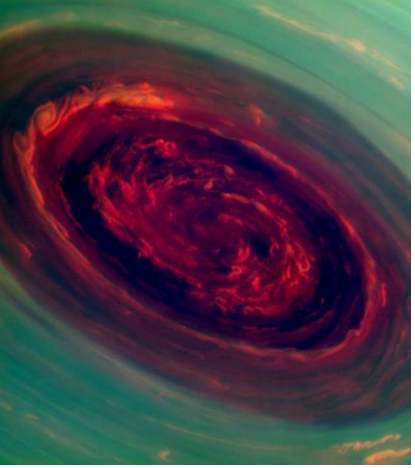
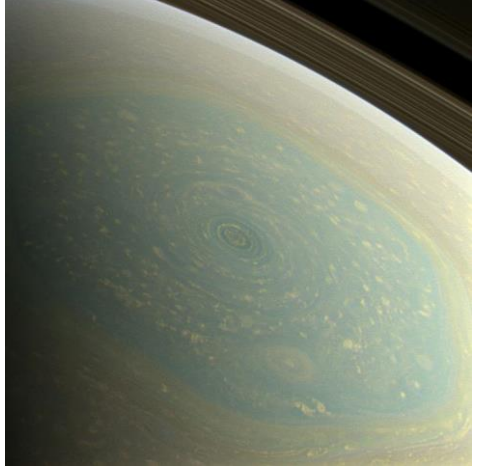
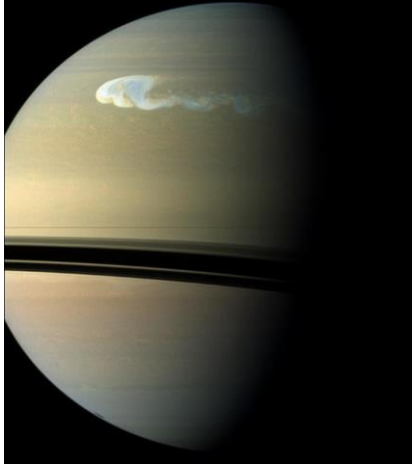


Science Planning & Sequence Team
CASSINI

SATURN TARGET WORKING TEAM

Rev 66_67 Segment Legacy Package

Segment Boundary: May 3, 2008 – May 9, 2008
2008-124T06:16 – 2008-130T06:00 (SCET)

Integration Began 09/29/2003
Segment Delivered to S40 Sequence 09/15/2004
Lead Integrator was Chris Roumeliotis

Legacy Package Assembled by Kyle Cloutier

Table of Contents

*** N.A. = Slide present but content not available.**

Segment Overview and Final Products

Segment Summary

- Saturn 66_67 was an apoapse segment in the Prime Mission, starting almost equatorial and moving northward to increasing sub-spacecraft latitudes.
- Saturn science included VIMS and ISS polar movies, and UVIS northern auroral movies.
- Other science performed included ISS satellite orbit determination observations, CIRS ring observations, and RADAR raster scans across the rings.
- RSS also performs a HGA boresight calibration.

Final Sequenced SPASS (1 of 2)

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End	Primary	Secondary	Comments
SATURN revs 66/67 Segment		2008-124T06:16:00		005T23:44:00	2008-130T06:00:00			
NAV_066SK_OPNAV241_PRIME	C, M, N	2008-124T06:16:00		000T00:59:00	2008-124T07:15:00	ISS_NAC to Satellites (0.0,-5.0,0.0 deg. offset)	POS_Z to NSP	Starts at Earth point, ends at NEW waypoint
NAV_066SA_WAYPTTURN241_PRIME	M	2008-124T07:15:00		000T00:01:00	2008-124T07:16:00	ISS_NAC to Saturn (0.0,-5.0,0.0 deg. offset)	POS_Z to NSP	
NEW WAYPOINT		**2008-124T07:16:00**		**002T13:59:00**	**2008-126T21:15:00**	**ISS_NAC to Saturn (0.0,-5.0,0.0 deg. offset)**	**POS_Z to NSP**	
VIMS_066SA_POLMOV001_PRIME	M, R	2008-124T07:16:00		000T16:30:00	2008-124T23:46:00	ISS_NAC to Saturn	POS_Z to NSP	
SP_066EA_DLTURN124_PRIME	M, R	2008-124T23:46:00		000T00:30:00	2008-125T00:16:00	XBAND to Earth	POS_X to NEP	15.4 min. Turn
SP_066EA_G34BWGNON124_PRIME	C, M, R	2008-125T00:16:00		000T06:00:00	2008-125T06:16:00	XBAND to Earth	POS_X to NEP	
SP_066SA_WAYPTTURN125_PRIME	C, M	2008-125T06:16:00		000T00:30:00	2008-125T06:46:00	ISS_NAC to Saturn (0.0,-5.0,0.0 deg. offset)	POS_Z to NSP	15 min. Turn
CIRS_066RI_TEMPU20LP001_PRIME	C, M, R	2008-125T06:46:00		000T04:00:00	2008-125T10:46:00	CIRS_FP1 to Rings	POS_Z to NSP	
RADAR_066RI_046MATCH001_PRIME	M, R	2008-125T10:46:00		000T10:00:00	2008-125T20:46:00	NEG_Z to Saturn	POS_X to NSP	RADAR must control both primary & secondary axes for polarization orientations.
SP_066EA_DLTURN125_PRIME	C, M, R	2008-125T20:46:00		000T00:30:00	2008-125T21:16:00	XBAND to Earth	POS_X to NEP	14.1 min. Turn
SP_066EA_G70METNON125_PRIME	C, E, M, R	2008-125T21:16:00		000T09:00:00	2008-126T06:16:00	XBAND to Earth	POS_X to NEP	
SP_066SA_WAYPTTURN126_PRIME	M	2008-126T06:16:00		000T00:30:00	2008-126T06:46:00	ISS_NAC to Saturn (0.0,-5.0,0.0 deg. offset)	POS_Z to NSP	13.6 min. Turn
VIMS_066SA_POLEMAP001_PRIME	M, R	2008-126T06:46:00		000T12:59:00	2008-126T19:45:00	ISS_NAC to Saturn	NEG_Z to North_Pole_Dir	
Apoapse Per = 9.6 d, inc =...		2008-126T07:31:25		000T00:00:01	2008-126T07:31:26			
ISS_067OT_SATELLORB001_PRIME	C, M, R	2008-126T19:45:00		000T01:00:00	2008-126T20:45:00	ISS_NAC to Satellites	POS_Z to NSP	
SP_067EA_DLTURN126_PRIME	C, M, R	2008-126T20:45:00		000T00:30:00	2008-126T21:15:00	XBAND to Earth	POS_X to NEP	
NEW WAYPOINT		**2008-126T21:15:00**		**000T09:30:00**	**2008-127T06:45:00**	**XBAND to Earth**	**POS_X to NEP**	
SP_067EA_G34BWGNON126_PRIME	C, M, R	2008-126T21:15:00		000T03:00:00	2008-127T00:15:00	XBAND to Earth	POS_X to NEP	
RSS_067EA_BORESIGHT002_PRIME	M, R	2008-127T00:15:00		000T01:00:00	2008-127T01:15:00	XBAND to Earth	PIC	
SP_067EA_G34BWGNON426_PRIME	C, M	2008-127T01:15:00		000T05:00:00	2008-127T06:15:00	XBAND to Earth	POS_X to NEP	
SP_067SA_WAYPTTURN127_PRIME	C, M	2008-127T06:15:00		000T00:30:00	2008-127T06:45:00	ISS_NAC to Saturn	NEG_Z to NSP	23.1 min. Turn

