Timeline for Cassini Rev 256: 2-Way RSS Saturn's Ring & Atmospheric Occultations

January 10, 2017 UTC (DOY-010)

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	ERT UTC OWLT = 01:30:45	SCET	PST ERT-8hrs 08:00:00	Comments
DOY 2017-010				
RSSG: Load 1-W, 2-W, and 3-W Frequency Predicts				
DSS-43: Begin Pre-Cal	00:30:00	22:59:15	16:30:00	
DSS-43: Beginning Of Track	01:30:00	23:59:15	17:30:00	No downlink signals detectable
DSS-35: Begin Pre-Cal	02:10:00	00:39:15	18:10:00	
S-Band ON	02:47:33	01:16:48	18:47:33	Per PEF
Ka-Band ON	02:52:29	01:21:44	18:52:29	Per PEF
DSS-43 Transmitter ON, 18 kW, LCP, RAMP, NO SWEEP	**03:34:30**	02:03:45	19:34:30	
DSS-35: Beginning Of Track	03:40:00	02:09:15	19:40:00	No downlink signals detectable
Spacecraft is Behind Saturn				
DSS-74: Begin Pre-Cal	03:45:00	02:14:15	19:45:00	
DSS-74: Beginning of Track	04:30:00	02:59:15	20:30:00	
RSSG: Begin DSS-43 and DSS-35 Open-Loop Recordings	04:30:00	02:59:15	20:30:00	
RSSG: Begin DSS-74 Open-Loop Recordings	04:30:00	02:59:15	20:30:00	
RNG OFF, TLM OFF	04:51:45	03:21:00	20:51:45	
DSS-55: Begin Pre-Cal	04:55:00	03:24:15	20:55:00	
Start of Rev 256 Egress Atmospheric Occultation	05:11:45	03:41:00	21:11:45	Waypoint: XBAND to Earth, NEG_X to 117.0/63.0
Start of Turn to Egress Occultation IVD	05:12:50	03:42:05	21:12:50	
End of Turn to Egress Occultation IVD	05:15:19	03:44:34	21:15:19	
Start Tracking Saturn's Limb	05:15:19	03:44:34	21:15:19	Likely weak 1-way S-band signal detectable
DSS-63: Begin Pre-Cal	05:25:00	03:54:15	21:25:00	
RSSG: Begin DSS-63 and DSS-55 Open-Loop Recordings	05:55:00	04:24:15	21:55:00	
DSS-74 Transmitter ON, 18 kW, LCP, RAMP	**06:16:00**	04:45:15	22:16:00	NO SWEEP; Uplink Transfer from DSS-43 to DSS-74
DSS-43: Transmitter OFF	**06:16:05**	04:45:20	22:16:05	
DSS-63 and DSS-55: Beginning of Track	06:25:00	04:54:15	22:25:00	
DSS-43: Begin S-Band 1-Way Acquisition	06:32:55	05:02:10	22:32:55	Likely weak and scintillating S-band Signal; ~1.4° BA
DSS-63: Begin S-Band 1-Way Acquisition	06:32:55	05:02:10	22:32:55	
DSS-74: Begin S-band 1-Way Acquisition	06:32:55	05:02:10	22:32:55	
RSSG: Enter 1-Way Open-Loop Frequency Offsets as Needed				
Weak S-band signal at DSS-43 & DSS-63 (~1.35° BA)	06:36:00	05:05:15	22:36:00	Approx. time; 1-Way until X-band uplink lock, then 2-Way
DSS-43: Begin S-Band 2-Way Acquisition	06:36:00	05:05:15	22:36:00	

