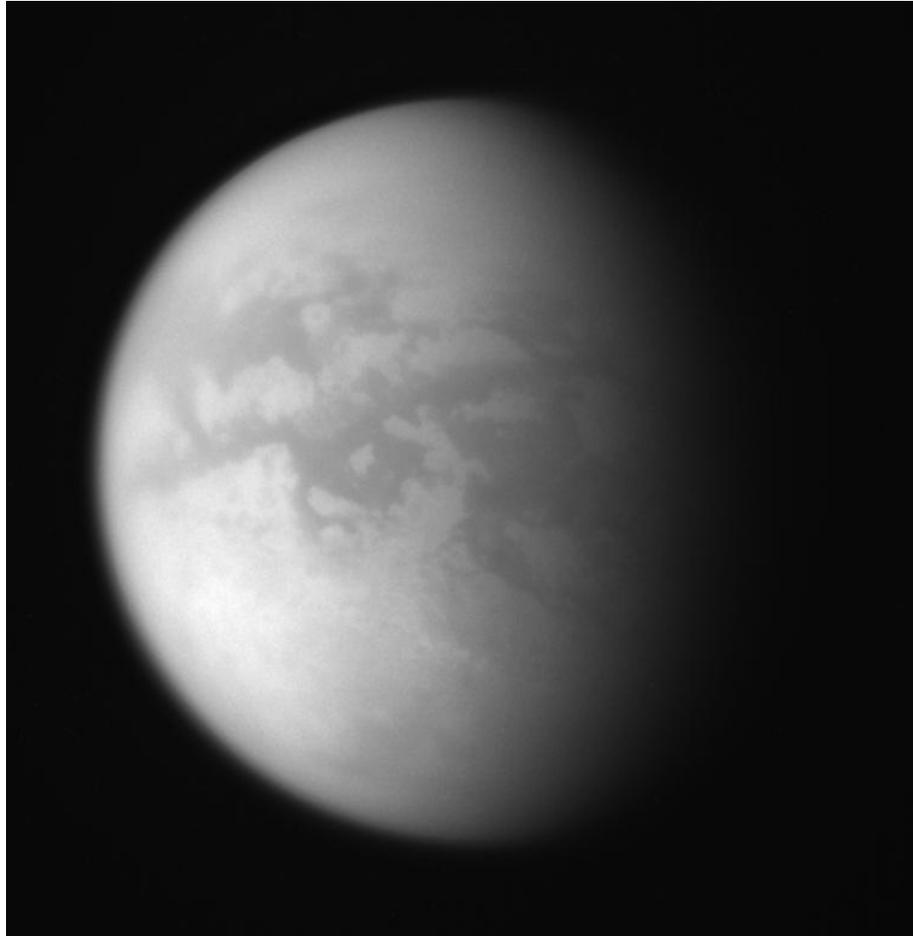


C A S S I N I



TITAN 030TI(T19)
MISSION DESCRIPTION

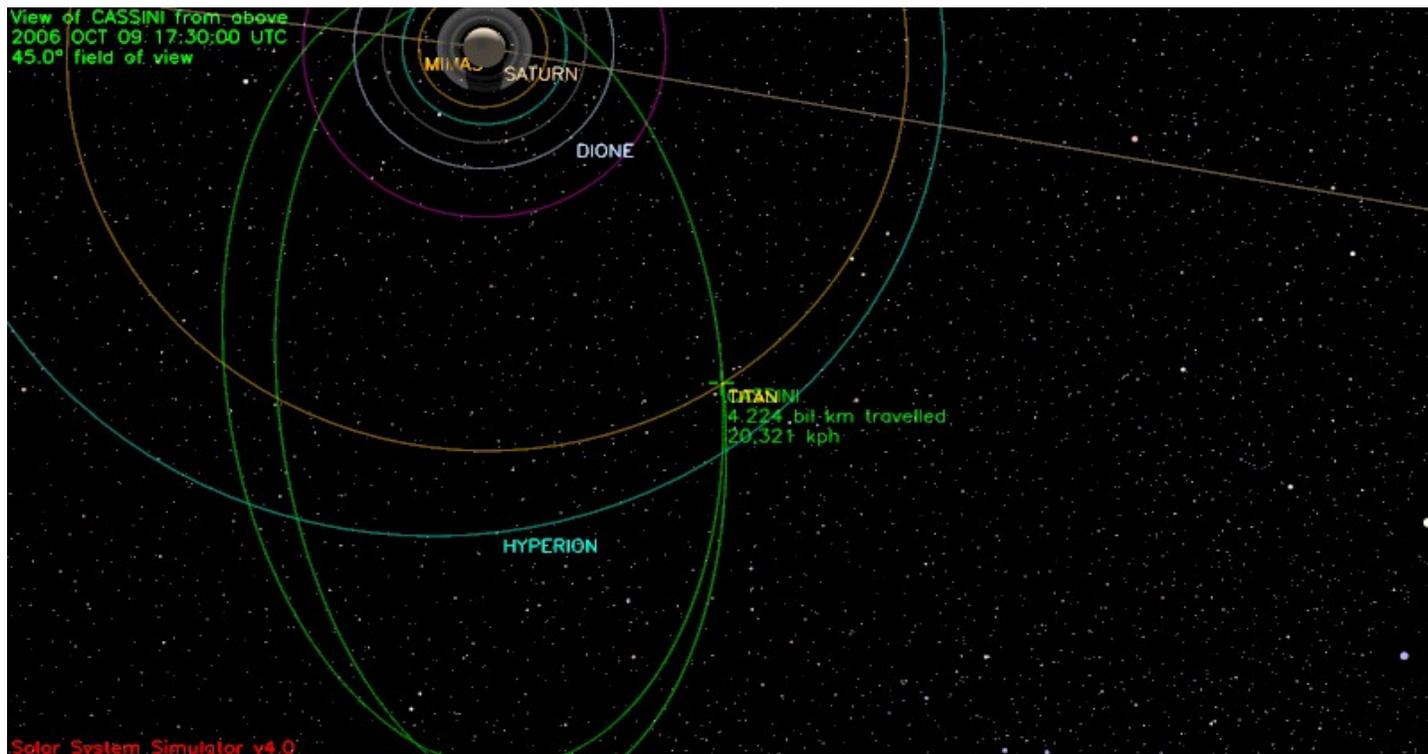
October 2006

Jet Propulsion Laboratory
California Institute of Technology

1.0 OVERVIEW

Just 16 days after Titan-18, Cassini returns to Titan for its twentieth targeted encounter. The closest approach to Titan occurs on Monday, October 9, at 2007-085T00:23:27 spacecraft time (October 9 at 10:53 a.m. Pacific Time) at an altitude of 980 kilometers (~610 miles) above the surface and at a speed of 6.0 kilometers per second (13,422 mph). The latitude at closest approach is 60.7° N (somewhat close to poles) and the encounter occurs on orbit number 30.