Final Sequenced SPASS (2 of 2)

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End	Primary	Secondary	Comments
NEW WAYPOINT		2008-127T06:45:00		002T14:15:00	2008-129T21:00:00	ISS_NAC to Saturn	NEG_Z to NSP	
ISS_067OT_SATELLORB002_PRIME	C, M	2008-127T06:45:00		000T00:30:00	2008-127T07:15:00	ISS_NAC to Satellites	NEG_Z to NSP	
CIRS_067RI_SUBMU35LP001_PRIME	C, M	2008-127T07:15:00		000T08:15:00	2008-127T15:30:00	CIRS_FP1 to Saturn	NEG_Z to NEP	
ISS_067OT_SATELLORB003_PRIME	C, M	2008-127T15:30:00		000T00:30:00	2008-127T16:00:00	ISS_NAC to Satellites	NEG_Z to NSP	
SP_067EA_DLTURN127_PRIME	C, M	2008-127T16:00:00		000T00:30:00	2008-127T16:30:00	XBAND to Earth	POS_X to NEP	23.2 min. Turn
SP_067EA_M70METNON127_PRIME	C, E, M, R	2008-127T16:30:00		000T06:00:00	2008-127T22:30:00	XBAND to Earth	POS_X to NEP	
SP_067SA_WAYPTTURN427_PRIME	M	2008-127T22:30:00		000T00:30:00	2008-127T23:00:00	ISS_NAC to Saturn	NEG_Z to NSP	23.3 min. Turn
ISS_067SA_POLRMOV01001_PRIME	C, M, U, V	2008-127T23:00:00		000T21:30:00	2008-128T20:30:00	ISS_NAC to Saturn	NEG_Z to NSP	Must satisfy needs of VIMS, CIRS, UVIS.
SP_067EA_DLTURN128_PRIME		2008-128T20:30:00		000T00:30:00	2008-128T21:00:00	XBAND to Earth	POS_X to NEP	23.1 min. Turn
SP_067EA_G70METNON128_PRIME	C	2008-128T21:00:00		000T09:00:00	2008-129T06:00:00	XBAND to Earth	POS_X to NEP	
SP_067SA_WAYPTTURN129_PRIME		2008-129T06:00:00		000T00:30:00	2008-129T06:30:00	ISS_NAC to Saturn	NEG_Z to NSP	22.8 min. Turn
UVIS_067SA_NAURMOV001_PRIME	V	2008-129T06:30:00		000T09:00:00	2008-129T15:30:00	UVIS_FUV to Saturn	NEG_X to Sun	
UVIS_067IC_ALPVIR001_PRIME	V	2008-129T15:30:00		000T01:00:00	2008-129T16:30:00	UVIS_FUV to 201.298/-11.161	NEG_X to Sun	
CIRS_067RI_TEMPU58MP001_PRIME	C	2008-129T16:30:00		000T04:00:00	2008-129T20:30:00	CIRS_FP1 to Saturn	NEG_Z to NSP	
SP_067EA_DLTURN129_PRIME		2008-129T20:30:00		000T00:30:00	2008-129T21:00:00	XBAND to Earth	POS_X to NEP	21.2 min. Turn NEW WAYPOINT for RINGS 67
NEW WAYPOINT		2008-129T21:00:00		001T05:05:00	2008-131T02:05:00	XBAND to Earth	POS_X to NEP	
SP_067EA_G34BWGOTP130_PRIME	C, N	2008-129T21:00:00		000T08:00:00	2008-130T05:00:00	XBAND to Earth	POS_X to NEP	
SP_067EA_G70METOTP130_PRIME	N	2008-130T05:00:00		000T01:00:00	2008-130T06:00:00	XBAND to Earth	POS_X to NEP	

Final Sequenced SMT and Data Volume (1 of 2)

DATA VOLUME SUMMARY --- TRANSFER FRAME OVERHEAD INCLUDED (80 BITS PER 8800-BIT FRAME)

