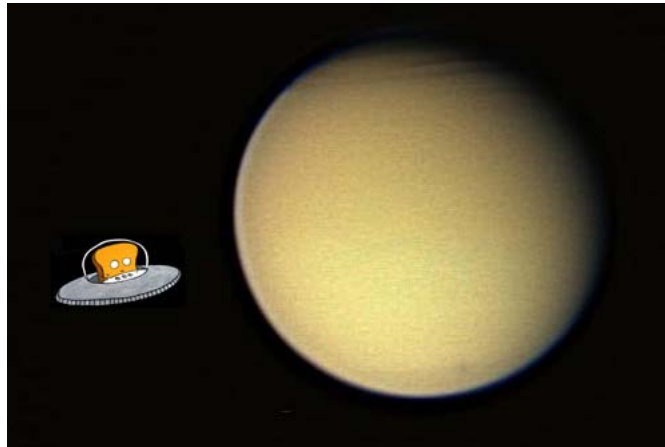


# TOST: Integration 124TI (T65) Handoff to S56



June 18, 2009

Kim Steadman, Jo Pitesky, Nora Kelly



# Segment Basics

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Segment times:

BEG: 2010-012T08:14:00

END: 2010-015T08:14:00

This is a 3 day segment with a “caboose” day on the end.

Altitude: 1073 km

Time of C/A: 2010-012T23:10:36

Epoch: GMB\_E124\_Titan65



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



# T65 High-level Science Objectives Pg 1

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- CIRS – Most observation types: surface temperature map, stratosphere map, integrations for trace species and composition.
- ISS – ISS will ride along with CIRS to track clouds and will continue to monitor clouds and the evolution thereof for an extra day after the Titan encounter. (No illuminated prime observations.)
- MAG - T65 is almost identical to T64, but over Titan's south pole. In nominal upstream conditions, Cassini would explore the south lobe of Titan's magnetic tail, very close to the moon. A close comparison with T64 and T63 will give important results on the structure of Titan's magnetic tail in the dusk sector.
- MIMI - Energetic ion and electron energy input to atmosphere--High value
- RADAR – Ridealong SAR on INMS inbound, SAR outbound to 8m SAR over Lacus Ontario
- CAPS -
- VIMS – During this flyby, VIMS will be ridealong with CIRS on the outbound where the phase angle is about 45 degrees. It provides a good opportunity to get a mosaic of the equatorial area between 160 and 270 long (Western portion of Shangri-la, Adiri, landing site) at a resolution of 25 to 30 km/pixel. VIMS will keep monitoring for mid-latitude clouds. On the inbound, will look at the terminator
- INMS - For T65, INMS is prime inbound, and riding along with RADR outbound. It is the highest southern latitude pass in the mission and will provide a great opportunity to observe the southern polar atmosphere and see the surface in a single flyby. Also provides excellent temporal proximity to T64 for comparison of the North and South polar regions.



# T65 High-level Science Objectives Pg 2

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- 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.
  
- RPWS - Measure thermal plasmas in Titan's ionosphere and surrounding environment; search for lightning in Titan's atmosphere; investigate the interaction of Titan with Saturn's magnetosphere.

# Master Timeline for T65



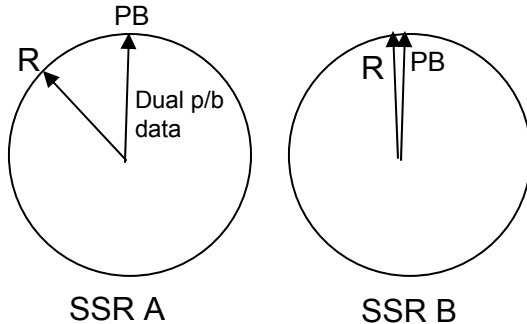
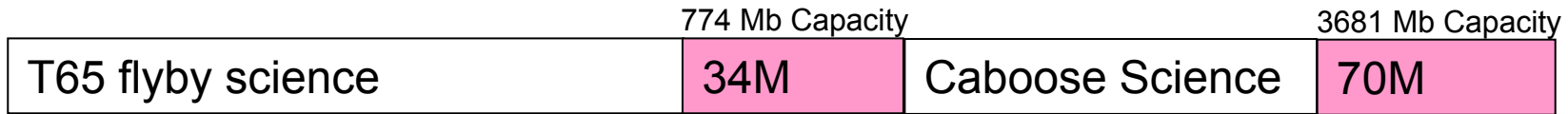
<b>T65</b>	<b>1073</b>
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Start Time	End Time	Prime Activity	Obs. Detail	Op Mode	TLM Mode	Comments
2010-012T08:14:00	2010-012T08:54:00	SP Turn to WP	NEG_Y to TITAN, NEG_X to SUN	DFPW Normal		
2010-012T08:54:00	C/A - 14:2:56	OD Uncertainty Dead Time				
C/A - 14:2:56	-13:00	CIRS	Template M4	DFPW Normal	S_N_ER3	
-13:00	-09:00	VIMS	Template O	DFPW Normal	S_N_ER3	
-09:00	-05:00	CIRS	Template R	RADWU at -05:15	S_N_ER5a for 15 min	
-05:00	-02:15	CIRS	Template T	RADWU	S_N_ER3	
-02:15	-02:14	RWA to RCS Transition		RADWU	S_N_ER3	
		begin custom period				
-2:14	-00:23	CAPS	NEG_X to DustRAM, NEG_Z to Titan Transition to a 2nd of NEG_Z to NTP outside -00:30	RADRCS	S_N_ER3	
-00:23	0	INMS	NEG_X to RAM, NEG_Z to Titan @ RADAR attitude at C/A	RADRCS	S_N_ER8	RADAR is doing the turn design. Will turn from CAPS attitude.
2010-012T23:11:56		CLOSEST APPROACH	NEG_X to RAM, NEG_Z to Titan	RADRCS	S_N_ER8	
0	+00:16	RADAR	SAR of Lacus Ontario	RADRCS	S_N_ER8	RADAR does the turn to CAPS attitude.
+00:16	+01:36	CAPS	transition to a 2nd of NEG_Z to NTP outside +00:30 Transition to RWA @ +1:36	DFPW Normal	S_N_ER3	
+01:36	+2:00	RCS to RWA Transition		DFPW Normal	S_N_ER3	CAPS continues their observation through the transition
+02:00	+05:00	CIRS	Template E	DFPW Normal	S_N_ER3	CIRS turns from the CAPS attitude.
		end custom period				
+05:00	+09:00	CIRS	Template F	DFPW Normal	S_N_ER3	
+09:00	+14:00	CIRS	Template C	DFPW Normal	S_N_ER3	
+14:00	C/A + 23	CIRS	Template A(Z)	DFPW Normal	S_N_ER3	
C/A + 23	2010-013T22:34:00	OD Uncertainty Dead Time				
2010-013T22:34:00	2010-013T23:14:00	SP Turn to Earth for downlink		DFPW Normal	S_N_ER3	
2010-013T23:14:00	2010-014T08:14:00	70-m Array		DFPW Normal	RTE_N_SPB	
2010-014T08:14:00	2010-014T08:54:00	SP Turn to WP		DFPW Normal	S_N_ER3	
2010-014T08:54:00	2010-014T14:00:00	ISS		DFPW Normal	S_N_ER3	
2010-014T14:00:00	2010-014T16:00:00	CAPS		DFPW Normal	S_N_ER3	MAGBNDPTG004
2010-014T16:00:00	2010-014T22:34:00	ISS		DFPW Normal	S_N_ER3	
2010-014T22:34:00	2010-014T23:14:00	SP Turn to Earth for downlink		DFPW Normal	S_N_ER3	
2010-014T23:14:00	2010-015T08:14:00	Madrid 70m		DFPW Normal	RTE_N_SPB	

