



Space-Based Range Safety Technical Interchange Meeting (TIM)



Implementation/Proof of Concept Activity Discussion

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August 25, 1998



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Agenda

- **Understanding the Command Destruct System
Statement of Work: What is Goddard's Role?**
- **Proposed Launch Head S-Band System (Example)**
- **Where to from Here?**



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Understanding the Command Destruct System Statement of Work: What is Goddard's Role?

- **Lead/Facilitate the Development and Test of a Prototype Command Destruct System**
 - **Contract Options Available through GSFC for Prototype Transceiver Development**
 - **TDRSS Experts Available to Assist in Technical Direction of the System with In-Depth TDRSS Technical Interface Knowledge**
 - **GSFC is the Management Authority for all aspects of TDRSS Services: Concepts, Planning, Development, Testing, and Operations**
 - **TDRSS Compatibility Test Resources in place to support Proof of Concept and/or Actual Flight Equipment Testing**
 - **Wallops Flight Facility (WFF) is an Extension of GSFC. Potential Resources for Conducting Test Activities on a Launch Range and Key Interface for Potential use of the Transportable Orbital Tracking Station (TOTS)**





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Proposed Launch Head S-Band System (Example)

- **Example: The Wallops Flight Facility (WFF) Transportable Orbital Tracking System (TOTS)**
 - **Characteristics**
 - **Mobile equipment that can be transported wherever it is needed (i.e.,**
 - **Transportable self-contained facilities with independent power,**
 - **The TOTS is S-band. The frequency range is 2200-2400 MHz (upper L-Band). Available tracking modes include auto, manual, slave and**
 - **The TOTS systems have metric tracking (Doppler and angles) and**
 - **TOTS can also support vehicle and payload telemetry.**





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Proposed Launch Head S-Band System (Example)

■ Example: WFF TOTS

– Characteristics (cont'd)

- The TOTS systems are housed in a 40-foot expanding-side ISO container. They require a pre-positioned concrete pad for precision angular accuracy
- Set-up time generally is three days once the equipment is at the launch site.
- TOTS antennas options are noted in Back Up Slides

