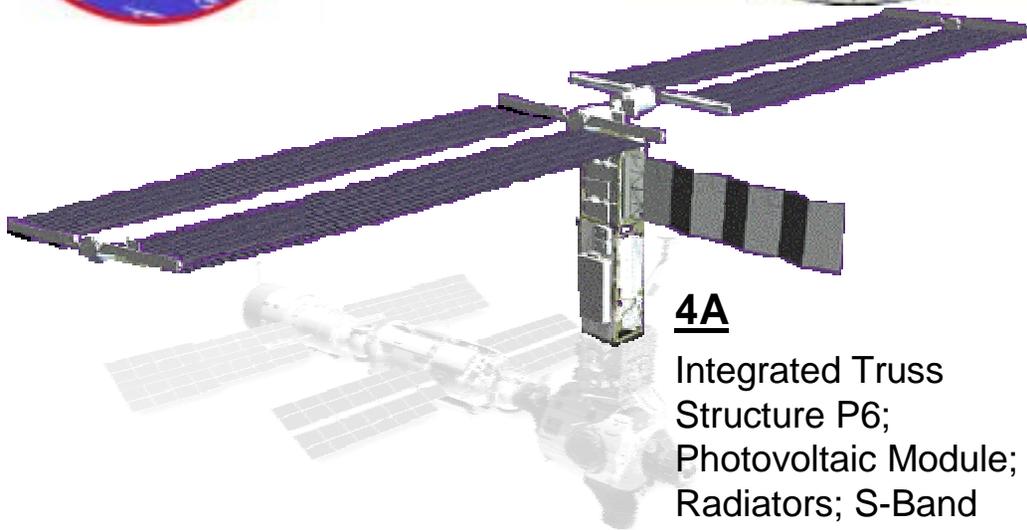




STS-97 ISS 4A Flight Readiness Review

Agenda

Networks



4A

Integrated Truss
Structure P6;
Photovoltaic Module;
Radiators; S-Band
LDR Activation

- Integrated Network Activity
- TDRSS Constellation
- Other Launches
- STS-92/ISS 3A Anomalies
- Mission Successes
- Core S-Band System LDR & ECS Operations
- Significant Changes
- Configuration Management
- Critical Periods

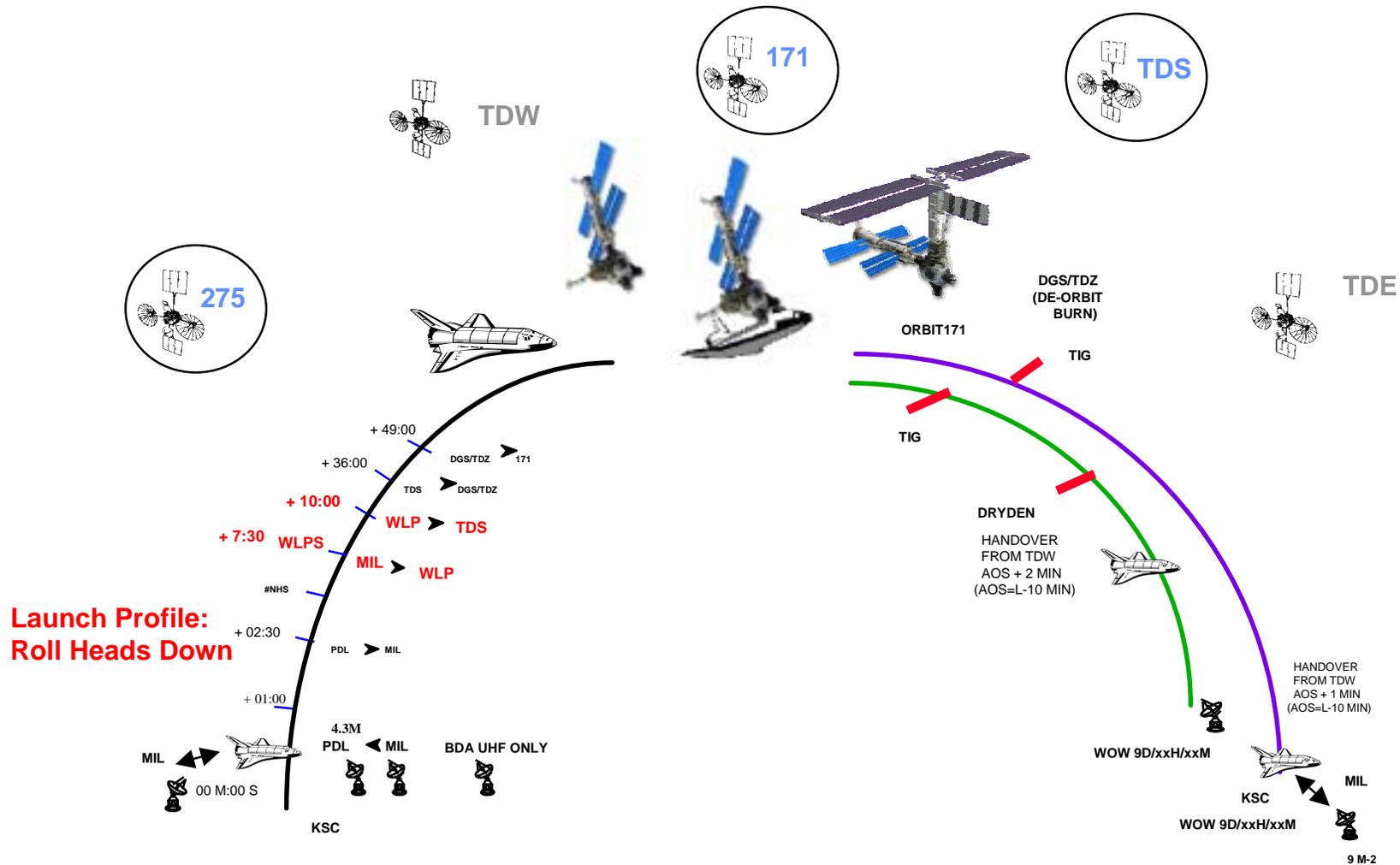
Ted Sobchak
Network Director
GSFC/Code 450
November 3, 2000



