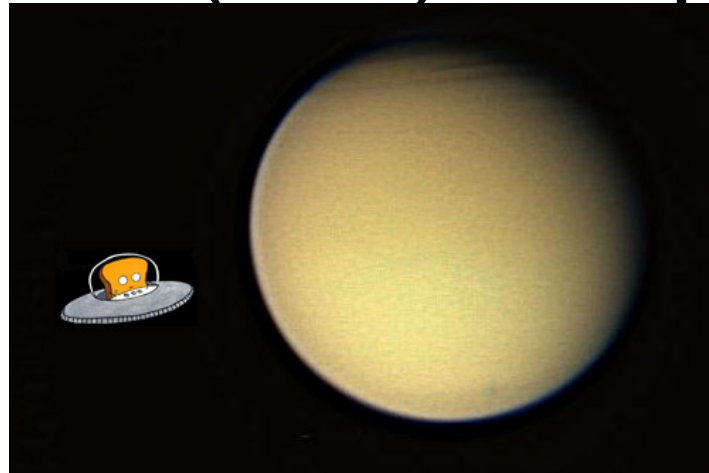


TOST: Integration 132TI (T69) Wrapup



August 7, 2009

Jo Pitesky, Nora Kelly, Trina Ray, Kim Steadman

Segment Basics

Segment times:

BEG: 2010-155T12:13:00

END: 2010-159T05:43:00

Altitude: 2044 km

Time of C/A: 2010-156T02:26:27

Epoch: GMB_E132_Titan69

Sequence: S60

<p>At least 2 weeks prior to the Kickoff Meeting make sure that all requests are in CIMS</p>	<p>Kickoff Meeting</p> <p><u>Present</u> Master Timeline Draft Op Modes Draft Telem Modes Draft RCS Deadband</p> <p><u>Discuss</u> Timeline Op Modes Telem Modes Deadbands for RCS</p> <p><u>Homework</u> Custom Handoff Attitudes Unique Op Mode Requirements (SCO) Turn Assignments CCRs High Level Science</p>	<p>Detailed Meeting</p> <p><u>Present</u> Master Timeline SMT Report Timeline Graphic TOL SPASS DSN Reports Dual Playback Science Draft Data Volume Cuts</p> <p><u>Discuss</u> Data Volume Cuts</p> <p><u>Homework</u> CCRs High Level Science Objectives</p>	<p>Wrap-up Meeting</p> <p><u>Present</u> Wrap-up Package Checklist High Level Science Objectives</p> <p><u>Discuss</u> N/A</p> <p><u>Homework</u> N/A</p>
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High-level Science Objectives (1)

ISS – ISS will acquire a full-disk mosaic of northwestern Adiri and will ride along with VIMS during and after closest-approach to observe parts of Titan's anti-Saturnian hemisphere from the North Pole to the equator. (*DOY 156*) ISS will also ride along with VIMS to track clouds (*DOY 155, 157*) and will continue to monitor clouds and the evolution thereof for an extra two days after the Titan encounter. (*DOY 157, 158*)

VIMS – During this flyby, VIMS will be prime at C/A and will observe the North-pole area. A mosaic of Kraken Mare (70-75 N, 225 W) may be obtained if the North polar hood has vanished. A mosaic of an area North of Adiri will be obtained at a resolution of 10 km per pixel (*DOY 156*)

CIRS – Continuation mapping of seasonal temperature and composition effects. (*DOY 155, 156*)

RADAR – radiometry, (*DOY 155*) scatterometry (*DOY 156*)

CAPS?

High-level Science Objectives (2)

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. *DOY 156*

MIMI– Energetic ion and electron energy input to atmosphere; good ENA *DOY 155-158*

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. *DOY 155-158*

MAG – T69 is a north polar, dusk flyby, with a minimum altitude of 2100 km. In nominal upstream conditions, Cassini would explore the edge of the north lobe of Titan's magnetic tail. *DOY 155-158*

