

TOST: Clean-up Package for 00ATI (TA)

Segment: 2004-299T16:31 – 2004-301T09:16
Titan C/A: 2004-300T15:31:27, Altitude = 1200 km
Epoch: GMB_E00A_TitanA

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TA High-level Science Objectives

RADAR - First-ever SAR imaging of Titan's surface. Scatterometry of Huygens landing site (roughness and probably solid/liquid discrimination). Partial temperature map from radiometry.

INMS - The first ever in situ measurements of Titan's upper atmosphere. INMS' main goal is to determine the density and composition of the Titan atmosphere. These density measurements will be used to help decide the minimum safe flyby altitude on subsequent Titan passes.

CIRS - Continued engineering responsibility to Huygens on Ta, namely to measure the stratospheric temperatures vs pressure (hence the densities) at the altitudes of the parachute deployment. Assuming there is a modicum of pointing control after SOI, we'll do this first at T0, but we won't cover the longitude of the probe landing site, just latitude. Ta inbound gives us the longitude too.

This will enable us to (1) verify the Huygens project atmospheric model, and (2) put limits on the amplitudes of gravity waves in the upper stratosphere.

TA High-level Science Objectives (cont')

- VIMS -
1. Surface compositional mapping.
 2. Surface fluid feature mapping (lakes, seas, rivers)
 3. Wind fields
 4. 3-D aerosol/cloud structure
 5. Methane fluorescence
 6. Search for cryo-volcanic activity

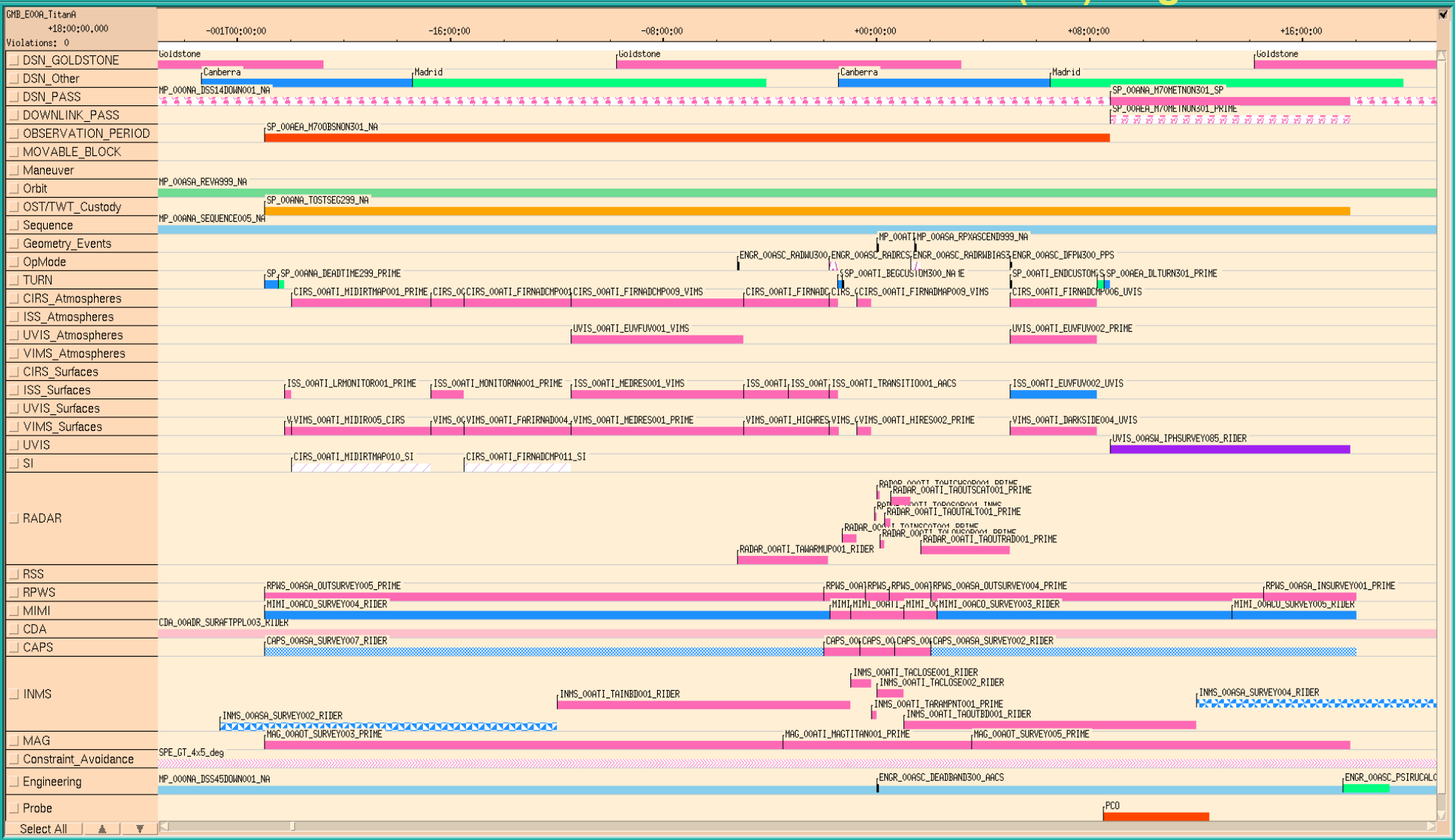
First mapping of Titan's surface in the 1 to 5 micron spectral region, including the landing site, at ~1km spatial resolution; search for volatiles and liquid bodies on the surface; observation of the dynamics of clouds at moderate spatial resolution.

