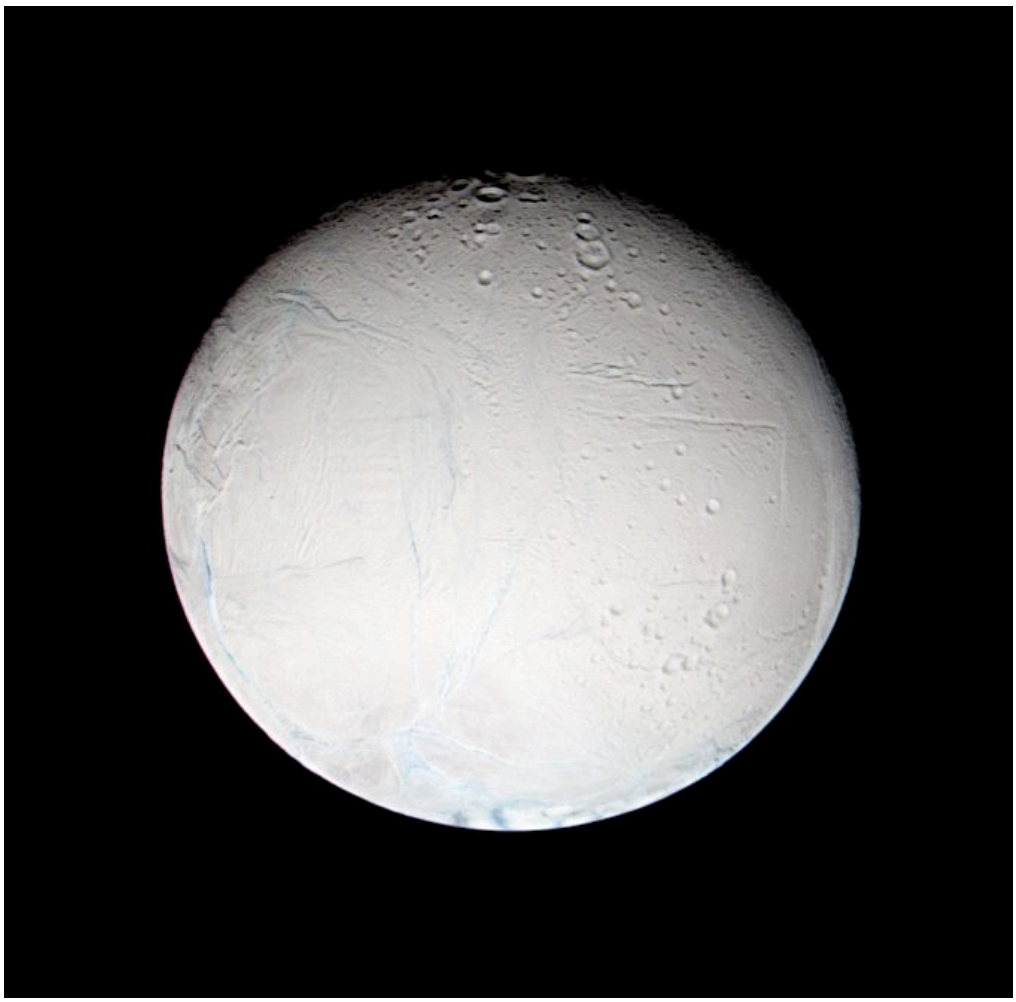
C A S S I N I



E n c e l a ∂ u s - 1

MISSION DESCRIPTION

March 2005

Jet Propulsion Laboratory
California Institute of Technology

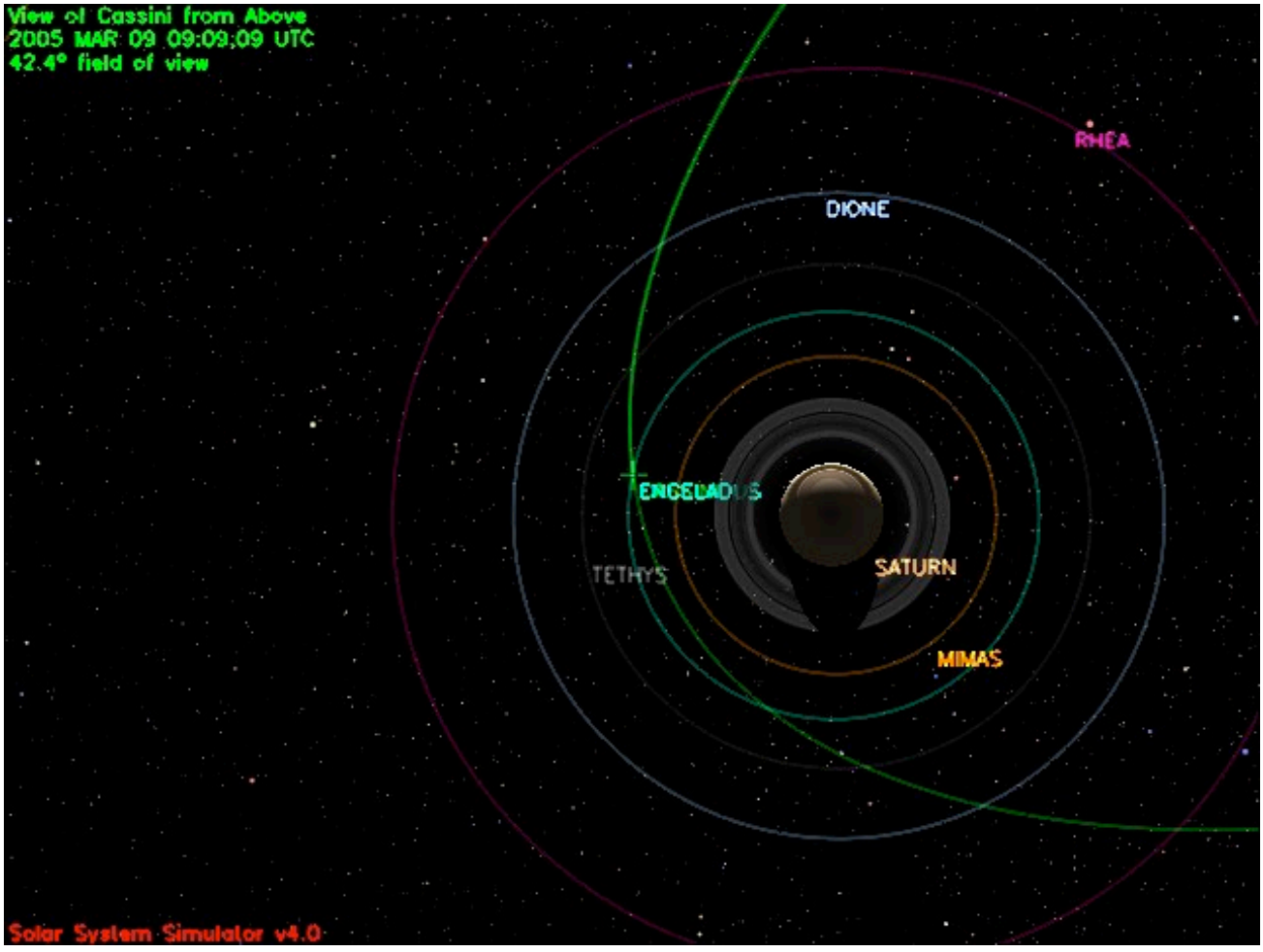
PD 699-100, Rev O (supplement)
JPL D-5564, Rev O (supplement)

1.1 OVERVIEW

Enceladus is the sixth largest moon of Saturn and will be Cassini's sixth targeted encounter (following Phoebe and four Titan flybys) since arriving at Saturn on 1 July 2004. Enceladus is similar in size, shape, and location to Mimas, yet it's surface is very different. While Mimas shows an old cratered surface, Enceladus appears to be bright and smooth indicating recent resurfacing.

The first of four targeted flybys of Enceladus will occur on Wednesday, 9 March 2005, at 09:08 SCET (02:19 AM Pacific Time). Cassini will pass within 504 km of Enceladus with a speed of 6.6 km/s (15,000 miles per hour). Enceladus is a triaxial ellipsoid (512x494x490 km) and Cassini will pass at about one Enceladus radii.

