



Science Planning & Sequence Team
CASSINI

CASSINI T126 SEGMENT

Rev 270 Handoff Package

Segment Boundary 2017-111T12:30:00 – 2017-115T13:12:00

26 OCT 2016

Karl Mitchell

Science Highlights

Notes & Liens

This document has been reviewed and determined not to contain export controlled technical data

SMT Report

TOST T126

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)	CAROVN (Mb)	
SP_271EA_G70METNON113_PRIME	113 05:56	113 14:26	0	3131	184	3316	3322	6	0	188	50	3554	2791	-763	2559	27%	763
SP_271EA_C70METNON113_PRIME	113 14:26	113 22:56	763	0	0	763	3322	2559	0	574	50	1387	3311	1923	3769	55%	0
SP_271EA_C34BWGOTP114_PRIME	114 11:52	114 20:52	0	626	55	681	3322	2641	0	199	53	933	707	-227	1845	53%	227
SP_271EA_M34UNQOTB114_PRIME	114 23:02	115 08:02	227	91	9	327	3322	2995	0	231	53	611	832	221	1845	66%	0
SP_271EA_G70METNON115_PRIME	115 08:02	115 13:12	0	0	0	0	3322	3322	0	308	30	339	1963	1624	1624	83%	0

SSR PARTITION SIZE SUMMARY - SELECTED SSR CONFIGURATION: DOUBLE

OBSERVATION PERIOD	SSR A/B		
	P4 Size (Frames)	P5 Size (Frames)	P6 Size (Frames)
SP_270NA_OBSERV111_NA	188954	10	38863
SP_271NA_OBSERV113_NA	188954	10	38863
SP_271NA_OBSERV114_NA	188954	10	38863

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	111 12:30	113 05:56	0.0	78.2	296.5	25.0	515.0	116.4	126.8	1088.4	541.2	100.4	215.0	0.0	181.6	3284.5
SP_271EA_G70METNON113_PRIME	113 05:56	113 14:26	0.0	16.0	81.0	3.1	0.0	15.1	26.0	0.0	40.1	4.7	0.0	0.0	0.0	186.0
SP_271EA_C70METNON113_PRIME	113 14:26	113 22:56	0.0	16.0	0.0	3.1	0.0	15.1	26.0	0.0	40.1	4.7	0.0	0.0	464.1	569.1
DAILY TOTAL SCIENCE	111 12:30	113 22:56	0.0	110.2	377.5	31.1	515.0	146.6	178.8	1088.4	621.4	109.7	215.0	0.0	645.7	
OBSERVATION_NOR	113 22:56	114 11:52	0.0	24.4	150.3	4.7	200.0	23.0	39.6	0.0	61.0	105.1	12.5	0.0	54.1	674.6
SP_271EA_C34BWGOTP114_PRIME	114 11:52	114 20:52	0.0	17.0	86.4	3.2	0.0	16.0	27.5	0.0	42.4	4.9	0.0	0.0	0.0	197.5
DAILY TOTAL SCIENCE	113 22:56	114 20:52	0.0	41.4	236.7	7.9	200.0	39.0	67.1	0.0	103.4	110.0	12.5	0.0	54.1	
OBSERVATION_NOR	114 20:52	114 23:02	0.0	4.1	12.0	0.8	50.0	3.9	6.6	0.0	10.2	0.0	2.5	0.0	9.1	99.1
SP_271EA_M34UNQOTB114_PRIME	114 23:02	115 08:02	0.0	17.0	9.0	3.2	0.0	16.0	27.5	0.0	151.5	4.9	0.0	0.0	0.0	229.2
SP_271EA_G70METNON115_PRIME	115 08:02	115 13:12	0.0	9.7	55.8	1.9	0.0	9.2	15.8	0.0	210.2	2.8	0.0	0.0	0.0	305.4
DAILY TOTAL SCIENCE	114 20:52	115 13:12	0.0	30.8	76.8	5.9	50.0	29.0	50.0	0.0	371.9	7.8	2.5	0.0	9.1	
TOTAL RECORDED (OPNAV data not included)			0.0	182.4	691.0	44.9	765.0	214.7	295.9	1088.4	1096.8	227.5	230.0	0.0		

