



# DFRC Range Status

**NSG**  
**NETWORK SUPPORT GROUP**  
INTEGRATED NETWORK SUPPORT FOR  
HUMAN SPACEFLIGHT

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# DFRC Overview



- **Status**
  - **In-work and Recent Activity**
  - **Systems Overview**





# In-work and Recent Activity



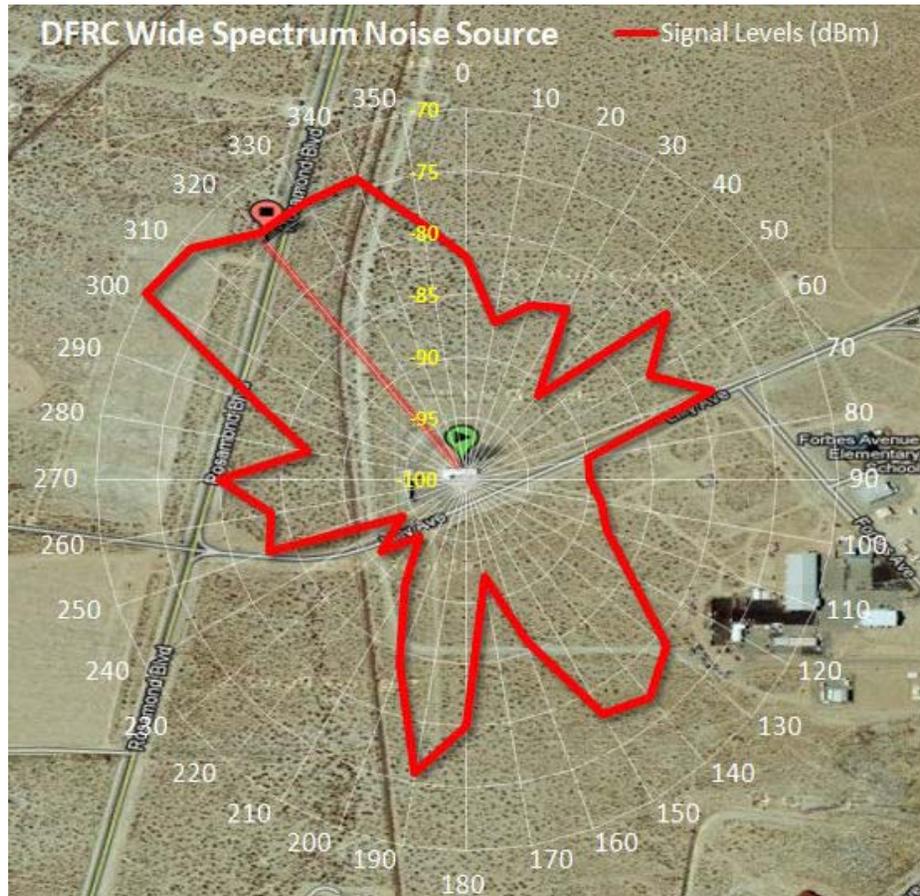
## DFRC ISS Support Issues

- Backup Quad PC replaced to mitigate flip mode problem on August ISS V1 support. (DR#1992 –closed)
- Noise Encountered on 30 Sept 2011 V1 support at AOS. DR# 2009 - open.
  - Frequency MGT isolated problem to power line noise. Problem pending resolution.
  - Noise will affect passes with AOS Azimuths from 300 to 350 degrees. Noise becomes negligible at 10 degrees elevation.