The encounter is set up with two approach maneuvers: an apoapsis maneuver (OTM#15) on 1 March and another maneuver (OTM #16) on 6 March, three days before the encounter. This Enceladus encounter is an inbound flyby with Saturn periapsis occurring just two and a half hours later. The flyby geometry is shown below.



1.2 ABOUT ENCELADUS

Enceladus was found by the Voyager spacecraft to be one of the most interesting objects in the Saturn system. Unlike the other icy satellites, the surface of Enceladus consists of

entire regions that appear to be relatively crater-free. Enceladus is known from ground-based observations to be the brightest object in the solar system, with a geometric albedo of unity. Additionally, Encelaldus orbits Saturn at the densest part of the E-ring, leading to suggestions that Enceladus itself is the source of the E-ring. These lines of evidence are suggestive of recent or current geologic activity on Enceladus. Such activity would be extremely unusual, because it would require internal heating; however, Enceladus is so small and icy that it is expected that any internal heat would have been lost long ago. Because Enceladus is so bright, it is the coldest of the Saturnian satellites - never warmer than 75K at noon. Ammonia (NH3) mixed with water ice would lower the melting temperature of water ice, allowing it to move from the interior, and the presence of ammonia at this heliocentric distance is not unexpected. However, so far, no ammonia has been detected in infrared spectra. The non-targeted flyby in Rev 3 suggested that the internal rock-ice ratio is higher than previously thought.

The key questions that will be addressed during this flyby are:

What is the composition of the surface? Are ammonia and other volatiles present (ammonia decreases the melting point dramatically: it is the only reasonable way to create liquid in the interior)? Are there any identifiable opaque materials (minerals, organics)?

Why is Enceladus so bright?

Is Enceladus currently active? If it is, what is the energy source?

How did the plains and grooves form? When were they formed (crater counts)? What are the main geological and geophysical processes?

What is the relationship between Enceladus and the E-ring?

What is the particle environment around the satellite?

What is the satellite's dynamical history? Has its orbit been more eccentric in the past?

What is the interior structure of Enceladus?

1.3 ENCELADUS-1 SCIENCE ACTIVITIES

CIRS measurements on the day and night sides of Enceladus will map surface temperatures to determine thermal inertia. If active sources are present, CIRS will determine their spatial distribution and energy output. CIRS will search for spectral signatures on the surface and in plumes (if present) to determine composition.

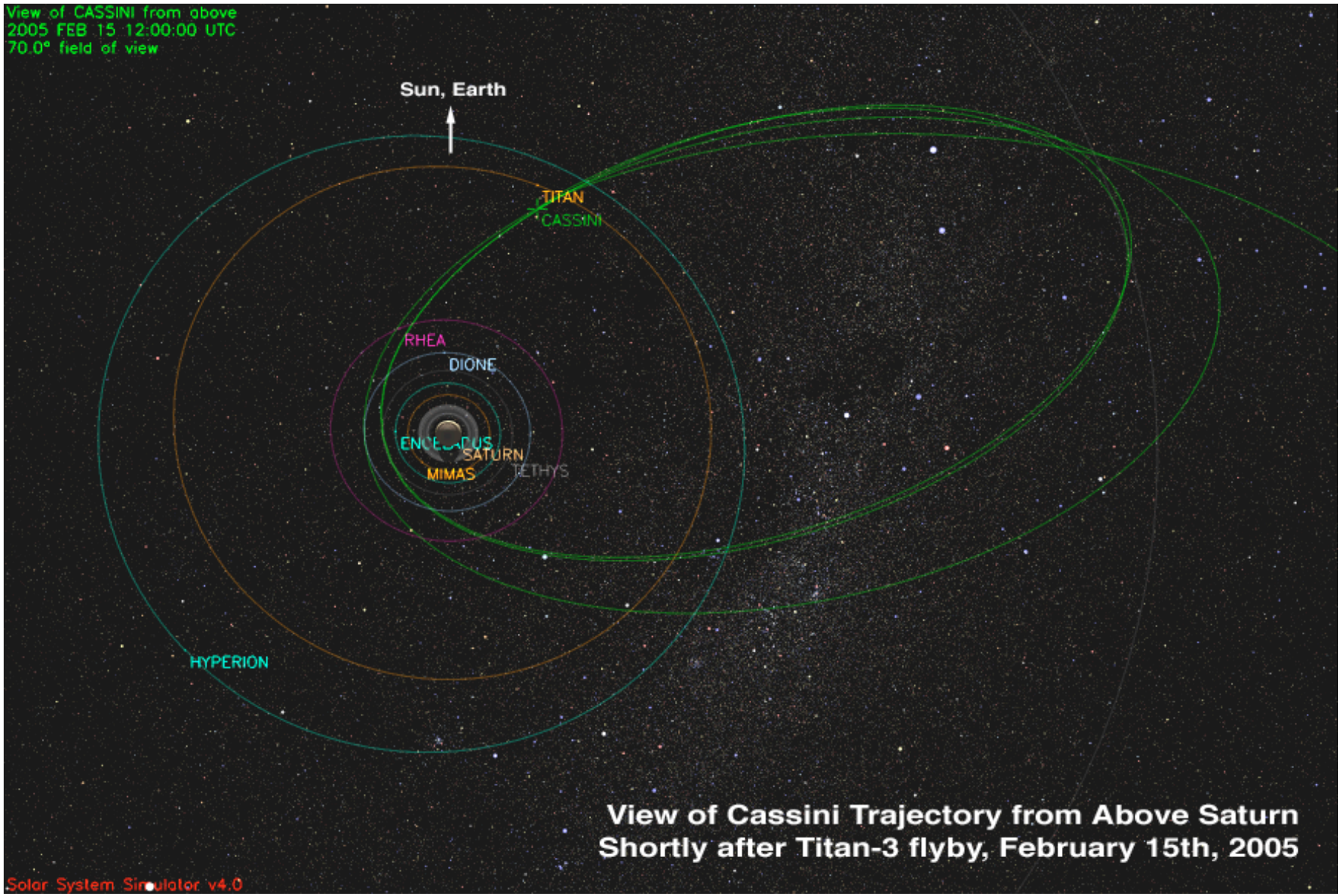
ISS will perform meter-scale resolution imaging to determine geological structures and investigate the satellite's history.

RADAR scatterometry of the surface will determine roughness at cm scales. Radiometry will probe the energy balance of Enceladus.

UVIS will make UV maps of the surface of Enceladus to understand surface composition and will look for emission features suggestive of a tenuous atmosphere.

VIMS will investigate the identification of minerals and other materials on the surface, and will perform mapping of the abundance and grain sizes of surficial materials.

MAPS instruments will examine the particle environment at ~500 km from the surface to determine the nature of material coming off the surface and the relationship between the satellite and the E-ring, and the satellite and its immediate magnetospheric particle environment.