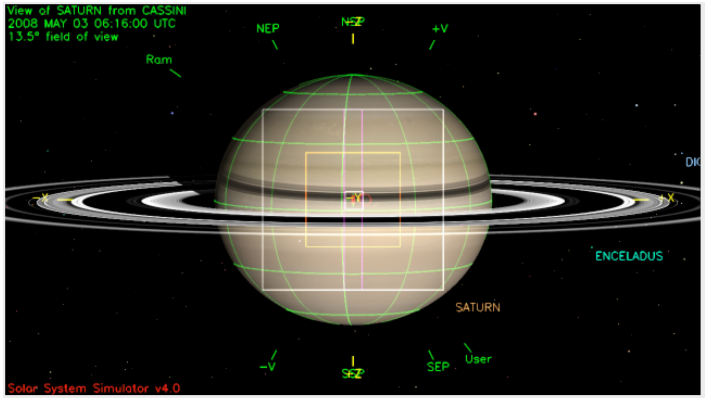
			OBSERVATION_PERIOD							DOWNLINK_PASS						
			P4						P5	RECORDED		PLAYBACK				
DOWNLINK PASS NAME	Start doy hh:mm	End doy hh:mm	START (Mb)	SCI (Mb)	HK+E (Mb)	TOTAL (Mb)	CPACTY (Mb)	MRGN (Mb)	OPNAV (Mb)	SCI (Mb)	ENGR (Mb)	TOTAL (Mb)	CPACTY (Mb)	MARGN (Mb)	NET_MARGN (Mb)	CAROVR (%)	CAROVR (Mb)
SP_066EA_G34BWGNON124_PRIME	125 00:16	125 06:16	0	904	76	980	3509	2529	21	172	35	1209	595	-614	2279	16%	613
SP_066EA_G70METNON125_PRIME	125 21:16	126 06:16	613	553	64	1231	3509	2279	0	236	53	1519	4326	2806	5421	38%	0
SP_067EA_G34BWGNON126_PRIME	126 21:15	127 00:15	0	832	63	895	3509	2614	0	79	18	991	276	-716	2655	19%	715
SP_067EA_G34BWGNON426_PRIME	127 01:15	127 06:15	715	16	4	736	3509	2774	0	141	29	906	491	-416	2655	17%	415
SP_067EA_M70METNON127_PRIME	127 16:30	127 22:30	415	396	43	854	3509	2655	0	172	35	1061	2917	1855	3390	21%	0
SP_067EA_G70METNON128_PRIME	128 21:00	129 06:00	0	1880	95	1975	3509	1534	0	221	53	2249	4326	2076	2105	12%	0
SP_067EA_G34BWGOTP130_PRIME	129 21:00	130 05:00	0	660	63	723	3509	2786	0	178	47	949	620	-330	28	0%	329
SP_067EA_G70METOTP130_PRIME	130 05:00	130 06:00	329	0	0	329	3509	3180	0	11	6	346	431	85	28	0%	0

Final Sequenced SMT and Data Volume (2 of 2)

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	124 06:16	125 00:16	64.8	19.4	7.2	3.2	0.0	38.9	77.8	0.0	84.9	0.0	600.0	0.0	14.7	910.9
OBSERVATION_OPN	124 06:16	125 00:16	0.0	0.0	0.0	0.0	21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.0
SP_066EA_G34BWGNON124_PRIME	125 00:16	125 06:16	21.6	6.5	72.0	1.1	0.0	13.0	25.9	0.0	28.3	1.6	0.0	0.0	0.0	170.0
DAILY TOTAL SCIENCE	124 06:16	125 06:16	86.4	25.9	79.2	4.3	0.0	51.8	103.7	0.0	113.2	1.6	600.0	0.0		
OBSERVATION_NOR	125 06:16	125 21:16	84.7	16.2	72.0	2.7	0.0	32.4	64.8	185.4	70.7	0.0	0.0	0.0	12.3	541.3
OBSERVATION_SI	125 06:16	125 21:16	0.0	0.0	19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.0
SP_066EA_G70METNON125_PRIME	125 21:16	126 06:16	32.4	9.7	86.4	1.6	0.0	19.4	38.9	0.0	42.4	2.5	0.0	0.0	0.0	233.4
DAILY TOTAL SCIENCE	125 06:16	126 06:16	117.1	25.9	177.4	4.3	0.0	51.8	103.7	185.4	113.2	2.5	0.0	0.0		
OBSERVATION_NOR	126 06:16	126 21:15	53.9	16.2	21.6	2.7	31.4	32.4	65.4	0.0	70.7	0.0	530.0	0.0	12.2	836.5
SP_067EA_G34BWGNON126_PRIME	126 21:15	127 00:15	10.8	3.2	28.8	0.5	0.0	6.5	13.1	0.0	14.1	0.8	0.0	0.0	0.0	77.9
DAILY TOTAL SCIENCE	126 06:16	127 00:15	64.7	19.4	50.4	3.2	31.4	38.8	78.5	0.0	84.8	0.8	530.0	0.0		
OBSERVATION_NOR	127 00:15	127 01:15	3.6	1.1	0.0	0.2	0.0	2.2	4.4	0.0	4.7	0.0	0.0	0.0	0.8	16.9
SP_067EA_G34BWGNON426_PRIME	127 01:15	127 06:15	18.0	5.4	57.6	0.9	0.0	10.8	21.9	0.0	23.6	1.4	0.0	0.0	0.0	139.5
DAILY TOTAL SCIENCE	127 00:15	127 06:15	21.6	6.5	57.6	1.1	0.0	13.0	26.2	0.0	28.3	1.4	0.0	0.0		
OBSERVATION_NOR	127 06:15	127 16:30	36.9	11.1	147.6	1.8	62.8	22.1	44.8	0.0	48.3	0.0	0.0	0.0	8.4	383.8
OBSERVATION_SI	127 06:15	127 16:30	0.0	0.0	16.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.5
SP_067EA_M70METNON127_PRIME	127 16:30	127 22:30	21.6	6.5	72.0	1.1	0.0	13.0	26.2	0.0	28.3	1.6	0.0	0.0	0.0	170.3
DAILY TOTAL SCIENCE	127 06:15	127 22:30	58.5	17.5	236.1	2.9	62.8	35.1	71.0	0.0	76.6	1.6	0.0	0.0		
OBSERVATION_NOR	127 22:30	128 21:00	81.0	24.3	309.6	4.1	420.0	48.6	91.3	0.0	106.1	77.9	700.0	0.0	18.4	1881.2
SP_067EA_G70METNON128_PRIME	128 21:00	129 06:00	32.4	9.6	86.4	1.6	0.0	19.4	24.3	0.0	42.4	2.5	0.0	0.0	0.0	218.7
DAILY TOTAL SCIENCE	127 22:30	129 06:00	113.4	33.9	396.0	5.7	420.0	68.0	115.6	0.0	148.6	80.4	700.0	0.0		
OBSERVATION_NOR	129 06:00	129 21:00	37.8	8.1	57.6	2.7	0.0	26.7	40.5	0.0	49.4	183.1	240.0	0.0	12.3	658.1
OBSERVATION_SI	129 06:00	129 21:00	0.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
SP_067EA_G34BWGOTP130_PRIME	129 21:00	130 05:00	20.2	4.3	86.4	1.4	0.0	14.2	21.6	0.0	26.3	2.2	0.0	0.0	0.0	176.7
SP_067EA_G70METOTP130_PRIME	130 05:00	130 06:00	2.5	0.5	0.0	0.2	0.0	1.8	2.7	0.0	3.3	0.3	0.0	0.0	0.0	11.3
DAILY TOTAL SCIENCE	129 06:00	130 06:00	60.5	13.0	152.0	4.3	0.0	42.7	64.8	0.0	79.0	185.6	240.0	0.0		