00ATI(TA) Timeline

C/A= 2004-300T15:31:27 @ 1200 km

Start Time	End Time	Prime Activity	Obs. Detail	Op Mode	TLM Mode	Comments
299T16:31	299T17:01	SP Turn to waypoint	-Y to Titan, -X to Sun	DFPW	S_N_ER_3	
299T17:01	299T17:16	OD Uncertainty Dead		DFPW	S_N_ER_3	
-22:14	-22:00	ISS	Monitor	DFPW	S_N_ER_3	
-22:00	-16:45	CIRS	Mid-IR Temp Map	DFPW	S_N_ER_3	
-16:45	-15:30	ISS	Monitor	DFPW	S_N_ER_3	
-15:30	-11:30	CIRS	Far-IR Nadir Comp	DFPW	S_N_ER_3	sit-and-stare
-11:30	-05:00	VIMS	Med Res	DFPW	S_N_ER_3	RADWU and S_N_ER_5a at -05:15; earlier
-05:00	-01:48	ISS	High Res	RADWU	S_N_ER_3	1 min dwells
-01:48	-01:27	RWA to RCS transition		RADRCS	S_N_ER_3	w/ VIMS Rider; Deadband = (2,2,2)
-01:27	-01:26	ISS Turn to waypoint	-Y to Titan, -X to Sun			
-01:26	-01:19	SP Turn to New waypoint	-Z to Titan, -X to Sun			-Y to Titan violates CIRS boresight to Sun
-01:19		Begin Custom Period				
-01:19	-01:15	RADAR	Turn to scatterometry	RADRCS	S_N_ER_8	
-01:15	-00:45	RADAR Scatterometry	Inbound	RADRCS	S_N_ER_8	Leave at -Z to Titan, +X to NTP
-00:45	-00:38	VIMS	Turn to -Y to Titan, +X NTP	RADRCS	S_N_ER_8	
-00:38	-00:13	VIMS	High Res	RADRCS	S_N_ER_3	Leave at VIMS_IR to Titan, +X to NTP
-00:12	-00:06	INMS	Turn to -X to Titan RAM, -Z Titan	RADRCS	S_N_ER_3	2nd axis = -Z to Titan for RADAR
-00:06	c/a	INMS	-X to RAM	RADRCS	S_N_ER_8	RADAR ride-along
c/a	+00:06	RADAR	High-Res SAR	RADRCS	S_N_ER_8	Pick up at INMS attitude; Deadband = (2,2,20)
+00:06	+00:16	RADAR	Low-Res SAR	RADRCS	S_N_ER_8	
+00:16	+00:30	RADAR	Altimetry	RADRCS	S_N_ER_8	
+00:30	+01:15	RADAR	Scatterometry	RADRCS	S_N_ER_8	
+01:15	+01:39	RCS to RWA Transition		RADRWA	S_N_ER_8	
+01:39	+05:00	RADAR	Radiometry	RADRWA	S_N_ER_8	Leave at -Z to Titan, -X to Sun
+05:00		End Custom Period				
+05:00	+08:15	UVIS	EUUVFUV	DFPW	S_N_ER_3	Extra time allocated for turns to/from -Z to Titan
300T23:46	301T00:01	OD Uncertainty Dead		DFPW	S_N_ER_3	
301T00:01	301T00:16	SP Turn to Earth for		DFPW	S_N_ER_3	
301T00:16	301T09:16	Downlink		DFPW	RTE_N_S	

00ATI (TA) Segment



Zoomed in on selected display(s).



