

Cassini T14: Titan Radio Occultation & Bistatic Scattering Observations

May 20 (DOY 140), 2006

Essam Marouf, May 14, 2006 (v3)

	ERT UTC OWLT = 1:18:54	SCET UTC	PDT ERT - 7 hrs 7:00:00	Comments
Start Precals DSS 55	8:45:00	7:26:06	1:45:00	See separate detailed Precals timeline
Start Precals DSS 63	8:50:00	7:31:06	1:50:00	
Begin-of-Track DSS 55 & 63	11:50:00	10:31:06	4:50:00	No Cassini downlink signals till about 12:35:36
Begin-of-Track DSS 55 & 63	11:50:00	10:31:06	4:50:00	
Start Bistatic Minical 1				see separate Minical 1 timeline
End Bistatic Minical 1				
Start turn from CIRS to Earth point	12:32:07	11:13:13	5:32:07	RSS Observations are part of a custom time block
Telemetry OFF	12:32:12	11:13:18	5:32:12	
Start 5 minutes Baseline	12:35:36	11:16:42	5:35:36	PC/N0 ~ 54, 48, & 41 dB-Hz for X-, Ka-, S-Band
Enable Monopulse: DSS 55	12:35:41	11:16:47		Keep/Clear offsets decision
Disable Monopulse: DSS 55	12:36:41	11:17:47		
End Baseline	12:40:35	11:21:41	5:40:35	Quick loss of of the carrier signals HGA boresight is pointed to Titan's surface Potential weak surface echo centered within the observations bandwidth Carrier signals should re-appear just beore 13:20:02
Start turn to Titan surface	12:40:46	11:21:52	5:40:46	
End Turn to Titan surface	12:46:39	11:27:45	5:46:39	
Start Bistatic Observations	12:47:05	11:28:11	5:47:05	
End Bistatic Observations	13:15:36	11:56:42	6:15:36	
Start turn to Earth point	13:15:59	11:57:05	6:15:59	
End Turn to Earth Point	13:20:02	12:01:08	6:20:02	
Enable Monopulse: DSS 55	13:20:07	12:01:13	6:20:07	Keep/Clear offsets decision
Disable Monopulse: DSS 55	13:20:37	12:01:43	6:20:37	
Start Occultation Observations	13:21:39	12:02:45	6:21:39	PC/N0 ~ 54, 48, & 41 dB-Hz for X-, Ka-, S-Band
Top of Ionosphere (~3000 km alt)	13:22:00	12:03:06	6:22:00	The ionosphere primarily affects the signal freq/phase Signal strength drops in Titan's atmosphere Hard-limb diffraction may cause the signals to continue to be very briefly observed after 13:31:58
Titan Ionosphere (~1500 km alt)	13:26:35	12:07:41	6:26:35	
Titan Atmosphere (~200 km alt)	13:30:46	12:11:52	6:30:46	
Titan Surface (~2575 km radius)	13:31:58	12:13:04	6:31:58	
Behind Titan				
Titan Closest Approach (C/A)	13:37:05	12:18:11	6:37:05	
Start Bistatic Minical 2				A 6 minutes bistatic calibration; see separate Minical 2 timeline
End Bistatic Minical 2				

Behind Titan				Signals may re-appear very briefly before 13:43:10
Titan Surface (~2575 km radius)	13:43:10	12:24:16	6:43:10	Signal strength builds over the course of the next minute
Titan Atmosphere (~200 km alt)	13:44:24	12:25:30	6:44:24	The ionosphere primarily affects the signal freq/phase
Titan Ionosphere (~1500 km alt)	13:48:34	12:29:40	6:48:34	
Top of Ionosphere (~3000 km alt)	13:53:09	12:34:15	6:53:09	
Enable Monopulse: DSS 55	13:54:02	12:35:08	6:54:02	
Disable Monopulse: DSS 55	13:54:32	12:35:38	6:54:32	Keep/Clear offsets decision
End Occultation Observations	13:54:32	12:35:38	6:54:32	PC/N0 ~ 54, 48, & 41 dB-Hz for X-, Ka-, S-Band
Start turn to Titan surface	13:54:44	12:35:50	6:54:44	Quick loss of of carrier signals
End turn to Titan surface	14:02:16	12:43:22	7:02:16	HGA boresight is pointed to Titan's surface
Start Bistatic Observations	14:02:20	12:43:26	7:02:20	Potential weak surface echo centered within the observations bandwidth
End Bistatic Observations	14:33:24	13:14:30	7:33:24	RSS Observations are part of a custom time block
Start turn to CIRS attitude	14:33:39	13:14:45	7:33:39	
Start Bistatic Minical 3				See separate Minical 3 timeline
End Bistatic Minical 3				
End of T14 RSS Observations Period	14:41:54	13:23:00	7:41:54	
Telemetry ON	14:42:02	13:23:08	7:42:02	
End-of-Track DSS 55 & 63	15:25:00	14:06:06	8:25:00	See separate detailed Poscals timeline
End of Postcals DSS 55 & 63	16:25:00	15:06:06	9:25:00	

CASSINI RSS

Atmospheric Times are based on reference trajectory 060323 & the T14 SSUP Files

DSN Activities