This encounter is set up with two maneuvers: an apoapsis maneuver on October 1, and an approach maneuver, scheduled for October 6. This inbound encounter occurs about 2 days before Saturn closest approach.



1.1 ABOUT TITAN

If Titan were a planet, it would likely stand out as the most important planet in the solar system for humans to explore. Titan, the size of a terrestrial planet, has a dense atmosphere of nitrogen and methane and a surface covered with organic material. It is Titan that is arguably Earth's sister world and the Cassini-Huygens mission considers Titan among its highest priorities.

Although it is far colder and lacks liquid water, the chemical composition of Titan's atmosphere resembles that of early Earth. This, along with the organic chemistry that takes place in Titan's atmosphere, prompts scientists to believe that Titan could provide a laboratory for seeking insight into the origins of life on Earth. Data from the Huygens probe, which touched down on Titan's surface in January 2005, and the Cassini orbiter has shown that many of the processes that occur on Earth also apparently take place on Titan – wind, rain, volcanism, tectonic activity, as well as river channels, and drainage patterns all seem to contribute in shaping Titan's surface. However, at an inhospitable -290°F (-179°C), the chemistry that drives these processes is fundamentally different from Earth's. For example it is methane that performs many of the same functions on Titan that water does on Earth.

The Huygens probe landed near a bright region now called Adiri, and photographed light hills with dark river beds that empty into a dark plain. It was believed that this dark plain could be a lake or at least a muddy material, but it is now known that Huygens landed in the dark region, and it is solid. Scientists believe it only rains occasionally on Titan, but the rains are extremely fierce when they come.

Only a small number of impact craters have been discovered. This suggests that Titan's surface is constantly being resurfaced by a fluid mixture of water and possibly ammonia, believed to be expelled from volcanoes and hot springs. Some surface features, such as lobate flows, appear to be volcanic structures. Volcanism is now believed to be a significant source of methane in Titan's atmosphere. However, there are no oceans of hydrocarbons as previously hypothesized. Dunes cover large areas of the surface.

The Cassini-Huygens mission, using wavelengths ranging from ultraviolet to radio, is methodically and consistently revealing Titan and answering long-held questions regarding Titan's interior, surface, atmosphere, and the complex interaction with Saturn's magnetosphere. While many pieces of the puzzle are yet to be found, with each Titan flyby comes a new data set that furthers our understanding of this world as we attempt to constrain scenarios for the formation and evolution of Titan and its atmosphere.

1.2 TITAN-19 SCIENCE HIGHLIGHTS

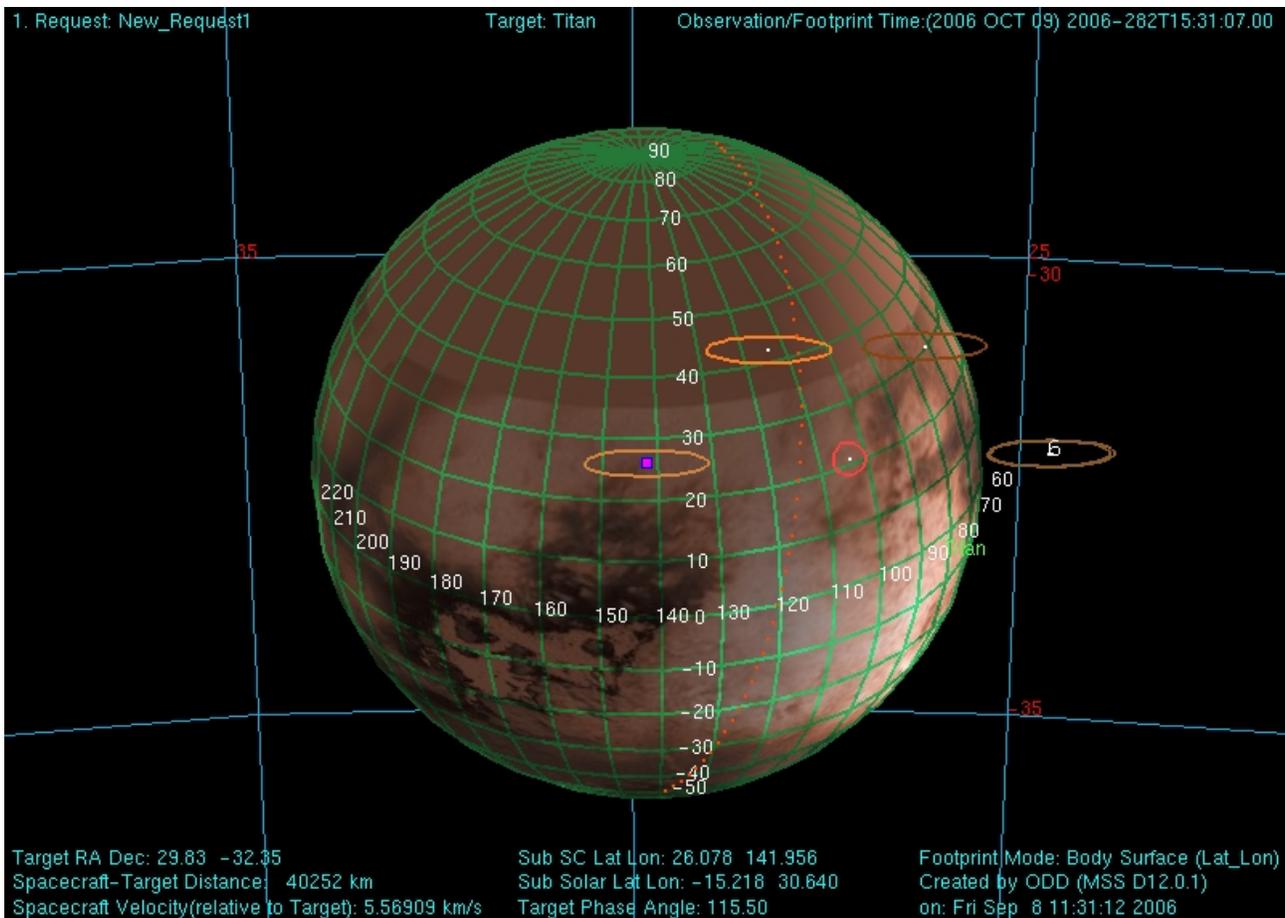
- The CIRS observations emphasize the far-infrared part of the spectrum to map Titan’s composition. CIRS will perform limb sounding with excellent vertical resolution. CIRS will also map surface temperatures. CIRS will also obtain information on trace constituents in Titan's stratosphere and obtain information on CO, HCN, CH₄.
- The ISS outbound observations will image the surface of Titan and attempt to track atmospheric and surface changes. ISS will also be looking at surface color variations and monitor limb hazes.
- RADAR will be performing Radiometry, Scatterometry, and Synthetic Aperture measurements of Titan’s surface at the high Northern Latitudes in an attempt to image lakes that were discovered in T16. RADAR will also be performing Altimetry to get relative altitudes of the Titan Surface.
- MAPS - Analysis of plasma wake, ions escaping from Titan, and Titan's interaction with Saturn's magnetosphere down to a low altitude (980km).