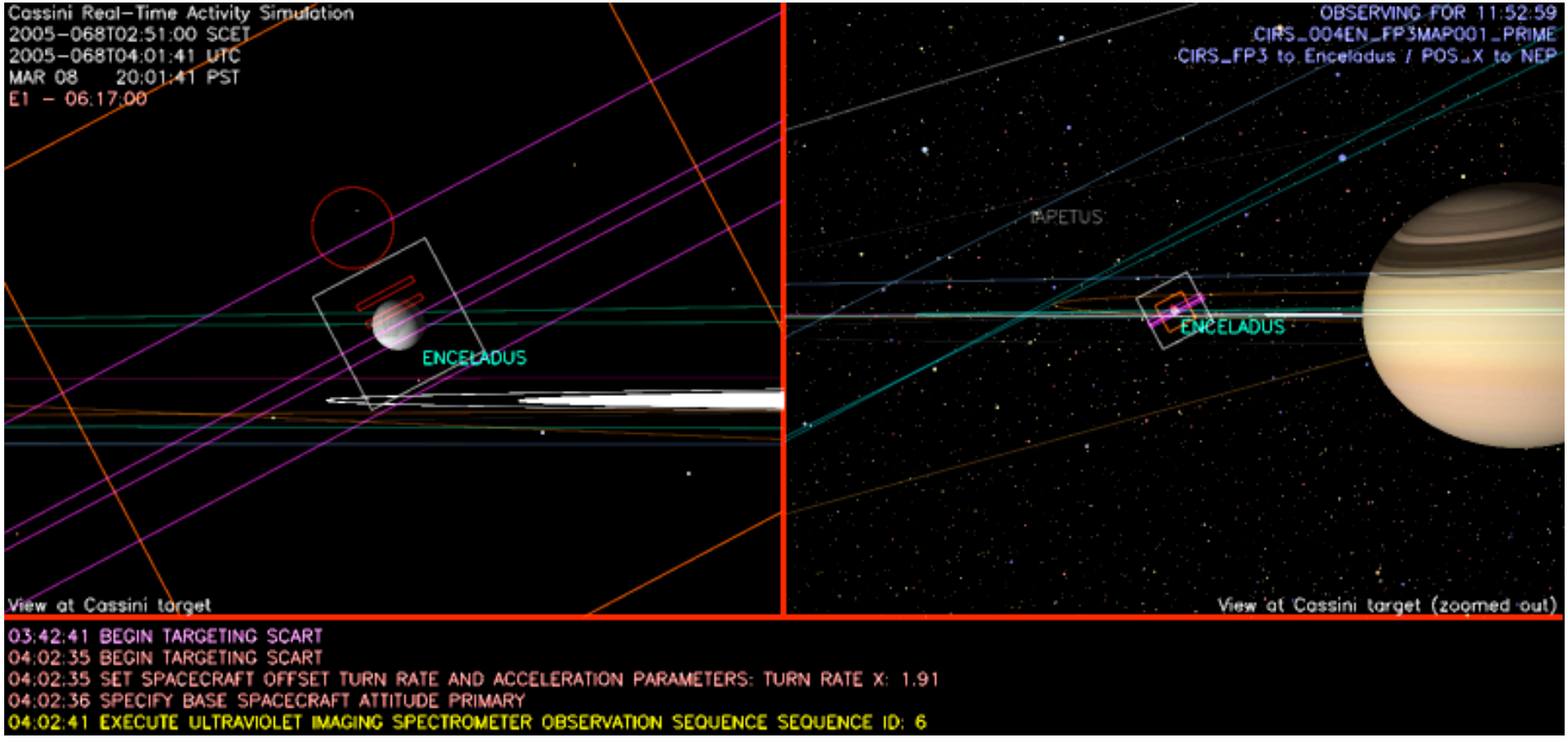

View of CASSINI from above
2005 FEB 15 12:00:00 UTC
70.0° field of view
Sun, Earth
TITAN
CASSINI
RHEA
DIONE
SATURN
MIMAS
TETHYS
HYPERION
View of Cassini Trajectory from Above Saturn
Shortly after Titan-3 flyby, February 15th, 2005
Solar System Simulator v4.0