Master Timeline

TOST T126

270TI_T126 979

Start Time	End Time	Prime Activity	Obs. Detail	Op Mode	TLM Mode	Comments
2017-111T12:30:00	2017-111T13:10:00	SP Turn to WP	NEG_Y to Titan/NEG_X to NTP	DFPW Normal	S_N_ER_3	(from XBand to Earth, -X to Rolling/NSP: Rings270)
2017-111T13:10:00	C/A -0T16:43:09	OD Uncertainty Dead Time		DFPW Normal	S_N_ER_3	
C/A - 0T16:43:09	-14:00	CIRS	A (Tc1b)	DFPW Normal	S_N_ER_3	Collaborative Rider (ISS)
-14:00	-12:00	ISS	D2 (TC1a, TC1b, TN1a, TN2c (Could also use TN1c for limb haze layer, depending on geometry if along limb, or TN2d, depending on timing.))	DFPW Normal	S_N_ER_3	
-12:00	-09:00	CIRS	D2 (TN1c)	DFPW Normal	S_N_ER_3	S_N_ER_5a for 15 minutes at end of request, starting -09:15, for RADAR warmup.
-09:00	-06:00	ISS	H1 (TC1a, TN1a, TN2c (Could also be TC1b and/or TN1c, depending on geometry, or TN2d, depending on timing.))	RADWU	S_N_ER_3	No instruments must sleep.
-06:00	-02:15	RADAR	H1+ L (TN2c ,TN2c)	RADROW	S_N_ER_8	ISS & VIMS sleep, UVIS "no HDAC", and RWAs in full power (not slow). Only required for RADROW, but no activity during RADRCS.
-02:15	-01:12	RADAR scatterometry/radiometry	(TN1a, TN2c)	RADROW	S_N_ER_8	
-01:12	-00:31	RADAR HiSAR	(TN1a)	RADROW	S_N_ER_8	
-00:31	-00:30	RWA to RCS Transition			S_N_ER_8	On thrusters. Deadband (0.5,0.5,2.0) RADAR.
-00:30	-00:15	RADAR Altimetry	(TN2b)	RADRCS	S_N_ER_8	
-00:15	0	INMS*	RADAR Needs to get entire northern lake region. RADAR ride along (TC1a, TN1a, TN1b, TN2b, TN2c)	RADRCS	S_N_ER_8	*RADAR Prime for CIMS (0 byte, radar designed), with INMS and RADAR collaborative riders. RADAR must be able to see the entire lakes.
2017-112T06:08:07		CLOSEST APPROACH	NEG_X to RAM, NEG_Z to Titan (Tc2a)			
0	+00:18	RADAR SAR	INMS ride along. RADAR SAR+Close Altimetry (TC1a, TN1a, TN1b, TN2b, TN2c)	RADRCS	S_N_ER_8	Collaborative Rider (INMS)
+00:18	+00:30	RADAR Altimetry	(TN2b)	RADRCS	S_N_ER_8	
+00:30	+00:52	RCS to RWA Transition			S_N_ER_8	
+00:52	+01:30	RADAR HiSAR	(TN1a)	RADROW	S_N_ER_8	
+01:30	+02:35	RADAR scatterometry/radiometry	(TN1a, TN2c)	RADROW	S_N_ER_8	
+02:35	+06:00	RADAR	L+Q1 (TN2c ,TN2c)	RADROW	S_N_ER_8	
+06:00	+09:00	VIMS	Q1 (TN1a (Specular reflection of lakes-depending on geometry))	DFPW Normal	S_N_ER_3	Instruments wake
+09:00	+13:00	VIMS	O (TN1a (Specular reflection of lakes-depending on geometry))	DFPW Normal	S_N_ER_3	
+13:00	+22:53	CIRS	M2 (Tc1b (TN1c on outbound))	DFPW Normal	S_N_ER_3	Switched to M2. Collaborative Rider (ISS)
C/A+0T22:52:51	2017-113T05:16:00	OD Uncertainty Dead Time		DFPW Normal	S_N_ER_3	
2017-113T05:16:00	2017-113T05:56:00	SP Turn to Earth for downlink	Xband to Earth/POS_X to NEP (Rolling)	DFPW Normal	S_N_ER_3	
2017-113T05:56:00	2017-113T14:26:00	Goldstone 70M	XBand to Earth/MAG.Rolling	RSS_K_RWAF	RTE_N_SPB	DSS-25 RSS ORT
2017-113T14:26:00	2017-113T22:56:00	Canberra 70M	XBand to Earth/MAG.Rolling	DFPW Normal	RTE_N_SPB	Dual playback for RADAR/INMS, -00:15 to +00:18. Pass req'd by NAV for tracking backup
2017-113T22:56:00	2017-113T23:36:00	SP Turn to WP	NEG_Y to Titan/NEG_Z to NTP	DFPW Normal	S_N_ER_3	
2017-113T23:36:00	2017-114T11:12:00	CIRS	Compositional mapping (TC1b)	DFPW Normal	S_N_ER_3	
2017-114T11:12:00	2017-114T11:52:00	SP Turn to Earth for downlink	Xband to Earth/NEG_Y to (153.1/-45.1)	DFPW Normal	S_N_ER_3	Inertial pointing of MIMI-friendly secondary
2017-114T11:52:00	2017-114T20:52:00	Canberra 34M	Xband to Earth/NEG_Y to (153.1/-45.1)	DFPW Normal	RTE_N_SPB	Orbital Trim Maneuver; Nav Prime
2017-114T20:52:00	2017-114T21:32:00	SP Turn to WP	NEG_Y to Titan/NEG_X to NTP	DFPW Normal	S_N_ER_3	
2017-114T21:32:00	2017-114T22:22:00	ISS	Cloud monitoring (TC1a, TC1b, TN1a, TN2c, TN2d)	DFPW Normal	S_N_ER_3	
2017-114T22:22:00	2017-114T23:02:00	SP Turn to Earth for downlink	Xband to Earth/NEG_Y to (153.1/-45.1)	DFPW Normal	S_N_ER_3	
2017-114T23:02:00	2017-115T06:12:00	Madrid 34M	Xband to Earth/NEG_Y to (153.1/-45.1)	DFPW Normal	RTE_N_SPB	OTM Backup; Nav Prime
2017-115T06:12:00	2017-115T13:12:00	Goldstone 70M	Xband to Earth/NEG_Y to (153.1/-45.1)	DFPW Normal	RTE_N_SPB	OTM Backup; Nav Prime