Segment Geometry (1 of 2)




```
Rev 066 OUTBOUND
2008 -  124T06:16:00 SCET
2008 MAY 03 06:16:00 SCET
2008 MAY 03 07:30:12 ERT
Apoapse__066 + 007T11:59:47
Periapse_066 + 002T17:24:43
Light time:    74.2 min
Orbit period:  9.6 days
Radius     1279182 km      21.22 Rs
Rad_cyl    1275379 km      21.16 Rs
Z_ht_cyl     98563 km       1.64 Rs
Mag_L          21.35
Semi_axs    868401 km      14.41 Rs
Eccentricity    0.702
Inclination    63.08 deg
Sun_range       9.29 AU
Earth_range     8.92 AU
--- DSN ELEV -- D/L -- U/L --------
Goldstone      29.3   57.5
Canberra       33.6    9.5
Madrid        -36.8  -24.4
------- LOOK DIRECTION INFO -------
FOV            13.5 deg  235.4 mrad
RA            148.667 deg
DEC            -2.430 deg
Crosses_RP_@    0.000 Rs
EPS             5.908 deg *
SEP           108.474 deg
ORS b/s angle 163.0 deg
ORS rad angle  77.7 deg  *
```

Point NEG_Y at SATURN and align NEG_Z = Up with NSP

User vector - RA: +89.300 DEC: -54.820 Paste Current RA/DEC

Tilt L Up Tilt R Left Reset Right Image Down Hi Res

Zoom Out Fill Screen Zoom In Labels Axes Orbits Vectors FOVs Lat/lons

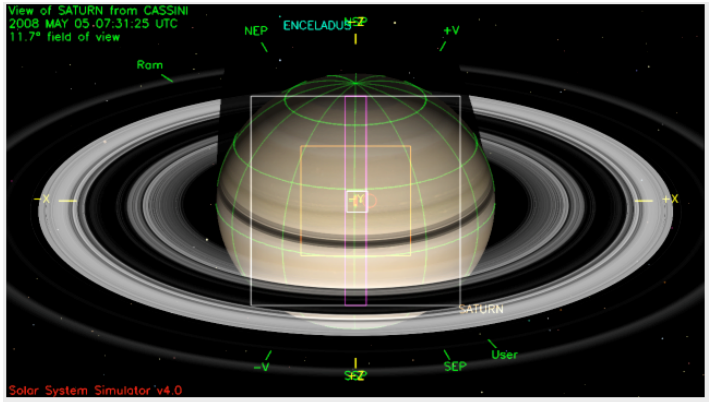
Year Month Day Hour Minute Second

Turn analyzer: SATURN to EARTH about Z on RWA = 15.2 min / 164.0 deg Event

BODY	S/C OCC?	SAT OCC?	RANGE [km]	RANGE [Rs]	ALTITUDE [km]	ALTITUDE [Rs]	PHASE [deg]	ANGLR_DIAMETER [deg]	ANGLR_DIAMETER mrad]	SUB_S/C LON	SUB_S/C LAT	ALON [deg]	VREL [km/s]	Z_HGHT (km)	ANGLE_FROM SATRN	ANGLE_FROM EARTH	ANGLE_FROM RAM
SATURN	--	--	1279182	21.22	1218948	20.23	16.9	5.40	94.26	356	4	0	4.0	0	0.0	164.0	115.4
MIMAS	--	--	1370608	22.74	1370408	22.74	12.3	0.02	0.30	56	4	116	13.4	4881	7.1	166.1	109.3
ENCELADUS	--	--	1061269	17.61	1061014	17.60	21.1	0.03	0.48	209	5	-21	12.6	24	4.7	160.7	119.7
TETHYS	--	--	1157834	19.21	1157302	19.20	11.8	0.05	0.93	108	4	59	9.3	4809	12.7	164.4	105.1
DIONE	--	--	1620667	26.89	1620104	26.88	21.5	0.04	0.70	338	3	-152	12.7	-61	6.4	161.0	119.9
RHEA	--	--	1749183	29.02	1748417	29.01	10.8	0.05	0.88	25	3	148	9.5	1964	9.2	166.7	107.2
TITAN	--	--	2458793	40.80	2456218	40.75	27.1	0.12	2.09	342	2	-153	8.4	7892	13.3	156.5	124.3
HYPERION	--	--	2485162	41.24	2485003	41.23	44.6	0.01	0.13	11	17	-123	8.0	27515	31.6	139.9	136.9
IAPETUS	--	--	2460745	40.83	2459998	40.82	148.3	0.03	0.61	351	9	-29	4.5	-431524	133.0	36.4	110.4
PHOEBE	--	--	13878687	230.28	13878575	230.28	116.9	0.00	0.02	218	-23	-67	4.3	3640234	109.0	68.4	114.5
SATURN	--	--	1279182	21.22	1218948	20.23	16.9	5.40	94.26	356	4	0	4.0	0	0.0	164.0	115.4

Segment Start: 2008-124T06:16

Apoapse: 2008-126T07:31:25




```
Rev 066 OUTBOUND
2008 -  126T07:31:25 SCET
2008 MAY 05 07:31:25 SCET
2008 MAY 05 08:45:54 ERT
Apoapse__066 + 009T13:15:12
Periapse_066 + 004T18:40:08
Light time:    74.5 min
Orbit period:  9.6 days
Radius     1477841 km      24.52 Rs
Rad_cyl    1361250 km      22.59 Rs
Z_ht_cyl    575336 km       9.55 Rs
Mag_L          28.90
Semi_axs    868395 km      14.41 Rs
Eccentricity    0.702
Inclination    63.07 deg
Sun_range       9.29 AU
Earth_range     8.95 AU
--- DSN ELEV -- D/L -- U/L --------
Goldstone      12.3   42.4
Canberra       41.0   24.2
Madrid        -34.8  -33.5
------- LOOK DIRECTION INFO -------
FOV            11.7 deg  203.8 mrad
RA            160.657 deg
DEC           -19.778 deg
Crosses_RP_@    0.000 Rs
EPS             5.976 deg *
SEP           106.472 deg
ORS b/s angle 149.8 deg
ORS rad angle  87.7 deg  *
```