1.3 SAMPLE SNAPSHOTS

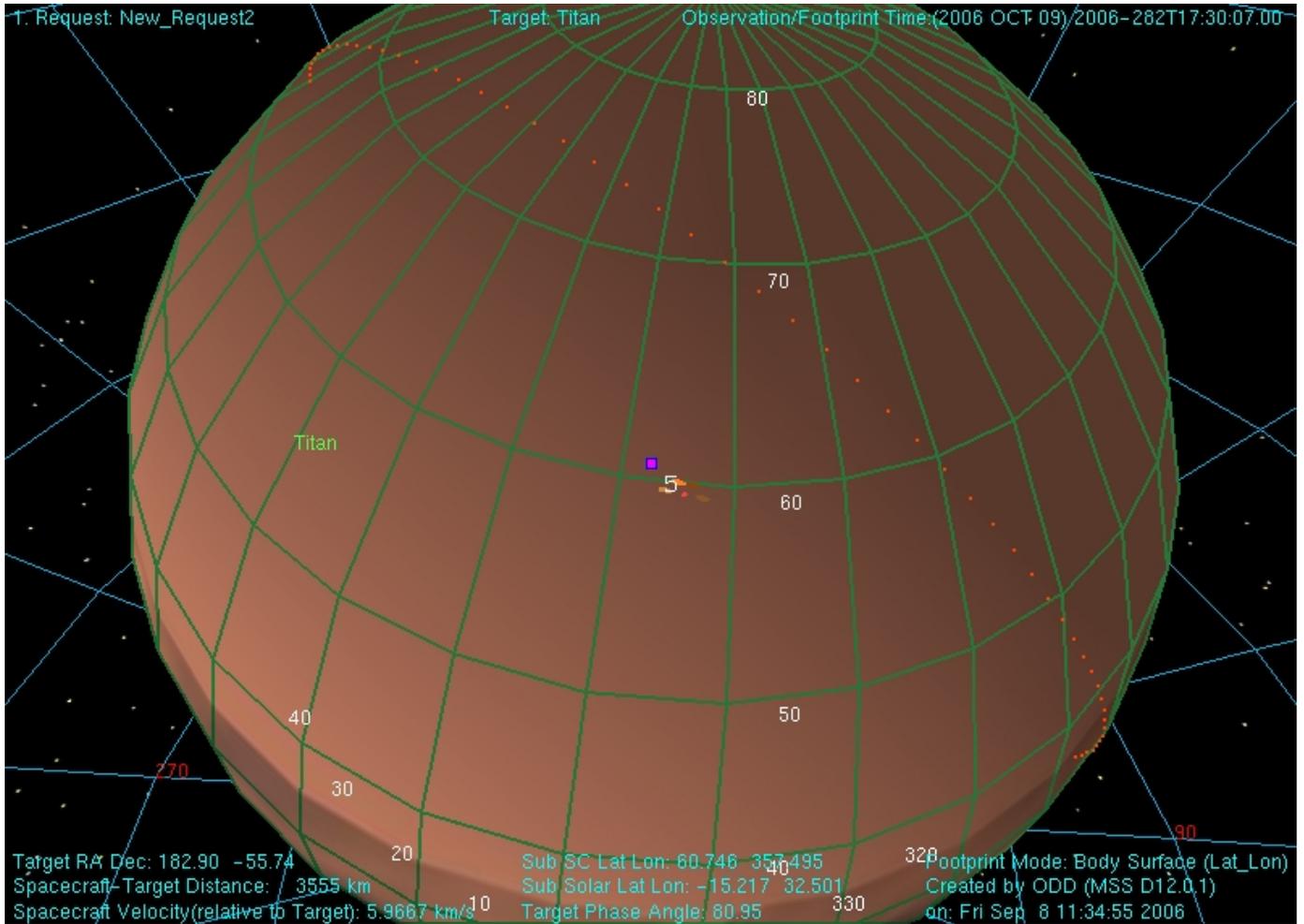
Three views of Titan from Cassini before, during, and after closest approach to Titan are shown below. The views are oriented such that the direction towards the top of the page is aligned with the Titan North Pole. The optical fields of view are shown in the first two plots and the remote sensing instrument fields of view are shown in the third assuming they are pointed towards the center of Titan. The sizes of these fields of view vary as a function of the distance between Cassini and Titan. A key for use in identifying the remote sensing instruments fields of view in the figures is listed at the top of the next page.