SPASS

TOST T126

Request		SPASS for Delivery: TI270_T126 Records 1-41 (Page 1 of 1)				Observation Attitude		
	◆ Riders ◆	◆ Start (SCET)	◆ Start (Epoch)	◆ Duration	◆ End (SCET)	◆ Primary	◆ Secondary	◆ Comments
Sequence S99_length = 41 days		2017-104T14:55:00		040T18:02:00	2017-145T08:57:00			
T126_270_TOST Segment		2017-111T12:30:00		004T00:42:00	2017-115T13:12:00			
SP_270TI_WAYPTTURN111_PRIME		2017-111T12:30:00		000T00:40:00	2017-111T13:10:00	NEG_Y to Titan	NEG_X to NTP	
NEW WAYPOINT		2017-111T13:10:00		001T16:46:00	2017-113T05:56:00	NEG_Y to Titan	NEG_X to NTP	
SP_270TI_DEADTIME111_PRIME		2017-111T13:10:00		000T00:14:58	2017-111T13:24:58	NEG_Y to Titan	NEG_X to NTP	
CIRS_270TI_MIDIRMAP001_PRIME	I,V	2017-111T13:24:58	GMB_E270_TITAN_T126-000T16:43:09	000T02:43:09	2017-111T16:08:07	CIRS_FPB to Titan	PIC	
ISS_270TI_MONITORNA001_PRIME	C,V	2017-111T16:08:07	GMB_E270_TITAN_T126-000T14:00:00	000T02:00:00	2017-111T18:08:07	ISS_NAC to Titan	NEG_X to NTP	No Preference to secondary pointing
CIRS_270TI_FIRNADCP001_PRIME	I,U,V	2017-111T18:08:07	GMB_E270_TITAN_T126-000T12:00:00	000T03:00:00	2017-111T21:08:07	CIRS_FP1 to Titan	PIC	
ISS_270TI_GLOBMAP001_PRIME	C,V	2017-111T21:08:07	GMB_E270_TITAN_T126-000T09:00:00	000T03:00:00	2017-112T00:08:07	ISS_NAC to Titan	NEG_X to NTP	No Preference to secondary pointing
RADAR_270TI_T126INRAD001_PRIME		2017-112T00:08:07	GMB_E270_TITAN_T126-000T06:00:00	000T03:45:00	2017-112T03:53:07	NEG_Z to Titan	NEG_X to NTP	Use -X to NTP and -Y to NTP as secondary axis for two polarizations.
RADAR_270TI_T126INSCT001_PRIME		2017-112T03:53:07	GMB_E270_TITAN_T126-000T02:15:00	000T01:03:00	2017-112T04:56:07	NEG_Z to Titan	NEG_Y to NTP	
RADAR_270TI_T126IHSAR001_PRIME		2017-112T04:56:07	GMB_E270_TITAN_T126-000T01:12:00	000T00:41:00	2017-112T05:37:07	NEG_Z to Titan	NEG_Y to NTP	
ENGR_270SC_RADRC5111_PRIME		2017-112T05:37:07	GMB_E270_TITAN_T126-000T00:31:00	000T00:01:00	2017-112T05:38:07	NEG_Z to Titan	NEG_Y to NTP	Deadband = (0.5,0.5,2.0)
RADAR_270TI_T126INALT001_PRIME		2017-112T05:38:07	GMB_E270_TITAN_T126-000T00:30:00	000T00:15:00	2017-112T05:53:07	NEG_Z to Titan	NEG_X to Titan_SC_RAM	
Begin Dual Playback Science		2017-112T05:53:07	GMB_E270_TITAN_T126-000T00:15:00	000T00:00:01	2017-112T05:53:07			
RADAR_270TI_T126RASAR001_PRIME	M	2017-112T05:53:07	GMB_E270_TITAN_T126-000T00:15:00	000T00:15:00	2017-112T06:08:07	NEG_X to Titan_SC_RAM	NEG_Z to Titan	Ride-along at c/a.
270TI (t) T126 TITAN Outbo...		2017-112T06:08:07		000T00:00:01	2017-112T06:08:08			
RADAR_270TI_T126OTSAR001_PRIME		2017-112T06:08:07	GMB_E270_TITAN_T126+000T00:00:00	000T00:18:00	2017-112T06:26:07	NEG_Z to Titan	NEG_X to Titan_SC_RAM	
End Dual Playback Science		2017-112T06:26:07	GMB_E270_TITAN_T126+000T00:18:00	000T00:00:01	2017-112T06:26:08			
RADAR_270TI_T126OTALT001_PRIME		2017-112T06:26:07	GMB_E270_TITAN_T126+000T00:18:00	000T00:12:00	2017-112T06:38:07	NEG_Z to Titan	POS_Y to NTP	
ENGR_270SC_RADRW8IAS112_PPS		2017-112T06:38:07	GMB_E270_TITAN_T126+000T00:30:00	000T00:22:00	2017-112T07:00:07	NEG_Z to Titan	NEG_Y to NTP	
RADAR_270TI_T126OHSAR001_PRIME		2017-112T07:00:07	GMB_E270_TITAN_T126+000T00:52:00	000T00:38:00	2017-112T07:38:07	NEG_Z to Titan	POS_Y to NTP	