STS-97/ISS 4A FRR Mission Services



STS-97/ISS 4A Integrated Networks Activity

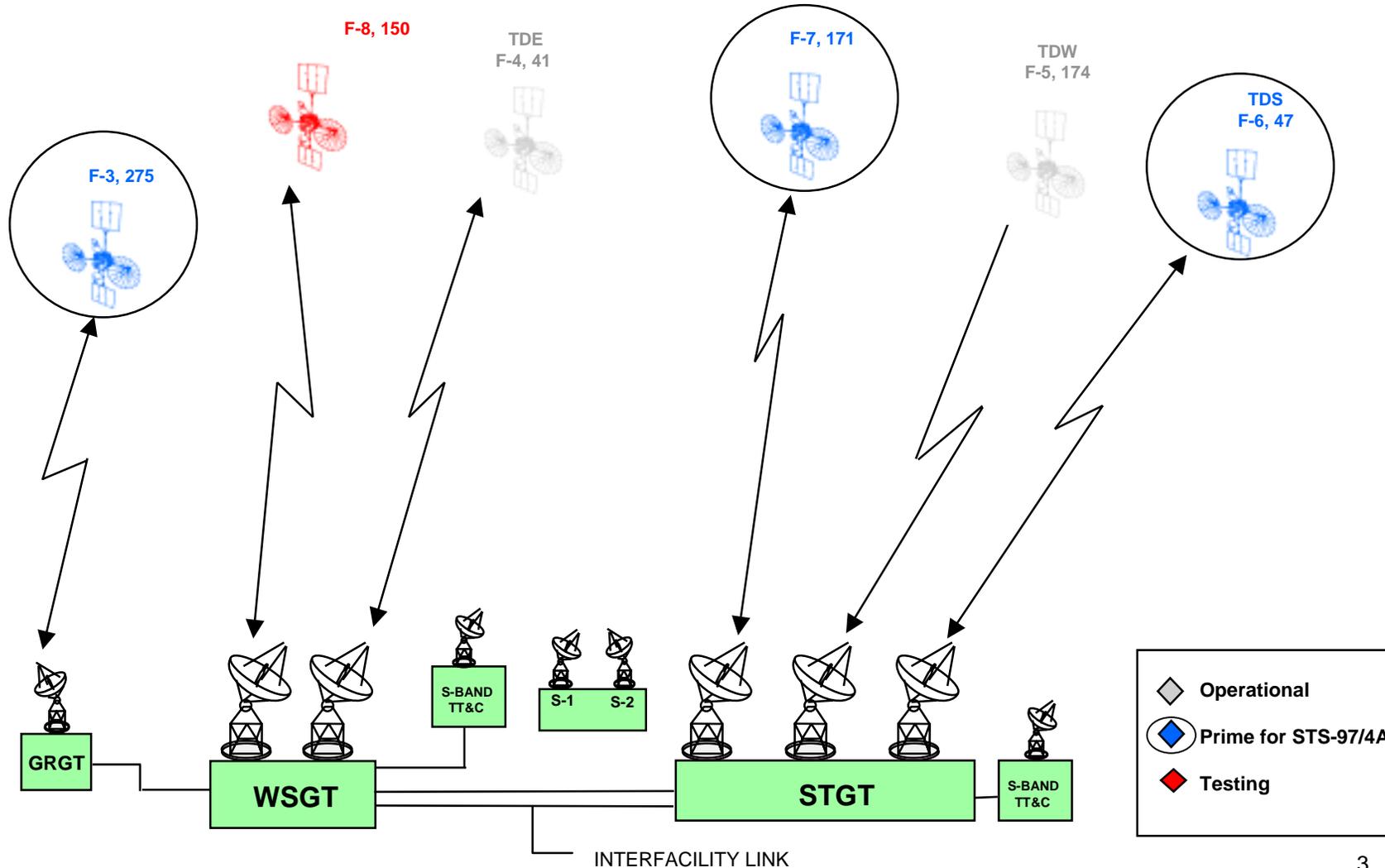




STS-97/ISS 4A FRR Mission Services



TDRSS Constellation





STS-97/ISS 4A FRR Mission Services

GSFC-0455:(NAS/PPT):C:N:4



Other Launches

Supported

- **Supported SeaLaunch SL-5 using the SN on October 21 with no impact to the STS-92/3A mission**
- **HETE-2 (Pegasus) supported with SN on Oct 9 (0538Z) prior to STS launch**

Upcoming

- **Atlas MLV-II window opens on December 5 (0000Z) GMT, coincident to occur during EVA#2**
 - **No conflicts with the Range, TDRSS, or other Network elements have been identified for this mission**



STS-97/ISS 4A FRR Mission Services

GSFC-0455:(NAS/PPT):C:N:5



STS-92/ISS 3A Anomalies

- **Pre-launch during the minus count, header errors in command blocks detected on prime Command circuit**
 - Four errors occurred in block headers. Signature implies command building problem at JSC blockers.
 - Used redundant Command circuit for launch. Prime circuit was available.
 - Investigation into cause is ongoing.
- **SN Negative acquisition of ISS on October 16**
 - No data loss declared. Approximately 76 minutes of TDRS service loss
 - Operator Error. Both a good and bad vector was sent by JSC. FDF transmitted incorrect vector to WSC.