Deadband: 2, 2, 20

Dual playback: No Dual Playback for this Segment

# Why no dual playback for T65?



After the T65 flyby, SSR B is full and SSR A has about 1400Mb on it.

Dual playback data is always written to SSR-A. To playback the dual playback for the second time, SSR-A must have been played back completely once.

In the T65 segment, it is impossible to playback SSR-A prior to the Madrid 70M that follows the caboose segment. Therefore, the only way to playback the “dual playback” science twice is to play it back twice over the same downlink pass. This means we would either get both playbacks or neither one. So dual playback isn’t possible fully contained within the TOST segment.

Integration constraints state that dual playback must be fully contained within the TOST segment and can’t be done in the following segment.



# T65 Telemetry Modes

## TELEMETRY MODE REPORT

EPOCH RELATIVE	UTC	DURATION	TELEMETRY MODE	REQUEST
GMB_E124_Titan65-000T05:15:00	2010-012T08:14:00.000	09:41:37	S_N_ER_3	SP_124NA_M34OBSNON013_NA
GMB_E124_Titan65-000T05:00:00	2010-012T17:55:37.000	00:15:00	S_N_ER_5A	SP_124NA_M34OBSNON013_NA
GMB_E124_Titan65-000T05:00:00	2010-012T18:10:37.000	04:37:00	S_N_ER_3	SP_124NA_M34OBSNON013_NA
GMB_E124_Titan65-000T00:23:00	2010-012T22:47:37.000	00:39:00	S_N_ER_8	SP_124NA_M34OBSNON013_NA
GMB_E124_Titan65+000T00:16:00	2010-012T23:26:37.000	23:47:23	S_N_ER_3	SP_124NA_M34OBSNON013_NA
	2010-013T23:14:00.000	00:30:00	RTE_N_SPB_22120	SP_124EA_M34BWGNON013_PRIME
	2010-013T23:44:00.000	01:45:00	RTE_N_SPB_27650	SP_124EA_M34BWGNON013_PRIME
	2010-014T01:29:00.000	04:30:00	RTE_N_SPB_33180	SP_124EA_M34BWGNON013_PRIME
	2010-014T05:59:00.000	02:00:00	RTE_N_SPB_27650	SP_124EA_M34BWGNON013_PRIME
	2010-014T07:59:00.000	00:15:00	RTE_N_SPB_22120	SP_124EA_M34BWGNON013_PRIME
	2010-014T08:14:00.000	15:00:00	S_N_ER_3	SP_124NA_M70OBSNON014_NA
	2010-014T23:14:00.000	00:30:00	RTE_N_SPB_99540	SP_124EA_M70METNON014_PRIME
	2010-014T23:44:00.000	00:45:00	RTE_N_SPB_124425	SP_124EA_M70METNON014_PRIME
	2010-015T00:29:00.000	06:30:00	RTE_N_SPB_142200	SP_124EA_M70METNON014_PRIME
	2010-015T06:59:00.000	00:45:00	RTE_N_SPB_124425	SP_124EA_M70METNON014_PRIME
	2010-015T07:44:00.000	00:30:00	RTE_N_SPB_99540	SP_124EA_M70METNON014_PRIME





# T65 SMT Report

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

DOWNLINK PASS NAME	OBSERVATION_PERIOD									DOWNLINK_PASS							
	Start doy hh:mm	End doy hh:mm	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)	MARGN (%)	CAROVN (Mb)
SP_124EA_M34BWGNON013_PRIME	013 23:14	014 08:14	0	3024	190	3214	3551	337	0	283	53	3550	774	-2777	-34	0%	2776
SP_124EA_M70METNON014_PRIME	014 23:14	015 08:14	2776	746	63	3586	3551	-34	0	283	53	3887	3681	-206	0	0%	206

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	012 08:14	013 23:14	534.7	73.6	333.5	24.1	350.0	218.1	168.0	270.2	565.9	90.6	340.0	0.0	188.3	3157.0
OBSERVATION_SI	012 08:14	013 23:14	0.0	0.0	28.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.0
SP_124EA_M34BWGNON013_PRIME	013 23:14	014 08:14	64.8	17.0	86.4	3.2	0.0	32.0	29.2	0.0	42.4	4.9	0.0	0.0	0.0	280.0
DAILY TOTAL SCIENCE	012 08:14	014 08:14	599.5	90.5	447.9	27.3	350.0	250.1	197.2	270.2	608.4	95.5	340.0	0.0	188.3	
OBSERVATION_NOR	014 08:14	014 23:14	108.0	28.3	0.0	5.4	400.0	53.4	48.6	0.0	70.7	0.0	25.0	0.0	62.7	802.1
SP_124EA_M70METNON014_PRIME	014 23:14	015 08:14	64.8	17.0	86.4	3.2	0.0	32.0	29.2	0.0	42.4	4.9	0.0	0.0	0.0	280.0
DAILY TOTAL SCIENCE	014 08:14	015 08:14	172.8	45.3	86.4	8.6	400.0	85.4	77.8	0.0	113.2	4.9	25.0	0.0	62.7	

	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	PROBE (Mb)
TOTAL RECORDED (OPNAV data not included)	772.3	135.8	534.3	36.0	750.0	335.5	275.0	270.2	721.6	100.5	365.0	0.0



# T65 DSN Report

CASSINI DOWNLINK/DSN COVERAGE SUMMARY for 124TI\_T65\_090528.apf on 2009-May-28 08:54:40  
(+ = 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
M34BWGNON013	013T23:14-08:14	014T00:30-09:30	09:00	22,27,33,27,22	55	013T23:14-08:14	014T00:29-09:29	09:00	60 /15	TP	N003
M70METNON014	014T23:14-08:14	015T00:30-09:30	09:00	99,124,142,124,99	63	014T23:14-08:14	015T00:29-09:29	09:00	60 /15	TP	N003

No overlap with maintenance.