RADAR_270TI_T126OTSCT001_PRIME		2017-112T07:38:07	GMB_E270_TITAN_T126+000T01:30:00	000T01:05:00	2017-112T08:43:07	NEG_Z to Titan	POS_Y to NTP	
RADAR_270TI_T126OTRAD001_PRIME		2017-112T08:43:07	GMB_E270_TITAN_T126+000T02:35:00	000T03:25:00	2017-112T12:08:07	NEG_Z to Titan	POS_Y to NTP	Use +Y to NTP and -X to NTP for polarizations.
VIMS_270TI_MEDRES001_PRIME	C,I	2017-112T12:08:07	GMB_E270_TITAN_T126+000T06:00:00	000T03:00:00	2017-112T15:08:07	VIMS_IR to Titan	NEG_X to NTP	No Preference to secondary pointing
VIMS_270TI_GLOBMAP002_PRIME	C,I	2017-112T15:08:07	GMB_E270_TITAN_T126+000T09:00:00	000T04:00:00	2017-112T19:08:07	VIMS_IR to Titan	NEG_X to NTP	No Preference to secondary pointing
CIRS_270TI_MIDIRMAP002_PRIME	I,U,V	2017-112T19:08:07	GMB_E270_TITAN_T126+000T13:00:00	000T09:52:51	2017-113T05:00:58	CIRS_FPB to Titan	PIC	Collaborative Rider(s): ISS
Apodize Per = 6.4 d, Inc = ...		2017-113T03:46:51		000T00:00:01	2017-113T03:46:52			
SP_271TI_DEADTIME113_PRIME		2017-113T05:00:58	GMB_E270_TITAN_T126+000T22:52:51	000T00:15:02	2017-113T05:16:00	NEG_Y to Titan	NEG_X to NTP	
SP_271TI_DLTURN113_PRIME		2017-113T05:16:00		000T00:40:00	2017-113T05:56:00	XBAND to Earth	POS_X to NEP	Rolling downlink for Mag, +X to NEP chosen as secondary to avoid FR violations.
NEW WAYPOINT		2017-113T05:56:00		000T17:40:00	2017-113T23:36:00	XBAND to Earth	POS_X to NEP	
SP_271EA_G70METNON113_PRIME	C,R	2017-113T05:56:00		000T08:30:00	2017-113T14:26:00	XBAND to Earth	Rolling	
Pointer Reset In preparatio...		2017-113T14:26:00		000T00:00:01	2017-113T14:26:01			
SP_271EA_G70METNON113_PRIME		2017-113T14:26:00		000T08:30:00	2017-113T22:56:00	XBAND to Earth	Rolling	Required for NAV as backup tracking if preceding Goldstone goes down.
SP_271TI_WAYPTTURN113_PRIME		2017-113T22:56:00		000T00:40:00	2017-113T23:36:00	NEG_Y to Titan	NEG_Z to NTP	
NEW WAYPOINT		2017-113T23:36:00		000T12:16:00	2017-114T11:52:00	NEG_Y to Titan	NEG_Z to NTP	
CIRS_271TI_COMPMPA001_PRIME	I,U,V	2017-113T23:36:00		000T11:36:00	2017-114T11:12:00	CIRS_FPB to Titan	NEG_Z to NTP	
SP_271TI_DLTURN114_PRIME		2017-114T11:12:00		000T00:40:00	2017-114T11:52:00	XBAND to Earth	NEG_Y to 153.1/-45.1	NEG_Y to 153.1/-45.1
NEW WAYPOINT		2017-114T11:52:00		000T09:40:00	2017-114T21:32:00	XBAND to Earth	NEG_Y to 153.1/-45.1	
SP_271EA_C34BWGOTP114_PRIME	C,E,N	2017-114T11:52:00		000T09:00:00	2017-114T20:52:00	XBAND to Earth	NEG_Y to 153.1/-45.1	MIMI: NEG_Y to Saturn (0,0,-9.5)
SP_271TI_WAYPTTURN114_PRIME		2017-114T20:52:00		000T00:40:00	2017-114T21:32:00	NEG_Y to Titan	NEG_X to NTP	
NEW WAYPOINT		2017-114T21:32:00		000T01:30:00	2017-114T23:02:00	NEG_Y to Titan	NEG_X to NTP	
ISS_271TI_CLOUD001_PRIME	C,V	2017-114T21:32:00		000T00:50:00	2017-114T22:22:00	ISS_NAC to Titan	NEG_X to NTP	No Preference to secondary pointing
SP_271TI_DLTURN414_PRIME		2017-114T22:22:00		000T00:40:00	2017-114T23:02:00	XBAND to Earth	NEG_Y to 153.1/-45.1	
NEW WAYPOINT		2017-114T23:02:00		000T14:10:00	2017-115T13:12:00	XBAND to Earth	NEG_Y to 153.1/-45.1	
SP_271EA_M34UNQOTB114_PRIME	C,N	2017-114T23:02:00		000T09:00:00	2017-115T08:02:00	XBAND to Earth	NEG_Y to 153.1/-45.1	MIMI: NEG_Y to Saturn (0,0,-9.5)
SP_271EA_G70METNON115_PRIME	C,E	2017-115T08:02:00		000T05:10:00	2017-115T13:12:00	XBAND to Earth	NEG_Y to 153.1/-45.1	MIMI: NEG_Y to Saturn (0,0,-9.5)