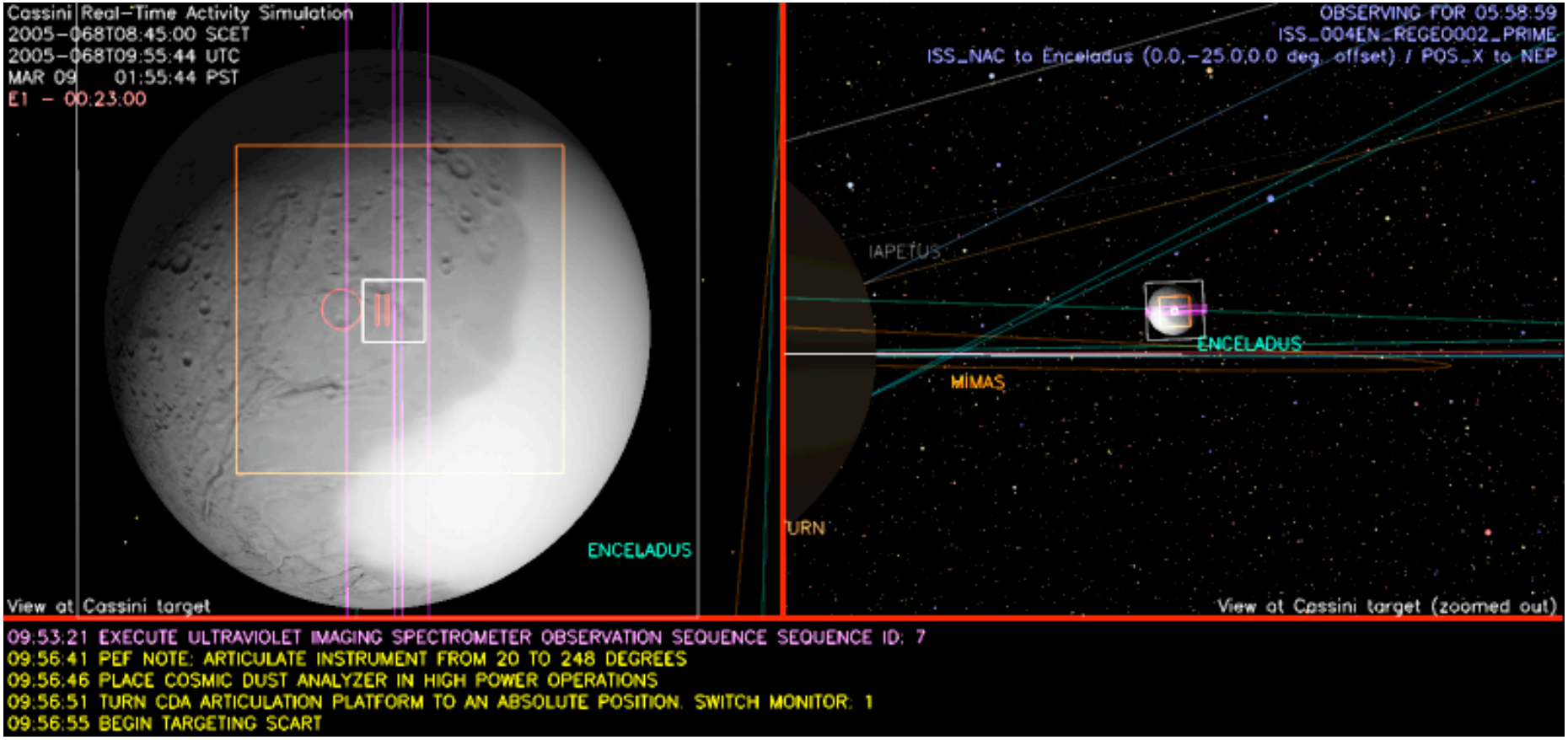
Cassini Enceladus Timeline - March 2005

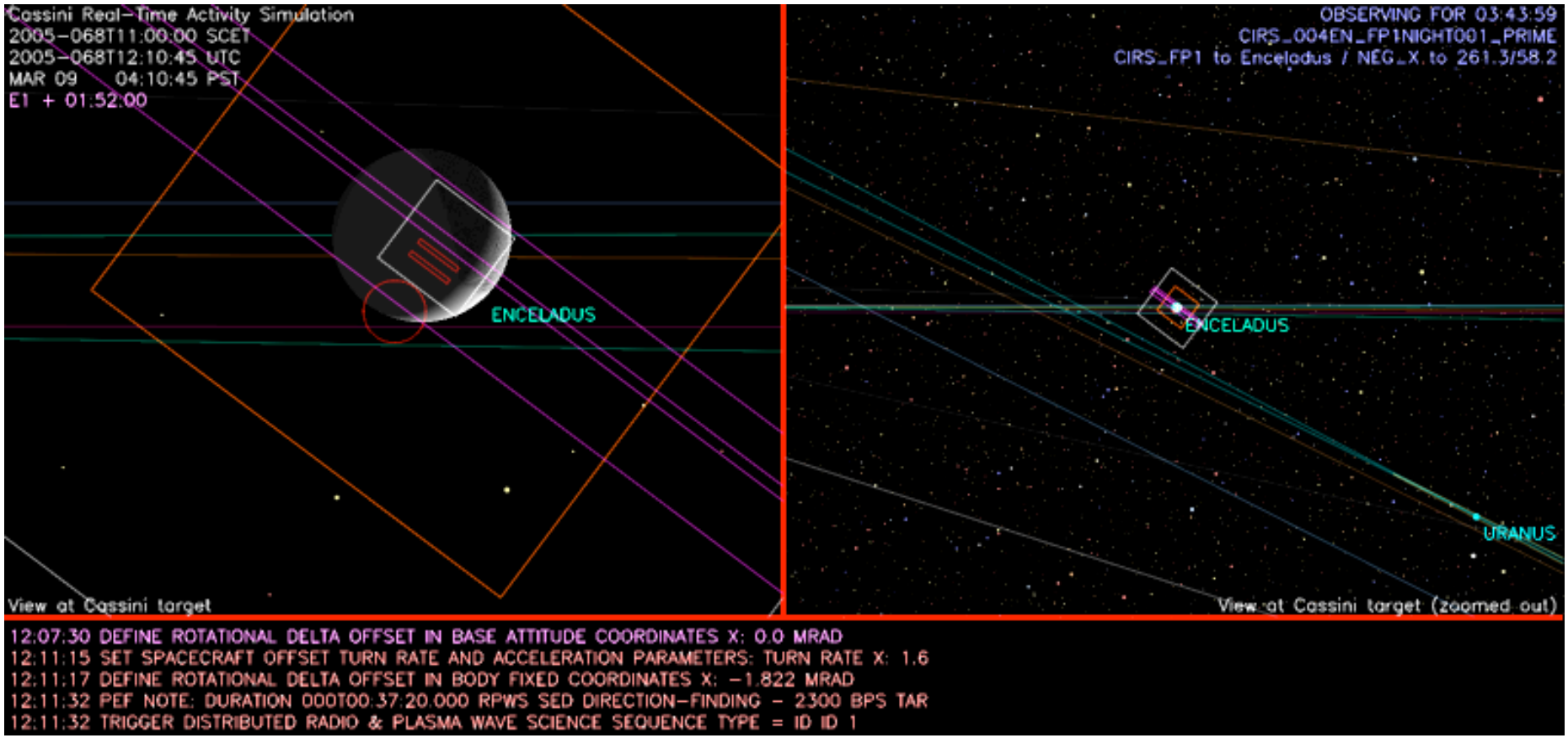
Colors: yellow = maneuvers; blue = geometry; pink = science-related; green = data playbacks

Orbiter UTC	Ground UTC	Pacific Time	Time wrt E1	Activity	Description
058T00:36	Feb 27 01:47	Sat Feb 26 05:47 PM	004EN-10d09h	Start of S09 background sequence	Start of 40-day sequence which contains Rev 4 Enceladus flyby
064T22:35	Mar 05 23:46	Sat Mar 05 03:46 PM	004EN-03d11h	**OTM #16 004EN Approach**	**004EN minus three day targeting maneuver**
065T22:20	Mar 06 23:31	Sun Mar 06 03:31 PM	004EN-02d11h	**OTM #16 Backup**	
066T22:35	Mar 07 23:46	Mon Mar 07 03:46 PM	004EN-01d11h	**9 hr playback to empty both SSRs**	**Goldstone 34m pass**
067T09:30	Mar 08 10:41	Tue Mar 08 02:41 AM	004EN-23h38m	**Saturn mapping: VIMS, CIRS, UVIS**	10 hours of Saturn observations
067T19:30	Mar 08 20:41	Tue Mar 08 12:41 PM	004EN-13h38m	Turn to Earth-line	
067T19:50	Mar 08 21:01	Tue Mar 08 01:01 PM	004EN-13h18m	**3 hr 50 min playback to clear space off SSRs**	**Madrid 70m pass**
347T13:36	Dec 13 14:47	Tue Dec 13 06:47 AM	004EN+279d04h	Turn cameras to Enceladus	
068T00:00	Mar 09 01:11	Tue Mar 08 05:11 PM	004EN-09h08m	Tethys observation: VIMS, UVIS, CIRS	1 hr 31 min observation; ~220,000 km altitude
068T01:32	Mar 09 02:43	Tue Mar 08 06:43 PM	004EN-07h36m	Dead time	15 minutes long; used to accommodate changes in flyby time
068T01:49	Mar 09 03:00	Tue Mar 08 07:00 PM	004EN-07h19m	Begin low to medium resolution Enceladus obs	CIRS scans and ISS point-and-stare; UVIS and VIMS ride along
068T05:28	Mar 09 06:39	Tue Mar 08 10:39 PM	004EN-03h40m	Begin medium to high resolution obs	CIRS high-res scans and ISS mosaics; UVIS and VIMS ride along
068T07:48	Mar 09 08:59	Wed Mar 09 12:59 AM	004EN-01h20m	Begin highest-res observation	ISS mosaic; UVIS, VIMS, CIRS ride along
068T08:59	Mar 09 10:10	Wed Mar 09 02:10 AM	004EN-00h09m	turn to safe S/C attitude	
068T09:08	Mar 09 10:19	Wed Mar 09 02:19 AM	004EN+00h00m	**Rev 4 Enceladus flyby closest approach**	**Altitude = 504km (313.2 miles); 6.6 km/sec (14,765 mi/hr); low phase inbound, ~90 deg phase at closest approach, high phase outbound**
068T09:25	Mar 09 10:36	Wed Mar 09 02:36 AM	004EN+00h17m	**Dust Hazard**	54 min duration
068T10:19	Mar 09 11:30	Wed Mar 09 03:30 AM	004EN+01h11m	Turn back to Enceladus	
068T10:39	Mar 09 11:50	Wed Mar 09 03:50 AM	004EN+01h31m	High-phase/night side mapping of Enceladus	phase angle ~ 130 deg
068T11:24	Mar 09 12:35	Wed Mar 09 04:35 AM	004EN+02h16m	Tethys observations	
068T11:55	Mar 09 13:06	Wed Mar 09 05:06 AM	004EN+02h47m	Tethys closest approach (83,033 km)	Non-targeted
068T12:09	Mar 09 13:20	Wed Mar 09 05:20 AM	004EN+03h01m	RADAR observations of Enceladus	scatterometry and radiometry
068T14:07	Mar 09 15:18	Wed Mar 09 07:18 AM	004EN+04h59m	Dead time	15 minutes long; used to accommodate changes in flyby time
068T14:22	Mar 09 15:33	Wed Mar 09 07:33 AM	004EN+05h14m	Turn to Earth-line	
068T14:46	Mar 09 15:57	Wed Mar 09 07:57 AM	004EN+05h38m	**Begin playback of 004EN data (see PB schedule)**	**Madrid 70m pass; 3 hr 4 min pass**
068T17:50	Mar 09 19:01	Wed Mar 09 11:01 AM	004EN+08h42m	turn back to Enceladus	
068T18:25	Mar 09 19:36	Wed Mar 09 11:36 AM	004EN+09h17m	Final Enceladus observation	~162,000 km altitude
068T21:00	Mar 09 22:11	Wed Mar 09 02:11 PM	004EN+11h52m	Final Tethys observation	~190,000 km altitude
068T23:11	Mar 10 00:22	Wed Mar 09 04:22 PM	004EN+14h03m	turn to Earth for final Enceladus data downlink	
068T23:26	Mar 10 00:37	Wed Mar 09 04:37 PM	004EN+14h18m	**Final playback of 004EN data (see PB schedule)**	**Goldstone 70m pass; 8 hr pass**

