

**Timeline for Cassini Rev 130 RSS Saturn Atmospheric Occultation  
on April 27, 2010 ERT UTC (DOY 117)**

Essam Marouf 04/23/2010 (v4)

	ERT UTC OWLT = 1:12:23	SCET	PDT ERT-7hrs 7:00:00	Comments
Load 2-way gravity predicts	TBD			
DSS-25: Start pre-cal (2010-116)	22:30:00	21:17:37	15:30:00	DSS 25 covers Enceladus gravity then Saturn Occultation
DSS-25: Begin-of-Track	0:00:00	22:47:37	17:00:00	
Ka-band is turned ON	0:57:23	23:45:00	17:57:23	HGA is Earth pointed for Enceladus gravity observation
Enceladus gravity observation				
DSS-34: Start pre-cal	6:30:00	5:17:37	23:30:00	X/Ka downlink
DSS-15: Start of pre-cal	6:30:00	5:17:37	23:30:00	
S-band is turned ON	6:57:23	5:45:00	23:57:23	S downlink
DSS-43: Start pre-cal	7:00:00	5:47:37	0:00:00	
DSS-34 & 43: Begin-of-Track	8:00:00	6:47:37	1:00:00	S/X/Ka downlink
DSS-15: Begin-of-Track	8:00:00	6:47:37	1:00:00	
DSS-34: Enable monopulse	TBD			Enable monopulse only when requested by RSS ops
DSS-25: Enable monopulse	TBD			Unless it's already enabled during the gravity observation
Load 1-way ingress occultation frequency predicts	8:59:23	7:47:00	1:59:23	
Formal start of Saturn ingress occultation period	8:59:23	7:47:00	1:59:23	
TWNC ON	8:59:23	7:47:00	1:59:23	
RNG OFF	8:59:27	7:47:04	1:59:27	
TLM OFF	8:59:28	7:47:05	1:59:28	
Start of free-space baseline	8:59:29	7:47:06	1:59:29	PC/N0 (X70, X & Ka34, S70) = ~ 55, 49, 49, and 43 dB
Ionosphere in (~68,000 km)	9:24:09	8:11:46	2:24:09	Ionospher primarily affects signal frequency
Troposphere in	9:42:00	8:29:37	2:42:00	S/X/Ka signal intensities start to drop
Loss of the Ka-band signal (~0.14 BA)	9:44:59	8:32:36	2:44:59	approximate time Ka-band signal walks out of the HGA beam
Loss of the X-band signal (~0.57° BA)	9:54:04	8:41:41	2:54:04	approximate time X-band signal walks out of the HGA beam
Loss of the S-band signal (~1.6° BA)	10:15:40	9:03:17	3:15:40	approximate time S-band signal is fully absorbed
Cassini is behind Saturn				No detectable signals from Cassini are expected during

Formal end of Saturn ingress occultation period	10:34:23	9:22:00	3:34:23	
Load 1-way egress occultation frequency predicts	10:35:00	9:22:37	3:35:00	
DSS-34: Initialize blind pointing offset?	TBD			Real-Time decision based on monopulse offsets behavior
DSS-15 & 25: End-of-Track	11:00:00	9:47:37	4:00:00	
DSS-15 & 25: End of post-cal	11:15:00	10:02:37	4:15:00	
Formal start of Saturn egress occultation period	12:58:23	11:46:00	5:58:23	
Cassini is behind Saturn				
Weak S-band signal (~1.6° BA)	13:16:06	12:03:43	6:16:06	weak but increasing and scintillating S-band signal
Weak X-band signal (~0.57° BA)	13:34:15	12:21:52	6:34:15	approximate time X-band signal walks into the HGA beam
Weak Ka-band signal (~0.14° BA)	13:41:31	12:29:08	6:41:31	approximate time Ka-band signal walks into the HGA beam
Troposphere out	13:44:06	12:31:43	6:44:06	PC/N0 (X70, X&Ka34, S70) = ~55, 49, 49, and 43 dB
Ionosphere out (~68,000 km)	14:01:13	12:48:50	7:01:13	Ionosphere primarily affects signal frequency
End of free-space baseline	15:08:59	13:56:36	8:08:59	
DSS-34: Enable monopulse	15:09:00	13:56:37	8:09:00	Monopulse enabled to check blind pointing performance
TLM ON	15:12:17	13:59:54	8:12:17	Drop of X-band signal level
TWNC OFF	15:12:21	13:59:58	8:12:21	
RNG ON	15:12:22	13:59:59	8:12:22	
Formal end of Saturn egress occultation period	15:12:23	14:00:00	8:12:23	
S-Band is turned OFF	15:12:23	14:00:00	8:12:23	Loss of S-band downlink
Load 2-way gravity predicts	15:12:23	14:00:00	8:12:23	
Enceladus gravity observation				Ka/X downlink
DSS-43: End-of-Track	16:00:00	14:47:37	9:00:00	
DSS-43: End of post-cal	16:15:00	15:02:37	9:15:00	
DSS-34: End-of-Track	17:00:00	15:47:37	10:00:00	
DSS-34: End of post-cal	17:15:00	16:02:37	10:15:00	

Canberra DSS-34 & DSS-43 related activities

Goldstone DSS-15 & DSS-25 related activities

Occultation event times are based on reference tour 091005