STS-97/ISS 4A FRR Mission Services

GSFC-0455:(NAS/PPT):C:N:6



STS-92/ISS 3A Mission Success

- **The GN and RTS sites supported an increased number of supports due to the Ku-Band outage.**
- **GN sites: MILA, Wallops and DFRC provided at total of 84 passes**
 - MILA = 35 passes
 - DFRC = 34 passes
 - WPS = 15 passes
- **The Air Force RTS supported 195 passes.**



STS-97/ISS 4A FRR Mission Services

GSFC-0455:(NAS/PPT):C:N:7



ISS Core S-Band System LDR & ECS Operations

- **S-Band LDR is available for ISS CMD/TLM after EVA#2**
- **Testing will be conducted with the S-Band Core System in conjunction with Shuttle OIU and simultaneous ECS LDR**
- **Post STS/ISS undock, ECS primary for ISS CMD/TLM and S-Band System LDR as a backup**
- **ECS will also be operated in the HDR mode for file transfers and videocons with the ISS**
- **Potential for JSC to schedule three (3) SA Services several times a day**
 - Shuttle, ECS HDR, S-Band CMD/TLM
- **SN resources may not be able to support this request at all times**
- **Service may be provided by using Virtual Spacecraft support services**
 - Shuttle (Ku-Band) and ISS (ECS) share one TDRS SA.
 - Final demo was planned for STS-92. Low Risk for use.