# T65 SPASS

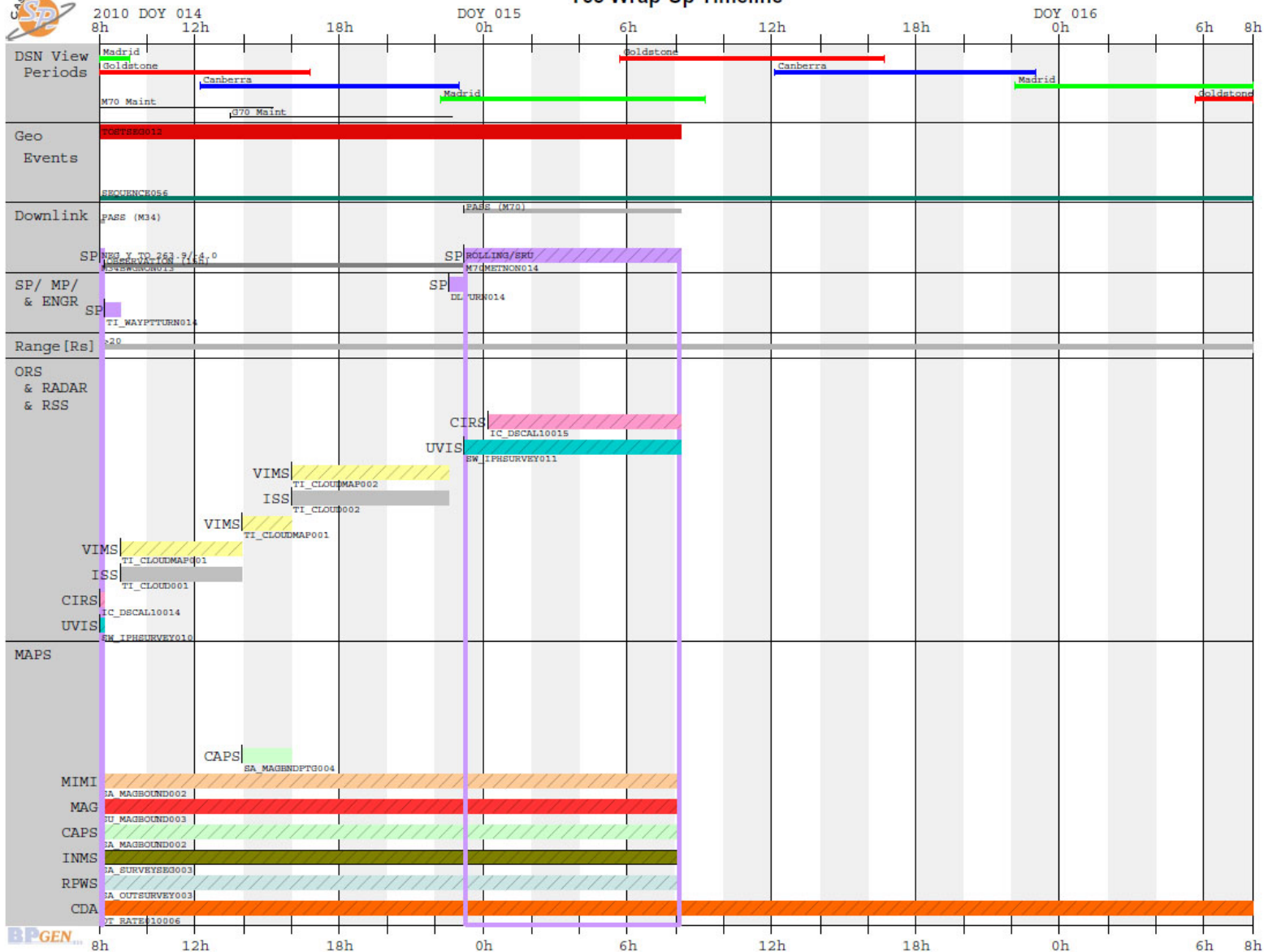


Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
Sequence S56, length = 32 days		2009-356T23:26:00		031T15:34:00	2010-023T15:00:00			
Titan Flyby T65 Segment		2010-012T08:14:00		003T00:00:00	2010-015T08:14:00			
SP_124TI_WAYPTTURN012_PRIME	M	2010-012T08:14:00		000T00:40:00	2010-012T08:54:00	NEG_Y to Titan	NEG_X to Sun	
<b>NEW WAYPOINT</b>		<b>2010-012T08:54:00</b>		<b>002T23:20:00</b>	<b>2010-015T08:14:00</b>	<b>NEG_Y to Titan</b>	<b>NEG_X to Sun</b>	
<b>SP_124TI_DEADTIME012_PRIME</b>	<b>M</b>	<b>2010-012T08:54:00</b>		<b>000T00:13:41</b>	<b>2010-012T09:07:41</b>	<b>NEG_Y to Titan</b>	<b>NEG_X to Sun</b>	
CIRS_124TI_MIDIRTMAP001_PRIME	C, I, M, V	2010-012T09:07:41	GMB_E124_Titan65-000T14:000T01:02:56	2010-012T10:10:37	CIRS_FPB to Titan	POS_X to North_Pole_Dir		
VIMS_124TI_CLOUDMAP001_PRIME	C, I, M	2010-012T10:10:37	GMB_E124_Titan65-000T13:000T04:00:00	2010-012T14:10:37	VIMS_IR to Titan	NEG_X to Sun		
CIRS_124TI_MIRLMBINT001_PRIME	C, I, M, U, \	2010-012T14:10:37	GMB_E124_Titan65-000T09:000T04:00:00	2010-012T18:10:37	CIRS_FPB to Titan	PIC		
CIRS_124TI_FIRNADMAP001_PRIME	C, I, M, R, \	2010-012T18:10:37	GMB_E124_Titan65-000T05:000T02:45:00	2010-012T20:55:37	CIRS_FP1 to Titan	POS_X to North_Pole_Dir		
ENGR_124SC_RADRCS012_PRIME	M, R	2010-012T20:55:37	GMB_E124_Titan65-000T02:1000T00:01:00	2010-012T20:56:37	NEG_Y to Titan	NEG_X to Sun	Deadband = (2,2,20)	
<b>Begin Custom Period</b>		<b>2010-012T20:56:37</b>	<b>GMB_E124_Titan65-000T02:000T00:00:01</b>	<b>2010-012T20:56:38</b>	<b>NEG_Y to Titan</b>	<b>NEG_X to Sun</b>		
CAPS_124TI_T65INPTG001_PRIME	M, R	2010-012T20:56:37	GMB_E124_Titan65-000T02:1000T01:51:00	2010-012T22:47:37	POS_Y to COROT (0.0,0.0,36.0 de	NEG_X to Dust_RAM		Pick up at NEG_Y to Titan, NEG_X to Sun; Hand off at POS_Y to COROT (0.0,0.0,36.0 deg. offset), NEG_X to Dust_RAM.
RADAR_124TI_T65RASAR001_PRIME	M, R	2010-012T22:47:37	GMB_E124_Titan65-000T00:2000T00:23:00	2010-012T23:10:37	NEG_X to Titan_SC_RAM	NEG_Z to Titan		Pick up at POS_Y to COROT (0.0,0.0,36.0 deg. offset), NEG_X to Dust_RAM; Hand off at NEG_X to Titan_SC_RAM, NEG_Z to Titan. Ride-along with INMS.
124TI (t) T65 TITAN Outbo...		2010-012T23:10:36		000T00:00:01	2010-012T23:10:37			
RADAR_124TI_T65OUTSAR001_PRIME	C, M	2010-012T23:10:37	GMB_E124_Titan65+000T00:000T00:16:00	2010-012T23:26:37	NEG_Z to Titan	NEG_X to Titan_SC_RAM		Pick up at NEG_X to Titan_SC_RAM, NEG_Z to Titan; Hand off at POS_Y to COROT (0.0,-40.0,8.0 deg. offset), NEG_X to Dust_RAM.
