

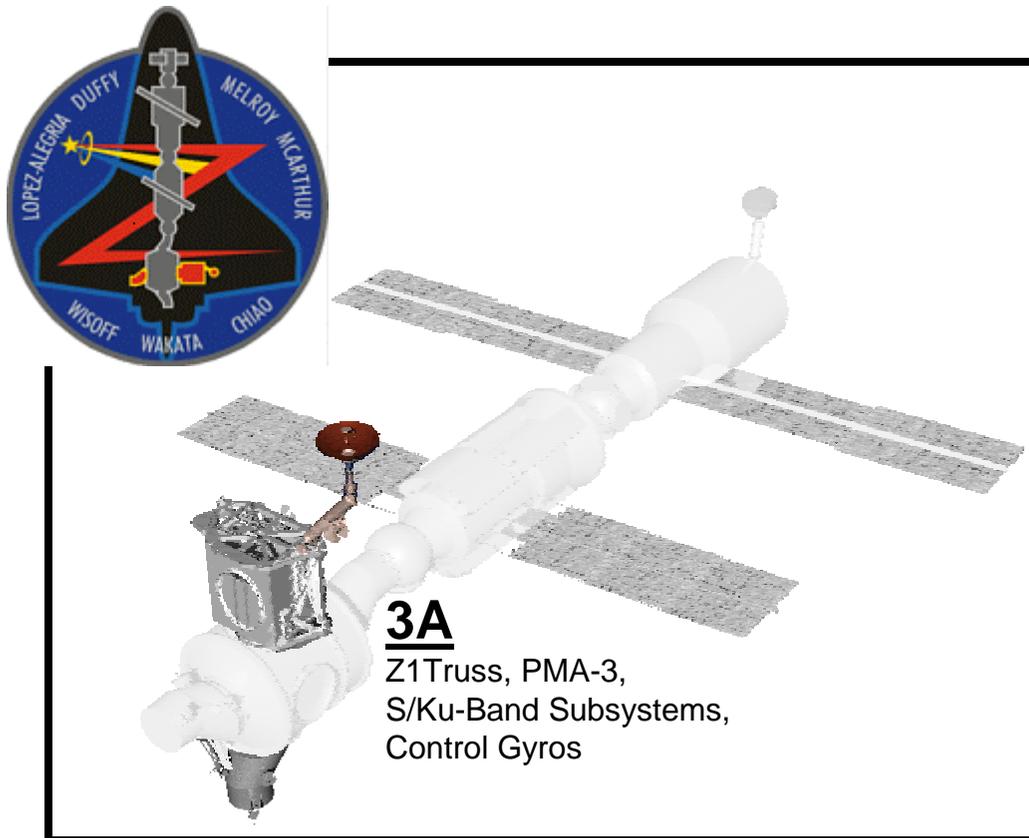


STS-92/ISS 3A FRR Mission Services



STS-92/ISS 3A Flight Readiness Review

Networks



Agenda

- STS-92 Integrated Network Activity
- TDRSS Constellation
- Other Launches
- ISS Network Preparations
- STS-106 Network Issue
- Significant Changes
- Configuration Management
- Critical Periods