1.4 Titan-4 Sample Snapshots




Cassini Real-Time Activity Simulation
2005-068T08:45:00 SCET
2005-068T09:55:44 UTC
MAR 09 01:55:44 PST
E1 - 00:23:00
ENCELADUS
View at Cassini target
OBSERVING FOR 05:58:59
ISS_004EN_REGEO002_PRIME
ISS_NAC to Enceladus (0.0,-25.0,0.0 deg. offset) / POS_X to NEP
IAPETUS
ENCELADUS
MIMAS
URN
View at Cassini target (zoomed out)
09:53:21 EXECUTE ULTRAVIOLET IMAGING SPECTROMETER OBSERVATION SEQUENCE SEQUENCE ID: 7
09:56:41 PEF NOTE: ARTICULATE INSTRUMENT FROM 20 TO 248 DEGREES
09:56:46 PLACE COSMIC DUST ANALYZER IN HIGH POWER OPERATIONS
09:56:51 TURN CDA ARTICULATION PLATFORM TO AN ABSOLUTE POSITION. SWITCH MONITOR: 1
09:56:55 BEGIN TARGETING SCART


Cassini Real-Time Activity Simulation
2005-068T11:00:00 SCET
2005-068T12:10:45 UTC
MAR 09 04:10:45 PST
E1 + 01:52:00
ENCELADUS
View at Cassini target
OBSERVING FOR 03:43:59
CIRS_004EN_FP1NIGHT001_PRIME
CIRS_FP1 to Enceladus / NEG_X to 261.3/58.2
ENCELADUS
URANUS
View at Cassini target (zoomed out)
12:07:30 DEFINE ROTATIONAL DELTA OFFSET IN BASE ATTITUDE COORDINATES X: 0.0 MRAD
12:11:15 SET SPACECRAFT OFFSET TURN RATE AND ACCELERATION PARAMETERS: TURN RATE X: 1.6
12:11:17 DEFINE ROTATIONAL DELTA OFFSET IN BODY FIXED COORDINATES X: -1.822 MRAD
12:11:32 PEF NOTE: DURATION 000T00:37:20.000 RPWS SED DIRECTION-FINDING - 2300 BPS TAR
12:11:32 TRIGGER DISTRIBUTED RADIO & PLASMA WAVE SCIENCE SEQUENCE TYPE = ID ID 1

1.5 E1 DATA RECORDING AND PLAYBACK

The E1 SSR playback will be done over two stations. The first downlink begins on DOY 068 (Wednesday, 9 March) at 14:46 SCET (15:57 received on ground, 7:57 am PST). The first 2.8 Gb will be played back over the first pass at Madrid.

The second playback will be over Goldstone and will downlink the remaining 1.6 Gb of data. The second downlink begins at 23:26 SCET(00:37 DOY 069 received on the ground, 04:37 pm PST).

The table of playback times follows.

Enceladus 4EN Approximate Playback Timeline

Event or Observation	Observation Type (APGEN)	Observation Record Start Time (yyyy-dddThh:mm:ss) (SCET)	Record Start Time - Reference Epoch (ddThh:mm)	Start Playback (Ground UTC)	Start Playback (Pacific Time)
CAPS_004SA_SURVEY005_RIDER	CAPS_16000	2005-067T23:40:00	-00T09:28	09-Mar Wed 04:01 PM	09-Mar Wed 08:01 AM
CDA_004DR_0800DUST024_RIDER	CDA_524	2005-067T23:40:00	-00T09:28	09-Mar Wed 04:01 PM	09-Mar Wed 08:01 AM
CDA_004OT_DRATE001_RIDER	CDA_524	2005-067T23:40:00	-00T09:28	09-Mar Wed 04:01 PM	09-Mar Wed 08:01 AM
INMS_004SA_FUSERVEY001_RSS	**INMS_1498**	**2005-067T23:40:00**	**-00T09:28**	**09-Mar Wed 04:01 PM**	**09-Mar Wed 08:01 AM**
INMS_004SA_INMAGSURV001_RIDER	**INMS_1498**	**2005-067T23:40:00**	**-00T09:28**	**09-Mar Wed 04:01 PM**	**09-Mar Wed 08:01 AM**
MAG_004OT_SURVEY001_PRIME	MAG_1976	2005-067T23:40:00	-00T09:28	09-Mar Wed 04:01 PM	09-Mar Wed 08:01 AM
MIMI_004CO_SURVEY004_RIDER	**MIMI_8000**	**2005-067T23:40:00**	**-00T09:28**	**09-Mar Wed 04:01 PM**	**09-Mar Wed 08:01 AM**
RPWS_004SA_INSURVEY001_PRIME	RPWS_30464	2005-067T23:40:00	-00T09:28	09-Mar Wed 04:01 PM	09-Mar Wed 08:01 AM
UVIS_004SW_IPHSURVEY022_RIDER	UVIS_5032	2005-067T23:40:00	-00T09:28	09-Mar Wed 04:01 PM	09-Mar Wed 08:01 AM
CIRS_004EN_ENCELADUS001_VIMS	CIRS_4000	2005-068T00:00:00	-00T09:08	09-Mar Wed 04:02 PM	09-Mar Wed 08:02 AM
UVIS_004TE_ICYLON006_VIMS	UVIS_5032	2005-068T00:00:00	-00T09:08	09-Mar Wed 04:02 PM	09-Mar Wed 08:02 AM
VIMS_004TE_TETHYS001_PRIME	**VIMS_18432**	**2005-068T00:00:00**	**-00T09:08**	**09-Mar Wed 04:02 PM**	**09-Mar Wed 08:02 AM**
CDA_004RE_0800ERNGX003_PRIME	CDA_524	2005-068T00:39:48	-00T08:28	09-Mar Wed 04:10 PM	09-Mar Wed 08:10 AM
MIMI_004DR_INCADUST001_PRIME	**MIMI_8000**	**2005-068T00:42:00**	**-00T08:26**	**09-Mar Wed 04:11 PM**	**09-Mar Wed 08:11 AM**
CDA_004DR_0700DUST019_RIDER	CDA_524	2005-068T01:30:47	-00T07:37	09-Mar Wed 04:22 PM	09-Mar Wed 08:22 AM
CIRS_004EN_FP3MAP001_PRIME	CIRS_4000	2005-068T01:48:01	-00T07:19	09-Mar Wed 04:23 PM	09-Mar Wed 08:23 AM
UVIS_004EN_ICYMAP001_CIRS	UVIS_32096	2005-068T01:48:01	-00T07:19	09-Mar Wed 04:23 PM	09-Mar Wed 08:23 AM
VIMS_004EN_ENCELADUS021_CIRS	**VIMS_18432**	**2005-068T01:48:01**	**-00T07:19**	**09-Mar Wed 04:23 PM**	**09-Mar Wed 08:23 AM**
CIRS_004EN_RIDER002_ISS	CIRS_4000	2005-068T02:52:01	-00T06:16	09-Mar Wed 04:33 PM	09-Mar Wed 08:33 AM
ISS_004EN_N3CPOL002_PRIME	**ISS_Phot_1_by_1**	**2005-068T02:52:01**	**-00T06:16**	**09-Mar Wed 04:33 PM**	**09-Mar Wed 08:33 AM**
UVIS_004EN_ICYMAP002_ISS	UVIS_32096	2005-068T02:52:01	-00T06:16	09-Mar Wed 04:33 PM	09-Mar Wed 08:33 AM
VIMS_004EN_ENCELADUS011_ISS	**VIMS_18432**	**2005-068T02:52:01**	**-00T06:16**	**09-Mar Wed 04:33 PM**	**09-Mar Wed 08:33 AM**
CDA_004RE_0700ERNGX003_PRIME	CDA_524	2005-068T02:52:55	-00T06:15	09-Mar Wed 04:33 PM	09-Mar Wed 08:33 AM
CIRS_004EN_FP3MAP002_PRIME	CIRS_4000	2005-068T03:07:01	-00T06:00	09-Mar Wed 04:41 PM	09-Mar Wed 08:41 AM
UVIS_004EN_ICYMAP003_CIRS	UVIS_32096	2005-068T03:07:01	-00T06:00	09-Mar Wed 04:41 PM	09-Mar Wed 08:41 AM
VIMS_004EN_ENCELADUS012_CIRS	**VIMS_18432**	**2005-068T03:07:01**	**-00T06:00**	**09-Mar Wed 04:41 PM**	**09-Mar Wed 08:41 AM**
CDA_004DR_0600DUST020_RIDER	CDA_524	2005-068T03:23:55	-00T05:44	09-Mar Wed 04:44 PM	09-Mar Wed 08:44 AM
CDA_004DI_0600DIORX004_PRIME	CDA_524	2005-068T03:57:43	-00T05:10	09-Mar Wed 04:49 PM	09-Mar Wed 08:49 AM
CIRS_004EN_TBDISS2003_ISS	CIRS_4000	2005-068T04:07:01	-00T05:01	09-Mar Wed 04:51 PM	09-Mar Wed 08:51 AM
ISS_004EN_N4COLR003_PRIME	**ISS_Phot_1_by_1**	**2005-068T04:07:01**	**-00T05:01**	**09-Mar Wed 04:51 PM**	**09-Mar Wed 08:51 AM**
UVIS_004EN_ICYMAP004_ISS	UVIS_32096	2005-068T04:07:01	-00T05:01	09-Mar Wed 04:51 PM	09-Mar Wed 08:51 AM

