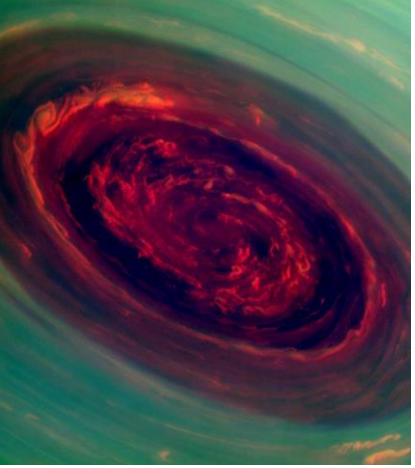

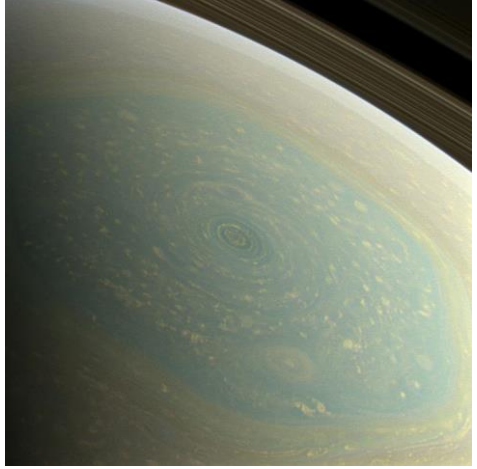
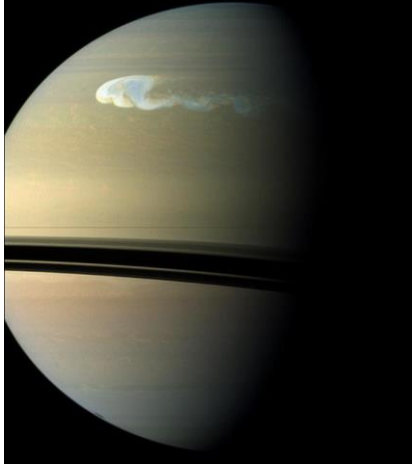

Science Planning & Sequence Team
CASSINI

SATURN TARGET WORKING TEAM

Rev 249 Segment Legacy Package

Segment Boundary: November 16, 2016 – November 23, 2016
2016-321T06:14 – 2016-328T05:43 (SCET)

Integration Began 11/02/2015
Segment Delivered to S96 Sequence 03/18/2016
Lead Integrator was Kyle Cloutier

Legacy Package Assembled by Kyle Cloutier

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

Segment Overview and Final Products

Segment Summary

- Rev 249 is an IN-2 periapse segment. Key science included VIMS mapping covering both hemispheres, UVIS auroral and ultraviolet atmosphere observations, and CIRS composition and limb sounding observations. The ORS instruments also observed the moon Mimas and participated in an Icy Satellite Exospheres campaign observation.
- ORS solar viewing constraints impacted science placement. A solar ring occultation was performed during the period where Saturn could not be observed. No CMT management was required, as the Sun was never occulted.

Final Sequenced SPASS (1 of 2)

Gap 1 / Gap 2 / Gap 3

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End	Primary	Secondary	Comments
SATURN_249 Segment		2016-321T06:14:00		006T23:29:00	2016-328T05:43:00			
SP_249SA_WAYPTTURN321_PRIME		2016-321T06:14:00		000T00:40:00	2016-321T06:54:00	ISS_NAC to Saturn	POS_Z to NSP	
NEW WAYPOINT		**2016-321T06:54:00**		**000T14:20:00**	**2016-321T21:14:00**	**ISS_NAC to Saturn**	**POS_Z to NSP**	
CIRS_249SA_COMPSIT001_PRIME	U, V	2016-321T06:54:00		000T13:40:00	2016-321T20:34:00	CIRS_FP1 to Saturn	POS_Z to NSP	
SP_249EA_DLTURN321_PRIME		2016-321T20:34:00		000T00:40:00	2016-321T21:14:00	XBAND to Earth	NEG_Y to 149.3/-34.4	
NEW WAYPOINT		**2016-321T21:14:00**		**000T09:40:00**	**2016-322T06:54:00**	**XBAND to Earth**	**NEG_Y to 149.3/-34.4**	
SP_249EA_C34BWGOTP321_PRIME	C, E, N	2016-321T21:14:00		000T08:30:00	2016-322T05:44:00	XBAND to Earth	4_Hr_Rolling	MIMI.RA/DEC for NEG_Y to Saturn (0,0,-9.5).OTP.SRU.post-TOST flyby.
SP_249SA_WAYPTTURN322_PRIME		2016-322T06:14:00		000T00:40:00	2016-322T06:54:00	ISS_NAC to Saturn	POS_Z to NSP	
NEW WAYPOINT		**2016-322T06:54:00**		**000T14:20:00**	**2016-322T21:14:00**	**ISS_NAC to Saturn**	**POS_Z to NSP**	
VIMS_249SA_NHEMMAP001_PRIME	I, U	2016-322T06:54:00		000T01:00:00	2016-322T07:54:00	ISS_NAC to Saturn	POS_Z to NSP	
UVIS_249SA_AURDSTARE001_PRIME	C, I, V	2016-322T07:54:00		000T05:00:00	2016-322T12:54:00	UVIS_FUV to Saturn	POS_Z to NSP	Collaborative Rider(s): VIMS. Collaborate with VIMS
VIMS_249SA_NHEMMAP002_PRIME	I, U	2016-322T12:54:00		000T01:00:00	2016-322T13:54:00	ISS_NAC to Saturn	POS_Z to NSP	
UVIS_249SA_AURSLEW002_PRIME	V	2016-322T13:54:00		000T05:40:00	2016-322T19:34:00	UVIS_FUV to Saturn	POS_Z to NSP	Collaborative Rider(s): VIMS. Collaborate with VIMS
VIMS_249SA_NHEMMAP003_PRIME	I, U	2016-322T19:34:00		000T01:00:00	2016-322T20:34:00	ISS_NAC to Saturn	POS_Z to NSP	
SP_249EA_DLTURN322_PRIME		2016-322T20:34:00		000T00:40:00	2016-322T21:14:00	XBAND to Earth	NEG_Y to 149.3/-34.4	
NEW WAYPOINT		**2016-322T21:14:00**		**000T09:40:00**	**2016-323T06:54:00**	**XBAND to Earth**	**NEG_Y to 149.3/-34.4**	
SP_249EA_C34BWGOTB322_PRIME	C, N	2016-322T21:14:00		000T08:40:00	2016-323T05:54:00	XBAND to Earth	NEG_Y to 149.3/-34.4	MIMI.same secondary as OTP pass.OTB.
SP_249SA_WAYPTTURN323_PRIME		2016-323T06:14:00		000T00:40:00	2016-323T06:54:00	ISS_NAC to Saturn	POS_Z to NSP	
NEW WAYPOINT		**2016-323T06:54:00**		**000T12:35:00**	**2016-323T19:29:00**	**ISS_NAC to Saturn**	**POS_Z to NSP**	
VIMS_249SA_NPOLMOV001_PRIME	C, I, U	2016-323T06:54:00		000T09:18:00	2016-323T16:12:00	ISS_NAC to Saturn	POS_Z to NSP	
VIMS_249SA_GAMCRUOCC001_PIE	C	2016-323T16:12:00		000T02:31:00	2016-323T18:43:00	VIMS_IR to 187.791/-57.113	POS_Z to NSP	
SP_249EA_DLTURN323_PRIME		2016-323T18:49:00		000T00:40:00	2016-323T19:29:00	XBAND to Earth	NEG_Y to 146.2/-39.6	
NEW WAYPOINT		**2016-323T19:29:00**		**000T14:11:00**	**2016-324T09:40:00**	**XBAND to Earth**	**NEG_Y to 146.2/-39.6**	
SP_249EA_YGAP323_PRIME		2016-323T19:29:00		000T01:30:00	2016-323T20:59:00	XBAND to Earth	NEG_Y to 146.2/-39.6	
SP_249EA_C70METSEQ323_PRIME	C, E	2016-323T20:59:00		000T09:00:00	2016-324T05:59:00	XBAND to Earth	NEG_Y to 146.2/-39.6	Secondary of NEG_Y to 146.2/-39.6 per MIMI request.SRU.
CIRS_249MI_MIMAS001_PIE	I, M, U, V	2016-324T06:00:00		000T03:00:00	2016-324T09:00:00	ISS_NAC to Mimas	NEG_Z to 78.0/10.0	Collaborative Rider(s): ISS, UVIS. We can be flexible on the secondary, but would prefer one that aligns the FP3 fov either perpendicular or parallel to the lines of longitude at the equator.
Periapse R = 3.620 Rs, lat ...		2016-324T08:39:18		000T00:00:01	2016-324T08:39:19			

