



NASA's Flight Demonstrations and Capabilities Project

Hugh L. Dryden Aeronautical Test Range (DATR)

The Dryden Aeronautical Test Range (DATR) is part of the Flight Demonstrations and Capabilities Project, which conducts complex and integrated flight research demonstrations in support of ARMD programs.

NASA Armstrong Flight Research Center's Dryden Aeronautical Test Range (DATR) supports aerospace flight research and technology integration, space exploration concepts, airborne remote sensing, and a wide variety of science missions.

The DATR supplies a comprehensive set of resources for the control and monitoring of flight activities, real-time acquisition and reduction of research data, and effective communication of information to flight and ground crews.

Facility Benefits

- Precision RADAR provides time space positioning information (TSPI) on research vehicles, International Space Station (ISS), and other targets, including satellites.
- Fixed and mobile telemetry antennas receive real-time telemetry data and video and have the capability to transmit uplink commands to research vehicles.
- The processed data is displayed at the engineering stations in the mission control center and archived in a post-flight storage area.
- Audio communication networks support aeronautics research

and space operations in the DATR, covering a broad frequency spectrum for transmitting and receiving voice communications and flight termination signals for unmanned aerial vehicles.

- Video monitoring provides real-time and recorded data for the control and safety of flight test missions.



Facility Applications

The DATR supports aerospace flight research and technology integration, space exploration concepts, airborne remote sensing and science missions, as well as the ISS operations.

Characteristics

DATR Mission Control Centers

- 26 test engineering stations in MCC1 and 17 in MCC2 including:
 - Communications (radio and intercom) panels
 - Video monitors,
 - Weather data
 - IRIG-B timing
 - Specialized graphics displays.
- Range and mission control, test operations, range safety and test director consoles provide critical analysis and display capabilities.

DATR mobile systems

- Available for rapid deployment to a specified location on short notice. These systems provide.
 - Radio-frequency communication
 - Video and telemetry-tracking support
 - Telemetry tracking for test missions outside local airspace boundaries
 - Uplink commands to research vehicles

Data Acquisition and Processing

Data is acquired and merged from multiple sources in various formats to a single, time-correlated, composite stream for processing, distribution, real-time display, and storage archival. Segments of post-mission data are immediately available on portable media. Post-flight RADAR data can also be provided if requested. The mobile operations system can process and display data onsite, or reformat data and transmit it to a customer's facility.

Telemetry

DATR telemetry tracking systems consist of:

- Multiple fixed antennas and available mobile systems.
 - Downlinked telemetry and video signals in C-, L-, and S-bands.
 - Uplinked commands in either L- or S-bands.
 - Track targets from horizon to horizon.
 - Certified for full on-orbit capability. Downlinked telemetry may be received in either analog or digital format.

Communications

Extensive Range Intercommunication system (DICES System) consisting of:

- Over a hundred 30 channel communications panels
- interconnects with Commercial telephone systems
- Links to Military ground-communication networks.
- Links to multiple other NASA Centers.
- Extensive ground-based fiber optics.
- Interface with the RF communications system

- Radio Frequency (RF) Communications including:
 - 26 VHF/UHF Transceivers
 - 3 UHF High Gain Omni Antennas
 - 3 UHF Parabolic Dish Directional Antennas
 - 2 High Frequency (HF) Transceiver systems with High Gain Log antenna
 - 2 Broadband (100–1000 MHz, AM & FM) Transceivers
- International Space Stations (ISS) Emergency Communications system comprised of:
 - 2 ISS VHF FM Transceivers
 - 2 Soyuz VHF FM Transceivers
 - 4 VHF Directional Antennas

Flight Termination Systems

- 4 UHF IRIG/EFTS flight termination systems
 - 4 FTS high gain Omni antennas

Radar

- Two high-accuracy, C-band instrumentation radars.

Video

- Numerous fixed and mobile camera systems for flight monitoring, safety and mission control
- Long-range, broadcast-quality, 4K high-definition optical tracking system providing day and night (including infrared) coverage.
- High Definition coverage of the flight line, ramp areas, and runways.
- Mobile video vans
 - Capability to relay live-action imagery via microwave links.
 - Capability to relay live-action imagery via ground video van C-Band TM uplink.
 - Downlinked video from research vehicles or chase aircraft can be received in C-, L-, or S-band frequencies.
 - Video recordings provided on DVD, Blue-Ray, Solid State Drives, SD memory cards and file transfer.

Contact Information

www.nasa.gov/aeroresearch/programs/iasp/fdc

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