Enceladus 4EN Approximate Playback Timeline

Event or Observation	Observation Type (APGEN)	Observation Record Start Time (yyyy-dddThh:mm:ss) (SCET)	Record Start Time - Reference Epoch (ddThh:mm)	Start Playback (Ground UTC)	Start Playback (Pacific Time)
VIMS_004EN_ENCELADUS013_ISS	VIMS_18432	2005-068T04:07:01	-00T05:01	09-Mar Wed 04:51 PM	09-Mar Wed 08:51 AM
CDA_004DR_0600DUST021_RIDER	CDA_524	2005-068T04:28:43	-00T04:39	09-Mar Wed 04:56 PM	09-Mar Wed 08:56 AM
CIRS_004EN_FP1COMP001_PRIME	CIRS_4000	2005-068T04:37:01	-00T04:30	09-Mar Wed 04:58 PM	09-Mar Wed 08:58 AM
UVIS_004EN_ICYMAP005_CIRS	UVIS_32096	2005-068T04:37:01	-00T04:30	09-Mar Wed 04:58 PM	09-Mar Wed 08:58 AM
VIMS_004EN_ENCELADUS014_CIRS	VIMS_18432	2005-068T04:37:01	-00T04:30	09-Mar Wed 04:58 PM	09-Mar Wed 08:58 AM
RPWS_004SA_SEDDF001_PRIME	RPWS_30464	2005-068T04:38:22	-00T04:29	09-Mar Wed 04:58 PM	09-Mar Wed 08:58 AM
CIRS_004EN_TBDISS3003_ISS	CIRS_4000	2005-068T05:27:01	-00T03:41	09-Mar Wed 05:06 PM	09-Mar Wed 09:06 AM
ISS_004EN_N4COLR004_PRIME	ISS_Phot_1_by_1	2005-068T05:27:01	-00T03:41	09-Mar Wed 05:06 PM	09-Mar Wed 09:06 AM
UVIS_004EN_ICYMAP006_ISS	UVIS_32096	2005-068T05:27:01	-00T03:41	09-Mar Wed 05:06 PM	09-Mar Wed 09:06 AM
VIMS_004EN_ENCELADUS015_ISS	VIMS_18432	2005-068T05:27:01	-00T03:41	09-Mar Wed 05:06 PM	09-Mar Wed 09:06 AM
CDA_004RE_0500ERNGX003_PRIME	CDA_524	2005-068T05:30:36	-00T03:37	09-Mar Wed 05:08 PM	09-Mar Wed 09:08 AM
1WAY_TO_2WAY_GAP_M70METNON068	MILESTONE	~5 min. playback gap		09-Mar Wed 05:17 PM	09-Mar Wed 09:17 AM
CIRS_004EN_FP3MAP003_PRIME	CIRS_4000	2005-068T05:52:01	-00T03:16	09-Mar Wed 05:19 PM	09-Mar Wed 09:19 AM
UVIS_004EN_ICYMAP007_CIRS	UVIS_32096	2005-068T05:52:01	-00T03:16	09-Mar Wed 05:19 PM	09-Mar Wed 09:19 AM
VIMS_004EN_ENCELADUS016_CIRS	VIMS_18432	2005-068T05:52:01	-00T03:16	09-Mar Wed 05:19 PM	09-Mar Wed 09:19 AM
CDA_004DR_0500DUST022_RIDER	CDA_524	2005-068T06:01:35	-00T03:06	09-Mar Wed 05:21 PM	09-Mar Wed 09:21 AM
CIRS_004EN_TBDISS4003_ISS	CIRS_4000	2005-068T06:47:01	-00T02:21	09-Mar Wed 05:29 PM	09-Mar Wed 09:29 AM
ISS_004EN_NGNPOL001_PRIME	ISS_Phot_1_by_1	2005-068T06:47:01	-00T02:21	09-Mar Wed 05:29 PM	09-Mar Wed 09:29 AM
UVIS_004EN_ICYMAP008_ISS	UVIS_32096	2005-068T06:47:01	-00T02:21	09-Mar Wed 05:29 PM	09-Mar Wed 09:29 AM
VIMS_004EN_ENCELADUS017_ISS	VIMS_18432	2005-068T06:47:01	-00T02:21	09-Mar Wed 05:29 PM	09-Mar Wed 09:29 AM
CDA_004TE_0500TEORX003_PRIME	CDA_524	2005-068T06:50:24	-00T02:17	09-Mar Wed 05:31 PM	09-Mar Wed 09:31 AM
MAG_004EN_ENTAR001_RIDER	MAG_1976	2005-068T07:08:01	-00T02:00	09-Mar Wed 05:42 PM	09-Mar Wed 09:42 AM
CDA_004DR_0500DUST023_RIDER	CDA_524	2005-068T07:15:52	-00T01:52	09-Mar Wed 05:47 PM	09-Mar Wed 09:47 AM
CIRS_004EN_FP1DAY001_PRIME	CIRS_4000	2005-068T07:27:01	-00T01:41	09-Mar Wed 05:54 PM	09-Mar Wed 09:54 AM
UVIS_004EN_ICYMAP009_CIRS	UVIS_32096	2005-068T07:27:01	-00T01:41	09-Mar Wed 05:54 PM	09-Mar Wed 09:54 AM
VIMS_004EN_ENCELADUS018_CIRS	VIMS_18432	2005-068T07:27:01	-00T01:41	09-Mar Wed 05:54 PM	09-Mar Wed 09:54 AM
CDA_004EN_ENC1DUST001_RSS	CDA_524	2005-068T07:38:01	-00T01:30	09-Mar Wed 05:57 PM	09-Mar Wed 09:57 AM
CDA_004RE_0400ERNGX003_PRIME	CDA_524	2005-068T07:39:22	-00T01:28	09-Mar Wed 05:57 PM	09-Mar Wed 09:57 AM
CIRS_004EN_TBDISS5003_ISS	CIRS_4000	2005-068T07:47:01	-00T01:20	09-Mar Wed 06:00 PM	09-Mar Wed 10:00 AM
ISS_004EN_REGEO002_PRIME	ISS_Phot_1_by_1	2005-068T07:47:01	-00T01:20	09-Mar Wed 06:00 PM	09-Mar Wed 10:00 AM
UVIS_004EN_ICYMAP010_ISS	UVIS_32096	2005-068T07:47:01	-00T01:20	09-Mar Wed 06:00 PM	09-Mar Wed 10:00 AM