Key to ORS Instrument Fields of View in Figures

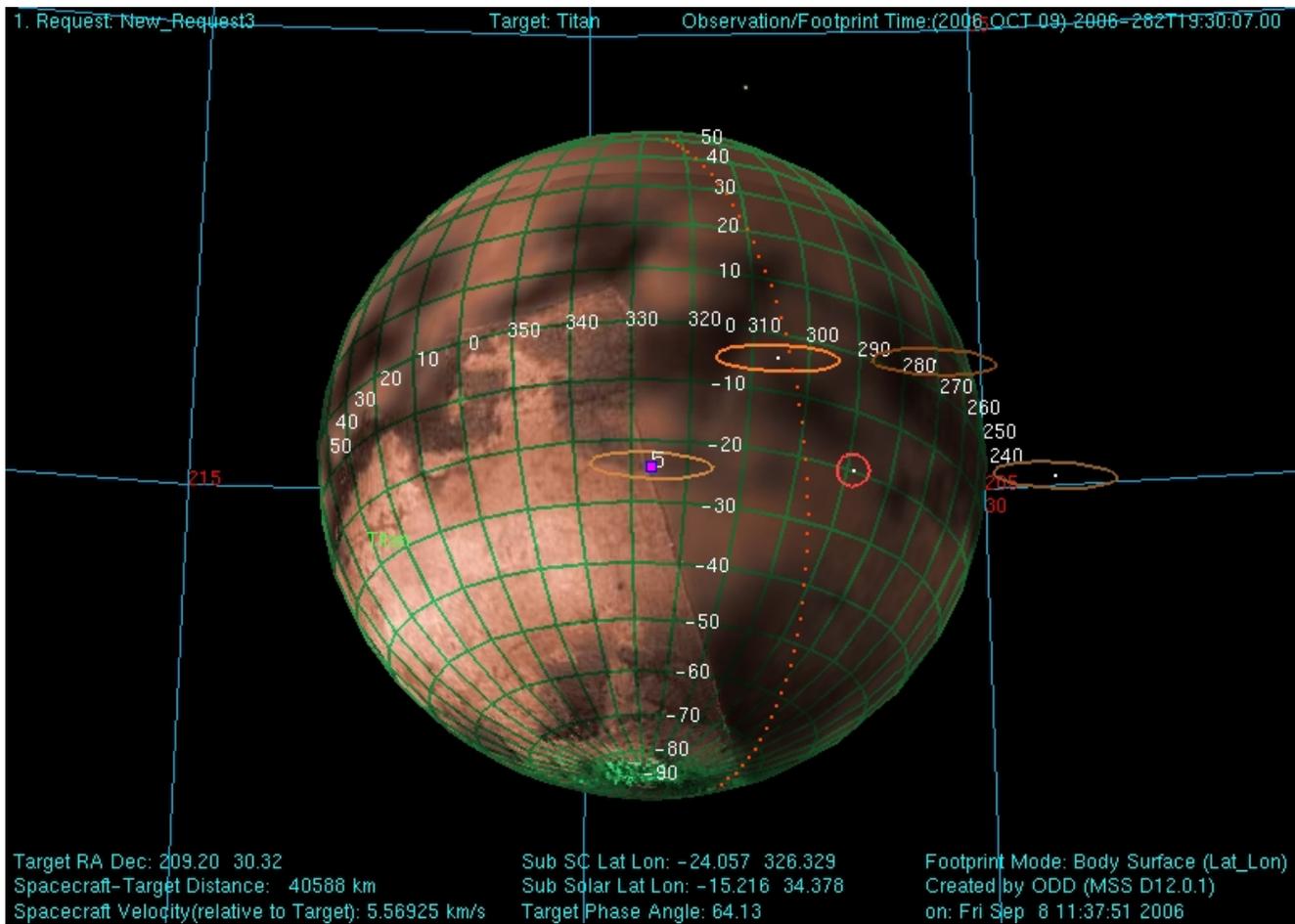
Instrument Field of View	Depiction in Figure
ISS WAC (imaging wide angle camera)	Largest square
VIMS (visual and infrared mapping spectrometer)	Next largest pink square
ISS NAC (imaging narrow angle camera)	Smallest green square
CIRS (composite infrared spectrometer) – Focal Plane 1	Small red circle near ISS_NAC FOV
UVIS (ultraviolet imaging spectrometer)	Vertical purple rectangle centered within largest square



View of Titan from Cassini 2 hours before Titan-19 closest approach



View of Titan from Cassini at Titan-19 Closest Approach



View of Titan from Cassini 2 hours after Titan-19 closest approach

Timeline and Geometry Table below

Colors: yellow = maneuvers; blue = geometry; pink = T19-related; green = data playbacks

Cassini Titan-19 Timeline - September 2006

Orbiter UTC	Ground UTC	Pacific Time	Time wrt T19	Activity	Description
263T20:22:00	Sep 20 21:42	Wed Sep 20 01:42 PM	T19-18d21h	Start of Sequence S24	Start of Sequence which contains Titan-19.
279T10:24:00	Oct 06 11:44	Fri Oct 06 03:44 AM	T19-03d07h	OTM #76 Prime	Titan-19 minus 3 day targeting maneuver
280T10:24:00	Oct 07 11:44	Sat Oct 07 03:44 AM	T19-02d07h	OTM #76 Backup	
281T19:24:00	Oct 08 20:44	Sun Oct 08 12:44 PM	T19-22h06m	Start of the TOST Segment	
281T19:24:00	Oct 08 20:44	Sun Oct 08 12:44 PM	T19-22h06m	Turn cameras to Titan	
281T19:54:00	Oct 08 21:14	Sun Oct 08 01:14 PM	T19-21h36m	Deadtime	22 minutes long; used to accommodate changes in flyby time
281T20:16:07	Oct 08 21:36	Sun Oct 08 01:36 PM	T19-21h14m	Titan atmospheric observations	Obtain information on the thermal structure of Titan's stratosphere
282T02:30:07	Oct 09 03:50	Sun Oct 08 07:50 PM	T19-15h00m	Titan limb observations	Search Titans Nightside for Atmospheric Lighting and Auras
282T12:10:07	Oct 09 13:30	Mon Oct 09 05:30 AM	T19-05h20m	Radiometry Measurements	Titan Inbound RADAR Radiometry observations
282T12:10:07	Oct 09 13:30	Mon Oct 09 05:30 AM	T19-05h20m	Scatterometry Measurements	Titan Inbound RADAR Scatterometry observations
282T16:38:07	Oct 09 17:58	Mon Oct 09 09:58 AM	T19-00h52m	Transition to Thrusters	Thrusters are needed to compensate for Titan Atmosphere torque and target motion compensation
282T17:00:07	Oct 09 18:20	Mon Oct 09 10:20 AM	T19-00h30m	Titan Inbound RADAR Altimetry observations	Determine altitude of Titan's surface while pointing Nadir.
282T17:15:07	Oct 09 18:35	Mon Oct 09 10:35 AM	T19-00h15m	Low-Res and Hi-Res Synthetic Aperture Radar of Titan's Surface	Determine Titan Surface features. T19 includes a search for lakes on Titan at the High Northern Latitudes.
282T17:30:07	Oct 09 18:50	Mon Oct 09 10:50 AM	T19+00h00m	Titan-19 Flyby Closest Approach Time	Altitude = 980 km (610 miles), speed = 6.0 km/s (13,422 mph); high phase inbound, 81 deg phase at closest approach, low phase outbound
282T17:45:07	Oct 09 19:05	Mon Oct 09 11:05 AM	T19+00h15m	Titan Outbound RADAR Altimetry observations	Determine altitude of Titan's surface while pointing Nadir.
282T18:00:07	Oct 09 19:20	Mon Oct 09 11:20 AM	T19+00h30m	Transition to Reaction Wheels	Wheels are used for greater spacecraft stability.
282T18:09:00	Oct 09 19:29	Mon Oct 09 11:29 AM	T19+00h39m	Descending Ring Plane Crossing	
282T18:22:07	Oct 09 19:42	Mon Oct 09 11:42 AM	T19+00h52m	Scatterometry Measurements	Titan Outbound RADAR Scatterometry observations
282T18:45:07	Oct 09 20:05	Mon Oct 09 12:05 PM	T19+01h15m	Radiometry Measurements	Titan Outbound RADAR Radiometry observations
282T22:51:07	Oct 10 00:10	Mon Oct 09 04:10 PM	T19+05h20m	Titan surface observations	Full disk observations for surface and atmospheric mapping
283T09:21:07	Oct 10 10:41	Tue Oct 10 02:41 AM	T19+15h51m	Deadtime	9 minutes long; used to accommodate changes in flyby time
283T09:30:00	Oct 10 10:50	Tue Oct 10 02:50 AM	T19+16h00m	Turn to Earth-Line	
283T10:00:00	Oct 10 11:20	Tue Oct 10 03:20 AM	T19+16h30m	Begin Playback of T19 Data	Goldstone 70M+34M Array
283T19:00:00	Oct 10 20:20	Tue Oct 10 12:20 PM	T19+02d01h	End Playback of T19 Data	
284T22:59:00	Oct 12 00:19	Wed Oct 11 04:19 PM	T19+02d05h	Saturn Periapse	R = 5.5 Rs, lat = -29 deg, phase = 14 deg

