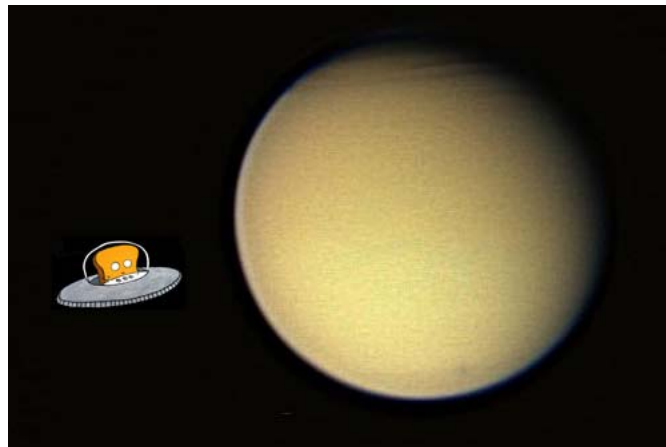


# TOST: Integration 102TI (T50) Wrap-Up



April 04, 2008

Kim Steadman, Trina Ray, Douglas Equils, Jo Pitesky



# Segment Basics

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Segment times:

BEG: 2009-037T13:19:00

END: 2009-039T16:19:00

Altitude: 960km

Time of C/A: 2009-038T08:50:52

Epoch: GMB\_E102\_Titan50



At least 2 weeks prior to the Kickoff Meeting make sure that all requests are in CIMS

## Kickoff Meeting

### Present

Master Timeline

### Discuss

Timeline  
Op Modes  
Telem Modes  
Deadbands for RCS

### Homework

Custom Handoff Attitudes  
Unique Op Mode Requirements (SCO)  
Turn Assignments  
CCRs  
High Value Science

## Detailed Meeting

### Present

Master Timeline  
SMT Report  
Timeline Graphic  
TOL  
SPASS  
DSN Reports  
High Value Science

### Discuss

Data Volume Cuts

### Homework

CCRs  
High Level Science Objectives

## Wrap-up Meeting

### Present

Wrap-up Package  
Checklist  
High Level Science Objectives

### Discuss

N/A

### Homework

N/A



# High-level Science Objectives

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- CIRS – On T50 CIRS focuses on mapping temperatures, trace hydrocarbons, nitriles and oxygen compounds in Titan's stratosphere. CIRS also continues to search for weak isotopes and new gas species.
  
- INMS –
  
- ISS – ISS will ride-along with VIMS to monitor clouds. (No illuminated prime observations.)
  
- RPWS - Will measure the thermal plasma density and temperature, observe plasma waves which play a role in the interaction of Titan with the magnetosphere, and look for lightning in Titan's atmosphere.
  
- RADAR – SAR of south polar lakeland region, and of mountain ranges SW of Tsegihi suggested in VIMS data.
  
- UVIS - UVIS will obtain an image cube of Titan's atmosphere at EUV and FUV wavelengths by sweeping its slit across the disk. These cubes provide spectral and spatial information on nitrogen emissions, H emission and absorption, absorption by simple hydrocarbons, and the scattering properties of haze aerosols. This is one of many such cubes gathered over the course of the mission to provide latitude and seasonal coverage of Titan's middle atmosphere and stratosphere.
  
- VIMS - During T50, VIMS will observe Titan from a large distance and will conduct cloud mapping. It will ride along with other instruments to probe Titan's atmosphere at the limb.



# Master Timeline for T50

T50		960					
Start Time	End Time	Prime Activity	Obs. Detail	Op Mode	TLM Mode	Comments	
2009-037T13:19:00	2009-037T13:59:00	SP Turn to WP	NEG_Y to Titan (0.0,-5.0,0.0 deg. offset), NEG_Z to 359.0/-21.0	DFPW Normal	S_N_ER_3		
C/A - 18:51:20	C/A - 18:36:20	OD Uncertainty Dead Time				S_N_ER_3	
C/A - 18:36:20	-13:00	VIMS	Template B	DFPW Normal	S_N_ER_3		
-13:00	-09:30	CIRS	Template C (short)	<a href="#">RADWU@-9:45</a>	S_N_ER_5a for 15 min		
-09:30	-05:30	CIRS	Template F (full)	RADWU	S_N_ER_3		
		<b>Begin custom period</b>					
-05:30	-05:00	RADAR Turn to RADAR attitude		RADRWA	S_N_ER_8		
-05:00	-02:00	RADAR	Template L	RADRWA	S_N_ER_8		
-02:00	-01:12	RADAR	Scatterometry/Radiometry	RADRWA	S_N_ER_8		
-01:12	-00:50	<b>RWA to RCS Transition</b>		RADRWA->RADRCS	S_N_ER_8		
-00:50	-00:30	RADAR	Hi-SAR	RADRCS	S_N_ER_8		
-00:30	-00:18	RADAR	Altimetry	RADRCS	S_N_ER_8		
-00:18	-00:12	Turn to INMS attitude	Check turn times	RADRCS	S_N_ER_8		
-00:12	0	INMS		RADRCS	S_N_ER_8	Deadband (2,2,20)	
2009-038T08:50:20		CLOSEST APPROACH		+/- 3 mins RADAR SAR Ride along NEG_X to RAM, NEG_Z to Titan			
0	+00:12	INMS		RADRCS	S_N_ER_8		
+00:12	+00:18	Turn to RADAR attitude	Check turn times	RADRCS	S_N_ER_8		
+00:18	+00:30	RADAR	Altimetry	RADRCS	S_N_ER_8		
+00:30	+00:50	RADAR	Hi-SAR	RADRCS	S_N_ER_8		
+00:50	+01:14	<b>RCS to RWA Transition</b>		RADRCS->RADRWA	S_N_ER_8		
+01:14	+02:00	RADAR	Scatterometry/Radiometry	RADRWA	S_N_ER_8		
+02:00	+05:30	RADAR	Template L	RADRWA	S_N_ER_8		
+05:30	+06:00	RADAR Turn to Waypoint attitude		RADRWA	S_N_ER_8		
		<b>end custom period</b>					
+06:00	+09:00	UVIS	Template P	DFPW Normal	S_N_ER_3		
+09:00	+10:00	ISS	Template N	DFPW Normal	S_N_ER_3		
+10:00	+13:00	CIRS	Template N	DFPW Normal	S_N_ER_3		
+13:00	+13:30	ISS (stare)	Template M2	DFPW Normal	S_N_ER_3		
+13:30	C/A + 18	CIRS	Template M2	DFPW Normal	S_N_ER_3		
C/A + 18	C/A + 18:33:40	ISS (stare)	Template M2	DFPW Normal	S_N_ER_3		
C/A + 18:33:40	2009-039T3:39:00	OD Uncertainty Dead Time				S_N_ER_3	
2009-039T3:39:00	2009-039T04:19:00	SP Turn to Earth for downlink			S_N_ER_3		
2009-039T04:19:00	2009-039T13:19:00	70-m Array		DFPW Normal	RTE_N_SPB	G70	
2009-039T13:19:00	2009-039T16:19:00	Dual Playback		DFPW Normal	RTE_N_SPB	C34	

