown, no cooling was noted on APU 2 Fuel Pump/GGVM while on system A. System B was successfully activated to cool the fuel pump/GGVM. Valve was flying under time/life exception EV2123R1. This valve plus seven others are to be R&R'd.

.

Valve R&R is in work.

.

Flight Problem Report presented to Special Level II Daily PRCB on 07/17/91. Directive was signed outside of board on 07/18/91 (PRCBD# S044844L).

1

IFA NUMBER> STS-39-V-03
TITLE:F5R Fuel Injector Temperature Low

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 118 : 15.14.00
IFA DATE: 04/28/1991
IFA STATUS: CLOSED : 06/12/1991
ELAPSED TIME: 000 : 03.40.46
PRACA STATUS: CLOSED : 1991-07-03
HOUSTON TIME: 10.14.00
PRCBD NUMBER: S044844G
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
M	PROP-02	P	CAR 39RF03
P	IM/39RF03		

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

0 DESCRIPTION:
F5R fuel injector temp runs 30 to 40 degrees lower than OX injector temp. GMEM ready to lower RM limit down to 90 degrees if necessary.
.
No KSC action required. Seen before on previous flights; Fly-as-is.
.
CAR Status: IM upgraded to CAR on 06/04/91. Explained closeout for all vehicles/all flights issued on 06/25/91. CAR was submitted for closure by RI/DNY on 06/26/91.
.
Flight Problem Report approved at Special Level II Daily PRCB on 06/12/91 (PRCBD# S044844G).

1

IFA NUMBER> STS-39-V-04
TITLE:OPS 2 Recorder Uncommanded Reconfiguration Before Launch

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 118 : 10.36.00
IFA DATE: 04/28/1991
IFA STATUS: CLOSED : 07/18/1991
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN
HOUSTON TIME: 05.36.00
PRCBD NUMBER: S044844P
PHASE: PRE-LAUNCH

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR48V0004	K	PR DIG-3-13-0236
M	DPS-02	P	FIAR BFCE-029-F035

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

0 DESCRIPTION:
OPS 2 recorder was found to be recording just after the BFS OPS 1 transition. Recorder was commanded off, then used nominally through ascent. Second recurrence at 125:14:21:18 in PASS and GPC4-recorder changed speed, stopped, restarted and jumped tracks and went to serial. Bite status read not performed due to an emergency power down. PF-2 MDM to be R&R'd. Spare available at KSC.
.
PF-2 MDM R&R is complete (06/04/91).
.
CAR Status: IM upgraded to CAR 39RF04 on 07/08/91. Explained write-up with action required for all vehicles/all flights issued on 07/09/91.
.
Flight Problem Report approved at Special Level II Daily PRCB on 07/18/91 (PRCBD# S044844P).

1

IFA NUMBER> STS-39-V-05
TITLE:MADS FDM Bites

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 118 : 12.08.00
IFA DATE: 04/28/1991
IFA STATUS: CLOSED : 07/18/1991
ELAPSED TIME: 000 : 00.34.46
PRACA STATUS: CLOSED : 1993-05-10
HOUSTON TIME: 07.08.00
PRCBD NUMBER: S044844Q
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 48V-0012	K	PR INS-3-13-0514
M	INCO-01	P	IM/39RF05

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: J. GUTHERY

2:

0 DESCRIPTION:
MADS FDM 2 MUX 1 & 2 BITE indications were annunciated when MADS was powered up to capture OMS-2 data. Indicates FM data may be lost.
.
Bites showed good at 124:06:55. MADS dump is complete. Data review showed MUX 2 data loss during OMS-2. FDM #2 to be R&R'd; suspect failed power supply.
.
FDM 2 R&R is complete; ready for re-test (06/07/91).
.
Flight Problem Report approved at Special Level II Daily PRCB on 07/18/91 (PRCBD# S044844Q).

1

IFA NUMBER> STS-39-V-06
TITLE:Rendezvous Radar Loss of Lock

0 MISSION CONSTRAINT: SUBS
IFA STATUS: CLOSED : 07/19/1991
PRACA STATUS: CLOSED : 1992-10-09
PRCBD NUMBER: S044844T
IFA TIME GMT: 121 : 20.46.00
IFA DATE: 05/01/1991
ELAPSED TIME: 003 : 09.12.46
HOUSTON TIME: 15.46.00
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 48V-0025	M	INCO-06
P	CAR 39RF06		

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

0 DESCRIPTION:
Radar lost lock a number of times in all modes except manual, which was not tried.
.
Trouble-shooting plan discussed at a 05/09/91 telecon. CHIT J3573 written and released for review. CHIT J3573A withdrawn on 05/16/91 (not approved). KSC will troubleshoot during normal turnaround processing. (MC409-0025-3008 DA, -1005 EA #1 spares available at KSC; MC409-0025-2001 EA #2 no spare available at KSC).
.
Troubleshooting complete; system radar lock and power output test good.
.
CAR Status: IM upgraded to CAR on 07/08/91. Explained writeup with action required for all vehicles/all flights issued on 06/13/91.
.
Flight Problem Report approved at Special Level II Daily PRCB on 07/19/91. (PRCBD# S044844T).

1

IFA NUMBER> STS-39-V-07
TITLE:CCTV Intermittent TLM Freeze and Video Loss (GFE)

0 MISSION CONSTRAINT: SUBS
IFA STATUS: CLOSED : 07/19/1991
PRACA STATUS: UNKNOWN
PRCBD NUMBER: S044844U
IFA TIME GMT: 121 : 12.30.00
IFA DATE: 05/01/1991
ELAPSED TIME: 003 : 00.56.46
HOUSTON TIME: 07.30.00
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR48V0026	K	PR COM-3-13-0173,74

M INCO-05 P FAIR RCA-TV-G-0394

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

0 DESCRIPTION:
121:12:30. 1) Crew attempted to reset pan/tilt angles on Camera A with no joy. Cleared with several power cycles of CCTV Contr Unit Power.

.

123:02:46. 2) S76 Comm message annunciated and all camera TLM frozen. Restored with VCU power cycle.

.

124:00:46. 3) No image from end effector camera noted by crew. Restored with VCU power cycle.

.

CHIT J3574 spells out troubleshooting plan. CHIT approved on 05/16/91.

.

Troubleshooting, per CHIT J3574, duplicated the problem. Video Switch Unit (VSU) and Remote Control Unit (RCU) R&R complete (06/05/91).

.

Flight Problem Report approved at Special Level II Daily PRCB on 07/19/91 (PRCBD# S044844U).

1

IFA NUMBER> STS-39-V-08
TITLE:Supply Water Dump Nozzle Temperature Drop

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 123 : 07.50.00
IFA DATE: 05/03/1991
IFA STATUS: CLOSED : 07/12/1991 ELAPSED TIME: 004 : 20.16.46
PRACA STATUS: CLOSED : 1992-04-16 HOUSTON TIME: 02.50.00
PRCBD NUMBER: S044844J PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 48V-0011 K PR V070-3-12-0363
M EECOM-03 P IM/39RF07

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

0 DESCRIPTION:
During supply water dump 5, temperature of nozzle rapidly decreased approximately 30 degrees, then recovered to normal temps. Two subsequent recurrences. One happened after heater start, before water flow.

.

Could not reproduce problem at KSC. Proceeding to wire wiggle tests on 05/17/91. Clamp on amp. meter and wire wiggle checks complete. No anomaly identified.

.

Troubleshooting complete; will add wire for new measurement to monitor heater (06/27/91). UA approved and deferred to flight# 14.

.

Flight Problem Report was approved at Special Level II Daily PRCB on 07/12/91 (PRCBD# S044844J).

1

IFA NUMBER> STS-39-V-09
TITLE:GFE: Treadmill Exhibited Excessive Resistance

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 124 : 01.39.00
IFA DATE: 05/04/1991
IFA STATUS: CLOSED : 06/10/1991 ELAPSED TIME: 005 : 14.05.46
PRACA STATUS: UNKNOWN HOUSTON TIME: 20.39.00
PRCBD NUMBER: S044844F PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M CRSYS-01 P FIAR BFCE-213-F007
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: P. OLIVER
2:
0 DESCRIPTION:
While using the treadmill, the PLT reported an audible snap and the treadmill resistance increased to almost infinite.
.
Treadmill has been returned to JSC. Investigation at JSC found the bearing on the governor froze. The bearing was replaced with a new bearing. The treadmill has been returned to service and shipped to KSC to support STS-40.
.
Flight Problem Report approved at Special Level II Daily PRCB on 06/10/91 (PRCBD# S044844F).

1

IFA NUMBER> STS-39-V-10
TITLE:LH Body Flap Auto/Man PBI Contact 3 Hard To Make (S9 Panel F2)

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 125 : 16.38.00
IFA DATE: 05/05/1991
IFA STATUS: CLOSED : 07/17/1991 ELAPSED TIME: 007 : 05.04.46
PRACA STATUS: CLOSED : 1991-11-15 HOUSTON TIME: 11.38.00
PRCBD NUMBER: S044844N PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 48V-0010 K PR DDC-3-13-0061
M GNC-01 P CAR 39RF08
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: M. ENGLE
2:
0 DESCRIPTION:
During FCS check-out, CDR reported that contact 3 would only make when very firmly depressed. Data review verifies contact 3 not made and/or lagging.
.
KSC troubleshooting confirmed switch problem. Panel F2 removal complete and shipped to NSLD for repair. Repair complete and panel has been reinstalled and is ready for retest.
.
CAR Status: Explained closeout with action required for all vehicles/all flights issued on 06/07/91. Change to closeout per ASR issued on 06/21/91.
.
Flight Problem Report approved at Special Level II Daily PRCB on 07/17/91 (PRCBD# S044844N).

1

IFA NUMBER> STS-39-V-12
TITLE:Right Outboard Main Tire Excessive Wear

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE: 05/06/1991

IFA STATUS: CLOSED : 08/08/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-01-15 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044844W PHASE: ENTRY/LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
P IM/39RF10
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. GERLACH
2:
0 DESCRIPTION:
Right outboard tire appeared to have shredded 3 plies during landing.
.
No KSC action other than normal processing. Outboard tire has been removed and is being expedited to the vendor (Michelin). Awaiting failure analysis.
.
Flight Problem Report approved at Special Level II Daily PRCB on 08/08/91 (PRCBD# S044844W).

1
STS-039 (OV-103,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 23
IFA NUMBER> STS-39-V-13
TITLE:Loss Of S-Band Downlink And Uplink On Entry

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 126 : 18.29.00
IFA DATE: 05/06/1991
IFA STATUS: CLOSED : 06/05/1991 ELAPSED TIME: 008 : 06.55.46
PRACA STATUS: CLOSED : 1991-05-17 HOUSTON TIME: 13.29.00
PRCBD NUMBER: S044844E PHASE: ENTRY/LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M INCO-07 P IM/39RF11
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: B. SWAN
2:
0 DESCRIPTION:
Lost S-band two-way on entry. No KSC action required other than normal processing.
.
To be closed as explained.
.
Flight Problem Report approved at Special Level II Daily PRCB on 06/05/91 (PRCBD# S044844E).

1
STS-039 (OV-103,FLT #12) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 24
IFA NUMBER> STS-39-V-14
TITLE:PLT's RHC Traveled to Full Aft Position & Adjust Knob Could Not Be Moved
0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 07/18/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1991-07-10 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044844M PHASE: ENTRY/LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
P IM/39RF13
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: W. LEVERICH
2:
0 DESCRIPTION:
PLT reported that when he was done flying his portion of the HAC and CDR took control, the PLT's RHC rotated to the full aft position. The PLT tried to re-adjust the RHC but the adjust knob could not be moved.

KSC found knob to be full open & movable.

.

Added as an IFA on 05/17/91 per PRCBD# S044844R1.

.

Flight Problem Report approved at Special Level II Daily PRCB on 07/18/91 (PRCBD# S044844M).

-JFDPO12: NORMAL TERMINATION OF PROCESSING

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STS-040 (OV-102,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 1

IFA NUMBER> STS-40-I-01
TITLE:CYLINDRICAL OBJECT DEBRIS AT ET SEP *** TRANSFERED TO STS-40-V-16 PER S044836A ***
0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE: 06/05/1991
IFA STATUS: CLOSED : 07/03/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044836A PHASE: ASCENT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
* ********NONE FOUND******* * ********NONE FOUND*******
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: G. GOOD
2:
0 DESCRIPTION:
This IFA was transferred to ORB as STS-40-V-16 on 07/03/91 per CR S044836A.

1

STS-040 (OV-102,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 2

IFA NUMBER> STS-40-K-01
TITLE:LH2 Recirc Pumps Dropped Off-Line for 15 Seconds

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE: 06/05/1991
IFA STATUS: CLOSED : 10/03/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044836K PHASE: PRE-LAUNCH
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 40V-0211 K IPR 50V-0002
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: C. ABNER
2:
0 DESCRIPTION:
The 1T100 400 HZ power supply voltage also dropped off scale low during this dropout. Deferred to post launch. The 1T100 power supply will be inspected, meggar checked, and further troubleshot. Per design, a short on one phase of the inverter will cause the power supply to shut down, and then when the short is removed, the power supply/inverter will come back up.
.
KSC troubleshooting of GSE power supplies and inverters found no anomalies. Condition was recreated by placing a 200 MSEC short to neutral.
.
Vehicle megger/continuity checks have been completed but did not result in any anomalies. Connectors at the pump interface demated and inspected. Each pump tested in-place on the vehicle.
.
No additional work is planned. Probable UA.
.
Flight Problem Report approved at Special Level II Daily PRCB on 10/03/91 (PRCBD# S044836K).

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STS-040 (OV-102,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 3

IFA NUMBER> STS-40-K-02

TITLE:KSC Wind Tower Erroneous Data

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 000 : 00.00.00
IFA DATE: 06/05/1991
IFA STATUS: CLOSED : 02/18/1992
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN
HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044836Z
PHASE: PRE-LAUNCH
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
* ********NONE FOUND******* * ********NONE FOUND*******
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: C. ABNER
2:
0 DESCRIPTION:
KSC wind tower data (TWRS 511, 512, 513) showed apparently abnormal wind gusts:
1) Too high,
2) Too similar, and
3) Too great a spread between prevailing and gust.
.
Problem occurred between:
1) 1125-1205Z,
2) 1300Z, and
3) 1505Z, 1515Z, 1525Z on 5 Jun 91
4) Occurred again 12 Jun 91 - 1505-1330Z avg 4 kts pk 15 to 16.
.
Status Report due 26 Jun 91
.
Flight Problem Report approved at Special Level II Daily PRCB on 02/18/92 (PRCBD# S044836Z).

1

IFA NUMBER> STS-40-P-01
TITLE:Orbiter Freezer Odor

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 158 : 12.09.00
IFA DATE: 06/07/1991
IFA STATUS: CLOSED : 11/27/1991
ELAPSED TIME: 001 : 22.44.09
PRACA STATUS: UNKNOWN
HOUSTON TIME: 07.09.00
PRCBD NUMBER: S044836W
PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M PYLD-04
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: P. GRAF
2:
0 DESCRIPTION:
Crew called down an odor similar to aldehyde emanating from inside the orbiter freezer. SMA determined that the smell was coming from freezer seals warming to ambient temperatures. At MET 3/09:46:00, the smell was reported again.
.
Crew taped up door to seal unit and powered unit off. Surgeon approved troubleshooting procedures including powering on of unit as long as odor was not detected. However, the door is not to be opened at this time.
.
Troubleshooting procedures were attemped during post-sleep on FD6. Seconds after the unit was powered on, the odor was detected. The unit was powered off and remained off for the rest of the mission with the door taped shut. This would confirm that odor is not emanating from the interior of the storage volume.
.

An engineering investigation of the odor problem of the ORF during STS-40/SLS-40 has been concluded at the White Sands Test Facility. Odor samples collected from outside and inside the unit have been analyzed. Preliminary data evaluation revealed several compounds that were not present during the original (1989) offgas test for the ORF and the flight duct tape. Small amounts of two suspected carcinogens, benzene and carbontetrachloride, were identified. Carbontetrachloride was present in the initial offgas tests for the tape. When power was applied to the unit it was noted that the primary Freon loop lost Freon, second containment pressure was nominal and, input current was lower than expected, indicating that the evaporator and cooling fans were not operating properly.

.

Preliminary analysis indicates that a failed evaporator fan motor may have caused adjacent Delrin plastic to overheat, causing a very pungent odor during STS-40. A thermal cutoff switch is being installed on the evaporator fan motor in ORF's 1001 and 1002 to preclude recurrence of this type problem.

.

Flight Problem Report approved at Special Level II Daily PRCB on 11/27/91 (PRCBD# S044836W).

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STS-040 (OV-102,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 5

IFA NUMBER> STS-40-P-01
TITLE:Orbiter Freezer Odor

0 DESCRIPTION: (Continued from previous page).

1

STS-040 (OV-102,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 6

IFA NUMBER> STS-40-P-02
TITLE:Orbiter Refrigerator/Freezer Anomalies

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 158 : 01.15.00
IFA DATE: 06/06/1991
IFA STATUS: CLOSED : 11/27/1991
ELAPSED TIME: 001 : 11.50.09
PRACA STATUS: UNKNOWN
HOUSTON TIME: 20.15.00
PRCBD NUMBER: S044836Y
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M PYLD-02 M PYLD-03
M PYLD-17

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: P. GRAF
2:

0 DESCRIPTION:
158:01:15 - 06/06/91. The temperature of the Orbiter freezer began what is believed to be a steady increase (only two data points). The MCC did not see the appropriate compressor current draw signature. However, crew reported compressor light on and audible compressor operating cues. Preliminary troubleshooting indicates possible freon blockage due to freeze-up in freon lines. After unit warmed up, blockage apparently melted and compressor started up. Unit operated nominally for approx 20 hrs then warmed up again at a rate of about 1.25 deg c/hr. At MET 3/06:35, the temperature was +4.3 deg C and the compressor light was on, the housing overpressure light was on, low pressure light was off, and the airflow was good. This could indicate a freon leak into the secondary containment. Further evidence of this is decreasing compressor loads on mid MNA. The door switch is not functioning properly. The evaporator fans will not turn on when they think the door is still open. This could be contributing to orbiter R/F problems.

.
158:08:45 - 06/07/91. Temperature of L9I Spacelab Ref/Freezer began to increase steadily at approx 9 deg F per hour and compressor current draw cycle amplitude decreased. Failure recurred at MET 007:05:25 and 007:19:00. Failure identified as freon line freeze-up due to contamination in freon lines.

.
After unit warmed up, blockage cleared. IFM (MET 007:05:59) to clear blockage from manual freon isol valve unsuccessful. IFM to warm freon lines quickly by opening door and running compressor successful for short term recovery. A longer term fix is planned to open door, tape over door microswitch, and run evaporation fans only to warm and dry out evaporation coils. A longer term fix was implemented to open door, tape over microswitch, and run evaporation fans only, to warm and dry out evaporator coils. The Imax photo flood light was used to introduce additional heat to ensure the evaporator coils thawed. The UNIW was converted to a freezer and is currently operating as a freezer.

.
163:12:47 - 06/12/91. L8I SL R/F displayed similar failure signature

1

IFA NUMBER> STS-40-P-02
TITLE:Orbiter Refrigerator/Freezer Anomalies

0 DESCRIPTION: (Continued from previous page).
as L9I R/F unit at 006:23:22. Failure recurred at MET 007:12:34 and 007:20:30. Failure identified as freon line freeze-up due to contamination in freon lines.

.
Unit warmed in refrigerator mode after first failure. IFM to warm freon lines quickly by opening door and running compressor successful for short term recovery. A longer term fix has been developed to open door, tape door microswitch, and run evaporation fans only to warm and dry out the evaporation coils. L8I did not require this procedure. The unit was left in freezer mode with samples stowed internally. The door was left closed to prevent introduction of additional moisture into unit which was suspected to be the cause of the evaporator coils freezing originally.

.
Troubleshooting has revealed a leak in the crimp joint of the condenser assembly. This leak may explain the cooling performance problems identified during STS-40, and Freon 502 found in the second containment system upon return to JSC. X-ray analysis of the unit revealed that the epoxied crimp joint had a flaw in it which caused the leak. A pressure leak test is currently underway to quantify the leak rate. Once the leak rate is established, the crimp joint will be cut out of the unit and placed in acetic acid to dissolve the copper tubing and expose the epoxied crimp to further study the void. An analysis was performed on the Freon 502 removed from the secondary containment system, and it was determined that the proportions of Freon 115 and Freon 22 (which are the primary constituents of Freon 502) were inconsistent with the chemical analysis provided by the vendor for the lot of Freon 502 gas used to charge the ORF prior to STS-40. An investigation is underway to determine the cause of this anomaly.

.
Flight Problem Report approved at Special Level II Daily PRCB on 11/27/91 (PRCBD# S044836Y).

