



## **Eighth Mission Services Customer Forum (MSCF #8)**

<http://msp.gsfc.nasa.gov/mscf/>

**March 18, 2004**

**Building 3 Goett Auditorium  
NASA/Goddard Space Flight Center  
Greenbelt, Maryland**

*Sponsored by:*

**Customer Commitment Office, Code 451  
(Mission Services Program, Code 450)  
NASA/Goddard Space Flight Center  
Greenbelt, Maryland**



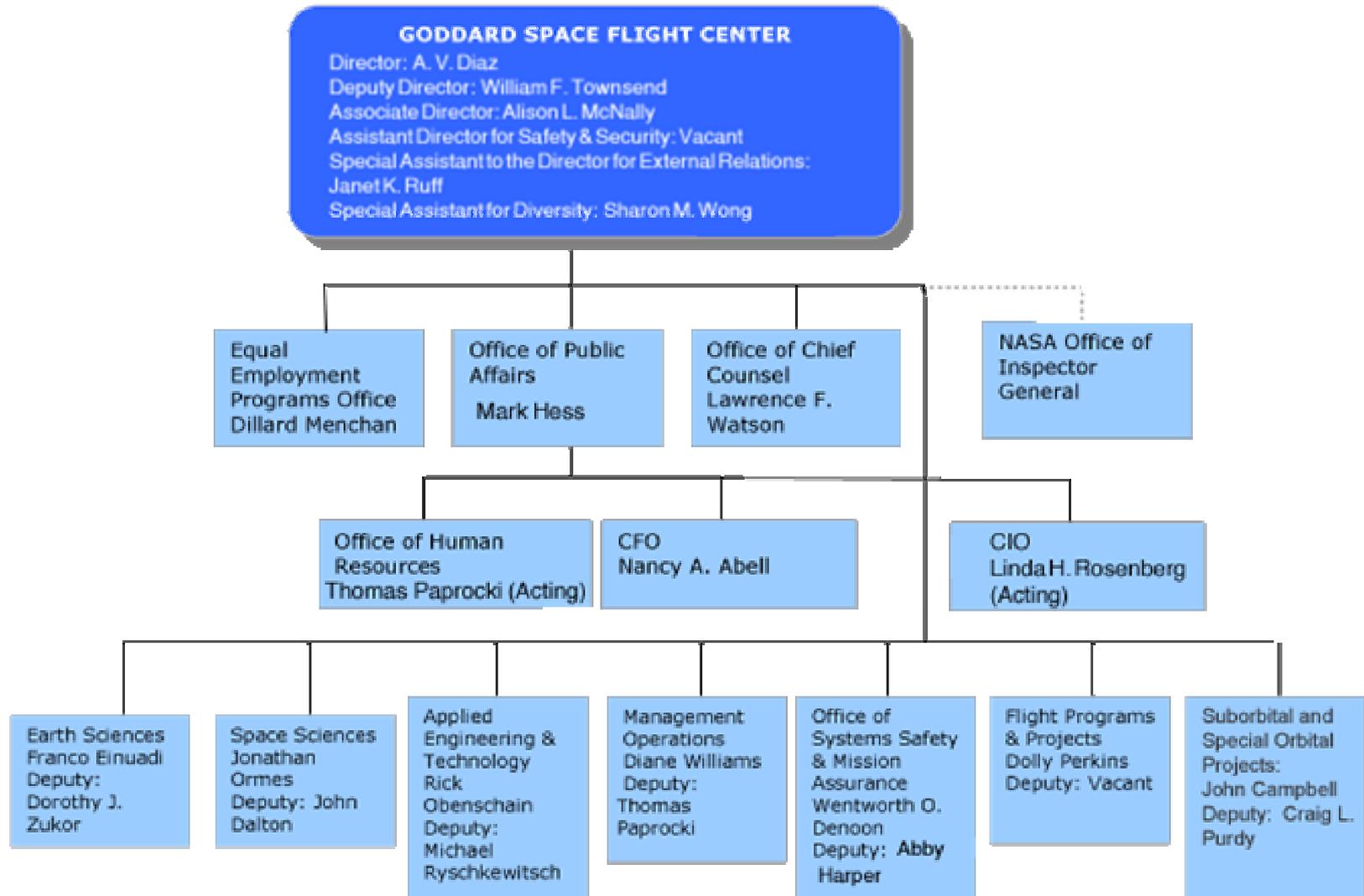
# SPACE COMMUNICATIONS PROGRAM

(Formerly Mission Services Program)

**Philip E. Liebrecht**  
Associate Director/  
Program Manager for Mission Services  
NASA/Goddard Space Flight Center

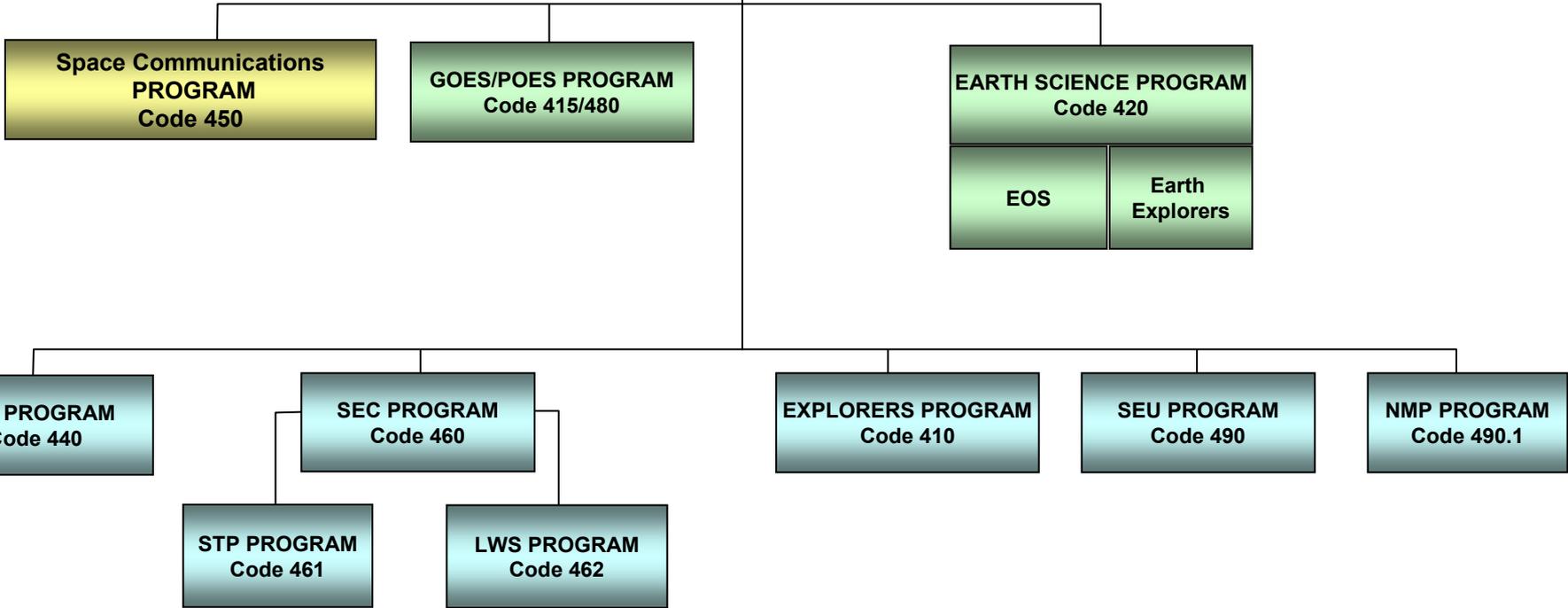


# Goddard Space Flight Center





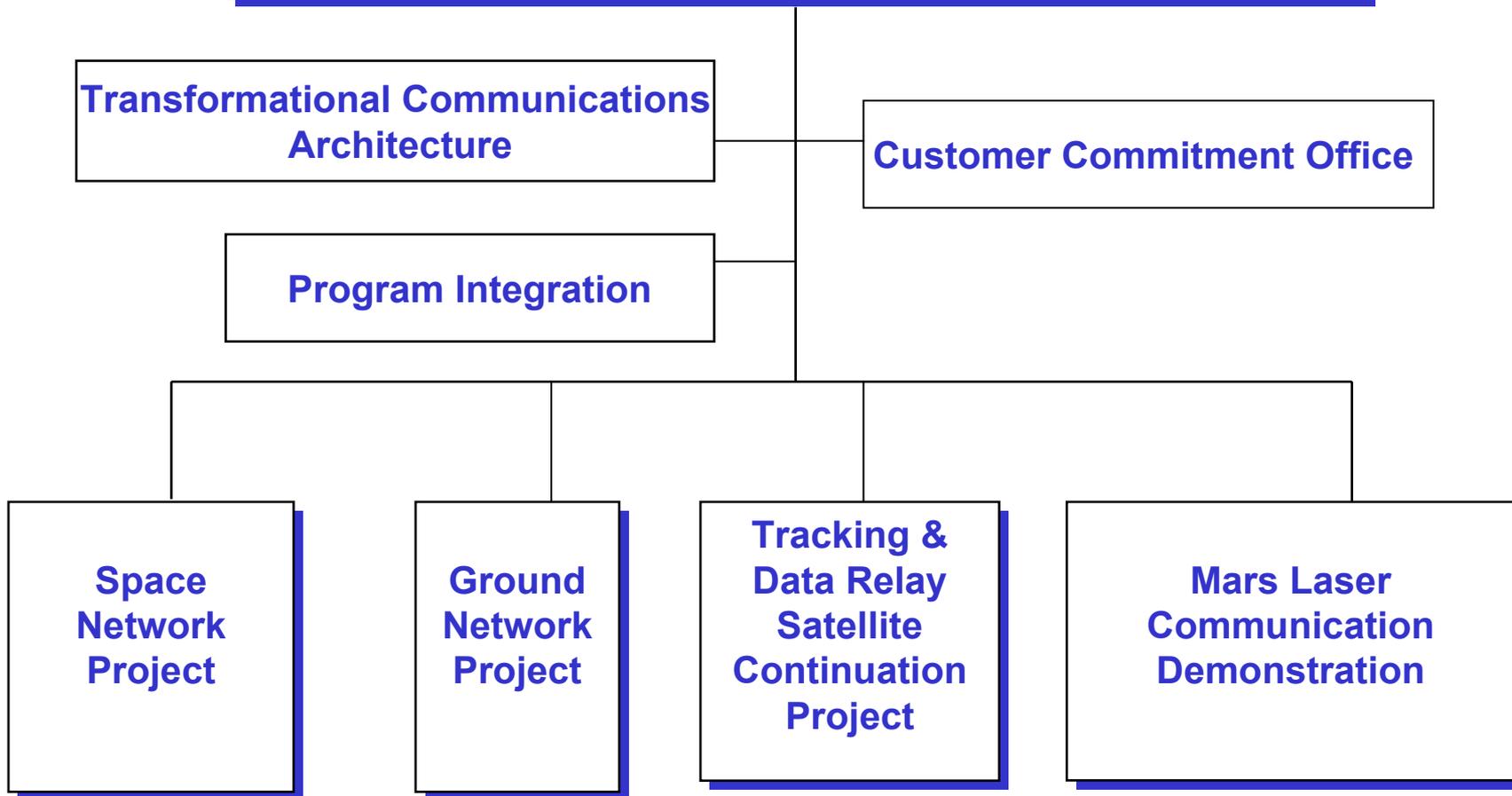
**FLIGHT PROGRAMS & PROJECTS**  
Code 400



-  Earth Science Enterprise
-  Space Science Enterprise
-  Space Flight Enterprise



## *Space Communications Program Code 450*





## Major Program Changes

- **Pre-Formulation studies for TDRS Continuation**
  - Current analysis indicates need to replenish by 2012/13
  - Evolutionary changes under study
- **MARS Laser Communications Demonstration**
  - Project team formed with JPL and MIT LL
  - Scheduled for 2009 launch
- **Satellite Laser Ranging systems added to the GN project**
- **Support to Space Communications Architecture studies**
  - NASA Space Architect / Code M 3
  - Transformational Communications Architecture