Master Timeline for T69

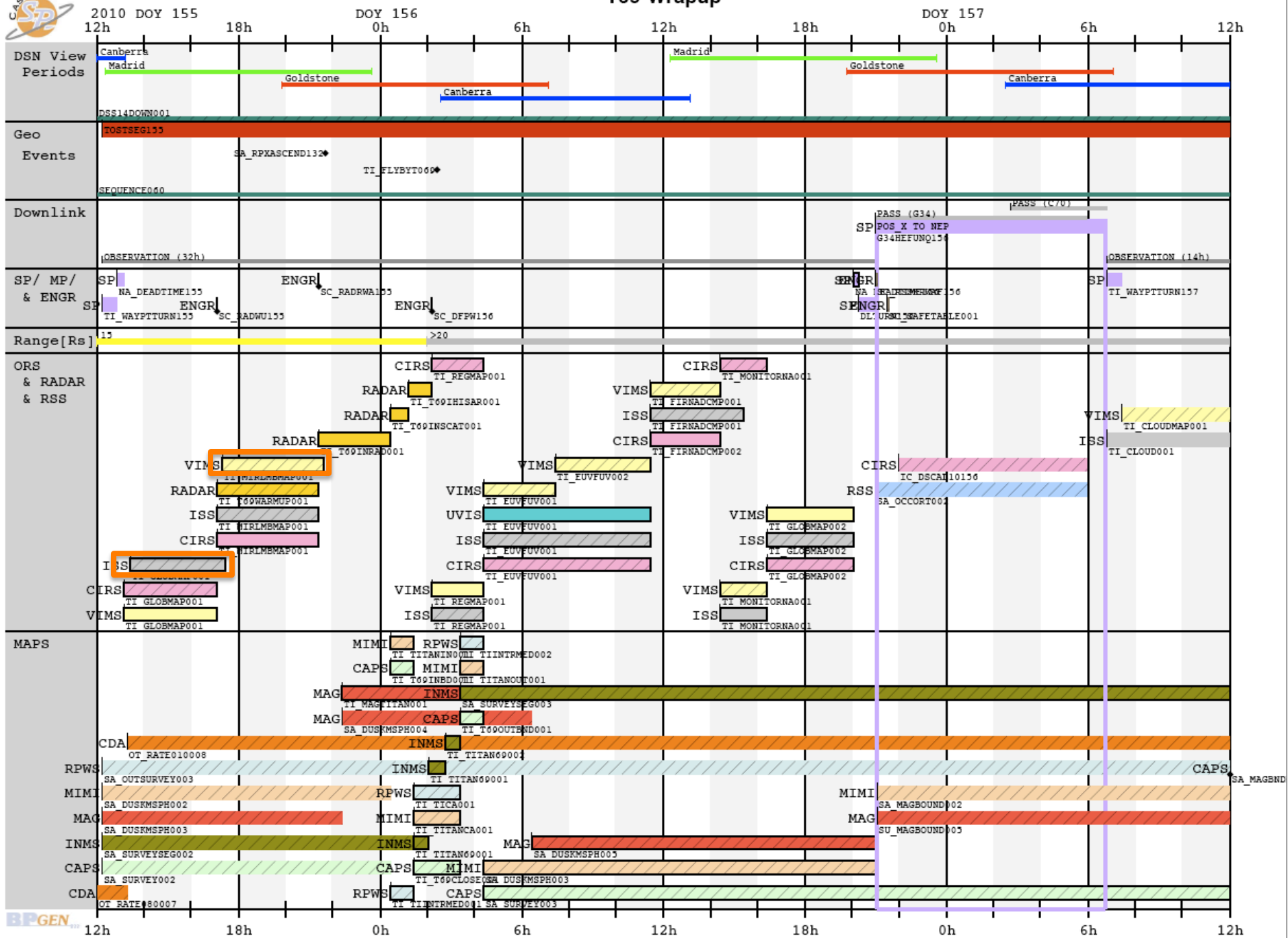
T69	2044
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Start Time	End Time	Prime Activity	Obs. Detail	Op Mode	TLM Mode	Comments
2010-155T12:13:00	2010-155T12:53:00	SP Turn to WP	Neg_Y to Titan, Neg_X to SUN	DFPW Normal	S_N_ER_3	
2010-155T12:53:00	C/A - 13:18:25	OD Uncertainty Dead Time		DFPW Normal	S_N_ER_3	
C/A - 13:18:25	-09:18	VIMS	Template O	DFPW Normal	S_N_ER_3	
-09:18	-05:00	CIRS	Template R	RADWU	S_N_ER_5A for 15 minutes, then S_N_ER_3	
-05:00	-02:00	RADAR	Template L	RADRWA	S_N_ER_8	
-02:00	-00:15	RADAR	Rad, Scatt, HISAR	RADRWA	S_N_ER_8	
-00:15	0	VIMS		DFPW Normal	S_N_ER_3	
2010-156T02:26:27		CLOSEST APPROACH	Neg_Y to Titan, Neg_X to SUN	DFPW Normal	S_N_ER_3	
0	+02:00	VIMS		DFPW Normal	S_N_ER_3	
+02:00	+09:00	UVIS	Template X	DFPW Normal	S_N_ER_3	
+09:00	+12:00	CIRS	Template D2	DFPW Normal	S_N_ER_3	
+12:00	+14:00	ISS	Template D2	DFPW Normal	S_N_ER_3	
+14:00	C/A + 17:36:35	VIMS	Template B(Z)	DFPW Normal	S_N_ER_3	
C/A + 17:36:35	2010-156T20:18:00	OD Uncertainty Dead Time		DFPW Normal	S_N_ER_3	
2010-156T20:18:00	2010-156T20:58:00	SP Turn to Earth for downlink		DFPW Normal	S_N_ER_3	
2010-156T20:58:00	2010-157T02:43:00	Goldstone 34-m		RSSK	RTE_N_SPB	
2010-157T02:43:00	2010-157T06:48:00	Canberra 70-m		RSSK	RTE_N_SPB	
2010-157T06:48:00	2010-157T07:28:00	SP Turn to WP		DFPW Normal	S_N_ER_3	
2010-157T07:28:00	2010-157T12:00:00	ISS		DFPW Normal	S_N_ER_3	Cloud monitoring
2010-157T12:00:00	2010-157T14:00:00	CAPS		DFPW Normal	S_N_ER_3	MAPS survey
2010-157T14:00:00	2010-157T18:48:00	ISS		DFPW Normal	S_N_ER_3	Cloud Monitoring
2010-157T18:48:00	2010-157T19:28:00	SP Turn to Earth for downlink		DFPW Normal	S_N_ER_3	
2010-157T19:28:00	2010-157T20:58:00	Bias Window (ISS Science if not needed)		DFPW Normal	S_N_ER_3	
2010-157T20:58:00	2010-158T03:28:00	Goldstone 34-m		RSS2	RTE_N_SPB	
2010-158T03:28:00	2010-158T06:48:00	Canberra 70-m		RSS2	RTE_N_SPB	
2010-158T06:48:00	2010-158T07:28:00	SP Turn to WP		RADWU during last 15 minutes of turn (07:13:00)	S_N_ER_3 until 07:13:00, then S_N_ER_5A	
2010-158T07:28:00	2010-158T12:00:00	ISS		RADWU	S_N_ER_3	Cloud monitoring
2010-158T12:00:00	2010-158T14:00:00	CAPS		RADWU	S_N_ER_3	MAPS survey
2010-158T14:00:00	2010-158T15:30:00	RADAR	3 hours warmup needed, activity is 1.5 hours	RADRWA	S_N_ER_8	Can be moved later if ISS wishes
2010-158T15:30:00	2010-158T20:03:00	ISS		DFPW Normal	S_N_ER_3	Cloud monitoring
2010-158T20:03:00	2010-158T20:43:00	SP Turn to Earth for downlink		DFPW Normal	S_N_ER_3	
2010-158T20:43:00	2010-159T05:43:00	Goldstone BWG		DFPW TCM (Normal last 2 m	RTE_N_SPB	

1.5 hour Bias window at 157T19:28: filled by ISS? Another team?