1

IFA NUMBER> STS-40-S-01
TITLE:ECOS Failures

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 160 : 01.59.00
IFA DATE: 06/07/1991
IFA STATUS: CLOSED : 09/08/1995
ELAPSED TIME: 003 : 12.34.09
PRACA STATUS: UNKNOWN
HOUSTON TIME: 20.59.00
PRCBD NUMBER: S044836AA
PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M CDMS-01 M CDMS-02
0 CLOSURE INITIATED BY: JSC-MT2/F. MORENO |
RESPONSIBLE MANAGERS 1: P. HAMBY
2:
0 DESCRIPTION:
Experiment Computer Operating System (ECOS) failed two times (160:01:59 - 06/07/91; 162:05:26 - 06/11/91) with a "212L Link Term" message being issued both times. The Periodic Input/Output Loop (PIOL) controller went static both times and an ECOS Last Occurance Error (LOE) of 1302 was logged. Also the SYS STOP was 4040 on first failure and 0081 on second failure.
.
Preliminary analysis of first failure suggests hardware problem causing mode violation resulting in trap. Trap status word indicated trap was a mode violation occurring at change in interrupt levels. Was in supervisory mode and shared program mode which caused trap to occur.
.
After second failure the crew performed ECOS IPL after wakeup at GMT 162:09:24. ECOS crash was caused by a length violation during execution of the ECOS background task. An ECOS memory patch has been implemented to gain additional data should another crash occur.

1
STS-040 (OV-102,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95

IFA NUMBER> STS-40-V-01
TITLE:Inertial Measurement Unit (IMU) 2 Failed Preflight Calibration

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 152 : 06.00.00
IFA DATE: 06/01/1991
IFA STATUS: CLOSED : 10/01/1991
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1994-04-19
HOUSTON TIME: 01.00.00
PRCBD NUMBER: S044836H
PHASE: PRE-LAUNCH
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
P CAR 40RF01
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: M. ENGLE
2:
0 DESCRIPTION:
During the second launch attempt, the first preflight calibration showed shifts in the IMU 2 accelerometer data. The calibration was repeated twice and the data indicated a problem with the stability of the accelerometer. The launch was scrubbed.
.
IMU 2 was R&R'd. Checks out OK at the JSC - Inertial Systems Laboratory (ISL).
.
Flight Problem Report approved at Special Level II Daily PRCB on 10/01/91 (PRCBD# S044836H).

- CLOSURE RATIONALE:
Postflight testing at JSC has isolated this problem to a defective

computer interface card (CIC) in IMU 2. The failed CIC resulted in one axis sensing an input rate at the same time another axis was transitioning through a zero rate value. This caused a scale factor error that resulted in a failed caligration. The effective CIU will be removed and replaced and returned to the vendor for evaluation. The specific mechanism internal to the CIC that resulted in this failure is unknown; however, this failure is a very unique occurrence and does not represent a generic CIC (or IMU) problem. Once a good CIC is installed in IMU 2, it will then be checked out and returned to the fleet.

IFA NUMBER> STS-40-V-03
TITLE:LiOH Door Aft Port Latch Won't Close

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 157 : 10.47.00
IFA DATE: 06/06/1991
IFA STATUS: CLOSED : 10/24/1991
ELAPSED TIME: 000 : 21.22.09
PRACA STATUS: CLOSED : 1992-04-16
HOUSTON TIME: 05.47.00
PRCBD NUMBER: S044836L
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR STR-2-11-2929 M MMACS-02
P IM/40RF04

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

0 DESCRIPTION:
Crew reported aft port latch on the LiOH stowage door was stuck closed. IFM tools were used to pry the latch open. Tools used to close for entry. Latch operated freely postflight. Latch stricker will be reworked to max drawing tolerances after vehicle returns to KSC from Palmdale.
.
Flight Problem Report approved at Special Level II Daily PRCB on 10/24/91 (PRCBD# S044836L).

IFA NUMBER> STS-40-V-04
TITLE:Orbital Maneuvering System (OMS) Xfeed Line Htr A Fail Off (V43T6242A)

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 157 : 19.40.00
IFA DATE: 06/06/1991
IFA STATUS: CLOSED : 09/10/1991
ELAPSED TIME: 001 : 06.15.09
PRACA STATUS: CLOSED : 1992-05-27
HOUSTON TIME: 14.40.00
PRCBD NUMBER: S044836E
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 50V-0004 M PROP-01
P IM/40RF05

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

0 DESCRIPTION:
OMS Xfeed center thermostat on Heater A System would not control in its normal range. Troubleshooting indicates a bad thermostat switch. Switch R&R to be scheduled after vehicle is returned to KSC from Palmdale.
.
Flight Problem Report approved at Special Level II Daily PRCB on 09/10/91 (PRCBD# S044836E).

1
STS-040 (OV-102,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 12

IFA NUMBER> STS-40-V-05
TITLE:Video Interface Unit (VIU)-C Malfunction

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 158 : 23.10.00
IFA DATE: 06/07/1991
IFA STATUS: CLOSED : 11/01/1991
ELAPSED TIME: 002 : 09.45.09
PRACA STATUS: UNKNOWN
HOUSTON TIME: 18.10.00
PRCBD NUMBER: S044836Q
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
M	MMACS-05	O	EE-0665

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

0 DESCRIPTION:
Power cable didn't work until after IFM. Interface cable loses signal when cable jiggled. VIU and cable shipped to JSC FEPC (06/25/91).
.
Troubleshooting postflight revealed two causes for this problem. A bad connection on the cable was one cause. The connector potting did not hold to the Teflon cable well enough to provide the necessary strain relief, failing to prevent a broken wire in the cable. A second possible cause was the VIU power DC/DC converter being adjusted slightly undervoltage for the new cable. The camcorder requires a high power-on surge current, something batteries are good at providing, but DC/DC converters are not. This, coupled with the new cable having smaller gauge wire than the original cable, created a voltage drop across the cable that was recognized by the camcorder as a battery undervoltage condition resulting in the camcorder shutting itself down. The VIU undervoltage problem may have caused the initial problem and IFM procedures could have subsequently created the connector potting problem.
.
The potting problem has been corrected with an update to the manufacturing procedure to epoxy the Teflon cable to the connector and then pot. The voltages in the VIUs have been increased (approx 0.2 volts) in order to handle the camcorder current surge.
.
Flight Problem Report approved at Special Level II Daily PRCB on 11/01/91 (PRCBD# S048836Q).

1
STS-040 (OV-102,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 13

IFA NUMBER> STS-40-V-07
TITLE:L5L Failed Off

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 158 : 00.51.00
IFA DATE: 06/06/1991
IFA STATUS: CLOSED : 10/24/1991
ELAPSED TIME: 001 : 11.26.09
PRACA STATUS: CLOSED : 1992-04-16
HOUSTON TIME: 19.51.00
PRCBD NUMBER: S044836M
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 50V 0009	M	PROP-02
P	CAR 40RF06		

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

0 DESCRIPTION:
Vernier jet L5L failed off by RM due to low Pc.
.

Jet hot fired and reselected. Used remainder of flight with erratic Pc. Chit J3705 was approved by the noon PRCB on 07/17/91 to remove thruster L5L from LP03 and to ship it to Marquardt for failure analysis. The Chit also requested a propellant sample be taken for chemical analysis, from the oxidizer tank through the Manifold 5 drain disconnect.

.

R&R of thruster is complete.

.

Flight Problem Report approved at Special Level II Daily PRCB on 10/24/91 (PRCBD# S044836M).

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STS-040 (OV-102,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 14

IFA NUMBER> STS-40-V-08
TITLE:H2 Tank 3 Heater A Fail OFf

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 163 : 05.45.00
IFA DATE: 06/12/1991
IFA STATUS: CLOSED : 10/02/1991
ELAPSED TIME: 006 : 16.20.09
PRACA STATUS: CLOSED : 1992-06-04
HOUSTON TIME: 12.45.00
PRCBD NUMBER: S044836J
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 50V-0005 M EGIL-01
P IM/40RF07

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

0 DESCRIPTION:
Heater failed after several cycles on auto.

.

Troubleshooting found open fuse F6 in Cyro Control box. Fuse replaced and heater now works. Fuse sent to KSC MAB for failure analysis to determine if failure was mechanical or overload. Inspection found wire insulation damage and exposed conductor. IPR upgraded to PR for repair. PR OEL-0188.

.

KSC plans to request repair at Palmdale.

.

Flight Problem Report approved at Special Level II Daily PRCB on 10/02/91 (PRCBD# S044836J).

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STS-040 (OV-102,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 15

IFA NUMBER> STS-40-V-09
TITLE:Loose Thermal Cover On Tunnel Adaptor Top Hatch

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 162 : 13.53.00
IFA DATE: 06/11/1991
IFA STATUS: CLOSED : 10/28/1991
ELAPSED TIME: 006 : 00.28.09
PRACA STATUS: CLOSED : 1991-09-04
HOUSTON TIME: 08.53.00
PRCBD NUMBER: S044836N
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR TCS-2-11-1619 M MMACS-06
P IM/40RF08

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

0 DESCRIPTION:
The cover on the EVA hatch was noticed to be loose after orbit 005 began. Inspection, after tunnel adapter removed from orbiter, showed blanket velcro loop straps were in the "stowed" position.

.
KSC has changed an existing Thermal Control System (TCS) Test Preparation Sheet (TPS) to insure proper installation of the thermal cover by making the installation the last step of the mission kit work.
.
Flight Problem Report approved at Special Level II Daily PRCB on 10/28/91 (PRCBD# S044836N)

1
STS-040 (OV-102,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 16

IFA NUMBER> STS-40-V-10
TITLE:LL & LR S-Band Quad Antennas Comm Erratic

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 09/27/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-07-31 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044836G PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR UA-2-A0012 K PR UA-2-A0027
M INCO-03 P IM/40RF09
P IM/40RF14
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: M. ENGLE
2:
0 DESCRIPTION:
Degraded performance on these antennas during entire flight.
.
CHIT J3603 presented and approved at OV-102 MSFR on 06/27/91. S-Band system connector re-torque/replacement to be accomplished during major mod at Palmdale.
.
Flight Problem Report approved at Special Level II Daily PRCB on 09/27/91 (PRCBD# S044836G).

1
STS-040 (OV-102,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 17

IFA NUMBER> STS-40-V-11
TITLE:RH ET Door Thermal Damage

0 MISSION CONSTRAINT: 43 SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE: 06/14/1991
IFA STATUS: CLOSED : 07/19/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1991-10-31 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044836B PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR MEQ-2-12-0427 P IM/40RF10
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: J. GUTHERY
2:
0 DESCRIPTION:
Forward centerline latch fitting and adjacent tile exhibited significant melting/erosion.
.
Eddy current evaluation is complete. The door, closed for S&G measurements and mylar pull checks, has now been opened and latch fitting removed.
.
IFA closure is considered a constraint to STS-43 per the Level II PRCB on June 20, 1991.

.
Flight Problem Report approved at Special Level II Daily PRCB on 07/19/91 (PRCBD# S044836B). Informal action was assigned to the orbiter and GFE Project office to examine NSTS 08126 (PRACA req. document) to determine if a CAR is required due to thermal damage.

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STS-040 (OV-102,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 18

IFA NUMBER> STS-40-V-12
TITLE:Auxiliary Power Unit (APU) 1 Service Line Temperature Rise

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 165 : 14.38.00
IFA DATE: 06/14/1991
IFA STATUS: CLOSED : 09/11/1991
ELAPSED TIME: 009 : 01.13.09
PRACA STATUS: CLOSED : 1994-04-05
HOUSTON TIME: 09.38.00
PRCBD NUMBER: S044836F
PHASE: ENTRY/LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M MMACS-07 P CAR 40RF11
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. MCMILLAN
2:
0 DESCRIPTION:
During deorbit burn following APU 1 start, V46T0183A rose to 99 deg. (FDA limit = 95 deg). Generated THRM APU message. Temp began to decline before heater B was turned off.
.
No KSC work required.
.
CAR Status: IM upgraded on 07/08/91. Explained closeout with action required for all vehicles/all flights issued on 07/09/91.
.
Flight Problem Report approved at Special Level II Daily PRCB on 09/11/91 (PRCBD# S044836F).

1
STS-040 (OV-102,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 19

IFA NUMBER> STS-40-V-15
TITLE:Ground Control Interface Logic (GCIL) Payload Data Interleaver (PDI) Command Anomaly
0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 156 : 22.25.00
IFA DATE: 06/05/1991
IFA STATUS: CLOSED : 11/01/1991
ELAPSED TIME: 000 : 09.00.09
PRACA STATUS: CLOSED : 1992-07-16
HOUSTON TIME: 17.25.00
PRCBD NUMBER: S044836P
PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M INCO-07 P IM/40RF12
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: B. SWAN
2:
0 DESCRIPTION:
PDI switch scan (V75S5100E) changed state when PDI on/off uplink commands were issued. Suspect reverse leakage across GCIL driver.
.
Postflight investigation explained the anomaly as reverse current feedback through the GCIL driver. The possibility of a reverse feedback ("sneak circuit") condition in the GCIL where current is backfed from the PNL (panel) drivers through the CMD (command) drivers was known to exist.
.
Rockwell and Smith Industries have been tasked to perform a detailed analysis to define the CGIL controls which could have feedback and the

effects resulting from the feedback.
.
Flight Problem Report approved at Special Level II Daily PRCB on 11/01/91 (PRCBD# S044836P).

1

IFA NUMBER> STS-40-V-16
TITLE:Umbilical Separation Pin Guide Fitting Detached At ET SEP

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 000 : 00.00.00
IFA DATE: 06/05/1991
IFA STATUS: CLOSED : 07/19/1991
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1993-01-04
HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044836C
PHASE: ASCENT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
P IM/40RF13
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. MCMILLAN
2:
0 DESCRIPTION:
Shortly after ET separation, the 16mm film showed a metallic cylinder drifting past the LH2 ET/ORB camera and moving away from the Orbiter. Inspection of OV-102 ET/ORB umbilicals after landing revealed no missing hardware. KSC identified the object as the outboard shear pin bushing from the ET half of the LH2 ET/ORB umbilical. On-orbit umbilical photography confirmed the inboard bushing on the LH2 umbilical and the two bushings on the LO2 umbilical were still in place after ET separation. KSC inspected the bushings on ET-47 prior to OV-104 umbilical mate. No anomalies were found.
.
Inspection of guide bushings on OV-102 show some burnish marks but no scratches or raised metal.
.
This IFA was transferred from Integration, STS-40-I-01, on 07/03/91 per CR S044836A.
.
Flight Problem Report approved at Special Level II Daily PRCB on 07/19/91 (PRCBD# S044836C).

1

IFA NUMBER> STS-40-V-2A
TITLE:PAYLOAD BAY DOOR ENVIRONMENTAL SEAL DAMAGE

0 MISSION CONSTRAINT: 0043 SUBS
IFA TIME GMT: 156 : 15.55.00
IFA DATE: 06/05/1991
IFA STATUS: CLOSED : 07/19/1991
ELAPSED TIME: 000 : 02.30.09
PRACA STATUS: CLOSED : 1992-12-01
HOUSTON TIME: 10.55.00
PRCBD NUMBER: S044836D
PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR STR-2-11-2910 M MMACS-01
P IM/40RF02 P IM/40RF03
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: J. GUTHERY
2:
0 DESCRIPTION:
Several thermal blankets on the 1307 bulkhead have become partially unfastened. A section of the aft bulkhead payload bay door environmental seal (port side) also debonded and is protruding into the PLB.

.
Inspection of OV-103 completed per CHIT J3591A. Inspection of OV-102 at DFRF completed per CHIT J-3596A. Additional inspection to be performed at KSC per CHIT J-3595A.
.
External inspection at KSC is complete. No new changes from what was seen at DFRF (06/26/91). Seal inspection, from bucket, following PLBD opening confirmed seal separated at the inboard side of MR splice at Y -33. Additional inspections to be scheduled.
.
IFA closure is considered a constraint to STS-43 per the Level II PRCB on June 20, 1991.
.
Flight Problem Report approved at Special Level II Daily PRCB on 07/19/91 (PRCBD# S044836D). A formal action was assigned to the Orbiter and GFE Project office to report back to the regular PRCB within one month on a historical review of 1307 bulkhead blanket damage. Also they are to provide a status on problem resolution.
.
Seal temporary installation completed for ferry to Palmdale. New seals on order for installation after vehicle returns to KSC. STR 2910/2938.
- CLOSURE RATIONALE:
A missing payload bay door environmental seal is not a safety-of-flight issue. The potential exists for interference with payload bay door closure, and for damage to the thermal blankets located on the aft bulkhead. The cause of the environmental seal and thermal blanket damage is currently not known. Undefined airflow past the payload bay door/aft bulkhead interface is potentially the cause, a contributing factor, or a symptom of the problem. Further analysis/testing will be
1
STS-040 (OV-102,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 22

IFA NUMBER> STS-40-V-2A
TITLE:PAYLOAD BAY DOOR ENVIRONMENTAL SEAL DAMAGE

0 CLOSURE RATIONALE:(Continued from previous page).
performed to understand the sensitivity and margin associated with the as-built tolerances, structural deflections and age of the seal material. Supplemental flight data is desired; as yet, a cost effective implementation has not been defined. Possible mission impacts include real-time modifications to the attitude timeline, shortened duration, and EVA/IFM procedures.
1
STS-040 (OV-102,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 23

IFA NUMBER> STS-40-V-2B
TITLE:LOOSE BLANKETS ON 1307 BULKHEAD

0 MISSION CONSTRAINT: 0043 SUBS IFA TIME GMT: 156 : 15.55.00
IFA DATE: 06/05/1991
IFA STATUS: CLOSED : 07/19/1991 ELAPSED TIME: 000 : 02.30.09
PRACA STATUS: CLOSED : 1992-12-01 HOUSTON TIME: 10.55.00
PRCBD NUMBER: S044836D PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	PR STR-2-11-2910	M	MMACS-01
P	IM/40RF02	P	IM/40RF03

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

0 DESCRIPTION:
Several thermal blankets on the 1307 bulkhead have become partially unfastened. A section of the aft bulkhead payload bay door

environmental seal (port side) also debonded and is protruding into the PLB.

.

Inspection of OV-103 completed per CHIT J3591A. Inspection of OV-102 at DFRF completed per CHIT J-3596A. Additional inspection to be performed at KSC per CHIT J-3595A.

.

External inspection at KSC is complete. No new changes from what was seen at DFRF (06/26/91). Seal inspection, from bucket, following PLBD opening confirmed seal separated at the inboard side of MR splice at Y -33. Additional inspections to be scheduled.

.

IFA closure is considered a constraint to STS-43 per the Level II PRCB on June 20, 1991.

.

Flight Problem Report approved at Special Level II Daily PRCB on 07/19/91 (PRCBD# S044836D). A formal action was assigned to the Orbiter and GFE Project office to report back to the regular PRCB within one month on a historical review of 1307 bulkhead blanket damage. Also they are to provide a status on problem resolution.

.

Seal temporary installation completed for ferry to Palmdale. New seals on order for installation after vehicle returns to KSC. STR 2910/2938.

- CLOSURE RATIONALE:

A missing payload bay door environmental seal is not a safety-of-flight issue. The potential exists for interference with payload bay door closure, and for damage to the thermal blankets located on the aft bulkhead. The cause of the environmental seal and thermal blanket damage is currently not known. Undefined airflow past the payload bay door/aft bulkhead interface is potentially the cause, a contributing factor, or a symptom of the problem. Further analysis/testing will be

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STS-040 (OV-102,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 24

IFA NUMBER> STS-40-V-2B
TITLE:LOOSE BLANKETS ON 1307 BULKHEAD

0 CLOSURE RATIONALE:(Continued from previous page).

performed to understand the sensitivity and margin associated with the as-built tolerances, structural deflections and age of the seal material. Supplemental flight data is desired; as yet, a cost effective implementation has not been defined. Possible mission impacts include real-time modifications to the attitude timeline, shortened duration, and EVA/IFM procedures.

1

STS-040 (OV-102,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 25

IFA NUMBER> STS-40-V-6A
TITLE:False Jam Indicator Light On TAGS

0 MISSION CONSTRAINT: SUBS

IFA STATUS: CLOSED : 11/04/1991
PRACA STATUS: UNKNOWN
PRCBD NUMBER: S044836U

IFA TIME GMT: 162 : 09.52.00
IFA DATE: 06/11/1991
ELAPSED TIME: 005 : 20.27.09
HOUSTON TIME: 04.52.00
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	PR COM-2-12-A0077	M	INCO-01
O	EE-0664		

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

0 DESCRIPTION:

TAGS jam indication was initiated during initial TAGS uplink and several times thereafter. Indication is confirmed to be false. Indication cleared by uplinking page advance.

.

The TAGS unit has been removed from the vehicle and shipped to JSC for troubleshooting.

.

The results from troubleshooting showed that paper sensor 3 was misaligned.. This sensor is located at the entrance of the developer. The misalignment decreased the sensitivity of the sensor. The sensor was fixed with a mechanical realignment. Should this anomaly recur in-flight, page advances can be used to clear the faulty indication.

.

Flight Problem Report approved at Special Level II Daily PRCB on 11/04/91. (PRCBD# S044836U).

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STS-040 (OV-102,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 26

IFA NUMBER> STS-40-V-6B
TITLE:Real TAGS Jam

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 162 : 09.52.00
IFA DATE: 06/11/1991
IFA STATUS: CLOSED : 11/04/1991
ELAPSED TIME: 005 : 20.27.09
PRACA STATUS: UNKNOWN
HOUSTON TIME: 04.52.00
PRCBD NUMBER: S044836U
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR COM-2-12-A0077 M INCO-05
O EE-0664

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

0 DESCRIPTION:
TAGS jam occurred most likely at the end of a Mode 1 uplink as previous page entered the developer. Subsequent page advance proved the jam to be a true jam.

.

The TAGS unit has been removed from the vehicle and shipped to JSC for troubleshooting.