Final Sequenced SPASS (2 of 2)

Gap 4

Gap 5a

Gap 5b

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End	Primary	Secondary	Comments
SP_249SA_WAYPTTURN324_PRIME		2016-324T09:00:00		000T00:40:00	2016-324T09:40:00	UVIS_SOL_OFF to Sun	NEG_X to NSP	
NEW WAYPOINT		**2016-324T09:40:00**		**001T03:49:00**	**2016-325T13:29:00**	**UVIS_SOL_OFF to Sun**	**NEG_X to NSP**	
CIRS_249SA_LIMBINT001_PRIME	E, I, U, V	2016-324T09:40:00		000T06:00:00	2016-324T15:40:00	CIRS_FPB to Saturn	NEG_X to NSP	20S left (illuminated) limb NEG_X to NSP for 3 hours 10N top limb or 50S bot limb NEG_Z to NSP for 3 hours
VIMS_249SA_SSTORMAPS001_PRIME	C	2016-324T15:40:00		000T09:10:00	2016-325T00:50:00	ISS_NAC to Saturn	NEG_Z to NSP	
VIMS_249SA_EQUATMAPS001_PRIME	C	2016-325T00:50:00		000T02:30:00	2016-325T03:20:00	ISS_NAC to Saturn	NEG_Z to NSP	
ISS_249TI_M150R2HZ325_PRIME	C, V	2016-325T03:39:00		000T01:30:00	2016-325T05:09:00	ISS_NAC to Titan	NEG_X to NSP	
VIMS_249RI_SOLAROCC001_PRIME	U	2016-325T05:09:00		000T06:30:00	2016-325T11:39:00	UVIS_SOL_OFF to Sun	NEG_X to NSP	
SP_249EA_DLTURN325_PRIME		2016-325T12:49:00		000T00:40:00	2016-325T13:29:00	XBAND to Earth	POS_Y to NSP	
NEW WAYPOINT		**2016-325T13:29:00**		**000T10:40:00**	**2016-326T00:09:00**	**XBAND to Earth**	**POS_Y to NSP**	
ENGR_249SC_KPTYBIAS325_PRIME		2016-325T13:29:00		000T01:30:00	2016-325T14:59:00	POS_Z to DELTA_H (0.0,0.0,16.0 deg. offset)	NEG_X to Sun	
SP_249EA_G70METSEQ325_PRIME	C, E, M	2016-325T14:59:00		000T08:30:00	2016-325T23:29:00	XBAND to Earth	POS_Y to NSP	POS_Y to NSP per MIMI request
SP_249SA_WAYPTTURN325_PRIME	M	2016-325T23:29:00		000T00:40:00	2016-326T00:09:00	ISS_NAC to Saturn	NEG_X to NSP	
NEW WAYPOINT		**2016-326T00:09:00**		**000T20:50:00**	**2016-326T20:59:00**	**ISS_NAC to Saturn**	**NEG_X to NSP**	
VIMS_249SA_SHEMMAPS001_PRIME	C, M	2016-326T00:09:00		000T04:51:00	2016-326T05:00:00	ISS_NAC to Saturn	NEG_X to NSP	
CIRS_249SA_COMPSIT002_PRIME	M, U, V	2016-326T05:00:00		000T11:00:00	2016-326T16:00:00	CIRS_FP1 to Saturn	POS_Z to NSP	
UVIS_249RH_ICYEXO001_PIE	C, I, M, V	2016-326T16:00:00		000T02:00:00	2016-326T18:00:00	UVIS_FUV to 85.189/-1.943	NEG_X to NSP	Duration requested includes possible turn time. Actual occ is from 16:46 to 16:50.
ISS_249SA_LIMBINT002_PRIME	M, U, V	2016-326T18:00:00		000T02:19:00	2016-326T20:19:00	ISS_NAC to Saturn	NEG_X to Sun	
SP_249EA_DLTURN326_PRIME	M	2016-326T20:19:00		000T00:40:00	2016-326T20:59:00	XBAND to Earth	NEG_Y to 152.0/-29.0	
NEW WAYPOINT		**2016-326T20:59:00**		**000T09:40:00**	**2016-327T06:39:00**	**XBAND to Earth**	**NEG_Y to 152.0/-29.0**	
SP_249EA_C34BWGOTP326_PRIME	C, E, M, N	2016-326T20:59:00		000T08:50:00	2016-327T05:49:00	XBAND to Earth	4_Hr_Rolling	MIMI.RA/DEC for NEG_Y to Saturn (0,0,-9.5).OTP.
SP_249SA_WAYPTTURN327_PRIME	M	2016-327T05:59:00		000T00:40:00	2016-327T06:39:00	ISS_NAC to Saturn	NEG_X to Sun	
NEW WAYPOINT		**2016-327T06:39:00**		**000T14:04:00**	**2016-327T20:43:00**	**ISS_NAC to Saturn**	**NEG_X to Sun**	
UVIS_249SA_EUVFUV001_PRIME	C, I, M	2016-327T06:39:00		000T13:24:00	2016-327T20:03:00	UVIS_FUV to Saturn	NEG_X to Sun	
SP_249EA_DLTURN327_PRIME	M	2016-327T20:03:00		000T00:40:00	2016-327T20:43:00	XBAND to Earth	NEG_Y to 152.0/-29.0	
NEW WAYPOINT		**2016-327T20:43:00**		**000T09:00:00**	**2016-328T05:43:00**	**XBAND to Earth**	**NEG_Y to 152.0/-29.0**	
SP_249EA_C70METOTB327_PRIME	C, E, M, N	2016-327T20:43:00		000T09:00:00	2016-328T05:43:00	XBAND to Earth	NEG_Y to 152.0/-29.0	MIMI.same secondary as OTP pass.OTB.