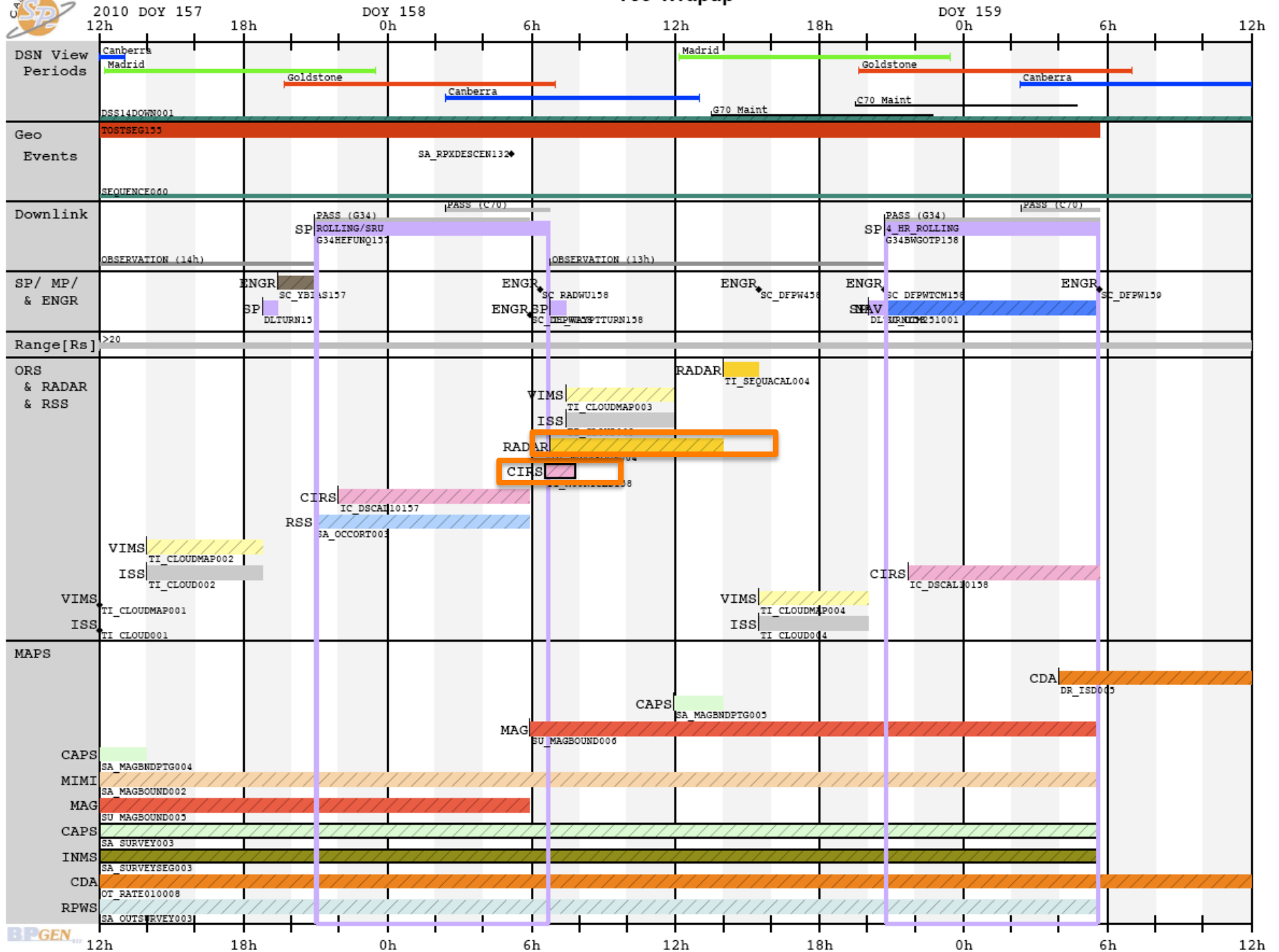


T69-Wrapup





T69-Wrapup



T69 Wrap-Up Telemetry Mode Report

TELEMETRY MODE REPORT

EPOCH RELATIVE	UTC	DURATION	TELEMETRY MODE	REQUEST
	2010-155T12:13:00.000	04:55:28	S_N_ER_3	SP_132NA_G34OBSNON156_NA
GMB_E132_Titan69-000T09:18:00	2010-155T17:08:28.000	00:15:00	S_N_ER_5A	SP_132NA_G34OBSNON156_NA
GMB_E132_Titan69-000T09:03:00	2010-155T17:23:28.000	04:03:00	S_N_ER_3	SP_132NA_G34OBSNON156_NA
GMB_E132_Titan69-000T05:00:00	2010-155T21:26:28.000	04:45:00	S_N_ER_8	SP_132NA_G34OBSNON156_NA
GMB_E132_Titan69-000T00:15:00	2010-156T02:11:28.000	18:46:32	S_N_ER_3	SP_132NA_G34OBSNON156_NA
	2010-156T20:58:00.000	00:45:00	RTE_N_SPB_27650	SP_132EA_G34HEFUNQ156_PRIME
	2010-156T21:43:00.000	05:00:00	RTE_N_SPB_35550	SP_132EA_G34HEFUNQ156_PRIME
	2010-157T02:43:00.000	00:45:00	RTE_N_SPB_82950	SP_132EA_G34HEFUNQ156_PRIME
	2010-157T03:28:00.000	01:30:00	RTE_N_SPB_110600	SP_132EA_G34HEFUNQ156_PRIME
	2010-157T04:58:00.000	01:50:00	RTE_N_SPB_142200	SP_132EA_G34HEFUNQ156_PRIME
	2010-157T06:48:00.000	14:10:00	S_N_ER_3	SP_132NA_G34OBSNON157_NA
	2010-157T20:58:00.000	00:45:00	RTE_N_SPB_33180	SP_132EA_G34HEFUNQ157_PRIME
	2010-157T21:43:00.000	04:45:00	RTE_N_SPB_35550	SP_132EA_G34HEFUNQ157_PRIME
	2010-158T02:28:00.000	01:00:00	RTE_N_SPB_66360	SP_132EA_G34HEFUNQ157_PRIME
	2010-158T03:28:00.000	01:30:00	RTE_N_SPB_110600	SP_132EA_G34HEFUNQ157_PRIME
	2010-158T04:58:00.000	01:50:00	RTE_N_SPB_142200	SP_132EA_G34HEFUNQ157_PRIME
	2010-158T06:48:00.000	00:25:00	S_N_ER_3	SP_132NA_G34OBSNON158_NA
	2010-158T07:13:00.000	00:15:00	S_N_ER_5A	SP_132NA_G34OBSNON158_NA
	2010-158T07:28:00.000	06:32:00	S_N_ER_3	SP_132NA_G34OBSNON158_NA
	2010-158T14:00:00.000	01:30:00	S_N_ER_8	SP_132NA_G34OBSNON158_NA
	2010-158T15:30:00.000	05:13:00	S_N_ER_3	SP_132NA_G34OBSNON158_NA
	2010-158T20:43:00.000	02:15:00	RTE_N_SPB_22120	SP_132EA_G34BWGOTP158_PRIME
	2010-158T22:58:00.000	03:30:00	RTE_N_SPB_33180	SP_132EA_G34BWGOTP158_PRIME
	2010-159T02:28:00.000	01:00:00	RTE_N_SPB_66360	SP_132EA_G34BWGOTP158_PRIME
	2010-159T03:28:00.000	01:15:00	RTE_N_SPB_110600	SP_132EA_G34BWGOTP158_PRIME
	2010-159T04:43:00.000	01:00:00	RTE_N_SPB_142200	SP_132EA_G34BWGOTP158_PRIME

T69 Wrap-Up 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)	(%)	CAROVR (Mb)
SP_132EA_G34HEFUNQ156_PRIME	156 20:58	157 06:48	0	2705	139	2844	3552	708	0	254	58	3156	2062	-1095	19	0%	1094
SP_132EA_G34HEFUNQ157_PRIME	157 20:58	158 06:48	1094	571	60	1725	3552	1827	0	257	58	2040	2059	19	19	1%	0
SP_132EA_G34BWGOTP158_PRIME	158 20:43	159 05:43	0	626	59	685	3552	2867	0	240	53	978	923	-55	0	0%	55

Need to cut 55 Mb from final observation/downlink blocks.

- Remove CIRS DSCAL?
- DV cuts from ISS or CAPS?
- Ramp down or data police MAPS?
- Extend final downlink on leading edge and truncate ISS cloud monitoring?
- Roll dice on data compression?