CAPS_124TI_T65OUTPTG001_PRIME	C, M, V	2010-012T23:26:37	GMB_E124_Titan65+000T00:000T01:22:55	2010-013T00:49:32	POS_Y to COROT (0.0,-40.0,8.0 de	NEG_X to Dust_RAM		Pick up at POS_Y to COROT (0.0,-40.0,8.0 deg. offset), NEG_X to Dust_RAM; Hand off at POS_Y to COROT (0.0,-40.0,8.0 deg. offset), NEG_X to Dust_RAM.
ENGR_124SC_DFPWBIAS013_PPS	C, M, V	2010-013T00:49:32	GMB_E124_Titan65+000T01:000T00:21:05	2010-013T01:10:37	POS_Y to COROT (0.0,-40.0,8.0 de	NEG_X to Dust_RAM		Pick up at POS_Y to COROT (0.0,-40.0,8.0 deg. offset), NEG_X to Dust_RAM; Hand off at POS_Y to COROT (0.0,-40.0,8.0 deg. offset), NEG_X to Dust_RAM. Deadband = (2,2,2) default
CIRS_124TI_FIRNADMAP002_PRIME	C, I, M, V	2010-013T01:10:37	GMB_E124_Titan65+000T02:000T03:00:00	2010-013T04:10:37	CIRS_FP1 to Titan	POS_X to North_Pole_Dir		Pick up at POS_Y to COROT (0.0,-40.0,8.0 deg. offset), NEG_X to Dust_RAM; Hand off at NEG_Y to Titan, NEG_X to Sun.
<b>End Custom Period</b>		<b>2010-013T04:10:37</b>	<b>GMB_E124_Titan65+000T05:000T00:00:01</b>	<b>2010-013T04:10:38</b>	<b>NEG_Y to Titan</b>	<b>NEG_X to Sun</b>		
CIRS_124TI_MIRLMBMAP002_PRIME	C, M, V	2010-013T04:10:37	GMB_E124_Titan65+000T05:000T04:00:00	2010-013T08:10:37	CIRS_FPB to Titan	PIC		
CIRS_124TI_FIRNADCMP002_PRIME	C, I, M, U, \	2010-013T08:10:37	GMB_E124_Titan65+000T09:000T05:00:00	2010-013T13:10:37	CIRS_FP1 to Titan	PIC		
CIRS_124TI_MIDIRTMAP002_PRIME	C, I, M, V	2010-013T13:10:37	GMB_E124_Titan65+000T14:000T09:00:00	2010-013T22:10:37	CIRS_FPB to Titan	POS_X to North_Pole_Dir		
<b>SP_124TI_DEADTIME013_PRIME</b>	<b>M</b>	<b>2010-013T22:10:37</b>	<b>GMB_E124_Titan65+000T23:000T00:23:23</b>	<b>2010-013T22:34:00</b>	<b>NEG_Y to Titan</b>	<b>NEG_X to Sun</b>		
SP_124EA_DLTURN013_PRIME	M	2010-013T22:34:00	000T00:40:00	2010-013T23:14:00	XBAND to Earth	NEG_Y to 263.9/-4.0		
SP_124EA_M34BWGNON013_PRIME	C, M	2010-013T23:14:00	000T09:00:00	2010-014T08:14:00	XBAND to Earth	NEG_Y to 263.9/-4.0		
SP_124TI_WAYPTTURN014_PRIME	M	2010-014T08:14:00	000T00:40:00	2010-014T08:54:00	NEG_Y to Titan	NEG_X to Sun		
ISS_124TI_CLOUD001_PRIME	M, V	2010-014T08:54:00	000T05:06:00	2010-014T14:00:00	ISS_NAC to Titan	NEG_X to Sun		Secondary orientation: NEG_X to Sun preferred, but flexible
CAPS_124SA_MAGBNDPTG004_PRIME	M, V	2010-014T14:00:00	000T02:00:00	2010-014T16:00:00	POS_Y to COROT (0.0,0.0,38.0 de	NEG_X to Sun		
ISS_124TI_CLOUD002_PRIME	M, V	2010-014T16:00:00	000T06:34:00	2010-014T22:34:00	ISS_NAC to Titan	NEG_X to Sun		Secondary orientation: NEG_X to Sun preferred, but flexible
SP_124EA_DLTURN014_PRIME	M	2010-014T22:34:00	000T00:40:00	2010-014T23:14:00	XBAND to Earth	NEG_Y to 263.9/-4.0		
SP_124EA_M70METNON014_PRIME	C, M	2010-014T23:14:00	000T09:00:00	2010-015T08:14:00	XBAND to Earth	Rolling/SRU		POS_X to NEP