**Deadband: (2, 2, 20)**



# T50 Telemetry Mode Report

## TELEMETRY MODE REPORT

EPOCH RELATIVE	UTC	DURATION	TELEMETRY MODE	REQUEST
	2009-037T13:19:00.000	09:46:52	S_N_ER_3	SP_102NA_G70OBSNON039_NA
GMB_E102_Titan50-000T09:45:00	2009-037T23:05:52.000	00:15:00	S_N_ER_5A	SP_102NA_G70OBSNON039_NA
GMB_E102_Titan50-000T09:30:00	2009-037T23:20:52.000	04:00:00	S_N_ER_3	SP_102NA_G70OBSNON039_NA
GMB_E102_Titan50-000T05:30:00	2009-038T03:20:52.000	11:30:00	S_N_ER_8	SP_102NA_G70OBSNON039_NA
GMB_E102_Titan50+000T06:00:00	2009-038T14:50:52.000	13:28:08	S_N_ER_3	SP_102NA_G70OBSNON039_NA
	2009-039T04:19:00.000	01:00:00	RTE_N_SPB_142200	SP_103EA_G70METNON039_PRIME
	2009-039T05:19:00.000	07:15:00	RTE_N_SPB_165900	SP_103EA_G70METNON039_PRIME
	2009-039T12:34:00.000	00:45:00	RTE_N_SPB_142200	SP_103EA_G70METNON039_PRIME
	2009-039T13:19:00.000	03:00:00	RTE_N_SPB_35550	SP_103EA_C34BWGNON039_PRIME



# T50 SMT Report

DATA VOLUME SUMMARY --- TRANSFER FRAME OVERHEAD INCLUDED (80 BITS PER 8800-BIT FRAME)

DOWNLINK PASS NAME	Start doy hh:mm	End doy hh:mm	OBSERVATION_PERIOD							DOWNLINK_PASS							
			P4				P5	RECORDED	PLAYBACK								
			START (Mb)	SCI (Mb)	HK+E (Mb)	TOTAL (Mb)	CPACTY (Mb)	MRGN (Mb)	OPNAV (Mb)	SCI (Mb)	ENGR (Mb)	TOTAL (Mb)	CPACTY (Mb)	MARGN (Mb)	NET_MARGN (Mb)	CAROVRR (%)	
SP_103EA_G70METNON039_PRIME	039 04:19	039 13:19	0	3399	180	3579	3551	-27	0	282	53	3886	4435	549	607	13%	0
SP_103EA_C34BWGNON039_PRIME	039 13:19	039 16:19	0	0	143	143	3551	3407	0	93	18	255	312	57	58	18%	0

DATA VOLUME REPORT --- TRANSFER FRAME OVERHEAD NOT INCLUDED

Event	Start doy hh:mm	End doy hh:mm	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	PROBE (Mb)	ENGR (Mb)	TOTAL (Mb)
OBSERVATION_NOR	037 13:19	039 04:19	279.2	73.6	232.7	32.7	700.0	98.7	155.4	697.6	571.7	168.5	340.0	0.0	46.5	3396.5
OBSERVATION_SI	037 13:19	039 04:19	0.0	0.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0
SP_103EA_G70METNON039_PRIME	039 04:19	039 13:19	32.4	17.0	86.4	4.7	0.0	19.6	29.2	0.0	84.9	4.9	0.0	0.0	0.0	279.0
OBSERVATION_NOR	037 13:19	039 13:19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.5	143.5
SP_103EA_C34BWGNON039_PRIME	039 13:19	039 16:19	10.8	5.7	28.8	1.1	0.0	6.5	9.7	0.0	28.3	1.6	0.0	0.0	0.0	92.5
DAILY TOTAL SCIENCE	037 13:19	039 16:19	322.4	96.2	365.9	38.4	700.0	124.8	194.2	697.6	684.9	175.1	340.0	0.0		

CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	PROBE (Mb)
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TOTAL RECORDED (OPNAV data not included)      322.4    96.2    365.9    38.4    700.0    124.8    194.2    697.6    684.9    175.1    340.0    0.0



# T50 DSN Report

CASSINI DOWNLINK/DSN COVERAGE SUMMARY for 102TI\_T50\_2008-03-18.apf on 2008-Mar-20 07:41:42  
(+ = pass overlaps with previous pass; \* = conflicts with DSN maintenance; o = overlaps occultation)

DOWNLINK PASS					DSN PASS						
NAME	START_TO_END SCET	START_TO_END ERT	DUR hh:mm	DATA_RATES kbps	ID	START_TO_END SCET	START_TO_END ERT	DUR hh:mm	CALS min	LABEL	CNFG
G70METNON039	039T04:19-13:19	039T05:30-14:30	09:00	142,165,142	14	039T04:19-13:19	039T05:30-14:30	09:00	60 /15	TP	N003
+C34BWGNON039	039T13:19-16:19	039T14:30-17:30	03:00	35	34	039T12:59-16:19	039T14:10-17:30	03:20	60 /15	TP	N003