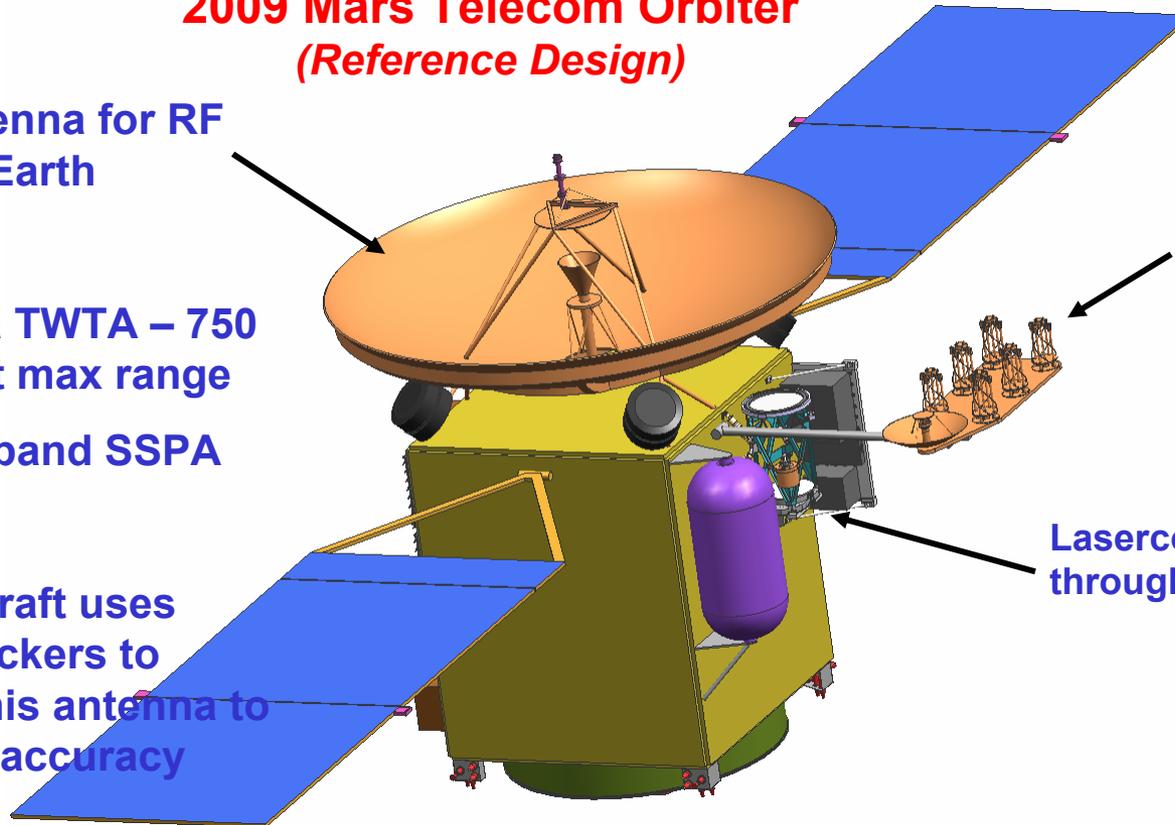
## 2009 Mars Telecom Orbiter (Reference Design)

3m antenna for RF link to Earth

35W Ka TWTA – 750 Kbps at max range

15W X-band SSPA

Spacecraft uses star-trackers to point this antenna to 1 mrad accuracy



Gimbaled UHF & X-band antennas for uplinks from Mars

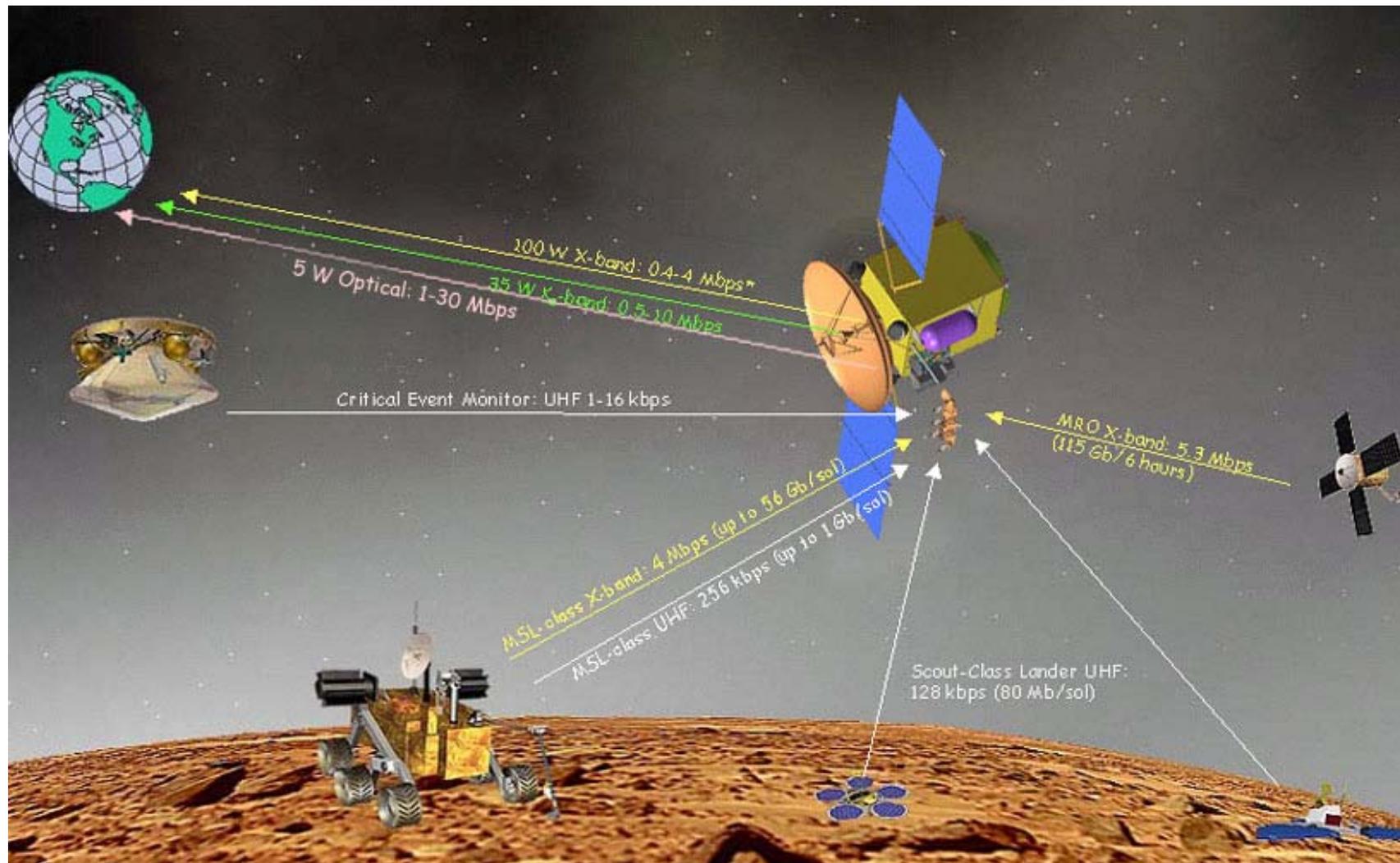
Lasercom terminal looks through hole in antenna

**Mars Lasercom Terminal will not exceed 70 Kg or 150 Watts**

- Launch: 6 Oct 2009
- Arrive Mars: 29 Aug 2010
- 6-hour Martian orbit
- Comm service for experiments on Mars
- 2 optical cameras



## Overview of MTO Links





## Future Mission Space Communications Needs

- **Presidents Space Exploration Initiative**
  - **Launch, Early Orbit, injection and reentry coverage**
    - » **SN and GN similar to today**
  - **Must adapt to Early phase out of some legacy missions**
    - » **Shuttle and HST (possibly ISS in 2017)**
  - **High bandwidth lunar and Deep Space Comm**
    - » **Ka band and /or Optical**
    - » **Enable Earth Science Instruments around other planets**
    - » **Lunar robotic reconn missions as early as 2007/8**
    - » **Likely GN use first 10's to 100's of Mb/s from the Moon**
  - **Transition to optical would increase capacity X 10 or more**
    - » **Space based optical preferable - Higher availability**



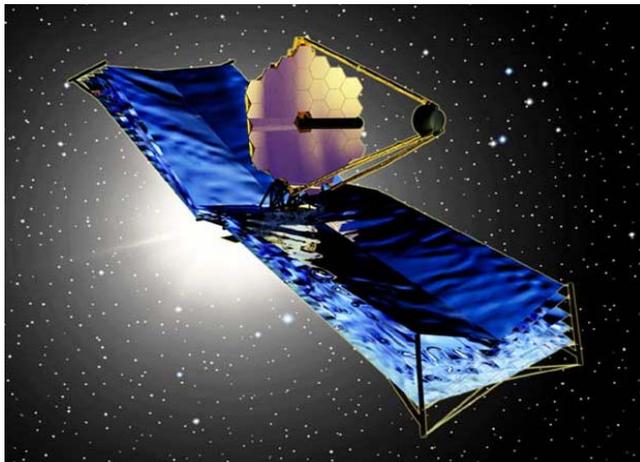
## Future Mission Space Communications Needs

- **Space and Earth science missions**
  - **Continued desire for larger bandwidth**
    - » **Near-Earth and Deep Space**
      - **Ka band and or Optical under consideration**
      - **GN approach likely for missions W/O latency need**
      - **SN preferable for Highest bandwidth/ low latency**
  - **Transparency “Like a node on the Internet”**
    - » **On Demand communications**
    - » **Sensor WEBS / Science alerts / 911**
    - » **Many formations and constellations under study**
  - **Continued desire for S band tracking & H & S links**
    - » **LEO and contingency**
    - » **Navigation Beacon under study for ESE and others**



## Space Communications Enabling the Future

- **Revolutionary new Science and Exploration requires new (and mature) Space Communications**
  - Architectures
  - Technologies
  - Standards
- **We look forward to partnering with others to meet the future challenges**





## Simulations Operations Center (SOC) Data Evaluation Laboratory (DEL) Compatibility Test Van (CTV)

Y. Y. Bae  
Science Data Systems Branch, Code 586  
NASA/Goddard Space Flight Center



# Simulations Operations Center (SOC)

- **Provide Test Tools for Networks and Customer Interface Testing**
- **Support Ground System Testing and Training for All Mission Phases**
  - Element Interface Testing
  - End-to-End Readiness Testing
  - MOC Software Validation Testing
  - Flight Operations Team (FOT) Training
- **Develop and Operate Spacecraft Simulators**
  - Scalable Integrated Modular Simulator System (SIMSS)
  - Shuttle Simulator for Return-to-Flight Testing
- **Provide Portable Test and Simulation Capability for Remote Sites**



## SOC (Continued)

- **Radio Frequency Simulations Operations Center (RFSOC) Services**
  - Support SN Customer Link and Antenna Testing (S-band, Ku-band, and Ka-band)
  - Support End-to-End Tests and other Ground System Testing for Projects
  - Support Special Purpose Testing for Technology Development Projects
- **Projected SOC/RFSOC Customers: April-September 2004**
  - Hubble Space Telescope (HST)
  - Shuttle Return-to-Flight
  - Aura
  - GOES-N
  - Swift
  - Automated Transfer Vehicle (ATV)
  - Gamma Ray Large Area Space Telescope (GLAST)
  - Solar Dynamics Observatory (SDO)



## Data Evaluation Laboratory (DEL)

- **Provide Various Recorded Media of Spacecraft Data for GN and SN Tracking Stations**
- **Support GN/SN Data Flows**
- **Analyze, Duplicate, and Distribute Data Recorded on Various Media**
- **Provide Bulk Media Degaussing Services**
- **Provide ISIS Mission Data Reduction, Recording, and Distribution to National Science Foundation (NSF)**
- **Maintain Secured Vault in Building 16 for Classified/Unclassified Data for Safe Storage**
- **Degauss and Destroy Computer Hard Drives for Building 16 Excess**



## Compatibility Test Van (CTV)

- **Conduct RF Compatibility Tests with GN and SN Customer Spacecraft**
  - Independent test to ensure that RF and data systems meet specifications
  - Verify that Customer and supporting Network(s) meet RF interface specifications
  - Identify potential in-flight RF interference with other Customers
  - Determine margins of Network parameters and range of nominal operating conditions and overall robustness of RF interface
- **Support SN Relay Testing thru TDRSS**
  - End-to-End Tests
  - Launch Readiness Tests
- **Support Special Purpose Proof-of-Concept Testing for GN/SN**



## CTV (Continued)

- **Projected Customers: April-September 2004**
  - Gravity Probe B
  - Swift
  - Low Cost Transceiver (LCT)
  - Communication/Navigation Outage Forecasting System (CNOFS)
  - Automated Transfer Vehicle (ATV)
  - GOES-O
  - STARS (Range User and Range Safety)
  - XSS-11
  - H-IIA Transfer Vehicle (HTV)
  - Demonstration of Automated Rendezvous Technology (DART)
  - Gamma Ray Large Area Space Telescope (GLAST)
  - Solar Dynamics Observatory (SDO)



## Ground Network Status

**Roger Clason**  
**Ground Network Project Manager, Code 453**  
**Mission Services Program**

## High Rate Capacity Status

### Ground Network

- **The PF1 11-meter antenna failed on 11/20/03 and has been inoperable since**
  - **The azimuth gear mechanism is extensively damaged**
  - **The remaining Ground Network high rate capacity is sufficient to support the current load - no passes have been missed due to this failure**
  - **The remaining high rate capacity is not sufficient to:**
    - **support the current load if another antenna fails or**
    - **support the planned load once Aura is launched**
- **The load on the GN orbital high rate subnet (AGS, PF1, SGS, SKS, & WGS) peaks following Aura launch on 6/17/04**
  - **The average daily load during this period is:**
    - **Aura – 16**
    - **Aqua – 20**
    - **QuikScat – 14**
    - **GP-B – 5**
    - **ICESat – 5**
    - **EO-1 – 7**
    - **Other (GRACE 1 & 2, SAC-C, ACRIMSAT, TERRA, CHAMP, COBE) – 3**

## High Rate Capacity Status

### Ground Network

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- **The Ground Network Project initiated the development of additional high rate capacity immediately after the PF1 failure (several initiatives were already in process)**
  - **Enhance ASF to support QuikScat**
    - **EBNet connectivity already in place for ADEOS II**
    - **No uplink required (commanding done from other stations)**
    - **QuikScat compatible S-Band downlink processing components provided from GN spares**
    - **Certified for operation on 2/14/04 – currently providing about nine QuikScat passes/day**
  - **Enhance SG3 (third Svalbard antenna) for ICESat and QuikScat compatibility**
    - **Already certified for Aqua and in process for ICESat and QuikScat**
    - **Primarily relieves contention for Svalbard antennas on orbits with no Alaska view**
    - **ICESat and QuikScat compatible S-Band components on order**
    - **Anticipated operational date 5/19/04**