.

The developer upper paper guide condenses moisture which is a natural by-product of the developing process. Subsequent pages become stuck in this moisture which causes the paper to "accordion" and jam.

.

All hardcopiers will be modified for STS-42 and subsequent missions. This modification includes a modified developer with no upper guide, which eliminates the sticking point and associated jams. Additionally, the developer exit is enlarged which will facilitate the clearing of any other jams.

.

Flight Problem Report approved at Special Level II Daily PRCB on 11/04/91 (PRCBD# S044836U).

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STS-040 (OV-102,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 27

IFA NUMBER> STS-40-V-13A
TITLE:Loss Of Communication On Audio Interface Unit - D (AIU-D)

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 161 : 22.00.00
IFA DATE: 06/10/1991
IFA STATUS: CLOSED : 11/04/1991
ELAPSED TIME: 005 : 08.35.09

PRACA STATUS: UNKNOWN HOUSTON TIME: 17.00.00
PRCBD NUMBER: S044836T PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M INCO-04 O EE-0662

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

0 DESCRIPTION:
Postflight troubleshooting showed a blown fuse in the intercommunications master station. Once this fuse was replaced, AIU-D operated correctly. The most probable cause of the blown fuse was connecting and disconnecting the headsets without turning the power OFF.
.
AIU's and SAGI (Spacelab Audio Ground Isolator) to be returned to JSC for troubleshooting. ACIU to be returned to MSFC.
.
Hardware has been shipped to JSC and MSFC (06/27/91).
.
Flight Problem Report approved at Special Level II Daily PRCB on 11/04/91 (PRCBD# S044836T).

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IFA NUMBER> STS-40-V-13B
TITLE:Temporary Loss Of Communication on Audio Interface Unit - E (AIU-E)

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 163 : 10.20.00
IFA DATE: 06/12/1991
IFA STATUS: CLOSED : 11/04/1991 ELAPSED TIME: 006 : 20.55.09
PRACA STATUS: UNKNOWN HOUSTON TIME: 05.20.00
PRCBD NUMBER: S044836T PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M INCO-06 O EE-0663

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

0 DESCRIPTION:
The crew reported a total loss of audio communications to both crew remote unit's (CRU) on AIU-E installed in Spacelab. In-flight troubleshooting isolated the problem to AIU-E. The audio loss was temporary, lasting approximately 1.5 hours. AIU-E operated nominally for the duration of the mission.
.
Postflight troubleshooting could not recreate the in-flight anomaly.
.
AIU's and SAGI (Spacelab Autio Ground Isolator) to be returned to JSC for troubleshooting. ACIU to be returned to MSFC.
.
Hardware has been shipped to JSC and MSFC (06/27/91).
.
Flight Problem Report approved at Special Level II Daily PRCB on 11/04/91 (PRCBD# S044836T).

1

IFA NUMBER> STS-40-V-14A
TITLE:16 mm ET Umbilical Camera Anomaly

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE: 06/14/1991
IFA STATUS: CLOSED : 11/06/1991 ELAPSED TIME: 000 : 00.00.00

PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044836V PHASE: POST LANDING

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

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

0 DESCRIPTION:
Film was broken approx 30 ft. from start. Continued to run with no image occuring. Film was crunched and some sprocket damage also observed.

.

Camera has been removed and shipped to JSC (06/26/1).

.

The most probable cause of film breakage is that the film became slack due to launch-induced vibrations. This slack allowed the film to move at a slower rate of speed than the sprockets which in turn caused the observed damage to the film and ultimately jammed the camera. The brittleness of the film was a contributing factor in the film break.

.

Flight Problem Report approved at Special Level II Daily PRCB on 11/06/91 (PRCBD# S044836V).

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STS-040 (OV-102,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 30

IFA NUMBER> STS-40-V-14B
TITLE:35 mm ET Umbilical Camera Anomaly

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE: 06/14/1991
IFA STATUS: CLOSED : 11/06/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044836V PHASE: POST LANDING

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

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

0 DESCRIPTION:
Film broken approx 6 inches from start.

.

Camera has been removed and shipped to JSC (06/26/91).

.

The most probable cause of the 35-mm camera anomaly is that the pressure placed on the film by the pressure plate caused the film to break. The bent or warped back cover caused the pressure plate to exert the excessive pressure on the film. The camera has been returned to the vendor for repair.

.

Flight Problem Report approved at Special Level II Daily PRCB on 11/06/91 (PRCBD# S044836V).

-JFDPO12: NORMAL TERMINATION OF PROCESSING

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STS-041 (OV-103,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 1

IFA NUMBER> STS-41-E-01
TITLE:Engine 2011 Main Injector Augmented Spark Igniter (ASI) System Leak

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 03/25/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044841 PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
* ********NONE FOUND******* * ********NONE FOUND*******
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1:
2:
0 DESCRIPTION:
During a postflight leak check on the ME-1 (S/N 2011) powerhead, a Class II leak was found in the main injector ASI system.
.
After the STS-41 mission, an Integration IFA was assigned (IFA No. STS-41-I-03) which concerned high levels of H2 concentration measured in the Orbiter aft compartment during flight/ascent. It was this anomaly that prompted an additional powerhead encapsulation leak check of the SSME's in support of the integration effort. During the noted powerhead encapsulation leak check of Engine 2011, a 2.56 SCIM leak was identified in the hot-gas system. This type leak check is conducted with helium at 40 psig. The hot-gas system is defined as the area downstream of main propellant valves and upstream of the MCC throat plug. A multiple gas analyzer was used to isolate the leak in the area where the ASI LO2 supply line enters the top of the main injector ASI system. Soap solution was applied to the area and bubbles were observed with a borescope. This technique located the leak at braze joint no. 1. The leak area is approximately 180 degrees from the area where a leak was found and repaired during its fabrication in 1980 (MRD 204852). Braze joint number one (1) bonds the ASI insert to the ASI body. This joint intersects the hydrogen manifold and the combustion chamber and would result in a hot gas or hydrogen leak in the aft during flight. A worst case analysis was conducted assuming the leak was hydrogen and the leak area would remain constant with pressure and temperature. This analysis indicated a maximum leakage between 500 and 1000 SCIMS during flight. Engine 2011 was returned to Canoga Park for replacement of the ASI and has been replaced by Engine 2015. Leak checks performed on the ASI assembly after it had been cut out of the powerhead, indicated a 750 SCIM helium leak at 3500 psi. This leak rate adjusted to liquid hydrogen at 3500 psia (104% RPL) equates to 4000 SCIMS.
.
Background Information Regarding Engine 2011 Powerhead Unit 2016:
.
During the fabrication of powerhead unit 2016, a leak was found at the braze joint no. 1. A repair was made by cutting a V-groove into the top of the joint. The groove was filled with Silicoro-60 braze alloy and furnace brazed. The repair passed
1

STS-041 (OV-103,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 2

IFA NUMBER> STS-41-E-01
TITLE:Engine 2011 Main Injector Augmented Spark Igniter (ASI) System Leak

0 DESCRIPTION: (Continued from previous page).

helium leak check and multiple proof pressure tests during the remainder of the fabrication process. This unit has accumulated 26 starts and 6,312 seconds of hot fire time, with the last three flights on OV-103 (Discovery).

.

In conclusion, the forementioned braze repair most likely cast over the post STS-41 discovered leak and did not wick into the leak passages. This is most likely due to the sensitivity of Silicoro-60 braze alloy to joint preparation. The Silicoro 60 material may not have bonded adequately to the surface since the V-groove was not plated. All other flight engine fabrication records were reviewed, and none were found to have repairs similar to Engine 2011. As corrective action, the SSME Project recommends incorporation of the powerhead encapsulation leak test as a routine preflight leak check, RCN MV10199.

.

This anomaly was approved as an STS-41 IFA by a Special Level II Daily PRCB on 2/27/91 (PRCBD# S044840W).

.

This problem is deferred in the MSFC PRACA System for STS-37 and STS-39.

.

Flight Problem Report was approved at Special Level II Daily PRCB on 3/25/91 (PRCBD# S044841)

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STS-041 (OV-103,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 3

IFA NUMBER> STS-41-I-01
TITLE:SM2 NBAT had GPC-2 assigned to string 3.

0 MISSION CONSTRAINT: 38 SUBS IFA TIME GMT: 279 : 12.50.00
IFA DATE: 10/06/1990
IFA STATUS: CLOSED : 10/26/1990 ELAPSED TIME: 000 : 01.02.45
PRACA STATUS: UNKNOWN HOUSTON TIME: 06.50.00
PRCBD NUMBER: S044840A PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 39V-0001	K	IPR 41V-0228
M	DPS-01		

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: N. HARDEE
2:

0 DESCRIPTION:
String should have been unassigned.

.

Reported by crew post insertion. Condition existed pre-launch per T-20 min GPC dump. LPS retrievals indicate DEU EQUIVALENT commands issued on 10/5/90 to SPEC 0. Should have been sent to SPEC 62 per IUS TLM configuration. Not a concern for flight. No ferry impact.

.

KSC reported that the problem occurred during IUS telemetry operations on Friday afternoon when the C1(PL) Console in LPS sent LDB EQ DEU commands to the GPC MEMORY display instead of SPEC 62 (PCMMU/PL COMM). Subsequent LDB and downlist retrieval reveals that SPEC 62 was on CRT 1, but the LDB EQ DEU commands were designated for CRT 2, which had the GPC MEMORY display active. The following series of LDB EQ DEU commands were erroneously sent twice to the GPC MEMORY display:

.

1) ITEM 9 + 2 EXEC (Assigned String 3 to GPC 2)
2) ITEM 12 + 0 EXEC (Assigned CRT 1 to GPC 0-isolated)
3) ITEM 13 EXEC (ILLEGAL ENTRY)

.

NOTE: The T-20 minute dump confirmed the actions listed above, i.e.,

string 3 and CRT 1 NBAT assignments.

.

After this series of commands was sent twice, SPEC 62 was called on CRT 2 and the following series of commands was repeated three times on CRT 2 via LDB EQ DEU:

.

1)	ITEM 9 + 2 EXEC	(Configure PDI for DECOM 2)
2)	ITEM 12 + 0 EXEC	(Input source - None)
3)	ITEM 13 EXEC	(Perform above selections)
4)	ITEM 9 + 2 EXEC	(Configure PDI for DECOM 2)
5)	ITEM 12 + 5 EXEC	(Input source - CIU)
6)	ITEM 13 EXEC	(Perform above selections)

.

Based on the above data, the SM2 NBAT, anomaly is an explained condition, and the erroneous commands can be accounted for by the changes to the SM2 NBAT (Ref. mission CHIT #05).

IFA NUMBER> STS-41-I-01
TITLE:SM2 NBAT had GPC-2 assigned to string 3.

0 DESCRIPTION: (Continued from previous page).

.

Special teleconference scheduled for 10/11/90 at 1300 CDT.

.

This IFA is closed per PRCBD S044840A (11/9/90).

IFA NUMBER> STS-41-I-02
TITLE:Cresent shaped debris seen at Ulysses deploy.

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 000 : 00.00.00
IFA DATE: 10/06/1990
IFA STATUS: CLOSED : 02/27/1991
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN
HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044840Z
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M ORB-01

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

0 DESCRIPTION:
Initial evaluation of the object using CCTV camera B and crew camcorder indicates that the object was approximately 21.6 inches in length and was initially sighted at 17 hrs. 48 min, 43.25 sec G.m.t. at orbiter location Xo = 1194, Yo = 5, Zo = 517 (in front of vertical stabilizer). Further analysis is continuing (Ref. mission CHIT 004).

.

The origin of the object is yet unknown. The object's size and shape does not correlate to any items known to have been lost in the payload bay at KSC (Ref. mission CHIT 004).

.

CB/Story Musgrave reported that a similar piece of debris was observed on STS-33. The debris was observed at payload bay door opening, originating from the aft end of the vehicle (not from the payload bay). The piece observed on STS-33 appeared to have the same shape, length, and width as that observed on this flight. The STS-33 debris appeared to be a flexible, rubber type piece approximately 4'-5' in length (ref. Mission CHIT 010).

.

Per STS-41 mission CHIT 010, a review of TPS Design Post Flight Inspection reports of STS-33 by RI-Downey and RI-KSC showed there was no TPS loss of the type described by Mr. Musgrave. According to KSC there are a large number of pads or temporary seals used at KSC during processing that are shaped like the debris seen. However, lost and found records at KSC do not have any records of lost material of this type and size.

.

Debris also captured on 16mm shots from the left payload bay window.

.

Flight Problem Report approved at Special Level II Daily PRCB on 2/27/91 (PRCBD# S044840Z).

1

IFA NUMBER> STS-41-I-03
TITLE:Aft compartment hydrogen concentration high during ascent.

0 MISSION CONSTRAINT: 38 SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 02/25/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044840T PHASE: POST LANDING

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 39V-0040		

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

0 DESCRIPTION:
Higher than usual hydrogen leakage obtained for STS-41 from orbiter aft fuselage gas sampler system.

.

Confidence is high that data are good.

.

Maximum of 37,000 SCIM from data of three good sample bottles.

.

Leakage level was a safe condition - below 59,000 SCIM in-flight flammability limit.

.

Data from STS-41 may be indicating an increasing H2 leakage trend for OV-103.

.

Engine H2 Interface leak check complete. No leakage with flowmeter or mass spec (suspect system not wetted on ground). JSC CHIT J3448 approved for MPS T/s'ing at KSC. High press GH2 leak check complete/ good. Leak found at LV 56 during low press mass spec (SSME #1 GH2 Control Valve) at weld on body of solenoid (low press joint). LV 56 disposition is to R&R. Vendor (Eaton) on site to support valve component removal. LV 56 component removal complete, retest and leak check complete and good. SSME #2 and #3 H2 Flow Control Valve torque check complete. No further KSC troubleshooting planned. No constraint to flight.

.

Flight Problem Report approved at Special Lv. II Daily PRCB on 2/25/91 (PRCBD# S044840T).

1

IFA NUMBER> STS-41-I-04
TITLE:Left SRB NSI separated from pressure cartridge body

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00

IFA DATE:
IFA STATUS: CLOSED : 02/25/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044840Y PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
* ********NONE FOUND******* * ********NONE FOUND*******
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: R. SANDERS
2:
0 DESCRIPTION:
After pryo bolt detonation for SRB separation the left hand diagonal NSI ejected from the NSI pressure cartridge body. NSI contained by shock absorber inside strut assembly. NSI ejections have occurred during qualification and lot acceptance tests.
.
Flight Problem Report approved at Special Lv. II Daily PRCB on 2/25/91 (PRCBD# S044840Y).

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STS-041 (OV-103,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 8
IFA NUMBER> STS-41-K-01
TITLE:At T-60 seconds the payload bay purge circuit interface and duct pressures went out of LCC limits on the low side.
0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE: 10/06/1990
IFA STATUS: CLOSED : 02/07/1990 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044840M PHASE: PRE-LAUNCH
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A PVD K IPR 41V-0227
K PR-0650
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: C. ABNER
2:
0 DESCRIPTION:
Ground valve not cycling properly; caused a momentary hold at T-31 seconds while manual control of the valve was acquired and pressures were brought back into LCC limits manually.
.
Upgraded to a PAD-B PR.
.
KSC LSOC Tracking Number(s): IV-6-026182
.
Flight Problem Report approved at Level II PRCB on 2-07-91 (PRCBD# S044840M).

1
STS-041 (OV-103,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 9
IFA NUMBER> STS-41-M-01
TITLE:SRM Igniters' Outer Joint Putty Blowhole; Cadmium Plating Damage and Sooting
0 MISSION CONSTRAINT: 38 SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 10/26/1990 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1991-03-29 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044840B PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A A13262 D DR4-5/200
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. THORNTON/EES3
2:

0 DESCRIPTION:
During the postflight inspection of both the left and right SRM igniters, the outer joints were found to have a blowhole in the putty. Also, cadmium plating damage and sooting were observed.
.
This condition is similar to a previous occurrence from the STS-36 mission and was likewise tracked as an IFA (IFA No. STS-36-M-1). The left SRM igniter damage is as follows: There was one blowhole through the putty in the outer joint. It was located at 165 degrees and measured 0.20" at the gasket interface, widened to 0.50" and then narrowed again to 0.25 inch at the aft putty edge. A small area of pitting was found on the I.D. of the forward dome boss at 165 degrees. The location corresponds to the blowhole through the outer igniter joint putty. The pitting measured 0.003" at its maximum depth and extended axially across the surface. The lower surface of the igniter adapter had pitting in the same location 2.5" inboard of the adapter O.D. The maximum measured pitting depth was 0.0015" The pitting corresponds to the 165 degree putty blowhole location. At the location of the blowhole there was missing cadmium plating and corrosion on the I.D. edge of the outer gasket retainer between 160 and 185 degrees. Black combustion products were present on the gasket faces up to the primary seal cushion at three locations, the forward gasket face between 162 and 171 and at 144 degrees, and on the aft face between 95 and 108 degrees. There was also combustion products observed on the O.D. edge and aft face of the inner gasket around the entire circumference. Cadmium plating was missing from the gasket edges adjacent to the blowhole (160 to 185 degrees).
.
The right SRM igniter joint damage is as follows: A blowhole through the putty was found in the outer joint at 268 degrees measuring 1.3 inches wide at the starting point and 0.25" at the through point. The inner joint putty/insulation and chamber insulation was in normal condition. The forward face had soot to the primary cushion through 262 to 270 degrees. There was light heat affect to the cadmium from 262 through 270 degrees. There was soot on the gasket inside diameter for the full 360 degrees. Also, there was soot on the aft face of the metal
1

IFA NUMBER> STS-41-M-01
TITLE:SRM Igniters' Outer Joint Putty Blowhole; Cadmium Plating Damage and Sooting
0 DESCRIPTION: (Continued from previous page).
retainer through 171-0-45 degrees. There was light corrosion on the aft face and the inside diameter at 270 degrees. There was no evidence of soot past the primary seal. In comparision to the left SRM igniter outer joint blowhole and associated damage, the right side was much less extensive and well within the experience database for this type of condition.
.
The consensus of the postflight inspection team with members of MSFC, KSC and Thiokol feel that the pitting observed on the igniter adapter and forward dome were similar to 360L009 (STS-36). There was no erosion to these parts. The laboratory analysis of the gasket showed combustion products on the metal retainer. Hardness tests near the edge of the retainer showed no heat effects. The elastomeric seals were also unaffected by the presence of any heat. This was verified by a 300X microscope inspection. The elastomeric seal appearance and seal bond to the metal was in "new" gasket condition. In summary, there was no damage to the elastomeric seal, the seal retainer, or the case igniter steel

parts. Also, the overall joint capability was not affected.
.
The proposals for corrective action are as follows. 1) Remove putty from joint by redesigning the igniter adapter, seal, case, and insulation interface; and 2) Remove cadmium plating from the current gasket configuration. Item 1 is currently being presented to the PRCB for approval to continue with the design and testing of the redesign. Item 2 has been incorporated and should be available by STS-43 (360L017) at the earliest. In the interim timeframe, sufficient thermal analyses assuming worst case conditions have been analyzed and conclude that no flight safety concerns are associated with the putty blowhole condition. The putty is not intended to serve as a pressure seal. Its purpose is to act as a thermal barrier and restrict the circulation of hot gases. Putty blowholes have occurred on 75% of the RSRMs and are considered inherent to the design. Furthermore, the missing cadmium plating on the gasket is considered an acceptable condition. Hot gas through the outer joint is the most probable cause of damage to the cadmuim plating. The chlorine constituent of the solid propellant (ammonium perchlorate) reacts with the cadmium surface on the gasket to produce a highly corrosive product, cadmium chloride (CdC12). Pitting in the regions of hot gas exposure results from those areas experiencing grease loss, leaving the surfaces unprotected from the moist, chlorinated postflight environments. Last of all, the elastomeric seals have consistently served their design purpose without damage. Also, the seal system redundancy has never been compromised. Since this anomaly is understood, the subsequent missions are considered safe for flight based on the forementioned rationale.
.
This problem was deferred in the Level III MSFC PRACA tracking

1 STS-041 (OV-103,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 11

IFA NUMBER> STS-41-M-01
TITLE:SRM Igniters' Outer Joint Putty Blowhole; Cadmium Plating Damage and Sooting
0 DESCRIPTION: (Continued from previous page).
system for STS-38,-35, and -39. The problem was later deferred again based on the same deferral rationale for STS-37, -40, and -43.
.
This IFA is closed per PRCBD S044840B (11/9/90).

1 STS-041 (OV-103,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 12

IFA NUMBER> STS-41-M-02
TITLE:Abnormal Erosion on SRM AFT Segment Factory Joints' Internal Insulation.
0 MISSION CONSTRAINT: 38 SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 10/26/1990 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044840C PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A A13263, A13264 D DR4-5/201
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. THORNTON/EE53
2:
0 DESCRIPTION:
Abnormal erosion of the internal insulation (at the forward edge) was observed in both the left and right SRM aft dome-to-stiffener and stiffener-to-stiffener factory joints.

.
The erosion pattern is most evident at the areas of ply overlaps. The condition is random over the full circumference of the aft dome-to-stiffener factory joint and at only four to six locations on the stiffener-to-stiffener factory joint. Requested measurements were made by drilling through the insulation and determining the remaining thickness. From these measurements it was determined that the minimum erosion safety factors met CEI requirements.

