Cassini Grand Finale: Rev 273 RSS Gravity & Ring Occultations
May 8-9, 2017 UTC (DOY 128-129)
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	ERT UTC OWLT = 01:16:52	SCET	PDT ERT-7hrs 07:00:00	Comments
DOY 2017-128				
DSS-35: Start Pre-Cal	09:40:00	08:23:08	02:40:00	
S/C at Waypoint: X-Band to Earth, NEG_Y to 127.0/-37.0	09:42:52	08:26:00	02:42:52	
DSS-43: Start Pre-Cal	10:10:00	08:53:08	03:10:00	
RSSG: Start DSS-35 & DSS-43 Open-Loop Recordings	10:40:00	09:23:08	03:40:00	
DSS-35 & DSS-43: Beginning Of Track	11:10:00	09:53:08	04:10:00	S/C is Earth pointed; X-Band downlink detectable
DSS-43 & DSS-35: Begin X-Band 1-Way Acquisition	11:10:00	09:53:08	04:10:00	Pc/N0 TLM ON (X-70, X-34) = 40, 34 dB-Hz
Ka-Band ON	11:12:48	09:55:56	04:12:48	Per PEF
DSS-35: Begin Ka-Band 1-Way Acquisition	11:12:48	09:55:56	04:12:48	Pc/N0 TLM ON (Ka-34) = 48 dB-Hz
RSSG: Note TLM BR Change to 99541	11:12:59	09:56:07	04:12:59	
DSS-35: Enable Monopulse	11:14:00	09:57:08	04:14:00	Enable/Disable Monopulse only when requested by RSSG
DSS-35: Transmitter ON, 18kW, LCP, RAMP, SWEEP	11:20:00	10:03:08	04:20:00	
RSSG: Note TLM BR Change to 110601	11:30:00	10:13:08	04:30:00	
RSSG: Note TLM BR Change to 124426	11:59:59	10:43:07	04:59:59	
RSSG: Note TLM BR Change to 142201	12:44:58	11:28:06	05:44:58	
DSS-35: Disable Monopulse Without Clearing the Offsets	13:51:00	12:34:08	06:51:00	Before mode switch to 2-way; when requested by RSSG
DSS-35: Transmitter ON Observed	13:53:44	12:36:52	06:53:44	
DSS-35: Begin X- & Ka-Band 2-Way Acquisition	13:53:44	12:36:52	06:53:44	Pc/N0 TLM ON (X-34, Ka-34) = 34, 48 dB-Hz
DSS-43: Begin X-Band 3-Way Acquisition w/DSS-35	13:53:44	12:36:52	06:53:44	Pc/N0 TLM ON (X-70) = 40 dB-Hz
DSS-35: Enable Monopulse	13:56:00	12:39:08	06:56:00	Enable/Disable monopulse only when requested by RSSG
RSSG: Note TLM BR Change to 33180	19:29:57	18:13:05	12:29:57	
DSS-43: End Of Track	19:30:00	18:13:08	12:30:00	
Start of Rev 273 Saturn Gravity Observation	19:33:31	18:16:39	12:33:31	
DSS-43: Post-Cal	19:45:00	18:28:08	12:45:00	
Start of First MAG Roll	19:53:45	18:36:53	12:53:45	
RSSG: End DSS-43 Open-Loop Recordings	20:00:00	18:43:08	13:00:00	
RSSG: Note TLM BR Change to 27650	20:59:57	19:43:05	13:59:57	
DSS-55: Start Pre-Cal	21:25:00	20:08:08	14:25:00	