## High Rate Capacity Status

### Ground Network

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- **Enhance NOAA Fairbanks station to support Aqua and Aura**
  - **MOU for reciprocal, no cost contingency support already in process**
  - **GSIFs already located at NOAA station**
  - **NOAA X-Band receiver procurement included Terra/Aqua/Aura compatibility requirement**
  - **EDOS provided GSIFs and low rate connectivity**
  - **GN providing tracking components**
  - **Anticipated operational date 4/30/04**
- **Install leased 7.3 meter antenna at Poker Flat**
  - **DataLynx using existing Poker Flat infrastructure for everything except the antenna**
  - **Will not support high elevation Aqua & Aura passes due to smaller aperture size**
  - **Anticipated Aqua support certification date 4/30/04**

## High Rate Capacity Status

### Ground Network

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- **Impacts:**
  - **if all initiatives are completed prior to Aura LEOP**
    - **All requirements will be met with the NOAA station providing one high inclination pass/day**
  - **if 7.3 meter is not operational but all other initiatives are done**
    - **All requirements would be met with NOAA station providing two high inclination passes/day**
  - **if 7.3 meter is not operational and AGS fails**
    - **EO1 would miss about 1 pass/day**
    - **All other requirements would be met with NOAA providing six Aqua passes/day and ASF providing nine QuikScat passes/day**
    - **All other passes would be provided by Svalbard, WGS, & MGS**

## MILA/PDL Replacement Status

### Ground Network

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- MILA/PDL Replacement Procurement Activities have been terminated
  - Current MILA/PDL stations can reliably provide Shuttle services through 2010 with adequate sustaining and maintenance
  - MILA/PDL Replacement business case requires five to ten years of operations – minimum three-year procurement/development/test activity prior to operational capability
- The MILA/PDL Replacement team has been redirected to produce a MILA/PDL Future study:
  - Identify all activities required to ensure reliable MILA/PDL services through requirements lifetime
  - Identify cost reduction opportunities that don't increase risk
  - Consider potential for continued requirements beyond 2010

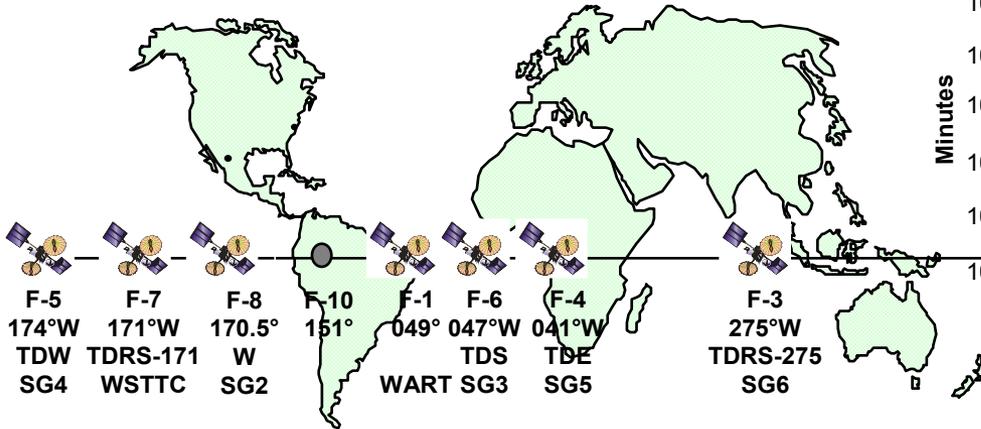


## Space Network “At a Glance”

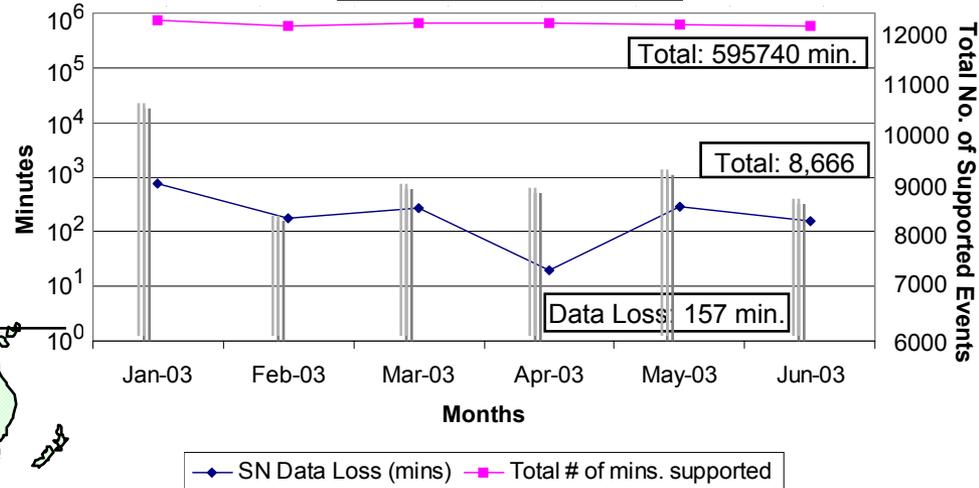
**Keiji Tasaki**  
**Space Network Project Manager, Code 452**  
**Mission Services Program**

# Operations and Maintenance

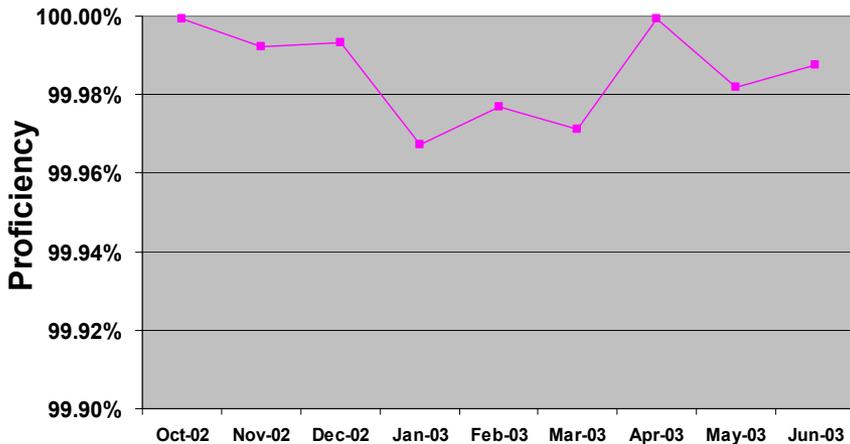
## Space Network



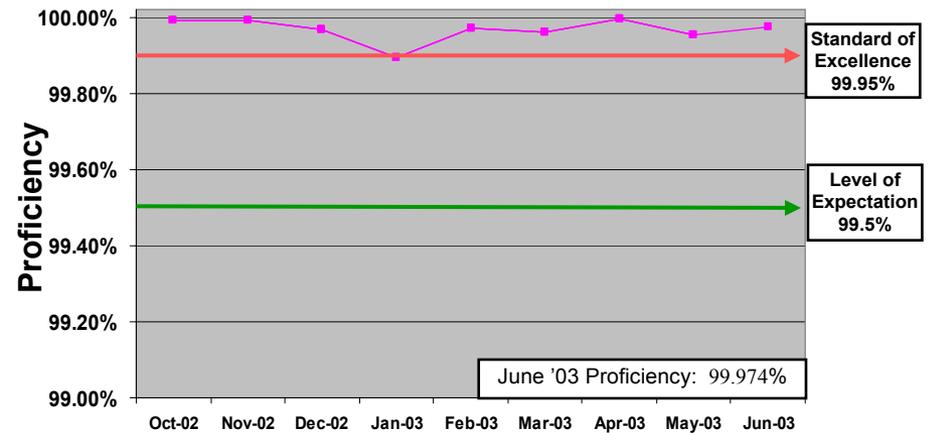
**Minutes of Support and Minutes of Data Loss**  
Total No. of Supported Events



**SN Critical Support Proficiency Trend**

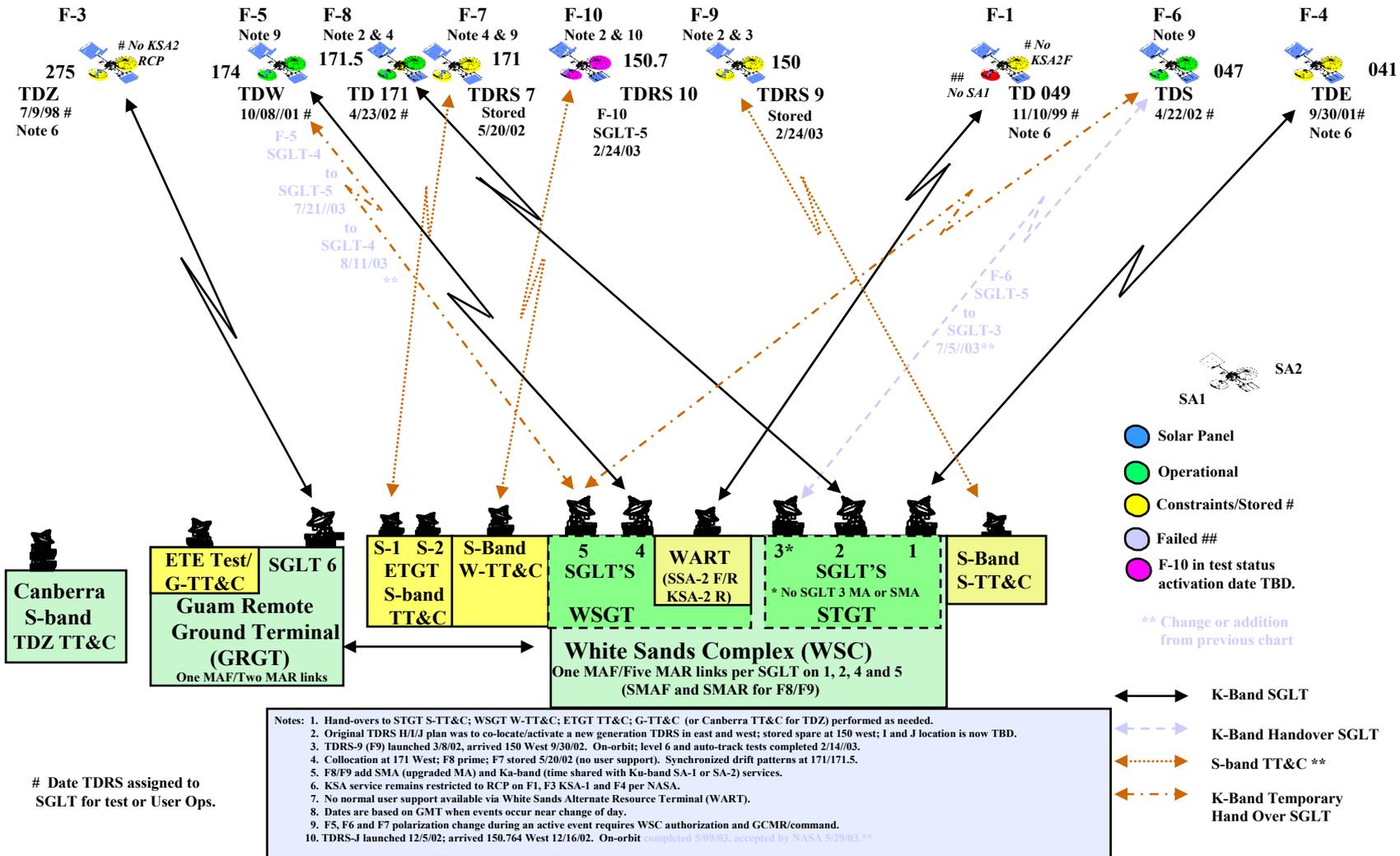


**SN Proficiency Trend**



Missions	Total No. of Supported Events	Service Stat.	Proficiency (%)	Standard of Excellence (%)
Aqua, ERBS, FUSE, HST, ISS, L-7, SP&M, TERRA, TOPEX, TRMM, UARS, XTE, LDBP, Sealaunch, Delta-II	8,666	9,931 hrs. sched 9,929 hrs. actual 2 hrs. 37 min. lost	99.974%	99.95%

# Space Network Configuration – June – Aug. 2003





## Space Network Initiatives



## Bilateration Ranging Transponder System Augmentation (BRTSA)



## BRTS Augmentation Background

- **BRTS is critical in providing SN customers with extremely accurate tracking services**
- **The BRTS System is over 20 years old**
- **Some BRTS subsystems have no spare parts**
- **Some critical subsystems are not repairable**
- **Loss of BRTS Stations will degrade or prevent SN from meeting Customer Tracking requirements**



## BRTS Augmentation

- **Requirements review conducted on 3/3/04**
  - 28 RFAs were received and are being worked
- **Near Earth Networks (NENS) task being written to design, develop and implement BRTSA**
- **Project Commitment Document (PCD) and Project Management Plan (PMP) were approved 3/11/04**