## Interference problem – continued

Interference Sweep 30 Sept 2011 –  
after ISS pass



Interference Sweep 12 Oct 2011 –  
After replacing insulators on 3 power poles



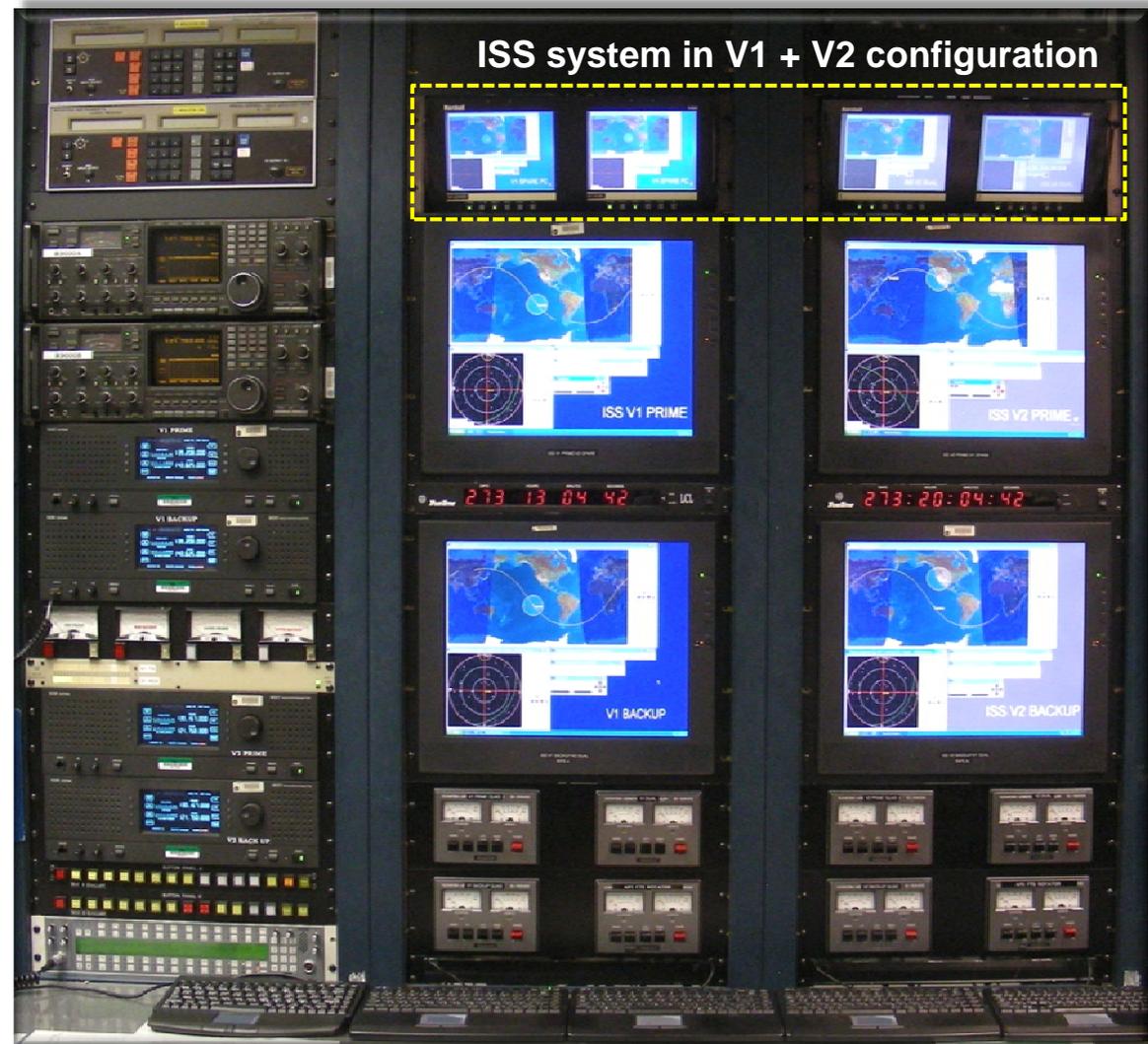


# In-work and Recent Activity



- ISS V1 / V2 system changes (CCR#4741)

- Added V1 dual Yagi & V1 Spare PC - displayed on left small screens
- Added V2 dual Yagi & V2 Spare PC – displayed on right small screens
- Added antenna patch system to facilitate rapid antenna replacement