	AFT DOME-TO-STIFFENER SAFETY FACTORS	STIFFENER-TO-STIFFENER SAFETY FACTORS	CEI REQUIREMENT
WITHIN 5" OF INNER CLEVIS TIP	3.06	2.76	2.0
OUTSIDE 5" OF INNER CLEVIS TIP	2.16	1.57	1.5

.
This type of erosion has been observed on FSM-1, PVM-1, and QM-6, but this is a first time postflight observation. The remainder of the internal case insulation was in very good condition. There were no indications of unusual erosion and no indications of hot gas through the insulation. This condition is attributed to the erosion of uneven insulation surfaces, which results from ply overlaps made during the manufacturing process. Because ply overlaps are part of the manufacturing process and because of the more than adequate safety margin remaining, no process change is contemplated at this time. This anomaly is categorized as a criticality 3 relative to its mission effects: 1) The internal insulation serves as a thermal barrier to protect the case from hot gases; 2) The subject condition is within the Thiokol experienced post fire database; and 3) Minimum erosion safety factors exceeded CEI requirements.

.
This problem was closed in the Level III MSFC PRACA tracking system for STS-39 and subs on 1/09/91.

1
STS-041 (OV-103,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 13

IFA NUMBER> STS-41-M-02
TITLE:Abnormal Erosion on SRM AFT Segment Factory Joints' Internal Insulation.

0 DESCRIPTION: (Continued from previous page).

.
This IFA is closed per PRCBD S044840C (11/9/90).

1
STS-041 (OV-103,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 14

IFA NUMBER> STS-41-V-03
TITLE:APU-1 GG/FP heater system "B" failed on.

0 MISSION CONSTRAINT: SUBS

IFA TIME GMT: 282 : 12.10.00
IFA DATE: 10/09/1990
IFA STATUS: CLOSED : 01/24/1991
ELAPSED TIME: 003 : 00.22.45
PRACA STATUS: CLOSED : 1991-10-14
HOUSTON TIME: 06.10.00
PRCBD NUMBER: S044840J
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 39V-0003	K	PR APU-3-12-0252
M	MMACS-02	P	CAR 41RF01

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

0 DESCRIPTION:
When crew selected "B" heaters following FCS checkout, BYP LINE TEMP rose from 110 deg. F to 258 deg. F in approximately 3 minutes.

Reselected "A" heaters and temperatures returned to normal. Three of four heaters accessible without APU removal. KSC to isolate short and R/R heater.

.

Heating rate test to be run on heater 1A prior to ferry. Will require ferry heater config change to 1A, 2B, 3B.

.

KSC verified short circuit - wire nicked at wire clamp. R&R in progress.

.

KSC LOSC Tracking Number(s): IV-6-026286

.

CAR Status: Explained closeout for OV-103, flt #12 (STS-39) and OV-104, flt #8 (STS-37) was issued on 11/26/90. OV-102, flt #11 (STS-40) was added on 05/10/91.

.

Flight Problem Report approved at Special Level II Daily PRCB on 1-24-91 (PRCBD# S044840J).

1

IFA NUMBER> STS-41-V-04
TITLE:IMU-1 RM Fail

0 MISSION CONSTRAINT: SUBS

IFA TIME GMT: 282 : 20.36.00
IFA DATE: 10/09/1990
ELAPSED TIME: 003 : 08.48.45
HOUSTON TIME: 14.36.00
PHASE: ON-ORBIT

IFA STATUS: CLOSED : 01/31/1991
PRACA STATUS: CLOSED : 1991-07-22
PRCBD NUMBER: S044840K

TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 39V-0004	K	PR GNC-3-12-0105
M	GNC-01	P	CAR 41RF02

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

0 DESCRIPTION:
IMU 1 experiencing transient Z axis accelerometer shifts of up to 10,000 micro G's. The IMU was failed by RM. The problem has occurred several times with the transient lasting from 5 to 15 minutes. Not considered a generic problem.

.

IMU-1 was deselected in both BFS and PASS for entry. R/R IMU-1 at KSC. No ferry impact.

.

Anomaly reoccurred at KSC during T/S'ing, IMU R&R complete, retest to be scheduled (11/21/90).

.

KSC LSOC Tracking Numbers: IV-6-026233; PV-6-172011

.

CAR Status: CAR issued on 11/15/90. Explained closeout for all flights, all vehicles with action required issued on 1/3/91. RI PAC submitted CAR for closure on 1/4/91. Action ECD is 4/26/91.

.

Flight Problem Report approved at Special Level II Daily PRCB on 1/31/91 (PRCBD# S044840K).

1

IFA NUMBER> STS-41-V-05
TITLE:BFS Backup DP/DT Calculation triggered FDA at MECO

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 279 : 11.46.09
IFA DATE: 10/06/1990
IFA STATUS: CLOSED : 02/07/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 05.46.09
PRCBD NUMBER: S044840P PHASE: PRE-LAUNCH
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M EECOM-04
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. DILLMAN
2:
0 DESCRIPTION:
At MET 000:00:08:54, a fault message by BFS backup DP/DT calculation indicated a cabin leak rate in excess of 0.14 psi/min. Analysis shows that a 2 data bit step response (1 data bit normal) by the cabin press sensor caused calculation to trigger FDA. Hardware DP/DT sensor showed no problem. No ferry impact.
.
BFS S/W change under consideration.
.
Flight Problem Report approved at Special Level II Daily PRCB on 2/7/91 (PRCBD# S044840P).

1

IFA NUMBER> STS-41-V-06
TITLE:Left ADI Rate/Scale Switch showed "HI" and "MED" Simultaneously.

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 283 : 11.16.00
IFA DATE: 10/11/1990
IFA STATUS: CLOSED : 02/19/1991 ELAPSED TIME: 003 : 23.28.45
PRACA STATUS: CLOSED : 1991-04-01 HOUSTON TIME: 05.16.00
PRCBD NUMBER: S044840Q PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 39V-0005 M GNC-01
P CAR 41RF03
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: W. LEVERICH
2:
0 DESCRIPTION:
Data confirmed both signals active simultaneously for 26 sec. Switch is single pole. Crew was not using switch during this occurance per crew debrief. No ferry impact.
.
T/S'ing at KSC could not repeat problem, will R&R switch and perform failure analysis (11/21/90). Failure was isolated to a loose solder particle that originated from the back fill sealing area. Condition is considered to be an isolated escape that should have been detected during acceptance X-ray.
.
CAR Status: CAR issued on 12/7/90. Explained closeout issued on 2/8/91. CAR submitted for closure on 2/11/91. Closeout revision issued on 2/28/91. CAR re-submitted for closure on 2/28/91. Revision to closeout issued on 03/15/91.
.
Flight Problem Report presented to Special Level II PRCB on 2/[illegible]/91. Was disapproved with action to Orbiter and GFE Projects Office to identify all CRIT 1 Switch applications and return to the board on 2/18/91. Requested material presented to Special Level II PRCB on 2/19/91. IFA was closed per PRCBD# S044840Q.

1

IFA NUMBER> STS-41-V-07
TITLE:Debris Plunger (EO-2) Fail to Seat/Ordnance Pieces Found on Runway.

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 000 : 00.00.00
IFA DATE: 10/11/1990
IFA STATUS: CLOSED : 01/31/1991
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1990-11-01
HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044840L
PHASE: POST LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
O PYR-3-12-0153 P CAR 41RF04

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

0 DESCRIPTION:
The debris plunger in the EO-2 (LH2) separation fitting debris container was caught by the frangible nut halves and failed to seat properly. Three pieces of spent ordnance assembly were found on the runway beneath the LH2 ET/Orbiter umbilical opening and may be attributed to this failure. In addition, a two inch long piece of what appears to be lockwire was found on the runway beneath the LO2 ET/Orbiter umbilical opening. The origin of this wire is unknown at present. Four pieces of hardware are missing and apparently exited the debris container prior to ET door closure. The EO-1 and EO-3 separation ordnance device plungers appeared to have functioned properly.

.

Photo of debris found on runway hand carried to RI/Downey design for engineering evaluation. CHIT J3451 written to ship hardware to JSC for IFA analysis.

.

KSC LSOC Tracking Number: PV-6-171386

.

CAR Status: CAR issued on 10/17/90.

.

Flight Problem Report approved at Special Level II Daily PRCB on 1/31/91 (PRCBD# S044840L).

1

IFA NUMBER> STS-41-V-08
TITLE:Left RHC Trim Inhibit Switch Contact Miscompare.

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 283 : 11.44.00
IFA DATE: 10/10/1990
IFA STATUS: CLOSED : 01/14/1991
ELAPSED TIME: 003 : 23.56.45
PRACA STATUS: CLOSED : 1991-02-19
HOUSTON TIME: 05.44.00
PRCBD NUMBER: S044840F
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 39V-0009 M GNC-03
P CAR 41RF05

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

0 DESCRIPTION:
"A" contact discrete failed low for 16 seconds. Possible "teasing" phenomenon. KSC will attempt to recreate miscompare. Crew does not recall moving the switch in this time frame.

.

T/S'ing at KSC unable to recreate problem. Additional wire wiggle troubleshooting did not repeat anomaly. Will continue to monitor, will probably fly-as-is, UA approved on 01/16/91.

.
CAR Status: CAR issued on 1/9/91. Explained closeout for all vehicles, all flights issued on 1/10/91. RI submitted CAR for closure on 1/31/91.
.
Flight Problem Report approved by Special Level II Daily PRCB on 01/14/91 (PRCBD #S044840F).

1

IFA NUMBER> STS-41-V-09
TITLE:Ammonia Boiler PRI A Controller Controlled to 31.6 Deg Evap Out Temp, S/B 35 +/- 3.

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 000 : 00.00.00
IFA DATE: 10/11/1990
IFA STATUS: CLOSED : 01/15/1991
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN
HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044840G
PHASE: POST LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 39V-0018 M EECOM-05
P IM/41RF06

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

0 DESCRIPTION:
Controller stabilized at 31.6 Deg. KSC to check evap out temp sensor accuracy.
.
Initial troubleshooting complete and is under engineering evaluation. Retest after boiler heat exchanger R&R was good (01/15/91).
.
IM Status: Issued on 10/17/90.
.
Flight Problem Report approved by Special Level II Daily PRCB on 01/15/91 (PRCBD #S044840G).

1

IFA NUMBER> STS-41-V-10
TITLE:HYD Sys 2 Priority Valve Sluggish Response

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 283 : 13.14.09
IFA DATE: 10/11/1990
IFA STATUS: CLOSED : 02/06/1991
ELAPSED TIME: 004 : 01.26.54
PRACA STATUS: CLOSED : 1991-05-17
HOUSTON TIME: 07.14.09
PRCBD NUMBER: S044840N
PHASE: ENTRY/LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR HYD-3-12-0426 P CAR 41RF07

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

0 DESCRIPTION:
During APU 2 start for entry the priority valve took 5.8 seconds to open and opened at a differential pressure of 400-500 psi. Normally opens instantaniously at differential pressure of 25 psi. KSC to R&R and analyze.
.
The cause of the priority valve anomolous operation is suspect to have been caused by a contaminant temporarily hanging up the valve's check valve. The source of the contamination is not known since a 5 micron absolute filter is located upstream within the associated system

filter module. The valve's supplier also verifies the valves meet the level 190 cleanliness requirement prior to delivery. However, it's possible some of the contaminants could have migrated into the valve from the bootstrap accumulator. This was addressed under a "hydraulic bootstrap system study", which was presented to CCB and authorization given for implementation of a 15 micron inline filter at the accumulator port. No further action will be taken other than monitoring for any future occurrences of this condition.

.

CAR Status: Issued on 10/31/90. Explained closeout for OV-102, flights 10 and 11, and OV-104, flight 8, issued on 11/16/90. Explained closeout for all vehicles/flights issued on 04/08/91. CAR submitted for closure on 04/09/91.

.

Flight Problem Report approved at Special Level II Daily PRCB on 2/06/91 (PRCBD# S044840N).

1

IFA NUMBER> STS-41-V-12
TITLE:Lost 6" Section of PLBD AFT Environmental Seal

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 02/15/1991
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1991-08-06
HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044840U
PHASE: POST LANDING

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	PR STR-3-12-3491	K	PR STR-3-12-3648
P	CAR 41RF09		

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

0 DESCRIPTION:
Post flight inspections revealed a 6" section of AFT PLBD environmental seal (Xo1307 Bulkhead) missing. Thermal control blanket (TCS) unfastening was also recorded. Post flight photograhic analysis of on-orbit Xo1307 bulkhead TCS blankets revealed that seal was missing, in orbit. Seal found behind unfastened blanket. Seal to be sent to RI-Downey for failure analysis.

.

Problem isolated to improper etching/bonding, repair complete.

.

CAR Status: Issued on 11/15/90. Explained closeout for OV-102, Flt #11 (STS-40); OV-103, Flt #12 (STS-39); and OV-104, Flt #8 (STS-37) issued on 3/6/91.

.

Flight Problem report approved at Special Level II PRCB on 2/15/91 (PRCBD# S044840U).

1

IFA NUMBER> STS-41-V-2A
TITLE:GFE: Camera "C" Image Burn.

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 280 : 05.40.00
IFA DATE: 10/07/1990
IFA STATUS: CLOSED : 01/18/1991
ELAPSED TIME: 000 : 17.52.45
PRACA STATUS: UNKNOWN
HOUSTON TIME: 23.40.00
PRCBD NUMBER: S044840H
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER

M INCO-01 P FIAR B-FCE-029-F018

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

0 DESCRIPTION:
Burned-in image of the Orbiter structure seen in downlink. Indicative of extended overexposure to intense light.
.
Remove at KSC and return to FEPC at JSC. No ferry impact.
.
Flight Problem Report approved at Special Level II Daily PRCB on 1-18-91 (PRCBD# S044840H).

1
STS-041 (OV-103,FLT #11) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 24

IFA NUMBER> STS-41-V-2B
TITLE:GFE: Camera D Incorrect Color Phasing

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 01/18/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044840H PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
P FIAR B-FCE-029-F019

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

0 DESCRIPTION:
Image showed blinking or flashing colors. Remove and ship to FEPC for potentiometer adjustment.
.
Flight Problem Report approved at Special Level II Daily PRCB on 1/18/91. (PRCBD# S044840H).

-JFDPO12: NORMAL TERMINATION OF PROCESSING

1
1
1

IFA NUMBER> STS-42-M-01
TITLE:Gas Path In RH and LH Nozzle-To-Case Joint Polysulfide w/Eroded Nozzle-To-Case Wiper O-Ring
0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 03/09/1992 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044848A PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A PV6-209710 A PV6-209823
A PV6-209824
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. MUNSON
2:
0 DESCRIPTION:
During postflight inspection of both the left and right RSRM nozzle-to case joints, gas paths were observed through the polysulfide adhesive with erosion and sooting of the wiper o-rings. Gas penetration on the left side was more extensive as blowby was ovserved at the wiper o-ring.

.

Since damage to the left RSRM nozzle-to-case joint was more extensive than that on the right side, the IFA discussion will address only the prevailing damage. The left nozzle-to-case joint gas path was found through the polysulfide to the wiper o-ring at 57.6 deg. The gas path measured 0.25 inch circumferentially minimum at the step and opened up to 4.2 inches circumferentially just forward of the wiper o-ring. The gas path contained heat-affected polysulfide. The Glass Cloth Phenolic (GCP) was also heat-affected along the fixed housing GCP wiper o-ring at 57 deg. The heated area measured 4 inches circumferentially and 0.4 inches axially.

.

Soot was observed up to the wiper o-ring from 48 deg. to 79 deg. and past the wiper o-ring (downstream wall of the o-ring groove) intermittently from 52.2 deg to 68.4 deg. Soot was also noted in the vent slots at 57.6 deg and 64.8 deg. No soot was ovserved on the primary o-ring.

.

Erosion of the wiper o-ring was observed for 2.2 inches axially and 0.16 inch radially (centered at 57.6 deg). The erosion depth was measured to be 0.02 inches maximum.

.

The polysulfide adhesive (STW4-3311) is applied to the aft dome insulation surface and is used to join the insulation baffle flap (NBR) to the phenolics of the fixed housing during transportation and acts as a volume filler/thermal barrier during operation. The theoretical worst case impact of this problem would be a gas path to the primary o-ring, resulting in hot gas impingement to the o-ring and metal. These heat effects could subsequently penetrate through the primary and secondary o-rings, manifesting into a complete failure of the joint. However, the nozzle-to-case joint was

1

IFA NUMBER> STS-42-M-01
TITLE:Gas Path In RH and LH Nozzle-To-Case Joint Polysulfide w/Eroded Nozzle-To-Case Wiper O-Ring
0 DESCRIPTION: (Continued from previous page).

redesigned to tolerate the occurrence of polysulfide blowholes to the wiper o-ring. This design has been verified by extensive subscale and full scale testing.

.

Flight Problem Report approved at Special Level II Daily PRCB on 03/09/92 (PRCB# S044848A).

1

STS-042 (OV-103,FLT #14) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 3

IFA NUMBER> STS-42-S-01
TITLE:VCR 3 Failed To Play Back Recorded Data

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE: 01/22/1992
IFA STATUS: CLOSED : 09/08/1995 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044848J PHASE: ON-ORBIT

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

0 CLOSURE INITIATED BY: JSC-MT2/F. MORENO |
RESPONSIBLE MANAGERS 1: H. HIGHT
2:

0 DESCRIPTION:
At Met 4/11:32 video cassette recorder (VCR) 3 playback dump was not successful. After several tests, VCR 3 was considered to be nonoperational and was powered off at Met 4/17:42.

.

VCR 3 failure. Postflight evaluation is required and is under way. Safety is not a concern. Loss of VCR could cause partial loss of science data for a module mission. IML-1 science loss, if any, is under investigation.

.

VCR 3 has been returned to MDSSC/Huntsville for test and evaluation. VCR tapes related to anomaly are also under investigation.

1

STS-042 (OV-103,FLT #14) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 4

IFA NUMBER> STS-42-T-01
TITLE:External Tank Divots On The Intertank

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 08/19/1992 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-09-01 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044848H PHASE: ASCENT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A A14467 A CAPS T-062PFC

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: C. BRAMON EE31
2:

0 DESCRIPTION:
Post-separation ET photographs taken by crew show two (2) possible divots on the intertank on STS-42/ET-52. Detailed analysis of the photographs is in work.

.

The subject intertank divots are estimated at eight to twelve inches. The assessment coninues at Michoud Assembly Facility (MAF) and MSFC as to the cause of the divots. This ET (ET-52,LWT-45) utilized the two-gun spray method of insulating the intertank. The next ET with the two-gun spray procedure will fly September 24, 1992 (STS-52).

.

This tank was second to fly with two-gun spray. This has minimal potential for subsurface voids which have historically caused divots at altitudes. After assessment and lab analysis, possible divot cause cannot be established.

.

Flight Problem Report approved at a Special Level II Daily PRCB on 08/19/92 (PRCBD# S044848H).

IFA NUMBER> STS-42-V-01
TITLE:Fuel Cell 2 Hydrogen Pump Motor Condition Spike/AC Bus 2 Phase Anomaly

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 022 : 07.02.00
IFA DATE: 01/22/1992
IFA STATUS: CLOSED : 05/18/1992
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1993-03-01
HOUSTON TIME: 01.02.00
PRCBD NUMBER: S044848D
PHASE: PRE-LAUNCH

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 53V-0001 M EGIL-01
P CAR 42RF01

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

0 DESCRIPTION:
A spike in the fuel cell 2 H2 pump motor condition was noted with a maximum value of 1.48 (LCC limit = 1.00) At the same time AC 2 phase B showed a 0.25 amp increase and phase C showed a 0.16 amp decrease.

.

The cause of this anomaly is presently unknown. The most probable cause was a non-repeatable transient high resistance in the phase C wiring to the hydrogen pump motor. The fuel cell 2 ECU will be removed and replaced and all related wiring/connector interfaces have been checked.

.

Flight Problem Report approved at Special Level II Daily PRCB on 05/18/92 (PRCBD# S044848D).

IFA NUMBER> STS-42-V-03
TITLE:WCS Commode Control Handle Linkage

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 024 : 16.10.00
IFA DATE: 01/24/1992
IFA STATUS: CLOSED : 03/23/1992
ELAPSED TIME: 002 : 01.17.28
PRACA STATUS: CLOSED : 1992-10-07
HOUSTON TIME: 10.10.00
PRCBD NUMBER: S044848B
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR ECL-3-15-0859 M EECOM-02,4
P IM/42RF02

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

0 DESCRIPTION:
During an attempt to configure the WCS for commode use, the commode control handle became disconnected from the commode control valves. Crew IFM regained use of commode. At 027:17:19 the pin inside the WCS ball sheared due to extra torque from the IFM. Caused loss of hardstops on ball valve. Further IFM provided initial hardstop starting point and visual stopping point. WCS again functional.

Linkage removed at DFRC on 2/3. Verified single shear dowel pin failure where handle linkage mates to the vacuum valve shaft caused initial problem. Later double shear of roll pin near the valve caused loss of hardstops.

.

A design change is in work for STS-50 and subsequent flights that will insert the dowel pin completely through the rotational shaft and thereby double the strength of the connection. In addition, the shaft material will be changed to inconel to enable the system to handle additional loads.

.

Flight Problem Report approved at Special Level II Daily PRCB on 03/23/92 (PRCBD# S044848B).