## BRTS Augmentation Schedule

<b>System Requirements Review</b>	<b>March 3, 2004</b>
<b>NENS Task Written</b>	<b>March 31, 2004</b>
<b>System Design Review</b>	<b>June 04</b>
<b>System Delivery</b>	<b>February 05</b>
<b>Integration &amp; Test Complete</b>	<b>June 05</b>
<b>Operational Readiness Review</b>	<b>August 05</b>
<b>Transition to O&amp;M/Sustaining</b>	<b>September 05</b>



## Ka-Band Initiatives



## Space Network Ka-Band Initiatives

- **GSFC/Code 450, Code 452 and NASA Headquarters management met on March 1, 2004 to reassess the Ka-Band Data Services (KaDS) Project and Ka-Band Flight Systems (KaFS) Project in the context of NASA's recently announced exploration vision and other ongoing SN initiatives and commitments**
  - **Both the KaDS and KaFS will be discontinued**
  - **Two new projects will be formulated and presented to management for approval**
    - **Provide a data service for the 225 MHz channels using bandwidth efficient modulation and coding schemes**
      - **Explore potential synergy with replacement of the existing 225 MHz channel data service equipment due to obsolescence**
    - **Develop flight systems components compatible with the new data service**



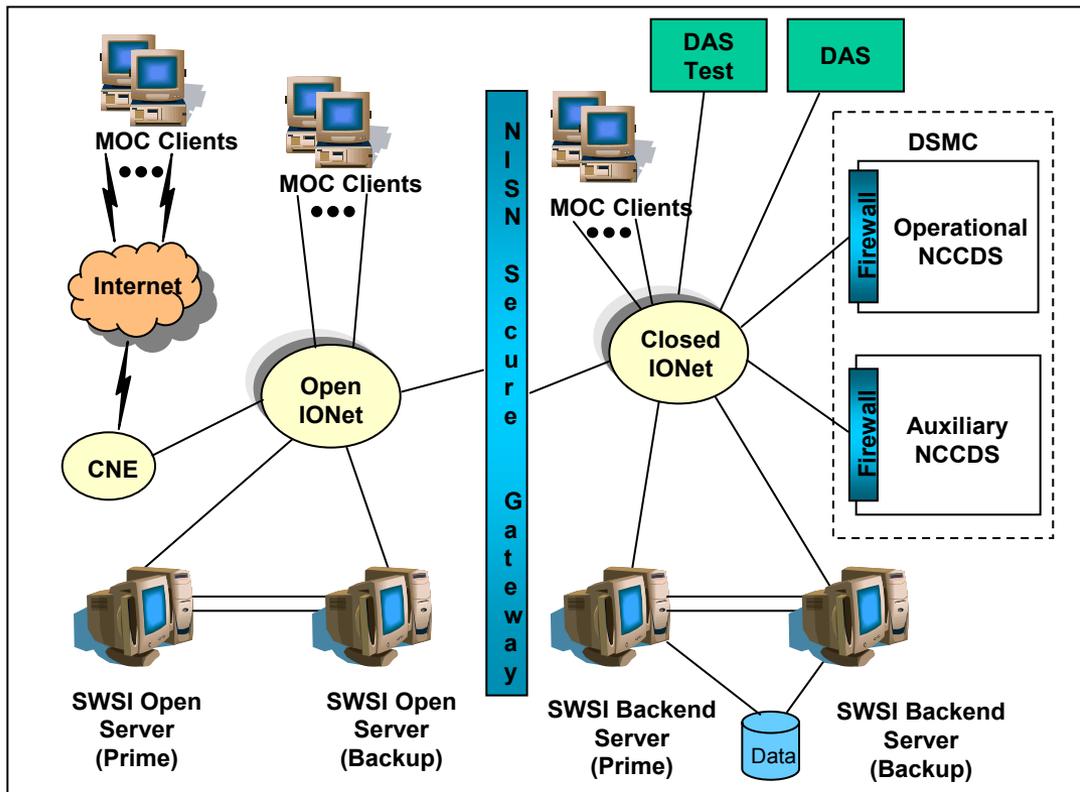
## Space Network Web Services Interface (SWSI)



## Space Network Web Services Interface (SWSI)

- **SWSI was developed to provide a secure network-based Graphical User Interface (GUI) to the Network Control Center (NCC) Data System (NCCDS) and to the Demand Access System (DAS) to perform SN customers managing TDRS services.**
- **SWSI Capabilities:**
  - Provides a secure network-based (server-client relationship) customer interface for performing SN scheduling and real-time control and monitoring
  - Supports customers who schedule SN services through both the Network Control Center Data System (NCCDS) and the Demand Access System (DAS)
  - Accessible from the Internet and the NISN Open and Closed IONet
  - Provides for easy system setup and workstation independence for the SN customer (the SWSI client software will run on any type of personal computer or workstation that can run Sun Microsystems Java Virtual Machine)
- **SWSI Release 04.1 was declared operational on March 3, 2004.**
  - SWSI Release 04.1 includes capability to schedule DAS Services.
  - SWSI is fully integrated into suite of services provided by the Space Network
  - Contact your mission commitment manager to begin using SWSI for your MOC.
  - Visit <http://swsi.gsfc.nasa.gov> to view operation requirements.

## SWSI Reference Architecture



- **Client:**
  - Client software resides on SN Customer MOC workstation or PC
  - Provide access to the SN via the Open or Backend SWSI Servers
- **Servers:**
  - Act as proxies to route requests from the client to the NCCDS and/or the DAS, and return responses to the client
  - Establish and maintain all required Transmission Control Protocol (TCP) connections
- **Database:**
  - Operates on the Closed IONet side of the NISN Secure Gateway
  - Hold static data, semi-static data, and dynamically updated data
  - SWSI customers are granted access privileges depending upon their roles



## TDRS Constellation Status



## TDRS Constellation Status

TDRS	Inclination ↑ - Increasing ↓ - Decreasing	TDRS Assignment	Ground Station and SGLT
TDRS-1	11.59° ↑	WART (49W)	WSGT
TDRS-3	7.88° ↑	TDRS-275	WSGT/SGLT-6
TDRS-4	5.93° ↑	TDE (41W)	STGT/SGLT-2
TDRS-5	5.13° ↑	TDW (174W)	STGT/SGLT-1
TDRS-6	4.39° ↑	TDS (47W)	WSGT/SGLT-3
TDRS-7	6.58° ↑	150/Stored	ETGT S2
TDRS-8	3.95° ↓	TDRS-171	WSGT/SGLT-5
TDRS-9	7.24° ↓	171/Stored	WSGT/SGLT-4
TDRS-10	6.01° ↓	150/Stored	STGT/STTC



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## TDRS Constellation Status

- **TDRS-9 and -10 Transition and Activation**
  - **NASA is transitioning TDRS-9 and -10 into operations to demonstrate their ability to support the SN community**
    - **The 171W longitude slot will be used to transition TDRS-9 into operations**
    - **The 041W (TDE) slot will be used to transition TDRS-10 into operations (TBR)**
    - **Each spacecraft will provide a minimum a six months of operational support**



## TDRS Constellation Status

- **TDRS-9 Transition into Operations at 171W**
  - Transition into operations to occur on 29 Mar 04
  - Support SN customers for a minimum of six months
  - TDRS-8 will be hot back-up for at least two weeks
- **TDRS-8 Relocation to 174W (TDW)**
  - Relocate to 174W as cold back-up to TDRS-5
  - Replace TDRS-5 when KSA1F service deteriorates
    - TDRS-5 SSA/KSA services will be de-activated: continue DAS support (TBR)
- **TDRS-5 Relocation to 171W**
  - Relocate to 171W and continue to provide DAS services during drift (TBR)
  - Replace TDRS-9 and provide all services except KSA1F
    - TDRS-9 checkout may be shorten due to the TDRS-5 KSA1F failure



## Demand Access System (DAS)



## Demand Access System (DAS)

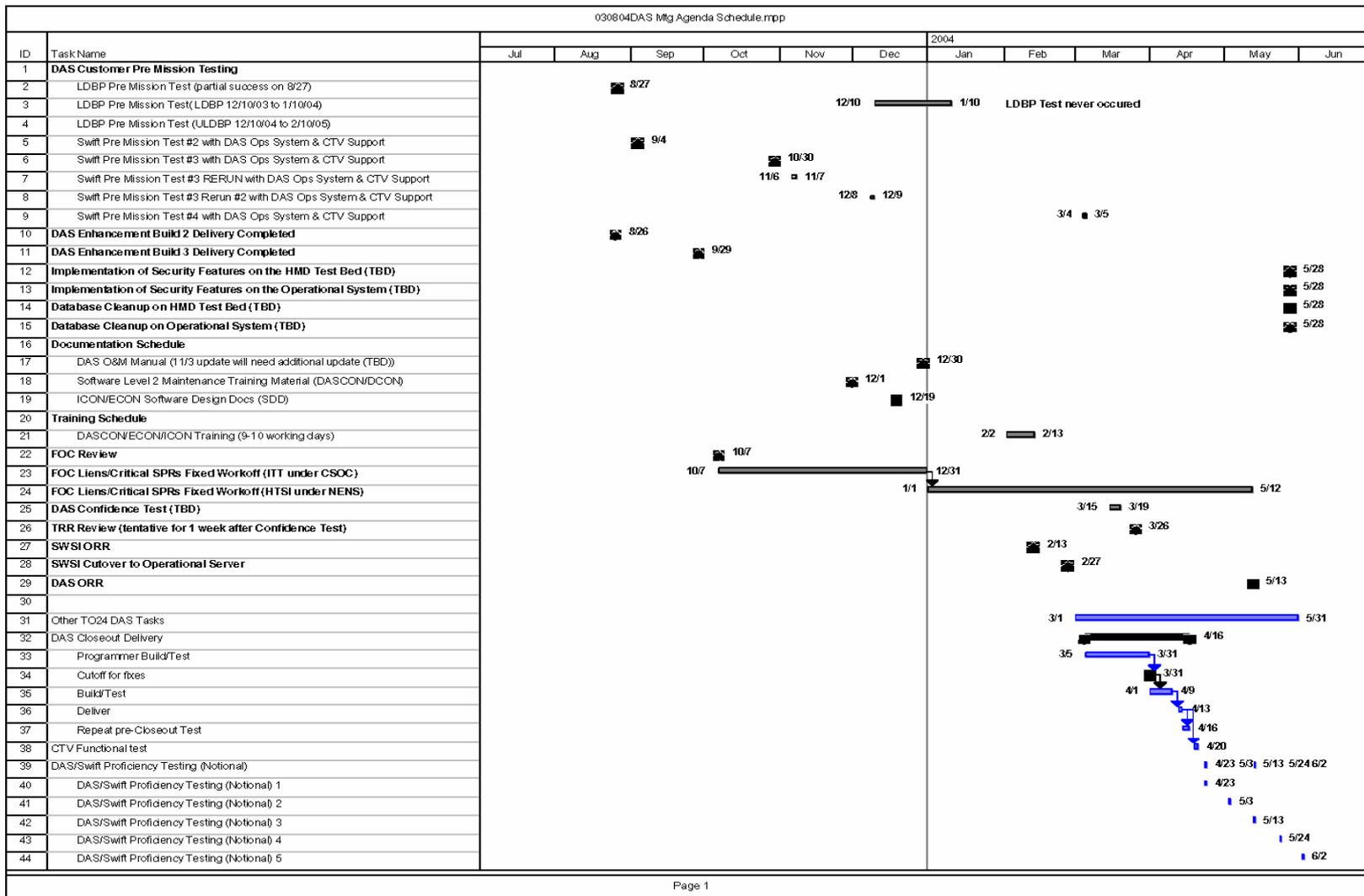
- The DAS team held a Full Operations Capability (FOC) review on October 7, 2003. SWSI, DAS Customers, and Customer Commitment office personnel were in attendance. The closing recommendation was that DAS would be ready for transition to operations upon resolution of liens to the system. The major liens at that time included issues with the Avtec Programmable Telemetry Processor (PTP) which have been worked with the manufacturer and resolved. After the FOC review, the team performed additional testing and uncovered some additional liens, several of which have been resolved.
- On January 1, 2004, the Near-Earth Networks (NENS) contractor, Honeywell, assumed responsibility for DAS. Honeywell has been tasked to bring the DAS into a fully operational state. These tasks involve performing comprehensive confidence testing after clearing all remaining liens. The DAS Operations Readiness Review (ORR) is scheduled for May 13, 2004.
- The DAS successfully supported several Long-Duration Balloon Project events in late 2003 on a best effort basis when the LDBP could not get service via other means. Additionally, several pre-mission tests have been successfully run with both LDBP and Swift.
- Refer to the DAS website at <http://nmisp.gsfc.nasa.gov/das/> for the latest DAS information.



