

GOES-16 Update

September 13, 2017

GOES DCS TWG Meeting

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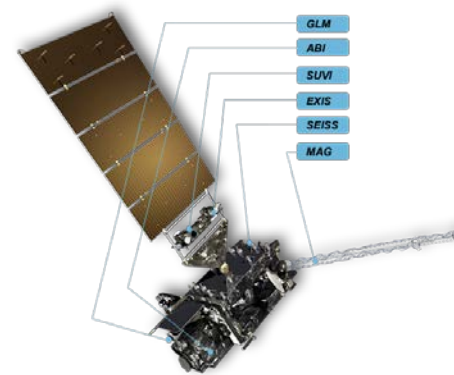
National Environmental Satellite, Data, and Information Service

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GOES-R Series Overview

FREQUENCY (MHz)	DIRECTION
401.7, 401.85, 402.0, 402.4, 401.7-402.4	E-S
406.005 – 406.095	E-S
1575.42	E-S
2027.1	E-S
2032.775; 2032.825	E-S
2034.2	E-S
2036.0	E-S
7216.6	E-S
468.775; 468.825	S-E
1544.55	S-E
1679.9 (U.S. Domestic) 1680.2 (International)	S-E
1686.6	S-E
1693.0	S-E
1694.1	S-E
2211.04	S-E
8220	S-E

- Orbit:** Geostationary; locations 75.2W and 137W (Future satellites will be checked out at 89.5W or 105W and stored at 105W). **Number of satellites:** 4 **Main ground stations:** US: Wallops VA (primary); Fairmont, WV (backup) **Direct Broadcast Service:** GOES Rebroadcast (GRB) and HRIT/EMWIN



General objective: GOES-R collects numerous atmospheric and surface parameters such as ice, snow and vegetation; atmospheric temperatures; moisture, aerosol, and ozone distribution. GOES-R also monitors the solar and near-Earth space environment. The satellites will detect Emergency Locator Transmitters (ELTs), Emergency Position-Indicating Radio Beacons (EPIRBs), and Personal Locator Beacons (PLBs) as part of the international COSPAS-SARSAT system. In the GOES-R era, the number of DCS user-platform channels expands from 266 to 433. There will also be a frequency change from 1696 MHz to 1679 MHz,



Launch and Post-Launch Schedule



GOES-R Launch
Nov 19, 2016

Launch: November 19, 2016

Instrument/Product Dates:

Instrument	Activation	First Science
ABI	Dec. 9, 2016	Jan. 7, 2017
GLM	Dec. 9, 2016	Jan. 4, 2017
EXIS	Dec. 9, 2016	Jan. 20, 2017
MAG	Dec. 7, 2016	Dec. 7, 2016
SEISS	Dec. 21, 2016	Jan. 8, 2017
SUVI	Dec. 9, 2017 ⁶	Jan. 26, 2017



GOES-16 Operations Handover to
NOAA (end of Post-Launch Test
Phase): June 23, 2017

Move to GOES-East: November 2017



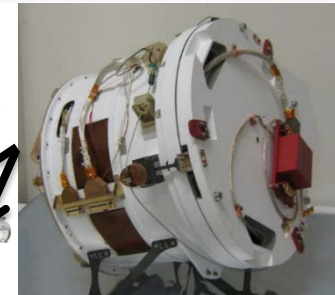
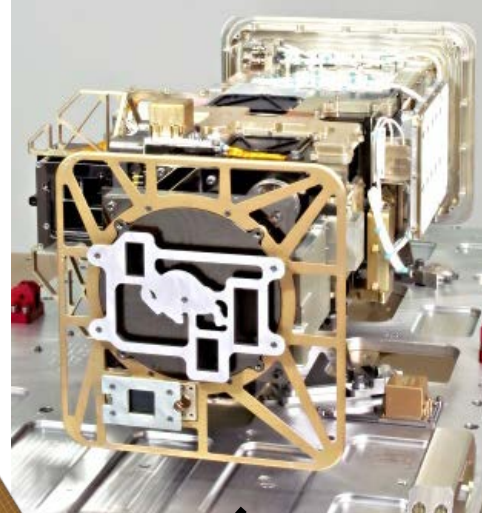
**Extreme Ultraviolet and
X-Ray Irradiance Sensor
(EXIS)**