Enceladus 4EN Approximate Playback Timeline

Event or Observation	Observation Type (APGEN)	Observation Record Start Time (yyyy-dddThh:mm:ss) (SCET)	Record Start Time - Reference Epoch (ddThh:mm)	Start Playback (Ground UTC)	Start Playback (Pacific Time)
VIMS_004EN_ENCELADUS019_ISS	VIMS_18432	2005-068T07:47:01	-00T01:20	09-Mar Wed 06:00 PM	09-Mar Wed 10:00 AM
MAG_004EN_ENTAR002_RIDER	MAG_1976	2005-068T08:05:00	-00T01:03	09-Mar Wed 06:16 PM	09-Mar Wed 10:16 AM
MAG_004OT_INTFLD001_PRIME	MAG_1976	2005-068T08:05:00	-00T01:03	09-Mar Wed 06:16 PM	09-Mar Wed 10:16 AM
CDA_004DR_0400DUST024_RIDER	CDA_524	2005-068T08:10:36	-00T00:57	09-Mar Wed 06:20 PM	09-Mar Wed 10:20 AM
INMS_004EN_ICYSATIB001_RSS	INMS_1498	2005-068T08:38:01	-00T00:30	09-Mar Wed 06:43 PM	09-Mar Wed 10:43 AM
MIMI_004EN_ENCOUNTER001_RSS	MIMI_8000	2005-068T08:38:01	-00T00:30	09-Mar Wed 06:43 PM	09-Mar Wed 10:43 AM
RPWS_004EN_ENCA001_PRIME	RPWS_182784	2005-068T08:38:01	-00T00:30	09-Mar Wed 06:43 PM	09-Mar Wed 10:43 AM
CAPS_004EN_ENCOUNTER001_RIDER	CAPS_16000	2005-068T08:39:00	-00T00:29	09-Mar Wed 06:45 PM	09-Mar Wed 10:45 AM
INMS_004EN_ICYSATCL001_RSS	INMS_1498	2005-068T08:53:01	-00T00:14	10-Mar Thu 01:19 AM	09-Mar Wed 05:19 PM
CIRS_004EN_ENCELADUS004_RSS	CIRS_4000	2005-068T08:58:01	-00T00:10	10-Mar Thu 01:27 AM	09-Mar Wed 05:27 PM
MP_004EN_FLYBYE001_NA	FLYBY	2005-068T09:08:01	00T00:00	10-Mar Thu 01:35 AM	09-Mar Wed 05:35 PM
CDA_004EN_0400ENORX003_PRIME	CDA_524	2005-068T09:10:05	00T00:02	10-Mar Thu 01:38 AM	09-Mar Wed 05:38 PM
INMS_004EN_ICYSATOB001_RSS	INMS_1498	2005-068T09:23:01	00T00:14	10-Mar Thu 01:50 AM	09-Mar Wed 05:50 PM
INMS_004SA_INMAGSURV002_RIDER	INMS_1498	2005-068T09:38:01	00T00:30	10-Mar Thu 02:04 AM	09-Mar Wed 06:04 PM
MIMI_004DR_INCADUST002_PRIME	MIMI_8000	2005-068T09:38:01	00T00:30	10-Mar Thu 02:04 AM	09-Mar Wed 06:04 PM
RPWS_004SA_SEDDF002_PRIME	RPWS_30464	2005-068T09:38:01	00T00:30	10-Mar Thu 02:04 AM	09-Mar Wed 06:04 PM
CDA_004DR_0400DUST025_RIDER	CDA_524	2005-068T09:45:39	00T00:37	10-Mar Thu 05:18 AM	09-Mar Wed 09:18 PM
CAPS_004SA_SURVEY002_RIDER	CAPS_16000	2005-068T09:53:09	00T00:45	10-Mar Thu 05:18 AM	09-Mar Wed 09:18 PM
RADAR_004OT_WARM4SCAT001_RIDER	RADAR_364800	2005-068T10:18:01	00T01:09	10-Mar Thu 05:21 AM	09-Mar Wed 09:21 PM
ISS_004EN_FP1NIGHT001_CIRS	ISS_Phot_1_by_1	2005-068T10:38:01	00T01:30	10-Mar Thu 05:22 AM	09-Mar Wed 09:22 PM
VIMS_004EN_ENCELADUS008_CIRS	VIMS_18432	2005-068T10:38:01	00T01:30	10-Mar Thu 05:22 AM	09-Mar Wed 09:22 PM
RPWS_004SA_WHISTLER001_PRIME	RPWS_182784	2005-068T10:38:22	00T01:30	10-Mar Thu 05:23 AM	09-Mar Wed 09:23 PM
CIRS_004EN_FP1NIGHT001_PRIME	CIRS_4000	2005-068T10:42:01	00T01:33	10-Mar Thu 05:28 AM	09-Mar Wed 09:28 PM
UVIS_004EN_ICYMAP011_CIRS	UVIS_32096	2005-068T10:42:01	00T01:33	10-Mar Thu 05:28 AM	09-Mar Wed 09:28 PM
RPWS_004SA_SEDDF003_PRIME	RPWS_30464	2005-068T10:53:22	00T01:45	10-Mar Thu 05:47 AM	09-Mar Wed 09:47 PM
CDA_004RE_0300ERNGX002_PRIME	CDA_524	2005-068T10:55:12	00T01:47	10-Mar Thu 05:48 AM	09-Mar Wed 09:48 PM
CIRS_004TE_FP1FAZ0P5351_VIMS	CIRS_4000	2005-068T11:23:01	00T02:15	10-Mar Thu 05:58 AM	09-Mar Wed 09:58 PM
ISS_004TE_TETHYS004_VIMS	ISS_Phot_1_by_1	2005-068T11:23:01	00T02:15	10-Mar Thu 05:58 AM	09-Mar Wed 09:58 PM
UVIS_004TE_ICYLON007_VIMS	UVIS_5032	2005-068T11:23:01	00T02:15	10-Mar Thu 05:58 AM	09-Mar Wed 09:58 PM
VIMS_004TE_TETHYS004_PRIME	VIMS_18432	2005-068T11:23:01	00T02:15	10-Mar Thu 05:58 AM	09-Mar Wed 09:58 PM
RPWS_004SA_HRSED001_PRIME	RPWS_182784	2005-068T11:30:42	00T02:22	10-Mar Thu 06:01 AM	09-Mar Wed 10:01 PM

