



**SPACE SHUTTLE PROGRAM**  
**Space Shuttle Program Integration**  
NASA Johnson Space Center, Houston, Texas



# **STS-102 Flight Readiness Review**

**February 27, 2001**



## Agenda

Presenter

Date **02/27/2001** Page **2**

- • **Program Integration - Flight Manager**
    - **Key Program Considerations**
    - **Payload & System Safety**
    - **Orbital Debris Status**
    - **Payload In-Flight Anomalies**
    - **Launch Commit Criteria**
  - **USA Program Integration**
    - **Systems and Cargo Integration Flight Preparation**
  - **Boeing Integration**
    - **Program Anomalies**
    - **Waivers to Vol X**
  - **System Integration TMR**
  - **Flight Readiness Statement**
- Vanessa Ellerbe**  
  
**No Issues**  
**No Issues \***  
**Bob White**  
  
**No Issues**  
**No Issues**  
**No Issues \***

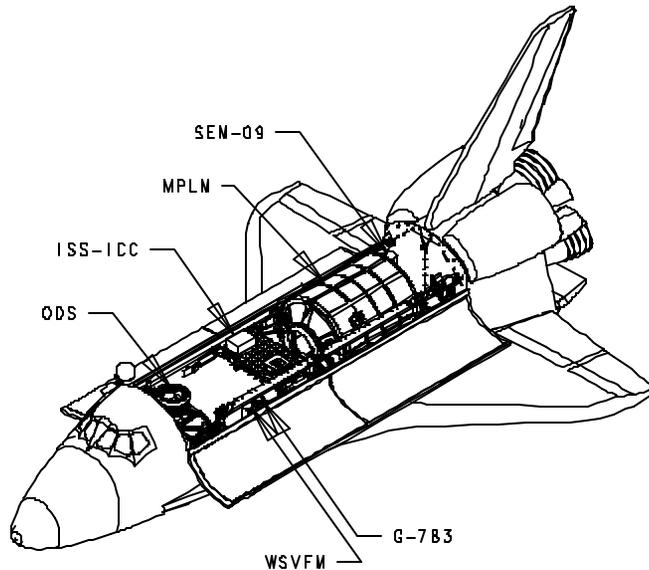
**\* Backup Material Included**



# Payload Bay Configuration

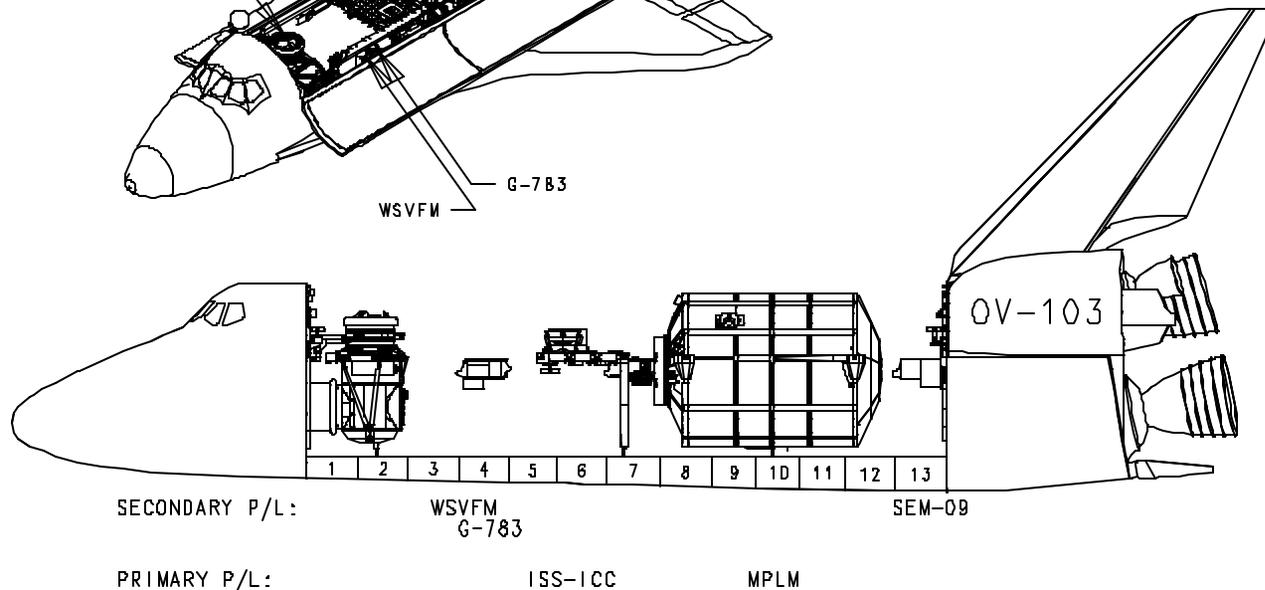
Presenter **Vanessa Ellerbe**

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**PAYLOAD BAY CARGO:**

- MPLM Multi-Purpose Logistics Module
- ISS-ICC ISS Integrated Cargo Carrier
- WSVFM Wide-Band Shuttle Vibration Forces Measurement
- G-783 Get-Away Special - 783
- SEM-09 Space Experiment Module - 09
- ODS Orbiter Docking System





## Key Program Considerations

Presenter	Vanessa Ellerbe	
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- **Mission Duration (12+0+2) / Pad Hold (+96 Hrs Margin)**
  - DI 122 supports FD3 rendezvous
  - Unscheduled EVA can be supported within 12 day mission
- **Middeck Stowage Strategy**
  - All available middeck volume is being utilized; includes non-standard volumes (Volume B, Volume F, and 1 floor stacked bag)
  - No volume “protected” for late changes
  - ~16 MLE of hardware is pre-positioned on ISS (3<sup>rd</sup> EMU, 2 SAFER(s), Photo TV hardware)
  - Critical crew rotation hardware is in the middeck
- **Spares / LON Call-Ups**
  - Support call-up L-10 days without impact to launch date
  - Formal decision for call-up made via PRCB
  - Call-ups inside of ~10 days may result in launch slip up to 7 days