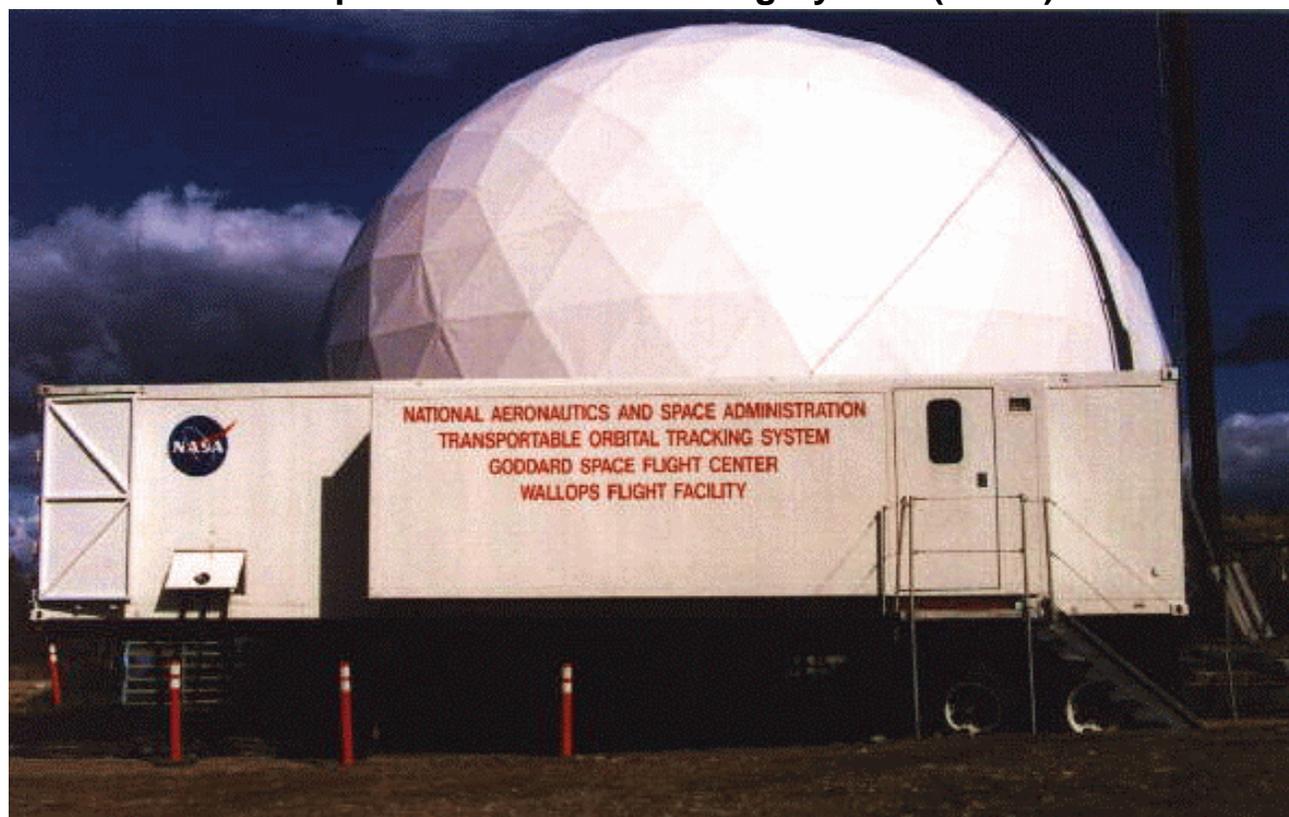


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Proposed Launch Head S-Band System (Example)

Transportable Orbital Tracking System (TOTS)





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Where To From Here?

- **GSFC Analyze the CDS Statement of Work**
- **Set in Place a Schedule of Events**
- **Work Closely with the Eastern Range and Western Range to Verify Progress in the Desired Direction**
- **Work with Vendor to Develop the Prototype Transceiver**
- **Development of Proof of Concept Equipment**
- **Compatibility Test with the TDRSS**
- **Pull Wallops into the Plan for Purposes of Proof of Concept Testing**
- **Run a Flight Test with All Parties Involved**



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➤ **GSFC SN Support for Range Safety: Concept and Feasibility Study On the Web**

» Soon to be at: <http://tip.gsfc.nasa.gov>





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Back Up Slides



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■ Summary of the WFF TOTS Current Antenna Options:

- Antenna #1: 3M, 10 foot, 4-section parabolic; tracking modes: autotrack, slave and manual; frequency ranges: 1435-1540 MHz, 1650-1710 MHz and 2200-2300 MHz
- Antenna #2: 3M, 10 foot, solid parabolic; tracking modes: autotrack, slave and manual; frequency ranges: 1435-1540 MHz, 1650-1710 MHz and 2200-2300 MHz
- Antenna #3: 2.4M, 8 foot, solid parabolic; tracking modes: autotrack, slave and manual; frequency ranges: 1435-1540 MHz and 2200-2300 MHz
- Antenna #4—2.4M, 8 foot, solid parabolic; tracking modes: autotrack, slave and manual; frequency ranges: 1435-1540 MHz and 2200-2300 MHz
- Antenna #5—2.4M, 8 foot, parabolic reflector; tracking modes: autotrack, slave and manual; frequency range: 1435-2300 MHz (includes 1680)
- Antenna #6—4.8M, 16 foot, parabolic reflector; tracking modes: autotrack, slave and manual; frequency range: 1435-2300 MHz (includes 1680)
- Antenna #7—2.1M, 6 foot “Minitracker,” 2-section parabolic; tracking modes: autotrack, slave and manual; frequency range: 1435-2300 MHz





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■ Summary of the WFF TOTS Current Antenna Options:

- Antenna #8—2.1M, 6 foot “Minitracker,” 2-section parabolic; tracking modes: autotrack, slave and manual; frequency range: 1435-2300 MHz
- Antenna #9—6.1M, 20 foot, 8-section mesh parabolic; tracking modes: autotrack, slave and manual; frequency ranges: 1435-1540 MHz and 2200-2300 MHz
- Antenna #10—5.5M, 18 foot, 16-section parabolic; tracking modes: autotrack, slave and manual; frequency ranges: 1435-1540 MHz and 2200-2300 MHz.