Final Sequenced SMT and Data Volume

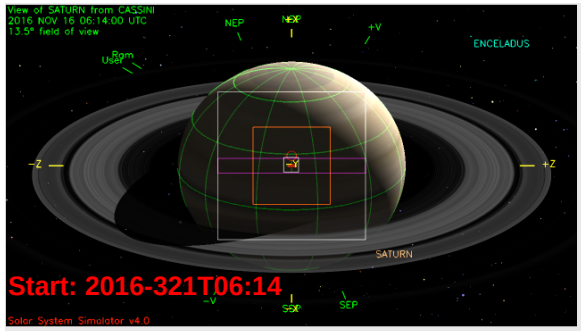
DATA VOLUME SUMMARY --- TRANSFER FRAME OVERHEAD INCLUDED (80 BITS PER 8800-BIT FRAME)

			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 (Mb)
SP_249EA_C34BWGOTP321_PRIME	321 21:14	322 05:44	565	742	63	1370	3322	1952	0	188	50	1608	441	-1168	0	0%	1167
SP_249EA_C34BWGOTB322_PRIME	322 21:14	323 05:54	1167	840	65	2073	3322	1249	0	266	51	2390	537	-1853	0	0%	1853
SP_249EA_C70METSEQ323_PRIME	323 20:59	324 05:59	1853	1199	64	3115	3322	207	0	310	53	3478	2774	-704	0	0%	704
SP_249EA_G70METSEQ325_PRIME	325 14:59	325 23:29	704	2429	139	3272	3322	50	0	175	50	3498	2082	-1417	0	0%	1416
SP_249EA_C34BWGOTP326_PRIME	326 20:59	327 05:49	1416	1343	91	2850	3322	473	0	183	52	3084	462	-2623	0	0%	2622
SP_249EA_C70METOTB327_PRIME	327 20:43	328 05:43	2622	550	63	3236	3322	86	0	186	53	3475	2947	-529	0	0%	528

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	321 06:14	321 21:14	0.0	28.3	98.4	5.4	0.0	26.7	45.9	0.0	70.7	49.5	410.0	0.0	62.7	797.6
SP_249EA_C34BWGOTP321_PRIME	321 21:14	322 05:44	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
DAILY TOTAL SCIENCE	321 06:14	322 05:44	0.0	44.3	179.4	8.5	0.0	41.8	71.9	0.0	110.8	54.2	410.0	0.0	62.7	
OBSERVATION_NOR	322 05:44	322 21:14	0.0	29.2	41.4	5.6	200.0	27.6	47.4	0.0	114.4	131.9	235.0	0.0	64.8	897.3
SP_249EA_C34BWGOTB322_PRIME	322 21:14	323 05:54	0.0	16.3	82.8	3.1	0.0	15.4	26.5	0.0	114.5	4.8	0.0	0.0	0.0	263.4
DAILY TOTAL SCIENCE	322 05:44	323 05:54	0.0	45.6	124.2	8.7	200.0	43.0	74.0	0.0	228.8	136.7	235.0	0.0	64.8	
OBSERVATION_NOR	323 05:54	323 20:59	0.0	28.5	106.8	5.4	100.0	26.8	46.2	0.0	196.0	168.7	510.0	0.0	63.0	1251.3
SP_249EA_C70METSEQ323_PRIME	323 20:59	324 05:59	0.0	17.0	86.4	13.3	0.0	32.8	27.5	0.0	124.8	4.9	0.0	0.0	0.0	306.8
DAILY TOTAL SCIENCE	323 05:54	324 05:59	0.0	45.4	193.2	18.7	100.0	59.6	73.7	0.0	320.8	173.6	510.0	0.0	63.0	
OBSERVATION_NOR	324 05:59	325 14:59	0.0	82.1	235.2	11.9	238.5	105.9	101.0	0.0	424.3	304.0	904.0	0.0	137.9	2544.7
SP_249EA_G70METSEQ325_PRIME	325 14:59	325 23:29	0.0	16.0	81.0	3.1	0.0	15.1	26.0	0.0	27.8	4.7	0.0	0.0	0.0	173.7
DAILY TOTAL SCIENCE	324 05:59	325 23:29	0.0	98.1	316.2	14.9	238.5	121.0	127.0	0.0	452.2	308.6	904.0	0.0	137.9	
OBSERVATION_NOR	325 23:29	326 20:59	0.0	40.6	130.0	17.8	199.8	38.2	65.8	0.0	70.4	102.8	665.0	0.0	89.9	1420.3
SP_249EA_C34BWGOTP326_PRIME	326 20:59	327 05:49	0.0	16.7	84.6	3.2	0.0	15.7	27.0	0.0	28.9	4.8	0.0	0.0	0.0	181.0
DAILY TOTAL SCIENCE	325 23:29	327 05:49	0.0	57.2	214.6	21.0	199.8	53.9	92.8	0.0	99.4	107.7	665.0	0.0	89.9	
OBSERVATION_NOR	327 05:49	327 20:43	0.0	28.1	98.3	5.4	50.0	26.5	45.6	0.0	48.8	242.8	0.0	0.0	62.3	607.8
SP_249EA_C70METOTB327_PRIME	327 20:43	328 05:43	0.0	17.0	86.4	3.2	0.0	16.0	27.5	0.0	29.5	4.9	0.0	0.0	0.0	184.6
DAILY TOTAL SCIENCE	327 05:49	328 05:43	0.0	45.1	184.7	8.6	50.0	42.5	73.1	0.0	78.3	247.8	0.0	0.0	62.3	

Segment Geometry



Rev 249 INBOUND
2016 - 321T06:14:00 SCET
2016 NOV 16 06:14:00 SCET
2016 NOV 16 07:45:09 ERT
Apoapse_249 + 21:07:31
Periapse_249 - 003T02:25:19
Light time: 91.2 min
Orbit period: 9.0 days

Radius	1274292 km	21.14 Rs
Rad_cyl	1182637 km	19.62 Rs
Z_ht_cyl	474542 km	7.87 Rs
Mag_L	24.55	
Semi_axs	769117 km	12.76 Rs
Eccentricity	0.716	
Inclination	61.36 deg	
Sun_range	10.05 AU	
Earth_range	10.96 AU	

--- DSN ELEV -- D/L -- U/L --------

Goldstone	-67.6	-31.7
Canberra	31.3	67.4
Madrid	-11.7	-46.0

------- LOOK DIRECTION INFO -------

FOV	13.5 deg	236.3 mrad
RA	118.829 deg	
DEC	-23.326 deg	
Crosses_RP_0	0.000 Rs	
EPS	2.093 deg	
SEP	21.787 deg	
ORS b/s angle	60.5 deg	
ORS rad angle	47.2 deg	*

Point NEG_Y at SATURN and align POS_X = Up with NSP

User vector - RA: +189.100 DEC: +32.000 Paste Current RA/DEC

Tilt L Up Tilt R Left Reset Right Down

Zoom Out Fill Screen Zoom In

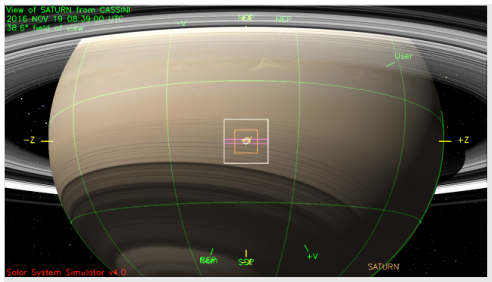
Labels Axes Orbits Vectors FOVs Lat/Lons Image Hi Res