Point NEG_Y at SATURN and align NEG_Z = Up with NSP

User vector - RA: +89.300 DEC: -54.820 Paste Current RA/DEC

Tilt L Up Tilt R Left Reset Right Image Down Hi Res

Zoom Out Fill Screen Zoom In Labels Axes Orbits Vectors FOVs Lat/lons

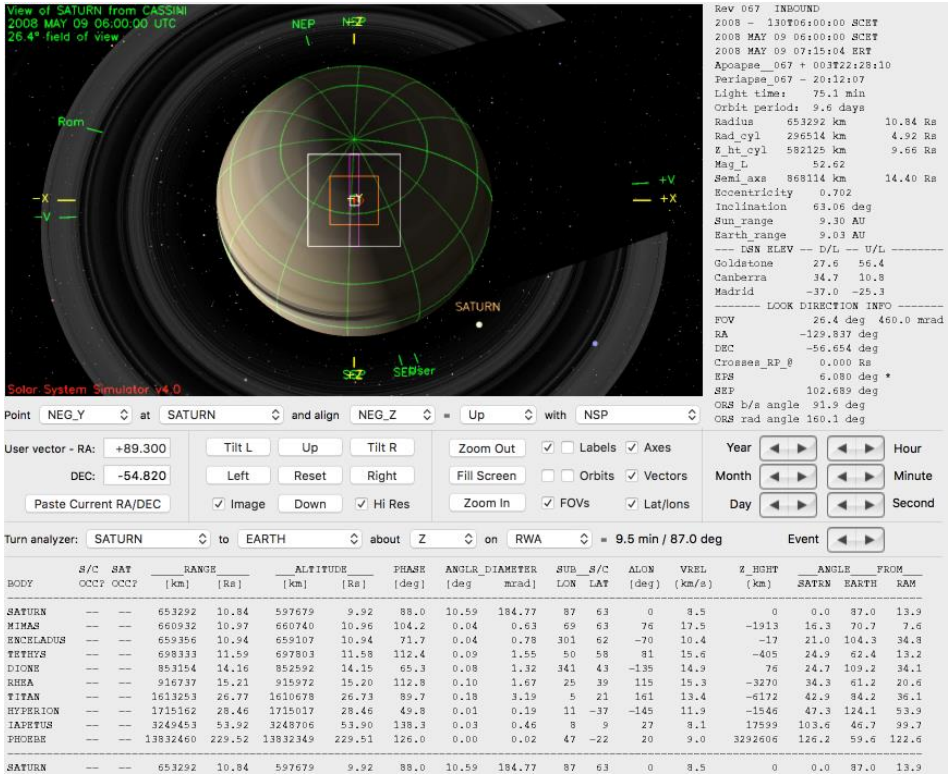
Year Month Day Hour Minute Second

Turn analyzer: SATURN to EARTH about Z on RWA = 13.9 min / 147.0 deg Event

BODY	S/C OCC?	SAT OCC?	RANGE [km]	RANGE [Rs]	ALTITUDE [km]	ALTITUDE [Rs]	PHASE [deg]	ANGLR_DIAMETER [deg]	ANGLR_DIAMETER mrad]	SUB_S/C LON	SUB_S/C LAT	ALON [deg]	VREL [km/s]	Z_HGHT (km)	ANGLE_FROM SATRN	ANGLE_FROM EARTH	ANGLE_FROM RAM
SATURN	--	--	1477841	24.52	1418435	23.54	30.1	4.67	81.58	209	23	0	2.8	0	0.0	147.0	90.0
MIMAS	--	--	1410708	23.41	1410511	23.40	31.5	0.02	0.29	110	24	64	14.6	3577	7.0	144.6	84.9
ENCELADUS	--	S-	1697120	28.16	1696865	28.16	27.0	0.02	0.30	12	20	171	14.3	-24	3.3	149.9	97.3
TETHYS	--	--	1279784	21.23	1279250	21.23	34.4	0.05	0.84	134	26	38	11.2	2573	9.1	141.6	95.3
DIONE	--	--	1299669	21.56	1299108	21.56	37.3	0.05	0.87	246	26	-52	8.7	-107	13.8	142.0	103.3
RHEA	--	--	1018052	16.89	1017287	16.88	42.1	0.09	1.51	191	35	-5	7.4	-2633	12.0	135.4	98.6
TITAN	--	--	2674526	44.38	2671951	44.33	19.5	0.11	1.93	2	12	173	7.3	4568	11.1	156.8	81.4
HYPERION	--	--	2769929	45.96	2769779	45.96	27.2	0.01	0.12	139	1	-146	6.4	25228	20.4	154.1	98.8
IAPETUS	--	--	2497195	41.43	2496452	41.42	136.9	0.03	0.60	353	19	-29	2.1	-284130	118.7	47.1	150.3
PHOEBE	--	--	13466055	223.44	13465943	223.43	118.6	0.00	0.02	332	-21	-55	4.2	3522478	122.1	66.8	134.7
SATURN	--	--	1477841	24.52	1418435	23.54	30.1	4.67	81.58	209	23	0	2.8	0	0.0	147.0	90.0

	Saturn Range	Phase Angle	Sub-S/C Lat.
Segment Start	21.22 Rs	16.9 deg	4
Apoapse	24.52 Rs	30.1 deg	23
Segment End	10.84 Rs	88.0 deg	63

Segment Geometry (2 of 2)



Segment End: 2008-130T06:00

	Saturn Range	Phase Angle	Sub-S/C Lat.
Segment Start	21.22 Rs	16.9 deg	4
Apoapse	24.52 Rs	30.1 deg	23
Segment End	10.84 Rs	88.0 deg	63

Solar Geometry – ORS Boresight Concerns

No ORS Boresight Solar Constraints on Science Pointing.

Daily Science Highlights

DOY 124: The day was dominated by VIMS taking a long Saturn polar movie while MAPS images the inner magnetosphere.

DOY 125: On this day, the spacecraft turned its attention briefly to the rings. CIRS took temperature measurements and RADAR executed raster scans across the rings while maneuvering the spacecraft to achieve different polarization orientations.

DOY 126: As the spacecraft approaches apoapse, VIMS took another polar movie of Saturn. ISS wrapped up the day with images of small satellites as part of a campaign to establish better orbit determination.

