

STS-102
FLIGHT READINESS REVIEW

February 27, 2001

Ground Operations

AGENDA	

- Shuttle Processing
 - Integrated Operations J. Vevera
 - Launch and Landing M. Leinbach
 - Summary
 - D. King
 - E. Adamek
 - C. Murphy

PROCESSING DIFFERENCES

Presenter:

Jim Vevera

Organization/Date:

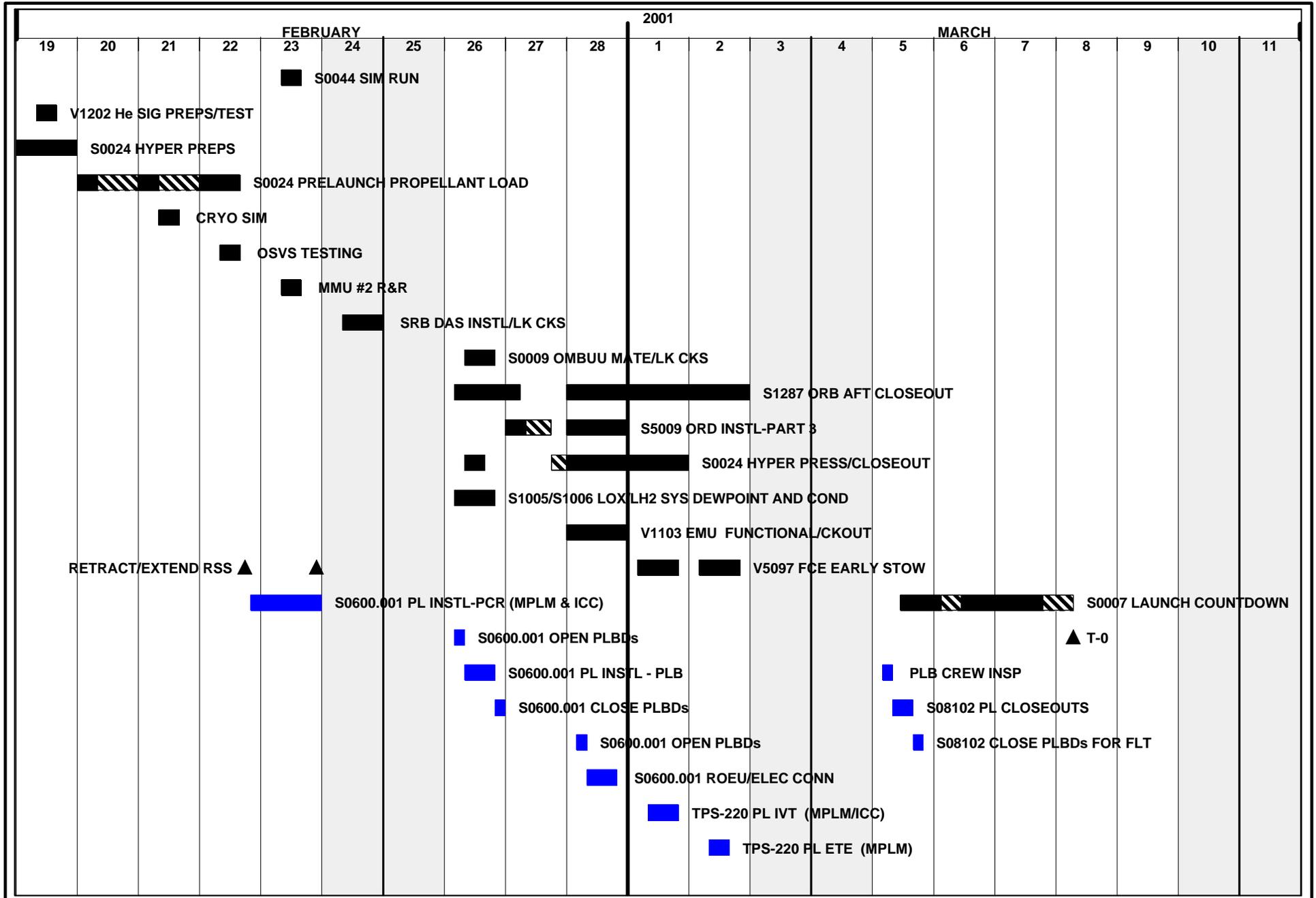
Ground Ops/02-27-01

- Processing Differences - VAB / Pad
 - Planned
 - Late Payload Delivery
 - Unplanned
 - None

