

About the Occultation

- S31 Rev 47 Saturn Atmospheric occultation
 - Egress Atmospheric occ only
 - Telemetry OFF, 1-way mode
 - Covered by Goldstone
- Starting with rev 47 and until the end of the Cassini nominal mission, radio occultations of Saturn's rings and atmosphere occur mostly on separate orbits. The rev 47 occultation is the first in that sequence. It provides an egress only atmospheric/ionospheric occultation that [probes a mid-southern Saturn latitude](#). Radio occultations over a range of Saturn latitudes provide important information about the structure and physical properties of the atmosphere, including its thermal structure, microwave absorbing species, the hydrogen-to-helium ratio, Saturn's winds, and the electron number density profile of Saturn's ionosphere.

DSN Antennas

- DSN Coverage

Station	Pre-cal	BOT	EOT
	Post-Cal		
DSS-25	178/2215	179/0000	
	179/0115	179/0130	
DSS-26	178/2215	179/0000	
	179/0115	179/0130	
DSS-14	178/2245	178/2345	
	179/0115	179/0130	

DSS-14

DSS-25

DSS-26

X-RCP

X-RCP

X-RCP

X-LCP

X-LCP

X-LCP

S-RCP

K-RCP

K-RCP

S-LCP

K-LCP

K-LCP

Either KLCP (switch 43 in B position)
or monopulse (switch 43 in A position)

- Receivers scheduled

RSR/VSR/WVSR Assignment

Aseel: VOCA

Roberto: Displays

DSS	Operator	Station	Open-Loop Receiver	RSR Assignment
14	Danny	rsops1	RSR3	RSR3A -> XRCP
				RSR3B -> SRCP
25	Danny	rsops1	RSR2	RSR2A -> XRCP
				RSR2B -> KRCP
26	Elias	rsops2	RSR1	RSR1A -> XRCP
				RSR1B -> KRCP
26/14 LCP	Don	rsops3	VSR1 and WVSR1	26 VSR1A -> XLCP
				26 VSR1B -> SLCP
				14 WVSR1A -> XLCP
				14 WVSR1B -> KLCP

RSSG will be in RS Ops Room at 2 pm on Wed 6/27 (178/2100)

ORTs

All BWG ORTs are to prepare for Rev47 Occ and T33 gravity

ORT on DOY 170-171 (June 20-21) over DSS-25, DSS-14 and DSS-34, X, S and Ka

07 170 1730 1915 0400 0415 DSS-25 CAS TP RSR46-OCCORT2 3544 N748 1A1

07 170 1800 1900 0400 0415 DSS-14 CAS TP RSR46-OCCORT2 3544 1639 1A1

07 170 2345 0130 0400 0415 DSS-34 CAS TP RSR46-OCCORT2 3545 N750 1A1

- Collect warm-up data at all three frequencies over DSS-25 and DSS-14
- DSS-14 verify S- and X-band (RCP and LCP)
- DSS-25 and DSS-34 verify monopulse ops and collect pointing data
- Power failure at SPC-10 caused DSS-25 to fail from 22:14 to ~22:44 (DR# G107832) and DSS-14 to fail from 22:14 to ~23:07 (DR# G107833)
- Nominal DSS-34 support

ORT on DOY 171 (June 20) over DSS-26, X and Ka-band

07 171 1700 1845 0345 0400 DSS-26 CAS TP RSR47-OCCORT3 3545 N750 1A1

07 171 1725 1825 0345 0400 DSS-14 CAS TKG PASS 3545 N003 1A1

- DSS-14 is prime for uplink and telemetry
- DSS-26 collected pointing data (monopulse) to update the 4th-order blind pointing model
- Nominal supports

ORTs cont'd

ORT on DOY 174-175 (June 23-14) over DSS-25 and DSS-14 and DSS-34, S-, X- and Ka-band

07 174 1700 1845 0345 0400 DSS-25 CAS TP RSR47-USOPIM1 3548 N748 1A1

07 174 1745 1845 0345 0400 DSS-14 CAS TP RSR47-USOPIM1 3548 N71E 1A1

07 174 2325 0110 0345 0400 DSS-34 CAS TP RSR47-GRVORT2 3549 N750 1A1

- DSS-14 is prime for uplink and telemetry
- DSS-14 and DSS-25 first three hours are for USO characterization test: 1-way mode (TWNC ON)
DSS-25 monopulse enabled
- DSS-14 also to verify S- and X-band (RCP and LCP)
- DSS-25 and DSS-34 collected pointing data (monopulse) to update the 4th-order blind pointing model

ORT on DOY 175 (June 24) over DSS-55 and DSS-25, X- and Ka-band, KaT Testing

07 175 0915 1100 2000 2015 DSS-55 CAS TP RSR47-GRVORT1 3549 N750 1A1

07 175 1000 1100 2000 2015 DSS-65 CAS TKG PASS 3549 N006 1A1

07 175 1525 1710 2000 2015 DSS-25 CAS TP RSR47-GRVORT1 3549 N748 1A1

- DSS-65 is prime for uplink and telemetry
- DSS-25 and DSS-55 collected pointing data (monopulse) to update the 4th-order blind pointing model
- Power cycling of Ka-band Translator (KaT) onboard s/c. Free running signal observed in bad region
- DSS-25 blind pointing model degraded. Fluctuations at beginning before monopulse enabled. Improved SNR when monopulse enabled. Drop in power when monopulse offsets are cleared

Misc

Cassini Specific 4th Order Pointing Models

- Names:
 - DSS-25 cas25.sem
 - DSS-26 cas26.sem
 - DSS-55 cas55.sem
 - DSS-34 cas34.sem or 34cas.sem
- David Rochblatt on travel. No update to pointing models prior to Rev 47 Occ

SNT

- Enable X at DSS-26 only during occultation