S66 Rev 145 Timeline for RSS Titan T74 Gravity Observation

and Gravity Science Enhancements

2011/048-050, Thu-Sat Feb 17-19, 2011

Titan Closest Approach: 2011/049-17:18 ERT

OWLT = 01:14, RTLT = ~02:28

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

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

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

DOY	Time ERT	Date/Day PST	Time PDT	Event	Comments
029	06:15	Fri 1/28	10:15 PM	X-TWTA ON	Was in Sleep mode for a Radar observation
048	11:15	Thu 2/17	3:15 AM	DSS-25 Pre-cal	Pass# 4886. Cassini specific 4th-order pointing model, TLC enabled
	11:35		3:35 AM	DSS-34 Pre-cal	Pass# 4887. Cassini specidic 4th-order pointing model
	12:45		4:45 AM	DSS-25 BOT	1-way
				Begin Inbound GSE	
				DSS-25 Enable Monopulse	At 1-way acquisition
	12:55		4:55 AM	DSS-25 Transmitter ON	Unramped uplink predicts. DKF time 125500
	13:00		5:00 AM	Ka-band ON (KEX & Ka-TWTA)	ON for GSE. Stays ON until end of outbound GSE
	13:05		5:05 AM	DSS-34 BOT	1-way
	13:15		5:15 AM	Uplink Transfer from 25 to 34	Unamped uplink predicts. DKF time 131500
	14:10		6:10 AM	DSS-25 EOT	
				DSS-25 Disable Monopulse	At loss of Ka-band signal
	15:23		7:23 AM	DSS-34 Tracking Mode Change	1-way to 3-way. DKF time 152320
	15:43		7:43 AM	DSS-34 Tracking Mode Change	3-way to 2-way. DKF time 154320
	19:17		11:17 AM	DSS-34 Transmitter OFF	DKF time 191651
	21:45		1:45 PM	End Inbound GSE	
				Ka-band OFF	
	21:45		1:45 PM	DSS-34 EOT	
049	01:15	Thu 2/17	5:15 PM	DSS-55 Pre-cal	Pass# 4887. Cassini specific 4th-order pointing model, TLC enabled
	02:45		6:45 PM	DSS-55 BOT	No signal until ~05:57 ERT
	03:29		7:29 PM	DSS-55 Transmitter ON	Unramped uplink predicts. DKF time 032904
	04:20		8:20 PM	DSS-25 Pre-cal	Pass# 4887. Cassini specific 4th-order pointing model, TLC enabled
	05:18		9:18 PM	Begin turn to Earth	Turn by CAPS
	05:30		9:30 PM	*RSSG: Begin RSR recordings (X & Ka) at DSS-55 and -25*	
	05:50		9:50 PM	DSS-25 BOT	No signal until ~05:57 ERT
	05:57		9:57 PM	Begin Titan Gravity - Begin Coherent Data	DKF time 055717
				DSS-55 Acquire 2-way signal	DKF time 055717
				DSS-55 Enable Monopulse	As requested by RSSG
				DSS-25 Acquire 3-way signal	DKF time 055717
				DSS-25 Enable Monopulse	As requested by RSSG
	06:10		10:10 PM	Uplink Transfer from 55 to 25	DKF time 061000
	08:30	Fri 2/18	12:30 AM	DSS-55 EOT	
				DSS-55 Disable Monopulse	At loss of Ka-band signal

DOY	Time ERT	Date/Day PST	Time PDT	Event	Comments
	08:38		12:38 AM	DSS-25 Tracking Mode Change	3-way to 2-way. DKF time 083812
	10:20		2:20 AM	DSS-34 Pre-cal	Pass# 4888. Cassini specidic 4th-order pointing model
	11:20		3:20 AM	*RSSG: Begin RSR recordings (X & Ka) at DSS-34*	
	11:50		3:50 AM	DSS-34 BOT	3-way with DSS-25
	12:00		4:00 AM	Uplink Transfer from 25 to 34	DKF time 120000
	14:28		6:28 AM	Tracking Mode Change	DSS-34 to 2-way. DSS-25 to 3-way. DKF time 142809
	16:15		8:15 AM	DSS-25 EOT	
				DSS-25 Disable Monopulse	At loss of Ka-band signal
	17:18		9:18 AM	T74 Titan Closest Approach	Altitude 3651 km
	20:45		12:45 PM	DSS-55 Pre-cal	Pass# 4888. Cassini specific 4th-order pointing model, TLC enabled
	21:45		1:45 PM	*RSSG: Begin RSR recordings (X & Ka) at DSS-55*	
	22:15		2:15 PM	DSS-55 BOT	3-way with DSS-34
				DSS-55 Enable Monopulse	As requested by RSSG. Wait till 10 degrees elevation angle
	22:36		2:36 PM	DSS-34 Transmitter OFF	DKF time 223600
	22:40		2:40 PM	DSS-55 Transmitter ON	DKF time 224000
	22:55		2:55 PM	DSS-34 EOT	
050	01:04		5:04 PM	DSS-55 Tracking Mode Change	3-way to 1-way. DKF time 010403
	01:08		5:08 PM	DSS-55 Tracking Mode Change	1-way to 2-way. DKF time 010803
	02:37		6:37 PM	DSS-55 Transmitter OFF	5 minutes after DKF time 023210
	05:00		9:00 PM	End Titan Gravity - End Coherent Data	DKF time 050011
				Begin turn from Earth	Turn by CAPS. 18min turn
				DSS-55 Disable Monopulse	At loss of Ka-band signal
	05:30		9:30 PM	DSS-55 EOT	
050	11:15	Sat 2/19	3:15 AM	DSS-34 Pre-cal	Pass# 4889. Cassini specidic 4th-order pointing model
	11:45		3:45 AM	DSS-43 Pre-cal	Pass# 4889 for telemetry support
	12:45		4:45 AM	DSS-34 BOT	1-way
				DSS-43 BOT	1-way
				Begin Outbound GSE	
	12:55		4:55 AM	DSS-43 Transmitter ON	Ramped uplink predicts. DKF time 125500
	15:23		7:23 AM	Tracking Mode Change	DSS-43 to 2-way. DSS-34 to 3-way. DKF time 152255
	21:45		1:45 PM	End Outbound GSE	
				Ka-band OFF	DKF time 214440
	21:45		1:45 PM	DSS-34 EOT	
	22:34		2:34 PM	DSS-43 Transmitter OFF	DKF time 223330
	22:45		2:45 PM	DSS-43 EOT	