

NASA

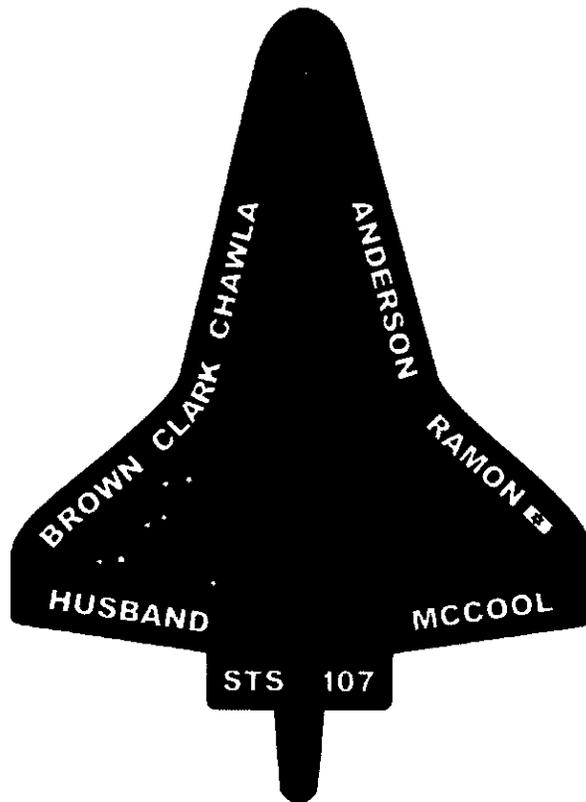
SECTION 34

STS-107

Prelaunch Mission Management Team (MMT) Review
January 14, 2003

And

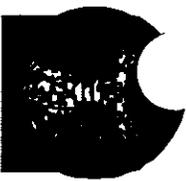
Mission Management Team L-1 Day Review
January 15, 2003



STS-107
Prelaunch Mission Management Team (MMT) Review
January 14, 2003

Agenda

Introduction	Manager, Launch Integration
Mission Operations	Director, Mission Operations APM, Flight Operations, SFOC
EVA	Manager, EVA Project
Flight Crew	Director, Flight Crew Operations
Space and Life Sciences	Director, Space and Life Sciences
Program Integration	Flight Manager Manager, Space Shuttle Systems Integration Manager, Space Shuttle Customer and Flight Integration Manager, Space Shuttle KSC Integration APM, Program Integration, SFOC
Payload Processing	Director of ISS/Payloads Processing
External Tank	Manager, External Tank Project
RSRM	Manager, Reusable Solid Rocket Motor Project
SRB	Manager, Solid Rocket Booster Project APM, SRB Element, SFOC
SSME	Manager, Space Shuttle Main Engine Project
Vehicle Engineering	Manager, Space Shuttle Vehicle Engineering APM, Orbiter Element, SFOC APM, FCE/EVA, SFOC
Ferry Readiness	Ferry Operations Manager
Shuttle Processing	Director of Shuttle Processing, KSC APM, Ground Operations, SFOC
Range	United States Air Force
DDMS	Commander, DOD, Manned Space Flight Support Office
Launch Weather	45th Weather Squadron
Landing Weather	National Weather Service
SS SR&QA	Manager, Space Shuttle Safety, Reliability & Quality Assurance
Readiness Poll	Manager, Launch Integration

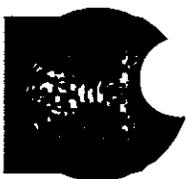


**EVA
PROJECT
OFFICE**



STS-107
Prelaunch Mission Management
Team Review

Jeff Dutton
EVA Project Office
Johnson Space Center
January 14, 2003



**EVA
PROJECT
OFFICE**

EVA Project Office Readiness Statement



- **The EVA Project Office has no exceptions**
- **The EVA Project Office certifies there are no constraints to the launch of the STS-107 mission**