OWL (mins)	80.9
C/A Time	Mon Oct 09 10:50 AM

1.4

FLYBY GEOMETRY

Event Name: T19_30TI, Targeted Titan, Inbound. 050505 SPK: Table Creation Date (YYMMDD) 050712

Event Name at Event Time Only	SCET Date (YYYY-DOYTHH:MM:SS.FF) UTC	SCET Date (MM/DD/YYYY HH:MM:SS) UTC	SCET Date (MM/DD/YYYY HH:MM:SS) ET	Hours wrt Event Epoch	Minutes wrt Event Epoch	S/C Range (km)	S/C Altitude wrt Tri-axial Ellipsoid (km)	S/C North Latitude (deg)	S/C West Longitude wrt SMEQP M Date (deg)	S/C Inertial Velocity (km/s)	S/C Radial Inertial Velocity (km/s)	S/C Tangential Inertial Velocity (km/s)	Central Body Angular Diameter (mrad)	Phase = Sun-Central Body S/C Angle (deg)	Sun-S/C Central Body Angle (deg)	S/C Local Time wrt Central Body (hh:mm)	Sub-solar wrt Central Body (deg)	Sub-solar West Longitude wrt Central Body SMEQP M Date (deg)
	2006-281T17:25:31.90	08-Oct-06	17:26:36	-24	-1440	485,330.5	482,755.5	20.6	124.3	5,705	-5,695	0.331	10.6	117.7	62.3	04:22	-15.2	9.9
	2006-281T21:25:31.90	08-Oct-06	21:26:36	-20	-1200	403,545.8	400,970.8	20.9	127.5	5,669	-5,663	0.253	12.8	117.3	62.7	04:24	-15.2	13.7
	2006-281T23:25:31.90	08-Oct-06	23:26:36	-18	-1080	362,828.3	360,253.3	21.0	129.2	5,651	-5,647	0.221	14.2	117.1	62.9	04:25	-15.2	15.5
	2006-282T01:25:31.90	09-Oct-06	01:26:36	-16	-960	322,227.3	319,652.3	21.1	130.8	5,634	-5,631	0.193	16.0	116.9	63.1	04:26	-15.2	17.4
	2006-282T03:25:31.90	09-Oct-06	03:26:36	-14	-840	281,740.4	279,165.4	21.3	132.5	5,618	-5,615	0.171	18.3	116.7	63.3	04:27	-15.2	19.3
	2006-282T05:25:31.90	09-Oct-06	05:26:36	-12	-720	241,362.4	238,787.4	21.5	134.2	5,603	-5,601	0.156	21.3	116.6	63.4	04:27	-15.2	21.2
	2006-282T07:25:31.90	09-Oct-06	07:26:36	-10	-600	201,085.5	198,510.5	21.7	135.9	5,590	-5,587	0.151	25.6	116.4	63.5	04:28	-15.2	23.0
	2006-282T09:25:31.90	09-Oct-06	09:26:36	-8	-480	160,897.9	158,322.9	22.0	137.6	5,578	-5,576	0.160	32.0	116.3	63.7	04:29	-15.2	24.9
	2006-282T11:25:31.90	09-Oct-06	11:26:36	-6	-360	120,783.6	118,208.6	22.5	139.3	5,571	-5,567	0.191	42.6	116.2	63.8	04:30	-15.2	26.8
	2006-282T12:25:31.90	09-Oct-06	12:26:36	-5	-300	100,747.1	98,172.1	22.8	140.1	5,569	-5,564	0.221	51.1	116.1	63.9	04:30	-15.2	27.7
	2006-282T13:25:31.90	09-Oct-06	13:26:36	-4	-240	80,720.0	78,145.0	23.4	140.8	5,569	-5,562	0.269	63.8	116.0	64.0	04:31	-15.2	28.7
	2006-282T14:25:31.90	09-Oct-06	14:26:36	-3	-180	60,698.7	58,123.7	24.2	141.5	5,572	-5,561	0.352	84.9	115.8	64.2	04:32	-15.2	29.6
	2006-282T15:25:31.90	09-Oct-06	15:26:36	-2	-120	40,682.4	38,107.4	26.0	141.9	5,583	-5,558	0.521	126.7	115.5	64.5	04:34	-15.2	30.5
	2006-282T16:25:31.90	09-Oct-06	16:26:36	-1	-60	20,705.0	18,130.0	30.9	141.2	5,619	-5,526	1.019	249.4	114.4	65.6	04:41	-15.2	31.5
	2006-282T16:55:31.90	09-Oct-06	16:56:36	-1	-30	10,662.4	8,287.4	40.2	138.0	5,689	-5,347	1.942	478.7	111.9	68.1	04:55	-15.2	32.0
	2006-282T17:10:31.90	09-Oct-06	17:11:36	0	-15	6,254.2	3,679.2	55.2	129.3	5,795	-4,712	3.372	848.7	106.5	73.5	05:31	-15.2	32.2
	2006-282T17:20:31.90	09-Oct-06	17:21:36	0	-5	3,925.9	1,350.9	75.8	65.8	5,940	-2,533	5.372	1430.8	93.3	86.7	09:46	-15.2	32.3
T19_30TI	2006-282T17:25:31.90	09-Oct-06	17:26:36	0	0	3,525.0	950.0	60.7	-2.5	5,983	0.001	5,983	1638.1	80.9	99.1	14.19	-15.2	32.4
	2006-282T17:30:31.90	09-Oct-06	17:31:36	0	5	3,926.3	1,351.3	35.7	-18.7	5,940	2,535	5.372	1430.6	70.3	109.7	15:24	-15.2	32.5
	2006-282T17:40:31.90	09-Oct-06	17:41:36	0	15	6,255.0	3,680.0	5.9	-27.5	5,795	4,713	3.372	848.6	63.2	116.8	16:00	-15.2	32.7
	2006-282T17:55:31.90	09-Oct-06	17:56:36	1	30	10,663.6	8,288.6	-9.7	-31.2	5,689	5,347	1.941	478.6	62.6	117.4	16:16	-15.2	32.9
	2006-282T18:25:31.90	09-Oct-06	18:26:36	1	60	20,707.0	18,132.0	-19.1	-33.3	5,620	5,527	1.018	249.4	63.4	116.6	16:26	-15.2	33.4
	2006-282T19:25:31.90	09-Oct-06	19:26:36	2	120	40,687.0	38,112.0	-24.1	-33.8	5,583	5,559	0.516	126.7	64.2	115.8	16:32	-15.2	34.3
	2006-282T20:25:31.90	09-Oct-06	20:26:36	3	180	60,706.5	58,131.5	-25.8	-33.4	5,572	5,562	0.343	84.9	64.5	115.5	16:34	-15.2	35.2
	2006-282T21:25:31.90	09-Oct-06	21:26:36	4	240	80,731.8	78,156.8	-26.6	-32.7	5,569	5,563	0.252	63.8	64.6	115.4	16:35	-15.2	36.2
	2006-282T22:25:31.90	09-Oct-06	22:26:36	5	300	100,764.1	98,189.1	-27.1	-31.9	5,569	5,566	0.195	51.1	64.7	115.3	16:35	-15.2	37.1
	2006-282T23:25:31.90	09-Oct-06	23:26:36	6	360	120,808.1	118,233.1	-27.5	-31.0	5,572	5,570	0.154	42.6	64.7	115.3	16:36	-15.2	38.1
	2006-283T01:25:31.90	10-Oct-06	01:26:36	8	480	160,952.7	158,377.7	-27.8	-29.1	5,583	5,582	0.095	32.0	64.7	115.3	16:36	-15.2	39.9
	2006-283T03:25:31.90	10-Oct-06	03:26:36	10	600	201,210.3	198,635.3	-28.0	-27.2	5,602	5,601	0.059	25.6	64.7	115.3	16:36	-15.2	41.8
	2006-283T05:25:31.90	10-Oct-06	05:26:36	12	720	241,629.9	239,054.9	-28.0	-25.2	5,628	5,628	0.064	21.3	64.6	115.4	16:36	-15.2	43.7
	2006-283T07:25:31.90	10-Oct-06	07:26:36	14	840	282,267.3	279,692.3	-28.0	-23.2	5,663	5,662	0.109	18.2	64.4	115.6	16:36	-15.2	45.6
	2006-283T09:25:31.90	10-Oct-06	09:26:36	16	960	323,186.8	320,611.8	-27.9	-21.1	5,709	5,706	0.171	15.9	64.3	115.7	16:34	-15.2	47.4
	2006-283T11:25:31.90	10-Oct-06	11:26:36	18	1080	364,462.9	361,887.9	-27.7	-19.0	5,767	5,761	0.246	14.1	64.1	115.9	16:33	-15.2	49.3
	2006-283T13:25:31.90	10-Oct-06	13:26:36	20	1200	406,182.8	403,607.8	-27.5	-16.9	5,839	5,830	0.334	12.7	63.9	116.1	16:32	-15.2	51.2
	2006-283T17:25:31.90	10-Oct-06	17:26:36	24	1440	491,376.7	488,801.7	-26.9	-12.6	6,040	6,015	0.557	10.5	63.4	116.6	16:30	-15.2	55.0