# T65 Wrap-Up Timeline



BPGEN

printed on 5/28/2009

# T65 TOL page 1



Request	AGPEN	Start Time	Epoch	Duration	End Time	Rate	Data Volume	SPASS Type	Primary Pointing	Secondary Pointing
CAPS 124SA_DUSKMSPH002_PRIME	CAPS 16000	2010-012T06:45:00		000T14:25:37	2010-012T21:10:37	4000	207.7	SPASS Rider		
CAPS 124TI_T65INPTG001_PRIME	CAPS 16000	2010-012T20:56:37	GMB E124 Titan65-000T02:14:00	000T01:51:00	2010-012T22:47:37	0	0.0	Prime		
CAPS 124TI_T65INBD001_PRIME	CAPS 16000	2010-012T21:10:37	GMB E124 Titan65-000T02:00:00	000T01:00:00	2010-012T22:10:37	4000	14.4	SPASS Rider		
CAPS 124TI_T65CLOSE001_PRIME	CAPS 16000	2010-012T22:10:37	GMB E124 Titan65-000T01:00:00	000T02:00:00	2010-013T00:10:37	16000	115.2	SPASS Rider		
CAPS 124TI_T65OUTPTG001_PRIME	CAPS 16000	2010-012T23:26:37	GMB E124 Titan65+000T00:16:00	000T01:20:00	2010-013T00:46:37	0	0.0	Prime		
CAPS 124TI_T65OUTBND001_PRIME	CAPS 16000	2010-013T00:10:37	GMB E124 Titan65+000T01:00:00	000T01:00:00	2010-013T01:10:37	4000	14.4	SPASS Rider		
CAPS 124TI_T65OUTPTG002_PRIME	CAPS 16000	2010-013T00:46:37	GMB E124 Titan65+000T01:36:00	000T00:24:00	2010-013T01:10:37	0	0.0	SPASS Rider		
CAPS 124SA_DUSKMSPH003_PRIME	CAPS 16000	2010-013T01:10:37	GMB E124 Titan65+000T02:00:00	000T06:19:23	2010-013T07:30:00	4000	91.1	SPASS Rider		
CAPS 124SA_DUSKMSPH004_PRIME	CAPS 16000	2010-013T07:30:00		000T10:00:00	2010-013T17:30:00	2000	72.0	SPASS Rider		
CAPS 124SA_MAGBOUND002_PRIME	CAPS 16000	2010-013T17:30:00		001T14:44:00	2010-015T08:14:00	2000	278.9	SPASS Rider		
CAPS 124SA_MAGBNDPTG004_PRIME	CAPS 16000	2010-014T14:00:00		000T02:00:00	2010-014T16:00:00	0	0.0	Prime		
CDA 124OT_RATE010006 RIDER	CDA 524	2010-011T03:39:12		008T00:37:48	2010-019T04:17:00	524	363.4	Non-SPASS		
CIRS 124TI_MIDIRTMAP001_PRIME	CIRS 4000	2010-012T09:07:41	GMB E124 Titan65-000T14:02:56	000T01:02:56	2010-012T10:10:37	4000	15.1	Prime	CIRS_FPB to Titan	POS_X to North Pole Dir
CIRS 124TI_MIDIRTMAP001_SI	ISS_SUPPORT_IM	2010-012T09:07:41	GMB E124 Titan65-000T14:02:56	000T01:02:56	2010-012T10:10:37	0	4.0	SPASS Rider		
CIRS 124TI_CLOUDMAP001_VIMS	CIRS 4000	2010-012T10:10:37	GMB E124 Titan65-000T13:00:00	000T04:00:00	2010-012T14:10:37	2000	28.8	SPASS Rider		
CIRS 124TI_MIRLMBINT001_PRIME	CIRS 4000	2010-012T14:10:37	GMB E124 Titan65-000T09:00:00	000T04:00:00	2010-012T18:10:37	4000	57.6	Prime	CIRS_FPB to Titan	PIC
CIRS 124TI_MIRLMBINT001_SI	ISS_SUPPORT_IM	2010-012T14:10:37	GMB E124 Titan65-000T09:00:00	000T04:00:00	2010-012T18:10:37	0	4.0	SPASS Rider		
CIRS 124TI_FIRNADMAP001_PRIME	CIRS 4000	2010-012T18:10:37	GMB E124 Titan65-000T05:00:00	000T02:45:00	2010-012T20:55:37	2000	19.8	Prime	CIRS_FP1 to Titan	POS_X to North Pole Dir
CIRS 124TI_FIRNADMAP001_SI	ISS_SUPPORT_IM	2010-012T18:10:37	GMB E124 Titan65-000T05:00:00	000T02:44:00	2010-012T20:54:37	0	4.0	SPASS Rider		
CIRS 124TI_T65OUTPTG002_CAPS	CIRS 4000	2010-012T23:25:37	GMB E124 Titan65+000T00:15:00	000T01:45:00	2010-013T01:10:37	4000	25.2	SPASS Rider		
CIRS 124TI_FIRNADMAP002_PRIME	CIRS 4000	2010-013T01:10:37	GMB E124 Titan65-000T02:00:00	000T03:00:00	2010-013T04:10:37	2000	21.6	Prime	CIRS_FP1 to Titan	POS_X to North Pole Dir