DOY127: The bulk of the day was spent with CIRS observing the rings. ISS snapped some more pictures of satellites as part of their SATELLORB campaign. Meanwhile, the MAPS teams were continuing their measurements of the dynamics of the inner magnetosphere.

DOY 128: On this day, ISS led the way in observing the northern hemisphere of Saturn, with the other ORS teams riding along.

DOY129: UVIS performed repeated scans across the north polar region of Saturn to produce an auroral movie, while VIMS rode along. UVIS was also performing a stellar calibration. The day was wrapped up with CIRS looking again at the rings.

Segment Integration Planning

Timeline Gaps and Suggested Observations

Activity	Start	Duration	Pointing	Notes
Segment Start/SPTurn to Waypoint	2008-124T06:16:00	00:30:00		
New Waypoint	**2008-124T06:46:00**			
ISS Satellorb	2008-124T06:46:00	00:30:00		
VIMS Saturn Polar Movie	2008-124T07:16:00	16:30:00		
SP Turn to Downlink	2008-124T23:46:00	00:30:00		
Downlink	2008-0125T00:16:00	06:00:00	XBAND to Earth;	Goldstone 34 HEF
SP Turn to Waypoint	2008-125T06:16:00	00:30:00		
CIRS Rings Temp	2008-125T06:46:00	04:00:00		
RADAR Rings Matching	2008-125T10:46:00	10:00:00		
SP Turn to Downlink	2008-125T20:46:00	00:30:00	XBAND to Earth;	
Downlink	2008-125T21:16:00	04:00:00	XBAND to Earth;	Goldstone 34 HEF
RSS Boresight	**2008-126T01:16:00**	**01:00:00**		
Downlink	2008-126T02:16:00	04:00:00	XBAND to Earth;	Goldstone 34 HEF
SP Turn to Waypoint	2008-126T06:16:00	00:30:00		
VIMS Saturn Polar Map	2008-126T06:36:00	11:00:00		
Rev 67 Apoapsis	**2008-126T07:40:52**			
OPEN	2008-126T17:36:00	02:51:00		
SP Turn to Downlink	2008-126T20:45:00	00:30:00	XBAND to Earth;	
Downlink	2008-126T21:15:00	09:00:00	XBAND to Earth;	Goldstone 34 HEF
SP Turn to Waypoint	2008-127T06:15:00	00:30:00		
CIRS Rings	2008-127T06:45:00	06:15:00		
SP Turn to Downlink	2008-127T13:00:00	00:30:00		
Downlink	2008-127T13:30:00	09:00:00	XBAND to Earth;	Madrid 34 HEF(was following Goldstone)
SP Turn to Waypoint	2008-127T22:30:00	00:30:00		**VIMS DECON PERIOD**
ISS Polar Movie	2008-127T23:00:00	21:30:00		**VIMS DECON PERIOD**
SP Turn to Downlink	2008-128T20:30:00	00:30:00		**VIMS DECON PERIOD**
Downlink	2008-128T21:00:00	09:00:00	XBAND to Earth;	Goldstone 34 HEF
SP Turn to Waypoint	2008-129T06:00:00	00:30:00		**VIMS DECON PERIOD**
OPEN	2008-129T06:30:00	14:00:00		**VIMS DECON PERIOD**
SP Turn to Downlink	2008-129T20:30:00	00:30:00		**VIMS DECON PERIOD**
Downlink	2008-129T21:00:00	09:00:00	XBAND to Earth;	Goldstone 34 BWG OTM-154 Prime U/L