1

STS-042 (OV-103,FLT #14) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 7

IFA NUMBER> STS-42-V-05
TITLE:Left Aft RCS Thruster L3A Failed Leak

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 028 : 21.00.00
IFA DATE: 01/28/1992
IFA STATUS: CLOSED : 06/03/1992
ELAPSED TIME: 006 : 06.07.28
PRACA STATUS: CLOSED : 1992-03-13
HOUSTON TIME: 15.00.00
PRCBD NUMBER: S044848E
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 53V-0005 M PROP-01
P IM/42RF03

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

0 DESCRIPTION:
At 028:21:00 aft RCS thruster L3A (s/n 116) was deselected by RM when the oxidizer injector temperature dropped below 30 degree F. No thruster firings in process at this time. A review of the data indicates an oxidizer valve leak. Thruster has since rewarmed indicating the leak has stopped.

.

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. However, this leakage was unusual in that it occurred spontaneously instead of immediately following a thruster firing, which is typically the case. Currently, there is no explanation for the spontaneous nature of the leakage.

.

Thruster L3A will be removed, replaced and shipped to the vendor. The oxidizer valve will be removed from the thruster and undergo failure analysis.

.

Flight Problem Report approved at Special Level II Daily PRCB on 06/03/92 (PRCBD# S044848E).

1

STS-042 (OV-103,FLT #14) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 8

IFA NUMBER> STS-42-V-06
TITLE:Thruster R4U Ox Leak

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 030 : 03.07.00
IFA DATE: 01/30/1992
IFA STATUS: CLOSED : 06/05/1992
ELAPSED TIME: 007 : 12.14.28
PRACA STATUS: CLOSED : 1993-02-01
HOUSTON TIME: 21.07.00
PRCBD NUMBER: S044848G
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 53V-00004 M PROP-02
P IM/42RF04
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. MCCORMACK
2:
0 DESCRIPTION:
Crew downlinked video of fluid leak from aft of vehicle. Powerup of MDM FA4 verified R4U ox leak. Leak also visible via tank quantity decrease. Right manifold 4 closed for entry.
.
The most probable cause of the leak is that the thermal cycles uncovered flaws that were already present in the seals, allowing the valve to leak on-orbit.
.
Thruster R4U has been removed and replaced.
.
Flight Problem Report approved at Special Level II Daily PRCB on 06/05/92 (PRCBD# S044848G).

1
STS-042 (OV-103,FLT #14) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 9

IFA NUMBER> STS-42-V-08
TITLE:Degraded Waste Dump Flowrate

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 023 : 15.08.00
IFA DATE: 01/23/1992
IFA STATUS: CLOSED : 06/03/1992 ELAPSED TIME: 001 : 00.15.28
PRACA STATUS: CLOSED : 1992-09-10 HOUSTON TIME: 09.08.00
PRCBD NUMBER: S044848F PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 53V-0008 M EECOM-05
P IM/42RF05
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. DILLMAN
2:
0 DESCRIPTION:
During waste dump 2, the dump flowrate degraded from an initial rate of 1.9%/min to a final rate of 1.5%/min on the first segment. The remaining three segments had a dump rate of 1.6%/min.
.
The waste-dump flowrate degradation was caused by contamination of the urine solids filter. The cause and extent of the contamination is still under analysis.
.
The OV-103 urine solids filter has been removed and replaced. A seciton of the waste dump line upstream of the filter will be cut out and anlyzed to dtermine the cause and extent of the solids build-up. The waste dump line will be flushed to the extent necessary to insure proper flowrate.
.
Flight Problem Report approved at Special Level II Daily PRCB on 06/03/92 (PRCBD# S044848F).

1
STS-042 (OV-103,FLT #14) OFFICIAL INFLIGHT ANOMALY REPORT 09/10/95
PAGE 10

IFA NUMBER> STS-42-V-09
TITLE:LH2 Topping Valve "Open" Indication Missing

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 030 : 15.30.00
IFA DATE: 01/30/1992

IFA STATUS: CLOSED : 05/05/1992 ELAPSED TIME: 008 : 00.37.28
PRACA STATUS: CLOSED : 1992-11-30 HOUSTON TIME: 09.30.00
PRCBD NUMBER: S044848C PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 53V-0009 M BSTR-01
P CAR 42RF06

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

0 DESCRIPTION:
Did not get "open" indication when the valve was commanded open during entry. Did lose "closed" indication. "Closed" indication came back when valve commanded closed.

.
No ferry impact.

.
The LH2 topping valve open indicator failed when the valve was commanded open during entry. Postflight troubleshooting repeated the problem and isolated it to a failed microswitch. The valve was verified to be operating nominally.

.
The topping valve will be removed and replaced.

.
Flight Problem Report approved at Special Level II Daily PRCB on 05/05/92 (PRCBD# S044848C).

-JFDPO12: NORMAL TERMINATION OF PROCESSING

STS-043

1
1
1

IFA NUMBER> STS-43-B-01
TITLE:Hang-Up Of The Holddown Post (HDP) 7 During Liftoff

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 09/10/1991
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN
HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044852A
PHASE: POST LANDING

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

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: J.M. KENNEDY
2:

0 DESCRIPTION:
The primary cause of stud hangup was pyrotechnic skewed firing which caused contact with the holddown post bore resulting in loss of energy and velocity. The attach link did not contribute to stud hangup. MSFC and Rockwell analyses show that stud hangups have minimal effects on post/tower clearance and vehicle controllability.

.

Stud hangups have occurred on six previous flights (STS-2, STS-4, STS-51L, STS-61A, STS-33R, and STS-34). Broaching in the STS-43 HDP 7 bore (0.40 inch maximun depth) was very similar to that experienced on STS-51L (mission sequence number 20). The thread impressions experienced on STS-43 (the most severe recorded) indicated severe lateral stud contact with the aft skirt HDP, which resulted in a loss of energy and velocity. The primary cause of the stud hangup has been attributed to a skewed firing of the HDP pyrotechnics, with frangible nut rebound into the holddown stud as a secondary contributor. The two conditions combined to reduce the stud exit velocity to less than 6 feet per sec (required to prevent stud hangup). The burn marks on the stud and the frangible nut separation geometry indicated that HDP 7 experienced approximately 0.5 msec of skew. Test data exhibited that pyrotechnic skew firing of 0.5 - 0.75 msec coupled with nut rebound into the holddown stud can decrease the stud's exit velocity to less than required in preventing a stud hangup. Also, the physical evidence exonerated the attach link as a contributor to this anomaly. A MSFC analysis assessed that vehicle liftoff clearance would be unaffected with eight stud hangups, provided that the frangible nuts are separated properly. A Rockwell International analysis which assessed liftoff loads revealed that one, two, or three stud hangups resulted in load conditions within design limits and had minimal effects on post/tower clearance, as will as negligible effects on vehicle controllability.

.

This IFA was closed at the Level II PRCB (PRCBD No. S084291) on 08/22/91. Problem report closed in the Level III MSFC PRACA tracking system for STS-44 and subs on 10/11/91.

1

IFA NUMBER> STS-43-E-01
TITLE:ME-3 Controller Digital Computer Unit (DCU) Failure On Channel A

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 09/19/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044852B PHASE: PRE-LAUNCH
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
* ********NONE FOUND******* * ********NONE FOUND*******
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: C. PINSON/EE22
2:
0 DESCRIPTION:
The ME-3 controller (F21) experienced a DCU channel "A" hold without a power loss prior to the start of LO2 replenish.
.
A successful switchover to channel "B" was performed at T-4.5 hours before the planned liftoff. A Failure Identification (FID) 001-000 was reported on the Vehicle Data Table (VDT), and a Major Component Failure (MCF) was reported in the engine status word. A memory dump of the faulty controller was performed and the analysis identified a parity error as the cause of the DCU A halt. The decision was made to replace the discrepant controller with a spare (F18), and the launch attempt was scrubbed. The failed controller was then sent to Honeywell for further evaluation and testing. The parity error was isolated to hardware failure in the plated wire memory bit sense line circuit, specifically a bit 6 sense line open circuit. The hardware disassembly revealed a broken blind lap solder joint connection of the bit jumper cable to the half-stack, which is not a generic design problem. The solder joint cannot be visually inspected after completion of the joint due to ribbon wire insulation remaining on the top half of the conductor. The defective solder joint was caused by improper reflow (insufficient heat) during build. The resultant high resistance produced the observed parity error and DCU A halt. There are 8960 similar solder joints in each controller and there has been only one failure at the controller level in the SSME program history. This includes 54500 hours of field operation and 24443 hours of factory operation. There have been three blind lap joint failures detected during subassembly build. These were detected prior to half-stack assembly into an engine controller. A single channel failure of the DCU results in the loss of redundancy and the controller posts an MCE. If the failure occurs before SRB ignition, the result is an on-pad abort, if the failure occurs before engine start command the result is a launch scrub. A dual channel failure during engine start or mainstage results in a engine pneumatic shutdown. There have been no DCU switchovers during engine start or mainstage in program history. Since this issue was considered unique and understood, the problem did not pose a generic concern and was eliminated as a flight constraint to the STS-43 mission.
.
1

IFA NUMBER> STS-43-E-01
TITLE:ME-3 Controller Digital Computer Unit (DCU) Failure On Channel A

0 DESCRIPTION: (Continued from previous page).
The IFA has been submitted to the Level II PRCB for closure signatures outside the board. Closed in the Level III MSFC PRACA tracking system for STS-48 and subs.
.
Flight Problem Report approved at Special Level II Daily PRCB on 10/28/91 (PRCBD# S044852B).

1

IFA NUMBER> STS-43-E-02
TITLE:ME-2 HPFTP First Stage Turbine Blade With Stop Tab Broken Off

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: S044853C PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A A031164
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: C. PINSON/EE22
2:
0 DESCRIPTION:
During disassembly of HPFTP 4007R3 a first stage turbine blade stop was found fractured and the piece recovered. The pump teardown had been initiated as a result of high torque experienced during normal turn-around inspections post flight STS-43 and due to reaching the bearing life limit.
.
The blade stop fatigue cracks resulted from installation deformation residual stresses which when combined with operating stresses exceeded the threshold for hydrogen embrittlement assisted fatigue. Plastic strain enhances hydrogen diffusion which in turn reduces the material strength and ductility. The stop fragment is within the demonstrated turbine ingestion capability. No effect on blade retention or damping would be experienced. Engine start will not be affected.
.
The assembly process has been modified to eliminate the potential for blade stop damage. Slave blades with varing fir tree width will be used to broach the disc prior to installation of production blades. This will reposition the gold in the disc to allow easier installation of the production blades. A nylon brush will also be used to clean the fir trees of the blades and the disc to remove any material which may interfere with asembly. During installation of the production blades a nylon hammer and drift can only be used to install a blade up to 2/3 of the blade length, and only the nylon drift can be used for the remainder of the installation. Several caution notes not to strike the blade stop were added to the installation procedure. Briefings were presented to the assembly personnel to summarize the failure and to review the new asembly procedures.
.
Flight Problem Report approved at Special Level II Daily PRCB on 11/15/91 (PRCBD# S044853C).

1

IFA NUMBER> STS-43-K-01
TITLE:H2 Leak At The ET Ground Carrier Umbilical Plate (GUCP)

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 000 : 00.00.00
IFA DATE: 08/01/1991
IFA STATUS: CLOSED : 10/03/1991
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN
HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044852J
PHASE: PRE-LAUNCH
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 43V-105
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: C. ABNER
2:
0 DESCRIPTION:
Indications of H2 leak at the ET GUCP utilizing LD 23 and 25 - H2 was detected in the GUCP cavity starting during the last part of topping. The H2 concentrations were cycling between 0% and 1.9% and were in sync with the intertank purge heater cycles. LCC for H2 detection at this location is 4.4%. This indicates there was a leak in the I/T purge disconnect seal into the GUCP cavity. Mass spec readings confirmed that GN2 was periodically suppressing the GH2 concentration. No limits were ever violated and this was not a concern for flight.
.
Flight Problem Report approved at Special Level II Daily PRCB on 10/03/91 (PRCBD# S044852J).

1

IFA NUMBER> STS-43-K-02
TITLE:LOX Leak Inside The Tail Service Mast (TSM)

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 000 : 00.00.00
IFA DATE: 08/01/1991
IFA STATUS: CLOSED : 10/03/1991
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN
HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044852K
PHASE: PRE-LAUNCH
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 43V-107
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: C. ABNER
2:
0 DESCRIPTION:
Ice team reported that LOX was leaking inside the TSM. Leak was determined not to be degrading other components. Visual inspections and leak test during 24 hour recycle did not find the leak.
.
Flight Problem Report approved at Special Level II Daily PRCB on 10/03/91 (PRCBD# S044852K).

1

IFA NUMBER> STS-43-P-01
TITLE:BIMDA Cell Syringe Activation Anomaly

0 MISSION CONSTRAINT: SUBS

IFA TIME GMT: 215 : 13.07.00
IFA DATE: 08/03/1991
ELAPSED TIME: 000 : 22.05.01
HOUSTON TIME: 08.07.00
PHASE: ON-ORBIT

IFA STATUS: CLOSED : 11/08/1995
PRACA STATUS: UNKNOWN
PRCBD NUMBER: S044852AA

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
P PYLD-03

0 CLOSURE INITIATED BY: JSC-MT2/R. LOE
RESPONSIBLE MANAGERS 1: J. LAROCHELLE
2:

0 DESCRIPTION:
Cell Syringe (CS) activation for CS numbers 1, 5, and 6 was nominal.
.
CS#2 Anomaly: The plunger could not be depressed, and the fluids were not mixed.
.
CS#3 Anomaly: When the plunger was depressed, leaking was observed, and the plunger could not be pulled back. No mixing was observed, and the leading assembly was sealed in a ziploc bag.
.
CS#4 Anomaly: The fluids were successfully mixed, but the syringe was leaking slightly. The leaking stopped when plunger activity was halted.
.
No further activities will be attemped with CS numbers 2 or 3. Take CS#4 sample at nominal time, but do not use plunger.

- CLOSURE RATIONALE:
The glass syringes in their original state, had silicon coating inside the tubes to prevent plunger sticking. However, due to launch delays and subsequent sample removal/replacement, the syringes were cleaned and autoclaved, effectively removing the silicon coating. This apparently caused the plunger to stick and/or distort, resulting in either failure to activate or plunger distortion. A similar problem (plunger sticking) was observed in the ground-control parallel experiment, for the same reason. It was determined, however, that the apparent sample leakage was not sample material (Lymphocytes), but residual water from a pre-installation water pressure test and was not a problem. The corrective action would be implement procedures that would assure silicon re-coating after a sample replacement. However, the BIMDA apparatus will not be reflown, and no such action will be undertaken or is necessary.

1

IFA NUMBER> STS-43-P-02
TITLE:BIMDA Cell Syringe 48 Hour Sampling Anomalies

0 MISSION CONSTRAINT: SUBS

IFA TIME GMT: 217 : 12.55.00
IFA DATE: 08/05/1991
ELAPSED TIME: : 00.00.00
HOUSTON TIME: 00.00.00
PHASE: ON-ORBIT

IFA STATUS: CLOSED : 11/08/1995
PRACA STATUS: UNKNOWN
PRCBD NUMBER: S044852AB

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

0 CLOSURE INITIATED BY: JSC-MT2/R. LOE |
RESPONSIBLE MANAGERS 1: J. LAROCHELLE
2:

0 DESCRIPTION:
CS#1 Anomaly: When the sample vial was removed from the needle/valve adapter, leaking was observed through the needle. The needle/valve adapter was removed and bagged per the nominal procedure, and no further leaking was observed. The crew confirmed that the valve was in the closed position when the leaking occurred.
.
CS#5 Anomaly: Only a small sample was obtainable, even with the use of the plunger.
.
CS#6 Anomaly: The needle/valve adapter valve was stuck in the closed position, and no sample was obtained.
.
No further CS activites are scheduled.

- CLOSURE RATIONALE:
The CS#1 and CS#6 problems were not related to the plunger-sticking problems of IFA STS-43-P-1. Post-flight analysis and crew discussion determined that the needle/valve adapter leakage may have been caused by either valve failure or crew failure to fully close valve as the sample vial was removed. No conclusive determination was made. As for the CS#6 adapter valve failure to open, the problem appears to be due to the design of the needle/valve adapter made from Lexan. The tendency of Lexan to "creep" when not under load could have caused the threads to close up, preventing movement. Again, no conclusive determination was made. The apparatus will not be re-flown.

1

IFA NUMBER> STS-43-P-03
TITLE:Cracks In IUS Super * Zip Containment Tube

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 10/28/1991
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN
HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044853B
PHASE: POST LANDING

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

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

0 DESCRIPTION:
During STS-43 post flight inspection, 12 cracks were found in the IUS Super * Zip Containment Tube.
.
There is no safety concern and the performance of Super * Zip is not affected by the cracks. STS-44 IUS will fly as is.
.
Flight Problem Report approved on Special Level II Daily PRCB on 10/28/91 (PRCBD# S044853B).

1

IFA NUMBER> STS-43-V-01
TITLE:Cabin Vent Valve Failed to Indicate "Closed"

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 213 : 14.20.00
IFA DATE: 08/01/1991
IFA STATUS: CLOSED : 10/09/1991
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-02-28
HOUSTON TIME: 09.20.00
PRCBD NUMBER: S044852M
PHASE: PRE-LAUNCH

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 44V-0001	M	EECOM-01
P	IM/43RF01		

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

0 DESCRIPTION:
After vent-down from cabin leak test on 08/01/91 launch attempt, no "closed" indication was received from cabin vent valve. Subsequent cabin leak test verified valve closed.
.
KSC troubleshooting verified bad microswitch. Valve was R&R'd.
.
Flight Problem Report approved at Special Level II Daily PRCB on 10/09/91 (PRCBD# S044852M).

1

IFA NUMBER> STS-43-V-02
TITLE:No Cooling On Water Spray Boiler (WSB) 2 On Ascent

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 214 : 15.11.00
IFA DATE: 08/02/1991
IFA STATUS: CLOSED : 10/11/1991
ELAPSED TIME: 000 : 00.09.01
PRACA STATUS: CLOSED : 1992-04-29
HOUSTON TIME: 10.11.00
PRCBD NUMBER: S044852U
PHASE: ASCENT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 44V-0015	M	MMACS-01
P	IM/43RF02		

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

0 DESCRIPTION:
No cooling noted on WSB 2 controllers A or B. Data indicates freeze-up. Used system 2 for FCS c/o to verify ice sublimation.
.
FCS c/o verified no cooling on either controller. Both spray valves R & R'd. PRCB directed a hot lube oil flush of System Z, and this has been completed.
.
Since KSC troubleshooting results pointed to an intermittent mechanical failure of both valves, the lube oil and hydaulic spray valves were removed and sent to the vendor for full failure analysis. The vendor tests did not duplicate the original anomalies.
.
Flight Problem Report approved at a Special Level II Daily PRCB on 10/11/91 (PRCBD# S044852U).

IFA NUMBER> STS-43-V-03
TITLE:Payload Data Interleaver (PDI) Decom Problems

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 214 : 16.50.00
IFA DATE: 08/02/1991
IFA STATUS: CLOSED : 10/09/1991
ELAPSED TIME: 000 : 01.48.01
PRACA STATUS: UNKNOWN
HOUSTON TIME: 11.50.00
PRCBD NUMBER: S044852N
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 44V-0014	M	INCO-02
O	INS-4-10-0255		

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

0 DESCRIPTION:
Decom 2 dropped in & out of lock on format 7 SHARE data and lost lock completely after one minute. A reload of format & source was unsuccessful. Went to backup Decom 1 which experienced drops in data. Now successfully processing data on Decom 3.
.
Troubleshooting during the flight verified a deviation in the SHARE data stream of approximately 4 percent. This is within the PDI specification range which allows a deviation up to 10 percent. Further postlanding troubleshooting at KSC isolated the PDI decommutator 2 as the "most probable cause" failure mode.
.
The PDI was removed and replaced. The removed unit was returned to the vendor for failure analysis.
.
Flight Problem Report approved at a Special Level II Daily PRCB on 10/09/91 (PRCBD# S044852N).

IFA NUMBER> STS-43-V-04
TITLE:PRSD H2 Tank 1 Heater B Failed Off

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 215 : 09.30.00
IFA DATE: 08/03/1991
IFA STATUS: CLOSED : 10/02/1991
ELAPSED TIME: 000 : 18.28.01
PRACA STATUS: CLOSED : 1991-11-15
HOUSTON TIME: 04.30.00
PRCBD NUMBER: S044852H
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 44V-0008	M	EGIL-01
P	IM/43RF03		

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

0 DESCRIPTION:
After several dual-heater cycles, heater B appeared to fail off. A subsequent manual activation of heater B verified fail off.
.

5 amp fuse replaced in Cryo Heater Control Box 1. Heater works OK now. Failure analysis revealed that the STS-43 fuse failed due to a manufacturing defect in the fuse link. The link separated at the end cap. Scanning electron microscope examination of the fuse indicated that damage existed in the fuse link from the time of manufacture.
.
Fuse F2 has been removed and replaced. Metallurigical sectioning of the end cap is in progress to better characterize the failure mode.
.
Flight Problem Report approved at Special Level II Daily PRCB on 10/09/91 (PRCBD# S044852H).