High-Priority Observations

TOST T126

Sequence T126: Summary of PIEs and Other High Priority Observations

Discipline	CIMS Request Name	Start Time	End Time	Flexibility in secondary pointing	Comments (e.g., pointing tolerance, uniqueness; relative priority)	Science Traceability Matrix Code(s)	Pointing designer POC
Titan	RADAR_270TI_T126INSCT001_PRIME	2017-112T03:53:07 GMT	2017-112T04:56:07 GMT	Flexible		TN1a, TN2c	Yanhua Anderson <Yanhua.Z.Anderson@jpl.nasa.gov>
Titan	RADAR_270TI_T126IHSAR001_PRIME	2017-112T04:56:07 GMT	2017-112T05:37:07 GMT	Flexible		TN1a	Yanhua Anderson <Yanhua.Z.Anderson@jpl.nasa.gov>
Titan	RADAR_270TI_T126INALT001_PRIME	2017-112T05:38:07 GMT	2017-112T05:53:07 GMT	Flexible		TN2b	Yanhua Anderson <Yanhua.Z.Anderson@jpl.nasa.gov>
Titan	RADAR_270TI_T126RASAR001_PRIME	2017-112T05:53:07 GMT	2017-112T06:07:07 GMT	Significant Science Impact if Secondary Changed	Dual playback science with INMS	TC1a, TN1a, TN1b, TN2b, TN2c	Yanhua Anderson <Yanhua.Z.Anderson@jpl.nasa.gov>
Titan	RADAR_270TI_T126OTSAR001_PRIME	2017-112T06:07:07 GMT	2017-112T06:26:07 GMT	Significant Science Impact if Secondary Changed	Dual playback science with INMS	TC1a, TN1a, TN1b, TN2b, TN2c	Yanhua Anderson <Yanhua.Z.Anderson@jpl.nasa.gov>
Titan	RADAR_270TI_T126OTALT001_PRIME	2017-112T06:26:07 GMT	2017-112T06:38:07 GMT	Flexible		TN2b	Yanhua Anderson <Yanhua.Z.Anderson@jpl.nasa.gov>
Titan	RADAR_270TI_T126OHSAR001_PRIME	2017-112T07:00:07 GMT	2017-112T07:38:07 GMT	Flexible		TN1a	Yanhua Anderson <Yanhua.Z.Anderson@jpl.nasa.gov>
Titan	RADAR_270TI_T126OTSCT001_PRIME	2017-112T07:38:07 GMT	2017-112T08:43:07 GMT	Flexible		TN1a, TN2c	Yanhua Anderson <Yanhua.Z.Anderson@jpl.nasa.gov>