00ATI (TA) Current SPASS

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
Sequence S005, length = 26 ...		2004-292T09:30:00	E00A_SEQUENCE_005+000T00:00	027T22:19:00	2004-320T07:49:00			
TOST rev A Segment		2004-299T16:31:00		001T16:45:00	2004-301T09:16:00			
SP_00ATI_WAYPTTURN299_PRIME		2004-299T16:31:00		000T00:30:00	2004-299T17:01:00	ISS_NAC to Titan	NEG_X to Sun	
NEW WAYPOINT		2004-299T17:01:00		000T21:11:27	2004-300T14:12:27	ISS_NAC to Titan	NEG_X to Sun	
SP_00ANA_DEADTIME299_PRIME		2004-299T17:01:00		000T00:15:00	2004-299T17:16:00	ISS_NAC to Titan	NEG_X to Sun	
ISS_00ATI_LRMONITOR001_PRIME	V	2004-299T17:17:27	GMB_E00A_TitanA-000T22:14:00	000T00:14:00	2004-299T17:31:27	ISS_NAC to Titan	NEG_X to Sun	
CIRS_00ATI_MIDIRTMAP001_PRIME	C, I, V	2004-299T17:31:27	GMB_E00A_TitanA-000T22:00:00	000T05:15:00	2004-299T22:46:27	CIRS_FPB to Titan	POS_X to North_Pole_Dir	
ISS_00ATI_MONITORNA001_PRIME	C, V	2004-299T22:46:27	GMB_E00A_TitanA-000T16:45:00	000T01:15:00	2004-300T00:01:27	ISS_NAC to Titan	NEG_X to Sun	
CIRS_00ATI_FIRNADCMP001_PRIME	C, I, V	2004-300T00:01:27	GMB_E00A_TitanA-000T15:30:00	000T04:00:00	2004-300T04:01:27	CIRS_FP1 to Titan	PIC	
VIMS_00ATI_MEDRES001_PRIME	C, I, R, U	2004-300T04:01:27	GMB_E00A_TitanA-000T11:30:00	000T06:30:00	2004-300T10:31:27	ISS_NAC to Titan	POS_X to North_Pole_Dir	
ISS_00ATI_REGMAP001_PRIME	C, R, V	2004-300T10:31:27	GMB_E00A_TitanA-000T05:00:00	000T01:40:00	2004-300T12:11:27	ISS_NAC to Titan	NEG_X to Sun	
ISS_00ATI_HIRESNAC001_PRIME	C, M, R, V	2004-300T12:11:27	GMB_E00A_TitanA-000T03:20:00	000T01:32:00	2004-300T13:43:27	ISS_NAC to Titan	NEG_X to Sun	
ENGR_00ASC_RADRCS300_PPS	C, I, M, V	2004-300T13:43:27	GMB_E00A_TitanA-000T01:48:00	000T00:20:48	2004-300T14:04:15	ISS_NAC to Titan	NEG_X to Sun	Deadband = (2,2,2)
SP_00ATI_WAYPTTURN300_PRIME	M	2004-300T14:05:27	GMB_E00A_TitanA-000T01:26:00	000T00:07:00	2004-300T14:12:27	NEG_Z to Titan	NEG_X to Sun	
NEW WAYPOINT		2004-300T14:12:27		000T19:03:33	2004-301T09:16:00	NEG_Z to Titan	NEG_X to Sun	
Begin Custom Period		2004-300T14:12:27	GMB_E00A_TitanA-000T01:19:00	000T00:01:00	2004-300T14:13:27			
RADAR_00ATI_TAINSCAT001_PRIME	M	2004-300T14:12:27	GMB_E00A_TitanA-000T01:19:00	000T00:34:00	2004-300T14:46:27	NEG_Z to Titan	POS_X to North_Pole_Dir	Pick up at NEG_Z to Titan, NEG_X to Sun, Hand off at NEG_Z to Titan, POS_X to NTP. Leave at NEG_Z to Titan, POS_X to NTP.
VIMS_00ATI_HIRES002_PRIME	C, I, M	2004-300T14:46:27	GMB_E00A_TitanA-000T00:45:00	000T00:32:00	2004-300T15:18:27	VIMS_IR to Titan	NEG_X to Sun	Pick up at NEG_Z to Titan, POS_X to NTP, Hand off at VIMS_IR to Titan, POS_X to NTP. Pick up Neg_Z to Titan, POS_X to NTP, Leave VIMS_IR to Titan, POS_X to NTP.
TA High Priority Science		2004-300T15:11:27	GMB_E00A_TitanA-000T00:20:00	000T00:40:00	2004-300T15:51:27			
RADAR_00ATI_TAPT4INMS001_PRIME	M	2004-300T15:18:27	GMB_E00A_TitanA-000T00:13:00	000T00:13:00	2004-300T15:31:27	NEG_X to SC_RAM	NEG_Z to Titan	Pick up at VIMS_IR to Titan, POS_X to NTP, Hand off at unknown, unknown. To do pointing for INMS with RADAR_IVD_Z 2nd axis.
RADAR_00ATI_TAHIGH SAR001_PRIME	M	2004-300T15:31:27	GMB_E00A_TitanA+000T00:00:00	000T00:06:00	2004-300T15:37:27	NEG_Z to Titan	NEG_X to Titan_SC_RAM	Pick up at unknown, unknown; Hand off at unknown, unknown. Pick up at NEG_X to Titan_SC_RAM, NEG_Z to Titan
RADAR_00ATI_TALOWSAR001_PRIME	M	2004-300T15:37:27	GMB_E00A_TitanA+000T00:06:00	000T00:10:00	2004-300T15:47:27	NEG_Z to Titan	NEG_X to Titan_SC_RAM	Pick up at unknown, unknown; Hand off at unknown, unknown.
RADAR_00ATI_TAOULT001_PRIME	M	2004-300T15:47:27	GMB_E00A_TitanA+000T00:16:00	000T00:14:00	2004-300T16:01:27	NEG_Z to Titan (0.0,0.0,-10.0 deg. offset)	POS_X to North_Pole_Dir	Pick up at unknown, unknown; Hand off at unknown, unknown.
RADAR_00ATI_TAOULTSCAT001_PRIME	M	2004-300T16:01:27	GMB_E00A_TitanA+000T00:30:00	000T00:45:00	2004-300T16:46:27	NEG_Z to Titan	POS_X to North_Pole_Dir	Pick up at unknown, unknown; Hand off at unknown, unknown.
ENGR_00ASC_RADRWBIAS300_PPS	M	2004-300T16:46:27	GMB_E00A_TitanA+000T01:15:00	000T00:23:18	2004-300T17:09:45	NEG_Z to Titan	PIC	Pick up at unknown, unknown; Hand off at unknown, unknown.
RADAR_00ATI_TAOULTRAD001_PRIME	M	2004-300T17:10:27	GMB_E00A_TitanA+000T01:39:00	000T03:21:00	2004-300T20:31:27	NEG_Z to Titan	POS_X to North_Pole_Dir	Pick up at unknown, unknown; Hand off at NEG_Z to Titan, NEG_X to Sun. Use +Y to NTP for the 2nd polariz. Leave at -Z to Titan, -X to Sun.
End Custom Period		2004-300T20:31:27	GMB_E00A_TitanA+000T05:00:00	000T00:01:00	2004-300T20:32:27			
UVIS_00ATI_EUVFLUV002_PRIME	C, I, V	2004-300T20:31:27	GMB_E00A_TitanA+000T05:00:00	000T03:15:00	2004-300T23:46:27	UVIS_FLUV to Titan	NEG_X to Sun	
SP_00ANA_DEADTIME300_PRIME	C, I, V	2004-300T23:46:00		000T00:15:00	2004-301T00:01:00	ISS_NAC to Titan	NEG_X to Sun	
SP_00AEA_DLTURN301_PRIME		2004-301T00:01:00		000T00:15:00	2004-301T00:16:00	XBAND to Earth	POS_X to NEP	
SP_00AEA_M70METUNQ301_PRIME	X	2004-301T00:16:00		000T09:00:00	2004-301T09:16:00	XBAND to Earth	POS_X to NEP	