IFA NUMBER> STS-43-V-05
TITLE:CCTV Camera D Inoperative

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 214 : 17.48.00
IFA DATE: 08/02/1991
IFA STATUS: CLOSED : 10/03/1991
ELAPSED TIME: 000 : 02.46.01
PRACA STATUS: UNKNOWN
HOUSTON TIME: 12.48.00
PRCBD NUMBER: S044852L
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 44V-0004	M	INCO-01
P	FIAR-BFCE-029-F038		

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

0 DESCRIPTION:
Crew reported that when camera D was powered up there was no video output. Each time the camera was powered a "S76" camera overtemp message occurred. Crew tried to repower the camera on flight day 2 with no joy.
.
Troubleshooting completed. Camera D found bad and returned to JSC.
.
Flight Problem Report approved at Special Level II Daily PRCB on 10/03/91 (PRCBD# S044852L).

IFA NUMBER> STS-43-V-06
TITLE:APU 1 FP/GGVM Overcooling

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 214 : 15.32.00
IFA DATE: 08/04/1991
IFA STATUS: CLOSED : 09/25/1991
ELAPSED TIME: 000 : 00.30.01
PRACA STATUS: CLOSED : 1994-03-14
HOUSTON TIME: 10.32.00
PRCBD NUMBER: S044852D
PHASE: ASCENT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 44V-0003	M	MMACS-02
P	IM/43RF04		

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: W. SCOTT
2:

0 DESCRIPTION:
Post APU shutdown the FP/GGVM cooling system A for APU 1 displayed excessive, erratic water spraying resulting in overcooling of the fuel pump.
.
APU S/N 305 has a unique fuel pump cooling signature because the FP manifold allows water to spray on the FP temperature sensor. The timer control box for APIU 1 system "A" is out of specification as well. The pulse data from system "A" will be reviewed on upcoming flights to insure that the timer control box is still operating within its historical data base.
.
Fly as is with the APU 1 system "A" timer control box until vehicle major modification which removes the FP/GGVM cooling system completely.
.
Flight Problem Report approved at Special Level II Daily PRCB on 09/25/91 (PRCBD# S044852D).

1

IFA NUMBER> STS-43-V-07
TITLE:Low Ku-Band Power Indication

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 216 : 13.07.00
IFA DATE: 08/04/1991
IFA STATUS: CLOSED : 10/02/1991
ELAPSED TIME: 001 : 22.05.01
PRACA STATUS: CLOSED : 1994-12-09
HOUSTON TIME: 08.07.00
PRCBD NUMBER: S044852F
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 44V-0006	M	INCO-04
P	IM/43RF05		

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: L. LEONARD
2:

0 DESCRIPTION:
Ku-Band Power out (V74E2511A) dropped from 31 watts to -22 and recovered after 22 minutes. TV in progress was good. Similar occurrences at 216:16:40, 218:15:10, and 218:15:29.
.
Troubleshooting on 08/23/91 did not duplicate problem.
.
The cause of this anomaly has not been explained.
.
Flight Problem Report approved at a Special Level II Daily PRCB on 10/02/91 (PRCBD# S044852F).

1

IFA NUMBER> STS-43-V-08
TITLE:S-Band Power Amp 2 Degradation

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 216 : 21.30.00
IFA DATE: 08/04/1991
IFA STATUS: CLOSED : 10/01/1991
ELAPSED TIME: 002 : 06.28.01

PRACA STATUS: CLOSED : 1992-08-31 HOUSTON TIME: 16.30.00
PRCBD NUMBER: S044852G PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 44V-0005 K PR COM-4-10-0107
P IM/43RF06

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: P. SHACK
2:

0 DESCRIPTION:
S-Band PA2 has shown a slow power degradation through the flight. Will switch to PA1 if communication becomes unacceptable with PA2.
.
PA 2 reached the end of its operational lifetime during the STS-43 mission. PA 306 has been removed and replaced. The replacement PA has TWT serial numbers 211 and 249 which are expected to meet the design lifetime of 20,000 hours.
.
R & R completed 08/19/91.
.
Flight Problem Report approved at a Special Level II Daily PRCB on 10/02/91 (PRCBD# S044852G).

1

IFA NUMBER> STS-43-V-09
TITLE:PRSD H2 Manifold Valve 1 Failed Open

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 220 : 18.09.00
IFA DATE: 08/08/1991
IFA STATUS: CLOSED : 10/11/1991 ELAPSED TIME: 006 : 03.07.01
PRACA STATUS: CLOSED : 1995-03-04 HOUSTON TIME: 13.09.00
PRCBD NUMBER: S044852V PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 44V-0007 M EGIL-04
P IM/43RF07

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

0 DESCRIPTION:
Valve failed open when commanded closed. Crew cycled switch twice more, no joy. Further valve closures will not be attemped in-flight. Valve had closed five times previously on this flight. KSC troubleshooting cycled valve 5 times without incident.
.
Instrumentation of valve command circuit has been approved for next flight.
.
Flight Problem Report approved at Special Level II Daily PRCB on 10/11/91 (PRCBD# S044852V).

1

IFA NUMBER> STS-43-V-10
TITLE:Floodlight Failure Mid-Starboard Remote Power Controller (RPC) Trip

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 219 : 17.13.00
IFA DATE: 08/07/1991
IFA STATUS: CLOSED : 10/11/1991 ELAPSED TIME: 005 : 02.11.01
PRACA STATUS: CLOSED : 1991-11-18 HOUSTON TIME: 12.13.00
PRCBD NUMBER: S044852Q PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 44V-0013 M EGIL-03
P IM/43RF08
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. VILLAREAL
2:
0 DESCRIPTION:
When PL Bay Floodlights were powered, mid Main C amps increased 15 amps for 3-4 sec. Subsequent testing confirmed mid stbd floodlight failed.
.
Floodlight flickered during trouble shooting, and current spikes were observed on the bus. Floodlight R&R is complete.
.
The anomaly was caused by a failed floodlight. The lamp has been removed and replaced.
.
Flight Problem Report approved a Special Level II Daily PRCB on 10/11/91 (PRCBD# S044852Q).

1

IFA NUMBER> STS-43-V-11
TITLE:Partial Pressure O2 (PPO2) Sensor C Failed

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 223 : 02.32.00
IFA DATE: 08/11/1991
IFA STATUS: CLOSED : 10/11/1991 ELAPSED TIME: 008 : 11.30.01
PRACA STATUS: CLOSED : 1991-09-30 HOUSTON TIME: 21.32.00
PRCBD NUMBER: S044852W PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 44V-0016 M EECOM-02
P IM/43RF09
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: M. HOY
2:
0 DESCRIPTION:
Sensor C(V61P2515A) began diverging downward from sensor A & B valves. All 3 sensors R/R'd. Removed units enroute to vendor w/dedicated canisters. Troubleshooting shows no orbiter contribution to this problem.
.
Flight Problem Report approved at Special Level II Daily PRCB on 10/11/91 (PRCBD# S044852W).

1

IFA NUMBER> STS-43-V-12
TITLE:APU 1 S/N 305 Anomalous Chamber Pressure During Entry

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 223 : 11.58.00
IFA DATE: 08/11/1991
IFA STATUS: CLOSED : 09/25/1991 ELAPSED TIME: 008 : 20.56.01
PRACA STATUS: CLOSED : 1992-02-28 HOUSTON TIME: 06.58.00
PRCBD NUMBER: S044852E PHASE: ENTRY/LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 44V-0018 M MMACS-03
P IM/43RF10
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: W. SCOTT
2:
0 DESCRIPTION:
For approximately 35 seconds the APU 1 chamber pressure returned to a non-zero level after each pulse, indicating a possible leak in the pulse control valve. The leakage was probably caused by contamination lodged on the PC outlet seat, that was later dislodged.
.
S/N 305 has been removed. Have replaced with S/N 203 from OV-103 for one flight.
.
Flight Problem Report approved at Special Level II Daily PRCB on 09/25/91 (PRCBD# S044852E).

1

IFA NUMBER> STS-43-V-13
TITLE:MPS LH2 4" Disconnect-Portion Of Seal Stuck In Flapper

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 10/15/1991 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1993-12-10 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044852Y PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR MPS-4-10-0795
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: P. COTA
2:
0 DESCRIPTION:
During postlanding inspection, a pressurization leak was noted in MPS. Visual inspection showed that a portion of the PD3 flapper seal had come loose and was lodged in the flapper. Vendor has R & R'd seal. Burr on body of valve, not on sealing surface, cleaned up.
.
Flight Problem Report approved at Special Level II Daily PRCB on 10/15/91 (PRCBD# S044852Y).

1

IFA NUMBER> STS-43-V-14
TITLE:RIGHT HAND OUTBOARD (RHOB) Brake Pressure Bias

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 10/15/1991 ELAPSED TIME: 000 : 00.00.00

PRACA STATUS: UNKNOWN HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044852Z PHASE: PRE-LAUNCH

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

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

0 DESCRIPTION:
Right Hand Outboard brake pressure #4 (V51P0744A) appeared biased approx 200 psi lower than RHOB brake pressure 2. Ground T/S on 8/14 could not duplicate. Similar phenomenon, to a lesser extent, seen on previous flight of OV-104 (IFA 37-V-17 closed as UA).
.
The problem has been isolated to the servo valve which controls pressure in the affected brake line. The servo valve module was removed and replaced, and will undergo failure analysis.
.
Flight Problem Report approved at Special Level II Daily PRCB on 10/15/91 (PRCBD# S044852Z).

1

IFA NUMBER> STS-43-V-15
TITLE:-Z Star Tracker/Light Shade Shutter Light Leak

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 222 : 12.27.00
IFA DATE: 08/10/1991
IFA STATUS: CLOSED : 10/10/1991 ELAPSED TIME: 007 : 21.25.01
PRACA STATUS: CLOSED : 1991-11-15 HOUSTON TIME: 07.27.00
PRCBD NUMBER: S044852P PHASE: ON-ORBIT

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

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: A. SAULIETIS
2:

0 DESCRIPTION:
Star Tracker exhibited intermittant star presence while pointed at sun with shutter closed. Indicates shutter not completely closed. Plan normal inspections and light test.
.
Anomaly did not repeat during testing. Will fly next flight as-is.
.
Flight Problem Report approved at Special Level II Daily PRCB on 10/10/91 (PRCBD# S044852P).

1

IFA NUMBER> STS-43-V-16
TITLE:Right Main Engine Repressurized To 33 PSIA During Entry.

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 223 : 12.23.00
IFA DATE: 08/11/1991
IFA STATUS: CLOSED : 10/15/1991 ELAPSED TIME: 008 : 21.21.01
PRACA STATUS: CLOSED : 1992-10-07 HOUSTON TIME: 07.23.00
PRCBD NUMBER: S044853A PHASE: ENTRY/LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 44V-0020 K PR MPS-4-10-0814
P CAR 43RF14
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: P. COTA
2:
0 DESCRIPTION:
During entry the right engine LO2 inlet pressure (V41P1330C) tracked the mainfold pressure during repressurization.
.
Troubleshooting found the bleed check valve to be leaking and x-rays confirmed the check valve was partially open. After valve removal, visual inspection showed that both flapper closure spring tangs were missing.
.
The check valve was shipped to the vendor for confirmation of the spring material and a failure analysis. The specified spring material properties have been verified and it was concluded that the spring tang failures were caused by wear of the spring-end coils inner-diameter surface against the flapper shaft.
.
Flight Problem Report approved at Special Daily Level II PRCB on 10/15/91 (PRCBD# S044853A).

-JFDPO12: NORMAL TERMINATION OF PROCESSING

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STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 1

IFA NUMBER> STS-44-B-01
TITLE:Left SRB Structural Damage to Forward Skirt, Systems Tunnel & ETA Ring

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 328 : 23.44.00
IFA DATE: 11/24/1991
IFA STATUS: CLOSED : 01/08/1992
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-02-27
HOUSTON TIME: 17.44.00
PRCBD NUMBER: S044856F
PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A A14322
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: RL HENRY EE11
2:
0 DESCRIPTION:
During the SRB recovery operatons, the retrieval team reported structural damage to the left SRB forward skirt, systems tunnel, and ETA ring.

.

The left SRB sustained major structural damage. The forward skirt was buckled over a 150 deg F circumferential distance, from the +Z axis through the systems tunnel (-Y axis) on toward the -Z axis. Cracks were observed around the buckled area ranging from approximately 8" to 19" across. Also, the SRSS antenna was discovered missing from the +Z axis side, however, the antenna was later found floating nearby in the water and retrieved. In order to protect the forward skirt from further damage, the recovery team wrapped a nylon strap/webbing around the motor segments and attached the tow rope for safe transport back to the KSC port (Hangar AF). During towback, the forward skirt electrical components were subjected to partial or total salt water submersion.

.

The left SRB systems tunnel forward feed-through cover close-out was cracked on the -Z side. the first cover was severely damaged in the area of the forward skirt buckle. Between covers 4 and 5 the K5NA closeout was missing. Cover 6 had a 4 in sq area divot with a clean substrate, and on cover 12 the aft end was buckled and fasteners on the -Z side were broken. The left SRB ETA ring was buckled along all segments of the forward and aft webs with ring caps cracked and numerous fasteners broken/missing. The failed fasteners are located on either side of the +Z and -Z axes. The ring is also separated from the web at several locations circumferentially.

.

All of the left SRB damage has been mapped and data supplied to the anomaly investigation team. Twenty six action items were identified to close the ascent fault tree scenarios. The M&P investigation and stress analyses determined that the SRB structural damage was not attributed to the ascent or separation phases. The data review verified integrity of the hardware, and analysis showed adequate factors of safety for all ascent and separation loading events.

.

Only two descent phase loads exist which can cause SRB structural
1

STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95

IFA NUMBER> STS-44-B-01
TITLE:Left SRB Structural Damage to Forward Skirt, Systems Tunnel & ETA Ring

0 DESCRIPTION: (Continued from previous page).

damage; drogue parachute deployment and water impact/slapdown. It is improbable that drogue parachute deployment loads caused the damage as the STS-44 99th percentile load case cannot generate the loads required to cause this failure; therefore, the most probable cause of failure is water impact/slapdown. No corrective action was required. This incident is not a safey of flight concern as the investigation has eliminated the ascent and separation phases as possible times of occurrence. Likewise, this anomaly is not a constraint to STS-42 and subsequent missions.

.

The IFA was closed at the LEVEL II PRCB (PRCBD# S044856F) on 01/08/92. The problem report has not currently been dispositioned in the Level III MSFC PRACA tracking system.

1

IFA NUMBER> STS-44-B-02
TITLE:High Strain Measurements on Right SRB Aft Skirt HDP 4

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 328 : 23.44.00
IFA DATE: 11/24/1991
IFA STATUS: CLOSED : 01/08/1992
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-05-01
HOUSTON TIME: 17.44.00
PRCBD NUMBER: S044856G
PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A A14324
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: RL HENRY EE11
2:
0 DESCRIPTION:
During liftoff of the STS-44 mission, tensile strains were recorded from the right SRB aft skirt post 4 critical welds which measured outside the maximum tensile strain database.

.

No anomalies detected in instrumentation or data acquisition system. Review of build paper shows no related manufacturing anomalies. MLP measured loads indicate flight loads were nominal. No visual damage detected during preliminary postflight inspection of hardware. STS-44 RH aft skirt used as LH on STS-27 and STS-32. Skirt rotated due to weld anomaly in critical weld area. HDP #4 on present RH configuration was HDP #6 in previous LH configuration. HDP #6 maximum strain was -5680 micro strain on STS-27 and -4830 micro strain on STS-32. High compressive strains from previous flights result in residual strains. STS-44 high strains can be explained by hysteresis effect of residual strains.

.

Recommended as IFA - requires additional test, analyses or evaluation to understand cause and effect.

.

The IFA was closed at the Level II PRCB (PRCBD# S044856G) on 01/08/92. The problem report has not currently been dispositioned in the Level III MSFC PRACA tracking sytem.

1

IFA NUMBER> STS-44-B-03
TITLE:Two Recessed Socket Contacts In The Left SRB Aft BSM Firing Cables Connector

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 328 : 23.44.00
IFA DATE: 11/24/1991
IFA STATUS: CLOSED : 01/08/1992
ELAPSED TIME: 000 : 00.00.00

PRACA STATUS: CLOSED : 1992-04-06 HOUSTON TIME: 17.44.00
PRCBD NUMBER: S044856H PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A A14323 A PV6-205588
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: RL HENRY EE11
2:
0 DESCRIPTION:
During postflight inspection of the left SRB ETA ring, the aft BSM system A firing line cable connector was found with two recessed socket contacts.

.

The anomalous connector was found in line with the ETA ring damage (see IFA # STS-44-B-1). The cable (X13W8R) was pushed inward, and the tie wrap was broken. The cable functioned properly during the STS-44 mission as well as four previous missions. A postflight continuity test was performed with normal readings, confirming that continuity had been maintained.

.

A teardown analysis, including a Scanning Electron Microscope (SEM) analysis, determined that the retainer clips were damaged during cable manufacture. The SEM analysis showed that the damage was due to ductile overload. An analytical evaluation determined that there are no design loads, during ascent, descent, or water impact which can produce this ductile overload and subsequently break these retainer clips.

.

The failure analysis revealed that contact B was recessed 0.075 inch below the phenolic face of the connector (contact A recessed less than contact B). This is the maximum recess possible as the cable design limits potential recess to 0.075 inch. A dimensional analysis determined that a recess of 0.230 inch is required before the contacts and mating connector pins would not mate, thus causing an open circuit. The failure and dimensional analyses concluded that this failure mode cannot cause loss of continuity.

.

In conclusion, the damage to the retainer clips in the connector (which allowed the contacts to recess) occurred during the original manufacture; however, the cable design precludes loss of continuity due to recessed contacts. The cable had successfully passed all OMRSD inspections for recessed pins; therefore, it is assumed that the contacts were not recessed prior to the STS-44 flight. Accordingly, the recessed contacts are attributed to the excessive water impact loads which caused structural damage in the area of this cable. No corrective action was required since the cable design, tests, and

1

IFA NUMBER> STS-44-B-03
TITLE:Two Recessed Socket Contacts In The Left SRB Aft BSM Firing Cables Connector
0 DESCRIPTION: (Continued from previous page).
inspections preclude recessed contacts from causing a functional failure.

.

The IFA was closed at the Level II PRCB (PRCBD# S044856H) on 01/08/92. The problem report has not currently been dispositioned in the Level III MSFC PRACA tracking system.

1

IFA NUMBER> STS-44-E-01

TITLE:MCC Pressure Measurement Bias On ME-2

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 328 : 23.44.00
IFA DATE: 11/24/1991
IFA STATUS: CLOSED : 12/20/1991
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-03-04
HOUSTON TIME: 17.44.00
PRCBD NUMBER: S044856A
PHASE: ASCENT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A A031329 A A14313

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: C. PINSON EE22
2:

0 DESCRIPTION:
ME-2 (engine 2030) exhibited a 35 PSI bias between the two Main Combustion Chamber pressure (MCC Pc) transducers during the first 270 seconds of the flight. The Booster Flight Controller reported the MCC Pc shift to the Flight Director and indicated it did not violate Flight Rule 5-35A. At 270 seconds into the flight, MCC Pc channels returned to normal. Postflight analysis indicates the most likely cause of the anomaly is a partial blockage of the Channel B transducer sense passage. The blockage was cleared at 270 seconds and the measurement returned to normal. An unknown contaminant has been found during a special post flight inspection of the transducer installation. Analysis is in work to determine the source.

.

Post flight analysis indicated the most likely cause of the anomaly as a partial blockage of the Channel B transducer sense passage. Post flight inspection found a gel-like contaminant in the seal at joint G8.8. Some of the gel-like contaminant partially blocked the sense line between the MCC acoustic cavity and the transducer port. This material was expelled during the flight causing the blockage to be removed. Contaminant introduced during seal installation at Canoga Park.

.

A special inspection per RAR KLO-824R1 found all STS-42 installations to be free of contaminant.

.

The IFA was closed at the Level II PRCB (PRCBD# S044856A) on 12/20/91. The problem report has been deferred for STS-42 in the Level III MSFC PRACA tracking system.

1

IFA NUMBER> STS-44-M-01
TITLE:Left RSRM Case Segments Deformed And/Or Buckled

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 000 : 00.00.00
IFA DATE: 11/24/1991
IFA STATUS: CLOSED : 01/06/1992
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN
HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044856C
PHASE: POST LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A PV6-205333 A PV6-205592

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: C. PINSON EE22
2:

0 DESCRIPTION:
During retrieval and post flight assessment on left RSRM, varing degrees of structural damage were observed on the forward and forward center motor segments as well as the aft and forward ET flanges.

.

The left RSRM forward segment has visible case deformation on the aft

cylinder at two locations. There is visible case deformation at five locations on the left RSRM center forward segment. Outer ligament cracks exist on the forward ET flange at 211 deg and on the aft flange at 21 deg. These holes are elongated on the outboard side. Visual deformation exists on both ET flanges at approximately 330 deg. The forward flange is bent approximately 0.20" aft over a span of 5 deg. The aft flange is bent approximately 0.12" forward over a span of about 4 deg.

.

The major buckling damage at approximately station 980 was casued by a bending load on the motor. A bending moment of over 500,000,000 in-lbs is required to buckle the case. The parachute loads (drogue and main) can generate a maximum load of less than 200,000,000 in-lbs, assuming the worst case loading condition. No identified preflight or flight load can cause a significant bending moment at this location. The detailed postflight inspection did not identify any indications of in-flight impact. No damage occurred on the aft end of the motor (stiffener segments, aft dome, nozzle, and aft skirt), suggesting that the aft end of the motor did not hit the water in a normal vertical attitude.