CIRS 124TI_FIRNADMAP002_SI	ISS_SUPPORT_IM	2010-013T01:10:37	GMB E124 Titan65+000T02:00:00	000T03:00:00	2010-013T04:10:37	0	4.0	SPASS Rider		
CIRS 124TI_MIRLMBMAP002_PRIME	CIRS 4000	2010-013T04:10:37	GMB E124 Titan65+000T05:00:00	000T04:00:00	2010-013T08:10:37	2000	28.8	Prime	CIRS_FPB to Titan	PIC
CIRS 124TI_MIRLMBMAP002_SI	ISS_SUPPORT_IM	2010-013T04:10:37	GMB E124 Titan65+000T05:00:00	000T04:00:00	2010-013T08:10:37	0	4.0	SPASS Rider		
CIRS 124TI_FIRNADCMP002_PRIME	CIRS 4000	2010-013T08:10:37	GMB E124 Titan65+000T09:00:00	000T05:00:00	2010-013T13:10:37	4000	72.0	Prime	CIRS_FP1 to Titan	PIC
CIRS 124TI_FIRNADCMP002_SI	ISS_SUPPORT_IM	2010-013T08:10:37	GMB E124 Titan65+000T09:00:00	000T05:00:00	2010-013T13:10:37	0	4.0	SPASS Rider		
CIRS 124TI_MIDIRTMAP002_PRIME	CIRS 4000	2010-013T13:10:37	GMB E124 Titan65+000T14:00:00	000T09:00:00	2010-013T22:10:37	2000	64.8	Prime	CIRS_FPB to Titan	POS_X to North Pole Dir
CIRS 124TI_MIDIRTMAP002_SI	ISS_SUPPORT_IM	2010-013T13:10:37	GMB E124 Titan65+000T14:00:00	000T09:00:00	2010-013T22:10:37	0	4.0	SPASS Rider		
CIRS 124IC_DSCAL10014_SP	CIRS 4000	2010-014T00:14:00		000T08:00:00	2010-014T08:14:00	3000	86.4	SPASS Rider		
CIRS 124IC_DSCAL10015_SP	CIRS 4000	2010-015T00:14:00		000T08:00:00	2010-015T08:14:00	3000	86.4	SPASS Rider		
ENGR 124SC_RADWU012_PPS	OpMode	2010-012T17:55:37	GMB E124 Titan65-000T05:15:00	000T00:00:07	2010-012T17:55:44	0	0.0	Non-SPASS		
ENGR 124SC_AACSDUAL001_CDS	ENGR 1638	2010-012T20:52:37	GMB E124 Titan65-000T02:18:00	000T04:17:00	2010-013T01:09:37	1638	25.3	Non-SPASS		
ENGR 124SC_RADRCS012_PPS	OpMode	2010-012T20:55:37	GMB E124 Titan65-000T02:15:00	000T00:20:50	2010-012T21:16:27	0	0.0	Non-SPASS		
ENGR 124SC_RADRCS012_PRIME	MILESTONE	2010-012T20:55:37	GMB E124 Titan65-000T02:15:00	000T00:01:00	2010-012T20:56:37	0	0.0	Prime	CIRS_FP1 to Titan	PIC
ENGR 124SC_ORSRC012_PPS	OpMode	2010-012T22:54:43	GMB E124 Titan65-000T00:15:54	000T00:00:06	2010-012T22:54:49	0	0.0	Non-SPASS		
ENGR 124SC_DFPWBIAS013_PPS	OpMode	2010-013T00:47:31	GMB E124 Titan65+000T01:36:54	000T00:21:05	2010-013T01:08:36	0	0.0	Non-SPASS		
ENGR 124SC_AACSDUAL002_CDS	MILESTONE	2010-013T23:13:47		000T00:00:02	2010-013T23:13:49	0	0.0	Non-SPASS		
ENGR 124SC_SAFETABLE001_AACS	MILESTONE	2010-013T23:59:00		000T00:05:00	2010-014T00:04:00	0	0.0	Non-SPASS		
INMS 124SA_SURVEYSEG002_INMS	INMS 1498	2010-012T08:14:00		000T13:56:37	2010-012T22:10:37	100	5.0	Non-SPASS		
INMS 124TI_TITAN65001_INMS	INMS 1498	2010-012T22:10:37	GMB E124 Titan65-000T01:00:00	000T00:45:00	2010-012T22:55:37	1498	4.0	Non-SPASS		
INMS 124TI_TITAN65001_PRIME	INMS 1498	2010-012T22:55:37	GMB E124 Titan65-000T00:15:00	000T00:15:00	2010-012T23:10:37	1498	1.3	SPASS Rider		
INMS 124TI_TITAN65002_INMS	INMS 1498	2010-012T23:10:37	GMB E124 Titan65-000T00:00:00	000T01:00:00	2010-013T00:10:37	1498	5.4	Non-SPASS		
INMS 124SA_SURVEYSEG003_INMS	INMS 1498	2010-013T00:10:37	GMB E124 Titan65+000T01:00:00	002T08:03:23	2010-015T08:14:00	100	20.2	Non-SPASS		