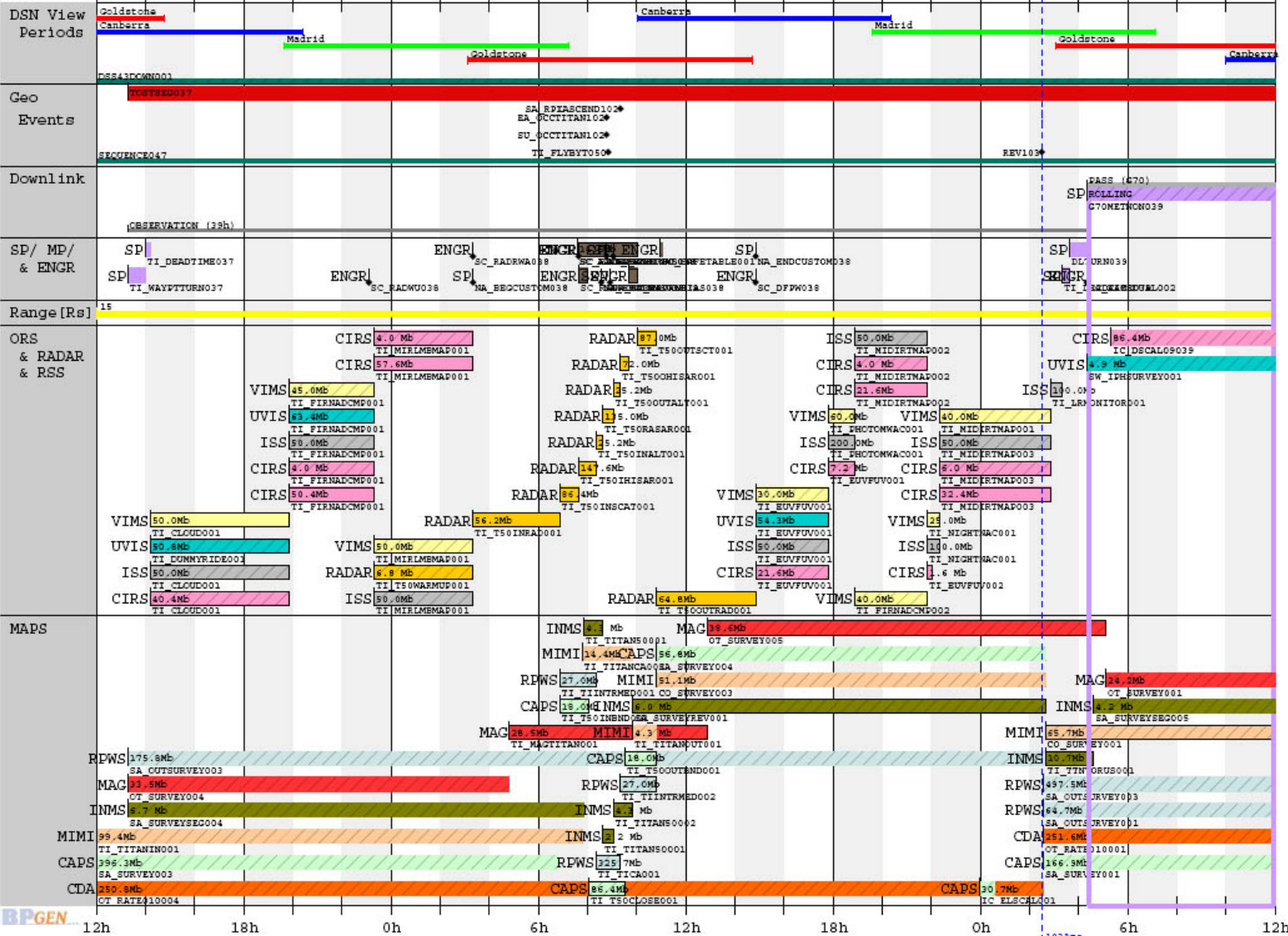
T50 Wrap-Up



2009 DOY 037  
12h 18h

DOY 038  
0h 6h

DOY 039  
0h 6h 12h



BP GEN

# T50 SPASS pg 1



Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
Sequence S47, length = 39 days		2009-009T15:16:00		038T21:19:00	2009-048T12:35:00			
Titan Flyby T50 Segment		2009-037T13:19:00		002T03:00:00	2009-039T16:19:00			
SP_102TI_WAYPTTURN037_PRIME	M	2009-037T13:19:00		000T00:40:00	2009-037T13:59:00	NEG_Y to Titan (0.0,-5.0,0.0 deg.	NEG_Z to 359.0/-21.0	Neg_Y to Titan, Neg_Z RA/DEC 359/-21 (0,-5.0)
<b>NEW WAYPOINT</b>		<b>2009-037T13:59:00</b>		<b>002T02:20:00</b>	<b>2009-039T16:19:00</b>	<b>NEG_Y to Titan (0.0,-5.0,0.0 deg.</b>	<b>NEG_Z to 359.0/-21.0</b>	
<b>SP_102TI_DEADTIME037_PRIME</b>	<b>M</b>	<b>2009-037T13:59:00</b>		<b>000T00:15:00</b>	<b>2009-037T14:14:00</b>	<b>NEG_Y to Titan (0.0,-5.0,0.0 deg.</b>	<b>NEG_Z to 359.0/-21.0</b>	
VIMS_102TI_CLOUD001_PRIME	C, I, M, U	2009-037T14:14:32	GMB_E102_Titan50-000T18:3000T05:36:20	2009-037T19:50:52		VIMS_IR to Titan	NEG_X to Sun	
CIRS_102TI_FIRNADCOMP001_PRIME	C, I, M, U,	2009-037T19:50:52	GMB_E102_Titan50-000T13:000T03:30:00	2009-037T23:20:52		CIRS_FP1 to Titan	PIC	
CIRS_102TI_MIRLMBMAP001_PRIME	C, I, M, R,	2009-037T23:20:52	GMB_E102_Titan50-000T09:3000T04:00:00	2009-038T03:20:52		CIRS_FP2 to Titan	PIC	
<b>Begin Custom Period</b>		<b>2009-038T03:20:52</b>	<b>GMB_E102_Titan50-000T05:000T00:00:01</b>	<b>2009-038T03:20:53</b>		<b>NEG_Y to Titan (0.0,-5.0,0.0 deg.</b>	<b>NEG_Z to 359.0/-21.0</b>	
RADAR_102TI_T50INRAD001_PRIME	M	2009-038T03:20:52	GMB_E102_Titan50-000T05:000T03:30:00	2009-038T06:50:52		NEG_Z to Titan	POS_Y to NTP	Pick up at NEG_Y to Titan (0.0,-5.0,0.0 deg. offset), NEG_Z to 359.0/-21.0; Hand off at NEG_Z to Titan, NEG_X to NTP. Use +Y_NTP and -X_NTP for the 2ndary for the two polarizations.
RADAR_102TI_T50INSCAT001_PRIME	M	2009-038T06:50:52	GMB_E102_Titan50-000T02:000T00:48:00	2009-038T07:38:52		NEG_Z to Titan	NEG_X to NTP	Pick up at NEG_Z to Titan, NEG_X to NTP; Hand off at NEG_Z to Titan, NEG_X to NTP.
ENGR_102SC_RADRCS038_PRIME	M	2009-038T07:38:52	GMB_E102_Titan50-000T01:1000T00:01:00	2009-038T07:39:52		NEG_Z to Titan	NEG_X to NTP	Pick up at NEG_Z to Titan, NEG_X to NTP; Hand off at NEG_Z to Titan, NEG_X to NTP. Deadband (2,2,20)
RADAR_102TI_T50IHISAR001_PRIME	M	2009-038T07:39:52	GMB_E102_Titan50-000T01:1000T00:41:00	2009-038T08:20:52		NEG_Z to Titan (0.0,0.0,10.0 deg.	NEG_X to NTP	Pick up at NEG_Z to Titan, NEG_X to NTP; Hand off at NEG_Z to Titan, NEG_X to NTP.
RADAR_102TI_T50INALT001_PRIME	M	2009-038T08:20:52	GMB_E102_Titan50-000T00:3000T00:18:00	2009-038T08:38:52		NEG_Z to Titan	NEG_X to NTP	Pick up at NEG_Z to Titan, NEG_X to NTP; Hand off at NEG_X to SC_RAM, NEG_Z to Titan.
Begin Reroute of INMS data ...		2009-038T08:35:52	GMB_E102_Titan50-000T00:1000T00:00:01	2009-038T08:35:53				
RADAR_102TI_T50RASAR001_PRIME	M	2009-038T08:38:52	GMB_E102_Titan50-000T00:1000T00:24:00	2009-038T09:02:52		NEG_X to Titan_SC_RAM	NEG_Z to Titan	Pick up at NEG_X to SC_RAM, NEG_Z to Titan; Hand off at NEG_X to SC_RAM, NEG_Z to Titan. Ride-along at c/a.
Begin Dual Playback Science		2009-038T08:45:52	GMB_E102_Titan50-000T00:000T00:00:01	2009-038T08:45:53				
102TI (t) T50 TITAN Outbo...		2009-038T08:50:52	000T00:00:01	2009-038T08:50:53				
End Dual Playback Science		2009-038T08:55:52	GMB_E102_Titan50+000T00:000T00:00:01	2009-038T08:55:53				