Time (2008)	Rs	Phase (deg.)	Sub S/C Lat
Rev 66/67			
124T00:00:00	20.25	16.2	1
125T00:00:00	23.17	20.8	12
126T00:00:00	24.43	27.9	20
127T00:00:00	24.16	35.8	29
128T00:00:00	22.33	44.9	37

Initial SMT and Data Volume (1 of 2)

Beginning of Integration:

DATA VOLUME SUMMARY

	OBSERVATION_PERIOD										DOWNLINK_PASS						
	P4									P5	RECORDED		PLAYBACK				
DOWNLINK PASS NAME	Start doy hh:mm	End doy hh:mm	START (Mb)	SCI (Mb)	HK+E (Mb)	TOTAL (Mb)	CPACTY (Mb)	MARGIN (Mb)	(%)	OPNAV (Mb)	SCI (Mb)	ENGR (Mb)	TOTAL (Mb)	CPACTY (Mb)	MARGIN (Mb)	(%)	CAROVR (Mb)
SP_066EA_G34HEFNON124_PRIME	125 00:16	125 06:16	0	1325	63	1388	3568	2181	61%	0	169	35	1592	714	-878	-123%	878
SP_066EA_G34HEFNON125_PRIME	125 21:16	126 06:16	878	490	52	1420	3568	2148	60%	0	229	53	1702	1060	-642	-61%	642
SP_067EA_G34HEFNON126_PRIME	126 22:15	127 06:15	642	1082	56	1780	3534	1754	50%	17	213	47	2057	955	-1102	-115%	1102
SP_067EA_M34HEFNON127_PRIME	127 16:30	127 22:30	1102	386	36	1524	3568	2044	57%	0	288	35	1848	631	-1217	-193%	1217
SP_067EA_G34HEFNON128_PRIME	128 21:00	129 06:00	1217	2851	78	4146	3569	-578	-16%	0	219	53	3841	1055	-2786	-264%	2786
SP_067EA_G34BWGOTP129_PRIME	129 21:00	130 06:00	2786	1080	52	3918	3569	-350	-10%	0	134	53	3756	714	-3041	-426%	3041

Initial SMT and Data Volume (2 of 2)

Beginning of Integration:

DATA VOLUME REPORT

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	124 06:16	125 00:16	64.8	9.7	14.4	3.2	31.4	38.9	77.8	0.0	84.9	0.0	1000.0	0.0	0.0	1325.1
SP_066EA_G34HEFNON124_PRIME	125 00:16	125 06:16	21.6	3.2	75.6	1.1	0.0	13.0	25.9	0.0	28.3	0.0	0.0	0.0	0.0	168.7
DAILY TOTAL SCIENCE	124 06:16	125 06:16	86.4	12.9	90.0	4.3	31.4	51.8	103.7	0.0	113.2	0.0	1000.0	0.0		
OBSERVATION_NOR	125 06:16	125 21:16	54.0	8.1	72.0	2.7	0.0	32.4	64.8	185.4	70.7	0.0	0.0	0.0	0.0	490.2
SP_066EA_G34HEFNON125_PRIME	125 21:16	126 06:16	32.4	4.9	86.4	1.6	0.0	19.4	38.9	0.0	42.4	2.5	0.0	0.0	0.0	228.5
DAILY TOTAL SCIENCE	125 06:16	126 06:16	86.4	12.9	158.4	4.3	0.0	51.8	103.7	185.4	113.2	2.5	0.0	0.0		
OBSERVATION_NOR	126 06:16	126 22:15	57.5	8.4	21.6	2.9	31.4	34.5	69.8	0.0	75.4	0.3	780.0	0.0	0.0	1081.7
OBSERVATION_OPN	126 06:16	126 22:15	0.0	0.0	0.0	0.0	17.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.4
SP_067EA_G34HEFNON126_PRIME	126 22:15	127 06:15	28.8	4.3	86.4	1.4	0.0	17.3	35.0	0.0	37.7	2.2	0.0	0.0	0.0	213.1
DAILY TOTAL SCIENCE	126 06:16	127 06:15	86.3	12.7	108.0	4.3	31.4	51.8	104.7	0.0	113.1	2.5	780.0	0.0		
OBSERVATION_NOR	127 06:15	127 16:30	36.9	5.5	147.6	1.8	62.8	22.1	44.8	0.0	48.3	0.0	0.0	0.0	0.0	369.9
OBSERVATION_SI	127 06:15	127 16:30	0.0	0.0	16.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.5
SP_067EA_M34HEFNON127_PRIME	127 16:30	127 22:30	48.6	7.3	75.6	2.4	0.0	29.2	59.0	0.0	63.7	2.5	0.0	0.0	0.0	288.2
DAILY TOTAL SCIENCE	127 06:15	127 22:30	85.5	12.8	239.7	4.3	62.8	51.3	103.8	0.0	112.0	2.5	0.0	0.0		
OBSERVATION_NOR	127 22:30	128 21:00	54.0	8.1	208.8	2.7	283.3	32.4	60.8	0.0	70.7	52.5	2077.6	0.0	0.0	2850.9
SP_067EA_G34HEFNON128_PRIME	128 21:00	129 06:00	32.4	5.2	86.4	1.6	0.0	19.4	29.2	0.0	42.4	2.5	0.0	0.0	0.0	219.2
DAILY TOTAL SCIENCE	127 22:30	129 06:00	86.4	13.3	295.2	4.3	283.3	51.8	89.9	0.0	113.2	55.0	2077.6	0.0		
OBSERVATION_NOR	129 06:00	129 21:00	54.0	10.8	72.0	2.7	0.0	32.4	48.6	0.0	70.7	181.2	600.0	0.0	0.0	1072.4
OBSERVATION_SI	129 06:00	129 21:00	0.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
SP_067EA_G34BWGOTP129_PRIME	129 21:00	130 06:00	32.4	6.5	0.0	1.6	0.0	19.4	29.2	0.0	42.4	2.5	0.0	0.0	0.0	134.0
DAILY TOTAL SCIENCE	129 06:00	130 06:00	86.4	17.2	80.0	4.3	0.0	51.8	77.8	0.0	113.2	183.6	600.0	0.0		