**Space Environment
In-Situ Suite (SEISS)**

**Magnetometer
(MAG)**

**Geostationary
Lightning
Mapper (GLM)**

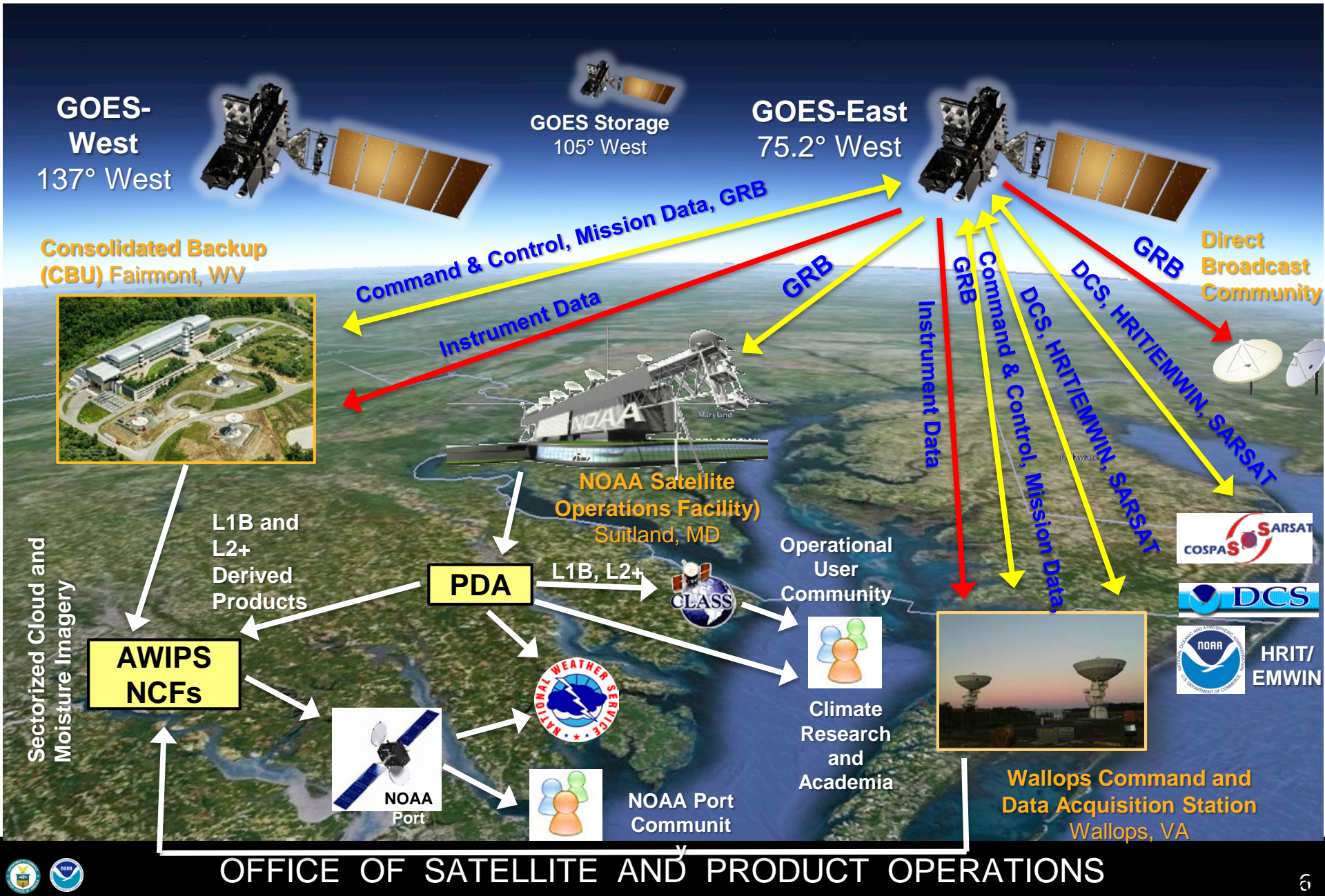
**Advanced Baseline
Imager (ABI)**



GOES-R Series Unique Payload Services

- GOES Rebroadcast (GRB)
- Data Collection System (DCS)
- High Rate Information Transmission (HRIT)/Emergency Managers Weather Information Network (EMWIN)
- Search and Rescue Satellite-Aided Tracking (SARSAT)

GOES-R System Architecture



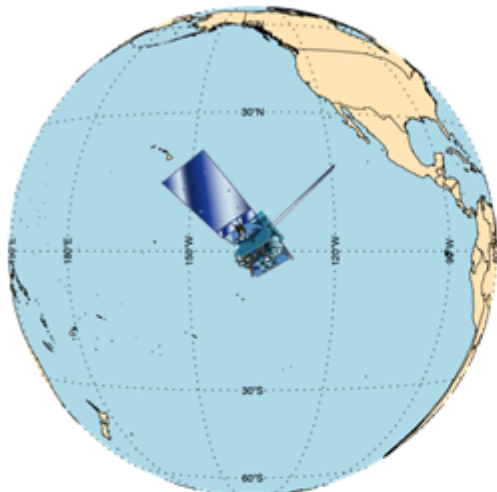
Changes Required for GOES-R DCS

- GOES DRGSs currently support the GOES East (GOES 13) DCS downlink in the frequency range of 1694.30 to 1694.70 MHz
- The GOES R series satellites use 1679.70 to 1680.10 MHz to support the DCS downlink
- Each Direct Readout Ground Systems (DRGS) must be modified to accommodate this change in downlink frequency
- Note that the GOES 16 frequency plan changes do NOT affect the Data Collection Platform (DCP) UHF-Band uplink transmissions, only the L-Band downlink to NOAA and the DRGSs
- There will also be NO frequency changes in the DCS DOMSAT Ku-Band service