1.5 PLAYBACK TIMELINE

030TI (T19) Playback Timeline

Created Sept. 21, 2006

Event or Observation	Observation Type (APGEN)	Observation Record Start Time (yyyy-dddThh:mm:ss) (SCET)	Record Start Time - Reference Epoch (days)	Start Playback (Ground UTC)		Start Playback (Pacific Time)	
				Best Estimate	~Latest Estimate	Best Estimate	~Latest Estimate
CIRS_030TI_MIDIRMAP006_PRIME	CIRS_4000	2006-281T20:16:07	-0.885	10-Oct Tue 11:31 AM	Tue 11:32 AM	10-Oct Tue 04:31 AM	Tue 04:32 AM
CIRS_030TI_MIDIRMAP006_SI	ISS_SUPPORT_IMAGI	2006-281T20:16:07	-0.885	10-Oct Tue 11:31 AM	Tue 11:32 AM	10-Oct Tue 04:31 AM	Tue 04:32 AM
ISS_030TI_MIDIRMAP006_CIRS	ISS_Phot_1_by_1	2006-281T20:16:07	-0.885	10-Oct Tue 11:31 AM	Tue 11:32 AM	10-Oct Tue 04:31 AM	Tue 04:32 AM
VIMS_030TI_COMPMAP002_CIRS	VIMS_18432	2006-281T20:16:07	-0.885	10-Oct Tue 11:31 AM	Tue 11:32 AM	10-Oct Tue 04:31 AM	Tue 04:32 AM
RPWS_030SA_OUTSURVEY001_PRIME	RPWS_30464	2006-281T23:02:00	-0.769	10-Oct Tue 11:56 AM	Tue 12:00 PM	10-Oct Tue 04:56 AM	Tue 05:00 AM
CAPS_030IC_CALIBRATE001_PRIME	CAPS_16000	2006-281T23:25:00	-0.753	10-Oct Tue 11:59 AM	Tue 12:03 PM	10-Oct Tue 04:59 AM	Tue 05:03 AM
INMS_030SA_SURVEY001_RIDER	INMS_1498	2006-281T23:25:00	-0.753	10-Oct Tue 11:59 AM	Tue 12:03 PM	10-Oct Tue 04:59 AM	Tue 05:03 AM
MAG_030OT_SURVEY001_PRIME	MAG_1976	2006-281T23:25:00	-0.753	10-Oct Tue 11:59 AM	Tue 12:03 PM	10-Oct Tue 04:59 AM	Tue 05:03 AM
MIMI_030CO_SURVEY001_RIDER	MIMI_8000	2006-281T23:25:00	-0.753	10-Oct Tue 11:59 AM	Tue 12:03 PM	10-Oct Tue 04:59 AM	Tue 05:03 AM
CIRS_030TI_FIRNADCMP003_ISS	CIRS_4000	2006-282T02:30:07	-0.625	10-Oct Tue 12:25 PM	Tue 12:31 PM	10-Oct Tue 05:25 AM	Tue 05:31 AM
ISS_030TI_NIGHTNAC001_PRIME	ISS_Phot_1_by_1	2006-282T02:30:07	-0.625	10-Oct Tue 12:25 PM	Tue 12:31 PM	10-Oct Tue 05:25 AM	Tue 05:31 AM
VIMS_030TI_GLOBALMAP001_ISS	VIMS_18432	2006-282T02:30:07	-0.625	10-Oct Tue 12:25 PM	Tue 12:31 PM	10-Oct Tue 05:25 AM	Tue 05:31 AM
CIRS_030TI_FIRNADCMP003_PRIME	CIRS_4000	2006-282T03:30:07	-0.583	10-Oct Tue 12:39 PM	Tue 12:46 PM	10-Oct Tue 05:39 AM	Tue 05:46 AM
CIRS_030TI_FIRNADCMP003_SI	ISS_SUPPORT_IMAGI	2006-282T03:30:07	-0.583	10-Oct Tue 12:39 PM	Tue 12:46 PM	10-Oct Tue 05:39 AM	Tue 05:46 AM
ISS_030TI_FIRNADCMP003_CIRS	ISS_Phot_1_by_1	2006-282T03:30:07	-0.583	10-Oct Tue 12:39 PM	Tue 12:46 PM	10-Oct Tue 05:39 AM	Tue 05:46 AM
VIMS_030TI_COMPMAP003_CIRS	VIMS_18432	2006-282T03:30:07	-0.583	10-Oct Tue 12:39 PM	Tue 12:46 PM	10-Oct Tue 05:39 AM	Tue 05:46 AM
INMS_030TI_T19INBD001_PRIME	INMS_1498	2006-282T05:34:53	-0.497	10-Oct Tue 01:01 PM	Tue 01:11 PM	10-Oct Tue 06:01 AM	Tue 06:11 AM
CIRS_030TI_MIRLMBINT002_PRIME	CIRS_4000	2006-282T08:30:07	-0.375	10-Oct Tue 01:32 PM	Tue 01:45 PM	10-Oct Tue 06:32 AM	Tue 06:45 AM
CIRS_030TI_MIRLMBINT002_SI	ISS_SUPPORT_IMAGI	2006-282T08:30:07	-0.375	10-Oct Tue 01:32 PM	Tue 01:45 PM	10-Oct Tue 06:32 AM	Tue 06:45 AM
ISS_030TI_MIRLMBINT002_CIRS	ISS_Phot_1_by_1	2006-282T08:30:07	-0.375	10-Oct Tue 01:32 PM	Tue 01:45 PM	10-Oct Tue 06:32 AM	Tue 06:45 AM