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Request	AGPEN	Start Time	Epoch	Duration	End Time	Rate	Data Volume	SPASS Type	Primary Pointing	Secondary Pointing
ISS_124TI_MIDIRTMAP001_CIRS	ISS_Phot_1_by_1	2010-012T09:07:41	GMB_E124_Titan65-000T14:02:56	000T01:02:56	2010-012T10:10:37	0	50.0	SPASS Rider		
ISS_124TI_CLOUDMAP001_VIMS	ISS_Phot_1_by_1	2010-012T10:10:37	GMB_E124_Titan65-000T13:00:00	000T04:00:00	2010-012T14:10:37	0	50.0	SPASS Rider		
ISS_124TI_MIRLMBINT001_CIRS	ISS_Phot_1_by_1	2010-012T14:10:37	GMB_E124_Titan65-000T09:00:00	000T04:00:00	2010-012T18:10:37	0	50.0	SPASS Rider		
ISS_124TI_FIRNADMAP001_CIRS	ISS_Phot_1_by_1	2010-012T18:10:37	GMB_E124_Titan65-000T05:00:00	000T02:45:00	2010-012T20:55:37	0	50.0	SPASS Rider		
ISS_124TI_FIRNADMAP002_CIRS	ISS_Phot_1_by_1	2010-013T01:10:37	GMB_E124_Titan65+000T02:00:00	000T03:00:00	2010-013T04:10:37	0	50.0	SPASS Rider		
ISS_124TI_FIRNADCMPO02_CIRS	ISS_Phot_1_by_1	2010-013T08:10:37	GMB_E124_Titan65+000T09:00:00	000T05:00:00	2010-013T13:10:37	0	50.0	SPASS Rider		
ISS_124TI_MIDIRTMAP002_CIRS	ISS_Phot_1_by_1	2010-013T13:10:37	GMB_E124_Titan65+000T14:00:00	000T09:00:00	2010-013T22:10:37	0	50.0	SPASS Rider		
ISS_124TI_CLOUD001_PRIME	ISS_Phot_1_by_1	2010-014T08:54:00		000T05:06:00	2010-014T14:00:00	0	200.0	Prime	ISS_NAC to Titan	NEG_X to Sun
ISS_124TI_CLOUD002_PRIME	ISS_Phot_1_by_1	2010-014T16:00:00		000T06:34:00	2010-014T22:34:00	0	200.0	Prime	ISS_NAC to Titan	NEG_X to Sun
MAG_124SA_DUSKMSPH003_MAPS	MAG_1976	2010-012T08:14:00		000T10:56:37	2010-012T19:10:37	988	38.9	Non-SPASS		
MAG_124SA_DUSKMSPH004_MAPS	MAG_1976	2010-012T19:10:37		000T08:00:00	2010-013T03:10:37	0	0.0	Non-SPASS		
MAG_124TI_MAGTITAN001_PRIME	MAG_1976	2010-012T19:10:37	GMB_E124_Titan65-000T04:00:00	000T08:00:00	2010-013T03:10:37	1976	56.9	Non-SPASS		
MAG_124SA_DUSKMSPH005_MAPS	MAG_1976	2010-013T03:10:37	GMB_E124_Titan65+000T04:00:00	000T14:19:23	2010-013T17:30:00	1976	101.9	Non-SPASS		
MAG_124SU_MAGBOUND003_MAPS	MAG_1976	2010-013T17:30:00		001T14:44:00	2010-015T08:14:00	988	137.8	Non-SPASS		
MIMI_124SA_DUSKMSPH002_RIDER	MIMI_8000	2010-012T08:14:00		000T12:56:37	2010-012T21:10:37	1200	55.9	SPASS Rider		
MIMI_124TI_TITANIN001_RIDER	MIMI_8000	2010-012T21:10:37	GMB_E124_Titan65-000T02:00:00	000T01:00:00	2010-012T22:10:37	1200	4.3	SPASS Rider		
MIMI_124TI_TITANCA001_RIDER	MIMI_8000	2010-012T22:10:37	GMB_E124_Titan65-000T01:00:00	000T02:00:00	2010-013T00:10:37	2000	14.4	SPASS Rider		
MIMI_124TI_TITANOUT001_RIDER	MIMI_8000	2010-013T00:10:37	GMB_E124_Titan65+000T01:00:00	000T01:00:00	2010-013T01:10:37	1200	4.3	SPASS Rider		
MIMI_124SA_DUSKMSPH003_RIDER	MIMI_8000	2010-013T01:10:37	GMB_E124_Titan65+000T02:00:00	000T16:19:23	2010-013T17:30:00	1200	70.5	SPASS Rider		
MIMI_124SA_MAGBOUND002_RIDER	MIMI_8000	2010-013T17:30:00		001T14:44:00	2010-015T08:14:00	900	125.5	SPASS Rider		
MP_123NA_SEQUENCE056_NA	MILESTONE	2009-356T23:26:00		031T15:34:00	2010-023T15:00:00	0	0.0	SPASS Note		
MP_124TI_FLYBYT065_NA	MILESTONE	2010-012T23:10:36		000T00:00:01	2010-012T23:10:37	0	0.0	SPASS Note		
MP_124SA_RPXDESCEN124_NA	MILESTONE	2010-013T02:03:23		000T00:00:01	2010-013T02:03:24	0	0.0	Non-SPASS		
RADAR_124TI_T65WARMUP001_RIDER	RADAR_364800	2010-012T18:20:37	GMB_E124_Titan65-000T04:50:00	000T04:35:00	2010-012T22:55:37	474.2	7.8	SPASS Rider		
RADAR_124TI_T65RASAR001_PRIME	RADAR_364800	2010-012T22:47:37	GMB_E124_Titan65-000T00:23:00	000T00:23:00	2010-012T23:10:37	54355	75.0	Prime	NEG_X to Titan_SC	NEG_Z to Titan
RADAR_124TI_T65OUTSAR001_PRIME	RADAR_364800	2010-012T23:10:37	GMB_E124_Titan65+000T00:00:00	000T00:16:00	2010-012T23:26:37	171876	165.0	Prime	NEG_Z to Titan	NEG_X to Titan_SC_RAM
RPWS_124SA_OUTSURVEY003_PRIME	RPWS_30464	2010-012T08:14:00		003T00:00:00	2010-015T08:14:00	1310	339.6	Non-SPASS		
RPWS_124TI_TIINTRMED001_PRIME	RPWS_30464	2010-012T20:55:37	GMB_E124_Titan65-000T02:15:00	000T01:30:00	2010-012T22:25:37	15232	82.3	Non-SPASS		
RPWS_124TI_TICA001_PRIME	RPWS_182784	2010-012T22:25:37	GMB_E124_Titan65-000T00:45:00	000T01:01:00	2010-012T23:26:37	30464	111.5	Non-SPASS		
RPWS_124TI_TICA002_PRIME	RPWS_182784	2010-012T23:26:37	GMB_E124_Titan65+000T00:16:00	000T00:29:00	2010-012T23:55:37	60927	106.0	Non-SPASS		
RPWS_124TI_TIINTRMED002_PRIME	RPWS_30464	2010-012T23:55:37	GMB_E124_Titan65+000T00:45:00	000T01:30:00	2010-013T01:25:37	15232	82.3	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