T69 Wrap-Up SMT Report (continued)

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	155 12:13	156 20:58	247.5	76.5	269.7	21.9	325.0	116.5	90.6	313.6	702.8	126.8	389.6	0.0	26.8	2707.1
SP_132EA_G34HEFUNQ156_PRIME	156 20:58	157 06:48	35.4	18.5	86.4	3.5	0.0	35.0	26.6	0.0	46.4	0.0	0.0	0.0	0.0	251.8
DAILY TOTAL SCIENCE	155 12:13	157 06:48	282.9	95.0	356.1	25.4	325.0	151.5	117.1	313.6	749.1	126.8	389.6	0.0		
OBSERVATION NOR	157 06:48	157 20:58	159.0	26.7	0.0	5.1	200.0	50.4	38.3	0.0	66.8	0.0	20.0	0.0	11.6	577.8
SP_132EA_G34HEFUNQ157_PRIME	157 20:58	158 06:48	35.4	18.5	88.8	3.5	0.0	35.0	26.5	0.0	46.4	0.0	0.0	0.0	0.0	254.2
DAILY TOTAL SCIENCE	157 06:48	158 06:48	194.4	45.3	88.8	8.6	200.0	85.4	64.8	0.0	113.2	0.0	20.0	0.0		
OBSERVATION NOR	158 06:48	158 20:43	158.1	26.3	15.6	5.0	235.0	49.5	37.6	7.5	65.6	0.0	20.0	0.0	11.4	631.6
SP_132EA_G34BWGOTP158_PRIME	158 20:43	159 05:43	32.4	17.0	86.4	3.2	0.0	32.0	24.3	0.0	42.4	0.0	0.0	0.0	0.0	237.8
DAILY TOTAL SCIENCE	158 06:48	159 05:43	190.5	43.2	102.0	8.3	235.0	81.5	61.9	7.5	108.1	0.0	20.0	0.0		
TOTAL RECORDED (OPNAV data not included)			667.8	183.5	546.9	42.3	760.0	318.3	243.8	321.1	970.4	126.8	429.6	0.0		

T69 Wrap-Up DSN Report

CASSINI DOWNLINK/DSN COVERAGE SUMMARY for 132TI_T69_090807.apf on 2009-Aug-07 08:38:27
 (+ = 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
G34HEFUNQ156	156T20:58-06:48	156T22:15-08:05	09:50	27,35,82,110,142	15	156T20:58-05:58	156T22:14-07:14	09:00	60 /15	TP	N003
C70METNON156	-----	-----	----	(no downlink)	43	157T02:43-06:48	157T03:59-08:04	04:05	60 /15	TKG PASS	N003
G34HEFUNQ157	157T20:58-06:48	157T22:15-08:05	09:50	33,35,66,110,142	15	157T20:58-05:58	157T22:14-07:14	09:00	60 /15	TP	N003
C70METNON157	-----	-----	----	(no downlink)	43	158T02:28-06:48	158T03:44-08:04	04:20	60 /15	TKG PASS	N003
G34BWGOTP158	158T20:43-05:43	158T22:00-07:00	09:00	22,33,66,110,142	25	158T20:43-05:43	158T21:59-06:59	09:00	60 /15	TP	N006
C70METNON158	-----	-----	----	(no downlink)	43*	159T02:28-05:43	159T03:44-06:59	03:15	60 /15	TP	N003

TOL for T69 (1 of 2)