Year Month Day Hour Minute Second

Turn analyzer: SATURN to EARTH about Z on RWA = 7.6 min / 61.9 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	--	--	1274292	21.14	1214814	20.16	119.5	5.42	94.63	253	22	0	3.2	0	0.0	61.9	75.5
MIMAS	--	--	1277914	21.20	1277718	21.20	124.4	0.02	0.32	273	21	-87	12.6	4333	8.2	56.8	82.4
ENCELADUS	--	--	1477403	24.51	1477148	24.51	124.5	0.02	0.35	342	19	-153	13.4	12	5.2	56.8	77.5
TETHYS	--	--	1084462	17.99	1083929	17.99	122.0	0.06	1.00	232	26	-41	9.1	5592	11.0	59.0	86.3
DIONE	--	--	1045098	17.34	1044536	17.33	122.4	0.06	1.08	237	27	-41	7.8	144	15.0	58.5	90.3
RHEA	--	--	950909	15.78	950146	15.77	121.8	0.09	1.61	242	30	-37	6.4	901	21.8	58.9	97.1
TITAN	--	--	953041	15.81	950466	15.77	115.2	0.31	5.40	289	30	-41	3.8	-5646	62.5	63.8	137.1
HYPERION	--	--	596245	9.89	596083	9.89	34.8	0.03	0.55	174	8	3	4.3	-26184	100.1	144.5	116.6
IAPETUS	--	--	4650827	77.17	4650080	77.16	139.8	0.02	0.32	359	10	-178	5.5	970587	28.0	42.0	63.3
PHOEBE	--	--	15035375	249.48	15035261	249.47	132.0	0.00	0.02	352	-4	165	2.2	5528300	43.7	49.7	44.8
SATURN	--	--	1274292	21.14	1214814	20.16	119.5	5.42	94.63	253	22	0	3.2	0	0.0	61.9	75.5

Periapse:
2016-324T08:39:18



Rev 249 INBOUND
2016 - 324T08:39:00 SCET
2016 NOV 19 08:39:00 SCET
2016 NOV 19 10:10:16 ERT
Apoapse_249 + 003T23:32:31
Periapse_249 - 00:00:19
Light time: 91.3 min
Orbit period: 8.0 days

Radius	218394 km	3.62 Rs
Rad_cyl	212391 km	3.52 Rs
Z_ht_cyl	-50851 km	-0.84 Rs
Mag_L	3.83	
Semi_axs	772074 km	12.81 Rs
Eccentricity	0.717	
Inclination	61.38 deg	
Sun_range	10.04 AU	
Earth_range	10.97 AU	

--- DSN ELEV -- D/L -- U/L --------

Goldstone	-68.2	-62.9
Canberra	0.9	36.9
Madrid	13.6	-16.6

------- LOOK DIRECTION INFO -------

FOV	38.6 deg	673.1 mrad
RA	-67.404 deg	
DEC	15.547 deg	
Crosses_RP_0	0.000 Rs	
EPS	1.834 deg	
SEP	18.986 deg	
ORS b/s angle	129.2 deg	
ORS rad angle	52.3 deg	*

Point NEG_Y at SATURN and align POS_X = Up with NSP

User vector - RA: +189.100 DEC: +32.000 Paste Current RA/DEC

Tilt L Up Tilt R Left Reset Right Down

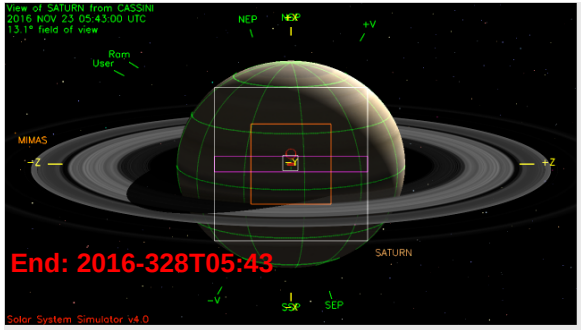
Zoom Out Fill Screen Zoom In

Labels Axes Orbits Vectors FOVs Lat/Lons Image Hi Res

Year Month Day Hour Minute Second

Turn analyzer: SATURN to EARTH about Z on RWA = 12.5 min / 127.9 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	--	--	218394	3.62	158447	2.63	50.8	32.04	559.18	72	-13	0	17.3	0	0.0	127.9	90.0
MIMAS	--	--	76290	1.27	76096	1.26	69.5	0.31	5.44	253	-39	-16	15.2	-3774	57.7	111.1	133.2
ENCELADUS	--	--	271555	4.51	271301	4.50	45.0	0.11	1.89	315	-11	-73	17.6	13	56.7	136.0	107.8
TETHYS	--	--	386653	6.42	386115	6.41	37.6	0.16	2.80	327	-8	-97	19.4	-3778	49.2	143.2	101.2
DIONE	--	--	423549	7.03	422986	7.02	98.3	0.15	2.66	31	-7	86	21.4	170	62.9	79.8	75.5
RHEA	--	--	631418	10.48	630651	10.46	36.5	0.14	2.43	344	-5	-109	19.0	-2211	52.4	144.2	99.7
TITAN	--	--	1120500	18.59	1117925	18.55	136.4	0.26	4.60	4	-3	61	17.9	4439	108.4	42.0	80.9
HYPERION	--	--	1479291	24.55	1479146	24.54	85.1	0.01	0.22	319	22	121	20.2	-5551	52.3	93.0	70.0
IAPETUS	--	--	3420502	56.75	3419755	56.74	131.7	0.03	0.44	359	-2	-18	15.6	946383	144.3	50.0	124.4
PHOEBE	--	--	14025705	232.72	14025590	232.72	133.5	0.00	0.02	0	-9	-19	18.5	5649538	138.2	47.9	131.2
SATURN	--	--	218394	3.62	158447	2.63	50.8	32.04	559.18	72	-13	0	17.3	0	0.0	127.9	90.0



Rev 249 OUTBOUND
2016 - 328T05:43:00 SCET
2016 NOV 23 05:43:00 SCET
2016 NOV 23 07:14:28 ERT
Apoapse_249 + 007T20:36:31
Periapse_249 + 003T21:03:41
Light time: 91.5 min
Orbit period: 8.0 days

Radius	1319689 km	21.90 Rs
Rad_cyl	1288208 km	21.37 Rs
Z_ht_cyl	286533 km	4.75 Rs
Mag_L	22.98	
Semi_axs	769353 km	12.77 Rs
Eccentricity	0.716	
Inclination	61.36 deg	
Sun_range	10.05 AU	
Earth_range	11.00 AU	

--- DSN ELEV -- D/L -- U/L --------

Goldstone	-66.6	-30.3
Canberra	32.7	68.6
Madrid	-12.9	-47.4

------- LOOK DIRECTION INFO -------

FOV	13.1 deg	228.2 mrad
RA	111.892 deg	
DEC	-14.692 deg	
Crosses_RP_0	0.000 Rs	
EPS	1.510 deg	
SEP	15.554 deg	
ORS b/s angle	49.6 deg	
ORS rad angle	53.0 deg	*