STS-102 / OV-103 Operations Summary

OPR: USA - D. Thompson, INTEG(1-2567)
NASA - E. Mango, PH (1-9221)

21FEB01 07:45



SHUTTLE ENGINEERING OVERVIEW	Presenter: Jim Vevera
	Organization/Date: Ground Ops/02-27-01

The following Topics have been reviewed:

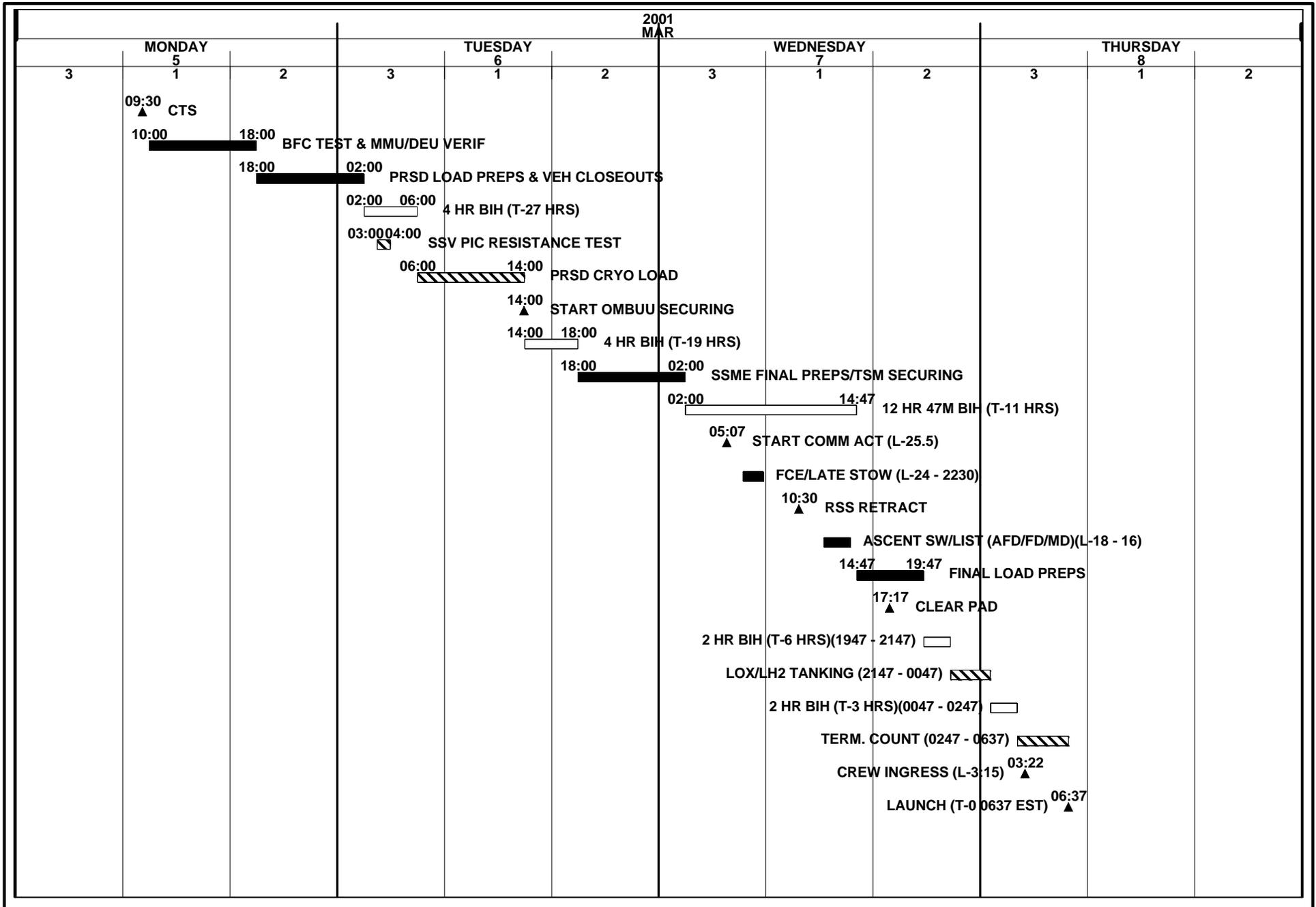
- | | |
|--|-----------------------|
| • Requirements Status – OMRS | No Issues |
| • TOPS Status | No Issues |
| • LCC/GLS Status | No Issues (in backup) |
| • Software, SCAN, and Configuration Status | No Issues |
| • Vehicle/GSE Modification Status | No Issues |
| • In-Flight Anomaly Status | No Issues |
| • Lost Item Problem Reports | No Issues (in backup) |
| • Time/Life Cycle | No Issues |
| • Critical Process Changes | No Issues |
| • Unexplained Anomalies | No Issues (in backup) |
| • Safety, Quality, and Mission Assurance | No Issues |
| • Engineering Topics | No Issues |