Original signed by

G. Allen Flynt

Manager, EVA Project Office



**Space and Life Sciences Directorate
L-2 Mission Management Team
STS-107**

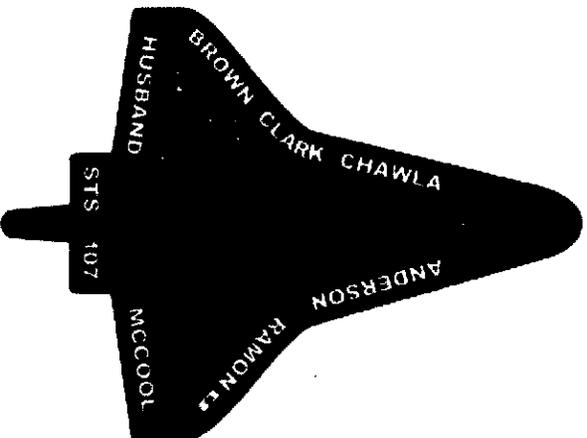
Presenter

S. L. Pool

Date:

January 14, 2003

**STS-107
Pre-launch Mission Management Team
Space and Life Sciences Directorate**





Space and Life Sciences Directorate
L-2 Mission Management Team
STS-107

Presenter

S. L. Pool

Date:

January 14, 2003

SPACE MEDICINE

Crew Health

- **All Crew Physicals have been completed or are scheduled**
- **No Crew Health Concerns**



Space and Life Sciences Directorate
L-2 Mission Management Team
STS-107

Presenter

S. L. Pool

Date:

January 14, 2003

Habitability and Environmental Factors

▪ Water Quality

STS-107 January 3, 2003 Water Analysis

Iodine: 6.5 ppm.

Microbiology: <1 CFU/100 ml.

- No issues

STS-107 L-3 day Water Analysis is in work

- No issues or problems are expected.

▪ Toxicology

- No Issues for STS-107



**Space and Life Sciences Directorate
L-2 Mission Management Team
STS-107**

Presenter

S. L. Pool

Date:

January 14, 2003

Shuttle Crew Radiation Exposure Projections

- **Projected crew exposures within limits.**
- **No Space Weather or Radiation Constraints to Launch**



**Space and Life Sciences Directorate
L-2 Mission Management Team
STS-107**

Presenter

S. L. Pool

Date:

January 14, 2003

- **No Open Space and Life Sciences Issues or Constraints to Launch**

SLSD is ready to support STS-107

VEHICLE ENGINEERING



STS-107 PRELAUNCH MMT

Presenter: Orbiter 01/14/03	Organization/Date: Orbiter 01/14/03

- ORBITER** To Be Presented
- GFE** No Constraints
- SOFTWARE** No Constraints
- FCE** No Constraints
- FLIGHT READINESS STATEMENT** To Be Presented
- BACKUP**

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VE-2



**STS-107
PRELAUNCH MMT REVIEW**

January 14, 2003

ORBITER



AGENDA

Presenter:
Doug White

Organization/Date:
Orbiter 01/14/03

Waivers and Exceptions

To Be Presented

Special Topics

To Be Presented

- **FRR CoFR Exception Resolution – BSTRA Ball Cracks**

STS-107 PRELAUNCH MMT

	<p>Presenter:</p> <p>Organization/Date: Orbiter 01/14/03</p>
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WAIVERS AND EXCEPTIONS

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VE-5



WAIVERS AND EXCEPTIONS

Presenter:
Doug White

Organization/Date:
Orbiter 01/14/03

One OMRS Exception Approved at SSVEO VECB Since FRR:

- EK10312 Micro SGU Requirements
 - 12 aft fuselage thrust structure micro strain gauge units are installed for STS-107
 - Due to failure of SGU S/N 1061 to record data for measurement V35G9044A (Group 3, Engine 1, Primary), the unit's functionality cannot be verified
 - The unit will not be programmed for flight, nor will the unit be downloaded post-flight
 - Micro SGUs will be flown on an adequate number of flights across the fleet – loss of data from one measurement for one flight is not an issue
 - Secondary measurement (V35G9045A) is functional
 - The SGU battery will remain installed, but not apply excitation power to the strain gauge circuit, eliminating any potential for shorting

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VE-6



STS-107 PRELAUNCH MMT

Presenter:

Organization/Date:
Orbiter 01/14/03

SPECIAL TOPICS

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VE-7



**SPECIAL TOPICS FOR THE
STS-107 PRELAUNCH MMT REVIEW**

Presenter:
Doug White

Organization/Date:
Orbiter 01/14/03

Topic

- BSTRA Ball Cracks

Presenter

David Rigby



MPS 17" Feedline Ball Strut Tie Rod Assembly Ball Crack	Presenter: David Rigby
	Date: Orbiter 01/14/03

Observation:

- OMRSD inspection of OV-103 17 inch LO2 feedline revealed a crack in the ball of the Ball Strut Tie Rod Assembly (BSTRA) nearest the LO2 manifold
- Similar design in 12 inch and 17 inch feedlines

Concern:

- Failure of ball could result in:
 - Lack of articulation capability of the feedline resulting in structural failure of the feedline
 - FOD generation
 - 17 inch feedlines upstream of feedline screens
 - 12 inch feedlines downstream of feedline screens

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MPS 17" Feedline Ball Strut Tie Rod Assembly Ball Crack

Presenter:
David Rigby

Date:
Orbiter 01/14/03

Flight Rationale Based on Resolution of Two Issues

- Joint performance with cracked balls
- Cracks must be self-limiting
 - Ball remains intact
 - Load margins remain positive
- Joint angulation capability not compromised
 - Friction
 - Binding
- FOD from cracked balls
- Crack propagation does not create FOD
- No spalling

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VE-8.1.2



MPS 17" Feedline Ball Strut Tie Rod Assembly Ball Crack

Presenter:
David Rigby

Date:
Orbiter 01/14/03

Agenda:

- MPS Feedline Introduction
- Vehicle Inspection Summary
- Qualification Testing Summary
- Build Records and Acceptance Testing of BSTRA Balls
- Approaches to Flight Rationale
- Testing Activities



MPS 17" Feedline Ball Strut Tie Rod Assembly Ball Crack

Presenter:
David Rigby

Date:
Orbiter 01/14/03

MPS Feedline Introduction:

- BSTRA joints are located in the two upstream joints of each 12 inch engine feedline and all three 17 inch feedline joints
- BSTRA provides internal structural support to feedline while allowing the joint to articulate to compensate for:
 - Cryogenic shrinkage
 - Pressure expansion
 - Dynamic loads
 - ET umbilical retract (17 inch feedline)
 - Structural deflections

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MPS 17" Feedline Ball Strut Tie Rod Assembly Ball Crack		Presenter: David Rigby
		Date: Orbiter 01/14/03

MPS Feedline Introduction (cont):

- Each BSTRRA consists of two hubs, suspended in the flow stream by three struts mounted to pads on the pressure carrier, and a ball located inside the hub cups
- Cups, Hubs, and Struts are manufactured from Inconel 718
- Balls are manufactured from Stooddy #2
 - Cobalt / Chrome / Tungsten Alloy
 - Vitrolube coating

Feedline Description	Ball Diameter	Quantity of Balls per Vehicle
LO2 17 Inch	2.24 inches	3
LO2 12 Inch	1.75 inches	6
LH2 12 and 17 Inch	1.25 inches	9