Request	Start Time	Epoch Relative Start Time	Duration	EndTime	Effective Rate (bps)	Data Volume (10 ⁶ bits)	SPASS Type	Primary Pointing	Secondary Pointing	Agreement
CAPS_00ASA_SURVEY007_RIDER	2004-299T16:31:00		000T20:59:23	2004-300T13:30:23	1000	75.563	Non-SPASS			
CAPS_00ATI_TAINBND001_RIDER	2004-300T13:30:23	GMB_E00A_TitanA-000T02:00:00		000T01:21:00	2004-300T14:51:23	4000	19.44	SPASS Rider		
CAPS_00ATI_TACLOSE001_RIDER	2004-300T14:51:23	GMB_E00A_TitanA-000T00:39:00		000T01:18:00	2004-300T16:09:23	16000	74.88	SPASS Rider		
CAPS_00ATI_TAOUTBND001_RIDER	2004-300T16:09:23	GMB_E00A_TitanA+000T00:39:00		000T01:21:00	2004-300T17:30:23	4000	19.44	SPASS Rider		
CAPS_00ASA_SURVEY002_RIDER	2004-300T17:30:23	GMB_E00A_TitanA+000T02:00:00		000T15:59:37	2004-301T09:30:00	1000	57.577	Non-SPASS		
CDA_00ADR_SURAFTPL002_RIDER	2004-285T17:00:00		002T17:26:00	2004-288T10:26:00	100.1	23.576	Non-SPASS			
CDA_00ADR_SURAFTPL003_RIDER	2004-292T09:30:00		010T08:14:00	2004-302T17:44:00	100.1	89.439	Non-SPASS			
CIRS_00ATI_MIDIRMAP001_PRIME	2004-299T17:30:23	GMB_E00A_TitanA-000T22:00:00		000T05:15:00	2004-299T22:45:23	2000	37.8	Prime	CIRS_FPB to Titan	POS_X to North_Pole_Dir
CIRS_00ATI_MIDIRMAP010_SI	2004-299T17:30:23	GMB_E00A_TitanA-000T22:00:00		000T05:15:00	2004-299T22:45:23	0	6	SPASS Rider		
CIRS_00ATI_FIRNADCMPO08_ISS	2004-299T22:45:23	GMB_E00A_TitanA-000T16:45:00		000T01:15:00	2004-300T00:00:23	4000	18	SPASS Rider		
CIRS_00ATI_FIRNADCMPO01_PRIME	2004-300T00:00:23	GMB_E00A_TitanA-000T15:30:00		000T04:00:00	2004-300T04:00:23	4000	57.6	Prime	CIRS_FP1 to Titan	PIC
CIRS_00ATI_FIRNADCMPO11_SI	2004-300T00:00:23	GMB_E00A_TitanA-000T15:30:00		000T04:00:00	2004-300T04:00:23	0	4	SPASS Rider		
CIRS_00ATI_FIRNADCMPO09_VIMS	2004-300T04:00:23	GMB_E00A_TitanA-000T11:30:00		000T06:30:00	2004-300T10:30:23	2000	46.8	SPASS Rider		
CIRS_00ATI_FIRNADCMPO07_ISS	2004-300T10:30:23	GMB_E00A_TitanA-000T05:00:00		000T03:10:00	2004-300T13:40:23	2000	22.8	SPASS Rider		
CIRS_00ATI_FIRNADCMPO09_RIDER	2004-300T13:40:23	GMB_E00A_TitanA-000T01:50:00		000T00:21:00	2004-300T14:01:23	2000	2.52	SPASS Rider		
CIRS_00ATI_FIRNADMAP009_VIMS	2004-300T14:45:23	GMB_E00A_TitanA-000T00:45:00		000T00:32:00	2004-300T15:17:23	3000	5.76	SPASS Rider		
CIRS_00ATI_FIRNADCMPO06_UVIS	2004-300T20:30:23	GMB_E00A_TitanA+000T05:00:00		000T03:15:00	2004-300T23:45:23	2000	23.4	SPASS Rider		
ENGR_00ASC_RADWU300_PPS	2004-300T10:15:23	GMB_E00A_TitanA-000T05:15:00		000T00:00:07	2004-300T10:15:30	0	0	Non-SPASS		
ENGR_00ASC_RADRCS300_PPS	2004-300T13:40:23	GMB_E00A_TitanA-000T01:50:00		000T00:20:48	2004-300T14:01:11	0	0	Prime	ISS_NAC to Titan	NEG_X to Sun
ENGR_00ASC_DEADBAND300_AACS	2004-300T15:30:23	GMB_E00A_TitanA+000T00:00:00		000T00:00:01	2004-300T15:30:24	0	0	SPASS Note		Deadband = (2,2,2)
ENGR_00ASC_RADRWBIAS300_PPS	2004-300T16:45:23	GMB_E00A_TitanA+000T01:15:00		000T00:23:18	2004-300T17:08:41	0	0	Prime	NEG_Z to Titan	PIC
ENGR_00ASC_DFPW300_PPS	2004-300T20:29:46	GMB_E00A_TitanA+000T04:59:23		000T00:00:37	2004-300T20:30:23	0	0	Non-SPASS		Deadband = (2,2,20)
ENGR_00ASC_PSIURCAL001_AACS	2004-301T09:00:00		000T01:45:00	2004-301T10:45:00	0	0	SPASS Rider			