STS-102 / OV-103

Launch Countdown Summary

OPF: J. Spaulding (1-9306)

23FEB01 15:07



LANDING OPERATIONS STATUS

Presenter:

Mike Leinbach

Organization/Date:

Launch & Landing/02-27-01

- **Launch Support**

- ❖ **RTLS:** KSC

- ❖ **TAL:**

- Zaragoza (Prime)
- Moron
- Ben Guirer (Alts)

Deploy at L-7 days, Mar 1, 2001
Deploy at L-6 days, Mar 2, 2001
Deploy at L-8 days, Feb 28, 2001

- ❖ **AOA:**

- KSC (Prime)
- WSSH (Alt)

Deploy at L-2 days, Mar 6, 2001

- **Mission Support**

- ❖ KSC (Prime EOM)
- ❖ DFRC/EDW
- ❖ WSSH

Deploy at L-2 days, Mar 6, 2001

- **Site Status**

- ❖ No Issues





Kennedy Space Center Shuttle Processing Team



STS-102 Readiness Statement

This is to certify that appropriate CoFR items from NSTS-08117 Appendices H and Q, Flight Preparation Process Plan, have been reviewed and dispositioned. Subject to completion of planned work and resolution of any identified constraints, KSC Shuttle Processing and Supporting Organizations are ready to support Launch Operations.

S/For Charles J. Fontana

Charlie W. Murphy
APM, Integrated Logistics, USA.

S/Paul E. Adamek

Paul E. Adamek
APM, Ground Operations, USA.

S/David A. King

David A. King
Director of Shuttle Processing,
NASA



STS-102
FLIGHT READINESS REVIEW

February 27, 2001

Ground Operations
Back-Up Charts

GO-BU-1

LOST ITEM PROBLEM REPORTS

Presenter:

Rich Millang

Organization/Date:

Ground Ops/02-27-01

Lost Items Not Found (5 Total)

Summary/Conclusion for all LAF PR's

- A thorough search of each area was unsuccessful in finding/retrieving the lost items
- System Engineering evaluations have concluded no adverse effect on Orbiter system operations

Crew Module

- PR -LAF-3-29-0604: 6' EPCS DC power cable was missing during destow
 - Weight: 176.5 grams
 - Size: ¼ x 6 foot long
 - Location: Crew Cabin

LOST ITEM PROBLEM REPORTS

Presenter:

Rich Millang

Organization/Date:

Ground Ops/02-27-01

Crew Module (Cont'd)

- PR- LAF-3-29-0605: Air Duct restraint strap was missing during destow
 - Weight: 11.2 grams
 - Size: 1" x 17" long
 - Location: Crew Cabin
- PR- LAF-3-29-0608: A V606-650648-029 strap was missing during destow
 - Weight: 9.6 grams
 - Size: ¼ x 19" long
 - Location: Crew Cabin