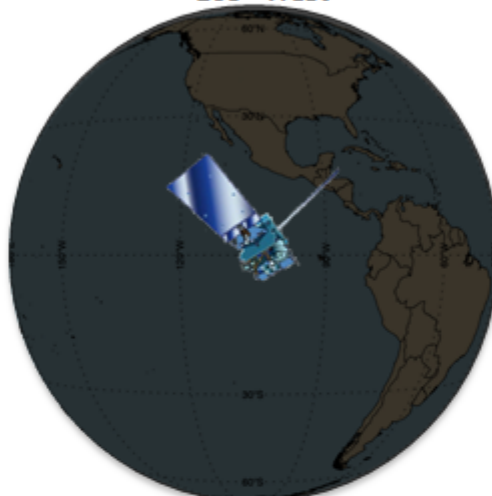


GOES Constellation

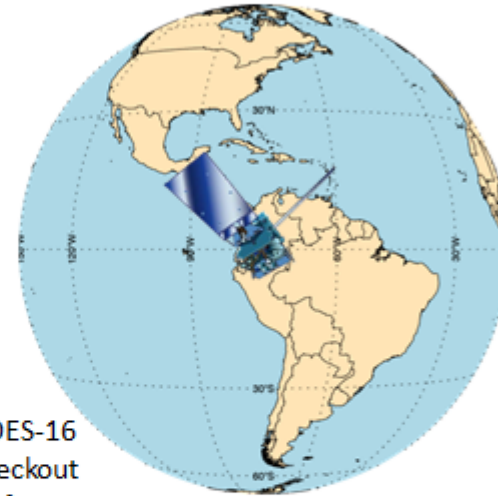
GOES-West
GOES-15
135° West



Standby
GOES-14
105° West



GOES-East
GOES-13
75° West



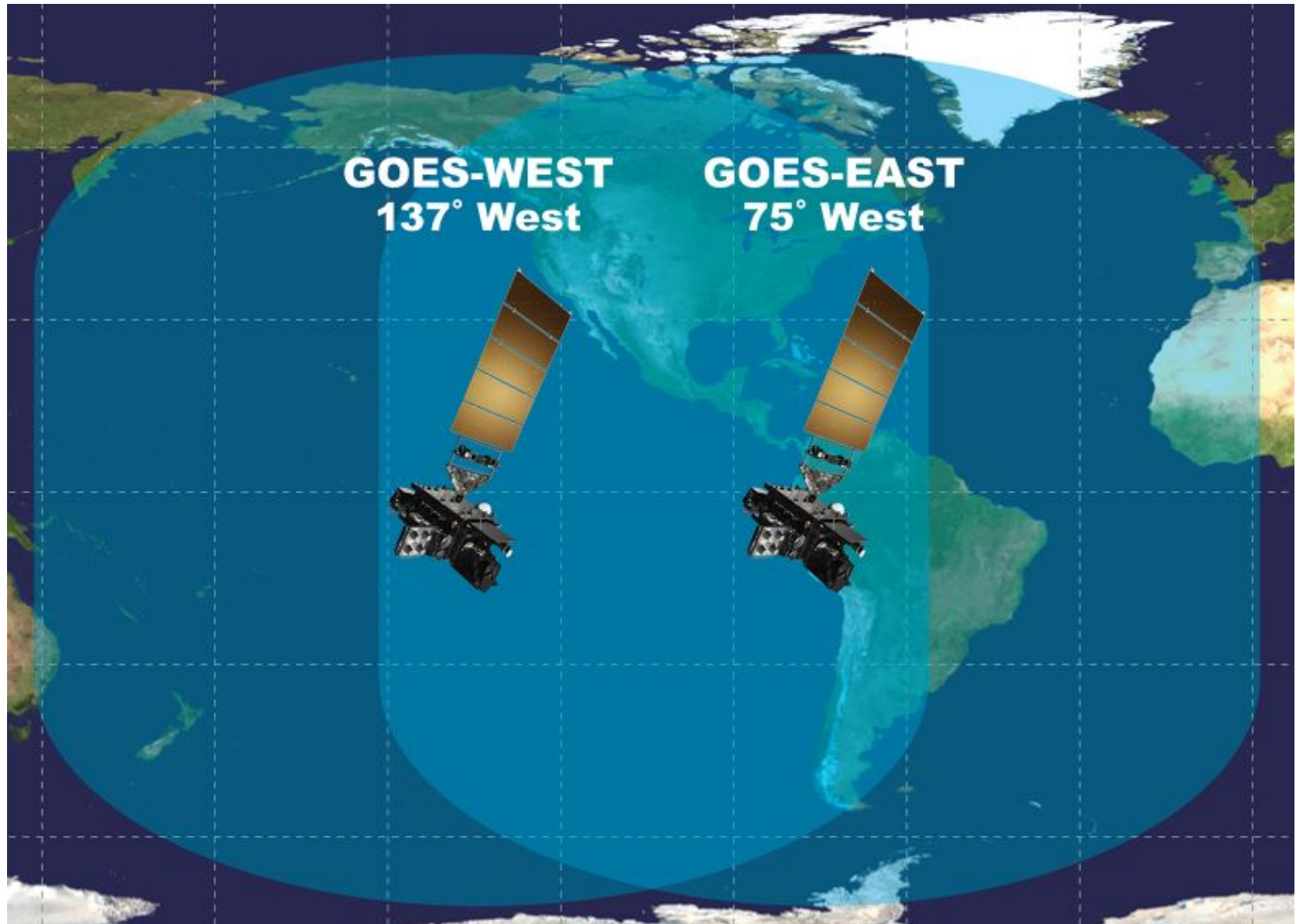
GOES-16
Checkout
89.5° West



- Primary source of data for short forecasting, especially of severe weather such as tropical storms
- Continuity of Operations since 1974