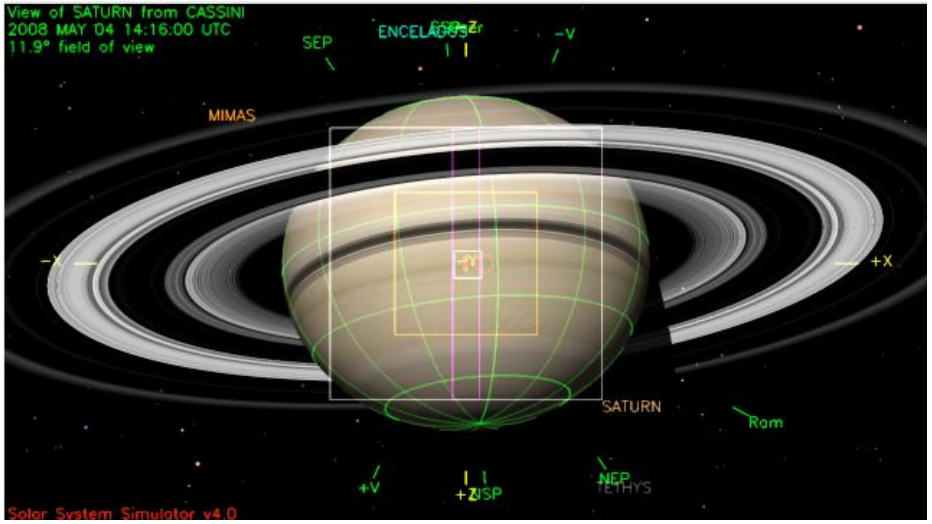
	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	PROBE (Mb)
TOTAL RECORDED (OPNAV data not included)	517.4	82.0	971.3	25.9	408.8	310.5	583.6	185.4	677.9	246.0	4457.6	0.0

Waypoint Selection

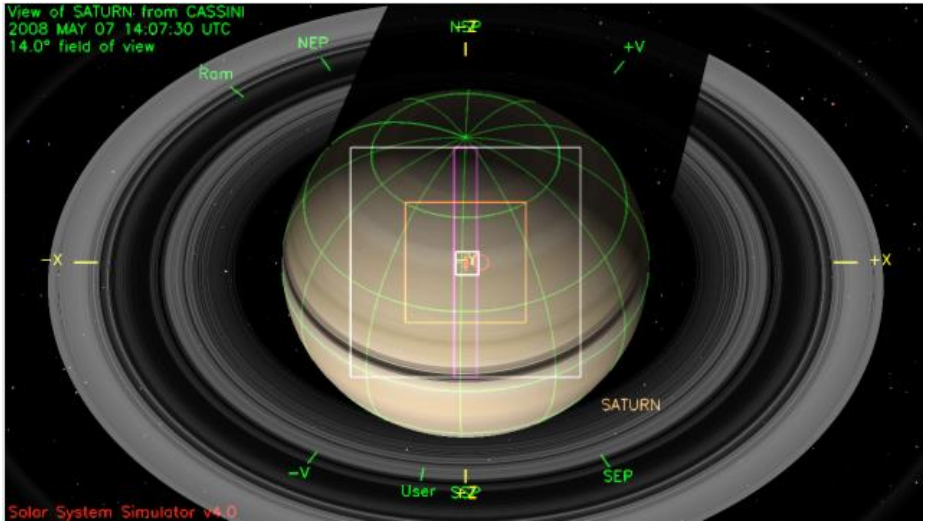
No Waypoint Selection Info Available.

Waypoints Chosen

Waypoint 1 (2008-124T07:16 – 126T21:15):
NAC to Saturn (0, -5, 0 deg. offset), POS_Z to NSP



Waypoint 3 (2008-127T06:45 – 129T21:00):
NAC to Saturn, NEG_Z to NSP



Waypoint 2 (2008-126T21:15 – 127T06:45):
XBAND to Earth, POS_X to NEP
(Not pictured, for HGA Boresight Calibration)

Notes & Liens

- **Pointing Issues**
  - None
- **Data Volume Issues**
  - Rings 67 TWT has agreed to absorb the remaining 5 Mbits of carryover.
- **Telemetry Mode Issues**
  - None
- **CIMS Issues**
  - None
- **Power/OPMODE Issues**
  - None
- **Flight Rule/Mission Planning Guideline and Constraint Issues**
  - Not checked
- **Other Issues**
  - SP_067EA_G70METOTP129_PRIME overlaps end of DSS-14 weekly maintenance by 1.7 hours. This request is an OTP and cannot be moved. We are requesting that DSN waive maintenance. Please see DSN Requests slide.