RSSG: Note TLM BR Change to 22120	21:59:56	20:43:04	14:59:56	
RSSG: Start DSS-55 Open-Loop Recordings	22:25:00	21:08:08	15:25:00	
RSSG: Note TLM BR Change to 14220	22:44:56	21:28:04	15:44:56	
DSS-35: Transmitter OFF	22:54:00	21:37:08	15:54:00	
DSS-55: Beginning Of Track	22:55:00	21:38:08	15:55:00	
DSS-55: Begin X- & Ka-Band 3-Way Acquisition w/DSS-35	22:55:00	21:38:08	15:55:00	Pc/N0 TLM ON (X-34, Ka-34) = 34, 48 dB-Hz
DSS-35: Disable Monopluse	23:15:00	21:58:08	16:15:00	Enable/Disable monopulse only when requested by RSSG
DSS-35: End Of Track	23:15:00	21:58:08	16:15:00	
DSS-55: Enable Monopluse	23:20:00	22:03:08	16:20:00	~10 deg EL. Enable/Disable monopulse only when requested by RSSG
DSS-55: Transmitter ON, 18 kW, LCP, RAMP	23:25:00	22:08:08	16:25:00	NO SWEEP
DSS-35: Post-Cal	23:30:00	22:13:08	16:30:00	
RSSG: End DSS-35 Open-Loop Recordings	23:50:00	22:33:08	16:50:00	
RSSG: Note TLM BR Change to 22120	23:59:57	22:43:05	16:59:57	
DOY 2017-129				
DSS-84: Start Pre-Cal	00:00:00	22:43:08	17:00:00	
RSSG: Note TLM BR Change to 27650	01:14:56	23:58:04	18:14:56	
RSSG: Start DSS-84 Open-Loop Recordings	00:15:00	22:58:08	17:15:00	
DSS-84: Beginning Of Track	00:45:00	23:28:08	17:45:00	
DSS-84: Begin X- & Ka-Band 3-Way Acquisition w/DSS-35	00:45:00	23:28:08	17:45:00	
End of the First MAG Roll	00:52:06	23:35:14	17:52:06	
DSS-84: Transmitter ON, 18 kW, LCP, RAMP	01:05:00	23:48:08	18:05:00	NO SWEEP; Uplink transfer from DSS-55 to DSS-84
DSS-55: Transmitter OFF	01:05:05	23:48:13	18:05:05	
DSS-55: Disable Monopulse Without Clearing the Offsets	01:25:00	00:08:08	18:25:00	Before mode switch to 1-way; when requested by RSSG
DSS-35 Transmitter OFF Observed	01:27:44	00:10:52	18:27:44	Begin 31 min coherent gap
DSS-84: Do Not Configure for 1-Way	01:27:44	00:10:52	18:27:44	Keep 3-way configuration
DSS-55: Begin Ka- & X-Band 1-Way Acquisition	01:27:44	00:10:52	18:27:44	Pc/N0 TLM ON (X-34, Ka-34) = 34, 48 dB-Hz
RSSG: Enter 1-Way Open-Loop Frequency Offsets as Needed	01:27:44	00:10:52	18:27:44	
DSS-55: Enable Monopluse	01:29:00	00:12:08	18:29:00	Enable/Disable monopulse only when requested by RSSG
DSS-55: Disable Monopulse Without Clearing the Offsets	01:57:00	00:40:08	18:57:00	Before mode switch to 2-way; when requested by RSSG
DSS-55 Transmitter ON Observed	01:58:44	00:41:52	18:58:44	End 31 min coherent gap
DSS-84: Begin X- & Ka-Band 3-Way Acquisition w/DSS-55	01:58:44	00:41:52	18:58:44	
DSS-55: Begin Ka- & X-Band 2-Way Acquisition	01:58:44	00:41:52	18:58:44	Pc/N0 TLM ON (X-34, Ka-34) = 34, 48 dB-Hz
DSS-55: Enable Monopulse	01:59:00	00:42:08	18:59:00	Enable/Disable monopulse only when requested by RSSG
DSS-55 to DSS-84 Uplink Transfer Observed	03:38:44	02:21:52	20:38:44	
DSS-84: Begin X- and Ka-Band 2-Way Acquisition	03:38:44	02:21:52	20:38:44	
RSSG: Continue Using 3-Way/55 Predicts at DSS-84	03:38:44	02:21:52	20:38:44	Since 2-way predicts are not available
DSS-55: Begin X- & Ka-Band 3-Way Acquisition w/DSS-84	03:38:44	02:21:52	20:38:44	Pc/N0 TLM ON (X-34, Ka-34) = 34, 48 dB-Hz
RSSG: Continue Using 2-Way Predicts at DSS-55	03:38:44	02:21:52	20:38:44	Since 3-way/84 predicts are not available