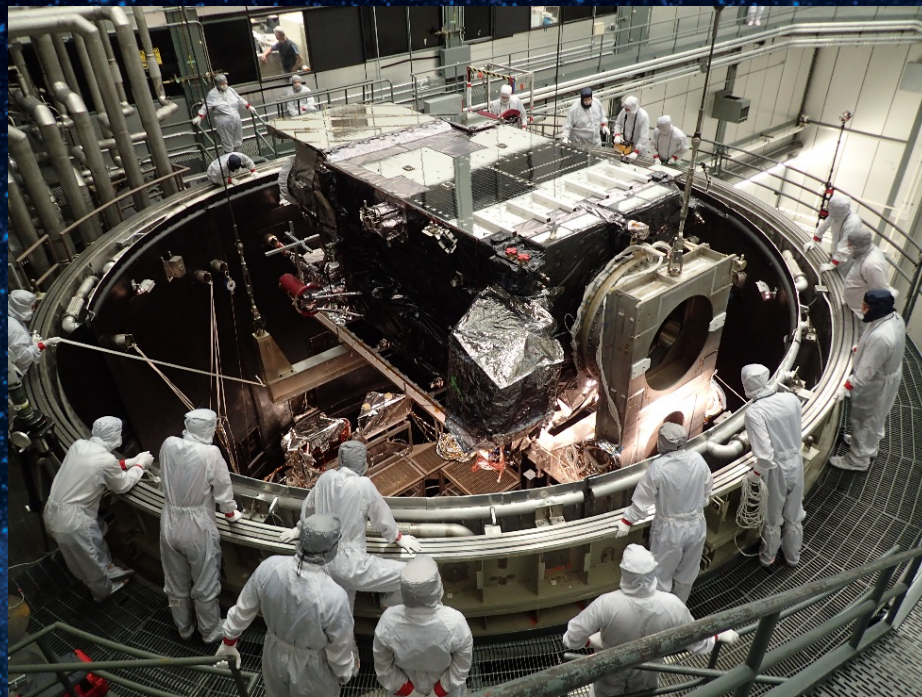
GOES-16 Will Go East to 75.2° West in November



- Thermal vacuum testing complete
- Completed third GOES-S end-to-end test with the ground system
- Launch vehicle completed Critical Design Review

Upcoming GOES-S milestones:

- Operational Readiness Review: Dec. 2017
- Pre-Shipment Review: ~Nov. 2017
- Mission Readiness Review: Jan. 2018
- Launch planned for spring 2018





GOES-T and GOES-U Status



- GOES-T:
 - EXIS and SUVI integrated with Solar-Pointing Platform (SPP)
 - ABI and SEISS integration underway
 - Completed Test Readiness Review
 - Initiated acceptance test of propulsion module
 - Upcoming milestones:
 - System Integration Review: July 2017
- GOES-U:
 - All structure hardware shipped
 - All solar-pointing subsystem detail parts complete

Highlights of NOAA Satellite Conference



NSC 2017 Presentations Available

- Presentations from the 2017 NOAA Satellite Conference are now available at

<http://www.nsc2017.org/program/presentation/>

- The Town Hall Meeting: Spectrum allocation and NOAA Satellite Downlinks:

http://www.nsc2017.org/wp-content/uploads/presentations/NSC2017_Session_25.1_BHB_2_uCom.pdf

http://www.nsc2017.org/wp-content/uploads/presentations/NSC2017_Session_25.2_Spectrum_Panel_David_Lubar.pdf

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