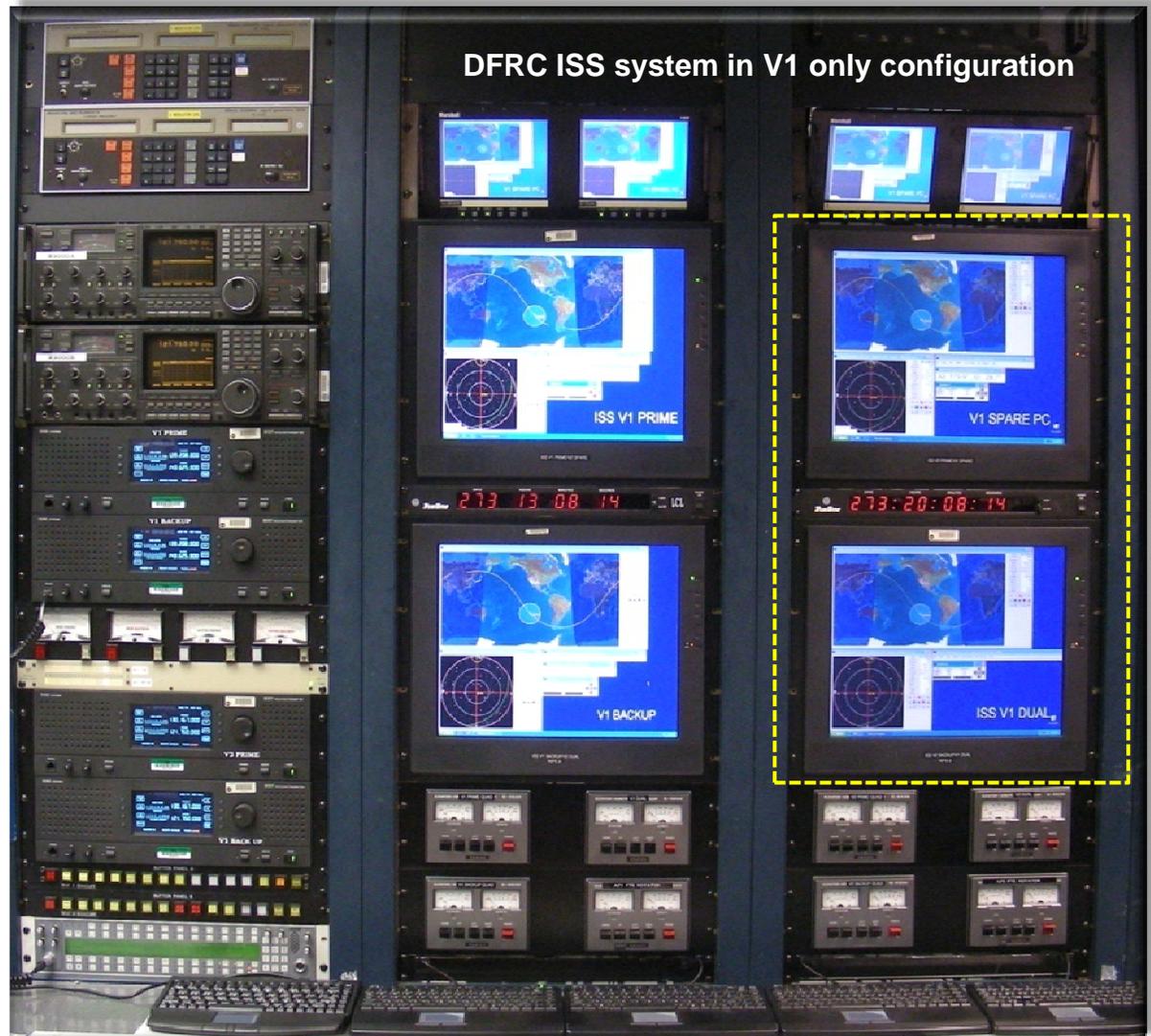




# In-work and Recent Activity



- ISS V1 System changes (CCR 4721)
  - Added capability to display Spare V1 PC on large right top screen
  - Added capability to display V1 Dual Yagi on right bottom screen for real-time support