DSS-25: Start Pre-Cal	04:40:00	03:23:08	21:40:00	
S-Band ON	04:41:50	03:24:58	21:41:50	Per PEF
RSSG: Note TLM BR Change to 22120	04:44:55	03:28:03	21:44:55	
Start of Second MAG Roll	05:09:37	03:52:45	22:09:37	
DSS-14: Start Pre-Cal	05:10:00	03:53:08	22:10:00	
RSSG: Start DSS-14 & DSS-25 Open-Loop Recordings	05:40:00	04:23:08	22:40:00	Use 3-way/55 predicts
RSSG: Note TLM BR Change to 14220	05:59:55	04:43:03	22:59:55	
DSS-14 & DSS-25: Beginning Of Track	06:10:00	04:53:08	23:10:00	
DSS-14: Begin X- & S-band 3-way acquisition w/DSS-84	06:10:00	04:53:08	23:10:00	Pc/N0 TLM ON OFF (X-70, S-70,) = 40, 42 dB-Hz
DSS-25: Begin X- & Ka-band 3-way acquisition w/DSS-84	06:10:00	04:53:08	23:10:00	Pc/N0 TLM ON (X-34, Ka-34) = 34, 48 dB-Hz
RSSG: Use 3-Way/55 Predicts at DSS-14 and DSS-25	06:10:00	04:53:08	23:10:00	Since 3-way/84 predicts are not available
DSS-25: Enable Monopulse	06:29:00	05:12:08	23:29:00	~10 deg EL. Enable/Disable monopulse only when requested by RSSG
Start of Rev 273 Periapse Ring Occultation	06:41:52	05:25:00	23:41:52	Gravity observation continues
RNG OFF	06:41:52	05:25:00	23:41:52	
TLM OFF	06:41:55	05:25:03	23:41:55	Increase in X-band signal level
Start Free-Space 2-Way/3-Way Baseline	06:41:56	05:25:04	23:41:56	
DSS-55: Disable Monopulse	06:45:00	05:28:08	23:45:00	Enable/Disable monopulse only when requested by RSSG
DSS-55: End Of Track	06:45:00	05:28:08	23:45:00	
DSS-55: Post-Cal	07:00:00	05:43:08	00:00:00	
RSSG: End DSS-55 Open-Loop Recordings	07:20:00	06:03:08	00:20:00	
Saturn Closest Approach (Orbit Periapse)	**07:33:31**	06:16:39	00:33:31	
Ring C In	07:33:32	06:16:40	00:33:32	Approximate time
DSS-25: Disable Monopulse Without Clearing the Offsets	07:38:42	06:21:50	00:38:42	Enable/Disable monopulse only when requested by RSSG
Ring B In	07:38:55	06:22:03	00:38:55	Approximate time
Ring B Out	07:47:43	06:30:51	00:47:43	Approximate time
Ring A In	07:49:27	06:32:35	00:49:27	Approximate time
DSS-25: Enable Monopulse	07:51:07	06:34:15	00:51:07	Enable/Disable monopulse only when requested by RSSG
Ring A Out	07:55:38	06:38:46	00:55:38	Approximate time
Ring F	07:57:12	06:40:20	00:57:12	Approximate time; Ring F is usually not detectable in real-time
Start Free-Space 2-Way/3-Way Baseline	07:57:13	06:40:21	00:57:13	
DSS-35: Start Pre-Cal	08:45:00	07:28:08	01:45:00	
TLM ON	08:47:46	07:30:54	01:47:46	
RNG ON	08:47:50	07:30:58	01:47:50	
End of Rev 273 Periapse Ring Occultation	08:47:52	07:31:00	01:47:52	Gravity observation continues