INMS_00ASA_SURVEY007_RIDER	2004-285T17:04:00	E00A_PROBEPATCH_PSAOFF+000T00:10:00		002T17:24:00	2004-288T10:28:00	50	11.772	Non-SPASS		
INMS_00ASA_SURVEY002_RIDER	2004-299T14:50:00		000T12:40:23	2004-300T03:30:23	100	2.281	Non-SPASS			
INMS_00ATI_TAINBND001_RIDER	2004-300T03:30:23		000T11:00:00	2004-300T14:30:23	50	3.96	Non-SPASS			
INMS_00ATI_TACLOSE001_RIDER	2004-300T14:30:23	GMB_E00A_TitanA-000T01:00:00		000T00:47:00	2004-300T15:17:23	1498	4.224	Non-SPASS		
INMS_00ATI_TARAMPT001_PRIME	2004-300T15:17:23	GMB_E00A_TitanA-000T00:13:00		000T01:13:00	2004-300T15:30:23	1498	1.188	Prime	NEG_X to Titan_SC_RAM	NEG_Z to Titan
INMS_00ATI_TACLOSE002_RIDER	2004-300T15:30:23	GMB_E00A_TitanA-000T00:00:00		000T01:00:00	2004-300T16:30:23	1498	5.393	Non-SPASS		Pick up at VIMS_IR to Titan, -X to Sun; leave at -X to Titan_SC_RAM, -Z to Titan
INMS_00ATI_TAOUTBND001_RIDER	2004-300T16:30:23	GMB_E00A_TitanA+000T01:00:00		000T11:00:00	2004-301T03:30:23	100	3.96	Non-SPASS		
INMS_00ASA_SURVEY004_RIDER	2004-301T03:30:23		005T13:04:37	2004-306T16:35:00	50	23.954	Non-SPASS			
ISS_00ATI_LRMONITOR001_PRIME	2004-299T17:16:23	GMB_E00A_TitanA-000T22:14:00		000T00:14:00	2004-299T17:30:23	0	20	Prime	ISS_NAC to Titan	NEG_X to Sun
ISS_00ATI_MONITORAD01_PRIME	2004-299T22:45:23	GMB_E00A_TitanA-000T16:45:00		000T01:15:00	2004-300T00:00:23	0	180	Prime	ISS_NAC to Titan	NEG_X to Sun
ISS_00ATI_MEDRES001_VIMS	2004-300T04:00:23	GMB_E00A_TitanA-000T11:30:00		000T06:30:00	2004-300T10:30:23	0	90	SPASS Rider		
ISS_00ATI_REGMAP001_PRIME	2004-300T10:30:23	GMB_E00A_TitanA-000T05:00:00		000T01:40:00	2004-300T12:10:23	0	282	Prime	ISS_NAC to Titan	NEG_X to Sun
ISS_00ATI_HIRESNAC001_PRIME	2004-300T12:10:23	GMB_E00A_TitanA-000T03:30:00		000T01:30:00	2004-300T13:40:23	0	206	Prime	ISS_NAC to Titan	NEG_X to Sun
ISS_00ATI_TRANSIT001_AACS	2004-300T15:51:23	GMB_E00A_TitanA+000T00:21:00		000T00:23:00	2004-300T16:14:23	0	20	SPASS Rider		
ISS_00ATI_EUVFUV002_UVIS	2004-300T20:30:23	GMB_E00A_TitanA+000T05:00:00		000T03:15:00	2004-300T23:45:23	0	50	SPASS Rider		
MAG_00AOT_SURVEY003_PRIME	2004-299T16:31:00		000T19:27:30	2004-300T11:58:30	494	34.605	Non-SPASS			
MAG_00ATI_MAGTTAN001_PRIME	2004-300T11:58:30	GMB_E00A_TitanA-000T03:31:53		000T07:03:46	2004-300T19:02:16	1976	50.242	Non-SPASS		
MAG_00AOT_SURVEY005_PRIME	2004-300T19:02:16	GMB_E00A_TitanA+000T03:31:53		000T14:13:44	2004-301T09:16:00	494	25.305	Non-SPASS		
MIMI_00ACO_SURVEY004_RIDER	2004-299T16:31:01		000T21:13:46	2004-300T13:44:47	900	68.783	Non-SPASS			
MIMI_00ATI_TAINBND001_RIDER	2004-300T13:44:36		000T00:45:47	2004-300T14:30:23	2000	5.494	SPASS Rider			
MIMI_00ATI_TACLOSE001_RIDER	2004-300T14:30:23	GMB_E00A_TitanA-000T01:00:00		000T02:00:00	2004-300T16:30:23	2000	14.4	SPASS Rider		
MIMI_00ATI_TAOUTBND001_RIDER	2004-300T16:30:23	GMB_E00A_TitanA+000T01:00:00		000T01:14:13	2004-300T17:44:36	2000	8.906	SPASS Rider		
MIMI_00ACO_SURVEY003_RIDER	2004-300T17:44:47		000T11:05:12	2004-301T04:49:59	900	35.921	Non-SPASS			
MIMI_00ACO_SURVEY005_RIDER	2004-301T04:50:01		000T04:40:00	2004-301T09:30:01	900	15.12	Non-SPASS			