RADAR_102TI_T50OUTALT001_PRIME	M	2009-038T09:02:52	GMB_E102_Titan50+000T00:000T00:18:00	2009-038T09:20:52		NEG_Z to Titan	NEG_X to NTP	Pick up at NEG_X to SC_RAM, NEG_Z to Titan; Hand off at NEG_Z to Titan, NEG_X to NTP.
End reroute of INMS to P5.		2009-038T09:05:52	GMB_E102_Titan50+000T00:000T00:00:01	2009-038T09:05:53				
RADAR_102TI_T50OHISAR001_PRIME	M	2009-038T09:20:52	GMB_E102_Titan50+000T00:000T00:20:00	2009-038T09:40:52		NEG_Z to Titan	NEG_X to NTP	Pick up at NEG_Z to Titan, NEG_X to NTP; Hand off at NEG_Z to Titan, NEG_X to NTP.
ENGR_102SC_RADRWBIAS038_PPS	M	2009-038T09:40:52	GMB_E102_Titan50+000T00:000T00:21:41	2009-038T10:02:33		NEG_Z to Titan	NEG_X to NTP	Pick up at NEG_Z to Titan, NEG_X to NTP; Hand off at NEG_Z to Titan, NEG_X to NTP.
RADAR_102TI_T50OUTSCT001_PRIME	M	2009-038T10:02:33	GMB_E102_Titan50+000T01:000T00:48:19	2009-038T10:50:52		NEG_Z to Titan	NEG_X to NTP	Pick up at NEG_Z to Titan, NEG_X to NTP; Hand off at NEG_Z to Titan, NEG_X to NTP.
RADAR_102TI_T50OUTRAD001_PRIME		2009-038T10:50:52	GMB_E102_Titan50+000T02:000T04:00:00	2009-038T14:50:52		NEG_Z to Titan	NEG_X to NTP	Pick up at NEG_Z to Titan, NEG_X to NTP; Hand off at NEG_Y to Titan (0.0,-5.0,0.0 deg. offset), NEG_Z to 359.0/-21.0. Use -X_NTP and -Y_NTP for the 2ndary for the two polarizations.
<b>End Custom Period</b>		<b>2009-038T14:50:52</b>	<b>GMB_E102_Titan50+000T06:000T00:00:01</b>	<b>2009-038T14:50:53</b>		<b>NEG_Y to Titan (0.0,-5.0,0.0 deg.</b>	<b>NEG_Z to 359.0/-21.0</b>	

# T50 SPASS pg 2



Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
UVIS_102TI_EUVFUV001_PRIME	C, I, V	2009-038T14:50:52	GMB_E102_Titan50+000T06:00T03:00:00	000T03:00:00	2009-038T17:50:52	NEG_Y to Titan (0.0,5.0,0.0 deg.	c NEG_Z to 359.0/21.0	Use primary and secondary of waypoint (at end of custom period) to minimize turns.
ISS_102TI_PHOTOMWAC001_PRIME	C, V	2009-038T17:50:52	GMB_E102_Titan50+000T09:00T01:00:00	000T01:00:00	2009-038T18:50:52	ISS_NAC to Titan	NEG_X to Sun	
CIRS_102TI_MIDIRTMAP002_PRIME	C, I, V	2009-038T18:50:52	GMB_E102_Titan50+000T10:00T03:00:00	000T03:00:00	2009-038T21:50:52	CIRS_FPB to Titan	POS_X to North_Pole_Dir	
ISS_102TI_NIGHTNAC001_PRIME	C, V	2009-038T21:50:52	GMB_E102_Titan50+000T13:00T00:30:00	000T00:30:00	2009-038T22:20:52	ISS_NAC to Titan	NEG_X to Sun	
CIRS_102TI_MIDIRTMAP003_PRIME	C, I, V	2009-038T22:20:52	GMB_E102_Titan50+000T13:00T04:30:00	000T04:30:00	2009-039T02:50:52	CIRS_FPB to Titan	POS_X to North_Pole_Dir	
Apoapse Per = 11.9 d, inc ...		2009-039T02:29:29		000T00:00:01	2009-039T02:29:30			
ISS_103TI_LRMONITOR001_PRIME		2009-039T02:50:52	GMB_E102_Titan50+000T18:00T00:30:00	000T00:30:00	2009-039T03:20:52	ISS_NAC to Titan	NEG_X to Sun	
<b>SP_103TI_DEADTIME039_PRIME</b>		<b>2009-039T03:20:52</b>	<b>GMB_E102_Titan50+000T18:00T00:18:08</b>	<b>000T00:18:08</b>	<b>2009-039T03:39:00</b>	<b>NEG_Y to Titan (0.0,5.0,0.0 deg.</b>	<b>NEG_Z to 359.0/21.0</b>	
SP_103EA_DLTRN039_PRIME		2009-039T03:39:00		000T00:40:00	2009-039T04:19:00	XBAND to Earth	POS_X to NEP	
SP_103EA_G70METNON039_PRIME	C	2009-039T04:19:00		000T09:00:00	2009-039T13:19:00	XBAND to Earth	Rolling	POS_X to NEP
Pointer Reset in preparatio...		2009-039T13:19:00		000T00:00:01	2009-039T13:19:01			
SP_103EA_C34BWGNON039_PRIME	C	2009-039T13:19:00		000T03:00:00	2009-039T16:19:00	XBAND to Earth	Rolling	POS_X to NEP