DOY 111/Apr 21, 2017 – **ISS** will acquire the final global- and regional-scale mosaics inbound over Titan's leading hemisphere of the mission, at mid-southern latitudes, including Hotei Regio (TN1a), and will also ride along with CIRS over Titan's trailing hemisphere to image Titan's surface (TN1a) and atmosphere (TC1a, TC1b, TN2c). **CIRS** will perform nadir and limb mapping in the mid-infrared to monitor gases and temperatures in the stratosphere during southern winter (TC1b, TN1c). **VIMS** will ride along with ISS and CIRS and will look for clouds in the northern hemisphere (TC1a). **UVIS** will ride along with CIRS to map spectrally the disk of Titan, from exobase to exobase, over a 7-hour period 2 to 9 hours from closest approach. Some of the time will be devoted to a stare with the slit in the radial direction, centered on the emission altitude (about 800 km) of the nitrogen features. The generic mapping employed to date is still the best for measurements of aerosol scattering and gaseous absorption features. This is one of the last of such observations gathered over the course of the mission to provide latitude and seasonal coverage of Titan's middle atmosphere and stratosphere.

DOY 112/Apr 22, 2017 – **RADAR** will obtain the final full resolution SAR images of the mission, of Northern Lakes and Seas, also providing longest time baseline for change detection (from T16, 2006). The instrument will also obtain completely unique high resolution altimetry of multiple small lakes, complementing 4 previous altimetry observations of seas, exploiting recent advanced enabling the use of altimetry to determine lake and sea depth as well as compositional constraints via modeling. Ride-along inbound SAR; prime outbound SAR. Inbound and outbound scatterometry/radiometry, HiSAR and altimetry (TC1a, TN1a, TN1b, TN2b, TN2c). **INMS** will obtain the final data set to an extensive temporal database from INMS of Titan's neutral and ion densities. T126 is a dawn side pass (Cassini relative to Titan) in the northern latitudes providing additional insight into the effects of solar input on Titan's ion and neutral atmosphere. On inbound, INMS will observe both ions and neutrals in Titan's atmosphere and ionosphere with a closest approach altitude of 979 km. INMS will then observe neutrals on outbound while riding along with RADAR. (TC1a, TC1b, TN1c, MC2a). **ISS** will acquire the final global- and regional-scale mosaics inbound over Titan's leading hemisphere at mid-southern latitudes, including Hotei Regio (TN1a), and will also ride along with CIRS over Titan's trailing hemisphere to image Titan's surface (TN1a) and atmosphere (TC1a, TC1b, TN2c). **VIMS** will obtain images of the North Pole are with very large emission angles, looking for clouds forming above the seas, and will look for clouds when riding along with ISS and CIRS (TC1a). It will also get limb images that are used to characterize Titan's haze (TC1a). **CIRS** will performs nadir and limb mapping in the mid-infrared to monitor gases and temperatures in the stratosphere during southern winter (TC1b, TN1c). **UVIS** will ride along with CIRS to map spectrally the disk of Titan, from exobase to exobase, over a 7-hour period 2 to 9 hours from closest approach. Some of the time will be devoted to a stare with the slit in the radial direction, centered on the emission altitude (about 800 km) of the nitrogen features. The generic mapping employed to date is still the best for measurements of aerosol scattering and gaseous absorption features. This is one of the last of such observations gathered over the course of the mission to provide latitude and seasonal coverage of Titan's middle atmosphere and stratosphere. **MAG** will explore the north sector of the magnetic tail on the dayside; This north polar flyby is one of the best (and last) such opportunities over the entire mission, and occurs in the late midnight sector of Saturn's magnetosphere.

