

S42 Rev 78 Timeline for RSS Titan T45 Gravity Observation

2008/212-213, Wed-Thu July 30-31, 2008
Titan Closest Approach: ~2008/213-03:38 ERT

EPOCH: GMB_E078_Titan45-000T13:35:00 SCET

OWLT = ~01:25, RTLTL = ~02:50

Closed-loop Doppler is prime for gravity. Open-loop is backup

RSR = Radio Science Receiver (open-loop receiver) RSSG = Radio Science Systems Group

RSSG: Note telemetry bit rate. Playback throughout. Set RSR fgain accordingly and do not change during observation

DOY	Time ERT	Date/Day PDT	Time PDT	Event	Comments
				X-TWTA ON	Has been ON for days
212	11:20	Wed 7/30	4:20 AM	DSS-55 Pre-cal	Cassini specific 4th-order pointing model, TLC enabled
	12:50		5:50 AM	DSS-55 BOT	No downlink until ~16:08 ERT
	13:18		6:18 AM	DSS-55 Transmitter ON	DKF time 13:18:30. Un-ramped uplink predicts
	14:00		7:00 AM	DSS-54 Pre-cal	No Cassini specific model
	14:00		7:00 AM	DSS-26 Pre-cal	Cassini specific 4th-order pointing model, TLC enabled
	14:08	Wed 7/30	7:08 AM	Ka-band ON (KEX & Ka-TWTA)	On-board s/c. 2008-212T12:43:15 SCET
	14:30		7:30 AM	DSS-25 Pre-cal	Cassini specific 4th-order pointing model, TLC enabled
	15:30		8:30 AM	DSS-54 BOT	No downlink until ~16:08 ERT
	15:38		8:38 AM	Begin Turn to Earth	DKF time 15:37:53. Turn by Science Planning
	15:45		8:45 AM	RSS: Begin RSR recording (X & Ka)	All stations. Configure RSRs for 2-way or 3-way downlink
	16:00		9:00 AM	DSS-25 BOT	
	16:00		9:00 AM	DSS-26 BOT	
	16:07		9:07 AM	1st Segment - Begin coherent downlink	DKF time 16:07:53. Telemetry Bit Rate: 22120 BPS
				DSS-55 Enable Monopulse	At 2-way lock
				DSS-54 Enable Monopulse	At 3-way lock
				DSS-25 Enable Monopulse	At 3-way lock
				DSS-26 Enable Monopulse	At 3-way lock
	16:15		9:15 AM	Uplink Transfer from 55 to 25	
	17:14		10:14 AM	Note: Bit Rate Change	Bit Rate 41475
	19:04		12:04 PM	Mode Change	DKF time 19:04:24
				DSS-25 2-way, DSS-55, 54 and 26 3-way	
	19:59		12:59 PM	Note: Bit Rate Change	Bit Rate 47400
	20:10		1:10 PM	DSS-55 EOT	
				DSS-55 Disable Monopulse	At loss of Ka-band signal
	20:10		1:10 PM	DSS-54 EOT	
				DSS-54 Disable Monopulse	At loss of Ka-band signal
	22:35		3:35 PM	DSS-45 Pre-Cal	DSS-34 down for upgrades and maintenance
	23:00		4:00 PM	DSS-47 Pre-cal	Narrabri's 6 antenna array
	23:30		4:30 PM	DSS-47 BOT	Acquire Ka-band signal
	23:40		4:40 PM	DSS-45 BOT	Acquire X-band signal
	23:44		4:44 PM	Note: Bit Rate Change	Bit Rate 41475
213	02:14		7:14 PM	Note: Bit Rate Change	Bit Rate 22120
	03:25		8:25 PM	Uplink Transfer from 25 to 45	
	03:38		8:38 PM	Titan Closest Approach	~03:37:52. Altitude:1613 km