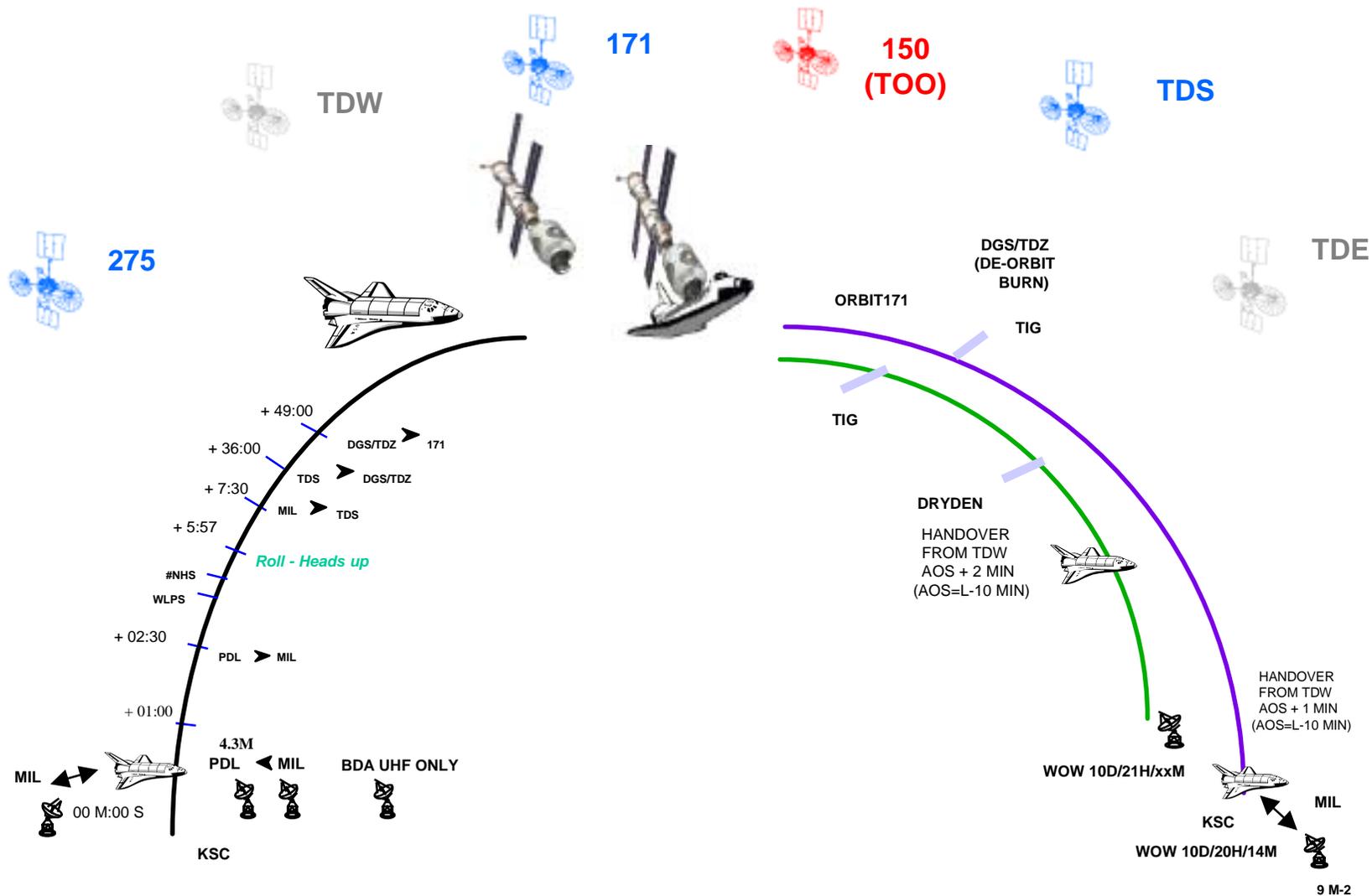
Ted Sobchak
Network Director
GSFC/Code 450
September 2000



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STS-92 Integrated Networks Activity