DSS-63: Begin S-Band 3-Way Acquisition (w/DSS-43)	06:36:00	05:05:15	22:36:00	Scintillating signal; DST may go in and out of lock
DSS-74: Begin S-band 3-Way Acquisition (w/DSS-43)	06:36:00	05:05:15	22:36:00	
DSS-43: End of Track	06:40:00	05:09:15	22:40:00	
Weak X-band signal (~1.2° BA)	06:44:50	05:14:05	22:44:50	Approx. time; 1-Way until X-band uplink lock, then 2-Way
DSS-63: Begin X-Band 3-Way Acquisition (w/DSS-43)	06:44:50	05:14:05	22:44:50	
DSS-55: Begin X-Band 3-Way Acquisition (w/DSS-43)	06:44:50	05:14:05	22:44:50	
DSS-74: Begin X-Band 3-Way Acquisition (w/DSS-43)	06:44:50	05:14:05	22:44:50	
DSS-35: End of Track	06:45:00	05:14:15	22:45:00	
DSS-43: End of Post-Cal	06:55:00	05:24:15	22:55:00	
Weak Ka-band signal (~1.0° BA) at DSS-55	06:56:00	05:25:15	22:56:00	Approx. time; 1-Way until X-band uplink lock, then 3-Way/43
DSS-55: Begin Ka-Band 3-Way Acquisition (w /DSS-43)	06:56:00	05:25:15	22:56:00	
DSS-35: End of Post-Cal	07:00:00	05:29:15	23:00:00	
RSSG: End DSS-43 and DSS-35 Open-Loop Recordings	07:05:00	05:34:15	23:05:00	
End Tracking Egress Atmospheric Occultation	07:47:45	06:17:00	23:47:45	Pc/N0 (dB/Hz): ~ 54 (43X), 48 (35/X), 48 (35K), 42 (43S)
Top of the Troposphere (~0.001° BA)	07:48:10	06:17:25	23:48:10	
DSS-55: Enable Monopulse	07:50:00	06:19:15	23:50:00	Enable monopulse only when requested by RS Operations
Official Start of Rev 256 Ring Occultation	07:51:45	06:21:00	23:51:45	
Ring C In	07:53:12	06:22:27	23:53:12	Ionosphere/Ring C interference
DSS-74: Transmitter OFF	**07:57:30**	06:26:45	23:57:30	Per DKF
DSS-74: End of Track	08:00:00	06:29:15	00:00:00	
DSS-74: End of Post-Cal	08:00:00	06:29:15	00:00:00	
RSSG: End DSS-74 Open-Loop Recordings	08:20:00	06:49:15	00:20:00	
Top of the ionosphere (~68,000 km)	08:20:40	06:49:55	00:20:40	
DSS-55: Disable Monopulse Without Clearing the Offsets	08:27:30	06:56:45	00:27:30	Disable monopulse only when requested by RS Operations
Ring B In	08:29:02	06:58:17	00:29:02	Signals will likely be blocked over parts of Ring B
Uplink Transfer from DSS-43 to DSS-74 Observed	09:17:30	07:46:45	01:17:30	
DSS-63: Begin X- & S-band 3-Way Acquisition (w/DSS-74)	09:17:30	07:46:45	01:17:30	
DSS-55: Begin X- & Ka-band 3-Way Acquisition (w/DSS-74)	09:17:30	07:46:45	01:17:30	
Ring B Out	09:18:25	07:47:40	01:18:25	Approximate time; Strong signals in the Cassini Division
Ring A In	09:27:01	07:56:16	01:27:01	Detectable signals over most of Ring A
DSS-55: Enable Monopulse	09:35:30	08:04:45	01:35:30	Enable monopulse only when requested by RS Operations
Ring A Out	09:54:48	08:24:03	01:54:48	All signals back to full strength (free-space) levels
Ring F	10:01:14	08:30:29	02:01:14	Approximate time; Ring F is usually not detectable in real-time
End of Rev 256 Observations. Begin 20 m Deadtime	10:54:45	09:24:00	02:54:45	
DSS-55: Disable Monopulse Without Clearing the Offsets	10:58:00	09:27:15	02:58:00	Prior to switching to 1-way
End of 2- and 3-Way Baseline	10:59:00	09:28:15	02:59:00	
DSS-74 Transmitter OFF Observed	10:59:00	09:28:15	02:59:00	
DSS-63: Begin X- & S-Band 1-Way Acquisition	10:59:00	09:28:15	02:59:00	PC/N0 (X-70m tlm OFF, S-70m) = 54, 42 dB-Hz

DSS-55: Begin X- & Ka-Band 1-Way Acquisition	10:59:00	09:28:15	02:59:00	PC/N0 (X-34m tlm OFF, Ka-34m) = 48, 48 dB-Hz
RSSG: Adjust 1-Way Open-Loop Frequency Offsets as Needed Begin ~15 m 1-Way Baseline				
DSS-55: Enable Monopulse	11:00:00	09:29:15	03:00:00	Enable monopulse only when requested by RS Operations
S-Band OFF	11:14:06	09:43:21	03:14:06	Per PEF
Ka-Band OFF	11:14:08	09:43:23	03:14:08	Per PEF
TLM ON/RNG ON	11:14:39	09:43:54	03:14:39	
End of Deadtime	11:14:45	09:44:00	03:14:45	
DSS-63 & DSS-55: End of Track	11:20:00	09:49:15	03:20:00	
DSS-63: End of Post-Cal	11:35:00	10:04:15	03:35:00	
RSSG: End DSS-63 and DSS-55 Open-Loop Recordings	11:40:00	10:09:15	03:40:00	

Canberra DSS-43 & DSS-35 related activities

Madrid DSS-63 & DSS-55

New Norcia DSS-74

Predicted atmospheric & ring event times are approximate and are based on reference trajectory 150901