.

It was concluded that the damage occurred after motor operation. Based on previous experience and the physical evidence, the most likely scenario is that the damage was a a result of water impact.

.

The IFA was closed at the Level II PRCB (PRCBD# S044856C) on 01/06/92. Currently no disposition exists for the problem report in the Level III MSFC PRACA tracking system.

1

IFA NUMBER> STS-44-M-02
TITLE:Abnornal Erosion Patterns On Right RSRM Nozzle Cowl & Outer Boot Ring

0 MISSION CONSTRAINT: 48 SUBS

IFA TIME GMT: 000 : 00.00.00
IFA DATE: 11/24/1991
IFA STATUS: CLOSED : 01/07/1992
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-04-15
HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044856D
PHASE: POST LANDING

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
A	A14337	D	DR4-5/223

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. THORNTON EE53
2:

0 DESCRIPTION:
During postflight inspection of the right RSRM nozzle cowl and OBR, abnormal erosion patterns/wash areas were observed.

.

Abnormal operational/erosion wash areas at the aft end of the nozzle cowl insulation are more extensive than previously observed. Concern is effective on cowl/Outer Boot Ring (OBR) bondline integrity and subsequent reduced flex bearing protection.

.

In a worst case scenario (as shown in TWR-18019), if the cowl-to-OBR bondline failed at T-50 seconds and if the nozzle was vectored over and held at four degrees (typically vector angle has been a maximum of approximately 2.5 degrees and only for short periods of time) the temperature of the o-ring at the end of burn would be less than the temperature required to degrade sealing performance (600 deg F). At the end of burn under this condition, less than 1/4 of the flex bearing would be lost as a result of heating. The loss of 1/4 of the flex bearing is not a structural concern, only a reuse issue. The

loss of sufficient cowl material to result in the cowl to OBR bond safety factor to be less than 1.0 at T + 50.0 seconds is highly unlikely for the following reasons:

.

o A worst on worst case evaluation assuming a limit depth and sequential wedgeout occurance at the 500 isotherm would project the earliest bondline failure at or beyond 70 second. Therefore, safety-of-flight risk is not feasible.

o Pore pressure early in burn is less than at end of burn.

o Out gassing has shorter path to escape early in burn.

o Propensity to wedgeout is higher at end of burn when outgassing has longer path to escape.

o Historically, most wedgeouts occur postburn, when outgassing path is greater (deeper into component)

o Postfire assessment of STS-44 (360T019) RH (B) cowl/OBR show wedgeouts occur late in burn (after T + 90 seconds)

.

The STS-44B (360T019B) cowl/ORB char and erosion depths and associated margins of safety are in compliance with CEI specification requirements, with the exception of a low predicted cowl/OBR bondline

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STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 9

IFA NUMBER> STS-44-M-02
TITLE:Abnornal Erosion Patterns On Right RSRM Nozzle Cowl & Outer Boot Ring

0 DESCRIPTION: (Continued from previous page).

safety factor. Those flights potentially affected by this condition will be covered with a deviation (RDW0601R2).

.

A design change to the cowl ply angle has been qualified and is anticipated to be incorporated as early as flight 33. This change desensitizes the cowl to any anomalous material loss conditions.

.

The IFA was closed at the Level II PRCB (PRCBD# S044856D) on 01/07/92. Currently no disposition exists for the problem report in the Level III MSFC PRACA tracking system.

1

STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 10

IFA NUMBER> STS-44-V-01
TITLE:LO2 17" Manifold Temp Probe A (V41T1528A)

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 328 : 15.43.00
IFA DATE: 11/24/1991
IFA STATUS: CLOSED : 02/07/1992 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-03-25 HOUSTON TIME: 09.43.00
PRCBD NUMBER: S044856P PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 45V-0001 M BSTR-02
P IM/44RF-04

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

0 DESCRIPTION:

At approximately 328:15:43:45 G.m.t the LO2 17" manifold temperature probe A measurement operated erratically for 10 minutes before failing off-scale low. At approximately 328:18:00:00 the readings returned to near normal values. At approximately 328:18:02:20 another 40 second period of erratic readings occurred, but then recovered with no subsequent anomalous readings.

.

The sensor is a -20 type (ME449-0013-0020) that has not been subject to electrical or structural failures in the past. The LO2 17-inch manifold temperature sensor A measurement exhibited erratic readings during the prelaunch time-frame most probably due to a transient open circuit condition caused by a faulty connection. Failure analysis of the sensor and its associated MDM is being performed to determine the exact cause of the anomaly. No structural failures were detected. The sensor was removed and replaced.

.

Flight Problem Report approved at Special Level II Daily PRCB on 02/07/92 (PRCBD# S044856P).

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STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 11

IFA NUMBER> STS-44-V-05
TITLE:Humidity Separator (HUM SEP) B H2O Carryover

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 332 : 18.35.00
IFA DATE: 11/28/1991
IFA STATUS: CLOSED : 02/13/1992
ELAPSED TIME: 003 : 18.51.00
PRACA STATUS: UNKNOWN
HOUSTON TIME: 12.35.00
PRCBD NUMBER: S044856Q
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M EECOM-02

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

0 DESCRIPTION:
At about 332:18:35, the crew reported about 1 to 2 cups of water around the HUM SEP screen, and it appeared to be spitting water. Water test per existing OMRSD. Test scheduled 12/19.

.

Based on the availbable flight data, crew comments, and the successful flush performed at KSC, the most probable cause of the humidity separator B water carry-over was a large slug of water being passed from the heat exchanger to the humidity separator during the redundant component checkout of the cabin temperature controllers.

.

A proposed modification to the Ascent Checklist will prevent the type of water carry-over that was observed during the redundant component checkout of the cabin temperature controllers.

.

Flight Problem Report approved at Special Level II Daily PRCB on 02/05/92 (PRCBD# S044856M).

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STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 12

IFA NUMBER> STS-44-V-06
TITLE:Supply Water Dump Valve Leak

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 331 : 19.30.00
IFA DATE: 11/27/1991
IFA STATUS: CLOSED : 02/05/1992
ELAPSED TIME: 002 : 19.46.00
PRACA STATUS: CLOSED : 1992-02-28
HOUSTON TIME: 13.30.00
PRCBD NUMBER: S044856M
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR6-200350-A M EECOM-01
P IM/44RF02

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

0 DESCRIPTION:
Indications of a leaking dump valve were seen after the second and fourth supply water dumps. IFM to purge supply water from dump line performed twice. First attempt indicated blockage, second attempt produced air flow. R&R pending result of OV-103 dump valve test at JSC.
.
Although a leak in the supply dump valve is not normal, it does not present a safety-of-flight issue. The next flight of OV-104 (STS-45) is scheduled to dump all of the supply water using FES dumps, with no use of the supply dump line planned. Therefore, no corrective action is deemed necessary and it is recommended to fly the existing supply dump valve.
.
Flight Problem Report approved at Special Level II Daily PRCB on 02/05/92 (PRCBD# S044856M).

1
STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 13

IFA NUMBER> STS-44-V-07
TITLE:IMU 2 Fail RM

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 334 : 15.30.00
IFA DATE: 11/30/1991
IFA STATUS: CLOSED : 02/14/1992
ELAPSED TIME: 005 : 15.46.00
PRACA STATUS: CLOSED : 1992-06-26
HOUSTON TIME: 09.30.00
PRCBD NUMBER: S044856U
PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 45V-0006
M GNC-01
P IM/44RF-01
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: M. ENGEL
2:
0 DESCRIPTION:
The Z axis accelerometer channel and redundant gyro showed excessive outputs (saturation). Taken to standby, then operate, then power cycled. Failure still present. R&R IMU. Ship to JSC-ISL.
.
Postflight troubleshooting in the Inertial Systems Laboratory (ISL) at JSC isolated the probelem to a failed computer interface card. The failed IMU has been removed and replaced. The New HAINS IMUs do not contain these types of cards, which are unique to the KT-70 IMUs.
.
Flight Problem Report approved at Special Level II Daily PRCB on 02/14/92 (PRCBD# S044856U).

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STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 14

IFA NUMBER> STS-44-V-09
TITLE:Left Air Data Probe Single Motor Deploy

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 335 : 22.25.00
IFA DATE: 12/01/1991
IFA STATUS: CLOSED : 01/31/1992
ELAPSED TIME: 000 : 22.41.00
PRACA STATUS: UNKNOWN
HOUSTON TIME: 16.25.00
PRCBD NUMBER: S044856K
PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 45V-0023
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: W. LEVERICH
2:

0 DESCRIPTION:
Motor 2 (MN B AC 2) apparently did not run. Standard troubleshooting required. Suspect FMCA2 relay, wiring or switch tease. Previous occurance during ground testing. Reference IPR's 36V-0251 & 27RV-0119.

.

The most probable cause of this anomaly was a recurrence of the previously documented "switch teasing" phenomena. The tendency of a switch of this type to exhibit these characteristics is a function of the actuator-operating technique and is not considered a failure of the switch. The corrective action documented on CAR AD1487 continues to apply. Crew members will be briefed on the most effective operating technique for prevention of the phenomena.

.

Flight Problem Report approved at Special Level II Daily PRCB on 01/31/92 (PRCBD# S044856K).

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STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 15

IFA NUMBER> STS-44-V-10
TITLE:APU 2 Drain Line Pressure Drop

0 MISSION CONSTRAINT: SUBS
IFA STATUS: CLOSED : 02/13/1992
PRACA STATUS: CLOSED : 1992-07-10
PRCBD NUMBER: S044856T
IFA TIME GMT: 333 : 02.14.00
IFA DATE: 11/29/1991
ELAPSED TIME: 004 : 02.30.00
HOUSTON TIME: 20.14.00
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 45V-0009 M MMACS-04
P IM/44RF-03

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

0 DESCRIPTION:
Pressure decayed from 15.5 to 3.5 pisa over 45 min period. R&R relief valve. Replace with new design valve.

.

The APU 2 drain line relief valve will be removed and replaced with a new design (-003) relief valve. Changeout scheduled 12/19.

.

Flight Problem Report approved at Special Level II Daily PRCB on 02/13/92 (PRCBD# S044856T).

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STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 16

IFA NUMBER> STS-44-V-11
TITLE:APU Drain Line Temp Rose During Entry

0 MISSION CONSTRAINT: SUBS
IFA STATUS: CLOSED : 02/07/1992
PRACA STATUS: UNKNOWN
PRCBD NUMBER: S044856N
IFA TIME GMT: 335 : 22.10.00
IFA DATE: 12/01/1991
ELAPSED TIME: 006 : 22.26.00
HOUSTON TIME: 16.10.00
PHASE: ENTRY/LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 45V-0010 M MMACS-06

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

0 DESCRIPTION:
APU 2 drain line temp 2 increased to 196F, then fell to 100F. FDA limit is 195F. Suspect warm slug of liquid. Test and standard

troubleshooting at KSC.
.
Similar rapid temperature increases were noted on this system during ascent and also on previous missions (on other APU's) while the APU was running, although not to this magnitude. A new drain line and new temperature sensor were installed in position 2 due to the IAPU (Improved Auxiliary Power Unit) installation.
.
Flight Problem Report approved at Special Level II Daily PRCB on 02/07/92 (PRCBD# S044856N).

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STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 17

IFA NUMBER> STS-44-V-13
TITLE:HYD SYS #1 Priority Valve Sluggish

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 335 : 21.50.00
IFA DATE: 12/01/1991
IFA STATUS: CLOSED : 01/21/1992
ELAPSED TIME: 006 : 22.06.00
PRACA STATUS: CLOSED : 1992-06-10
HOUSTON TIME: 15.50.00
PRCBD NUMBER: S044856J
PHASE: ENTRY/LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
P IM/44RF-05
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: K. BROWN
2:
0 DESCRIPTION:
.
Flight data indicated that the hydraulic system 1 accumulator pressure and reservoir pressure tracked each other during the period before and after the lag occurred, which implies that the check valve internal to the priority valve was sluggish to open. Examination of the priority valves has revealed contamination to be the probable cause of the lag.
.
The delay in hydraulic system 1 accumulator pressure reflecting the main pump pressure was most probably the result of a restriction in the movement of the check valve internal to the priority valve. The hydraulic system 1 priority valve will be removed and replaced.
.
Flight Problem Report approved at Special Level II Daily PRCB on 01/21/92 (PRCBD# S044856J).

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STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 18

IFA NUMBER> STS-44-V-14
TITLE:Loss Of Hardware From ET Umbilical Attachment System

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 01/08/1992
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-01-15
HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044856E
PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR-PYR-4-11-0142 P IM/44RF06
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: K. BROWN
2:
0 DESCRIPTION:
An NSI with an intact electrical connector was found underneath the LH2 umbilical cavity post-landing. An accounting of debris in the

containment system indicates a similar piece of debris was lost on-orbit.
.
A new hole plugger design, MCR-11960, has been approved for the umbilical plate assembly. OV-105 was delivered with the new design, and the hardware is available for immediate installation in the remaining vehicles.
.
Flight Problem Report approved at Special Level II Daily PRCB on 01/08/92 (PRCBD# S044856E).

IFA NUMBER> STS-44-V-16
TITLE:PLB Floodlights Failed To Operate

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 335 : 18.30.00
IFA DATE: 12/01/1991
IFA STATUS: CLOSED : 01/31/1992
ELAPSED TIME: 006 : 18.46.00
PRACA STATUS: CLOSED : 1993-05-19
HOUSTON TIME: 12.30.00
PRCBD NUMBER: S044856L
PHASE: POST LANDING

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 45V-0018	P	IM/44RF07
P	IM/44RF08		

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

0 DESCRIPTION:
During PLBD closure, the mid port floodlight flickered and the mid starboard floodlight failed to illuminate. Occurred on STS-43 (Ref. IFA STS-43-V-10). Mid stbd lamp replaced prior to STS-44.
.
Although the mid-port and mid-starboard floodlight anomalies are unexplained, it is presently believed that the most probable cause is insufficient magnitude of the starting pulse due to temperature effects and variations between individual FEA's and lamp assemblies. An engineering change is being processed which will improve the FEA starting pulse characteristics.
.
Flight Problem Report approved at Special Level II Daily PRCB on 01/31/92 (PRCBD# S044856L).

IFA NUMBER> STS-44-V-17
TITLE:MS2 Shoulder Harness Would Not Tighten

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 02/14/1992
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-09-08
HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044856V
PHASE: PRE-LAUNCH

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	PR LAF-4-11-0200	K	PR MV-0610A-3-0019
P	CAR 44RF09		

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

0 DESCRIPTION:
MS2 reported that a pin in the shoulder belt tightening mechanism came out, and tension could not be maintained. Shoulder belt was knotted to tighten it.

.
The cause of the MS2 shoulder harness failure is presently unknown. Suspect the loss of the C-clip. The failed MS2 adjuster mechanism has been removed from the flight inventory. Further corrective action may result from failure analysis of the missing piece parts, if they are found.
.
Flight Problem Report approved at Special Level II Daily PRCB on 02/14/92 (PRCBD# S044856V)

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STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 21

IFA NUMBER> STS-44-V-18
TITLE:Right Inboard Brake Rotor Crack

0 MISSION CONSTRAINT: 48 SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 02/25/1992 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-01-10 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044856W PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K MEQ-4-11-0417
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. GERLACH
2:
0 DESCRIPTION:
The postflight inspection of the carbon brakes revealed cracks and chips adjacent to one drive lug on the right-hand inboard brake (RHIB) rotor number 2. These cracks are the first recorded occurrence since carbon brake implementation. The cracking of the carbon brake was due to improper workmanship. The brake manufacturing process has been modified to prevent future defects.
.
Flight Problem Report approved at Special Level II Daily PRCB on 02/25/92 (PRCBD# S044856W).

-JFDPO12: NORMAL TERMINATION OF PROCESSING

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STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 1

IFA NUMBER> STS-44-B-01
TITLE:Left SRB Structural Damage to Forward Skirt, Systems Tunnel & ETA Ring

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 328 : 23.44.00
IFA DATE: 11/24/1991
IFA STATUS: CLOSED : 01/08/1992
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-02-27
HOUSTON TIME: 17.44.00
PRCBD NUMBER: S044856F
PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A A14322
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: RL HENRY EE11
2:
0 DESCRIPTION:
During the SRB recovery operatons, the retrieval team reported structural damage to the left SRB forward skirt, systems tunnel, and ETA ring.
.
The left SRB sustained major structural damage. The forward skirt was buckled over a 150 deg F circumferential distance, from the +Z axis through the systems tunnel (-Y axis) on toward the -Z axis. Cracks were observed around the buckled area ranging from approximately 8" to 19" across. Also, the SRSS antenna was discovered missing from the +Z axis side, however, the antenna was later found floating nearby in the water and retrieved. In order to protect the forward skirt from further damage, the recovery team wrapped a nylon strap/webbing around the motor segments and attached the tow rope for safe transport back to the KSC port (Hangar AF). During towback, the forward skirt electrical components were subjected to partial or total salt water submersion.
.
The left SRB systems tunnel forward feed-through cover close-out was cracked on the -Z side. the first cover was severely damaged in the area of the forward skirt buckle. Between covers 4 and 5 the K5NA closeout was missing. Cover 6 had a 4 in sq area divot with a clean substrate, and on cover 12 the aft end was buckled and fasteners on the -Z side were broken. The left SRB ETA ring was buckled along all segments of the forward and aft webs with ring caps cracked and numerous fasteners broken/missing. The failed fasteners are located on either side of the +Z and -Z axes. The ring is also separated from the web at several locations circumferentially.
.
All of the left SRB damage has been mapped and data supplied to the anomaly investigation team. Twenty six action items were identified to close the ascent fault tree scenarios. The M&P investigation and stress analyses determined that the SRB structural damage was not attributed to the ascent or separation phases. The data review verified integrity of the hardware, and analysis showed adequate factors of safety for all ascent and separation loading events.
.
Only two descent phase loads exist which can cause SRB structural
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STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 2

IFA NUMBER> STS-44-B-01
TITLE:Left SRB Structural Damage to Forward Skirt, Systems Tunnel & ETA Ring

0 DESCRIPTION: (Continued from previous page).

damage; drogue parachute deployment and water impact/slapdown. It is improbable that drogue parachute deployment loads caused the damage as the STS-44 99th percentile load case cannot generate the loads required to cause this failure; therefore, the most probable cause of failure is water impact/slapdown. No corrective action was required. This incident is not a safey of flight concern as the investigation has eliminated the ascent and separation phases as possible times of occurrence. Likewise, this anomaly is not a constraint to STS-42 and subsequent missions.

.

The IFA was closed at the LEVEL II PRCB (PRCBD# S044856F) on 01/08/92. The problem report has not currently been dispositioned in the Level III MSFC PRACA tracking system.

1

IFA NUMBER> STS-44-B-02
TITLE:High Strain Measurements on Right SRB Aft Skirt HDP 4

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 328 : 23.44.00
IFA DATE: 11/24/1991
IFA STATUS: CLOSED : 01/08/1992
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-05-01
HOUSTON TIME: 17.44.00
PRCBD NUMBER: S044856G
PHASE: POST LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A A14324

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: RL HENRY EE11
2:

0 DESCRIPTION:
During liftoff of the STS-44 mission, tensile strains were recorded from the right SRB aft skirt post 4 critical welds which measured outside the maximum tensile strain database.

.

No anomalies detected in instrumentation or data acquisition system. Review of build paper shows no related manufacturing anomalies. MLP measured loads indicate flight loads were nominal. No visual damage detected during preliminary postflight inspection of hardware. STS-44 RH aft skirt used as LH on STS-27 and STS-32. Skirt rotated due to weld anomaly in critical weld area. HDP #4 on present RH configuration was HDP #6 in previous LH configuration. HDP #6 maximum strain was -5680 micro strain on STS-27 and -4830 micro strain on STS-32. High compressive strains from previous flights result in residual strains. STS-44 high strains can be explained by hysteresis effect of residual strains.

.

Recommended as IFA - requires additional test, analyses or evaluation to understand cause and effect.

.

The IFA was closed at the Level II PRCB (PRCBD# S044856G) on 01/08/92. The problem report has not currently been dispositioned in the Level III MSFC PRACA tracking sytem.

1

IFA NUMBER> STS-44-B-03
TITLE:Two Recessed Socket Contacts In The Left SRB Aft BSM Firing Cables Connector

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 328 : 23.44.00
IFA DATE: 11/24/1991
IFA STATUS: CLOSED : 01/08/1992
ELAPSED TIME: 000 : 00.00.00

PRACA STATUS: CLOSED : 1992-04-06 HOUSTON TIME: 17.44.00
PRCBD NUMBER: S044856H PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A A14323 A PV6-205588
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: RL HENRY EE11
2:
0 DESCRIPTION:
During postflight inspection of the left SRB ETA ring, the aft BSM system A firing line cable connector was found with two recessed socket contacts.

.

The anomalous connector was found in line with the ETA ring damage (see IFA # STS-44-B-1). The cable (X13W8R) was pushed inward, and the tie wrap was broken. The cable functioned properly during the STS-44 mission as well as four previous missions. A postflight continuity test was performed with normal readings, confirming that continuity had been maintained.

.