# T50 TOL page 1



Request	AGPEN	Start Time	Epoch	Duration	End Time	Rate	Data Volume	SPASS Type	Primary Pointing	Secondary Pointing	Pointing Agreement
CAPS_102SA_SURVEY003_PRIME	CAPS_16000	2009-033T16:45:00		004T14:05:43	2009-038T06:50:43	1000	396.343	Non-SPASS			
CAPS_102TI_T50INBND001_PRIME	CAPS_16000	2009-038T06:50:52	GMB_E102_Titan50-000T02:00:00	000T01:15:00	2009-038T08:05:52	4000	18	SPASS Rider			
CAPS_102TI_T50CLOSE001_PRIME	CAPS_16000	2009-038T08:05:52	GMB_E102_Titan50-000T00:45:00	000T01:30:00	2009-038T09:35:52	16000	86.4	SPASS Rider			
CAPS_102TI_T50OUTBND001_PRIME	CAPS_16000	2009-038T09:35:52	GMB_E102_Titan50+000T00:45:00	000T01:15:00	2009-038T10:50:52	4000	18	SPASS Rider			
CAPS_102SA_SURVEY004_PRIME	CAPS_16000	2009-038T10:50:43		000T15:46:17	2009-039T02:37:00	1000	56.777	Non-SPASS			
CAPS_102IC_ELSCAL001_PRIME	CAPS_16000	2009-039T00:00:00		000T00:34:08	2009-039T00:34:08	15000	30.72	Non-SPASS			
CAPS_103SA_SURVEY001_PRIME	CAPS_16000	2009-039T02:36:00		001T22:21:00	2009-041T00:57:00	1000	166.86	Non-SPASS			
CDA_1020T_RATE010004_RIDER	CDA_524	2009-033T13:38:59		005T12:57:00	2009-039T02:35:59	524	250.797	Non-SPASS			
CDA_1030T_RATE010001_RIDER	CDA_524	2009-039T02:36:00		005T13:22:00	2009-044T15:58:00	524	251.583	Non-SPASS			
CIRS_102TI_CLOUD001_VIMS	CIRS_4000	2009-037T14:14:32	GMB_E102_Titan50-000T18:36:20	000T05:36:20	2009-037T19:50:52	2000	40.36	SPASS Rider			
CIRS_102TI_FIRNADCMP001_PRIME	CIRS_4000	2009-037T19:50:52	GMB_E102_Titan50-000T13:00:00	000T03:30:00	2009-037T23:20:52	4000	50.4	Prime	CIRS_FP1 to Titan	PIC	
CIRS_102TI_FIRNADCMP001_SI	ISS_SUPPOF	2009-037T19:50:52	GMB_E102_Titan50-000T13:00:00	000T03:30:00	2009-037T23:20:52	0	4	SPASS Rider			
CIRS_102TI_MIRLMBMAP001_PRIME	CIRS_4000	2009-037T23:20:52	GMB_E102_Titan50-000T09:30:00	000T04:00:00	2009-038T03:20:52	4000	57.6	Prime	CIRS_FP2 to Titan	PIC	
CIRS_102TI_MIRLMBMAP001_SI	ISS_SUPPOF	2009-037T23:20:52	GMB_E102_Titan50-000T09:30:00	000T04:00:00	2009-038T03:20:52	0	4	SPASS Rider			
CIRS_102TI_EUVFUV001_UVIS	CIRS_4000	2009-038T14:50:52	GMB_E102_Titan50+000T06:00:00	000T03:00:00	2009-038T17:50:52	2000	21.6	SPASS Rider			
CIRS_102TI_EUVFUV001_ISS	CIRS_4000	2009-038T17:50:52	GMB_E102_Titan50+000T09:00:00	000T01:00:00	2009-038T18:50:52	2000	7.2	SPASS Rider			
CIRS_102TI_MIDIRTMAP002_PRIME	CIRS_4000	2009-038T18:50:52	GMB_E102_Titan50+000T10:00:00	000T03:00:00	2009-038T21:50:52	2000	21.6	Prime	CIRS_FP2 to Titan	POS_X to North_Pole_Dir	
CIRS_102TI_MIDIRTMAP002_SI	ISS_SUPPOF	2009-038T18:50:52	GMB_E102_Titan50+000T10:00:00	000T03:00:00	2009-038T21:50:52	0	4	SPASS Rider			
CIRS_102TI_EUVFUV002_ISS	CIRS_4000	2009-038T21:50:52	GMB_E102_Titan50+000T13:00:00	000T00:13:00	2009-038T22:03:52	2000	1.56	SPASS Rider			