RSSG: Note TLM BR Change to 27650	08:47:54	07:31:02	01:47:54	
DSS-14: Transmitter ON, 18 kW, LCP, Ramp	09:09:00	07:52:08	02:09:00	NO SWEEP; Uplink transfer from DSS-84 to DSS-14
DSS-84: Transmitter OFF	09:09:05	07:52:13	02:09:05	
DSS-43: Start Pre-Cal	09:10:00	07:53:08	02:10:00	
RSSG: Switch DSS-14 Open-Loop Predicts to 2-Way	09:29:00	08:12:08	02:29:00	Since 3-way/84 predicts are not available
RSSG: Switch DSS-25 Open-Loop Predicts to 3-Way/14	09:29:00	08:12:08	02:29:00	Since 3-way/84 predicts are not available
RSSG: Switch DSS-84 Open-Loop Predicts to 3-Way/14	09:29:00	08:12:08	02:29:00	Since 3-way/84 predicts are not available
RSSG: Start DSS-35 & DSS-43 Open-Loop Recordings	09:40:00	08:23:08	02:40:00	Use 3-way/14 predicts
End of Second MAG Roll	10:07:58	08:51:06	03:07:58	
DSS-43: Beginning Of Track	10:10:00	08:53:08	03:10:00	
DSS-43: Start X- & S-Band 3-Way Acquisition w/DSS-84	10:10:00	08:53:08	03:10:00	Pc/N0 TLM OFF (X-70, S-70) = 54, 42 dB-Hz
RSSG: Use 3-Way/14 Predicts at DSS-43	10:10:00	08:53:08	03:10:00	Since 3-way/84 predicts are not available
DSS-35: Beginning Of Track	10:15:00	08:58:08	03:15:00	
DSS-35: Start Ka- & X-Band 3-Way Acquisition w/DSS-84	10:15:00	08:58:08	03:15:00	Pc/N0 TLM OFF (X-34, Ka-34) = 48, 48 dB-Hz
RSSG: Use 3-Way/14 Predicts at DSS-35	10:15:00	08:58:08	03:15:00	Since 3-way/84 predicts are not available
DSS-35: Enable Monopulse	10:27:00	09:10:08	03:27:00	Enable/Disable monopulse only when requested by RSSG
Start of Rev 273 Ingress Ring Occultation	11:02:52	09:46:00	04:02:52	
RNG OFF	11:02:52	09:46:00	04:02:52	
TLM OFF	11:02:55	09:46:03	04:02:55	Increase in X-band signal level
DSS-84: End Of Track	11:30:00	10:13:08	04:30:00	
DSS-84 to DSS-14 Uplink Transfer Observed	11:42:44	10:25:52	04:42:44	
DSS-14: Start X- & S-Band 2-Way Acquisition	11:42:44	10:25:52	04:42:44	Pc/N0 TLM OFF (X-70, S-70) = 54, 42 dB-Hz
DSS-25: Start X- & Ka-Band 3-Way Acquisition w/DSS-14	11:42:44	10:25:52	04:42:44	Pc/N0 TLM OFF (X-34, Ka-34) = 48, 48 dB-Hz
DSS-43: Start X- & S-Band 3-Way Acquisition w/DSS-14	11:42:44	10:25:52	04:42:44	Pc/N0 TLM OFF (X-70, S-70) = 54, 42 dB-Hz
DSS-35: Start X- & Ka-Band 3-Way Acquisition w/DSS-14	11:42:44	10:25:52	04:42:44	Pc/N0 TLM OFF (X-34, Ka-34) = 48, 48 dB-Hz
DSS-84: Post-Cal	11:45:00	10:28:08	04:45:00	
RSSG: End DSS-84 Open-Loop Recordings	12:05:00	10:48:08	05:05:00	
Ring F	12:32:18	11:15:26	05:32:18	Approximate time; Ring F is usually not detectable in real-time
DSS-14: Transmitter OFF	12:38:16	11:21:24	05:38:16	
Ring A In	12:39:31	11:22:39	05:39:31	
DSS-35: Disable Monopulse Without Clearing the Offsets	13:01:12	11:44:20	06:01:12	Enable/Disable monopulse only when requested by RSSG
DSS-25: Disable Monopulse Without Clearing the Offsets	13:01:12	11:44:20	06:01:12	Enable/Disable monopulse only when requested by RSSG
Ring A Out	13:10:14	11:53:22	06:10:14	Approximate time
Ring B In	13:19:40	12:02:48	06:19:40	Approximate time
Ring B Out / Ring C In	14:13:58	12:57:06	07:13:58	Approximate time
Top of the Ionosphere (~68,000 km)	14:14:26	12:57:34	07:14:26	