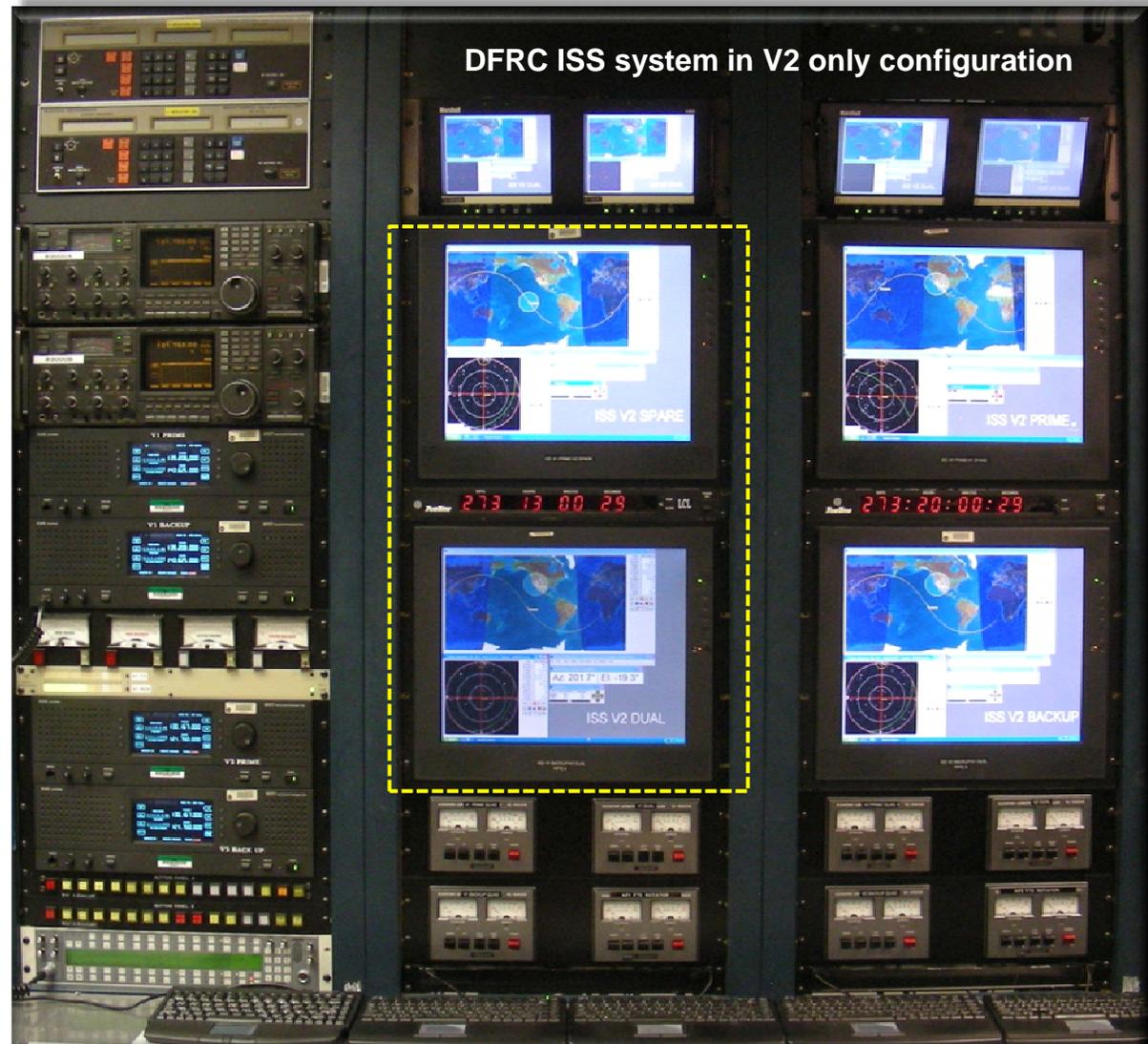




## In-work and Recent Activity continued



- ISS V2 System changes (CCR 4721)
- Spare V2 PC on large left top screen for real-time monitoring
- V2 Dual Yagi on large left bottom screen for real-time support





## In-work and Recent Activity continued



- **NTR**
  - The Satellite T1 circuit has been removed. There is no longer any NTR diversity.
  - Transponder 5 video support will be decommissioned in Dec 2011
    - To be replaced by smaller video dish – schedule TBD
    - IP video systems are available for interim uplink & downlink.
      - 3 SD & 1 HD uplink,
      - 2 SD/HD downlink



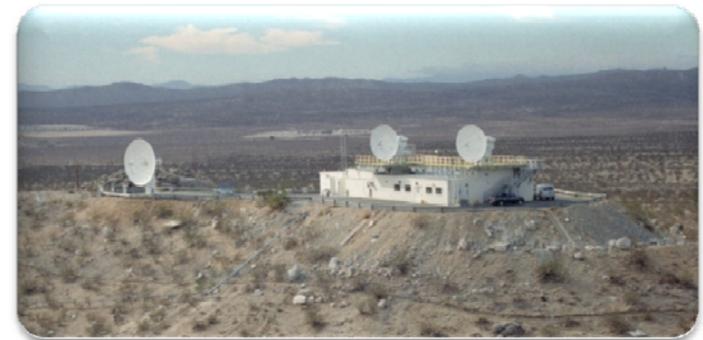


# DFRC Systems Overview





**The following DFRC systems will be maintained in the post shuttle environment**



**Telemetry & Radar**



**Long Range Optics**

**Mobile Video**



**Communications systems**



# DFRC Systems overview



- **Telemetry**

- two 7 meter (ATF 1 & 2) & one 4.5 meter (ATF 3) Telemetry antennas.
- C, L & S Band Telemetry & Video downlink
- L & S band command uplink



- **Radar**

- two 4.5 meter Radar antennas
- Track one square meter targets to 218,000 yards with 12 db S/N including atmospheric attenuation.