CIRS_102TI_MIDIRTMAP003_PRIME	CIRS_4000	2009-038T22:20:52	GMB_E102_Titan50+000T13:30:00	000T04:30:00	2009-039T02:50:52	2000	32.4	Prime	CIRS_FP2 to Titan	POS_X to North_Pole_Dir	
CIRS_102TI_MIDIRTMAP003_SI	ISS_SUPPOF	2009-038T22:20:52	GMB_E102_Titan50+000T13:30:00	000T04:30:00	2009-039T02:50:52	0	6	SPASS Rider			
CIRS_103IC_DSCAL09039_SP	CIRS_4000	2009-039T05:19:00		000T08:00:00	2009-039T13:19:00	3000	86.4	SPASS Rider			
CIRS_103IC_DSCAL09439_SP	CIRS_4000	2009-039T14:19:00		000T02:00:00	2009-039T16:19:00	4000	28.8	SPASS Rider			
ENGR_102SC_RADWU038_PPS	OpMode	2009-037T23:05:52	GMB_E102_Titan50-000T09:45:00	000T00:00:07	2009-037T23:05:59	0	0	Non-SPASS			
ENGR_102SC_RADRW038_PPS	OpMode	2009-038T03:20:52	GMB_E102_Titan50-000T05:30:00	000T00:00:44	2009-038T03:21:36	0	0	Non-SPASS			
ENGR_102SC_AACSDUAL001_CDS	ENGR_1638	2009-038T07:35:52	GMB_E102_Titan50-000T01:15:00	000T02:29:00	2009-038T10:04:52	1638	14.644	Non-SPASS			
ENGR_102SC_RADRC038_PPS	OpMode	2009-038T07:38:52	GMB_E102_Titan50-000T01:12:00	000T00:21:13	2009-038T08:00:05	0	0	Non-SPASS			
ENGR_102SC_RADRC038_PRIME	MILESTONE	2009-038T07:38:52	GMB_E102_Titan50-000T01:12:00	000T00:01:00	2009-038T07:39:52	0	0	Prime	NEG_Z to Titan	NEG_X to NTP	Deadband (2,2,20)
ENGR_102SC_RADRWBIAS038_PPS	OpMode	2009-038T09:40:52	GMB_E102_Titan50+000T00:50:00	000T00:21:41	2009-038T10:02:33	0	0	Prime	NEG_Z to Titan	NEG_X to NTP	
ENGR_102SC_SAFETABLE001_AA	MILESTONE	2009-038T11:00:00		000T00:01:00	2009-038T11:01:00	0	0	Non-SPASS			
ENGR_102SC_DFFW038_PPS	OpMode	2009-038T14:49:52	GMB_E102_Titan50+000T05:59:00	000T00:00:37	2009-038T14:50:29	0	0	Non-SPASS			
ENGR_103SC_AACSDUAL002_CDS	MILESTONE	2009-039T04:18:47		000T00:00:02	2009-039T04:18:49	0	0	Non-SPASS			
ENGR_103NA_DUALPB039_SP	ENGR_1638	2009-039T13:19:00		000T00:00:01	2009-039T13:19:01	1.43E+08	143.499	SPASS Note			
INMS_102SA_SURVEYSEG004_INM	INMS_1498	2009-037T13:19:00		000T18:31:52	2009-038T07:50:52	100	6.671	Non-SPASS			
INMS_102TI_TITAN50001_INMS	INMS_1498	2009-038T07:50:52	GMB_E102_Titan50-000T01:00:00	000T00:48:00	2009-038T08:38:52	1498	4.314	Non-SPASS			
INMS_102TI_TITAN50001_PRIME	INMS_1498	2009-038T08:38:52	GMB_E102_Titan50-000T00:12:00	000T00:24:00	2009-038T09:02:52	1498	2.157	Non-SPASS			
INMS_102TI_TITAN50002_INMS	INMS_1498	2009-038T09:02:52	GMB_E102_Titan50+000T00:12:00	000T00:48:00	2009-038T09:50:52	1498	4.314	Non-SPASS			
INMS_102SA_SURVEYREV001_INM	INMS_1498	2009-038T09:50:52	GMB_E102_Titan50+000T01:00:00	000T16:46:08	2009-039T02:37:00	100	6.037	Non-SPASS			
INMS_103TI_TINTORUS001_INMS	INMS_1498	2009-039T02:37:00	E103_Apo+000T00:00:00	000T01:59:00	2009-039T04:36:00	1498	10.696	Non-SPASS			
INMS_103SA_SURVEYSEG005_INM	INMS_1498	2009-039T04:36:00		000T11:43:00	2009-039T16:19:00	100	4.218	Non-SPASS			