SP 124NA M34OBSNON013 NA	OBSERVATION P	2010-012T08:14:00		001T15:00:00	2010-013T23:14:00	0	0.0	Non-SPASS			
SP 124NA TOSTSEG012 NA	MILESTONE	2010-012T08:14:00		003T00:00:00	2010-015T08:14:00	0	0.0	SPASS Note			
SP 124TI WAYPTTURN012 PRIME	MILESTONE	2010-012T08:14:00		000T00:40:00	2010-012T08:54:00	0	0.0	New Waypoint	NEG_Y to Titan	NEG_X to Sun	
SP 124TI DEADTIME012 PRIME	MILESTONE	2010-012T08:54:00		000T00:13:41	2010-012T09:07:41	0	0.0	Prime	NEG_Y to Titan	NEG_X to Sun	
SP 124NA BEGCUSTOM012 NA	MILESTONE	2010-012T20:56:37	GMB E124 Titan65-000T02:14:00	000T00:00:01	2010-012T20:56:38	0	0.0	SPASS Note			
SP 124NA ENDCUSTOM013 NA	MILESTONE	2010-013T04:10:37	GMB E124 Titan65+000T05:00:00	000T00:00:01	2010-013T04:10:38	0	0.0	SPASS Note			
SP 124TI DEADTIME013 PRIME	MILESTONE	2010-013T22:10:37	GMB E124 Titan65+000T23:00:00	000T00:23:23	2010-013T22:34:00	0	0.0	Prime	NEG_Y to Titan	NEG_X to Sun	
SP 124EA DLTURN013 PRIME	MILESTONE	2010-013T22:34:00		000T00:40:00	2010-013T23:14:00	0	0.0	Prime	XBAND to Earth	NEG_Y to 263.9/-4.0	
SP 124EA M34BWGNON013 PRIME	DOWNLINK PASS	2010-013T23:14:00		000T09:00:00	2010-014T08:14:00	0	0.0	Prime	XBAND to Earth	NEG_Y to 263.9/-4.0	
SP 124NA M34BWGNON013 SP	DSN PASS	2010-013T23:14:00		000T09:00:00	2010-014T08:14:00	0	0.0	Non-SPASS			
SP 124NA M70OBSNON014 NA	OBSERVATION P	2010-014T08:14:00		000T15:00:00	2010-014T23:14:00	0	0.0	Non-SPASS			
SP 124TI WAYPTTURN014 PRIME	MILESTONE	2010-014T08:14:00		000T00:40:00	2010-014T08:54:00	0	0.0	Prime	NEG_Y to Titan	NEG_X to Sun	
SP 124EA DLTURN014 PRIME	MILESTONE	2010-014T22:34:00		000T00:40:00	2010-014T23:14:00	0	0.0	Prime	XBAND to Earth	NEG_Y to 263.9/-4.0	
SP 124EA M70METNON014 PRIME	DOWNLINK PASS	2010-014T23:14:00		000T09:00:00	2010-015T08:14:00	0	0.0	Prime	XBAND to Earth	Rolling/SRU	POS_X to NEP
SP 124NA M70METNON014 SP	DSN PASS	2010-014T23:14:00		000T09:00:00	2010-015T08:14:00	0	0.0	Non-SPASS			
UVIS 124TI MIRLMBINT001 CIRS	UVIS 5032	2010-012T14:10:37	GMB E124 Titan65-000T09:00:00	000T04:00:00	2010-012T18:10:37	5032	72.5	SPASS Rider			
UVIS 124TI FIRNADCMP002 CIRS	UVIS 5032	2010-013T08:10:37	GMB E124 Titan65+000T09:00:00	000T05:00:00	2010-013T13:10:37	1006.4	18.1	SPASS Rider			
UVIS 124SW IPHSURVEY010 RIDER	UVIS 5032	2010-013T23:14:00		000T09:00:00	2010-014T08:14:00	152.5	4.9	Non-SPASS			
UVIS 124SW IPHSURVEY011 RIDER	UVIS 5032	2010-014T23:14:00		000T09:00:00	2010-015T08:14:00	152.5	4.9	Non-SPASS			
VIMS 124TI MIDIRTMAP001 CIRS	VIMS 18432	2010-012T09:07:41	GMB E124 Titan65-000T14:02:56	000T01:02:56	2010-012T10:10:37	2648.3	10.0	SPASS Rider			
VIMS 124TI CLOUDMAP001 PRIME	VIMS 18432	2010-012T10:10:37	GMB E124 Titan65-000T13:00:00	000T04:00:00	2010-012T14:10:37	1388.9	20.0	Prime	VIMS_IR to Titan	NEG_X to Sun	
VIMS 124TI MIRLMBMAP001 CIRS	VIMS 18432	2010-012T14:10:37	GMB E124 Titan65-000T09:00:00	000T04:00:00	2010-012T18:10:37	1388.9	20.0	SPASS Rider			
VIMS 124TI FIRNADMAP001 CIRS	VIMS 18432	2010-012T18:10:37	GMB E124 Titan65-000T05:00:00	000T02:45:00	2010-012T20:55:37	3535.4	35.0	SPASS Rider			
VIMS 124TI TRANS001 ENGR	VIMS 18432	2010-013T00:46:37	GMB E124 Titan65+000T01:36:00	000T00:24:00	2010-013T01:10:37	6944.4	10.0	SPASS Rider			
VIMS 124TI FIRNADMAP002 CIRS	VIMS 18432	2010-013T01:10:37	GMB E124 Titan65+000T02:00:00	000T03:00:00	2010-013T04:10:37	10648	115.0	SPASS Rider			
VIMS 124TI MIRLMBMAP002 CIRS	VIMS 18432	2010-013T04:10:37	GMB E124 Titan65+000T05:00:00	000T04:00:00	2010-013T08:10:37	2777.8	40.0	SPASS Rider			
VIMS 124TI FIRNADCMP001 CIRS	VIMS 18432	2010-013T08:10:37	GMB E124 Titan65+000T09:00:00	000T05:00:00	2010-013T13:10:37	2222.2	40.0	SPASS Rider			
VIMS 124TI MIDIRTMAP002 CIRS	VIMS 18432	2010-013T13:10:37	GMB E124 Titan65+000T14:00:00	000T09:00:00	2010-013T22:10:37	1543.2	50.0	SPASS Rider			
VIMS 124TI CLOUDMAP001 ISS	VIMS 18432	2010-014T08:54:00		000T05:06:00	2010-014T14:00:00	408.5	7.5	SPASS Rider			
VIMS 124TI CLOUDMAP001 CAPS	VIMS 18432	2010-014T14:00:00		000T02:00:00	2010-014T16:00:00	1388.9	10.0	SPASS Rider			
VIMS 124TI CLOUDMAP002 ISS	VIMS 18432	2010-014T16:00:00		000T08:34:00	2010-014T22:34:00	317.3	7.5	SPASS Rider			





# T65 Liens and Open Issues

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- Need CAPS Science Objectives
  - Frank is out of town until the end of June. Need to ping him again in July.
  
- Telemetry mode change during ISS\_124TI\_MIRLMBINT001\_CIRS.
  - Ok with ISS.
  
- Carryover accepted by following MAG segment.