MP_000NA_DSS14DOWN001_NA	2004-189T00:00:00		136T00:00:00	2004-327T00:00:00	0	0	Non-SPASS			
MP_00ASA_REVA999_NA	2004-240T12:38:49		085T20:02:14	2004-326T08:41:03	0	0	Non-SPASS			
MP_00ANA_DSS45DOWN001_NA	2004-290T00:00:00		049T00:00:00	2004-339T00:00:00	0	0	Non-SPASS			
MP_00ANA_SEQUENCE005_NA	2004-292T09:30:00	E00A_SEQUENCE_005+000T00:00:00	026T06:03:00	2004-318T15:33:00	0	0	SPASS Note			
MP_00ATI_FLYBYTA999_NA	2004-300T15:30:23		000T00:00:01	2004-300T15:30:24	0	0	Non-SPASS			
MP_00ASA_RPXASCEND999_NA	2004-300T16:53:55		000T00:00:01	2004-300T16:53:56	0	0	Non-SPASS			
RADAR_00ATI_TAWARMUP001_RIDER	2004-300T10:15:23	GMB_E00A_TitanA-000T05:15:00	000T03:25:00	2004-300T13:40:23	255.4	3.141	SPASS Rider			
RADAR_00ATI_TAINSCAT001_PRIME	2004-300T14:11:23	GMB_E00A_TitanA-000T01:19:00	000T00:34:00	2004-300T14:45:23	26484.5	54.028	Prime	NEG_Z to Titan	POS_X to North_Pole_Dir	Leave at NEG_Z to Titan, POS_X to NTP
RADAR_00ATI_TARASAR001_INMS	2004-300T15:24:23	GMB_E00A_TitanA-000T00:06:00	000T00:06:00	2004-300T15:30:23	149641	53.871	SPASS Rider			
RADAR_00ATI_TAHIGHSAR001_PRIME	2004-300T15:30:23	GMB_E00A_TitanA+000T00:00:00	000T00:06:00	2004-300T15:36:23	364800	131.328	Prime	NEG_Z to Titan	NEG_X to Titan_SC_RAM	Pick up at NEG_X to Titan_SC_RAM, NEG_Z to Titan
RADAR_00ATI_TALOWSAR001_PRIME	2004-300T15:36:23	GMB_E00A_TitanA+000T00:06:00	000T00:10:00	2004-300T15:46:23	249997.4	149.998	Prime	NEG_Z to Titan	NEG_X to Titan_SC_RAM	
RADAR_00ATI_TAOUTALT001_PRIME	2004-300T15:46:23	GMB_E00A_TitanA+000T00:16:00	000T00:14:00	2004-300T16:00:23	30023	25.219	Prime	NEG_Z to Titan (0.0,0.0,-10.0 degrees offset)	POS_X to North_Pole_Dir	
RADAR_00ATI_TAOUTSCAT001_PRIME	2004-300T16:00:23	GMB_E00A_TitanA+000T00:30:00	000T00:45:00	2004-300T16:45:23	30023	81.062	Prime	NEG_Z to Titan	POS_X to North_Pole_Dir	
RADAR_00ATI_TAOUTRAD001_PRIME	2004-300T17:09:23	GMB_E00A_TitanA+000T01:39:00	000T03:21:00	2004-300T20:30:23	5727.4	69.072	Prime	NEG_Z to Titan	POS_X to North_Pole_Dir	Use +Y to NTP for the 2nd polariz. Leave at -Z to Titan, -X to Sun.
RPWS_00ASA_OUTSURVEY005_PRIME	2004-299T16:31:00		000T20:59:23	2004-300T13:30:23	1310	98.988	Non-SPASS			
RPWS_00ATI_TINTRMED001_PRIME	2004-300T13:30:23	GMB_E00A_TitanA-000T02:00:00	000T01:32:30	2004-300T15:02:53	3500	19.425	Non-SPASS			
RPWS_00ATI_TICAD01_PRIME	2004-300T15:02:53	GMB_E00A_TitanA-000T00:27:30	000T00:55:00	2004-300T15:57:53	60928.7	201.065	Non-SPASS			
RPWS_00ATI_TINTRMED002_PRIME	2004-300T15:57:53	GMB_E00A_TitanA+000T00:27:30	000T01:32:30	2004-300T17:30:23	2500	13.875	Non-SPASS			
RPWS_00ASA_OUTSURVEY004_PRIME	2004-300T17:30:23	GMB_E00A_TitanA+000T02:00:00	000T12:29:37	2004-301T06:00:00	1310	58.92	Non-SPASS			
RPWS_00ASA_INSURVEY001_PRIME	2004-301T06:00:00		000T03:30:00	2004-301T09:30:00	1310	16.506	Non-SPASS			
SP_00AEA_M70OBSNON301_NA	2004-299T16:31:00		001T07:45:00	2004-301T00:16:00	0	0	Non-SPASS			
SP_00ANA_TOSTSEG299_NA	2004-299T16:31:00		001T16:45:00	2004-301T09:16:00	0	0	SPASS Note			
SP_00ATI_WAYPTTURN299_PRIME	2004-299T16:31:00		000T00:30:00	2004-299T17:01:00	0	0	New Waypoint	ISS_NAC to Titan	NEG_X to Sun	
SP_00ANA_DEADTIME299_PRIME	2004-299T17:01:00		000T00:15:00	2004-299T17:16:00	0	0	Prime	ISS_NAC to Titan	NEG_X to Sun	
SP_00ATI_WAYPTTURN300_PRIME	2004-300T14:01:23	GMB_E00A_TitanA-000T01:29:00	000T00:10:00	2004-300T14:11:23	0	0	New Waypoint	NEG_Z to Titan	NEG_X to Sun	
SP_00ATI_BEGCUSTOM300_NA	2004-300T14:11:23	GMB_E00A_TitanA-000T01:19:00	000T00:01:00	2004-300T14:12:23	0	0	SPASS Note			
SP_00ATI_ENDCUSTOM300_NA	2004-300T20:30:23	GMB_E00A_TitanA+000T05:00:00	000T00:01:00	2004-300T20:31:23	0	0	SPASS Note			
SP_00ANA_DEADTIME300_PRIME	2004-300T23:46:00		000T00:15:00	2004-301T00:01:00	0	0	Prime	ISS_NAC to Titan	NEG_X to Sun	
SP_00AEA_DLTURN301_PRIME	2004-301T00:01:00		000T00:15:00	2004-301T00:16:00	0	0	Prime	XBAND to Earth	POS_X to NEP	
SP_00AEA_M70METNON301_PRIME	2004-301T00:16:00		000T09:00:00	2004-301T09:16:00	0	0	Prime	XBAND to Earth	Rolling	
SP_00ANA_M70METNON301_SP	2004-301T00:16:00		000T09:00:00	2004-301T09:16:00	0	0	Non-SPASS			
UVIS_00ATI_EUVFUV001_VIMS	2004-300T04:00:23	GMB_E00A_TitanA-000T11:30:00	000T06:30:00	2004-300T10:30:23	3019.2	70.649	SPASS Rider			
UVIS_00ATI_EUVFUV002_PRIME	2004-300T20:30:23	GMB_E00A_TitanA+000T05:00:00	000T03:15:00	2004-300T23:45:23	3749.8	43.873	Prime	UVIS_FUV to Titan	NEG_X to Sun	
UVIS_00ASW_IPHSURVEY085_RIDER	2004-301T00:16:00		000T09:00:00	2004-301T09:16:00	76	2.462	Non-SPASS			
VIMS_00ATI_ISS006_ISS	2004-299T17:16:23	GMB_E00A_TitanA-000T22:14:00	000T00:14:00	2004-299T17:30:23	10714.3	9	SPASS Rider			
VIMS_00ATI_MIDIR005_CIRS	2004-299T17:30:23	GMB_E00A_TitanA-000T22:00:00	000T05:15:00	2004-299T22:45:23	2381	45	SPASS Rider			
VIMS_00ATI_ISS005_ISS	2004-299T22:45:23	GMB_E00A_TitanA-000T16:45:00	000T01:15:00	2004-300T00:00:23	12000	54	SPASS Rider			
VIMS_00ATI_FARIRINAD004_CIRS	2004-300T00:00:23	GMB_E00A_TitanA-000T15:30:00	000T04:00:00	2004-300T04:00:23	3750	54	SPASS Rider			
VIMS_00ATI_MEDRES001_PRIME	2004-300T04:00:23	GMB_E00A_TitanA-000T11:30:00	000T06:30:00	2004-300T10:30:23	11111.1	260	Prime	ISS_NAC to Titan	POS_X to North_Pole_Dir	
VIMS_00ATI_HIGHRES005_ISS	2004-300T10:30:23	GMB_E00A_TitanA-000T05:00:00	000T03:10:00	2004-300T13:40:23	19298.2	220	SPASS Rider			
VIMS_00ATI_TRANS003_ENGR	2004-300T13:40:23	GMB_E00A_TitanA-000T01:50:00	000T00:20:49	2004-300T14:01:12	14411.5	18	SPASS Rider			
VIMS_00ATI_HIRES002_PRIME	2004-300T14:45:23	GMB_E00A_TitanA-000T00:45:00	000T00:32:00	2004-300T15:17:23	42187.5	81	Prime	VIMS_IR to Titan	NEG_X to Sun	Pick up Neg_Z to Titan, POS_X to NTP, Leave VIMS_IR to Titan, NEG_X to Sun
VIMS_00ATI_DARKSIDE004_UVIS	2004-300T20:30:23	GMB_E00A_TitanA+000T05:00:00	000T03:15:00	2004-300T23:45:23	1538.5	18	SPASS Rider			

