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## TDRS Constellation Status



## WSC Software & Hardware Activities

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## TDRS Fleet Status

- **Current TDRS configuration (*Sep 10, 2010*)**
    - **TDRS-1– Decommissioned – Supersync occurred 6/27/2010 (Launched 4/4/83)**
    - **TDRS-3 49° W – stored S-Band (Launched 9/29/88)**
    - **TDRS-4 (TDS) 46° W (Launched 3/13/89)**
    - **TDRS-5 (171) 167.5° W (Launched 2/8/91)**
    - **TDRS-6 (TDW) 171° W (Launched 1/13/93)**
    - **TDRS-7 (TDZ) 275° W – Guam ZOE (Launched 7/13/95)**
    - **TDRS-8 (271) 271° W (Launched 6/6/00)**
    - **TDRS-9 62.4° W – stored S-Band (Launched 3/8/02)**
    - **TDRS-10 (TDE) 40.9° W (Launched 12/5/02)**
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## TDRS Fleet Status

- **TDRS-1 has been decommissioned and will be placed in supersynchronous orbit**
    - TDRS-1 was taken out of service on 10/22/09
    - Passivated 6/27/2010
  - **TDRS-3 is positioned at 49° west**
    - TDRS-3 is in storage mode
    - It is readily available to replace TDRS-4 if required, 24 hour turnaround
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## TDRS Fleet Status

- **TDRS-3 Space-to-Ground Link (SGL) dedicated downlink TWTA #2 helix current is rising**
    - TWT has been shut off for storage, will be reactivated as the composite link if TDRS-3 is activated
  - **TDRS-4 (TDS) KSA-2 Forward Power below specification**
    - The KSA-2 Forward service is 5.7 db below specification for Normal Power operations and 4.8 db below specification for High Power operations
    - Little or no adjustment of output power is available on the TWTA, a spare TWTA is available for this service
  - **TDRS-4 (TDS) Telemetry Errors**
    - SGLT-1/TDRS-4 downlink experiencing irregular, apparently random telemetry errors (hits)
    - Minor user data loss experienced with some of the telemetry hits
    - Spare TWTA available
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## TDRS Fleet Status

- **TDRS-4 (TDS) Intermittent MA Elements**
    - MA elements 4, 10, 16, 22, and 28 have been intermittently disappearing
    - The system is designed to meet specification with 20 of 30 elements operational
    - No user data loss directly attributable to the anomaly
  - **TDRS-4 (TDS) Power System Degradation**
    - Battery 1 has failed, and battery 2 has shown signs of soft short in at least one cell.
    - Summer 2010 eclipse season ongoing (7/24/10 – 9/25/10):
      - NAM 1127 issued to warn customers SA1 services and MA Forward services could be deactivated should battery 2 degrade further
      - No problems have been observed during this eclipse cycle
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## TDRS Fleet Status

- **TDRS Eccentricity Management**

- Received NASA concurrence to relax the TDRS eccentricity requirements to less than 0.0035 to minimize conjunction possibilities should a spacecraft anomaly occur
  - Based on potential issues with ISS, this action was suspended in late March 2010
  - Test were performed and data logs provided for study
  - Reports from JSC are positive
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## WSC Hardware

- **Mission Operations Voice Enhancement**

- **Overview**

- Replace current Multi-conference Digital Switch

- **Schedule**

- Install cabling and install keysets
    - Ongoing at STGT complete by 09/2010
    - WSGT cabling and keyset installation is scheduled to start early 2011
    - GRGT installation is scheduled to start early 2<sup>nd</sup> quarter
  - Cutover to NTR T-1s at STGT scheduled for late 11/2010
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## WSC Hardware

- **Guam Data Interface System (GDIS) Replacement**

- **Overview**

- **Current GDIS has reached obsolescence, is not expandable to cover new services, has maintenance issues**
- **Provide bulk encryption of all circuits**
- **Allow automatic failover of DS-3 traffic to backup DS-3**

- **Schedule Phase III - Replaces all circuits on the MDM with IP Encapsulators and at completion all user circuits will have redundant A and B paths. Not an upgrade to circuit capability.**

- **Phase 3 Test Readiness Review accepted on 29 July 2010**
  - **Status and Control Monitor system in Level 5 testing**
  - **WSGT cable and patch panel builds complete**
  - **B side circuit transition to IPE completed 08/2010**
  - **A side circuit transition to IPE to be completed by end of 09/2010**
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## WSC Hardware

- **TOCC Upgrade**

- **Overview**

- **Relocate and transition all controller positions to STGT**

- **Schedule**

- **WSGT position migration**
    - **WSGT CSC-6 position relocated 03/2010**
    - **WSGT CSC-4, 5 and SS moves were completed 09/10/2010**
    - **WSGT consoles will be available for fallback.**
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## WSC Hardware

- **Antenna SSC Replacement**

- **Overview**

- **Replace obsolete chassis**
- **Replace obsolete I/O boards and use current firmware**
- **No changes to TT&C ADPE software**

- **Schedule**

- **Currently testing new units in SMTF**
    - **Install SSC's in SGLTs1,2,3 B-side**
    - **Send updated firmware for install into SGLT-7 Guam**
    - **Complete STGT SGLT replacement by 03/2011**
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## WSC Software Activities

### ➤ SW 10001

- General maintenance delivery
- Contains fixes for multiple ADPEs 06/10/2010

### • SW 10001-02

- TDRS-K delivery
- Contains fixes to multiple ADPEs 07/28/2010

### • SW 10001-04

- MAR Range Zero set fix
  - MA ADPE only 09/30/2010
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