Point NEG_Y at SATURN and align POS_X = Up with NSP

User vector - RA: +189.100 DEC: +32.000 Paste Current RA/DEC

Tilt L Up Tilt R Left Reset Right Down

Zoom Out Fill Screen Zoom In

Labels Axes Orbits Vectors FOVs Lat/Lons Image Hi Res

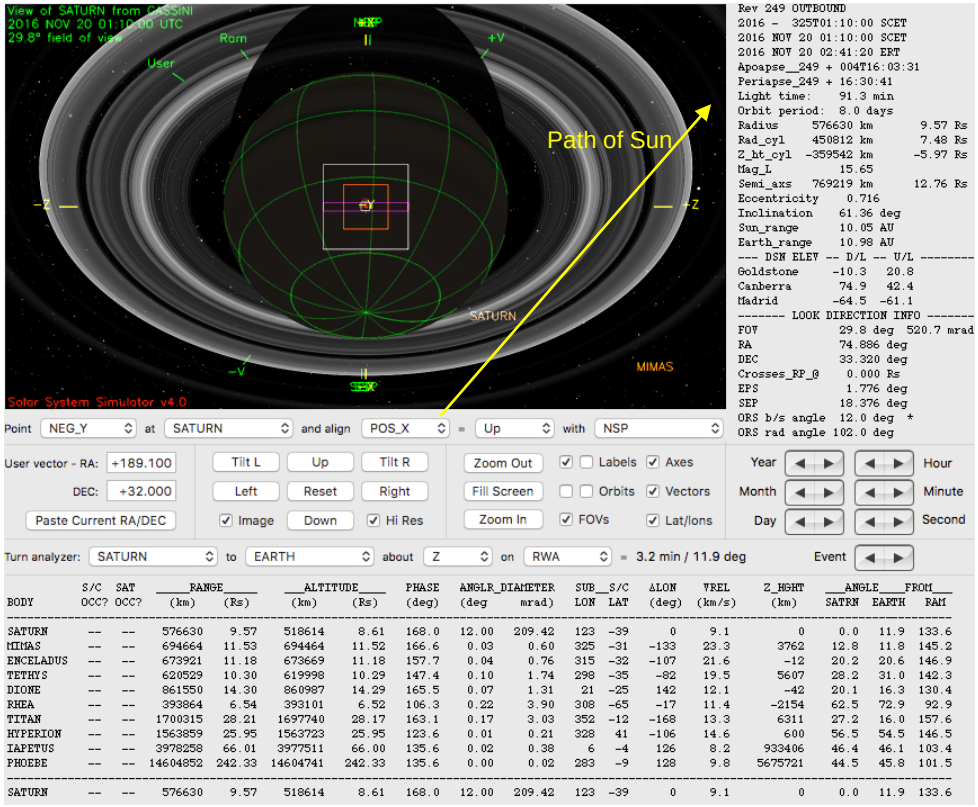
Year Month Day Hour Minute Second

Turn analyzer: SATURN to EARTH about Z on RWA = 6.7 min / 50.7 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	--	--	1319689	21.90	1259689	20.90	130.4	5.24	91.37	157	13	0	2.9	0	0.0	50.7	91.8
MIMAS	--	--	1431917	23.76	1431716	23.76	126.8	0.02	0.29	50	11	124	15.4	-5175	6.3	54.3	86.0
ENCELADUS	--	--	1548991	25.70	1548735	25.70	130.7	0.02	0.33	15	11	168	14.3	18	2.6	50.4	89.2
TETHYS	--	--	1217916	20.21	1217384	20.20	121.1	0.05	0.89	105	14	63	11.4	-2111	12.5	60.1	82.0
DIONE	--	--	1514831	25.13	1514269	25.13	122.6	0.04	0.74	52	11	115	11.3	-167	13.1	58.6	80.0
RHEA	--	--	1650684	27.39	1649920	27.38	121.0	0.05	0.93	45	10	121	9.9	-1737	16.0	60.2	77.3
TITAN	--	--	2492115	41.35	2489540	41.31	125.9	0.12	2.07	10	7	154	7.3	7896	14.0	55.4	77.9
HYPERION	--	--	2483761	41.21	2483641	41.21	145.5	0.01	0.13	93	42	-141	6.9	23293	20.8	35.1	105.4
IAPETUS	--	--	4664843	77.40	4664096	77.39	121.4	0.02	0.32	9	8	144	5.4	839314	32.8	59.9	59.0
PHOEBE	--	--	15277793	253.50	15277679	253.50	136.5	0.00	0.02	17	-7	163	2.0	5793603	37.0	44.6	61.4
SATURN	--	--	1319689	21.90	1259689	20.90	130.4	5.24	91.37	157	13	0	2.9	0	0.0	50.7	91.8

	Saturn Range	Phase Angle	Sub-S/C Lat.
Segment Start	21.14	119.5	22
Periapse	3.62	50.8	-13
Segment End	21.9	130.4	13

Solar Geometry – ORS Boresight Concerns



Rev 249 OUTBOUND
2016 - 325T01:10:00 SCET
2016 NOV 20 01:10:00 SCET
2016 NOV 20 02:41:20 ERT
Apoapse_249 + 004T16:03:31
Periapse_249 + 16:30:41
Light time: 91.3 min
Orbit period: 8.0 days

Radius	576630 km	9.57 Rs
Rad_cyl	450812 km	7.48 Rs
Z_ht_cyl	-359542 km	-5.97 Rs
Mag_L	15.65	
Semi_axs	769219 km	12.76 Rs
Eccentricity	0.716	
Inclination	61.36 deg	
Sun_range	10.05 AU	
Earth_range	10.98 AU	

--- DSN ELEV -- D/L -- U/L --------

Goldstone	-10.3	20.8
Canberra	74.9	42.4
Madrid	-64.5	-61.1

------- LOOK DIRECTION INFO -------

FOV	29.8 deg 520.7 mrad
RA	74.886 deg
DEC	33.320 deg
Crosses_RP_@	0.000 Rs
EPS	1.776 deg
SEP	18.376 deg
ORS b/s angle	12.0 deg *
ORS rad angle	102.0 deg

Point NEG_Y at SATURN and align POS_X = Up with NSP

User vector - RA: +189.100 DEC: +32.000 Paste Current RA/DEC

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

Zoom Out Fill Screen Zoom In

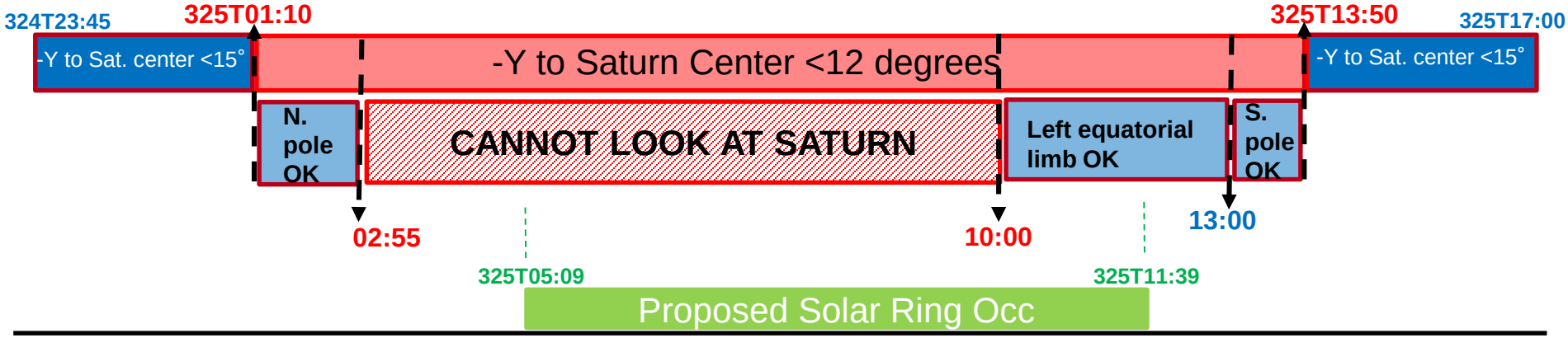
Labels Axes Orbits Vectors FOVs Lat/lons