00ATI (TA) Telem Modes

SCET	TELEMETRY MODE	REQUEST
2004-299T16:31:00.000	S_N_ER_3	SP_00AEA_M70OBSNON301_NA
2004-300T10:16:27.000	S_N_ER_5A	SP_00AEA_M70OBSNON301_NA
2004-300T10:31:27.000	S_N_ER_3	SP_00AEA_M70OBSNON301_NA
2004-300T14:05:27.000	S_N_ER_8	SP_00AEA_M70OBSNON301_NA
2004-300T14:46:27.000	S_N_ER_3	SP_00AEA_M70OBSNON301_NA
2004-300T15:25:27.000	S_N_ER_8	SP_00AEA_M70OBSNON301_NA
2004-300T20:31:27.000	S_N_ER_3	SP_00AEA_M70OBSNON301_NA
2004-301T00:16:00.000	RTE_N_SPB_142200	SP_00AEA_M70METUNQ301_PRIME
2004-301T08:16:00.000	RTE_N_SPB_33180	SP_00AEA_M70METUNQ301_PRIME
2004-301T09:01:00.000	RTE_N_SPB_41475	SP_00AEA_M70METUNQ301_PRIME

00ATI (TA) Data Volume

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					NET_MARGN (Mb)	NET_MARGN (%)	CAROVR (Mb)
			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)						
SP_00AEA_M70METUNQ301_PRIME	301 00:16	301 09:16	0	3347	114	3461	3498	37	0	129	53	3643	3574	-69	0	0%	70			