Request	Start Time	Epoch	Duration	End Time	Rate	Data Volume	SPASS Type	Primary Pointing	Secondary Pointing	Pointing Agreement
MP_127NA_DSS14DOWN001_NA	2010-066T22:49:02		117T23:50:11	2010-184T22:39:13	0	0	Non-SPASS			
MP_131NA_SEQUENCE060_NA	2010-137T13:31:00		039T07:39:00	2010-176T21:10:00	0	0	SPASS Note			
CDA_1320T_RATE080007_RIDER	2010-155T03:03:44		000T10:16:00	2010-155T13:19:44	4192	154.936	Non-SPASS			
CAPS_132SA_SURVEY002_PRIME	2010-155T12:13:00		000T12:13:28	2010-156T00:26:28	1000	44.008	Non-SPASS			
INMS_132SA_SURVEYSEG002_INMS	2010-155T12:13:00		000T13:13:28	2010-156T01:26:28	100	4.761	Non-SPASS			
MAG_132SA_DUSKMSPH003_MAPS	2010-155T12:13:00		000T10:13:28	2010-155T22:26:28	988	36.366	Non-SPASS			
MIMI_132SA_DUSKMSPH002_RIDER	2010-155T12:13:00		000T12:13:28	2010-156T00:26:28	750	33.006	SPASS Rider			
RPWS_132SA_OUTSURVEY003_PRIME	2010-155T12:13:00		003T17:30:00	2010-159T05:43:00	1310	422.086	Non-SPASS			
SP_132NA_G34OBSNON156_NA	2010-155T12:13:00		001T08:45:00	2010-156T20:58:00	0	0	Non-SPASS			
SP_132NA_TOSTSEG155_NA	2010-155T12:13:00		003T17:30:00	2010-159T05:43:00	0	0	SPASS Note			
SP_132TI_WAYPTTURN155_PRIME	2010-155T12:13:00		000T00:40:00	2010-155T12:53:00	0	0	New Waypoint	NEG_Y to Titan	NEG_X to Sun	
SP_132NA_DEADTIME155_PRIME	2010-155T12:53:00		000T00:15:03	2010-155T13:08:03	0	0	Prime	NEG_Y to Titan	NEG_X to Sun	
ISS_132TI_GLOBMAP001_VIMS	2010-155T13:08:03	GMB_E132_Titan69-000T13:18:25	000T04:18:25	2010-155T17:26:28	0	5	SPASS Rider			EDIT to match end time of VIMS GLOBMAP001
VIMS_132TI_GLOBMAP001_PRIME	2010-155T13:08:03	GMB_E132_Titan69-000T13:18:25	000T04:00:25	2010-155T17:08:28	1386.5	20	Prime	VIMS_IR to Titan	NEG_X to Sun	
CIRS_132TI_GLOBMAP001_VIMS	2010-155T13:08:28	GMB_E132_Titan69-000T13:18:00	000T04:00:00	2010-155T17:08:28	4000	57.6	SPASS Rider			
CDA_1320T_RATE010008_RIDER	2010-155T13:19:44		006T18:07:16	2010-162T07:27:00	524	305.825	Non-SPASS			
CIRS_132TI_MIRLMBMAP001_PRIME	2010-155T17:08:28	GMB_E132_Titan69-000T09:18:00	000T04:18:00	2010-155T21:26:28	4000	61.92	Prime	CIRS_FP to Titan	PIC	
ENGR_132SC_RADWU155_PPS	2010-155T17:08:28	GMB_E132_Titan69-000T09:18:00	000T00:00:07	2010-155T17:08:35	0	0	Non-SPASS			
ISS_132TI_MIRLMBMAP001_CIRS	2010-155T17:08:28	GMB_E132_Titan69-000T09:18:00	000T04:18:00	2010-155T21:26:28	0	25	SPASS Rider			
RADAR_132TI_T69WARMUP001_RIDER	2010-155T17:08:28	GMB_E132_Titan69-000T09:18:00	000T04:18:00	2010-155T21:26:28	474.2	7.341	SPASS Rider			
VIMS_132TI_MIRLMBMAP001_CIRS	2010-155T17:18:25	GMB_E132_Titan69-000T09:08:00	000T04:18:00	2010-155T21:36:28	646	10	SPASS Rider			EDIT to match start and end time of CIRS_MIRLMBMAP001
ENGR_132SC_RADRWA155_PPS	2010-155T21:26:28	GMB_E132_Titan69-000T05:00:00	000T00:00:44	2010-155T21:27:12	0	0	Non-SPASS			
RADAR_132TI_T69INRAD001_PRIME	2010-155T21:26:28	GMB_E132_Titan69-000T05:00:00	000T03:00:00	2010-156T00:26:28	4997.8	53.976	Prime	NEG_Z to Titan	NEG_Y to NTP	Use -Y to NTP and -Z to NTP for the 2ndary pointing
MP_132SA_RPXASCEND132_NA	2010-155T21:43:40		000T00:00:01	2010-155T21:43:41	0	0	Non-SPASS			
MAG_132SA_DUSKMSPH004_MAPS	2010-155T22:26:28		000T08:00:00	2010-156T06:26:28	0	0	Non-SPASS			
MAG_132TI_MAGTITAN001_PRIME	2010-155T22:26:28	GMB_E132_Titan69-000T04:00:00	000T08:00:00	2010-156T06:26:28	988	28.454	Non-SPASS			
CAPS_132TI_T69INBD001_PRIME	2010-156T00:26:28	GMB_E132_Titan69-000T02:00:00	000T01:00:00	2010-156T01:26:28	4000	14.4	SPASS Rider			
MIMI_132TI_TITANIN001_RIDER	2010-156T00:26:28	GMB_E132_Titan69-000T02:00:00	000T01:00:00	2010-156T01:26:28	900	3.24	SPASS Rider			