LOST ITEM PROBLEM REPORTS

Presenter:

Rich Millang

Organization/Date:

Ground Ops/02-27-01

Crew Module (Cont'd)

- PR- LAF-3-29-0609: A screw and washer was dropped under panel L12
 - Weight: 2.6 grams
 - Size: 3 OD x .6" long
 - Location: Behind Panel L-12

Aft

- PR- LAF-3-0607: Two QC stamp could be lost in the Aft
 - Weight: Less than 28 grams
 - Size: 5/8 x 1.5"
 - Location: Aft Compartment

FUEL CELL RUNTIME

Presenter:

Rich Millang

Organization/Date:

Ground Ops/02-27-01

- **Fuel Cell (FC) Runtime Contingency**

● Present Runtime	Hours
● FC1 S/N 110	687/687
● FC2 S/N 124	0/0
● FC3 S/N 122	683/683

GROUND LAUNCH SEQUENCER	Presenter: Rich Millang
	Organization/Date: Ground Ops/02-27-01

Ground Launch Sequencer Configuration for STS-102

- GLSDD (KLO-82-0071A) Rev 8, Change A, December 2000

SSID / OMRS	Description and Remarks
● Mask	
ECL-40	FC1&2 Payload Heat Exchanger Flow Rate
CT-01	TACAN 1 Range Built-in Status Word 2 Bit 4
CT-01	TACAN 2 Range Built-in Status Word 2 Bit 4
PAY-02	Payload Auxiliary RPC A & B - ON
PAY-03	Payload Aft Main B & C Power – ON

GROUND LAUNCH SEQUENCER	Presenter: Rich Millang
	Organization/Date: Ground Ops/02-27-01

Ground Launch Sequencer Configuration for STS-102 (Cont'd)

- GLSDD (KLO-82-0071A) Rev 8, Change A, December 2000

**SSID /
OMRS**

Description and Remarks

- Bypass - None

UNEXPLAINED ANOMALIES

Presenter:

Rich Millang

Organization/Date:

Ground Ops/02-27-01

- Deferred – 1*
 - IPR-102V-0004: X4 Connector Mate Indication was Off While Mated to PMA
- Closed – 2*
 - IPR-102V-0006: Main Landing Gear Tire Pressure Failed to Lower Limits
 - IPR-102V-0018: GPC 1 Mode TB Remained RUN During Post-Landing Deactivation

**UNEXPLAINED ANOMALIES
MAIN LANDING GEAR TIRE
PRESSURE FAILED TO LOWER LIMITS****Presenter:****Rich Millang****Organization/Date:****Ground Ops/02-27-01**

- Observation
 - During STS-92 Mission Flight the MLG Left Inboard Tire pressure 2 dropped from 322 psi to 232 psi (Lower Limits). It remained at lower limits for about 5 1/2 days and then returned to normal limits until wheel spin up
- Concerns
 - Loss of redundant tire pressure measurement

UNEXPLAINED ANOMALIES MAIN LANDING GEAR TIRE PRESSURE FAILED TO LOWER LIMITS (CONT'D)	Presenter: Rich Millang
	Organization/Date: Ground Ops/02-27-01

- **Actions Taken**
 - A detail inspection the MLG wire harness was done and no visual discrepancies noted
 - A wiggle test of the harness had no data drop outs
 - A new wheel assembly with new harness have been installed on OV-103
 - No unexpected drop outs of data has been seen during OPF checkout for STS-102
- **History**
 - On several occasions the tire pressure measurements have failed. Most failures were to damage at the separation harness
- **Most Probable Cause**
 - Intermittent connection or damage at the tire separation harness

UNEXPLAINED ANOMALIES MAIN LANDING GEAR TIRE PRESSURE FAILED TO LOWER LIMITS (CONT'D)	Presenter: Rich Millang
	Organization/Date: Ground Ops/02-27-01