# Mission Services Customer Forum



## DAS Schedule





## SN IP Services (SNIS)

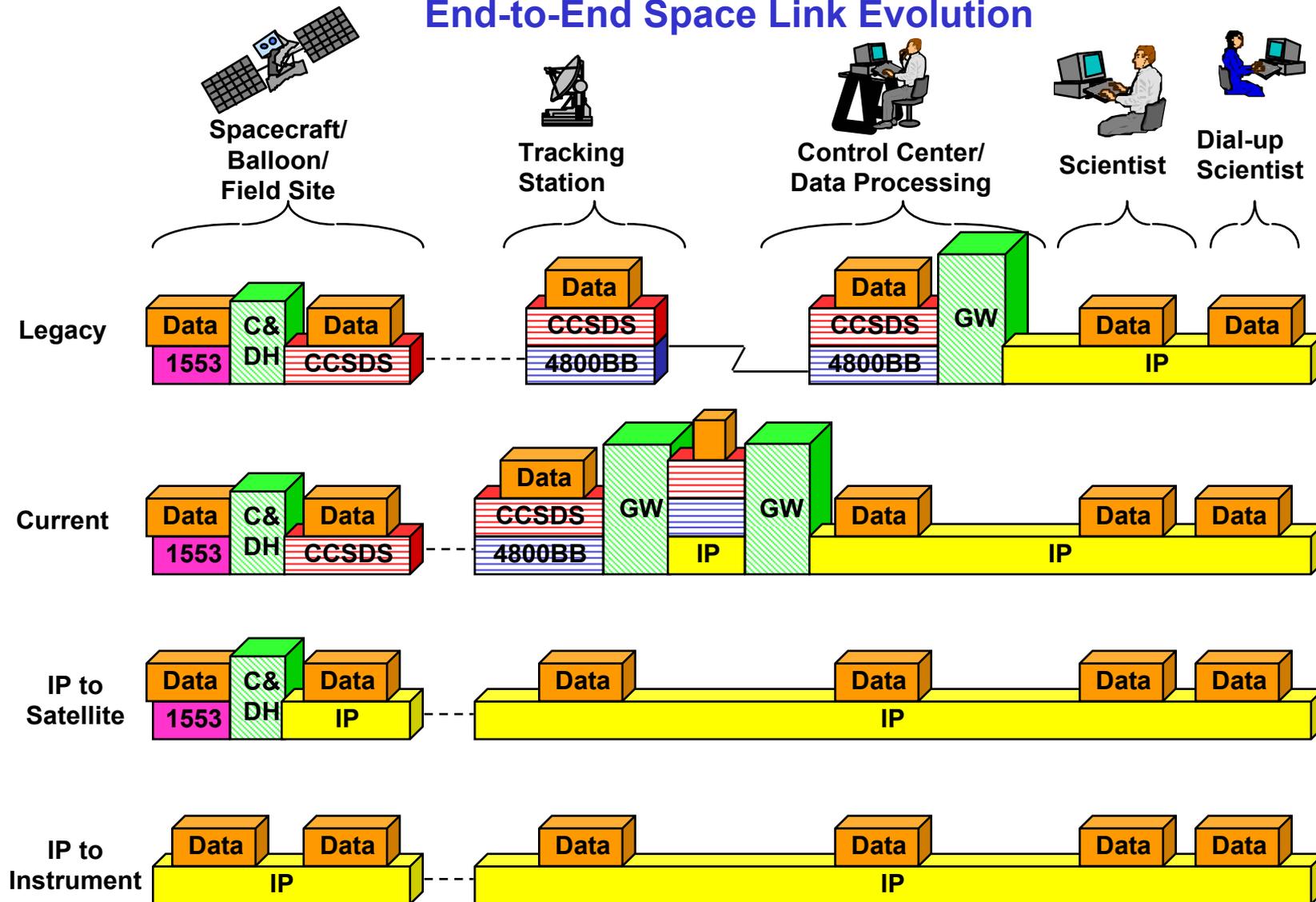


## SNIS

- **SNIS is an SN Product that will accomplish the following:**
  - Makes spacecraft systems look and operate just like any other nodes on the IONET
  - Provide operational IP services that were previously supported in test and demonstration modes
  - Enables end-to-end, standard IP communication between all mission resources (e.g. spacecraft, control center, Principal Investigators (PIs))
  - Enables low-cost individual security solutions tailored to meet the specific needs of each SN mission
  - Provides more privacy between SN missions on the IONET
- **SN has been supporting a daily IP connection to the South Pole since 1997 (South Pole TDRSS relay (SPTR))**
- **Multiple ground demonstrations and activities have been done since (TILT, eclipses, OMNI, demonstrations)**
- **The LPT CANDOS experiment onboard STS-107 demonstrated SN/GN IP support to an orbiting user**



## End-to-End Space Link Evolution





## SNIS Product Overview

- **The primary function of the SNIS Product is to make spacecraft systems look and operate just like any other nodes on the IONET**
- **The SNIS Product will enable the following concepts:**
  - **Data driven data distribution**
  - **File delivery (real-time and store and forward)**
  - **Time services**
  - **Spacecraft intercommunication**
  - **Distributed processing across spacecraft**
  - **Long-term system interoperability**
  - **Enhanced security options**



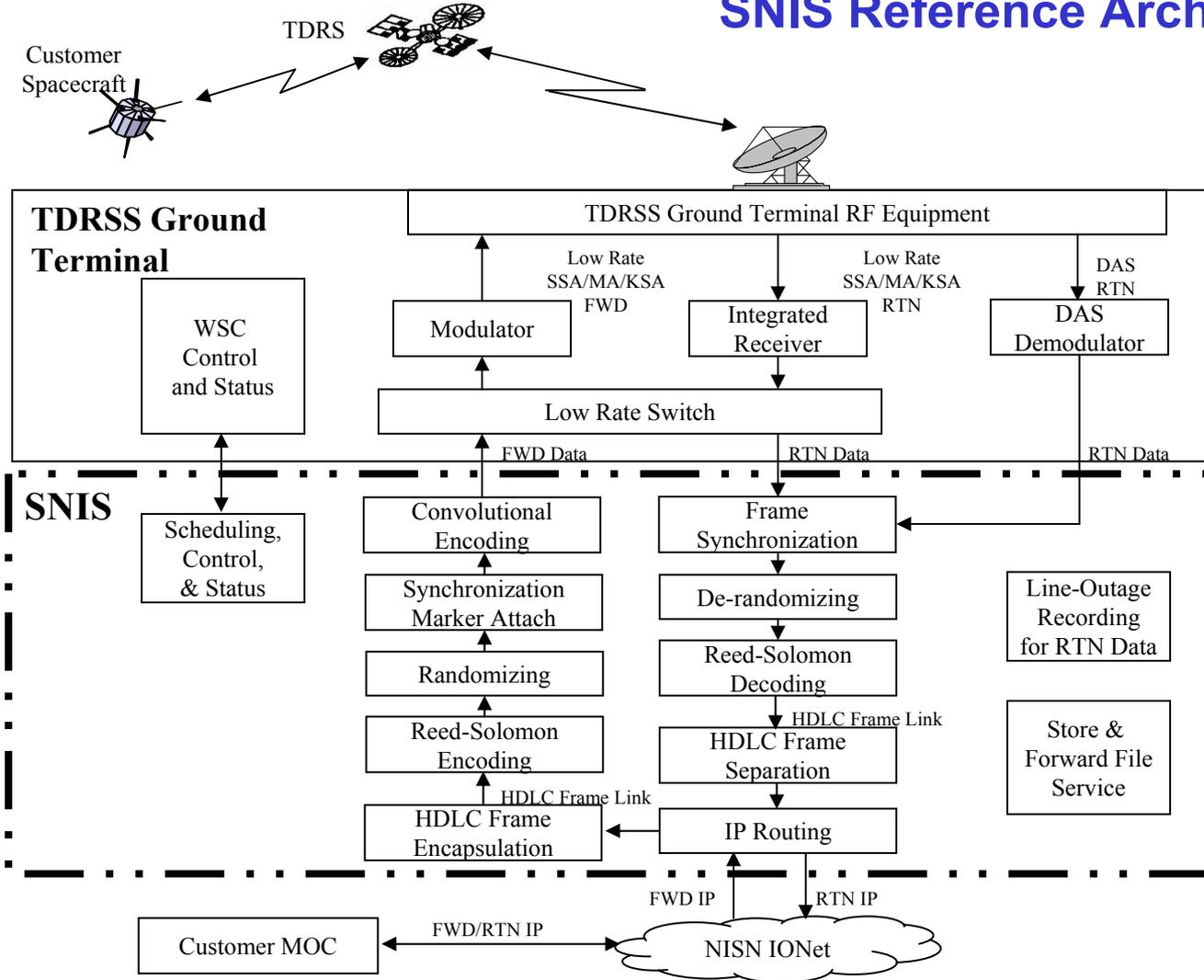
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## SNIS Design Goals

- **State-of-the art design that maximizes flexibility and reliability**
- **Modular and scalable to allow for future requirements expansion with minimal impact to facility and subsystems**
- **Maximize use of COTS products at WSC**
- **Minimize need for custom network equipment at user sites**



## SNIS Reference Architecture





## Space Network Access System (SNAS)



## SNAS Purpose

- **SNAS is intended to be capable of supporting all SN customers by providing a network-based system that incorporates features from the User Planning System (UPS), the SN Web Services Interface (SWSI), and other SN customer-required functionality.**
- **Motivation:**
  - The SN requires a fully capable, low cost, easily integrated SN scheduling and service control and status interface
  - The sustainability (hardware and software) of the User Planning System (UPS) for the life of the SN is questionable, therefore a transition to a more modern system makes sense
- **SNAS will:**
  - Support the existing ICD between the SN and its Customers for scheduling and service control and status
  - Provide a networks-based (server-client relationship) Customer interface for performing SN scheduling and real-time control and monitoring
  - Support Customers who schedule SN services through both the Network Control Center Data System (NCCDS) and the Demand Access System (DAS)
  - Be accessible from the Internet, and the NISN Open and Closed IONet
  - Provide for easy system setup and workstation independence for the SN Customer (the SNAS client software is envisioned to run on any type of personal computer or workstation that can run Sun Microsystems Java Virtual Machine)



## SNAS Status

- **A SNAS Systems Requirements Review (SRR) was held on July 8, 2003**
  - More than 100 Requests for Actions (RFAs) were received at the SRR
    - All RFAs responses were coordinated with each RFA originator
  - SNAS documentation has been updated based on the SRR and RFA responses
- **SNAS implementation is currently on hold pending the appointment of a Product Design Lead**
- **A two month duration task will be undertaken to assess SNAS. The task will include the following activities:**
  - Re-evaluate all responses to and disposition of the SRR RFAs
  - Meet with the RFA authors and Customers to identify concerns/issues
  - Evaluate advantages/disadvantages to the planned architecture
  - Evaluate the current implementation approach
  - Recommend changes to requirements and operations concept documents
  - Identify requirements and functions that are unaffected by RFAs
  - Develop a new implementation schedule
  - Develop and begin implementing a Customer liaison plan. The plan will call for coordinating SNAS activities with the customer community and publicize SNAS with a goal of achieving “buy-in” by customers.



## Second Guam Antenna System (SGAS)



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### Second Guam Antenna System (SGAS)

- **Supertyphoon Pongsona hit Guam on December 8, 2002. The storm packed sustained 150 mph winds with gusts in excess of 180 mph. Although there was minor damage to the GRGT (mostly to the roof), efforts were taken to identify and mitigate several vulnerabilities of the station.**
  - **One such vulnerability identified was the lack of a backup space-to-ground link antenna system.**
  - **Requirements definition is complete and the project is now in the design phase.**





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### SGAS Preliminary Antenna Locations

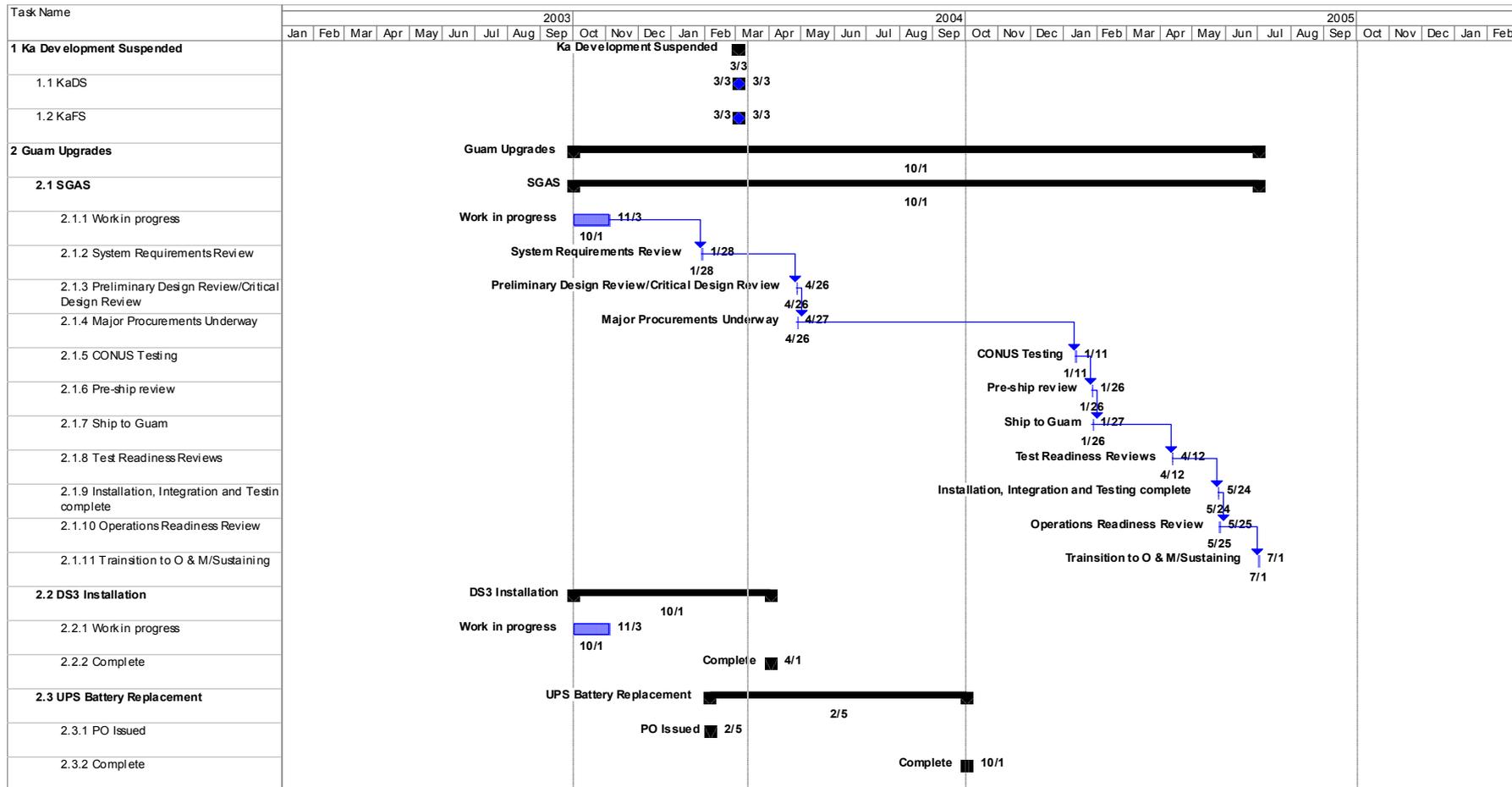
- **Please contact the SGAS Product Design Lead:**  
**Mr. Andre Fortin**  
**Space Network Project, Code 452**  
**Office: 301.286.7829**  
**E-mail: [Andre.Fortin@nasa.gov](mailto:Andre.Fortin@nasa.gov)**