Year Month Day Hour Minute Second

Turn analyzer: SATURN to EARTH about Z on RWA = 3.2 min / 11.9 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	--	--	576630	9.57	518614	8.61	168.0	12.00	209.42	123	-39	0	9.1	0	0.0	11.9	133.6
MIMAS	--	--	694664	11.53	694464	11.52	166.6	0.03	0.60	325	-31	-133	23.3	3762	12.8	11.8	145.2
ENCELADUS	--	--	673921	11.18	673669	11.18	157.7	0.04	0.76	315	-32	-107	21.6	-12	20.2	20.6	146.9
TETHYS	--	--	620529	10.30	619998	10.29	147.4	0.10	1.74	298	-35	-82	19.5	5607	28.2	31.0	142.3
DIONE	--	--	861550	14.30	860987	14.29	165.5	0.07	1.31	21	-25	142	12.1	-42	20.1	16.3	130.4
RHEA	--	--	393864	6.54	393101	6.52	106.3	0.22	3.90	308	-65	-17	11.4	-2154	62.5	72.9	92.9
TITAN	--	--	1700315	28.21	1697740	28.17	163.1	0.17	3.03	352	-12	-168	13.3	6311	27.2	16.0	157.6
HYPERION	--	--	1563859	25.95	1563723	25.95	123.6	0.01	0.21	328	41	-106	14.6	600	56.5	54.5	146.5
IAPETUS	--	--	3978258	66.01	3977511	66.00	135.6	0.02	0.38	6	-4	126	8.2	933406	46.4	46.1	103.4
PHOEBE	--	--	14604852	242.33	14604741	242.33	135.6	0.00	0.02	283	-9	128	9.8	5675721	44.5	45.8	101.5
SATURN	--	--	576630	9.57	518614	8.61	168.0	12.00	209.42	123	-39	0	9.1	0	0.0	11.9	133.6

- Pointing to NEG_Y to Saturn (center) would lead to a CMT (<12 deg) violation between 2016-325T01:10:00 and 2016-325T13:50:00 (Gap 4).
- Minimum NEG_Y to Sun angle is ~6.4° at 2016-325T06:24:00.
- From 325T01:10 - 02:55, pointing at the north pole brings one out of the 12° cone, but not the 15° cone. *A waiver will be required.*
- Cannot observe Saturn from 325T2:55 – 10:00
- From 325T10:00 - 13:00, pointing at the left equatorial limb brings one out of the 12° cone, but not the 15° cone. *A waiver will be required.*
- After 325T13:00, pointing at the south pole brings one out of the 12° cone, but not the 15° cone. *A waiver will be required.*



Daily Science Highlights

DOY 321 (16 November 2016): Saturn_249 was a periapse segment and the last segment of the S96 sequence. Science began with a 23hr (~2 rotation periods) CIRS stare at the northern hemisphere of Saturn to study atmospheric composition (COMPSIT); VIMS and UVIS rode along.

DOY 322 (17 November 2016): VIMS and UVIS alternated prime status with interchanging 1hr VIMS mapping mosaics of the north hemisphere of Saturn (ISS and UVIS riding) and UVIS northern aurora observations— one 5hr stare (VIMS, CIRS, ISS ride) and one 5hr40 slew (VIMS rides).

DOY 323 (18 November 2016): VIMS, with all other ORS instruments riding, created a 9hr movie of Saturn's north polar region. VIMS and CIRS then observed the occultation of the star Gamma Cru through Saturn's atmosphere.

DOY 324 (19 November 2016): CIRS, VIMS, ISS, and UVIS observed the moon Mimas. Cassini reached Saturn periapse at the end of this observation. Turning back to Saturn, CIRS observed the bright limb of Saturn for 6hr to obtain stratospheric thermal structure by means of limb sounding in the mid-IR. ISS, VIMS, and UVIS ride. VIMS and CIRS then began a 9hr observation to mosaic Saturn's southern storm latitude (35° S. lat).

DOY325 (20 November 2016): VIMS and CIRS took mosaics of Saturn's equatorial latitudes during a 2hr30 observation. Cassini then turned towards Titan and ISS, CIRS, and VIMS performed an observation as part of the Titan Monitoring Campaign (phase 164 and range 1.4 Mkm). VIMS and UVIS jointly observed a solar occultation for 6hr30 to study the size and spatial distributions of the smallest particles in the rings.

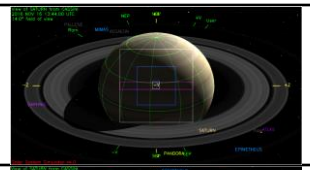
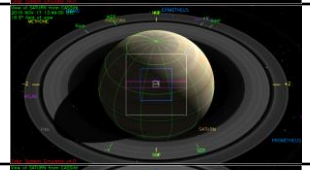
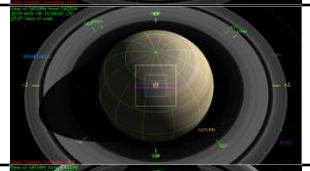
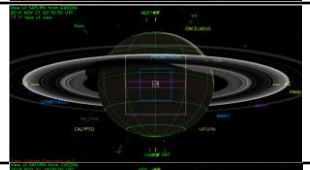
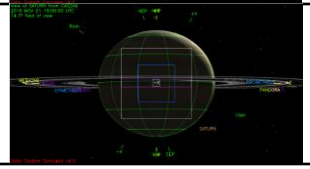
Daily Science Highlights

DOY 326 (21 November 2016): VIMS and CIRS mapped Saturn's southern hemisphere for just under 5hr. CIRS then stared at Saturn's southern hemisphere to study atmospheric composition (COMPSIT) for 11hr (1 rotation period); VIMS and UVIS ride. UVIS then led an observation with all other ORS instruments riding to look for volatiles as part of the Icy Satellite Exospheres campaign as Rhea occults the star Zeta Orionis. ISS then imaged along the bright limb of Saturn, with VIMS and UVIS riding, for a little over 2h.

DOY 327 (22 November 2016): UVIS mapped the planet in the ultraviolet to study the distribution of hazes and organic compounds high in Saturn's atmosphere for over 13h; CIRS and ISS rode along. Saturn_249 ended with a downlink of data via the 70M antenna at the Canberra Complex. This also ended S96.

Segment Integration Planning

Timeline Gaps and Suggested Observations

Gap	Start	End	Duration	Phase angle (range)	Rs range	Sub-S/C Lat.	Snapshot (mid-gap)
1	2016-321T06:54:00	2016-321T20:34:00	000T13:40:00	119.2 to 112.2	21.1 to 19.7	22 to 28	
	Suggested observations: CIRS Mapping or Compsit						
2	2016-322T06:54:00	2016-322T20:34:00	000T13:40:00	106.2 to 95.9	18.2 to 15.5	33 to 41	
	Suggested observations: Aurora						
3	2016-323T06:54:00	2016-323T16:12:00	000T09:18:00	84.8 to 68.7	12.7 to 9.6	49 to 59	
	Suggested observations: VIMS N. Pole						
	Periapse between gaps 3 & 4 at 324T08:39:19						
4	2016-324T09:40:00	2016-325T12:49:00	001T03:09:00	67.1 to 169.0	3.7 to 13.4	-28 to -23	
	Suggested observations: VIMS S. Equatorial, VIMS S. Storm Alley, VIMS N. Equatorial, Solar Ring Occ						
	Sun <12 deg of Saturn center 325T01:10 - 13:50						
5a	2016-326T00:09:00	2016-326T05:00:00	000T04:51:00	159.0 to 155.5	16.2 to 17.2	-13 to -10	
	Suggested observations: CAKE – VIMS Map						
5b	2016-326T18:00:00	2016-326T20:19:00	000T02:19:00	147.4 to 146.2	19.4 to 19.7	-3 to -2	
	Suggested observations: CAKE – ISS Limb						

Initial SMT and Data Volume

Beginning of Integration:

****Includes only MAPS, PIEs, and CAKEs**

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 (Mb)
SP_249EA_C34BWGOTP321_PRIME	321 21:14	322 06:14	0	179	63	242	3322	3080	0	199	53	494	472	-22	2931	32%	22
SP_249EA_C34BWGOTB322_PRIME	322 21:14	323 06:14	22	179	63	264	3322	3058	0	199	53	516	558	41	2931	33%	0
SP_249EA_C70METSEQ323_PRIME	323 20:59	324 05:59	0	370	62	433	3322	2889	0	501	53	986	2774	1787	2991	36%	0
SP_249EA_G70METSEQ325_PRIME	325 14:59	325 23:29	0	1866	139	2005	3322	1317	0	188	50	2243	2082	-162	1203	22%	162
CAKE SP_249EA_C34BWGOTP326_PRIME	326 20:59	327 05:59	162	874	91	1126	3322	2196	0	186	53	1365	472	-893	1203	35%	893
SP_249EA_C70METOTB327_PRIME	327 20:43	328 05:43	893	549	62	1504	3322	1818	0	186	53	1743	2947	1203	1203	41%	0

DATA VOLUME REPORT --- TRANSFER FRAME OVERHEAD NOT INCLUDED

ISS is used to book keep CAKE data volume for last 2 observation periods

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	321 06:14	321 21:14	0.0	28.3	0.0	5.4	0.0	26.7	45.9	0.0	70.7	0.0	0.0	0.0	62.7	239.7
SP_249EA_C34BWGOTP321_PRIME	321 21:14	322 06:14	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	321 06:14	322 06:14	0.0	45.3	86.4	8.6	0.0	42.7	73.4	0.0	113.2	4.9	0.0	0.0	62.7	
OBSERVATION_NOR	322 06:14	322 21:14	0.0	28.3	0.0	5.4	0.0	26.7	45.9	0.0	70.7	0.0	0.0	0.0	62.7	239.7
SP_249EA_C34BWGOTB322_PRIME	322 21:14	323 06:14	0.0	17.0	86.4	3.2	0.0	16.0	27.5	0.0	42.2	4.9	0.0	0.0	0.0	197.3
DAILY TOTAL SCIENCE	322 06:14	323 06:14	0.0	45.3	86.4	8.6	0.0	42.7	73.4	0.0	112.9	4.9	0.0	0.0	62.7	
OBSERVATION_NOR	323 06:14	323 20:59	0.0	27.8	57.8	5.3	0.0	26.2	45.1	0.0	134.6	0.0	70.0	0.0	61.6	428.6
SP_249EA_C70METSEQ323_PRIME	323 20:59	324 05:59	0.0	17.0	86.4	13.3	0.0	32.8	27.5	0.0	314.1	4.9	0.0	0.0	0.0	496.1
DAILY TOTAL SCIENCE	323 06:14	324 05:59	0.0	44.8	144.2	18.6	0.0	59.0	72.7	0.0	448.7	4.9	70.0	0.0	61.6	
OBSERVATION_NOR	324 05:59	325 14:59	0.0	82.1	43.2	11.9	150.0	105.9	101.0	0.0	1131.7	173.3	50.0	0.0	137.9	1986.9
SP_249EA_G70METSEQ325_PRIME	325 14:59	325 23:29	0.0	16.0	81.0	3.1	0.0	15.1	26.0	0.0	39.9	4.7	0.0	0.0	0.0	185.8
DAILY TOTAL SCIENCE	324 05:59	325 23:29	0.0	98.1	124.2	14.9	150.0	121.0	127.0	0.0	1171.6	178.0	50.0	0.0	137.9	
CAKE OBSERVATION_NOR	325 23:29	326 20:59	0.0	40.6	15.8	17.8	500.0	38.2	65.8	0.0	69.7	23.1	95.0	0.0	89.9	955.9
SP_249EA_C34BWGOTP326_PRIME	326 20:59	327 05:59	0.0	17.0	86.4	3.2	0.0	16.0	27.5	0.0	29.2	4.9	0.0	0.0	0.0	184.3
DAILY TOTAL SCIENCE	325 23:29	327 05:59	0.0	57.5	102.2	21.0	500.0	54.2	93.3	0.0	98.8	28.0	95.0	0.0	89.9	
OBSERVATION_NOR	327 05:59	327 20:43	0.0	27.8	0.0	5.3	392.0	26.2	45.1	0.0	47.7	0.0	0.0	0.0	61.6	605.7
SP_249EA_C70METOTB327_PRIME	327 20:43	328 05:43	0.0	17.0	86.4	3.2	0.0	16.0	27.5	0.0	29.2	4.9	0.0	0.0	0.0	184.3
DAILY TOTAL SCIENCE	327 05:59	328 05:43	0.0	44.8	86.4	8.5	392.0	42.2	72.6	0.0	76.9	4.9	0.0	0.0	61.6	

	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)	0.0	335.7	629.9	80.4	1042.0	361.9	512.5	0.0	2022.2	225.8	215.0	0.0

Waypoint Selection

RBOT - Friendly

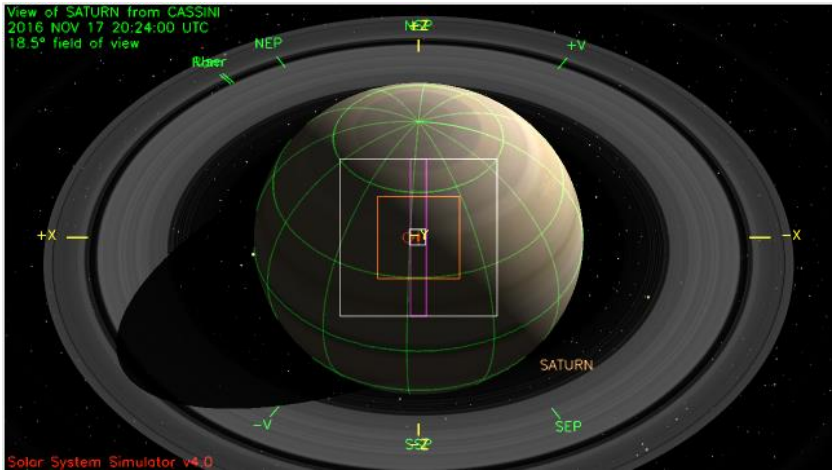
OBSERVATION PERIOD	START	END	POS_X	NEG_X	POS_Z	NEG_Z
SP_249NA_OBSERV321_NA	2016-321T06:14:00	2016-321T21:14:00	191.7/ 34.3	------	191.7/ 34.3	------
SP_249NA_OBSERV322_NA	2016-322T06:14:00	2016-322T21:14:00	191.7/ 34.3	------	191.7/ 34.3	------
SP_249NA_OBSERV323_NA	2016-323T06:14:00	2016-323T20:59:00	191.7/ 34.4	------	191.7/ 34.4	------
SP_249NA_OBSERV324_NA	2016-324T05:59:00	2016-325T14:59:00	------	------	------	------
SP_249NA_OBSERV325_NA	2016-325T23:29:00	2016-326T20:59:00	191.6/ 34.3	------	191.6/ 34.3	------
SP_249NA_OBSERV327_NA	2016-327T05:59:00	2016-327T20:43:00	191.6/ 34.3	------	191.6/ 34.3	------

	START	END	POS_X_2_NSP	POS_X_2_NEP	NEG_X_2_NSP	NEG_X_2_NEP	POS_Z_2_NSP	POS_Z_2_NEP	NEG_Z_2_NSP	NEG_Z_2_NEP	NEG_X_2_SUN	NEG_Z_2_EARTH
SP_249NA_OBSERV321_NA	2016-321T06:14:00	2016-321T21:14:00	**BAD**	**BAD**	OK	OK	OK	OK	**BAD**	**BAD**	OK	OK
SP_249NA_OBSERV322_NA	2016-322T06:14:00	2016-322T21:14:00	**BAD**	**BAD**	OK	OK	OK	OK	**BAD**	**BAD**	OK	OK
SP_249NA_OBSERV323_NA	2016-323T06:14:00	2016-323T20:59:00	**BAD**	OK	**BAD**	**BAD**	OK	OK	**BAD**	**BAD**	OK	OK
SP_249NA_OBSERV324_NA	2016-324T05:59:00	2016-325T14:59:00	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**
SP_249NA_OBSERV325_NA	2016-325T23:29:00	2016-326T20:59:00	**BAD**	**BAD**	OK	OK	OK	OK	**BAD**	**BAD**	OK	OK
SP_249NA_OBSERV327_NA	2016-327T05:59:00	2016-327T20:43:00	**BAD**	**BAD**	OK	OK	OK	OK	**BAD**	**BAD**	OK	OK