DSS-35: Enable Monopulse	14:15:36	12:58:44	07:15:36	Enable/Disable monopulse only when requested by RSSG
DSS-25: Enable Monopulse	14:15:36	12:58:44	07:15:36	Enable/Disable monopulse only when requested by RSSG
DSS-14 & DSS-25: End Of Track	14:40:00	13:23:08	07:40:00	
DSS-25: Disable Monopulse	14:40:00	13:23:08	07:40:00	Enable/Disable monopulse only when requested by RSSG
DSS-14 & DSS-25: Post-Cal	14:55:00	13:38:08	07:55:00	
Ring C Out	14:55:10	13:38:18	07:55:10	Approximate time
RSSG: End DSS-14 & DSS-25 Open-Loop Recordings	15:05:00	13:48:08	08:05:00	
Top of Saturn's Troposphere	15:09:22	13:52:30	08:09:22	
DSS-35: Disable Monopulse Without Clearing the Offsets	15:11:00	13:54:08	08:11:00	Enable/Disable monopulse only when requested by RSSG
DSS-14 Transmitter OFF Observed	15:12:00	13:55:08	08:12:00	
End of Rev 273 Ingress Ring Occultation	15:12:00	13:55:08	08:12:00	
S/C is Occulted by Saturn's Atmosphere (No Limb-Track)				
DSS-35: Start X- & Ka-Band 1-Way Acquisition	15:12:00	13:55:08	08:12:00	
DSS-43: Start X- & S-Band 1-Way Acquisition	15:12:00	13:55:08	08:12:00	
Attenuated Ka-Band Signal Drifts Out of the 1 kHz BW	15:10:22	13:53:30	08:10:22	Approximate Time
Attenuated X-Band Signal Drifts Out of the 1 kHz BW	15:15:52	13:59:00	08:15:52	Approximate Time
Attenuated S-Band Signal Drifts Out of the 1 kHz BW	15:33:52	14:17:00	08:33:52	Approximate Time
DSS-43: Transmitter ON, 18kW, LCP, RAMP, SWEEP	16:16:16	14:59:24	09:16:16	
Cassini is Deep Behind Saturn				
S-Band Maximum BA Reached (0.994°)	16:55:07	15:38:15	09:55:07	No downlink signals detectable until shortly before 18:46
1-Way Signals Detectable Just Before Atm Occ Egress	18:46:12	17:29:20	11:46:12	Atmosphere is Mixed with Ring B
Start of Rev 273 Egress Ring Occultation	18:50:00	17:33:08	11:50:00	
DSS-43 Transmitter ON & SWEEP Observed	18:50:00	17:33:08	11:50:00	
DSS-43: Start X- & S-Band 2-Way Acquisition	18:50:00	17:33:08	11:50:00	Pc/N0 TLM OFF (X-70, S-70) = 54, 42 dB-Hz
DSS-35: Start X- & Ka-Band 3-Way Acquisition w/DSS-43	18:50:00	17:33:08	11:50:00	Pc/N0 TLM OFF (X-34, Ka-34) = 48, 48 dB-Hz
Top of Saturn's Troposphere	18:54:22	17:37:30	11:54:22	Cassini is Behind Inner Ring B (region B1)
DSS-43: Transmitter OFF	19:26:16	18:09:24	12:26:16	
Ring B Out	19:33:06	18:16:14	12:33:06	Approximate time
End of Rev 273 Saturn Gravity Observation	19:33:31	18:16:39	12:33:31	Ring occultation continues
Ring A In	19:42:10	18:25:18	12:42:10	Approximate time
DSS-35: Enable Monopulse	19:51:00	18:34:08	12:51:00	Enable/Disable monopulse only when requested by RSSG
Ring A Out	20:11:13	18:54:21	13:11:13	Approximate time

Ring F	20:17:55	19:01:03	13:17:55	Approximate time; Ring F is usually not detectable in real-time
S-Band OFF	21:48:17	20:31:25	14:48:17	Per PEF
Ka-Band OFF	21:48:19	20:31:27	14:48:19	Per PEF
DSS-35: Disable Monopulse Without Clearing the Offsets	21:48:19	20:31:27	14:48:19	Enable/Disable monopulse only when requested by RSSG
TLM ON	21:48:46	20:31:54	14:48:46	
RSSG: Note TLM BR Change to 1896	21:48:47	20:31:55	14:48:47	
RNG ON	21:48:50	20:31:58	14:48:50	
End of Rev 273 Egress Ring Occultation	21:48:52	20:32:00	14:48:52	
DSS-43 & DSS-35: EOT	22:00:00	20:43:08	15:00:00	
DSS-43 Transmitter OFF Observed	22:00:00	20:43:08	15:00:00	
RSSG: End DSS-43 & DSS-35 Open-Loop Recordings	22:10:00	20:53:08	15:10:00	
DSS-43 & DSS-35: Post-Cal	22:15:00	20:58:08	15:15:00	

Canberra DSS-43 & DSS-35 related activities

Madrid DSS-55 related activities

Goldstone DSS-14 & DSS-25 related activities

Malargue DSS-84 related activities

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