UVIS_030TI_MIRLMBINT002_CIRS	UVIS_5032	2006-282T08:30:07	-0.375	10-Oct Tue 01:32 PM	Tue 01:45 PM	10-Oct Tue 06:32 AM	Tue 06:45 AM
VIMS_030TI_MIDIRLMB001_CIRS	VIMS_18432	2006-282T08:30:07	-0.375	10-Oct Tue 01:32 PM	Tue 01:45 PM	10-Oct Tue 06:32 AM	Tue 06:45 AM
RADAR_030OT_WARM4T119001_RID	RADAR_364800	2006-282T09:10:07	-0.347	10-Oct Tue 01:37 PM	Tue 01:51 PM	10-Oct Tue 06:37 AM	Tue 06:51 AM
RADAR_030TI_T19INRAD001_PRIME	RADAR_364800	2006-282T12:10:07	-0.222	10-Oct Tue 02:00 PM	Tue 02:18 PM	10-Oct Tue 07:00 AM	Tue 07:18 AM
CAPS_030TI_T19INBND001_PRIME	CAPS_16000	2006-282T15:23:24	-0.088	10-Oct Tue 02:16 PM	Tue 02:35 PM	10-Oct Tue 07:16 AM	Tue 07:35 AM
MAG_030TI_MAGTITAN001_PRIME	MAG_1976	2006-282T15:30:07	-0.083	10-Oct Tue 02:17 PM	Tue 02:36 PM	10-Oct Tue 07:17 AM	Tue 07:36 AM
MIMI_030TI_T19INBND002_CAPS	MIMI_8000	2006-282T15:30:07	-0.083	10-Oct Tue 02:17 PM	Tue 02:36 PM	10-Oct Tue 07:17 AM	Tue 07:36 AM
RPWS_030TI_T19INRMED001_PRIME	RPWS_30464	2006-282T15:30:07	-0.083	10-Oct Tue 02:17 PM	Tue 02:36 PM	10-Oct Tue 07:17 AM	Tue 07:36 AM
RADAR_030TI_T19INSCAT001_PRIME	RADAR_364800	2006-282T16:10:37	-0.055	10-Oct Tue 02:26 PM	Tue 02:45 PM	10-Oct Tue 07:26 AM	Tue 07:45 AM
CAPS_030TI_T19INRMED002_PRIME	CAPS_16000	2006-282T16:30:07	-0.042	10-Oct Tue 02:38 PM	Tue 02:57 PM	10-Oct Tue 07:38 AM	Tue 07:57 AM
INMS_030TI_T19CLOSE001_PRIME	INMS_1498	2006-282T16:30:07	-0.042	10-Oct Tue 02:38 PM	Tue 02:57 PM	10-Oct Tue 07:38 AM	Tue 07:57 AM
MIMI_030TI_T19CLOSE002_CAPS	MIMI_8000	2006-282T16:30:07	-0.042	10-Oct Tue 02:38 PM	Tue 02:57 PM	10-Oct Tue 07:38 AM	Tue 07:57 AM
RADAR_030TI_T19INAT001_PRIME	RADAR_364800	2006-282T17:00:07	-0.021	10-Oct Tue 02:50 PM	Tue 03:10 PM	10-Oct Tue 07:50 AM	Tue 08:10 AM
RPWS_030TI_T19INAT001_PRIME	RPWS_182784	2006-282T17:00:07	-0.021	10-Oct Tue 02:50 PM	Tue 03:10 PM	10-Oct Tue 07:50 AM	Tue 08:10 AM
RADAR_030TI_T19INLR001_PRIME	RADAR_364800	2006-282T17:15:07	-0.010	10-Oct Tue 03:00 PM	Tue 03:20 PM	10-Oct Tue 08:00 AM	Tue 08:20 AM
RADAR_030TI_T19HISAR001_PRIME	RADAR_364800	2006-282T17:23:07	-0.005	10-Oct Tue 03:19 PM	Tue 03:59 PM	10-Oct Tue 08:19 AM	Tue 08:59 AM
RADAR_030TI_T19OTLR001_PRIME	RADAR_364800	2006-282T17:37:07	0.005	10-Oct Tue 04:24 PM	Tue 04:48 PM	10-Oct Tue 09:24 AM	Tue 09:48 AM
RADAR_030TI_T19OTALT001_PRIME	RADAR_364800	2006-282T17:45:07	0.010	10-Oct Tue 04:43 PM	Tue 05:08 PM	10-Oct Tue 09:43 AM	Tue 10:08 AM
RPWS_030TI_T19INRMED002_PRIME	RPWS_30464	2006-282T18:00:07	0.021	10-Oct Tue 04:53 PM	Tue 05:18 PM	10-Oct Tue 09:53 AM	Tue 10:18 AM
RADAR_030TI_T19OTSCAT001_PRIME	RADAR_364800	2006-282T18:22:07	0.036	10-Oct Tue 05:00 PM	Tue 05:25 PM	10-Oct Tue 10:00 AM	Tue 10:25 AM
CAPS_030TI_T19OUTBND001_PRIME	CAPS_16000	2006-282T18:30:07	0.042	10-Oct Tue 05:05 PM	Tue 05:30 PM	10-Oct Tue 10:05 AM	Tue 10:30 AM
INMS_030TI_T19OUTBND001_PRIME	INMS_1498	2006-282T18:30:07	0.042	10-Oct Tue 05:05 PM	Tue 05:30 PM	10-Oct Tue 10:05 AM	Tue 10:30 AM
MIMI_030TI_T19OUTBND002_CAPS	MIMI_8000	2006-282T18:30:07	0.042	10-Oct Tue 05:05 PM	Tue 05:30 PM	10-Oct Tue 10:05 AM	Tue 10:30 AM
RADAR_030TI_T19OUTRAD001_PRIME	RADAR_364800	2006-282T18:45:07	0.052	10-Oct Tue 05:14 PM	Tue 05:39 PM	10-Oct Tue 10:14 AM	Tue 10:39 AM