A teardown analysis, including a Scanning Electron Microscope (SEM) analysis, determined that the retainer clips were damaged during cable manufacture. The SEM analysis showed that the damage was due to ductile overload. An analytical evaluation determined that there are no design loads, during ascent, descent, or water impact which can produce this ductile overload and subsequently break these retainer clips.

.

The failure analysis revealed that contact B was recessed 0.075 inch below the phenolic face of the connector (contact A recessed less than contact B). This is the maximum recess possible as the cable design limits potential recess to 0.075 inch. A dimensional analysis determined that a recess of 0.230 inch is required before the contacts and mating connector pins would not mate, thus causing an open circuit. The failure and dimensional analyses concluded that this failure mode cannot cause loss of continuity.

.

In conclusion, the damage to the retainer clips in the connector (which allowed the contacts to recess) occurred during the original manufacture; however, the cable design precludes loss of continuity due to recessed contacts. The cable had successfully passed all OMRSD inspections for recessed pins; therefore, it is assumed that the contacts were not recessed prior to the STS-44 flight. Accordingly, the recessed contacts are attributed to the excessive water impact loads which caused structural damage in the area of this cable. No corrective action was required since the cable design, tests, and

1

STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 5

IFA NUMBER> STS-44-B-03
TITLE:Two Recessed Socket Contacts In The Left SRB Aft BSM Firing Cables Connector
0 DESCRIPTION: (Continued from previous page).
inspections preclude recessed contacts from causing a functional failure.

.

The IFA was closed at the Level II PRCB (PRCBD# S044856H) on 01/08/92. The problem report has not currently been dispositioned in the Level III MSFC PRACA tracking system.

1

STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 6

IFA NUMBER> STS-44-E-01

TITLE:MCC Pressure Measurement Bias On ME-2

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 328 : 23.44.00
IFA DATE: 11/24/1991
IFA STATUS: CLOSED : 12/20/1991
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-03-04
HOUSTON TIME: 17.44.00
PRCBD NUMBER: S044856A
PHASE: ASCENT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
A	A031329	A	A14313

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: C. PINSON EE22
2:

0 DESCRIPTION:
ME-2 (engine 2030) exhibited a 35 PSI bias between the two Main Combustion Chamber pressure (MCC Pc) transducers during the first 270 seconds of the flight. The Booster Flight Controller reported the MCC Pc shift to the Flight Director and indicated it did not violate Flight Rule 5-35A. At 270 seconds into the flight, MCC Pc channels returned to normal. Postflight analysis indicates the most likely cause of the anomaly is a partial blockage of the Channel B transducer sense passage. The blockage was cleared at 270 seconds and the measurement returned to normal. An unknown contaminant has been found during a special post flight inspection of the transducer installation. Analysis is in work to determine the source.

.

Post flight analysis indicated the most likely cause of the anomaly as a partial blockage of the Channel B transducer sense passage. Post flight inspection found a gel-like contaminant in the seal at joint G8.8. Some of the gel-like contaminant partially blocked the sense line between the MCC acoustic cavity and the transducer port. This material was expelled during the flight causing the blockage to be removed. Contaminant introduced during seal installation at Canoga Park.

.

A special inspection per RAR KLO-824R1 found all STS-42 installations to be free of contaminant.

.

The IFA was closed at the Level II PRCB (PRCBD# S044856A) on 12/20/91. The problem report has been deferred for STS-42 in the Level III MSFC PRACA tracking system.

1

IFA NUMBER> STS-44-M-01
TITLE:Left RSRM Case Segments Deformed And/Or Buckled

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 000 : 00.00.00
IFA DATE: 11/24/1991
IFA STATUS: CLOSED : 01/06/1992
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: UNKNOWN
HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044856C
PHASE: POST LANDING

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
A	PV6-205333	A	PV6-205592

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: C. PINSON EE22
2:

0 DESCRIPTION:
During retrieval and post flight assessment on left RSRM, varing degrees of structural damage were observed on the forward and forward center motor segments as well as the aft and forward ET flanges.

.

The left RSRM forward segment has visible case deformation on the aft

cylinder at two locations. There is visible case deformation at five locations on the left RSRM center forward segment. Outer ligament cracks exist on the forward ET flange at 211 deg and on the aft flange at 21 deg. These holes are elongated on the outboard side. Visual deformation exists on both ET flanges at approximately 330 deg. The forward flange is bent approximately 0.20" aft over a span of 5 deg. The aft flange is bent approximately 0.12" forward over a span of about 4 deg.

.

The major buckling damage at approximately station 980 was casued by a bending load on the motor. A bending moment of over 500,000,000 in-lbs is required to buckle the case. The parachute loads (drogue and main) can generate a maximum load of less than 200,000,000 in-lbs, assuming the worst case loading condition. No identified preflight or flight load can cause a significant bending moment at this location. The detailed postflight inspection did not identify any indications of in-flight impact. No damage occurred on the aft end of the motor (stiffener segments, aft dome, nozzle, and aft skirt), suggesting that the aft end of the motor did not hit the water in a normal vertical attitude.

.

It was concluded that the damage occurred after motor operation. Based on previous experience and the physical evidence, the most likely scenario is that the damage was a a result of water impact.

.

The IFA was closed at the Level II PRCB (PRCBD# S044856C) on 01/06/92. Currently no disposition exists for the problem report in the Level III MSFC PRACA tracking system.

1

STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 8

IFA NUMBER> STS-44-M-02
TITLE:Abnornal Erosion Patterns On Right RSRM Nozzle Cowl & Outer Boot Ring

0 MISSION CONSTRAINT: 48 SUBS
IFA TIME GMT: 000 : 00.00.00
IFA DATE: 11/24/1991
IFA STATUS: CLOSED : 01/07/1992
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-04-15
HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044856D
PHASE: POST LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
A A14337 D DR4-5/223

0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: S. THORNTON EE53
2:

0 DESCRIPTION:
During postflight inspection of the right RSRM nozzle cowl and OBR, abnormal erosion patterns/wash areas were observed.

.

Abnormal operational/erosion wash areas at the aft end of the nozzle cowl insulation are more extensive than previously observed. Concern is effective on cowl/Outer Boot Ring (OBR) bondline integrity and subsequent reduced flex bearing protection.

.

In a worst case scenario (as shown in TWR-18019), if the cowl-to-OBR bondline failed at T-50 seconds and if the nozzle was vectored over and held at four degrees (typically vector angle has been a maximum of approximately 2.5 degrees and only for short periods of time) the temperature of the o-ring at the end of burn would be less than the temperature required to degrade sealing performance (600 deg F). At the end of burn under this condition, less than 1/4 of the flex bearing would be lost as a result of heating. The loss of 1/4 of the flex bearing is not a structural concern, only a reuse issue. The

loss of sufficient cowl material to result in the cowl to OBR bond safety factor to be less than 1.0 at T + 50.0 seconds is highly unlikely for the following reasons:

.

o A worst on worst case evaluation assuming a limit depth and sequential wedgeout occurance at the 500 isotherm would project the earliest bondline failure at or beyond 70 second. Therefore, safety-of-flight risk is not feasible.

o Pore pressure early in burn is less than at end of burn.

o Out gassing has shorter path to escape early in burn.

o Propensity to wedgeout is higher at end of burn when outgassing has longer path to escape.

o Historically, most wedgeouts occur postburn, when outgassing path is greater (deeper into component)

o Postfire assessment of STS-44 (360T019) RH (B) cowl/OBR show wedgeouts occur late in burn (after T + 90 seconds)

.

The STS-44B (360T019B) cowl/ORB char and erosion depths and associated margins of safety are in compliance with CEI specification requirements, with the exception of a low predicted cowl/OBR bondline

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STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 9

IFA NUMBER> STS-44-M-02
TITLE:Abnornal Erosion Patterns On Right RSRM Nozzle Cowl & Outer Boot Ring

0 DESCRIPTION: (Continued from previous page).

safety factor. Those flights potentially affected by this condition will be covered with a deviation (RDW0601R2).

.

A design change to the cowl ply angle has been qualified and is anticipated to be incorporated as early as flight 33. This change desensitizes the cowl to any anomalous material loss conditions.

.

The IFA was closed at the Level II PRCB (PRCBD# S044856D) on 01/07/92. Currently no disposition exists for the problem report in the Level III MSFC PRACA tracking system.

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STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 10

IFA NUMBER> STS-44-V-01
TITLE:LO2 17" Manifold Temp Probe A (V41T1528A)

0 MISSION CONSTRAINT: SUBS IFA TIME GMT: 328 : 15.43.00
IFA DATE: 11/24/1991
IFA STATUS: CLOSED : 02/07/1992 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-03-25 HOUSTON TIME: 09.43.00
PRCBD NUMBER: S044856P PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 45V-0001 M BSTR-02
P IM/44RF-04

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

0 DESCRIPTION:

At approximately 328:15:43:45 G.m.t the LO2 17" manifold temperature probe A measurement operated erratically for 10 minutes before failing off-scale low. At approximately 328:18:00:00 the readings returned to near normal values. At approximately 328:18:02:20 another 40 second period of erratic readings occurred, but then recovered with no subsequent anomalous readings.

.

The sensor is a -20 type (ME449-0013-0020) that has not been subject to electrical or structural failures in the past. The LO2 17-inch manifold temperature sensor A measurement exhibited erratic readings during the prelaunch time-frame most probably due to a transient open circuit condition caused by a faulty connection. Failure analysis of the sensor and its associated MDM is being performed to determine the exact cause of the anomaly. No structural failures were detected. The sensor was removed and replaced.

.

Flight Problem Report approved at Special Level II Daily PRCB on 02/07/92 (PRCBD# S044856P).

1

STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 11

IFA NUMBER> STS-44-V-05
TITLE:Humidity Separator (HUM SEP) B H2O Carryover

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 332 : 18.35.00
IFA DATE: 11/28/1991
IFA STATUS: CLOSED : 02/13/1992
ELAPSED TIME: 003 : 18.51.00
PRACA STATUS: UNKNOWN
HOUSTON TIME: 12.35.00
PRCBD NUMBER: S044856Q
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
M EECOM-02

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

0 DESCRIPTION:
At about 332:18:35, the crew reported about 1 to 2 cups of water around the HUM SEP screen, and it appeared to be spitting water. Water test per existing OMRSD. Test scheduled 12/19.

.

Based on the availbable flight data, crew comments, and the successful flush performed at KSC, the most probable cause of the humidity separator B water carry-over was a large slug of water being passed from the heat exchanger to the humidity separator during the redundant component checkout of the cabin temperature controllers.

.

A proposed modification to the Ascent Checklist will prevent the type of water carry-over that was observed during the redundant component checkout of the cabin temperature controllers.

.

Flight Problem Report approved at Special Level II Daily PRCB on 02/05/92 (PRCBD# S044856M).

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STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 12

IFA NUMBER> STS-44-V-06
TITLE:Supply Water Dump Valve Leak

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 331 : 19.30.00
IFA DATE: 11/27/1991
IFA STATUS: CLOSED : 02/05/1992
ELAPSED TIME: 002 : 19.46.00
PRACA STATUS: CLOSED : 1992-02-28
HOUSTON TIME: 13.30.00
PRCBD NUMBER: S044856M
PHASE: ON-ORBIT

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR6-200350-A M EECOM-01
P IM/44RF02

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

0 DESCRIPTION:
Indications of a leaking dump valve were seen after the second and fourth supply water dumps. IFM to purge supply water from dump line performed twice. First attempt indicated blockage, second attempt produced air flow. R&R pending result of OV-103 dump valve test at JSC.
.
Although a leak in the supply dump valve is not normal, it does not present a safety-of-flight issue. The next flight of OV-104 (STS-45) is scheduled to dump all of the supply water using FES dumps, with no use of the supply dump line planned. Therefore, no corrective action is deemed necessary and it is recommended to fly the existing supply dump valve.
.
Flight Problem Report approved at Special Level II Daily PRCB on 02/05/92 (PRCBD# S044856M).

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STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 13

IFA NUMBER> STS-44-V-07
TITLE:IMU 2 Fail RM

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 334 : 15.30.00
IFA DATE: 11/30/1991
IFA STATUS: CLOSED : 02/14/1992
ELAPSED TIME: 005 : 15.46.00
PRACA STATUS: CLOSED : 1992-06-26
HOUSTON TIME: 09.30.00
PRCBD NUMBER: S044856U
PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 45V-0006
M GNC-01
P IM/44RF-01
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: M. ENGEL
2:
0 DESCRIPTION:
The Z axis accelerometer channel and redundant gyro showed excessive outputs (saturation). Taken to standby, then operate, then power cycled. Failure still present. R&R IMU. Ship to JSC-ISL.
.
Postflight troubleshooting in the Inertial Systems Laboratory (ISL) at JSC isolated the probelem to a failed computer interface card. The failed IMU has been removed and replaced. The New HAINS IMUs do not contain these types of cards, which are unique to the KT-70 IMUs.
.
Flight Problem Report approved at Special Level II Daily PRCB on 02/14/92 (PRCBD# S044856U).

1
STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 14

IFA NUMBER> STS-44-V-09
TITLE:Left Air Data Probe Single Motor Deploy

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 335 : 22.25.00
IFA DATE: 12/01/1991
IFA STATUS: CLOSED : 01/31/1992
ELAPSED TIME: 006 : 22.41.00
PRACA STATUS: UNKNOWN
HOUSTON TIME: 16.25.00
PRCBD NUMBER: S044856K
PHASE: ON-ORBIT
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 45V-0023
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: W. LEVERICH
2:

0 DESCRIPTION:
Motor 2 (MN B AC 2) apparently did not run. Standard troubleshooting required. Suspect FMCA2 relay, wiring or switch tease. Previous occurance during ground testing. Reference IPR's 36V-0251 & 27RV-0119.
.
The most probable cause of this anomaly was a recurrence of the previously documented "switch teasing" phenomena. The tendency of a switch of this type to exhibit these characteristics is a function of the actuator-operating technique and is not considered a failure of the switch. The corrective action documented on CAR AD1487 continues to apply. Crew members will be briefed on the most effective operating technique for prevention of the phenomena.
.
Flight Problem Report approved at Special Level II Daily PRCB on 01/31/92 (PRCBD# S044856K).

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STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 15

IFA NUMBER> STS-44-V-10
TITLE:APU 2 Drain Line Pressure Drop

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 333 : 02.14.00
IFA DATE: 11/29/1991
IFA STATUS: CLOSED : 02/13/1992
ELAPSED TIME: 004 : 02.30.00
PRACA STATUS: CLOSED : 1992-07-10
HOUSTON TIME: 20.14.00
PRCBD NUMBER: S044856T
PHASE: ON-ORBIT

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 45V-0009	M	MMACS-04
P	IM/44RF-03		

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

0 DESCRIPTION:
Pressure decayed from 15.5 to 3.5 pisa over 45 min period. R&R relief valve. Replace with new design valve.
.
The APU 2 drain line relief valve will be removed and replaced with a new design (-003) relief valve. Changeout scheduled 12/19.
.
Flight Problem Report approved at Special Level II Daily PRCB on 02/13/92 (PRCBD# S044856T).

1
STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 16

IFA NUMBER> STS-44-V-11
TITLE:APU Drain Line Temp Rise During Entry

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 335 : 22.10.00
IFA DATE: 12/01/1991
IFA STATUS: CLOSED : 02/07/1992
ELAPSED TIME: 006 : 22.26.00
PRACA STATUS: UNKNOWN
HOUSTON TIME: 16.10.00
PRCBD NUMBER: S044856N
PHASE: ENTRY/LANDING

0 TYPE	TRACKING NUMBER	TYPE	TRACKING NUMBER
K	IPR 45V-0010	M	MMACS-06

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

0 DESCRIPTION:
APU 2 drain line temp 2 increased to 196F, then fell to 100F. FDA limit is 195F. Suspect warm slug of liquid. Test and standard

troubleshooting at KSC.
.
Similar rapid temperature increases were noted on this system during ascent and also on previous missions (on other APU's) while the APU was running, although not to this magnitude. A new drain line and new temperature sensor were installed in position 2 due to the IAPU (Improved Auxiliary Power Unit) installation.
.
Flight Problem Report approved at Special Level II Daily PRCB on 02/07/92 (PRCBD# S044856N).

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STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 17

IFA NUMBER> STS-44-V-13
TITLE:HYD SYS #1 Priority Valve Sluggish

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 335 : 21.50.00
IFA DATE: 12/01/1991
IFA STATUS: CLOSED : 01/21/1992
ELAPSED TIME: 006 : 22.06.00
PRACA STATUS: CLOSED : 1992-06-10
HOUSTON TIME: 15.50.00
PRCBD NUMBER: S044856J
PHASE: ENTRY/LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
P IM/44RF-05
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: K. BROWN
2:
0 DESCRIPTION:
.
Flight data indicated that the hydraulic system 1 accumulator pressure and reservoir pressure tracked each other during the period before and after the lag occurred, which implies that the check valve internal to the priority valve was sluggish to open. Examination of the priority valves has revealed contamination to be the probable cause of the lag.
.
The delay in hydraulic system 1 accumulator pressure reflecting the main pump pressure was most probably the result of a restriction in the movement of the check valve internal to the priority valve. The hydraulic system 1 priority valve will be removed and replaced.
.
Flight Problem Report approved at Special Level II Daily PRCB on 01/21/92 (PRCBD# S044856J).

1
STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 18

IFA NUMBER> STS-44-V-14
TITLE:Loss of Hardware From ET Umbilical Attachment System

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 01/08/1992
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-01-15
HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044856E
PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR-PYR-4-11-0142 P IM/44RF06
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: K. BROWN
2:
0 DESCRIPTION:
An NSI with an intact electrical connector was found underneath the LH2 umbilical cavity post-landing. An accounting of debris in the

containment system indicates a similar piece of debris was lost on-orbit.
.
A new hole plugger design, MCR-11960, has been approved for the umbilical plate assembly. OV-105 was delivered with the new design, and the hardware is available for immediate installation in the remaining vehicles.
.
Flight Problem Report approved at Special Level II Daily PRCB on 01/08/92 (PRCBD# S044856E).

1
STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 19

IFA NUMBER> STS-44-V-16
TITLE:PLB Floodlights Failed To Operate

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 335 : 18.30.00
IFA DATE: 12/01/1991
IFA STATUS: CLOSED : 01/31/1992
ELAPSED TIME: 006 : 18.46.00
PRACA STATUS: CLOSED : 1993-05-19
HOUSTON TIME: 12.30.00
PRCBD NUMBER: S044856L
PHASE: POST LANDING

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K IPR 45V-0018 P IM/44RF07
P IM/44RF08

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

0 DESCRIPTION:
During PLBD closure, the mid port floodlight flickered and the mid starboard floodlight failed to illuminate. Occurred on STS-43 (Ref. IFA STS-43-V-10). Mid stbd lamp replaced prior to STS-44.
.
Although the mid-port and mid-starboard floodlight anomalies are unexplained, it is presently believed that the most probable cause is insufficient magnitude of the starting pulse due to temperature effects and variations between individual FEA's and lamp assemblies. An engineering change is being processed which will improve the FEA starting pulse characteristics.
.
Flight Problem Report approved at Special Level II Daily PRCB on 01/31/92 (PRCBD# S044856L).

1
STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 20

IFA NUMBER> STS-44-V-17
TITLE:MS2 Shoulder Harness Would Not Tighten

0 MISSION CONSTRAINT: SUBS
IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 02/14/1992
ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-09-08
HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044856V
PHASE: PRE-LAUNCH

0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K PR LAF-4-11-0200 K PR MV-0610A-3-0019
P CAR 44RF09

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

0 DESCRIPTION:
MS2 reported that a pin in the shoulder belt tightening mechanism came out, and tension could not be maintained. Shoulder belt was knotted to tighten it.

.
The cause of the MS2 shoulder harness failure is presently unknown. Suspect the loss of the C-clip. The failed MS2 adjuster mechanism has been removed from the flight inventory. Further corrective action may result from failure analysis of the missing piece parts, if they are found.
.
Flight Problem Report approved at Special Level II Daily PRCB on 02/14/92 (PRCBD# S044856V)

1
STS-044 (OV-104,FLT #10) OFFICIAL INFLIGHT ANOMALY REPORT 01/31/95
PAGE 21

IFA NUMBER> STS-44-V-18
TITLE:Right Inboard Brake Rotor Crack

0 MISSION CONSTRAINT: 48 SUBS IFA TIME GMT: 000 : 00.00.00
IFA DATE:
IFA STATUS: CLOSED : 02/25/1992 ELAPSED TIME: 000 : 00.00.00
PRACA STATUS: CLOSED : 1992-01-10 HOUSTON TIME: 00.00.00
PRCBD NUMBER: S044856W PHASE: POST LANDING
0 TYPE TRACKING NUMBER TYPE TRACKING NUMBER
K MEQ-4-11-0417
0 CLOSURE INITIATED BY:
RESPONSIBLE MANAGERS 1: D. GERLACH
2:
0 DESCRIPTION:
The postflight inspection of the carbon brakes revealed cracks and chips adjacent to one drive lug on the right-hand inboard brake (RHIB) rotor number 2. These cracks are the first recorded occurrence since carbon brake implementation. The cracking of the carbon brake was due to improper workmanship. The brake manufacturing process has been modified to prevent future defects.
.
Flight Problem Report approved at Special Level II Daily PRCB on 02/25/92 (PRCBD# S044856W).

-JFDPO12: NORMAL TERMINATION OF PROCESSING