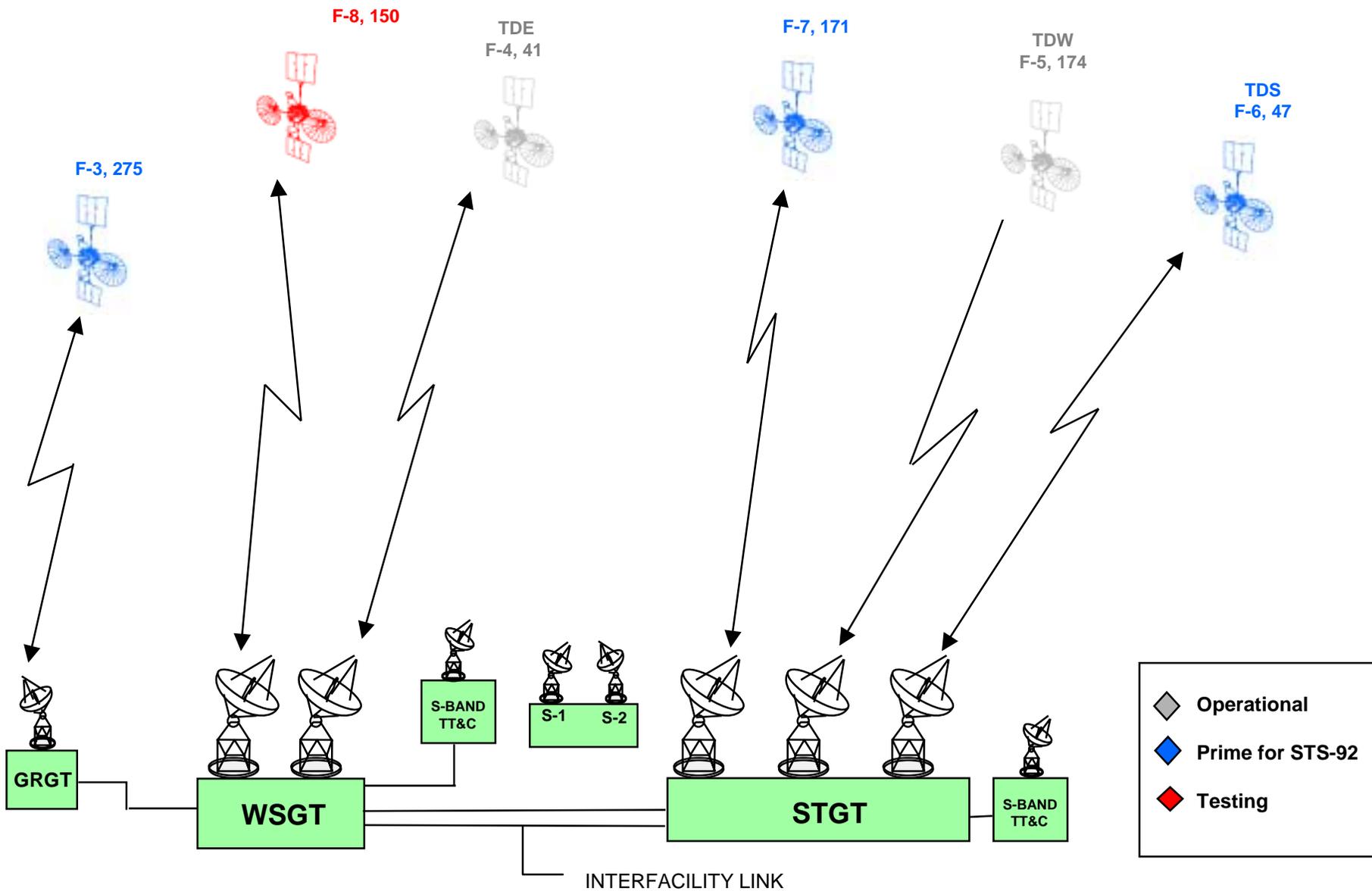




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TDRSS Constellation





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Other Launches

- **STS-92 is scheduled for Oct 6 at 0130Z**
- **HETE-2 (Pegasus) is scheduled for Oct 6 from 0535-1435Z on the WR**
 - **HETE-2 uses TDRS for LEO support.**
 - **No conflicts with the Range, TDRSS, or other Network elements have been identified for these missions**
- **SeaLaunch-5 is scheduled NET Oct 5 at 0654Z**
 - **Launch will potentially occur during STS-92 mission**
 - **Spacecraft technical difficulties impacting launch date**