DOY 113/Apr 23, 2017 – **CIRS** will perform nadir and limb mapping in the mid-infrared to monitor gases and temperatures in the stratosphere during southern winter (TC1b, TN1c). **ISS** will ride along with CIRS over Titan's trailing hemisphere to image Titan's surface (TN1a) and atmosphere (TC1a, TC1b, TN2c). **VIMS** will look for clouds when riding along with CIRS (TC1a). **UVIS** will ride along with CIRS to map spectrally the disk of Titan, from exobase to exobase, over a 7-hour period 2 to 9 hours from closest approach. Some of the time will be devoted to a stare with the slit in the radial direction, centered on the emission altitude (about 800 km) of the nitrogen features. The generic mapping employed to date is still the best for measurements of aerosol scattering and gaseous absorption features. This is one of the last of such observations gathered over the course of the mission to provide latitude and seasonal coverage of Titan's middle atmosphere and stratosphere.

DOY 114/Apr 24, 2017 – **CIRS** will perform nadir and limb mapping in the mid-infrared to monitor gases and temperatures in the stratosphere during southern winter (TC1b, TN1c). **ISS** will acquire a series of global-scale images and mosaics, observing Titan's surface and atmosphere at northern mid-latitudes over the leading and sub-Saturnian hemispheres. The series of observations allows ISS to monitor Titan to track clouds and the evolution thereof, of particular scientific interest as Titan's northern summer equinox approaches. ISS will also ride along with CIRS over Titan's trailing hemisphere to image Titan's surface (TN1a) and atmosphere (TC1a, TC1b, TN2c). **VIMS** will look for clouds when riding along with CIRS (TC1a). **UVIS** will ride along with CIRS to map spectrally the disk of Titan, from exobase to exobase, over a 7-hour period 2 to 9 hours from closest approach. Some of the time will be devoted to a stare with the slit in the radial direction, centered on the emission altitude (about 800 km) of the nitrogen features. The generic mapping employed to date is still the best for measurements of aerosol scattering and gaseous absorption features. This is one of the last of such observations gathered over the course of the mission to provide latitude and seasonal coverage of Titan's middle atmosphere and stratosphere.

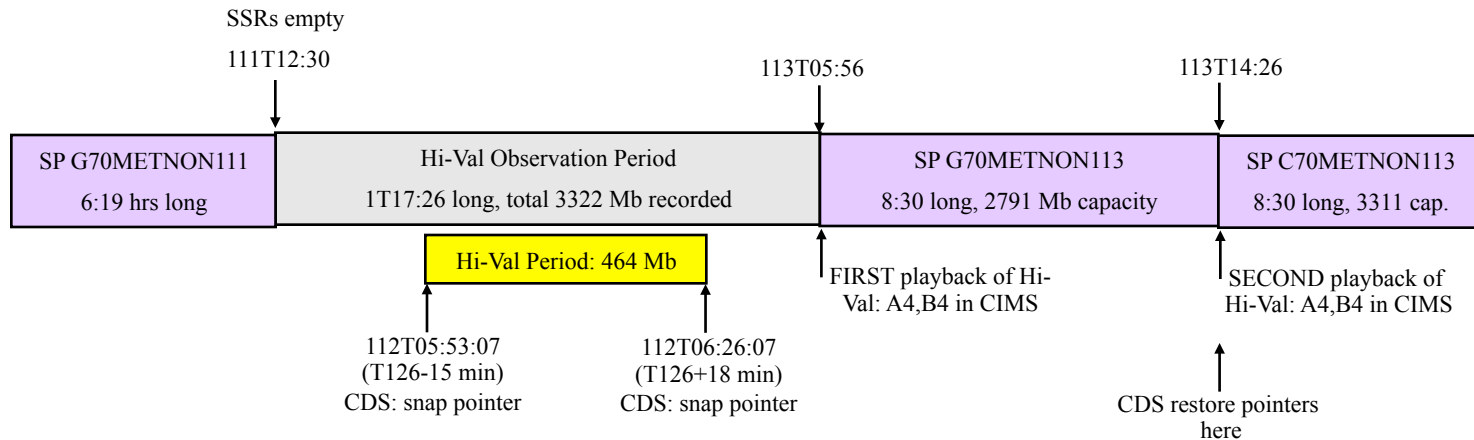
DOY 115/Apr 25, 2017 – **ISS** will acquire a series of global-scale images and mosaics, observing Titan's surface and atmosphere at northern mid-latitudes over the leading and sub-Saturnian hemispheres. The series of observations allows ISS to monitor Titan to track clouds and the evolution thereof, of particular scientific interest as Titan's northern summer equinox approaches, as part of the on-going Titan cloud monitoring campaign. **VIMS** will ride-along with ISS, monitoring the evolution of cloud coverage at the North Pole in particular. **CIRS** will ride-along (collaborative) with ISS and observe Titan's north pole in the mid-infrared (7-17 microns) to map spatial variation of temperatures and gas composition as the northern hemisphere moves towards summer solstice.