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Request	AGPEN	Start Time	Epoch	Duration	End Time	Rate	Data Volume	SPASS Type	Primary Pointing	Secondary Pointing	Pointing Agreement
ISS_102TI_CLOUD001_VIMS	ISS_Phot_1	2009-037T14:14:32	GMB_E102_Titan50-000T18:36:20	000T05:36:20	2009-037T19:50:52	0	50	SPASS Rider			
ISS_102TI_FIRNADCMP001_CIRS	ISS_Phot_1	2009-037T19:50:52	GMB_E102_Titan50-000T13:00:00	000T03:30:00	2009-037T23:20:52	0	50	SPASS Rider			
ISS_102TI_MIRLMBMAP001_CIRS	ISS_Phot_1	2009-037T23:20:52	GMB_E102_Titan50-000T09:30:00	000T04:00:00	2009-038T03:20:52	0	50	SPASS Rider			
ISS_102TI_EUVFUV001_UVIS	ISS_Phot_1	2009-038T14:50:52	GMB_E102_Titan50+000T06:00:00	000T03:00:00	2009-038T17:50:52	0	50	SPASS Rider			
ISS_102TI_PHOTOMWAC001_PRIME	ISS_Phot_1	2009-038T17:50:52	GMB_E102_Titan50+000T09:00:00	000T01:00:00	2009-038T18:50:52	0	200	Prime	ISS_NAC to Titan	NEG_X to Sun	
ISS_102TI_MIDIRTMAP002_CIRS	ISS_Phot_1	2009-038T18:50:52	GMB_E102_Titan50+000T10:00:00	000T03:00:00	2009-038T21:50:52	0	50	SPASS Rider			
ISS_102TI_NIGHTNAC001_PRIME	ISS_Phot_1	2009-038T21:50:52	GMB_E102_Titan50+000T13:00:00	000T00:30:00	2009-038T22:20:52	0	100	Prime	ISS_NAC to Titan	NEG_X to Sun	
ISS_102TI_MIDIRTMAP003_CIRS	ISS_Phot_1	2009-038T22:20:52	GMB_E102_Titan50+000T13:30:00	000T04:30:00	2009-039T02:50:52	0	50	SPASS Rider			
ISS_103TI_LRMONITOR001_PRIME	ISS_Phot_1	2009-039T02:50:52	GMB_E102_Titan50+000T18:00:00	000T00:30:00	2009-039T03:20:52	0	100	Prime	ISS_NAC to Titan	NEG_X to Sun	
MAG_102OT_SURVEY004_PRIME	MAG_1976	2009-037T13:19:00		000T15:31:52	2009-038T04:50:52	600	33.547	Non-SPASS			
MAG_102TI_MAGTITAN001_PRIME	MAG_1976	2009-038T04:50:52	GMB_E102_Titan50-000T04:00:00	000T08:00:00	2009-038T12:50:52	988	28.454	Non-SPASS			
MAG_102OT_SURVEY005_PRIME	MAG_1976	2009-038T12:50:52	GMB_E102_Titan50+000T04:00:00	000T16:16:08	2009-039T05:07:00	658.7	38.577	Non-SPASS			
MAG_103OT_SURVEY001_PRIME	MAG_1976	2009-039T05:07:00		000T11:12:00	2009-039T16:19:00	600	24.192	Non-SPASS			
MIMI_102TI_TITANIN001_RIDER	MIMI_8000	2009-037T08:50:00		000T23:00:00	2009-038T07:50:00	1200	99.36	SPASS Rider			
MIMI_102TI_TITANCA001_RIDER	MIMI_8000	2009-038T07:50:00		000T02:00:00	2009-038T09:50:00	2000	14.4	SPASS Rider			
MIMI_102TI_TITANOUT001_RIDER	MIMI_8000	2009-038T09:50:00		000T01:00:00	2009-038T10:50:00	1200	4.32	SPASS Rider			
MIMI_102CO_SURVEY003_RIDER	MIMI_8000	2009-038T10:50:00		000T15:47:00	2009-039T02:37:00	900	51.138	Non-SPASS			
MIMI_103CO_SURVEY001_RIDER	MIMI_8000	2009-039T02:37:00	E103_Apo+000T00:00:00	000T20:16:34	2009-039T22:53:34	900	65.695	Non-SPASS			
MP_099NA_DSS43DOWN001_NA	MILESTONE	2009-004T22:46:00		097T23:59:59	2009-102T22:45:59	0	0	Non-SPASS			
MP_100NA_SEQUENCE047_NA	MILESTONE	2009-009T15:16:00		038T21:19:00	2009-048T12:35:00	0	0	SPASS Note			
MP_102EA_OCCTITAN102_NA	MILESTONE	2009-038T08:48:27		000T00:00:01	2009-038T08:48:28	0	0	Non-SPASS			
MP_102SU_OCCTITAN102_NA	MILESTONE	2009-038T08:48:51		000T00:00:01	2009-038T08:48:52	0	0	Non-SPASS			
MP_102TI_FLYBYT050_NA	MILESTONE	2009-038T08:50:52		000T00:00:01	2009-038T08:50:53	0	0	SPASS Note			
MP_102SA_RPXASCEND102_NA	MILESTONE	2009-038T09:19:59		000T00:00:01	2009-038T09:20:00	0	0	Non-SPASS			
MP_102SA_APOAPSE103_NA	MILESTONE	2009-039T02:29:29		000T00:00:01	2009-039T02:29:30	0	0	SPASS Note			
MP_102SA_REV103_NA	MILESTONE	2009-039T02:29:29		000T00:00:01	2009-039T02:29:30	0	0	Non-SPASS			
RADAR_102TI_T50WARMUP001_RIC	RADAR_3648	2009-037T23:20:52	GMB_E102_Titan50-000T09:30:00	000T04:00:00	2009-038T03:20:52	474.2	6.829	SPASS Rider			
RADAR_102TI_T50INRAD001_PRIME	RADAR_3648	2009-038T03:20:52	GMB_E102_Titan50-000T05:30:00	000T03:30:00	2009-038T06:50:52	4461.5	56.215	Prime	NEG_Z to Titan	POS_Y to NTP	Use +Y_NTP and -X_N
RADAR_102TI_T50INSCAT001_PRIM	RADAR_3648	2009-038T06:50:52	GMB_E102_Titan50-000T02:00:00	000T00:48:00	2009-038T07:38:52	30001.2	86.403	Prime	NEG_Z to Titan	NEG_X to NTP	
RADAR_102TI_T50IHISAR001_PRIME	RADAR_3648	2009-038T07:39:52	GMB_E102_Titan50-000T01:11:00	000T00:41:00	2009-038T08:20:52	60009.6	147.624	Prime	NEG_Z to Titan (0.0	NEG_X to NTP	
RADAR_102TI_T50INALT001_PRIME	RADAR_3648	2009-038T08:20:52	GMB_E102_Titan50-000T00:30:00	000T00:18:00	2009-038T08:38:52	23332.6	25.199	Prime	NEG_Z to Titan	NEG_X to NTP	
RADAR_102TI_T50RASAR001_PRIM	RADAR_3648	2009-038T08:38:52	GMB_E102_Titan50-000T00:12:00	000T00:24:00	2009-038T09:02:52	93753.6	135.005	Prime	NEG_X to Titan_SC	NEG_Z to Titan	Ride-along at c/a.
RADAR_102TI_T50OUTALT001_PRIM	RADAR_3648	2009-038T09:02:52	GMB_E102_Titan50+000T00:12:00	000T00:18:00	2009-038T09:20:52	23332.6	25.199	Prime	NEG_Z to Titan	NEG_X to NTP	
RADAR_102TI_T50OHISAR001_PRIM	RADAR_3648	2009-038T09:20:52	GMB_E102_Titan50+000T00:30:00	000T00:20:00	2009-038T09:40:52	60009.6	72.012	Prime	NEG_Z to Titan	NEG_X to NTP	
RADAR_102TI_T50OUTSC001_PRIM	RADAR_3648	2009-038T10:02:33	GMB_E102_Titan50+000T01:11:41	000T00:48:19	2009-038T10:50:52	30001.2	86.973	Prime	NEG_Z to Titan	NEG_X to NTP	
RADAR_102TI_T50OUTRAD001_PRIM	RADAR_3648	2009-038T10:50:52	GMB_E102_Titan50+000T02:00:00	000T04:00:00	2009-038T14:50:52	4501.6	64.824	Prime	NEG_Z to Titan	NEG_X to NTP	Use -X_NTP and -Y_N

