About the Occultation

- S36 Rev 56 Rings and Saturn atmospheric occultation
  - Rings Occ: Chord Ingress, Saturn Atmospheric Occ: Ingress and Egress
  - Telemetry OFF, 1-way mode
  - Covered by Canberra and Madrid
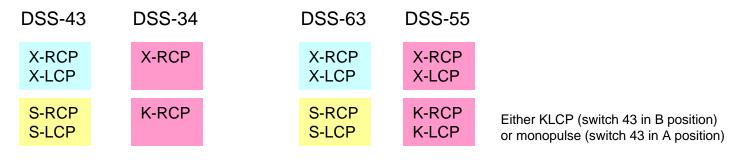
- From Essam Marouf:

  The S36 Rev 56 RSS observations include a chord ring occultation as well as an ingress and egress ionospheric and atmospheric Saturn occultations. The ring opening angle is 7 degrees. The occultation probes all major ring features (A, Cassini Division, B, and C) on the way in and out, hence will provide excellent profiling of the dependence of detectable ring structure on observation longitude. This is especially valuable for characterization of the rings microstructure (the spatial distribution of aggregates of ring particles). The ring occultation geometry was especially optimized to allow capturing favorable Doppler contours alignment, hence facilitate determination of physical ring properties from the near- forward scattered signal observations. The two atmospheric occultations probe southern Saturn latitudes of about 18 and 63 degrees on the ingress and egress sides, respectively. The two are part of a campaign of occultations during the last year of the prime mission that probe low, mid, and high southern latitudes of Saturn. Collectively, the occultations will provide important information about physical properties of the neutral atmosphere and ionosphere over the southern hemisphere of Saturn.

DSN Antennas

- DSN Coverage

Station	Pre-cal	BOT	EOT	Post-Cal
DSS-34	015/1815	015/2000	015/2205	015/2220
DSS-43	015/1900	015/2000	015/2205	015/2220
DSS-55	015/1935	015/2120	016/0830	016/0845
DSS-63	015/2020	015/2120	016/0000	016/0015

- Receivers scheduled
  - 2 closed-loop receivers per antenna
  - Four RSRs, One VSR (A&B) and One WVSR (A&B) at each complex are scheduled
    - Total: 8 open-loop receivers per complex
  - Open-loop data are prime. Closed-loop data are backup

- Antennas Band and Polarization Capabilities

DSS-43	DSS-34		DSS-63	DSS-55	
X-RCP X-LCP	X-RCP		X-RCP X-LCP	X-RCP X-LCP	
S-RCP S-LCP	K-RCP		S-RCP S-LCP	K-RCP K-LCP	Either KLCP (switch 43 in B position) or monopulse (switch 43 in A position)
	Either XRCP or XLCP				

  - LCP data are enhancement. Prime are RCP

RSR/VSR/WVSR Assignment

Aseel: VOCA
Roberto: Displays

DSS	Operator	Station	Open-Loop Receiver	RSR Assignment
43	Danny	rsops1	RSR1	RSR1A -> XRCP
				RSR1B -> SRCP
63	Danny	rsops1	RSR1	RSR1A -> XRCP
				RSR1B -> SRCP
34	Karen	PC through rsops2	RSR2	RSR2A -> XRCP
				RSR2B -> KRCP
55	Elias	rsops2	RSR2	RSR2A -> XRCP
				RSR2B -> KRCP
43/34 LCP	Don	rsops3	VSR1 and WVSR1	43 WVSR1A -> XLCP
				43 WVSR1B -> SLCP
63/55 LCP	Don	rsops3	WVSR1	63 WVSR1A -> XLCP
				63 WVSR1B -> SLCP
				55 VSR1A -> XLCP
				55 VSR1B -> KLCP

RSSG will be in RS Ops Room at 10:00 am on Tuesday 1/15/08 (015/1800)

ORTs

ORT on DOY 004 (January 4) over DSS-55, X- and Ka-band   **completed**
08 004 2045 2230 0700 0715 DSS-55 CAS TP RSR55-OCCORT1 3744 N750 1A1
08 004 2130 2230 0700 0715 DSS-63 CAS TKG PASS   3744 N003 1A1
- DSS-63 is prime
- Nominal DSS-55 support
- Conducted tests to investigate the oscillation problem
- Collected pointing data (monopulse) to update the 4th-order blind pointing model
    - Used default pointing model

ORT on DOY 006 (January 6) over DSS-63, X- and S-band   **completed**
08 006 2235 2335 0840 0855 DSS-63 CAS TP T40PB RSORT 3746 1639 1A1
- DSS-63 verify S-band and X-band (RCP and LCP)

ORT on DOY 008 (January 8) over DSS-55 and DSS-34, X- and Ka-band   **completed**
08 008 0500 0645 0935 0950 DSS-55 CAS TP RSR55-OCCORT2 3747 N750 1A1
08 008 0545 0645 1545 1600 DSS-15 CAS TKG PASS   3747 N006 1A1
08 008 1120 1305 1545 1600 DSS-34 CAS TP RSR55-OCCORT2 3748 N750 1A1
- DSS-15 is prime
- Nominal DSS-55 and DSS-34 supports
- Collected pointing data (monopulse) to update the 4th-order blind pointing model
    - Used default pointing model at DSS-55

ORTs cont'd

ORT on DOY 009 (January 9) over DSS-34 and DSS-43,S-, X- and Ka-band   **completed**
08 009 0530 0630 1530 1545 DSS-14 CAS T/P RS-SBND   3748 N71E 1A1
08 009 1120 1305 1530 1545 DSS-34 CAS TP RSR55-OCCORT3 3749 N750 1A1
08 009 1145 1245 1530 1545 DSS-43 CAS TP RSR55-OCCORT3 3749 1639 1A1
-      DSS-14 is prime
-      Nominal DSS-34 supports
-      DSS-34 collected pointing data (monopulse) to update the 4th-order blind pointing model
-      DSS-43 S-band Maser red
-      DSS-43 verified S-band and X-band (RCP and LCP)
-      Some problems with RSR2

ORT on DOY 010 (January 10) over DSS-34, X- and Ka-band
08 010 0530 0630 1530 1545 DSS-15 CAS TKG PASS   3749 N003 1A1
08 010 1115 1300 1530 1545 DSS-34 CAS TP RSR56-RSSORT4 3750 N750 1A1
-      DSS-15 is prime
-      DSS-34 to collected pointing data (monopulse) to update the 4th-order blind pointing model
-      DSS-34 requested to do monopule on-pointphase cal from 1500 to 1530

Also, GSE on DOY 014 over DSS-55
08 014 2100 2245 0745 0800 DSS-55 CAS TP RSR56-GSE   3754 N750 1A1

Misc

Oscillations at DSS-55

Cassini Specific 4th Order Pointing Models
- Status

SNT
- Enable X only at DSS-34 and DSS-55 throughout
- Conduct SNT measurements

DSS-43 and DSS-63 Microwave Configuration
- Configure SRCP low noise to the SP MASER to the 01 output
- Configure SLCP through the diplexer to the SB HEMT to the 02 output
- Status of DSS-43 S-band Maser?

Open-loop receivers at Canberra
- Status