- **Mobile Systems:**
  - 45-ft semi-trailer
  - Equipped with 6-ft telemetry antenna:
    - Uplink capability (L & S band 100 watt)
    - C-, L-, and S-band receive (G/T 5 dB over degree Kelvin)
  - 2 UHF/VHF radios
  - 12 channel intercom system

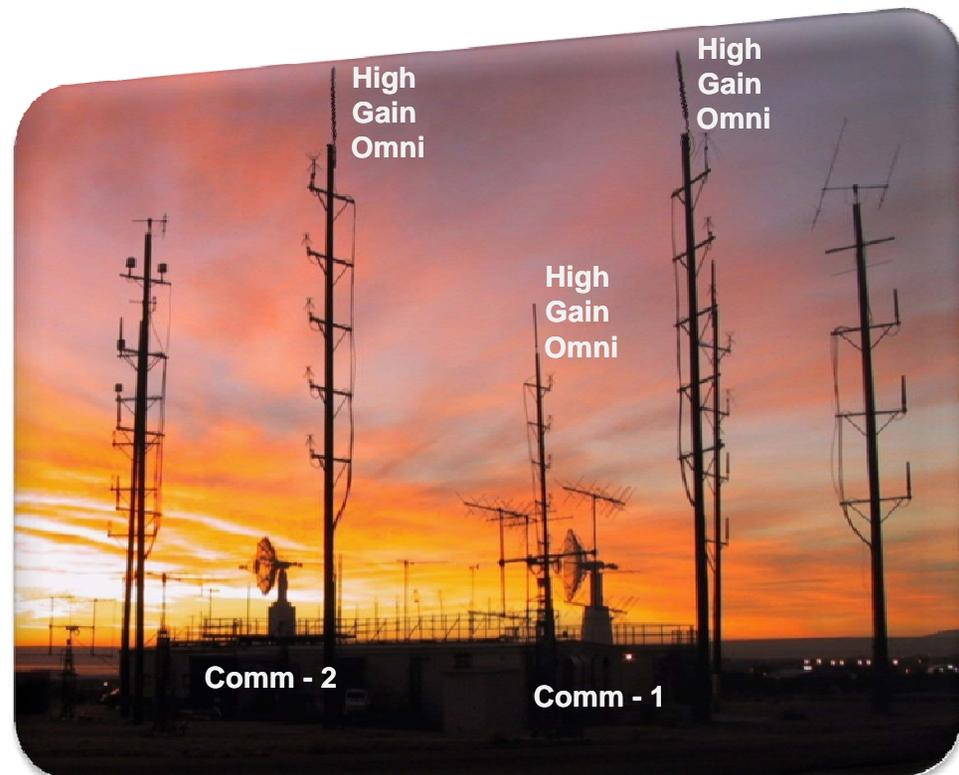




## Support Configuration (cont.)



- **Communications Facility:**
  - Three 15 dB gain UHF Directional Antennas (Comm 1, 2 & 3)
  - Three 7 dB gain UHF High Gain Omni antennas
  - Two 10 dB gain VHF Directional Antennas
  - Redundant Voice Communications system



