4K HDR Summit
UHD at NASA

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UHD on the International Space Station

- For over a year video on board the ISS has been recorded on 4K with Canon XF-705 cameras and downlinked as 4K files.
- Ground infrastructure to broadcast live 4K from the ISS is imminent in the near future.
- RED Helium camera on board available for customers requesting cinematic quality video for high end productions.
- Continue acquiring Ultra High Definition Earth timelapse images using Nikon D5 cameras.
- Several UHD tech demos are imminent:
  - Nikon Z-9 as ISS core camera and for Lunar missions
  - SphereCam

Artemis Nikon Z-9

- Considering the Nikon mirrorless Z-9 camera as prime candidate to fly with the Moon missions
  - To be used in video and digital still photography modes
  - Orion on the way to the Moon
  - Gateway, as handheld camera
  - The Lunar lander
  - The surface of the Moon
- Successfully completed thermal vacuum testing of Nikon Z9 candidate camera
  - This test used equipment to automatically capture photos in a flight-like scenario.
  - Currently analyzing results to build a thermal model of the camera.
- First engineering blanket design unit complete. Will be field tested in the near future.
- Continue with radiation testing.
- Several Analog missions are being held in Arizona. Latest was in October.

SphereCam

The Madison Square Garden Sphere Venue will open in Las Vegas in 2023 and will feature the largest dome structure on Earth as well as the largest LED screen in area and resolution on Earth

SphereCam Overview

Payload sponsored by Madison Square Garden Entertainment. Plan is to record ‘spherical’ video on ISS and use this video in productions that will be shown in a new, purpose-built dome theater.

This payload is the first in a 3-phase mission that aims to develop a new ultra-high-resolution single sensor camera. The camera will revolutionize imaging technology by replacing multi-sensor arrays with a single sensor unit. This minimizes the form factor and cost, and greatly increases use case.

The level of sharpness, detail, and stabilization required by this venue is what first motivated these strict requirements.

UHD Launch & Landing Operations

Numerous UHD assets are used to cover the launch and landing of the Commercial Crew Vehicles (Space-X Crew Dragon and Boeing Starliner)

- 4K drone coverage of pre-launch crew activities
- 4K drone coverage of launch pad
- Multiple 4K cameras on ground to cover various launch angles
- 4K landing tracking camera located offshore
- 4K drone coverage of splash down
- WB-57 high altitude NASA aircraft outfitted with 4K cameras for tracking landing crew vehicles. Footage used for parachute analysis and other research.

Significant 2022 NASA Projects

- The ISS hosted the first Private Astronaut Mission, Axiom-1, in May 2022.
  - Ax-1 international crew of 4.
  - Ax-2 being planned for Summer 2023
- Webb Telescope first images.
- DART mission success.

James Webb Space Telescope “Cosmic Cliffs” in Carina Nebula

Captured in infrared light by the Near-Infrared Camera (NIRCam) on NASA’s James Webb Space Telescope, this image reveals previously obscured areas of star birth. Called the Cosmic Cliffs, the region is actually the edge of a gigantic, gaseous cavity, roughly 7,600 light-years away. It unveils hundreds of previously hidden stars, and even numerous background galaxies.

DART Mission Success

NASA's Double Asteroid Redirection Test (DART) spacecraft prior to impact at the Didymos binary asteroid system. DART's target was the moonlet Dimorphos, which orbits the larger asteroid Didymos. This test proved that intentionally crashing a spacecraft into an asteroid is an effective way to change its course, should an Earth-threatening asteroid be discovered in the future.

- 14,000-mile-per-hour collision
- Collision slowed down Dimorphos orbit by about 32 minutes
- Significant change in velocity to deviate course

NASA Imagery

NASA imagery can be found at several locations around the web:

www.nasa.gov/multimedia/nasatv/
NASA TV on the web, plus additional information about NASA TV channels (including UHD content)

images.nasa.gov
The NASA Image and Video Library

eol.jsc.nasa.gov
The Gateway to Astronaut Photography of Earth

www.youtube.com/user/NASAtelevision
The official NASA TV YouTube channel