RADAR_132TI_T69INSCAT001_PRIME	2010-156T00:26:28	GMB_E132_Titan69-000T02:00:00	000T00:48:00	2010-156T01:14:28	30001.2	86.403	Prime	NEG_Z to Titan	NEG_X to NTP	
RPWS_132TI_TIIINTRMED001_PRIME	2010-156T00:26:28	GMB_E132_Titan69-000T02:00:00	000T01:00:00	2010-156T01:26:28	15232	54.835	Non-SPASS			
RADAR_132TI_T69IHISAR001_PRIME	2010-156T01:14:28	GMB_E132_Titan69-000T01:12:00	000T00:57:00	2010-156T02:11:28	50524.8	172.795	Prime	NEG_Z to Titan	NEG_X to NTP	
CAPS_132TI_T69CLOSE001_PRIME	2010-156T01:26:28	GMB_E132_Titan69-000T01:00:00	000T02:00:00	2010-156T03:26:28	16000	115.2	SPASS Rider			
INMS_132TI_TITAN69001_INMS	2010-156T01:26:28	GMB_E132_Titan69-000T01:00:00	000T00:40:00	2010-156T02:06:28	1498	3.595	Non-SPASS			
MIMI_132TI_TITANCA001_RIDER	2010-156T01:26:28	GMB_E132_Titan69-000T01:00:00	000T02:00:00	2010-156T03:26:28	900	6.48	SPASS Rider			
RPWS_132TI_TICA001_PRIME	2010-156T01:26:28	GMB_E132_Titan69-000T01:00:00	000T02:00:00	2010-156T03:26:28	60921.9	438.638	Non-SPASS			
INMS_132TI_TITAN69001_RIDER	2010-156T02:06:28	GMB_E132_Titan69-000T00:20:00	000T00:40:00	2010-156T02:46:28	1498	3.595	Non-SPASS			
CIRS_132TI_REGMAP001_VIMS	2010-156T02:11:28	GMB_E132_Titan69-000T00:15:00	000T02:15:00	2010-156T04:26:28	2000	16.2	SPASS Rider			
ISS_132TI_REGMAP001_VIMS	2010-156T02:11:28	GMB_E132_Titan69-000T00:15:00	000T02:15:00	2010-156T04:26:28	0	5	SPASS Rider			
VIMS_132TI_REGMAP001_PRIME	2010-156T02:11:28	GMB_E132_Titan69-000T00:15:00	000T02:15:00	2010-156T04:26:28	24691.4	200	Prime	VIMS_IR to Titan	NEG_X to Sun	
ENGR_132SC_DFPW156_PPS	2010-156T02:12:05	GMB_E132_Titan69-000T00:14:23	000T00:00:37	2010-156T02:12:42	0	0	Non-SPASS			
MP_132TI_FLYBYT069_NA	2010-156T02:26:27		000T00:00:01	2010-156T02:26:28	0	0	SPASS Note			
INMS_132TI_TITAN69002_INMS	2010-156T02:46:28	GMB_E132_Titan69+000T00:20:00	000T00:40:00	2010-156T03:26:28	1498	3.595	Non-SPASS			
CAPS_132TI_T69OUTBND001_PRIME	2010-156T03:26:28	GMB_E132_Titan69+000T01:00:00	000T01:00:00	2010-156T04:26:28	4000	14.4	SPASS Rider			
INMS_132SA_SURVEYSEG003_INMS	2010-156T03:26:28	GMB_E132_Titan69+000T01:00:00	003T02:16:32	2010-159T05:43:00	100	26.739	Non-SPASS			
MIMI_132TI_TITANOUT001_RIDER	2010-156T03:26:28	GMB_E132_Titan69+000T01:00:00	000T01:00:00	2010-156T04:26:28	900	3.24	SPASS Rider			
RPWS_132TI_TIIINTRMED002_PRIME	2010-156T03:26:28	GMB_E132_Titan69+000T01:00:00	000T01:00:00	2010-156T04:26:28	15232	54.835	Non-SPASS			
CAPS_132SA_SURVEY003_PRIME	2010-156T04:26:28	GMB_E132_Titan69+000T02:00:00	003T01:16:32	2010-159T05:43:00	1000	263.792	Non-SPASS			
CIRS_132TI_EUVFUV001_UVIS	2010-156T04:26:28	GMB_E132_Titan69+000T02:00:00	000T07:00:00	2010-156T11:26:28	2000	50.4	SPASS Rider			
ISS_132TI_EUVFUV001_UVIS	2010-156T04:26:28	GMB_E132_Titan69+000T02:00:00	000T07:00:00	2010-156T11:26:28	0	60	SPASS Rider			
MIMI_132SA_DUSKMSPH003_RIDER	2010-156T04:26:28	GMB_E132_Titan69+000T02:00:00	000T16:38:32	2010-156T21:05:00	750	44.934	SPASS Rider			
UVIS_132TI_EUVFUV001_PRIME	2010-156T04:26:28	GMB_E132_Titan69+000T02:00:00	000T07:00:00	2010-156T11:26:28	5032	126.806	Prime	UVIS_FUV to Titan	NEG_X to Sun	
VIMS_132TI_EUVFUV001_UVIS	2010-156T04:26:28	GMB_E132_Titan69+000T02:00:00	000T03:00:00	2010-156T07:26:28	4629.6	50	SPASS Rider			
MAG_132SA_DUSKMSPH005_MAPS	2010-156T06:26:28	GMB_E132_Titan69+000T04:00:00	000T14:38:32	2010-156T21:05:00	988	52.079	Non-SPASS			
VIMS_132TI_EUVFUV002_UVIS	2010-156T07:26:28	GMB_E132_Titan69+000T05:00:00	000T04:00:00	2010-156T11:26:28	2430.6	35	SPASS Rider			