Enceladus 4EN Approximate Playback Timeline

Event or Observation	Observation Type (APGEN)	Observation Record Start Time (yyyy-dddThh:mm:ss) (SCET)	Record Start Time - Reference Epoch (ddThh:mm)	Start Playback (Ground UTC)	Start Playback (Pacific Time)
RPWS_004SA_SEDDF004_PRIME	RPWS_30464	2005-068T11:35:42	00T02:27	10-Mar Thu 06:08 AM	09-Mar Wed 10:08 PM
INMS_004SA_INMAGSURV003_RIDER	INMS_1498	2005-068T11:39:15	00T02:31	10-Mar Thu 06:10 AM	09-Mar Wed 10:10 PM
RADAR_004EN_SCATTRAD001_PRIME	RADAR_364800	2005-068T12:08:01	00T03:00	10-Mar Thu 06:18 AM	09-Mar Wed 10:18 PM
CDA_004DR_0400DUST026_RIDER	CDA_524	2005-068T12:45:39	00T03:37	10-Mar Thu 06:36 AM	09-Mar Wed 10:36 PM
RPWS_004SA_SEDDF005_PRIME	RPWS_30464	2005-068T12:53:22	00T03:45	10-Mar Thu 06:40 AM	09-Mar Wed 10:40 PM
CDA_004EN_0400ENORX004_PRIME	CDA_524	2005-068T13:55:12	00T04:47	10-Mar Thu 07:08 AM	09-Mar Wed 11:08 PM
CDA_004DR_0400DUST027_RIDER	CDA_524	2005-068T14:30:45	00T05:22	10-Mar Thu 07:16 AM	09-Mar Wed 11:16 PM
UVIS_004SW_IPHSURVEY023_RIDER	UVIS_5032	2005-068T14:46:00	00T05:37	10-Mar Thu 02:05 AM	09-Mar Wed 06:05 PM
MAG_004OT_SURVEY003_PRIME	MAG_1976	2005-068T15:10:00	00T06:01	10-Mar Thu 02:06 AM	09-Mar Wed 06:06 PM
CDA_004RE_0400ERNGX004_PRIME	CDA_524	2005-068T15:24:29	00T06:16	10-Mar Thu 02:07 AM	09-Mar Wed 06:07 PM
CDA_004DR_0500DUST028_RIDER	CDA_524	2005-068T15:55:42	00T06:47	10-Mar Thu 02:10 AM	09-Mar Wed 06:10 PM
CDA_004TE_0500TEORX004_PRIME	CDA_524	2005-068T16:24:58	00T07:16	10-Mar Thu 02:11 AM	09-Mar Wed 06:11 PM
CDA_004DR_0500DUST029_RIDER	CDA_524	2005-068T16:46:07	00T07:38	10-Mar Thu 02:13 AM	09-Mar Wed 06:13 PM
CDA_004RE_0500ERNGX004_PRIME	CDA_524	2005-068T17:37:05	00T08:29	10-Mar Thu 02:16 AM	09-Mar Wed 06:16 PM
CDA_004OT_DRATE002_RIDER	CDA_524	2005-068T17:50:00	00T08:41	10-Mar Thu 02:17 AM	09-Mar Wed 06:17 PM
INMS_004SA_FUSERVEY002_RSS	INMS_1498	2005-068T17:50:00	00T08:41	10-Mar Thu 02:17 AM	09-Mar Wed 06:17 PM
MAG_004OT_SURVEY006_PRIME	MAG_1976	2005-068T17:50:00	00T08:41	10-Mar Thu 02:17 AM	09-Mar Wed 06:17 PM
RPWS_004CO_HIRATE003_CAPS	RPWS_30464	2005-068T18:00:00	00T08:51	10-Mar Thu 02:18 AM	09-Mar Wed 06:18 PM
CDA_004DR_0600DUST030_RIDER	CDA_524	2005-068T18:08:05	00T09:00	10-Mar Thu 02:20 AM	09-Mar Wed 06:20 PM
VIMS_004EN_ENCELADUS020_ISS	VIMS_18432	2005-068T18:10:00	00T09:01	10-Mar Thu 02:20 AM	09-Mar Wed 06:20 PM
ISS_004EN_OBSERV002_PRIME	ISS_Phot_1_by_1	2005-068T18:25:00	00T09:16	10-Mar Thu 02:23 AM	09-Mar Wed 06:23 PM
UVIS_004EN_ICYLON012_ISS	UVIS_5032	2005-068T18:25:00	00T09:16	10-Mar Thu 02:23 AM	09-Mar Wed 06:23 PM
CIRS_004EN_OBSERV002_ISS	CIRS_4000	2005-068T18:25:01	00T09:16	10-Mar Thu 02:23 AM	09-Mar Wed 06:23 PM
1WAY_TO_2WAY_GAP_G70METNON068	MILESTONE	~5 min. playback gap		10-Mar Thu 02:27 AM	09-Mar Wed 06:27 PM
RPWS_004SA_INSURVEY002_PRIME	RPWS_30464	2005-068T18:38:22	00T09:30	10-Mar Thu 02:29 AM	09-Mar Wed 06:29 PM
CDA_004DI_0600DIORX005_PRIME	CDA_524	2005-068T19:09:57	00T10:01	10-Mar Thu 02:45 AM	09-Mar Wed 06:45 PM
CDA_004DR_0600DUST031_RIDER	CDA_524	2005-068T19:40:57	00T10:32	10-Mar Thu 03:01 AM	09-Mar Wed 07:01 PM
CDA_004RE_0700ERNGX004_PRIME	CDA_524	2005-068T20:17:39	00T11:09	10-Mar Thu 03:18 AM	09-Mar Wed 07:18 PM
CDA_004DR_0700DUST032_RIDER	CDA_524	2005-068T20:48:38	00T11:40	10-Mar Thu 03:34 AM	09-Mar Wed 07:34 PM
CIRS_004TE_TETHYS003_ISS	CIRS_4000	2005-068T21:00:00	00T11:51	10-Mar Thu 03:40 AM	09-Mar Wed 07:40 PM
ISS_004TE_OBSERV002_PRIME	ISS_Phot_1_by_1	2005-068T21:00:00	00T11:51	10-Mar Thu 03:40 AM	09-Mar Wed 07:40 PM

Enceladus 4EN Approximate Playback Timeline

Event or Observation	Observation Type (APGEN)	Observation Record Start Time (yyyy-dddThh:mm:ss) (SCET)	Record Start Time - Reference Epoch (ddThh:mm)	Start Playback (Ground UTC)	Start Playback (Pacific Time)
UVIS_004TE_ICYLON008_ISS	UVIS_5032	2005-068T21:00:00	00T11:51	10-Mar Thu 03:40 AM	09-Mar Wed 07:40 PM
VIMS_004TE_TETHYS012_ISS	**VIMS_18432**	**2005-068T21:00:00**	**00T11:51**	**10-Mar Thu 03:40 AM**	**09-Mar Wed 07:40 PM**
CDA_004RE_0800ERNGX004_PRIME	CDA_524	2005-068T22:07:53	00T12:59	10-Mar Thu 04:10 AM	09-Mar Wed 08:10 PM
MIMI_004CO_SURVEY002_MAPS	**MIMI_8000**	**2005-068T22:57:28**	**00T13:49**	**10-Mar Thu 04:33 AM**	**09-Mar Wed 08:33 PM**
CDA_004DR_0800DUST025_RIDER	CDA_524	2005-068T22:58:52	00T13:50	10-Mar Thu 04:33 AM	09-Mar Wed 08:33 PM
UVIS_004SW_IPHSURVEY024_RIDER	UVIS_5032	2005-068T23:26:00	00T14:17	10-Mar Thu 07:25 AM	09-Mar Wed 11:25 PM
CDA_004RH_0900RHORX004_RIDER	CDA_524	2005-069T00:05:15	00T14:57	10-Mar Thu 04:37 AM	09-Mar Wed 08:37 PM
CDA_004DR_0900DUST026_RIDER	CDA_524	2005-069T00:56:14	00T15:48	10-Mar Thu 04:46 AM	09-Mar Wed 08:46 PM
CDA_004RI_0900RINGM004_RIDER	CDA_524	2005-069T01:40:17	00T16:32	10-Mar Thu 04:53 AM	09-Mar Wed 08:53 PM
INMS_004SA_SURVEY002_RIDER	**INMS_1498**	**2005-069T02:15:52**	**00T17:07**	**10-Mar Thu 04:58 AM**	**09-Mar Wed 08:58 PM**
CDA_004DR_1000DUST027_RIDER	CDA_524	2005-069T02:31:16	00T17:23	10-Mar Thu 05:00 AM	09-Mar Wed 09:00 PM
CAPS_004CO_DISTTORUS002_PRIME	CAPS_16000	2005-069T03:14:56	00T18:06	10-Mar Thu 05:06 AM	09-Mar Wed 09:06 PM
INMS_004CO_DISTTORUS001_CAPS	**INMS_1498**	**2005-069T03:14:56**	**00T18:06**	**10-Mar Thu 05:06 AM**	**09-Mar Wed 09:06 PM**
RPWS_004CO_DISTTORUS001_CAPS	RPWS_30464	2005-069T03:14:56	00T18:06	10-Mar Thu 05:06 AM	09-Mar Wed 09:06 PM
CDA_004RI_1000RINGM004_RIDER	CDA_524	2005-069T03:52:46	00T18:44	10-Mar Thu 05:14 AM	09-Mar Wed 09:14 PM
CDA_004DR_1100DUST028_RIDER	CDA_524	2005-069T04:43:45	00T19:35	10-Mar Thu 07:40 AM	09-Mar Wed 11:40 PM
MAG_004CO_DISTTORUS001_MAPS	MAG_1976	2005-069T06:59:00	00T21:50	10-Mar Thu 08:13 AM	10-Mar Thu 12:13 AM
RPWS_004CO_DISTTORUS002_CAPS	RPWS_30464	2005-069T06:59:00	00T21:50	10-Mar Thu 08:13 AM	10-Mar Thu 12:13 AM

Created March 6, 2005

Last Updated: 3/07/05 - Subject to change.
Orbiter UTC is the actual time of the spacecraft event.
Ground UTC is the time when the signal reaches Earth. It takes about 1 hour and 8 minutes for the signal to travel from the spacecraft to Earth.