

# About the Occultation

- S43 Rev 84 Saturn rings occultation
  - Telemetry OFF, 1-way mode
  - Covered by Madrid

- From Essam Marouf:

The S43 Rev 82 radio science ring occultation is [the last in a family of four fast chord occultations that probe the rings when the opening angle  \$B\$  is small \(about 5 to 7 degrees\)](#). [For Rev 82,  \$B = 4.7\$  deg](#). The long path of the radio signals through the rings when  $B$  is small makes these occultations [especially sensitive to ring features of small optical depth, like Ring C and the Cassini Division. More optically thick ring regions, like Ring B, become mostly noise-limited](#). The observation geometry complements in nature earlier occultations conducted at larger  $B$  angles, providing valuable information about the variability of ring structure and scattering properties with ring viewing geometry.

# DSN Antennas

- DSN Coverage

Station	Pre-cal	BOT	EOT	Post-Cal
DSS-55	254/0630	254/0800	254/1055	254/1110
DSS-63	254/0700	254/0800	254/1055	254/1110

- Receivers scheduled

- 2 closed-loop receivers per antenna
- All open-loop receivers
  - Total: 8 open-loop receivers
- Open-loop data are prime. Closed-loop data are backup

- Antennas Band and Polarization Capabilities

DSS-63

X-RCP  
X-LCP

S-RCP  
S-LCP

DSS-54

X-RCP  
X-LCP

K-RCP  
K-LCP

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

- LCP data are enhancement. Prime are RCP

# RSR/VSR/WVSR Assignment

Aseel: VOCA

DSS	Operator	Station	Open-Loop Receiver	RSR Assignment
63	Danny	rsops1	RSR1	RSR1A -> XRCP
				RSR1B -> SRCP
54	Danny	rsops1	RSR2	RSR2A -> XRCP
				RSR2B -> KRCP
63/54 LCP	Don	rsops3	WVSR1 & VSR1	63 WVSR1A -> XLCP
				63 WVSR1B -> SLCP
				54 VSR1A -> XLCP
				54 VSR1B -> KLCP

RSSG will be in RS Ops Room at 11:30 pm on Tuesday 9/9/08 (254/0630)

# ORTs

- No DSS-63 S-band ORT
  - Was used during the Rev82 Occ on DOY 239
- Plenty of DSS-54 passes as part of Solar Conjunction Experiment
  - Four completed so far
  - Monopulse connectivity problems

08 245 0615 0745 1645 1700 DSS-54 CAS TP RSR83-SCE5008	3985 N748 1A1	Completed
08 246 0615 0745 1645 1700 DSS-54 CAS TP RSR83-SCE5009	3986 N748 1A1	Completed
08 247 0615 0745 1645 1700 DSS-54 CAS TP RSR83-SCE5010	3987 N748 1A1	Completed
08 248 0615 0745 1645 1700 DSS-54 CAS TP RSR83-SCE5011	3988 N748 1A1	Completed
08 249 1200 1330 1645 1700 DSS-54 CAS TP RSR83-SCE5012	3989 N748 1A1	
08 250 0600 0730 1630 1645 DSS-54 CAS TP RSR83-SCE5013	3990 N748 1A1	
08 251 0600 0730 1435 1450 DSS-54 CAS TP RSR84-SCE5014	3991 N748 1A1	
08 251 0630 0730 1630 1645 DSS-63 CAS TKG PASS SEQ	3991 N003 1A1	
08 252 0600 0730 1630 1645 DSS-54 CAS SEQ RS84-SCE5015	3992 N748 1A1	
08 253 0600 0730 1630 1645 DSS-54 CAS TP RSR84-KADWN1	3993 N748 1A1	SCE/GSE
08 253 0630 0730 1430 1445 DSS-63 CAS TKG PASS SEQ	3993 N003 1A1	

# Misc

Low SEP. S-band likely to be noisy

- Exiting solar conjunction

Have not tested DSS-54 KLCP capability. Should we try during SCE?

Update to the DSS-54 Cassini specific 4th order pointing model?

- Based on eDMD monopulse offsets observed during SCE passes, models look good
- David Rochblatt is on travel. Sent him email

SNT

- Enable X only at DSS-54 throughout
- Conduct SNT measurements

DSS-54 azimuth angles from ~104 to 180 degrees

- Can use LQG coefficients if needed

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

DSS-55 Microwave Configuration?