CAPS_030SA_SURVEY002_RIDER	CAPS_16000	2006-282T19:30:07	0.083	10-Oct Tue 05:24 PM	Tue 05:50 PM	10-Oct Tue 10:24 AM	Tue 10:50 AM
MAG_030OT_SURVEY005_PRIME	MAG_1976	2006-282T19:30:07	0.083	10-Oct Tue 05:24 PM	Tue 05:50 PM	10-Oct Tue 10:24 AM	Tue 10:50 AM
MIMI_030CO_SURVEY002_RIDER	MIMI_8000	2006-282T19:30:07	0.083	10-Oct Tue 05:24 PM	Tue 05:50 PM	10-Oct Tue 10:24 AM	Tue 10:50 AM
CIRS_030TI_MIRLMBINT003_PRIME	CIRS_4000	2006-282T22:50:07	0.222	10-Oct Tue 05:40 PM	Tue 06:07 PM	10-Oct Tue 10:40 AM	Tue 11:07 AM
CIRS_030TI_MIRLMBINT003_SI	ISS_SUPPORT_IMAGI	2006-282T22:50:07	0.222	10-Oct Tue 05:40 PM	Tue 06:07 PM	10-Oct Tue 10:40 AM	Tue 11:07 AM
ISS_030TI_MIRLMBINT003_CIRS	ISS_Phot_1_by_1	2006-282T22:50:07	0.222	10-Oct Tue 05:40 PM	Tue 06:07 PM	10-Oct Tue 10:40 AM	Tue 11:07 AM
UVIS_030TI_MIRLMBINT003_CIRS	UVIS_5032	2006-282T22:50:07	0.222	10-Oct Tue 05:40 PM	Tue 06:07 PM	10-Oct Tue 10:40 AM	Tue 11:07 AM
VIMS_030TI_COMPMAP006_CIRS	VIMS_18432	2006-282T22:50:07	0.222	10-Oct Tue 05:40 PM	Tue 06:07 PM	10-Oct Tue 10:40 AM	Tue 11:07 AM
CIRS_030TI_FIRNADCMP004_ISS	CIRS_4000	2006-283T01:30:07	0.333	10-Oct Tue 06:02 PM	Tue 06:33 PM	10-Oct Tue 11:02 AM	Tue 11:33 AM
ISS_030TI_MONITONA001_PRIME	ISS_Phot_1_by_1	2006-283T01:30:07	0.333	10-Oct Tue 06:02 PM	Tue 06:33 PM	10-Oct Tue 11:02 AM	Tue 11:33 AM
VIMS_030TI_GLOBALMAP002_ISS	VIMS_18432	2006-283T01:30:07	0.333	10-Oct Tue 06:02 PM	Tue 06:33 PM	10-Oct Tue 11:02 AM	Tue 11:33 AM
CDA_030RI_1804RINGM001_RIDER	CDA_524	2006-283T01:39:50	0.340	10-Oct Tue 06:05 PM	Tue 06:36 PM	10-Oct Tue 11:05 AM	Tue 11:36 AM
CIRS_030TI_FIRNADCMP002_PRIME	CIRS_4000	2006-283T03:30:07	0.417	10-Oct Tue 06:36 PM	Tue 07:11 PM	10-Oct Tue 11:36 AM	Tue 12:11 PM
CIRS_030TI_FIRNADCMP002_SI	ISS_SUPPORT_IMAGI	2006-283T03:30:07	0.417	10-Oct Tue 06:36 PM	Tue 07:11 PM	10-Oct Tue 11:36 AM	Tue 12:11 PM
ISS_030TI_FIRNADCMP002_CIRS	ISS_Phot_1_by_1	2006-283T03:30:07	0.417	10-Oct Tue 06:36 PM	Tue 07:11 PM	10-Oct Tue 11:36 AM	Tue 12:11 PM
VIMS_030TI_COMPMAP007_CIRS	VIMS_18432	2006-283T03:30:07	0.417	10-Oct Tue 06:36 PM	Tue 07:11 PM	10-Oct Tue 11:36 AM	Tue 12:11 PM
CDA_030DR_1405DUST175_RIDER	CDA_524	2006-283T03:40:49	0.424	10-Oct Tue 06:37 PM	Tue 07:13 PM	10-Oct Tue 11:37 AM	Tue 12:13 PM
INMS_030SA_MRO007_RIDER	INMS_1498	2006-283T05:25:32	0.497	10-Oct Tue 06:49 PM	Tue 07:26 PM	10-Oct Tue 11:49 AM	Tue 12:26 PM
INMS_030SA_SURVEY002_RIDER	INMS_1498	2006-283T05:56:24	0.518	10-Oct Tue 06:53 PM	Tue 07:30 PM	10-Oct Tue 11:53 AM	Tue 12:30 PM
UVIS_030SW_IPHSURVEY016_RIDER	UVIS_5032	2006-283T10:00:00	0.688	10-Oct Tue 07:18 PM	Tue 07:58 PM	10-Oct Tue 12:18 PM	Tue 12:58 PM
CIRS_030IC_DSCAL1434_RIDER	CIRS_4000	2006-283T10:45:00	0.719	10-Oct Tue 07:33 PM	Tue 08:13 PM	10-Oct Tue 08:33 AM	Tue 08:33 AM
RPWS_030SA_INSURVEY001_PRIME	RPWS_30464	2006-283T15:00:00	0.896	10-Oct Tue 07:20 PM	Tue 08:01 PM	10-Oct Tue 12:20 PM	Tue 01:01 PM
CDA_030DR_1415SUOUT001_RIDER	CDA_524	2006-283T17:22:19	0.995	10-Oct Tue 07:29 PM	Tue 08:13 PM	10-Oct Tue 12:29 PM	Tue 01:13 PM