Dual Playback T126

TOST T126

Flyby	BEGHIVAL	ENDHIVAL	P4 Dual Playback Data Volume	SSR empty before hi-val observation period? (if not verify any carryover on A fits with Hi-Val data)	SSR-A empty after first playback?	PPL set to A4,B4 for first AND second playbacks?	SSRs empty after second playback? (if not does any Hi-Val data carry over?)
T126	T126-15 min	T126+18 min	464 Mb	Yes	Yes	Yes	Yes

Playbacks contiguous:



Reminder - ALL instruments' data is played back twice during P4 dual playback periods

Pointing:

- CIRS and VIMS temperature violations
 - No significant waypoint heating.
 - RADAR_270TI_T126INOSAR001_PRIME: AACS reports CIRS temperature rise of >5 K (MAX CIRS Temp: 82.75 deg K) from 2017-112T06:15:49.400 until 2017-112T08:08:48.190. VIMS maximum is 0.3 K. VIMS (Brown, 4/12/16) and CIRS (Flasar, 4/12/16) agree to waiver.
- CMT Management Required due to POS_X to Sun warnings/violations:
 - RADAR_270TI_T126INOSAR001_PRIME: POS_X to Sun Notification & Violation, 2017-112T05:51:05.840 to 2017-112T06:29:23.200, min angle 6.099 deg at 2017-112T06:12:35.200.
- Collaborative riders: ISS on CIRS_270TI_MIDIRTMAP001_PRIME, ISS on CIRS_270TI_MIDIRTMAP002_PRIME
- Changes to secondary would significantly impact INMS.
- A discrepancy was found during pre-assessment between (1) the PDT-IVP generated vector-fits that RADAR sees and (2) the IVP-generated vector-fits that AACS sees. AACS pre-assessment hydrazine predicts are quoted above. The vector discrepancy issue is being worked by RADAR (Yanhua Anderson) and AACS (Luis Andrade and Tom Burk) in preparation for S99 Sequence Integration, but the hydrazine predicts are not expected to change significantly.

Data Volume:

- No carryover to next segment
- SSRs empty at end of segment (see Dual Playback chart)
- Unusual priority playback tables for SP_271EA_G70METNON113_PRIME and SP_271EA_C70METNON113_PRIME due to dual playback
- SMT Warning expected (warmup):
 - RADAR_270TI_T126WRMUP001_RIDER Found an activity whose data are NOT recorded in this telemetry mode "S_N_ER_3" commanded at 2017-111T21:08:09.000. Volume of 5.121792 Mb not given data policing space.

- DSN:
 - RSS ORT at 2017-113T05:56:00, uses G34 DSS-25 while downlinking to G70 DSS-14
 - Dual playback handover.
 - UNQ pass at 2017-114T23:02:00, SP_271EA_M34UNQOTB114_PRIME does not have full DSN coverage. This is a Split Pass Backup OTM.
- Resource checker:
 - SP_271EA_M34UNQOTB114_PRIME: (1) Downlink Pass Request occurs outside of DSN Pass time boundaries. Split backup OTM, using UNQ pass, non-standard ap_downlink split between G34 and G70. (2) First part of OTM or OTB handover pass is longer than 4-hours. Combined playback telemetry wedding cake implemented.
 - ISS_270TI_FIRNADCMP001_CIRS: Telemetry Mode change during an ISS observation. Telemetry mode transition – to S_N_ER_5A for 15m to see RADAR Warmup. OK with ISS.
 - SP_271EA_G70METNON113_PRIME & SP_271EA_C70METNON113_PRIME: Unusual priority playback tables due to dual playback (see Data Volumes)
- Opmodes:
 - RSS_K_RWAF opmode in support of RSS ORT at 2017-113T05:56:00, using DSS=25.
- Hydrazine:
 - KPT Estimate (per L. Andrade): 304 g
 - FSDS Estimate (n = 0.35): 284 g
 - Deadband (per RADAR): 0.5, 0.5, 2.0 mrad
 - *Note: Hydrazine predicts DO NOT account for RWA spin-down or spin-up*
 - *Note: KPT does not model deadbanding and does not estimate hydrazine consumption due to deadbanding*
- Special Activities:
 - See under Pointing for CMT Management Periods due to POS_X to Sun.

Sequence Liens (should all be SPLAT items):

- CIRS heating violations
 - SPLAT item initiated for INMS & RADAR-induced CIRS heating, and to a lesser extent VIMS heating.
- Dual playback for T126
 - SPLAT item initiated at pointer reset.