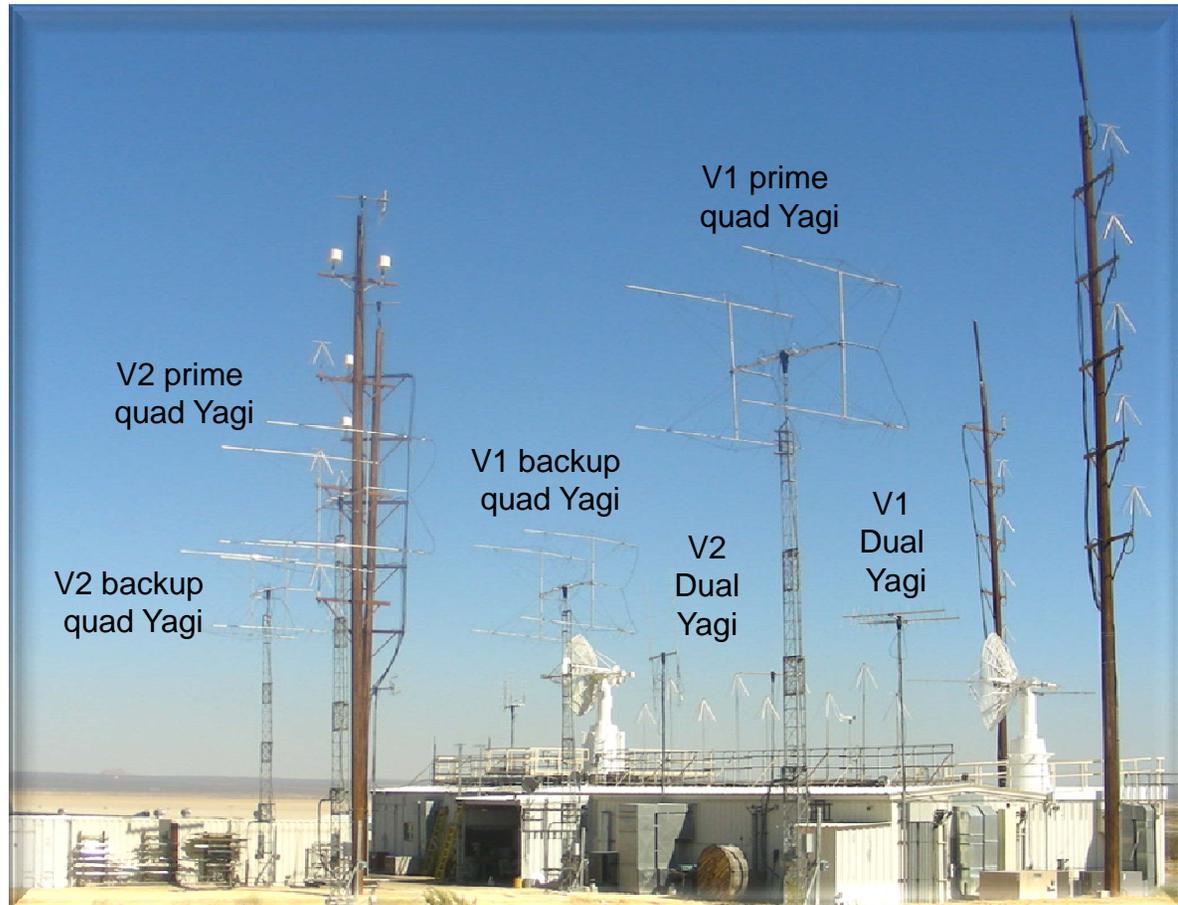
- **ISS Support Systems**

- **V1:**

- **Two Quad Yagi Antennas**
- **One Dual Yagi Antenna**

- **V2:**

- **Two Quad Yagi antennas**
- **One Dual Yagi antenna**



- **Video Support:**
  - **Long Range Optics**
    - HD 720p Camera with 13.5 – 2300mm lens tracking to 100 nautical miles
    - 480i Infrared optics with 15x lens tracking to 40 nautical miles





- **Video Support - continued:**

- **TV 1 Mobile Video**

- **HD 720p Camera with 27 – 1760 mm lens**



- **TV 2 Mobile Video**

- **HD 720p Camera with 15.2 – 260 mm lens**
    - **HD transmit capability**

- **Video Support** continued:
  - **ATF 1 & 2**
    - 520 NTSC with 2200 mm lens
  - **ATF 3**
    - 520 NTSC with 503 mm lens
  - **Radar 34**
    - 520 NTSC with 3050 mm lens
  - **Radar 38**
    - 520 NTSC with 3050 mm lens





## • DFRC Mission Control Rooms & Data Processing

- The DFRC Western Aeronautical Test Range provides data tools for:
  - 29 display stations monitoring data for flight safety and mission parameters
  - Data analysis for in-flight test point clearance



- Mission Control Center provides real-time mission operations for test conductors, research engineers, range safety and project personnel





# DFRC SUPPORTED VEHICLES



**UAVs**  
BWB

**HIGH PERFORMANCE AIRCRAFT**  
F18 TESTBED

**SCIENCE AIRCRAFT**  
SOPHIA

**LEO SPACECRAFT**  
ISS

**LONG DURATION UAVs**  
PHANTOM EYE

**Space Transportation Vehicles**  
DREAMCHASER



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**Questions?**