TOL for T69 (2 of 2)

Request	Start Time	Epoch	Duration	End Time	Rate	Data Volume	SPASS Type	Primary Pointing	Secondary Pointing	Pointing Agreement
CIRS_132TI_FIRNADCMP002_PRIME	2010-156T11:26:28	GMB_E132_Titan69+000T09:00:00	0000T03:00:00	2010-156T14:26:28	4000	43.2	Prime	CIRS_FP1 to Titan		
ISS_132TI_FIRNADCMP001_CIRS	2010-156T11:26:28	GMB_E132_Titan69+000T09:00:00	0000T03:00:00	2010-156T14:26:28	0	5	SPASS Rider			
VIMS_132TI_FIRNADCMP001_CIRS	2010-156T11:26:28	GMB_E132_Titan69+000T09:00:00	0000T03:00:00	2010-156T14:26:28	1388.9	15	SPASS Rider			
CIRS_132TI_MONITORNA001_ISS	2010-156T14:26:28	GMB_E132_Titan69+000T12:00:00	0000T02:00:00	2010-156T16:26:28	2000	14.4	SPASS Rider			
ISS_132TI_MONITORNA001_PRIME	2010-156T14:26:28	GMB_E132_Titan69+000T12:00:00	0000T02:00:00	2010-156T16:26:28	0	200	Prime	ISS_NAC to Titan	NEG_X to Sun	
VIMS_132TI_MONITORNA001_ISS	2010-156T14:26:28	GMB_E132_Titan69+000T12:00:00	0000T02:00:00	2010-156T16:26:28	2777.8	20	SPASS Rider			
CIRS_132TI_GLOBMAP002_VIMS	2010-156T16:26:28	GMB_E132_Titan69+000T14:00:00	0000T03:36:35	2010-156T20:03:03	2000	25.99	SPASS Rider			
ISS_132TI_GLOBMAP002_VIMS	2010-156T16:26:28	GMB_E132_Titan69+000T14:00:00	0000T03:36:35	2010-156T20:03:03	0	25	SPASS Rider			
VIMS_132TI_GLOBMAP002_PRIME	2010-156T16:26:28	GMB_E132_Titan69+000T14:00:00	0000T03:36:35	2010-156T20:03:03	3078.1	40	Prime	VIMS_IR to Titan	NEG_X to Sun	
SP_132NA_DEADTIME156_PRIME	2010-156T20:03:03	GMB_E132_Titan69+000T17:36:35	0000T00:14:57	2010-156T20:18:00	0	0	Prime	NEG_Y to Titan	NEG_X to Sun	
SP_132EA_DLTURN156_PRIME	2010-156T20:18:00		0000T00:40:00	2010-156T20:58:00	0	0	Prime	XBAND to Earth	POS_X to NEP	
RSS_132SA_OCCORT002_RSS	2010-156T20:58:00		0000T09:00:00	2010-157T05:58:00	0	0	SPASS Rider			
SP_132EA_G34HEFUNQ156_PRIME	2010-156T20:58:00		0000T09:50:00	2010-157T06:48:00	0	0	Prime	XBAND to Earth	POS_X to NEP	
SP_132NA_G34HEFNON156_SP	2010-156T20:58:00		0000T09:00:00	2010-157T05:58:00	0	0	Non-SPASS			
ENGR_132SC_RSSKRWF156_PPS	2010-156T20:58:05		0000T00:05:08	2010-156T21:03:13	0	0	Non-SPASS			
MAG_132SU_MAGBOUND005_MAPS	2010-156T21:05:00		001T08:53:00	2010-158T05:58:00	988	116.959	Non-SPASS			
MIMI_132SA_MAGBOUND002 RIDER	2010-156T21:05:00		002T08:38:00	2010-159T05:43:00	750	152.91	SPASS Rider			
ENGR_132SC_SAFETABLE001_AACS	2010-156T21:28:00		0000T00:05:00	2010-156T21:33:00	0	0	Non-SPASS			
CIRS_132IC_DSCAL10156_SP	2010-156T21:58:00		0000T08:00:00	2010-157T05:58:00	3000	86.4	SPASS Rider			
SP_132NA_C70METNON156_SP	2010-157T02:43:00		0000T04:05:00	2010-157T06:48:00	0	0	Non-SPASS			
SP_132NA_G34OBSNON157_NA	2010-157T06:48:00		0000T14:10:00	2010-157T20:58:00	0	0	Non-SPASS			
SP_132TI_WAYPTTURN157_PRIME	2010-157T06:48:00		0000T00:40:00	2010-157T07:28:00	0	0	New Waypoint	NEG_Y to Titan	NEG_X to Sun	
ISS_132TI_CLOUD001_PRIME	2010-157T07:28:00		0000T04:32:00	2010-157T12:00:00	0	100	Prime	ISS_NAC to Titan	NEG_X to Sun	Secondary orientati NEG_X to Sun prefe but flexible
VIMS_132TI_CLOUDMAP001_ISS	2010-157T07:28:00		0000T04:32:00	2010-157T12:00:00	612.7	10	SPASS Rider			
CAPS_132SA_MAGBNDPTG004_PRIME	2010-157T12:00:00		0000T02:00:00	2010-157T14:00:00	15000	108	Prime			
ISS_132TI_CLOUD002_PRIME	2010-157T14:00:00		0000T04:48:00	2010-157T18:48:00	0	100	Prime	ISS_NAC to Titan	NEG_X to Sun	Secondary orientati NEG_X to Sun prefe but flexible
VIMS_132TI_CLOUDMAP002_ISS	2010-157T14:00:00		0000T04:48:00	2010-157T18:48:00	578.7	10	SPASS Rider			
SP_132EA_DLTURN157_PRIME	2010-157T18:48:00		0000T00:40:00	2010-157T19:28:00	0	0	New Waypoint	XBAND to Earth	NEG_X to Sun	
ISS?										YBIAS window not used
ENGR_132SC_YBIAS157_AACS	2010-157T19:28:00		0000T01:30:00	2010-157T20:58:00	0	0	SPASS Rider			
RSS_132SA_OCCORT003_RSS	2010-157T20:58:00		0000T09:00:00	2010-158T05:58:00	0	0	SPASS Rider			
SP_132EA_G34HEFUNQ157_PRIME	2010-157T20:58:00		0000T09:50:00	2010-158T06:48:00	0	0	Prime	XBAND to Earth	Rolling/SRU	
SP_132NA_G34HEFNON157_SP	2010-157T20:58:00		0000T09:00:00	2010-158T05:58:00	0	0	Non-SPASS			
CIRS_132IC_DSCAL10157_SP	2010-157T21:58:00		0000T08:00:00	2010-158T05:58:00	3000	86.4	SPASS Rider			
SP_132NA_C70METNON157_SP	2010-158T02:28:00		0000T04:20:00	2010-158T06:48:00	0	0	Non-SPASS			
MP_132SA_RPXDESCEN132_NA	2010-158T05:09:19		0000T00:00:01	2010-158T05:09:20	0	0	Non-SPASS			
ENGR_132SC_DFPW158_PPS	2010-158T05:57:38		0000T00:00:12	2010-158T05:57:50	0	0	Non-SPASS			
MAG_132SU_MAGBOUND006_MAPS	2010-158T05:58:00		0000T23:45:00	2010-159T05:43:00	988	84.474	Non-SPASS			
ENGR_132SC_RADWU158_PPS	2010-158T06:23:00		0000T00:00:07	2010-158T06:23:07	0	0	Non-SPASS			
CIRS_132TI_M60RCLD158_ISS	2010-158T06:38:00	E132_M60RCLD158+000T00:00:00	0000T01:15:00	2010-158T07:53:00	4000	18	SPASS Rider			EDIT to match ISS CLOUD003
RADAR_132OT_WU4SEQUA004 RIDER	2010-158T06:48:00		0000T07:12:00	2010-158T14:00:00	481.5	12.481	SPASS Rider			
SP_132NA_G34OBSNON158_NA	2010-158T06:48:00		0000T13:55:00	2010-158T20:43:00	0	0	Non-SPASS			
SP_132TI_WAYPTTURN158_PRIME	2010-158T06:48:00		0000T00:40:00	2010-158T07:28:00	0	0	New Waypoint	NEG_Y to Titan	NEG_X to Sun	
ISS_132TI_CLOUD003_PRIME	2010-158T07:28:00		0000T04:32:00	2010-158T12:00:00	0	135	Prime	ISS_NAC to Titan	NEG_X to Sun	Secondary orientati NEG_X to Sun prefe but flexible
VIMS_132TI_CLOUDMAP003_ISS	2010-158T07:28:00		0000T04:32:00	2010-158T12:00:00	612.7	10	SPASS Rider			
CAPS_132SA_MAGBNDPTG005_PRIME	2010-158T12:00:00		0000T02:00:00	2010-158T14:00:00	15000	108	Prime			
RADAR_132TI_SEQUACAL004_PRIME	2010-158T14:00:00		0000T01:30:00	2010-158T15:30:00	1313.3	7.092	Prime	NEG_Z to Titan	POS_Y to NTP	
ENGR_132SC_DFPW458_PPS	2010-158T15:29:52		0000T00:00:08	2010-158T15:30:00	0	0	Non-SPASS			
ISS_132TI_CLOUD004_PRIME	2010-158T15:30:00		0000T04:33:00	2010-158T20:03:00	0	100	Prime	ISS_NAC to Titan	NEG_X to Sun	Secondary orientati NEG_X to Sun prefe but flexible
VIMS_132TI_CLOUDMAP004_ISS	2010-158T15:30:00		0000T04:33:00	2010-158T20:03:00	610.5	10	SPASS Rider			
SP_132EA_DLTURN158_PRIME	2010-158T20:03:00		0000T00:40:00	2010-158T20:43:00	0	0	Prime	XBAND to Earth	NEG_Y to 268.53/-4.91	
ENGR_132SC_DFPWTCM158_PPS	2010-158T20:42:02		0000T00:00:58	2010-158T20:43:00	0	0	Non-SPASS			
NAV_132SC_OTM251001_PRIME	2010-158T20:43:00		0000T09:00:00	2010-159T05:43:00	0	0	SPASS Rider			
SP_132EA_G34BWGOTP158_PRIME	2010-158T20:43:00		0000T09:00:00	2010-159T05:43:00	0	0	Prime	XBAND to Earth	4 Hr Rolling	NEG_Y to 268.53/-4 (Saturn, (0,0,-9.5)), MIMI,CAPS,CDA
SP_132NA_G34BWNON158_SP	2010-158T20:43:00		0000T09:00:00	2010-159T05:43:00	0	0	Non-SPASS			
CIRS_132IC_DSCAL10158_SP	2010-158T21:43:00		0000T08:00:00	2010-159T05:43:00	3000	86.4	SPASS Rider			
SP_132NA_C70METNON158_SP	2010-159T02:28:00		0000T03:15:00	2010-159T05:43:00	0	0	Non-SPASS			
CDA_132DR_ISD005_PRIME	2010-159T04:00:00		0000T12:00:00	2010-159T16:00:00	0	0	SPASS Rider			
ENGR_132SC_DFPW159_PPS	2010-159T05:41:00		0000T00:00:47	2010-159T05:41:47	0	0	Non-SPASS			