STS-97/ISS 4A FRR Mission Services

GSFC-0455:(NAS/PPT):C:N:8



Significant Changes

- **Space Network, Ground Network, DFRC, FDF, AFSCN, ER**
 - No significant changes to ISS or STS support posture
- **The Data Systems Management Center (DSMC) consolidates real-time console operations, scheduling, and service accounting functions at WSC**
 - Implemented through a series of physical relocations, and system enhancements to enable functional and organizational consolidations
- **Additional NCC Ops functions will be transitioned to WSC Ops at L-85:00**
 - SSME Ascent Dump prelaunch data flow coordination and status reporting during the launch count
- **Ascent abort contingency operations for the Network remain at the NCC**
 - As does SN Scheduling



STS-97/ISS 4A FRR Mission Services

GSFC-0455:(NAS/PPT):C:N:9



Significant Changes (NISN)

- **ISS Mission Voice/Data**
 - All voice and data configurations are in place
- **Canadian Space Agency (CSA) interface**
 - 24 voice channels configured, and flight follow ISS telemetry
- **Glenn Research Center**
 - 39 voice channels configured, GRC will be supporting ESR
- **Russian Circuit Transition**
 - Backup interface from GSFC to Washington Point Of Presence (POP) down as of November 2
 - Russian circuit problems with Over Seas line, not Domestic interfaces



STS-97/ISS 4A FRR Mission Services



Configuration Management

- **Mission Freeze**
 - Space Network freeze will be imposed November 17 (Ver/Val)
 - MIL freeze will be imposed November 7 (TCDT)
 - Remaining Integrated Networks freeze imposed L-7 days
 - Exemptions must be approved prior to implementation

- **Critical Period Restrictions**
 - Critical periods will be identified prior to the mission and documented in a “Mission Critical Periods ISI”
 - Maintenance and testing restrictions are imposed for all network elements during mission-critical periods
 - *ISS Network support is critical through the conclusion of STS-97/4A operations*



STS-97/ISS 4A FRR Mission Services



Generic Shuttle/Station Critical Periods

EVENT	START	STOP
LAUNCH RENDEZVOUS MISSION	LAUNCH -4 HOURS	LAST RENDEZVOUS BURN ON FD1
LAUNCH NON-RENDEZVOUS MISSION	LAUNCH -4 HOURS	“GO FOR ORBIT OPS”
PAYLOAD DEPLOY	DEPLOY -3 HOURS	FINAL SEP BURN (+1 ORBIT DELAY)
RENDEZVOUS/DOCKING	2 HOURS PRIOR TO FIRST DAY OF RENDEZVOUS BURN (~CREW WAKEUP)	HATCH OPENING (+1 ORBIT DELAY FOR CONTINGENCY)
RENDEZVOUS GRAPPLE/RETRIEVE	2 HOURS PRIOR TO FIRST DAY OF RENDEZVOUS BURN (~CREW WAKEUP)	PAYLOAD BERTHING (+1 ORBIT DELAY FOR CONTINGENCY)
EVA(S)	EVA EGRESS - 1 HOUR	EVA INGRESS + 1 HOUR
SELECTED ASSEMBLY/ACTIVATION/CHECK-OUT TASKS	1 HOUR PRIOR TO START OF IDENTIFIED PERIOD SPECIFIED IN MISSION FLIGHT RULE ANNEX	+1 HOUR FROM TERMINATION OF IDENTIFIED PERIOD SPECIFIED IN MISSION FLIGHT RULE ANNEX
REBOOST OPS	3 HOURS PRIOR TO MANEUVER TO REBOOST ATTITUDE	150 MINUTES AFTER RETURN TO NOMINAL ATTITUDE
UNDOCKING	UNDOCKING - 3 HOURS	FINAL SEP BURN (+1 ORBIT DELAY)
LANDING	TD - 5 HOURS	WOW

 IDENTIFIES CRITICAL PERIODS



Space Operations Management Office



Certificate Of Flight Projects Directorate Networks Readiness

This is to certify that with successful completion of flight readiness preparations and closure of associated action items, all integrated networks and CSOC elements are ready to support the STS-97/ISS-4A/PV Module P6

William F. Mack 10/27/00

W. Mack/NASA Date
Office of Systems Safety and Mission Assurance

T. Sobchak 10/27/00

T. Sobchak/NASA Date
Human Spaceflight Network Director

J. Walker 10/27/00

J. Walker/NASA Date
Center Customer Commitment Manager

S. Norman 10/27/00

S. Norman/NASA Date
NISN Representative

D. Wagner 10/27/00

D. Wagner/HTSI Date
GSFC CSOC Site Manager

J. McKee 10/27/00

J. McKee/DRFC Date
Center Mission Services Manager



Space Operations Management Office



Certificate of Space Operations Management Office Readiness

**Pending completion of flight readiness preparations, remaining standard work and closure of all action items, SOMO dedicated elements and all CSOC resources are ready to support the
STS-97/4A**

S. C. Newberry **Date**
Director, Space Operations Management Office
Johnson Space Center

G. Morse **Date**
Manager, Space Operations Services
Johnson Space Center

D. Tighe **Date**
CSOC Program Manager