DOY	Time ERT	Date/Day PDT	Time PDT	Event	Comments
	03:44		8:44 PM	<i>Note: Bit Rate Change</i>	Bit Rate 27650
	03:45		8:45 PM	DSS-25 EOT	
				Disable Monopulse	At loss of Ka-band signal
				DSS-26 EOT	
				Disable Monopulse	At loss of Ka-band signal
	05:37		10:37 PM	DSS-45 Transmitter OFF	DKF time 05:33:27. Extend
	06:14		11:14 PM	Mode Change	DKF time 06:14:24
				DSS-45 2-way, DSS-47 3-way	
	06:50		11:50 PM	DSS-55 Pre-cal	Cassini specific 4th-order pointing model, TLC enabled
	06:59		11:59 PM	<i>Note: Bit Rate Change</i>	Bit Rate 22120
	07:59	Thu 7/31	12:50 AM	<i>Note: Bit Rate Change</i>	Bit Rate 14220
	08:20		1:20 AM	DSS-55 BOT	Acquire X- and Ka-band signals
				DSS-55 Enable Monopulse	At 3-way lock
	08:22		1:22 AM	<i>Note: Bit Rate Change</i>	Bit Rate 1896
	08:23		1:23 AM	1st Segment - End coherent downlink	DKF time 08:22:55
				Begin S/C Turn from Earth by CIRS	
				DSS-55 Disable Monopulse	At loss of Ka-band signal
	08:30		1:30 AM	DSS-47 EOT	
	08:35		1:35 AM	RSSG: Stop RSR recording	
	09:00		2:00 AM	DSS-54 Pre-cal	
	09:03		2:03 AM	DSS-55 Transmitter ON	DKF time 09:03:27. Un-ramped uplink predicts
	09:05		2:05 AM	DSS-45 EOT	
	11:00		4:00 AM	DSS-54 BOT	No downlink until ~11:53
	11:34		4:34 AM	Begin Turn to Earth	DKF time 11:34:26. Turn by CIRS
	11:35		4:35 AM	RSSG: Begin RSR recording (X & Ka)	
	11:53		4:53 AM	2nd Segment - Begin coherent downlink	DKF time 11:52:56. Telemetry Bit Rate: 47400 BPS
				DSS-55 Enable Monopulse	At 2-way lock
				DSS-54 Enable Monopulse	At 3-way lock
	15:45		8:45 AM	DSS-25 Pre-cal	Cassini specific 4th-order pointing model, TLC enabled
	15:45		8:45 AM	DSS-24 Pre-cal	
	16:30		9:30 AM	<i>Note: Bit Rate Change</i>	Bit Rate 1896
	16:45		9:45 AM	2nd Segment - End coherent downlink	DKF time 16:44:43
				Official end of gravity experiment, but s/c remains	
				Earth pointed	
	17:14		10:14 AM	<i>Note: Bit Rate Change</i>	Bit Rate 41475
	17:15		10:15 AM	DSS-25 BOT	
				DSS-25 Enable Monopulse	At 3-way lock
	17:15		10:15 AM	DSS-24 BOT	Acquire X-band signal
	17:25		10:25 AM	Uplink transfer from 55 to 25	
	17:30		10:30 AM	DSS-55 EOT	
				DSS-55 Disable Monopulse	At loss of Ka-band signal
	17:30		10:30 AM	DSS-54 EOT	
				DSS-54 Disable Monopulse	At loss of Ka-band signal
				GSE	
	19:59		12:59 PM	<i>Note: Bit Rate Change</i>	Bit Rate 47400

DOY	Time ERT	Date/Day PDT	Time PDT	Event	Comments
	20:14		1:14 PM	Mode Change	DKF time 20:14:32
				DSS-25 2-way, DSS-24 3-way	
	23:29		4:29 PM	<i>Note: Bit Rate Change</i>	Bit Rate 41475
	23:30		4:30 PM	DSS-25 Transmitter OFF	DKF time 23:25:13. Extend.
	02:14		7:14 PM	<i>Note: Bit Rate Change</i>	Bit Rate 1896
214	02:15		7:15 PM	End GSE	
				Begin S/C Turn from Earth	
				Ka-band OFF	On board s/c. 2008-214T00:50:00 SCET
	02:15		7:15 PM	DSS-25 EOT	
				DSS-25 Disable Monopulse	At loss of Ka-band signal
	02:15		7:15 PM	DSS-24 EOT	
	02:30		7:30 PM	RSSG: End RSR Recording (X & Ka)	