- Rationale for Flight
 - Each tire has 2 tire pressure measurements
 - Confirmed failure of both measurement are no constraint to launch as long as the decay rate of the tires are within limits
 - Tire integrity is verified by long term decay checks since build up
- Risk Assessment
 - Very Low
 - Redundant tire measurement
 - Long term decay checks on tires
- Flight Effects
 - None

UNEXPLAINED ANOMALIES GPC1 MODE B REMAINED IN RUN DURING POST LANDING DEACTIVATION	Presenter: Rich Millang
	Organization/Date: Ground Ops/02-27-01

- Observation
 - During orbiter power down at DFRC post STS-92 landing, the SCO took the GPC1 mode switch from RUN to STBY but the talkback remained in RUN
- Concerns
 - Possible GPC1 hardware failure or PASS software anomaly preventing successful completion of transition to standby mode

UNEXPLAINED ANOMALIES GPC1 MODE B REMAINED IN RUN DURING POST LANDING DEACTIVATION (CONT'D)	Presenter: Rich Millang
	Organization/Date: Ground Ops/02-27-01

- Actions Taken
 - Memory dump of GPC1 obtained and analyzed
 - GPC1 has been cycled between RUN/STBY several times
 - No discrepancies noted
 - GPC1 exercised repeatedly during daily orbiter power operations
 - No discrepancies noted
- Analysis
 - Dump analysis shows a program check interrupt occurred during STBY processing

UNEXPLAINED ANOMALIES GPC1 MODE B REMAINED IN RUN DURING POST LANDING DEACTIVATION (CONT'D)	Presenter: Rich Millang
	Organization/Date: Ground Ops/02-27-01

- Possible Causes
 - Radiation-induced single event upset in CPU local store register containing PC1 timer load constant
 - Transient hardware anomaly in GPC
 - Memory Management Unit, internal bus, and CPU local store
- Most Probable Cause
 - Single Event Upset (SEU) in CPU local store register

UNEXPLAINED ANOMALIES GPC1 MODE B REMAINED IN RUN DURING POST LANDING DEACTIVATION (CONT'D)	Presenter: Rich Millang
	Organization/Date: Ground Ops/02-27-01

- Rationale for Flight
 - GPC1 thoroughly exercised since anomaly with nominal performance
 - Recurrence of anomaly as observed would have no flight impact
 - The most probable cause is attributed to a SEU to GPC local store register
 - GPC failure history exhibits high degree of reliability
 - Redundancy provided by three other PASS GPCs and the BFS

UNEXPLAINED ANOMALIES GPC1 MODE B REMAINED IN RUN DURING POST LANDING DEACTIVATION (CONT'D)	Presenter: Rich Millang
	Organization/Date: Ground Ops/02-27-01

- Risk Assessment
 - Very Low
 - All Circuit have been checked out per OMRSD
 - High reliability components
 - High degree of redundancy

- Flight Effects
 - None

**UNEXPLAINED ANOMALIES
X4 CONNECT INDICATION WAS
OFF WHEN MATE TO PMA-2****Presenter:****Rich Millang****Organization/Date:****Ground Ops/02-27-01**

- Observation
 - During STS-92 PMA-2 to ODS Mate, the X4 connector mate indication never came "ON"
- Concern
 - Loss of mate indication
- Actions Taken
 - Post Flight inspection was done on connector pins (2)
 - No discrepancies noted
 - A standard checkout of the circuit was done
 - No discrepancies noted
- Most Probable Cause
 - Possible connector discrepancies on the PMA-2 side

**UNEXPLAINED ANOMALIES
X4 CONNECT INDICATION WAS
OFF WHEN MATE TO PMA-2 (CONT'D)****Presenter:****Rich Millang****Organization/Date:****Ground Ops/02-27-01**

- Rationale for Flight
 - This is instrumentation used to verify nominal mate of connector X4. There are other functions on this connector that can verify nominal mate
 - During STS-92 mate to PMA-2 no other discrepancies were noted on the X4 connector
 - The Orbiter side of the circuit has been checked out and ready to support STS-102 Mission

- Risk Assessment
 - Very Low

- Flight Effects
 - None