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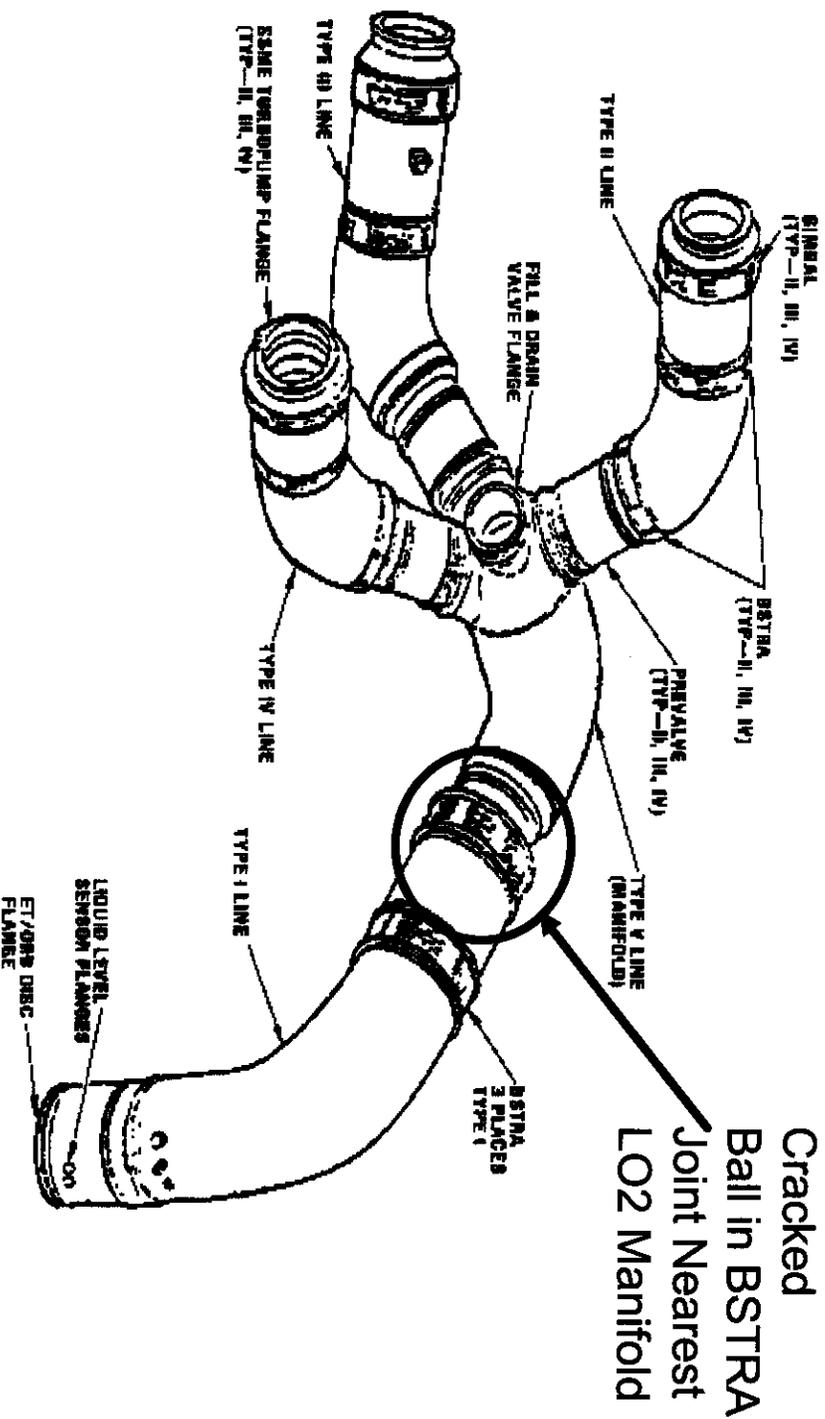
STS-107 FLIGHT READINESS REVIEW

**MPS 17" Feedline Ball Strut Tie
Rod Assembly Ball Crack**

Presenter:
David Rigby

Date:
Orbiter 01/14/03

LO2 Feedline Installation (Foamed, OV-103 and Subs)



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10/14/03 4:00pm