# Mission Services Customer Forum



## Space Network Critical Milestone Schedule



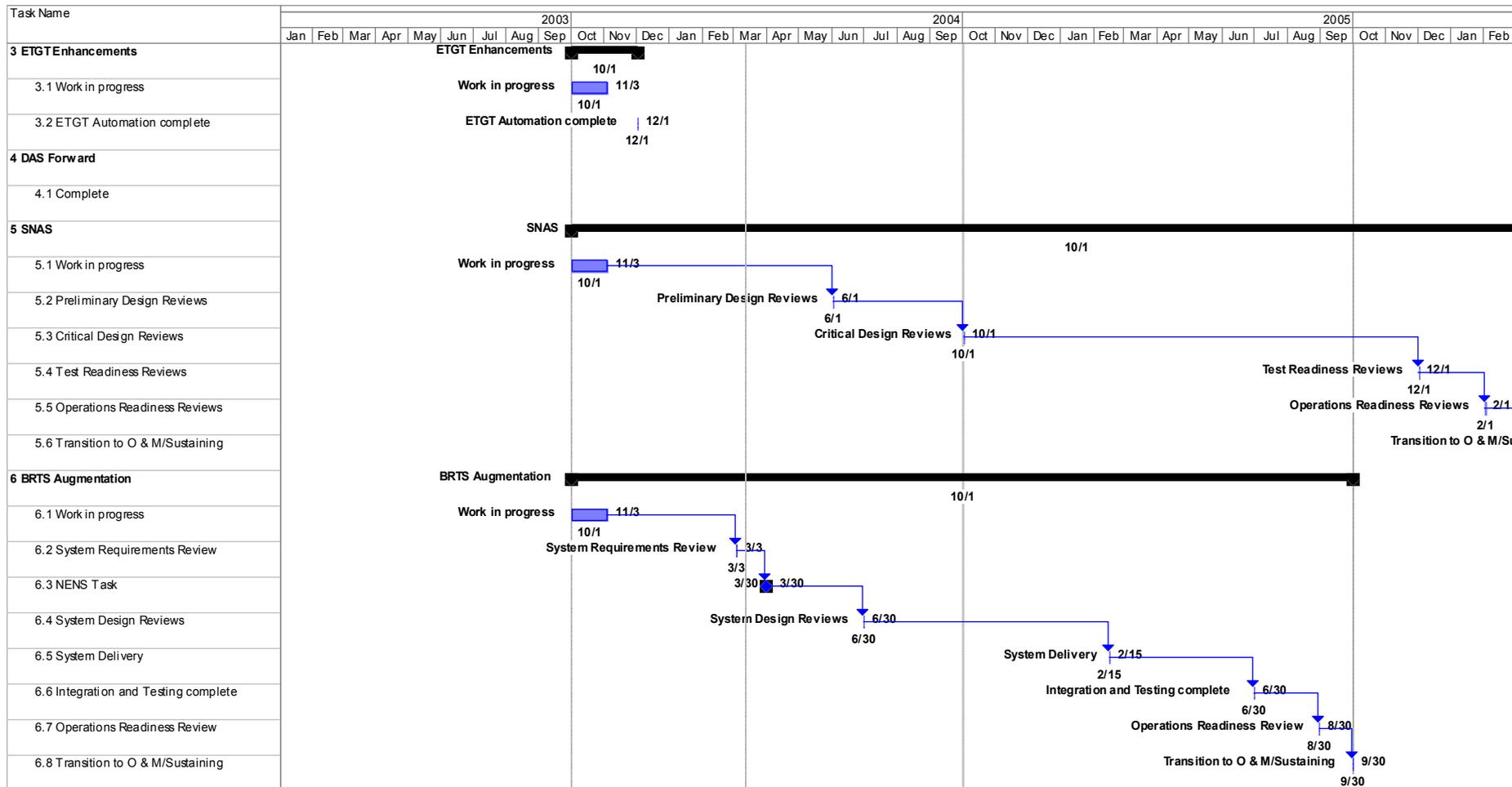
Schedule updated and distributed monthly; please contact [Jennifer.Clark@gsc.nasa.gov](mailto:Jennifer.Clark@gsc.nasa.gov) to be added to distribution list.



# Mission Services Customer Forum



## Space Network Critical Milestone Schedule (Cont'd)

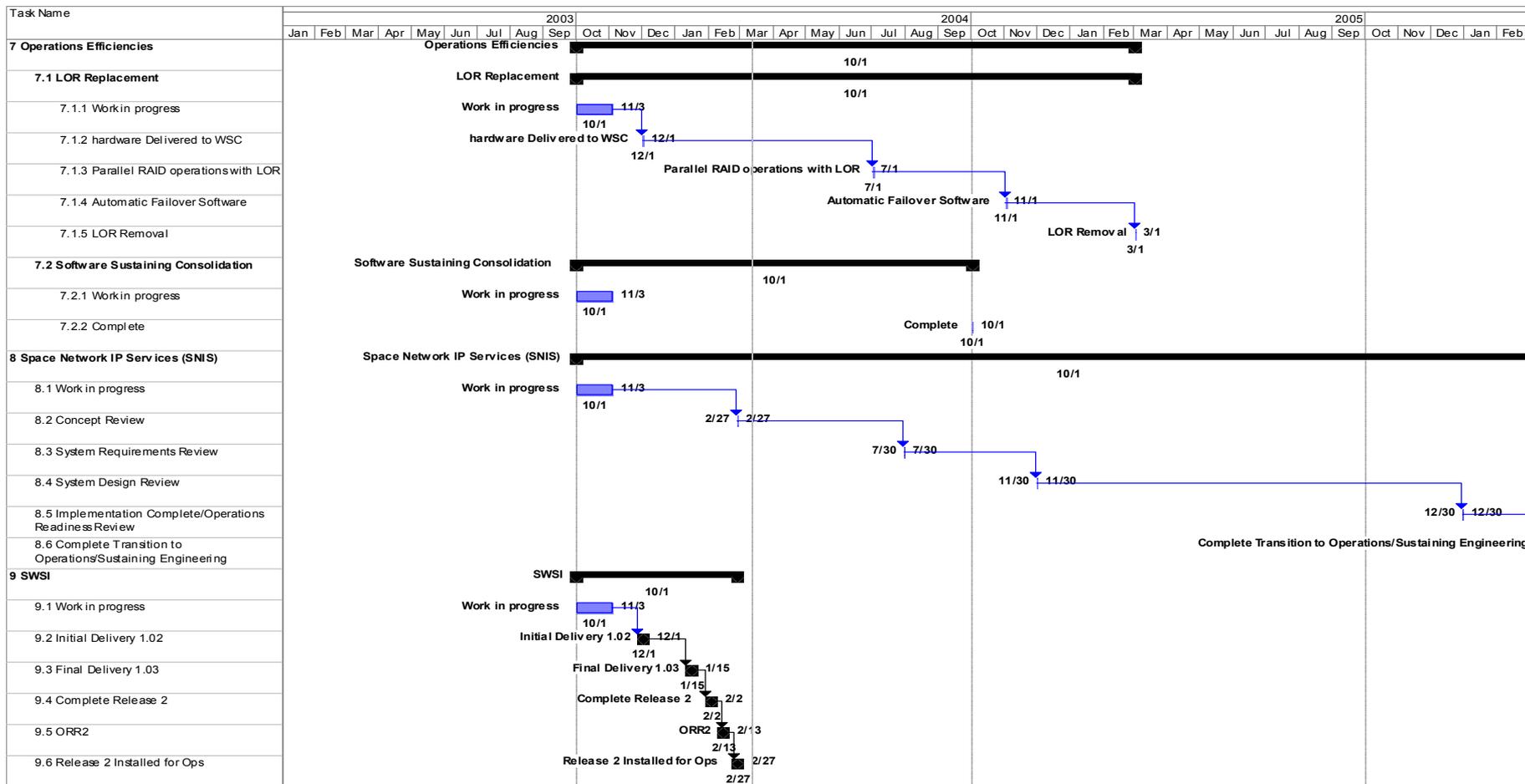




# Mission Services Customer Forum



## Space Network Critical Milestone Schedule (Cont'd)





## NASA Integrated Services Network (NISN)

**Chuck Duignan**  
**Network Engineering Branch, Code 292**  
**(NASA Integrated Services Network)**  
**Goddard Space Flight Center**



## UNIFIED NASA INFORMATION TECHNOLOGY SERVICES (UNITeS)

### OVERVIEW

- **UNITeS awarded to Science Applications International Corporation (SAIC) on December 23, 2003.**
- **CSOC responsible for operations of NISN until transition is complete on March 30, 2004.**
- **UNITeS Contracting Officers Technical Representative (COTR) is Rose Ann Goss/MSFC**



# Mission Services Customer Forum





## NASA INTEGRATED SERVICES NETWORK - GSFC

### UNITeS

CIG  
NISN Gateway

### UNITeS/MOMS

Mission Video  
Mission Voice  
Mission Commgrs  
Shift Commgrs  
Scheduling  
Metrics

### UNITeS/MILLENIA

Tech Control WAN  
CD Management WAN  
IPNOC WAN

### MOMS

Cable Plant  
Security  
Maintenance

### MILLENIA

Tech Control  
CD Management  
IPNOC



## NISN Customer Interface Group NISN Service Managers

- Beth Paschall, 256-544-2930
- [Elizabeth.g.paschall@nasa.gov](mailto:Elizabeth.g.paschall@nasa.gov)
- ARC, HQ, SSC, non-NASA
  
- Chuck Duignan, 301-286-6342
- [Charles.m.duignan@nasa.gov](mailto:Charles.m.duignan@nasa.gov)
- (Codes R & S) DFRC (Aeronautical), GSFC (Space Science missions) JPL, VAFB (ELVs)
  
- Kim Wright, 256-544-0936
- [Kimberly.a.Wright@msfc.nasa.gov](mailto:Kimberly.a.Wright@msfc.nasa.gov)
- (Code M) ISS, JSC, KSC, MSFC, MAF, WSTF (Institutional)
  
- Seaton Norman, 301-286-8676
- [Seaton.b.norman@nasa.gov](mailto:Seaton.b.norman@nasa.gov)
- (Code M) STS, ISS, JSC, KSC, MAF/WSTF, MSFC, DFRC (Shuttle)
  
- Jerry Zgonc, 301-286-7160
- [gerald.r.zgonc@nasa.gov](mailto:gerald.r.zgonc@nasa.gov)
- (Code Y) LaRC, GSFC (Earth Science missions and Institutional), VAFB (EOS ELVs)

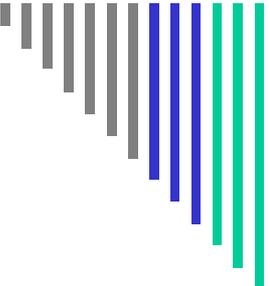


## NISN Customer Interface Group Customer Service Reps

- Joe Finey, 256-961-9443
- E-mail: [Joe.Finney@csoonline.com](mailto:Joe.Finney@csoonline.com)
- MSFC Customer Service Director
  
- Michael Bradley, 256-961-9492
- E-mail: [Michael.Bradley@csoonline.com](mailto:Michael.Bradley@csoonline.com)
- EOS missions and PSLAs, Code S Missions (GSFC/JPL) and PSLAs, International CSR
  
- Bill Manning, 256-961-9491
- E-mail: [Bill.Manning@csoonline.com](mailto:Bill.Manning@csoonline.com)
- STS missions and PSLA, ISS missions and PSLA, Code R missions and PSLA, Code U missions and PSLA
  
- Tom Goard, 256-961-9448
- E-mail: [Tom.Goard@csoonline.com](mailto:Tom.Goard@csoonline.com)
- Requirements databases, Processes and Procedures, NSR Analysis Ream, and Site Rep Liaison
  