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Request	AGPEN	Start Time	Epoch	Duration	End Time	Rate	Data Volume	SPASS Type	Primary Pointing	Secondary Pointing	Pointing Agreement
RPWS_102SA_OUTSURVEY003_PRRPWS_30464		2009-037T13:19:00		001T13:17:00	2009-039T02:36:00	1310	175.83	Non-SPASS			
RPWS_102TI_TIIINTRMED001_PRIMERPWS_30464		2009-038T06:50:52	GMB_E102_Titan50-000T02:00:00	000T01:30:00	2009-038T08:20:52	4996.1	26.979	Non-SPASS			
RPWS_102TI_TICAD01_PRIME	RPWS_18276	2009-038T08:20:52	GMB_E102_Titan50-000T00:30:00	000T01:00:00	2009-038T09:20:52	90478.1	325.721	Non-SPASS			
RPWS_102TI_TIIINTRMED002_PRIMERPWS_30464		2009-038T09:20:52	GMB_E102_Titan50+000T00:30:00	000T01:30:00	2009-038T10:50:52	4996.1	26.979	Non-SPASS			
RPWS_103SA_OUTSURVEY001_PRRPWS_30464		2009-039T02:36:00		000T13:43:00	2009-039T16:19:00	1310	64.688	Non-SPASS			
RPWS_103SA_OUTSURVEY003_PRRPWS_30464		2009-039T02:36:00		004T09:29:00	2009-043T12:05:00	1310	497.464	Non-SPASS			
SP_102NA_G70OBSNON039_NA	OBSERVATION	2009-037T13:19:00		001T15:00:00	2009-039T04:19:00	0	0	Non-SPASS			
SP_102NA_TOSTSEG037_NA	MILESTONE	2009-037T13:19:00		002T03:00:00	2009-039T16:19:00	0	0	SPASS Note			
SP_102TI_WAYPTTURN037_PRIME	MILESTONE	2009-037T13:19:00		000T00:40:00	2009-037T13:59:00	0	0	New Waypoint	NEG_Y to Titan (0.0	NEG_Z to 359.0/-21.0	Neg_Y to Titan, Neg_Z
SP_102TI_DEADTIME037_PRIME	MILESTONE	2009-037T13:59:00		000T00:15:00	2009-037T14:14:00	0	0	Prime	NEG_Y to Titan (0.0	NEG_Z to 359.0/-21.0	
SP_102NA_BEGCUSTOM038_NA	MILESTONE	2009-038T03:20:52	GMB_E102_Titan50-000T05:30:00	000T00:00:01	2009-038T03:20:53	0	0	SPASS Note			
SP_102NA_BEGINMS038_CDS	MILESTONE	2009-038T08:35:52	GMB_E102_Titan50-000T00:15:00	000T00:00:01	2009-038T08:35:53	0	0	SPASS Note			
SP_102NA_BEGHIVAL038_NA	MILESTONE	2009-038T08:45:52	GMB_E102_Titan50-000T00:05:00	000T00:00:01	2009-038T08:45:53	0	0	SPASS Note			
SP_102NA_ENDHIVAL038_NA	MILESTONE	2009-038T08:55:52	GMB_E102_Titan50+000T00:05:00	000T00:00:01	2009-038T08:55:53	0	0	SPASS Note			
SP_102NA_ENDINMS039_CDS	MILESTONE	2009-038T09:05:52	GMB_E102_Titan50+000T00:15:00	000T00:00:01	2009-038T09:05:53	0	0	SPASS Note			
SP_102NA_ENDCUSTOM038_NA	MILESTONE	2009-038T14:50:52	GMB_E102_Titan50+000T06:00:00	000T00:00:01	2009-038T14:50:53	0	0	SPASS Note			
SP_103TI_DEADTIME039_PRIME	MILESTONE	2009-039T03:20:52	GMB_E102_Titan50+000T18:30:00	000T00:18:08	2009-039T03:39:00	0	0	Prime	NEG_Y to Titan (0.0	NEG_Z to 359.0/-21.0	
SP_103EA_DLTURN039_PRIME	MILESTONE	2009-039T03:39:00		000T00:40:00	2009-039T04:19:00	0	0	Prime	XBAND to Earth	POS_X to NEP	
SP_103EA_G70METNON039_PRIME	DOWNLINK	2009-039T04:19:00		000T09:00:00	2009-039T13:19:00	0	0	Prime	XBAND to Earth	Rolling	POS_X to NEP
SP_103NA_G70METNON039_SP	DSN_PASS	2009-039T04:19:00		000T09:00:00	2009-039T13:19:00	0	0	Non-SPASS			
SP_103NA_C34BWGNON039_SP	DSN_PASS	2009-039T12:59:00		000T03:20:00	2009-039T16:19:00	0	0	Non-SPASS			
SP_103EA_C34BWGNON039_PRIME	DOWNLINK	2009-039T13:19:00		000T03:00:00	2009-039T16:19:00	0	0	Prime	XBAND to Earth	Rolling	POS_X to NEP
UVIS_102TI_DUMMYRIDE001_VIMS	UVIS_5032	2009-037T14:14:32	GMB_E102_Titan50-000T18:36:20	000T05:36:20	2009-037T19:50:52	2516	50.773	SPASS Rider			
UVIS_102TI_FIRNADCMP001_CIRS	UVIS_5032	2009-037T19:50:52	GMB_E102_Titan50-000T13:00:00	000T03:30:00	2009-037T23:20:52	5032	63.403	SPASS Rider			
UVIS_102TI_EUVFUV001_PRIME	UVIS_5032	2009-038T14:50:52	GMB_E102_Titan50+000T06:00:00	000T03:00:00	2009-038T17:50:52	5032	54.346	Prime	NEG_Y to Titan (0.0	NEG_Z to 359.0/-21.0	Use primary and secur
UVIS_103SW_IPHSURVEY001_RIDE	UVIS_5032	2009-039T04:19:00		000T09:00:00	2009-039T13:19:00	152.5	4.94	Non-SPASS			
UVIS_103SW_IPHSURVEY002_RIDE	UVIS_5032	2009-039T13:19:00		000T03:00:00	2009-039T16:19:00	152.5	1.647	Non-SPASS			
VIMS_102TI_CLOUD001_PRIME	VIMS_18432	2009-037T14:14:32	GMB_E102_Titan50-000T18:36:20	000T05:36:20	2009-037T19:50:52	2477.7	50	Prime	VIMS_IR to Titan	NEG_X to Sun	
VIMS_102TI_FIRNADCMP001_CIRS	VIMS_18432	2009-037T19:50:52	GMB_E102_Titan50-000T13:00:00	000T03:30:00	2009-037T23:20:52	3571.4	45	SPASS Rider			
VIMS_102TI_MIRLMBMAP001_CIRS	VIMS_18432	2009-037T23:20:52	GMB_E102_Titan50-000T09:30:00	000T04:00:00	2009-038T03:20:52	3472.2	50	SPASS Rider			
VIMS_102TI_EUVFUV001_VIMS	VIMS_18432	2009-038T14:50:52	GMB_E102_Titan50+000T06:00:00	000T03:00:00	2009-038T17:50:52	2777.8	30	SPASS Rider			
VIMS_102TI_PHOTOMWAC001_ISS	VIMS_18432	2009-038T17:50:52	GMB_E102_Titan50+000T09:00:00	000T01:00:00	2009-038T18:50:52	16666.7	60	SPASS Rider			
VIMS_102TI_FIRNADCMP002_CIRS	VIMS_18432	2009-038T18:50:52	GMB_E102_Titan50+000T10:00:00	000T03:00:00	2009-038T21:50:52	3703.7	40	SPASS Rider			
VIMS_102TI_NIGHTNAC001_ISS	VIMS_18432	2009-038T21:50:52	GMB_E102_Titan50+000T13:00:00	000T00:30:00	2009-038T22:20:52	13888.9	25	SPASS Rider			
VIMS_102TI_MIDIRTMAP001_CIRS	VIMS_18432	2009-038T22:20:52	GMB_E102_Titan50+000T13:30:00	000T04:30:00	2009-039T02:50:52	2469.1	40	SPASS Rider			



# Open Issues

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- Location of Dual Playback Science is -5 to +5.
  - SCO will reroute INMS (-15 min to +15 min) to P5. Approx. 2.7 Mb.
- High-level Science Objectives.
  - Still missing INMS
- CIRS heating of 4.9K near c/a. (mainly due to INMS attitude of -X to SC\_RAM)
- RADAR pointing during custom period is not finalized.