Need 70 total

Can get 90Mb by starting D/L 15m earlier

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	299 16:31	301 00:16	213.7	11.4	214.9	19.5	828.0	94.1	118.8	567.7	365.2	114.5	759.0	0.0	0.0	3307.0
OBSERVATION_SI	299 16:31	301 00:16	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0
SP_00AEA_M70METUNQ301_PRIME	301 00:16	301 09:16	32.4	3.2	0.0	2.2	0.0	16.0	29.2	0.0	42.5	2.5	0.0	0.0	0.0	128.0
DAILY TOTAL SCIENCE	299 16:31	301 09:16	246.1	14.7	224.9	21.7	828.0	110.2	148.0	567.7	407.8	117.0	759.0	0.0		

00ATI(TA) DSN Requests

CASSINI DOWNLINK/DSN COVERAGE SUMMARY for 00ATI_TA_2004-05-27.apf generated on 2004-May-27 13:58:59
 (+ = pass overlaps with previous pass; * = conflicts with DSN weekly 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	RADIO__CONFIG R UD D UD MAR
M70METUNQ301	301T00:16-09:16	301T01:30-10:30	09:00	142,33,41	63*	301T00:16-09:16	301T01:30-10:30	09:00	60/15	R XX - -- --0
G34HEFNON301	-----	-----	-----	(no downlink)	15	301T08:16-09:16	301T09:30-10:30	01:00	60/15	- -X - -- --0

- *ap_downlink* lists a maintenance conflict with DSS-63 on DOY 301. So DSS-63 has been scheduled assuming a waiver will be obtained.

00ATI(TA) OpMode Strategy

Start	End	Request
=====		
2004-300T10:15:23e	2004-300T10:15:30	ENGR_00ASC_RADWU300_PPS
2004-300T13:40:23e	2004-300T14:01:11	ENGR_00ASC_RADRCS300_PPS
2004-300T15:30:23e	2004-300T15:30:24	ENGR_00ASC_DEADBAND300_AACS
2004-300T16:45:23e	2004-300T17:08:41	ENGR_00ASC_RADRWBIAS300_PPS
2004-300T20:29:46e	2004-300T20:30:23	ENGR_00ASC_DFPW300_PPS

00ATI(TA) Notes & Open Issues

- **Pointing Issues**

- Waypoint and downlink attitudes are FR-safe.
 - **LIEN:** -Z to Titan, -X to Sun waypoint attitude results in Saturn in the SRU FOV for about 4 minutes between 300T15:28 and 300T15:32 (i.e., at closest approach).

The SRU will need to be suspended. (Possibly during the RCS-RWA transitions).

- SP turns are FR-safe and have sufficient time allocated to them.
- RADAR, INMS, and VIMS modeled all of the turns in the custom period; no issues.

- **Data Volume Issues**

- Transition to RCS complete at -01:19 (alt ~27900 km); transition to RWA begins at +01:15 (alt ~23625 km)

00ATI(TA) Notes & Open Issues (cont.)

SPLAT Items

- **Can critical data be re-directed to P5? (ITL may be needed)**
- **The entire playback strategy may need to be ITL tested.**
- **Need to waive DSS-63 weekly maintenance.**

The S5 DSN plan already submitted to the schedulers contained a request to waive weekly maintenance for DSS63.

- The exact wording in the S5 DSN Plan was "2.8 hr overlap with maintenance at end of pass. Pass is needed for critical Ta data & DSS 14 is down" with an "M" notation to indicate that this pass is in conflict with weekly maintenance and waiver requested.

LEIN: INMS Data at Closest Approach determined to be critical.

Need to play this back with dual coverage.

TWT/OST Integration Constraint and Guideline Checklist

Below are Target Working Team (TWT) and Orbiter Science Team (OST) constraints that must be followed during segment implementation. Any exceptions to constraint numbers 3, 4, 6, or 7 must be approved by the Science Planning Manager.

Constraint	C=Comply V=Violate N/A=Not Applicable		Comments	Disposition
1. A. SP has checked all waypoints turns to and from waypoints. B. All initial downlink attitudes have been checked as waypoints.	C			
	C			
2. All turns to and from waypoints checked for violations and margins. <input type="checkbox"/> CAPS <input type="checkbox"/> CDA <input type="checkbox"/> CIRS <input type="checkbox"/> INMS <input type="checkbox"/> ISS <input type="checkbox"/> MIMI <input type="checkbox"/> MAG <input type="checkbox"/> NAV <input type="checkbox"/> RADAR <input type="checkbox"/> RPWS <input type="checkbox"/> RSS <input type="checkbox"/> UVIS <input type="checkbox"/> VIMS Each Prime Instrument agrees to accept a reduction in observation time during implementation if problems arise.	C			
3. Custom handoffs limited to: A. ±3 hours from targeted Icy Satellite flyby B. ±3 hours from targeted Titan Flyby C. OpNavs preceding/following a downlink				
	C			
4. Minimum 30 min SPASS Prime request duration outside ±5 hours from targeted satellite flyby (5 min. integer duration if >30 min.)	C			
5. Live and Ground Movable Blocks include appropriate time margins.	C		K. Klaasen's margin for flyby is min. according to memo dated .	
6. Waypoints changes are ≤3 per day A. All turns that accomplish the waypoint strategy are requested by SP or OpNav.	C			
	C			
7. Live Movable Blocks limited to the following orbits: 7, 8, 9, 10, 12, 28, 51, 56, 57, 60, 63, 64	N/A			

Guideline	Yes / No	Comments
1. Were repeatable/reusable templates used where possible?	Yes	
2. During Pre-Integration: Was 30 min. used for 90° RWA turns and/or 10 min. for RCS turns?	Yes	

(DOUBLE-CLICK TO MAKE CHANGES)