- Bill Ihnat, 301-805-3351
- E-mail: [William.Ihnat@csoonline.com](mailto:William.Ihnat@csoonline.com)
- Code Y missions (except EOS) and PSLAs, Code M missions (except ISS & STS) and PSLAs, Reimbursables and PSLAs; WSC CSR



## Overview of the CNE Project March – May, 2004



The CNE Project is comprised of Code 290 Civil Service led Teams knowledgeable in and experienced with Greenbelt/Wallops network environment support

Program Manager  
**Curt Suprock** – Code 291

Deputy Program Manager  
**Brian Drake** – Code 291

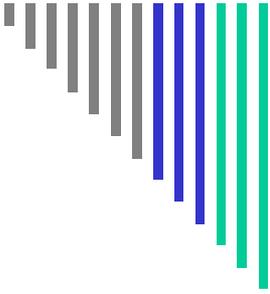
Network Engineering  
Lead – **David R. Smith**, Code 291  
Deputies – **Kurt Bruhnke**, Code 291  
WFF Lead - **Jim Brady**, Code 296

Internet Services  
Lead – **Mike Richter**, Code 291  
WFF Lead – **Scott Webb**, Code 296

Security  
Lead – **Shelly Greer**, Code 297  
Deputies – **Kim Phillips**, Code 297

Customer Support  
Lead – **Stan Rubin**, Code 291  
Marketing and Communication –  
**Jean-Marie Jean-Pierre**, Code 290

Application Services  
Lead – **Steve Jung**, Code 290  
Deputies – **Dave Baer**, Code 291  
WFF Lead – **Scott Webb**, Code 296



## The house the CNE built...

### Security Services

#### Network Security Scanning

IP Registration policy definition and coordination

Maintenance of the CNE Firewall Architecture Rule Set (CFRB)

Security Policy Development and Implementation

### Network Engineering Services

- CNE NW infrastructure
- CAT-5 Network Cabling Initiative
  - Remote Access (Dial-up, VPN)
- IP Address Management
- CNE Firewall Architecture
- Wireless networking

### Internet and Enterprise Services

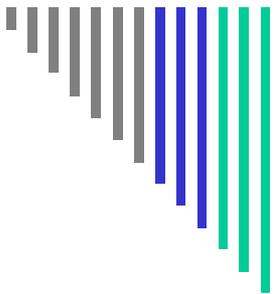
- Electronic (POP) Mail Services
- Directory Services (X500, ERS)
  - Web mail
- Web Drive (internal/external)
  - Center Site License
- Management- Web browser, email and Anti-virus software
  - Time Services
- DNS, IP Reg and ePresence

### Application Services

- Active Directory
  - WINS
- GSFC Domain Management
- Calendaring Services (Meeting Maker)
- Lanier Copier Services
- Webcast Video Services

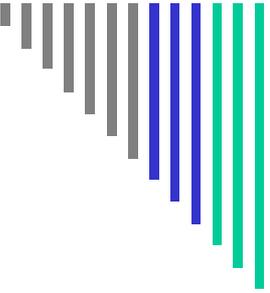
### Customer Support

Goddard-based Customer Call Center, Customer education and communication, Network Administration Support, Customer education, "Information Kiosk"



## **CNE - Current Status...**

- **Completed transition to new CNE Project on February 1, 2004**
- **Completed new maintenance and license agreements required to support CNE Services**
- **Activation of new CNE Customer Call Center on March 1, 2004**
  - Available via phone at 301-286-7342
  - Web site: [cne.gsfc.nasa.gov](http://cne.gsfc.nasa.gov)



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## **CNE - Future Directions and Initiatives...**

- **Wireless CNE**
- **Remote Access Improvements**
- **High Speed CNE**
- **Customer Forums**
- **Patchlink**
- **ePresence**
- **CNE Webpage Redesign and Update**
- **Network and Service Improvements and Tech Refresh**



## Data Services Management Center (DSMC)

**Bob Hudgins**  
Near Earth Networks Services  
White Sands Complex



## DSMC Status Update

- **SN Scheduling**
  - **WSC NCCDS SPSR/CCS M03.1D5 S/W delivery completed 12/18/03**
  - **SWSI S/W release 04.1 completed 03/01/04**
  - **A SN scheduling error following a software delivery in September 2003 impacted ISS**
    - **Eight action items were opened**
    - **RCCA analysis was completed**
    - **One action item requiring additional for all crews remains open (anticipated completion date is 04/15/04)**

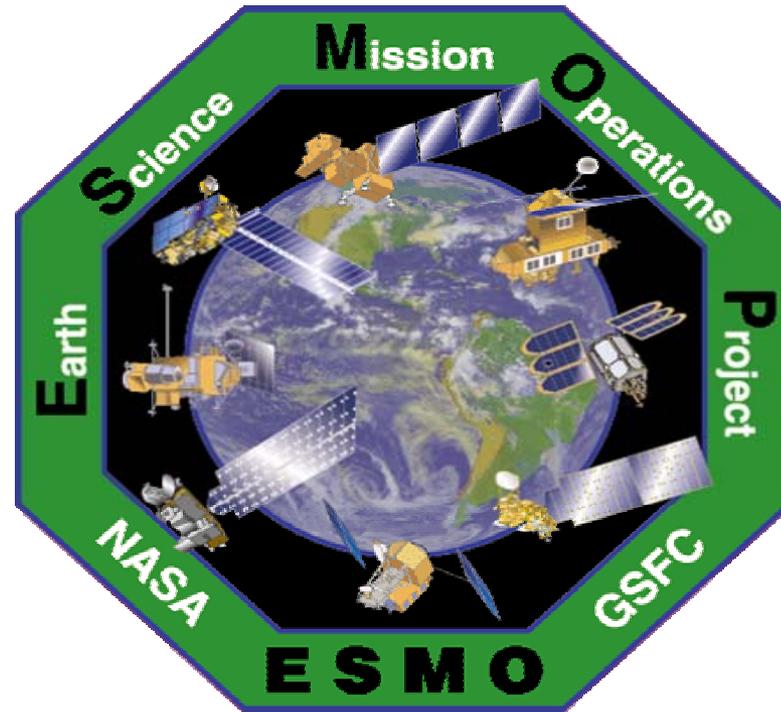


## DSMC Status Update

- **GN Scheduling**
  - Security changes for WOTIS open to closed IONet FTP was completed on 12/03/03
  - Through 03/14/04 no GN scheduling errors have occurred; however, a mis-configuration on the WOTIS front end caused a 33 minute data loss



## Earth Science Mission Operations



Paul Ondrus - ESMO Project Manager, Code 428

Edward J. Macie - ESMO Operations Director

301-614-5416



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## Earth Science Mission Operations Project (ESMO)

**Mission Objective:** The ESMO Project manages mission operations of NASA's Earth Science Enterprise satellites with a goal for each mission of successfully meeting its Level 1 requirements.

**Organizations:** For the Earth Science Enterprise Missions operated for GSFC, ESMO provides mission operations, data processing, and delivery of science data to science teams and/or data archives. ESMO works with the scientists, satellite and instrument developers, and Goddard technical experts to insure mission success.

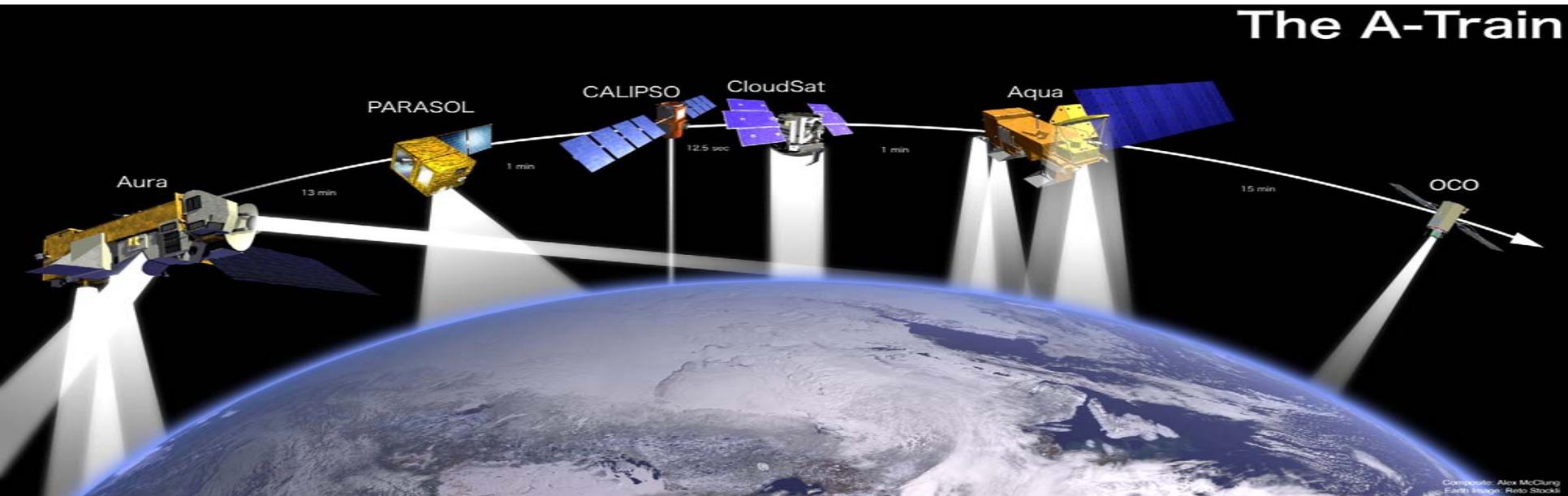
**Mission Description:** Satellites being operated by ESMO are Earth Radiation Budget Satellite, Terra, Aqua, Total Ozone Mapping Spectrometer Earth Probe, Tropical Rainfall Measuring Mission, ICESat, SORCE, and Upper Atmosphere Research Satellite. ESMO also supports Landsat-7 anomalies and will manage operations for the Aura satellite after launch and on-orbit checkout.

**Near Term Events:** Aura launch and on-orbit commissioning and TRMM Reentry Planning.



## Significant Progress

- Mission Systems Development
  - Continuing CSOC close-out.
    - Working close-out cost issue with JSC.
    - Awaiting allocation of severance costs and last award fee actions.
  - Successfully conducted Aura SCIF #4 test and Mission Rehearsal #2 of 5.
  - Working detailed planning for EMOS with respect to Aura launch, sustaining engineering, and Earth Observing System (EOS) contract close-out.
  - Preparing for Constellation Working Group Meeting at Langley on 3/25 & 3/26.





## Significant Progress

- **Terra**
  - Recovered Direct Broadcast capability from an SEU impact.
  - Continuing Terra KU-band anomaly team with Code 450.
- **UARS/ERBS/TOMS**
  - Normal operations
- **TRMM**
  - Completed Ground System Requirements Review (1/30/04).
  - Completed AETD Independent Risk Assessment for Controlled Reentry (2/6/04.)
  - Completed risk/programmatic review of Controlled Reentry with Center (3/2/04).
  - Completed presentation to Code Y on 3/8.
- **ICESat**
  - Laser was turned on 2/17. Will terminate this laser cycle 3/21/04.



