

**Timeline for Cassini Rev 123 RSS Saturn Ring & Atmospheric Occultations  
on December 25-26, 2009 (DOY 359-360)**

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	ERT UTC OWLT = 1:18:22	SCET	PST ERT-8hrs 8:00:00	Comments
Load frequency predicts (one set for each complex)	TBD			Free-space for Canberra; atmosphere egress for Madrid
DSS-34: Start pre-cal	17:50:00	16:31:38	9:50:00	
RSS3a OpMode ON	18:14:11	16:55:49	10:14:11	S/C is Earth pointed starting 07:57:00
DSS-43: Start pre-cal	18:20:00	17:01:38	10:20:00	
DSS-34 & 43 Begin-of-Track	19:20:00	18:01:38	11:20:00	Likely detectable downlink
Start Live Moveable Block (LMB) period	19:55:22	18:37:00	11:55:22	Cassini HGA is Earth pointed; strong S/X/Ka signals
TWNC ON/ RNG OFF/ TLM OFF	19:55:22	18:37:00	11:55:22	Increase in X-band signal level
DSS-34: Enable Monopulse	19:58:00	18:39:38	11:58:00	Enable monopulse only when asked to do so by RS
DSS-34: Disable Monopulse	20:15:00	18:56:38	12:15:00	Real-time decision to keep or remove the offsets
Start free-space baseline	20:15:01	18:56:39	12:15:01	PC/N0 (X70, X & Ka55, S70) = ~54, 48, 48, and 42 dB
Official Start of Ring Occultation Ingress Observ'n	20:15:22	18:57:00	12:15:22	
Ring A In	20:51:40	19:33:18	12:51:40	Detectable signals over most of Ring A
Within the Encke Gap	20:57:07	19:38:45	12:57:07	Signals are back very briefly to full strength
Ring A Out	21:16:41	19:58:19	13:16:41	Relatively strong signals in the Cassini Division
Ring B In	21:24:20	20:05:58	13:24:20	Signals will be small or absent over most of Ring B
Ring C In	22:07:04	20:48:42	14:07:04	Signals detectable but briefly blocked by dense ringlets
Ring C Out	22:36:15	21:17:53	14:36:15	Signals are back to full strength
End of Baseline	22:40:59	21:22:37	14:40:59	PC/N0 (X70, X & Ka55, S70) = ~54, 48, 48, and 42 dB
DSS-34: Enable Monopulse	22:41:00	21:22:38	14:41:00	Enable monopulse only when asked to do so by RS
Official End of RSS Ingress Experiment	22:41:22	21:23:00	14:41:22	
Start ISS Enceladus Plume Observation	22:41:23	21:23:01	14:41:23	Loss of all signals; no downlink expected till about 02:08
Cassini is behind Saturn as seen from Earth				
DSS-34 & DSS-43: End-of-Track	23:15:00	21:56:38	15:15:00	
DSS-34 & DSS-43: End of post-cal	23:30:00	22:11:38	15:30:00	
DSS-55: Start pre-cal	23:50:00	22:31:38	15:50:00	
DSS-63: Start pre-cal	0:20:00	23:01:38	16:20:00	
DSS-55 & DSS-63: Begin-of-Track	1:20:00	0:01:38	17:20:00	

End of ISS Observation; S/C is Earth Pointed	1:55:22	0:37:00	17:55:22	
Start targeting turn to Saturn Egress Limb	1:55:27	0:37:05	17:55:27	
End Targeting Turn	1:58:02	0:39:41	17:58:02	
Start of Egress Limb-Track Maneuver	1:58:03	0:39:41	17:58:03	Sat Occ'n egress is completed using blind pointing
Cassini is behind Saturn as seen from Earth				
Weak S-band signal (~1.55° BA)	2:08:10	0:49:48	18:08:10	Weak but increasing and scintillating S-band signal
Weak X-band signal (~1.35° BA)	2:09:53	0:51:31	18:09:53	Weak but increasing and scintillating X-band signal
Weak Ka-band signal (~1.15° BA)	2:11:35	0:53:13	18:11:35	Weak but increasing and scintillating Ka-band signal
Troposphere Out (~0.1° BA)	2:20:25	1:02:03	18:20:25	PC/N0 (X70, X&Ka55, S70) = ~54, 48, 48, and 42 dB
End of tracking IVD file	2:28:22	1:10:00	18:28:22	
Continue tracking X-band to Earth	2:28:23	1:10:01	18:28:23	
Ionosphere Out (~68,000 km)	2:34:22	1:16:00	18:34:22	Ionosphere primarily affects signal frequency
End of Saturn Occultation Egress	2:34:22	1:16:00	18:34:22	
Start of Ring Occultation Egress	2:34:23	1:16:01	18:34:23	Signals are at full strength
DSS-55: Enable Monopulse ??? (TBD)	2:34:30	1:16:08	18:34:30	Enable monopulse only when asked to do so by RS
Ring C In	2:40:06	1:21:44	18:40:06	Signals detectable but briefly blocked by dense ringlets
Ring B In	3:10:27	1:52:05	19:10:27	Signals will be small or absent over most of Ring B
Ring B Out	3:57:22	2:39:00	19:57:22	Relatively strong signals in the Cassini Division
Ring A In	4:06:19	2:47:57	20:06:19	Detectable signals over most of Ring A
Within the Encke Division	4:30:33	3:12:11	20:30:33	Signals are back very briefly to full strength
Ring A Out	4:37:47	3:19:25	20:37:47	All hthree signals are back to full strength
Official End of Ring Occultation Egress	5:16:22	3:58:00	21:16:22	
End of Egress Baseline	5:27:59	4:09:37	21:27:59	PC/N0 (X70, X&Ka55, S70) = ~54, 48, 48, and 42 dB
DSS-55: Enable Monopulse	5:28:00	4:09:38	21:28:00	Monopulse enabled to check blind pointing performance
TLM ON/ TWNC OFF/ RNG ON/	5:31:16	4:12:54	21:31:16	Decrease in X-band signal level
End of LMB & of Rev 123 RSS Experiments	5:31:22	4:13:00	21:31:22	HGA Continues to be Earth pointed until this time
Start wapoint turn away from Earth	5:31:22	4:13:00	21:31:22	Quick loss of all signals; end of the Rev123 RSS experiments
End of RSS3a Op-Mode	5:31:22	4:13:00	21:31:22	
DSS-55 & DSS-63: End-of-Track	6:10:00	4:51:38	22:10:00	
DSS-55 & DSS-63: End of post-cal	6:25:00	5:06:38	22:25:00	

Canberra DSS-34 & DSS-43 related activities

Madrid DSS-55 and DSS-63 related activities

Ring occultation event times are approximate (ring edges are noncircular) and are based on reference trajectory 091005

Monopulse strategy is preliminary at this time