T69 Wrapup SPASS

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
Sequence S60, length = 34 days		2010-137T13:31:00		039T07:39:00	2010-176T21:10:00			
Titan Flyby T69 Segment		2010-155T12:13:00		003T17:30:00	2010-159T05:43:00			
SP_132TI_WAYPTTURN155_PRIME	M	2010-155T12:13:00		000T00:40:00	2010-155T12:53:00	NEG_Y to Titan	NEG_X to Sun	
NEW WAYPOINT		2010-155T12:53:00		001T18:35:00	2010-157T07:28:0	NEG_Y to Titan	NEG_X to Sun	
SP_132NA_DEADTIME155_PRIME	M	2010-155T12:53:00		000T00:15:03	2010-155T13:08:0	NEG_Y to Titan	NEG_X to Sun	
VIMS_132TI_GLOBMAP001_PRIME	C, I, M	2010-155T13:08:03	GMB_E132_Titan69-000T13:18:25	000T04:00:25	2010-155T17:08:28	VIMS_IR to Titan	NEG_X to Sun	
CIRS_132TI_MIRLMBMAP001_PRIME	I, M, R, V	2010-155T17:08:28	GMB_E132_Titan69-000T09:18:00	000T04:18:00	2010-155T21:26:28	CIRS_FP to Titan	PIC	
RADAR_132TI_T69INRAD001_PRIME	M, V	2010-155T21:26:28	GMB_E132_Titan69-000T05:00:00	000T03:00:00	2010-156T00:26:28	NEG_Z to Titan	NEG_Y to NTP	Use -Y to NTP and -X to NTP for the 2ndary axis.
RADAR_132TI_T69INSCAT001_PRIME	M	2010-156T00:26:28	GMB_E132_Titan69-000T02:00:00	000T00:48:00	2010-156T01:14:28	NEG_Z to Titan	NEG_X to NTP	
RADAR_132TI_T69IHISAR001_PRIME	M	2010-156T01:14:28	GMB_E132_Titan69-000T01:12:00	000T00:57:00	2010-156T02:11:28	NEG_Z to Titan	NEG_X to NTP	
VIMS_132TI_REGMAP001_PRIME	C, I, M	2010-156T02:11:28	GMB_E132_Titan69-000T00:15:00	000T02:15:00	2010-156T04:26:28	VIMS_IR to Titan	NEG_X to Sun	
132TI (t) T69 TITAN Outbo...		2010-156T02:26:27		000T00:00:01	2010-156T02:26:28			
UVIS_132TI_EUVFUV001_PRIME	C, I, M, V	2010-156T04:26:28	GMB_E132_Titan69+000T02:00:00	000T07:00:00	2010-156T11:26:28	UVIS_FUV to Titan	NEG_X to Sun	
CIRS_132TI_FIRNADCMP002_PRIME	I, M, V	2010-156T11:26:28	GMB_E132_Titan69+000T09:00:00	000T03:00:00	2010-156T14:26:28	CIRS_FP1 to Titan	PIC	
ISS_132TI_MONITORNA001_PRIME	C, M, V	2010-156T14:26:28	GMB_E132_Titan69+000T12:00:00	000T02:00:00	2010-156T16:26:28	ISS_NAC to Titan	NEG_X to Sun	
VIMS_132TI_GLOBMAP002_PRIME	C, I, M	2010-156T16:26:28	GMB_E132_Titan69+000T14:00:00	000T03:36:35	2010-156T20:03:03	VIMS_IR to Titan	NEG_X to Sun	
SP_132NA_DEADTIME156_PRIME	M	2010-156T20:03:0	GMB_E132_Titan69+000T17:36:00	000T00:14:57	2010-156T20:18:0	NEG_Y to Titan	NEG_X to Sun	
SP_132EA_DLTURN156_PRIME	M	2010-156T20:18:00		000T00:40:00	2010-156T20:58:00	XBAND to Earth	POS_X to NEP	
SP_132EA_G34HEFUNQ156_PRIME	C, M, R	2010-156T20:58:00		000T09:50:00	2010-157T06:48:00	XBAND to Earth	POS_X to NEP	
SP_132TI_WAYPTTURN157_PRIME	M	2010-157T06:48:00		000T00:40:00	2010-157T07:28:00	NEG_Y to Titan	NEG_X to Sun	
NEW WAYPOINT		2010-157T07:28:00		000T12:00:00	2010-157T19:28:0	NEG_Y to Titan	NEG_X to Sun	
ISS_132TI_CLOUD001_PRIME	M, V	2010-157T07:28:00		000T04:32:00	2010-157T12:00:00	ISS_NAC to Titan	NEG_X to Sun	Secondary orientation: NEG_X to Sun preferred, but flexible
CAPS_132SA_MAGBNPTG004_PRIME	M	2010-157T12:00:00		000T02:00:00	2010-157T14:00:00	NEED TO SPECIFY	NEED TO SPECIFY	
ISS_132TI_CLOUD002_PRIME	M, V	2010-157T14:00:00		000T04:48:00	2010-157T18:48:00	ISS_NAC to Titan	NEG_X to Sun	Secondary orientation: NEG_X to Sun preferred, but flexible
SP_132EA_DLTURN157_PRIME	M	2010-157T18:48:00		000T00:40:00	2010-157T19:28:00	XBAND to Earth	NEG_X to Sun	
NEW WAYPOINT		2010-157T19:28:00		000T12:00:00	2010-158T07:28:0	XBAND to Earth	NEG_X to Sun	
				To Be Assigned				
SP_132EA_G34HEFUNQ157_PRIME	C, M, R	2010-157T20:58:00		000T09:50:00	2010-158T06:48:00	XBAND to Earth	Rolling/SRU	
SP_132TI_WAYPTTURN158_PRIME	C, M, R	2010-158T06:48:00		000T00:40:00	2010-158T07:28:00	NEG_Y to Titan	NEG_X to Sun	
NEW WAYPOINT		2010-158T07:28:00		000T22:15:00	2010-159T05:43:0	NEG_Y to Titan	NEG_X to Sun	
ISS_132TI_CLOUD003_PRIME	C, M, R, V	2010-158T07:28:00		000T04:32:00	2010-158T12:00:00	ISS_NAC to Titan	NEG_X to Sun	Secondary orientation: NEG_X to Sun preferred, but flexible
CAPS_132SA_MAGBNPTG005_PRIME	M, R	2010-158T12:00:00		000T02:00:00	2010-158T14:00:00	NEED TO SPECIFY	NEED TO SPECIFY	
RADAR_132TI_SEQUACAL004_PRIME	M	2010-158T14:00:00		000T01:30:00	2010-158T15:30:00	NEG_Z to Titan	POS_Y to NTP	
ISS_132TI_CLOUD004_PRIME	M, V	2010-158T15:30:00		000T04:33:00	2010-158T20:03:00	ISS_NAC to Titan	NEG_X to Sun	Secondary orientation: NEG_X to Sun preferred, but flexible
SP_132EA_DLTURN158_PRIME	M	2010-158T20:03:00		000T00:40:00	2010-158T20:43:00	XBAND to Earth	NEG_Y to 268.53/-4.91	
SP_132EA_G34BWGOTP158_PRIME	C, M, N	2010-158T20:43:00		000T09:00:00	2010-159T05:43:00	XBAND to Earth	4_Hr_Rolling	NEG_Y to 268.53/-4.91 (Saturn, (0,0,-9.5)); MIMI,CAPS,CDA

T69 Wrapup Open Issues

- ISS prime observation needed in 1.5 hours between turn to D/L and downlink.
 - Sequence lead, note that this could be displaced by bias rider
- CCR edits to timeline as noted (ISS, VIMS, CAPS, RADAR?)
- CAPS to add pointing and science highlights
- Downlink turn on DOY 157 and waypoint turn on DOY 158 have SRU bright body exposure issues under 5 minutes. Short enough to be OK. DOY 157 has SRU bright body issues during roll, which may need to be split.