# Mission Services Customer Forum

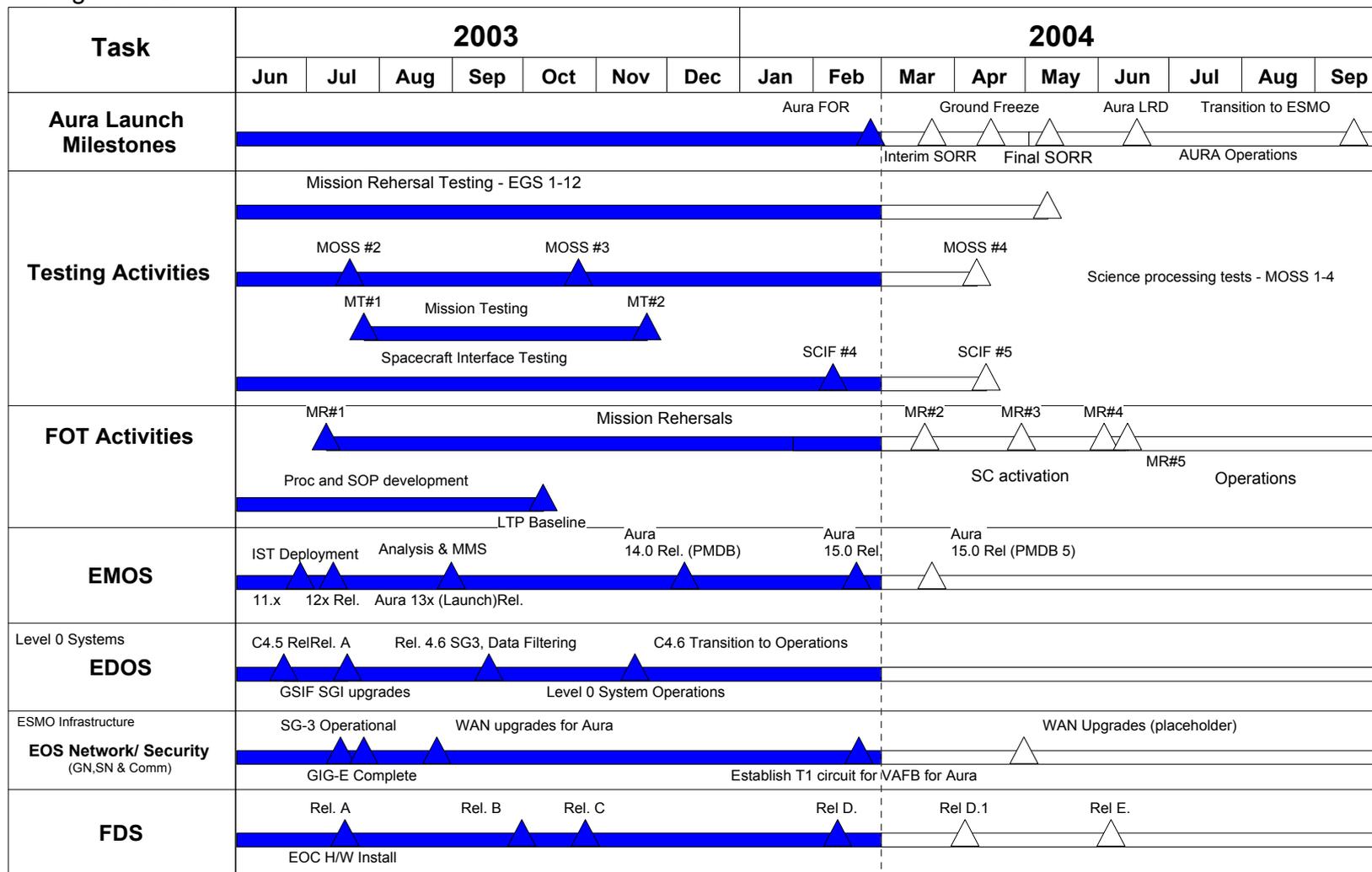


## ESMO Project Schedule

Code 428

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2/29/04





# Mission Services Customer Forum

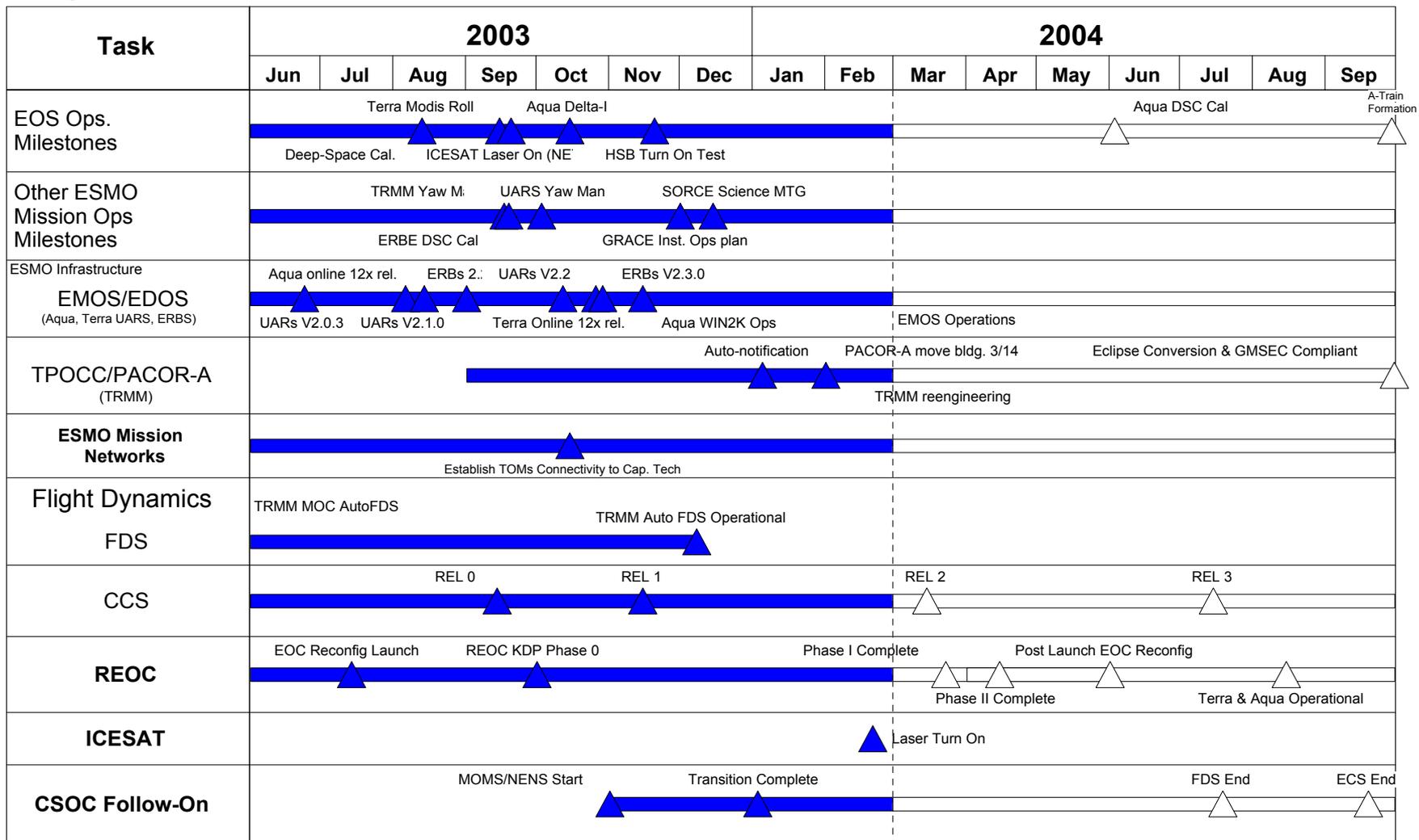


## ESMO Project Schedule

Code 428

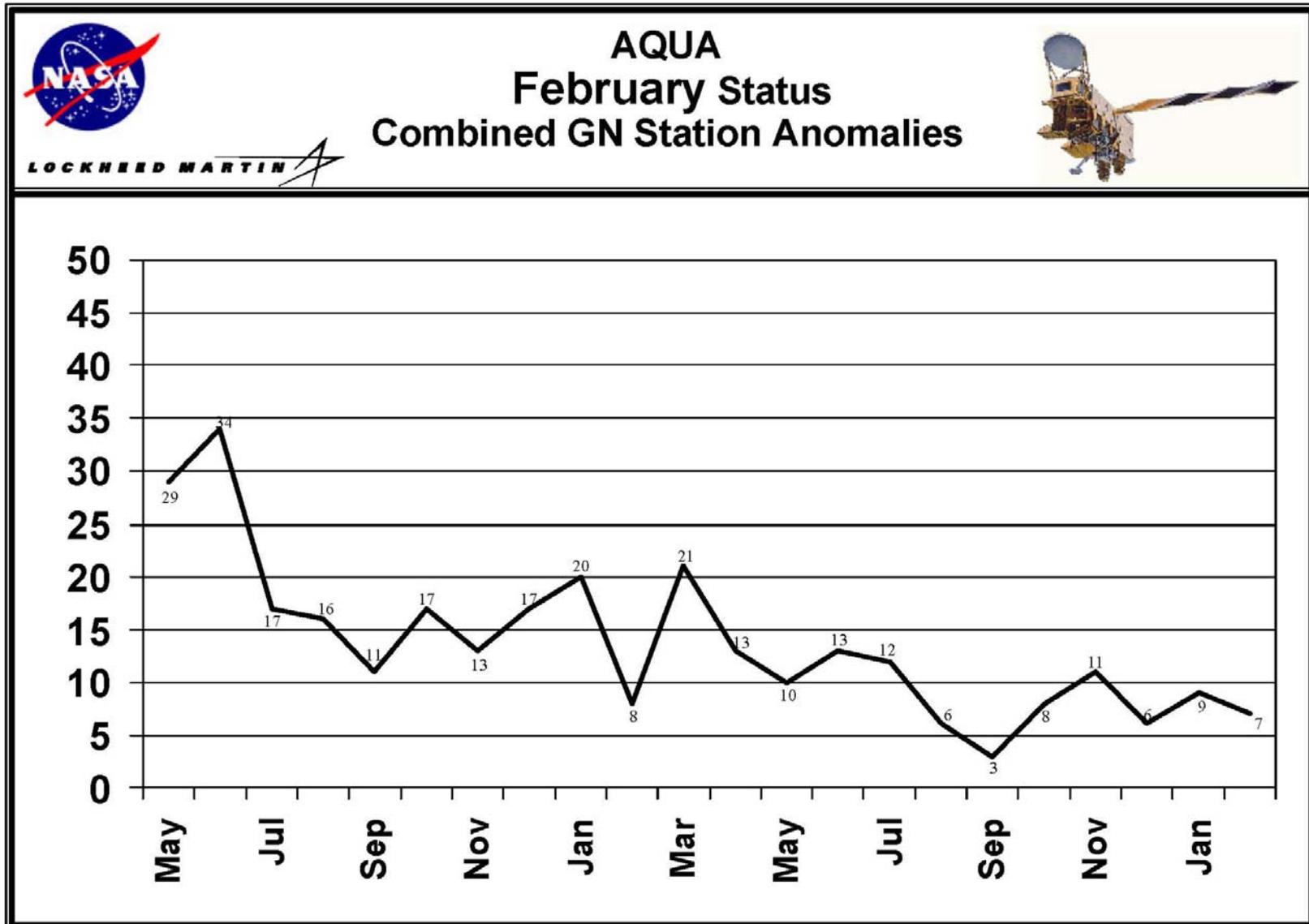
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# Mission Services Customer Forum





## Terra Data Capture/Delivery Metrics

	Raw Data Capture (1)	Data Received at DAACs (2)	Data Received at DAACs On Time (3)	NOAA Data Latency (4)	Comments on Significant Data Losses/Latencies
01/21/04 – 02/20/04	99.97%	98.47%	99.98%	99.6%	
12/21/03- 01/20/04	99.86%	98.36%	99.99%	99.5%	.
12/20/03 - 11/21/03	99.92%	98.42%	99.99%	99.9%	

Key: Columns (1,2,3) -> G=100%-95% (requirement), Y=94.99%-90%, R=89.99%-0%  
 Column (4) -> G=100%-80% (goal), Y=79.99%-70%, R=69.99%-0%



## Aqua Data Capture/Delivery Metrics

	Raw Data Capture (1)	Data Received at DAACs (2)	Data Received at DAACs On Time (3)	NOAA Data Latency (4)	Comments on Significant Data Losses/Latencies
01/21/04 – 02/20/04	99.90%	99.90%	100.0%	99.4%	
12/21/03- 01/20/04	99.99%	99.99%	99.69%	98.8%	
12/20/03 - 11/21/03	99.99%	99.99%	100.00%	98.7%	

Key: Columns (1,2,3) -> G=100%-95% (requirement), Y=94.99%-90%, R=89.99%-0%  
Column (4) -> G=100%-80% (goal), Y=79.99%-70%, R=69.99%-0%



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# Enterprise Updates

## Human Space Flight

### (Code M)

## March 18, 2004

Wm. Bruce Schneck  
Manager, Human Space Flight  
Near Earth Networks Services



## Agenda

- **HSF Integrated Network Return to Flight (RTF) Status**
- **Crew Exploration Vehicle (CEV) Program**



## HSF Integrated Network Return To Flight (RTF) Status

- **HSF Integrated Network RTF Status**
  - **Launch now scheduled for March 2005**
  - **RTF Test Plan Published (Draft)**
  - **RTF Re-validation Management Plan Published**
  - **RTF Monthly Tag-up Telecons with the Network Planned**
  - **Testing planned to start in April 2004**
    - **Launch Count Testing**
    - **STA/PSS Run**
  - **Only one new requirement received for Return To Flight – ET TV**



## Crew Exploration Vehicle (CEV) Program

- **CEV Program replaces Orbital Space Plane (OSP) Program as of March 1, 2004**
- **Will be administered out of HQ Code T by Adm. Craig Steidle.**
- **Former OSP Leads at JSC, KSC, and MSFC will remain in place for CEV. They will be badged as HQ, but remain at the centers.**
- **Plan for the Coming Year**
  - **Level 0 requirements out by mid-February**
  - **Level I requirements out by Summer 2004**
  - **Level II requirements/SRR complete by September 2004**
- **First Test Flight in 2008-2009 (same as planned for OSP)**



# Mission Services Customer Forum



## Return to Flight Milestone Schedule

Date: March 3, 2004

Task	Start	End	2003	2004												2005				
				JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY
1 Kick off meeting with team	4/14/03	4/14/03	▼																	
2 Weekly meetings for return to flight	4/12/04	3/5/05					▼													▼
3 Identify test requirements	4/15/03	3/15/04	▼			▼														
4 Develop RTF Management Plan	5/15/03	8/30/04	▼											▼						
5 Develop RTF Test Plan	5/15/03	12/15/04	▼																	▼
6 Develop RTF & External Reviews	9/16/03	2/20/05	▼																	▼
7 Testing with stations	4/15/04	2/20/05					▼													▼
8 Aircraft flybys at MILA and DFRC	8/15/04	1/15/05										▼								▼
9 Preliminary ORR	10/1/04	1/6/05												▼						▼
10 ET TV ORR	10/1/04	12/1/04												▼						▼
11 Network ORR	10/1/04	2/10/05												▼						▼
12 STS RTF Launch	3/16/04	3/6/05				▼														▼
13																				

Notes: \*Plan assumes that new Network Requirements have been provided by JSC in a timely manner.

Planned



- **QUESTIONS?**
- **COMMENTS?**
- **PLEASE RETURN YOUR SURVEY**
- **“THANK YOU!” FOR YOUR PARTICIPATION IN MSCF #8**
- **MSCF #9: JULY 22, 2004**