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ISS Network Preparations

- **ISS 3A mission will transport portions of ISS Ku-/S-Band Core Comm equipment for future activation.**
- **Networks have extensive experience from previous testing**
 - **ISS Development, Test, and Verification Model (DVTM) TDRSS Compatibility Testing**
 - S-band @ Camden, NJ and Ku-band @ GSFC.
 - **Proto-flight Model (PFM) TDRSS Compatibility Testing**
 - Over 85 hours of RF Testing via TDRSS
 - S- and Ku-Band Testing performed in Seattle, WA, with the Z1 Truss.
 - **Flight Model (MEIT) Testing**
 - Approximately 116 hours of RF testing via TDRSS



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STS-106 Network Issue

- **STS-106 TCDT**
 - **Issue:**
 - **MIL Network Command Processor System (NCPS) experienced Command Verify Errors on commands from JSC**
 - **Commands to Orbiter where not corrupted, NCPS verification was mis-locked and required a reset**
 - **New software installed since STS-101 on JSC blockers used for GN commanding provided improper spacing between command blocks.**
 - **Corrective Action:**
 - **Reverted back to prior software for GN command blocking**



STS-92/ISS 3A FRR Mission Services



Significant Changes (SN)

- **The integrated Networks will remain in a mission freeze that began on August 31 until STS-92 WOW.**
- **Space Network**
 - No software changes
 - VHF-2 antenna replacement planned for late September at WSC
 - TDRS-8 Target of Opportunity (TOO) demonstration passes will be scheduled during quiescent periods
- **Data Systems Management Center (DSMC)**
 - No Change. Realtime Ops interface will transfer from NCC Ops to WSC Ops after “GO” for on orbit ops
- **Flight Dynamics**
 - No change. Continue to use dedicated Acquisition Data Generator (ADG) configuration for Shuttle and ISS



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Significant Changes (GN/AFSCN/DFRC)

- **Ground Network**
 - No changes.
 - VHF-1 available for Service Module support
- **DFRC**
 - No change. Flight-follow with new digital recorders
- **AFSCN**
 - New digital recorders will be installed at DGS from October 10 - 26 with a loss of on-station record capability
 - Low risk, recording at OAS.



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Significant Changes (NISN)

- **Russia Circuit Transition**
 - Support on new direct JSC to Russia interface began on August 28
 - A fire occurred at the Ostankino tower in Russia on August 27. Network traffic was not impacted.
 - All mission and backup interfaces use the Telcom Center building which was not effected. Admin circuits rerouted to Telcom Building
 - Interface through GSFC will terminate on Oct 3 at end of 30 day backup period
- **Canadian Space Agency (CSA) interface**
 - 24 new voice circuits, conferences assigned, monitoring voice and data
- **Small Conversion Device (SCD) 5.0 Software Transition**
 - No change. Network of IP conversion devices will use this version



STS-92/ISS 3A FRR Mission Services



Configuration Management

- **Mission Freeze**
 - An integrated networks freeze was imposed on August 31 for STS-106 and will remain in effect through STS-92 Weight On Wheels (WOW)
 - Exemptions must be approved prior to implementation
 - One exemption identified, installation of a VHF-2 antenna at WSC
- **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



STS-92/ISS 3A FRR Mission Services



Generic Shuttle/Station Critical Periods

<i>EVENT</i>	<i>START</i>	<i>STOP</i>
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-92/3A

William F. Mack 9/6/00

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

T. Sobczak 9/6/00

T. Sobczak/NASA Date
Human Spaceflight Network Director

J. Walker 9/6/00

J. Walker/NASA Date
Center Customer Commitment Manager

S. Norman 9/6/00

S. Norman/NASA Date
NISN Representative

D. Wagner 9/6/00

D. Wagner/HTSI Date
GSFC CSOC Site Manager

J. McKee 9/6/00

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-92/3A**

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