## **Payload and System Safety**

Presenter	<b>Vanessa Ellerbe</b>	
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- **Integrated Experiment Hazards Assessment Is Complete**
- **Toxicology Process**
  - **Verification 1: Complete**
  - **Verification 2: Standard open work for late load items**
- **Payload Safety Review Process Is Complete**



## STS-102 Orbital Debris Status

Presenter **Vanessa Ellerbe**

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- **Orbital Debris / Micrometeoroid Risk Is Acceptable**

<u>Criteria</u>	<u>Risk</u>	<u>Guideline</u>
Critical Penetration	1 in 633	1 in 200
Radiator Tube Penetration	1 in 112	1 in 61
Window Replacements	30.25%	N/A



## Agenda

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**No Issues**  
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**No Issues**  
**No Issues**  
**No Issues \***

**\* Backup Material Included**

**SYSTEMS & CARGO INTEGRATION  
ANALYSES & REQUIREMENTS****Presenter:**

Bob White

**Organization/Date:**

Program Integ/02-27-2001

- **STS-102 has been evaluated for compatibility with all generically certified systems requirements - no issues**
- **Mission specific Systems and Cargo Integration analyses have been completed except for standard planned work – no issues**
- **STS-102 flight elements and cargo configuration requirements have been developed and released in appropriate documents and engineering drawings - no issues**

<b>SYSTEMS AND CARGO VERIFICATION</b>	<b>Presenter:</b> Bob White
	<b>Organization/Date:</b> Program Integ/02-27-2001

- **Have verified that STS-102 ascent design criteria operates within the PE certification limits for all critical parameters - no issues**
- **Supported the testing and verification for DOSS - no issues**
  - Standard planned work remaining - L-2 day verification testing
- **Payload Integration hardware reconfiguration and Interface Verification Tests (IVT's) have been completed or planned - no issues**
  - Payload electrical connections and IVT – (02/28 – 03/01/01)
  - End-to-End network test – (03/02/01)

## CLEARANCE ANALYSIS

**Presenter:**

Bob White

**Organization/Date:**

Program Integ/02-27-2001

- **CAD models from ISSP are used for PLB clearance verification**
- **A risk mitigation plan to ensure compliance with ICD and CAD models was developed and accomplished**
  - MPLM “As-Designed” CAD model analysis
  - Actual MPLM measurements evaluation
  - Photographic review
  - Visual inspection
- **Three discrepancies were identified in the mitigation activities and subsequently resolved by ISSP and SSP**

**Ready For Flight**



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- **Program Integration - Flight Manager**

**Vanessa Ellerbe**

- Key Program Considerations
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**No Issues**

**No Issues \***

- **USA Program Integration**

**Bob White**

- Systems and Cargo Integration Flight Preparation

- **Boeing Integration**

- Program Anomalies
- Waivers to Vol X

**No Issues**

**No Issues**

- **System Integration TMR**

**No Issues \***

- • **Flight Readiness Statement**

**\* Backup Material Included**



## STS-102 Flight Readiness Statement

Presenter

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**THIS CERTIFIES THAT ALL MISSION REQUIREMENTS HAVE BEEN MET AND  
SPACE SHUTTLE INTEGRATION IS READY FOR FLIGHT, PENDING COMPLETION  
OF THE DEFINED OPEN WORK**

*/s/ Don Noah for*

L. D. AUSTIN, JR., MANAGER  
SPACE SHUTTLE SYSTEMS INTEGRATION

*/s/ Fred R. Hinson*

F. R. HINSON, ACTING ASSOC. PROG. MGR  
PROGRAM INTEGRATION  
UNITED SPACE ALLIANCE

*/s/ Richard N. Richards*

R. N. RICHARDS, PROGRAM DIRECTOR  
SHUTTLE & SPACE STATION INTEGRATION  
BOEING HUMAN SPACE FLIGHT &  
EXPLORATION

*/s/ Michele A. Brekke*

M. A. BREKKE, MANAGER  
SPACE SHUTTLE CUSTOMER AND  
FLIGHT INTEGRATION

*/s/ Axel M. Larsen*

A. M. LARSEN, MANAGER  
PAYLOAD SAFETY

*/s/ R. L. Segert*

R. L. SEGERT, MANAGER  
SPACE SHUTTLE KSC INTEGRATION

*/s/ Vanessa Ellerbe*

V. S. ELLERBE, FLIGHT MANAGER  
SPACE SHUTTLE PROGRAM INTEGRATION



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# **STS-102 Flight Readiness Review**

## **Backup Charts**



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## **Launch Commit Criteria Approved for STS-102**

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- **Minimum Equipment List (MEL) Mission Specific**



**STS-102 NASA System Integration TMR  
Flight Readiness**

Presenter **Lambert Austin**

Date **02/27/2001** Page **3**

- **Insight, audit and surveillance requirements complete**
- **No out-of-family problems have been identified for impact to safety of flight, or planned flight operations**
- **Approved Program requirements changes have been implemented and verified**
  - **ICD, OMRS, LCC**
  - **Vehicle configuration**
  - **DOSS configuration**
  - **NSTS 07700, Volume X**
  - **Joint requirements**
- **All Joint Shuttle / International Space Station on-orbit Systems Integration analyses have been completed and compatibility verified for STS-102-5A.1 baseline mission**
- **System Integration is ready for flight pending the completion of remaining open work**