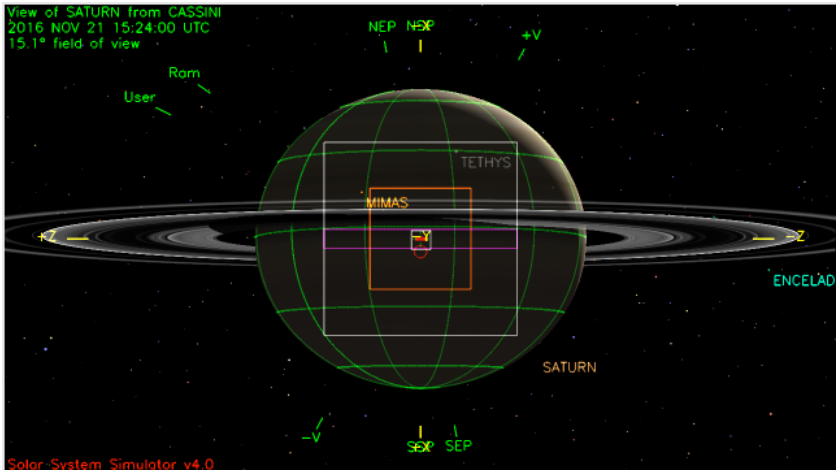
*** NEG_Y to Saturn not safe from 2016-324T23:45 to 32517:00 (ORS to Sun < 15 deg)**

Waypoints Chosen

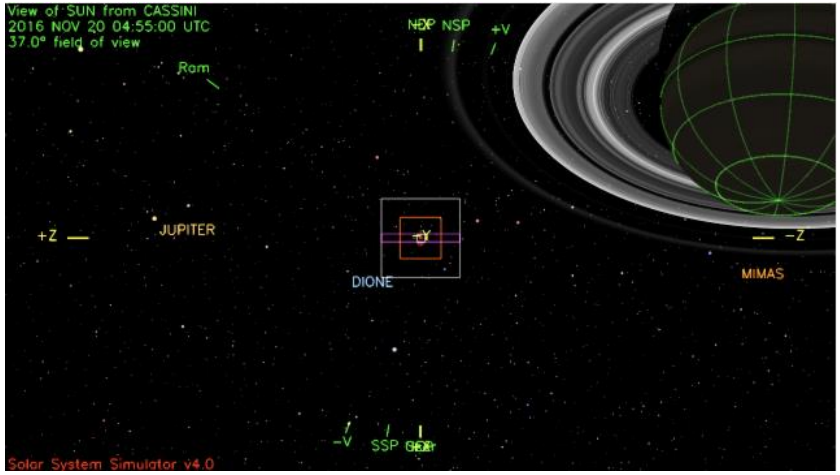
Waypoint 1 (2016-321T06:54 – 324T09:40):
NAC to Saturn, POS_Z to NSP



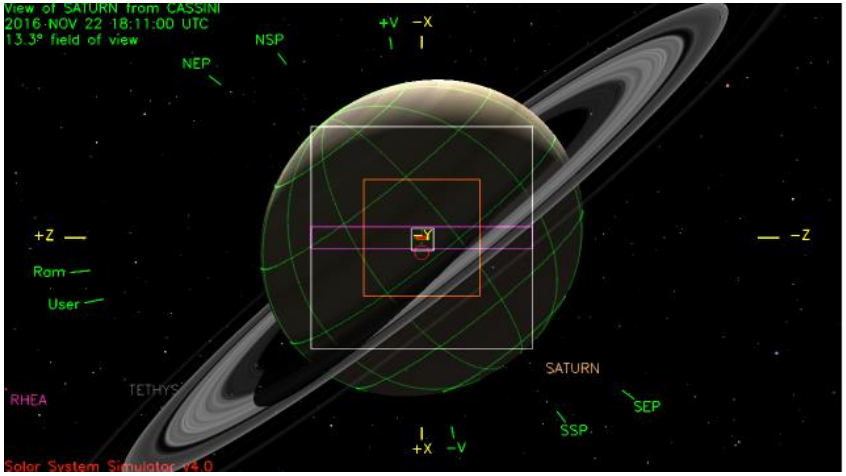
Waypoint 3 (2016-326T00:09 – 327T06:39):
NAC to Saturn, NEG_X to NSP



Waypoint 2 (2016-324T09:40 – 326T00:09):
UVIS_SOL_OFF to Sun, NEG_X to NSP



Waypoint 4 (2016-327T06:39 – 328T05:43):
NAC to Saturn, NEG_X to Sun



Notes & Liens (1 of 2)

- Pointing:
  - CIRS Boresight Operational FR waiver (CIRS boresight to sun < 15 degrees) may be needed for incursions during the approximate period 2016-324T23:45 - 325T17:00 (VIMS_249SA_SSTORMAPS001, VIMS_249SA_EQUATMAPPS001, ISS_249TI_M150R2HZ325, VIMS_249RI_SOLAROCC001, SP_249EA_DLTURN325, SP_249EA_YGAP325, SP_249EA_G70METSEQ325). CIRS gives **preliminary** OK for waiver.
    - The observations during this time period **may require a two-part turn** to return to the waypoint.
    - The waypoint is UVIS_SOL_OFF to SUN and downlink turn/downlink do not violate flight rules.
  - RBOT friendly waypoints used when compatible with science.

- Data Volume:
  - No SMT warnings
  - Accepting 89 Mb of carryover from TOST
  - SSR cleared by end of segment/sequence but have constant carryover throughout segment (do not clear SSR for 7 days).

- DSN:
  - Disposition of ap_downlink report check warnings:

    Warning: SP_249EA_G70METSEQ325_PRIME is a SEQ upload pass and should be at least 9 hours in duration
    - Pass is 8h30. Due to the viewperiod, this is the longest the pass can be. See SPLAT item.

    Warning: 70m usage for sequence exceeds project commitment of <= 35%; is at 50%
    - No passes were upgraded from original DLWG allocation. Also, data volume is extremely tight in this segment and downgrading is not possible.

    Warning: number of sequence upload passes is 2; should be 5 or more
    - There are 6 passes in this segment, 2 labeled SEQ, the remaining 4 are 2 sets of OTP/OTB. There are also SEQ passes in the segments before (2 in TOST248_T124, 1 in MAPS_248)

- Opmodes:
  - No unique opmodes.

Notes & Liens (2 of 2)

- Resource checker:

  Downlink Pass for sequence request has a duration of 000T08:30:00; Downlink pass for sequence should be at least nine hours.

  - Due to the viewperiod, this is the longest the pass can be. See SPLAT item.

  Known gaps, can be ignored:

  - 2016-323T18:43 – 18:49 : Between VIMS GAMCRUOCC001 and DLTURN (6min)
  - 2016-324T05:59 – 06:00 : Between C70METSEQ downlink and CIRS MIMAS001_PIE (1min)
  - 2016-325T03:20 – 03:39 : Between VIMS EQUATMAPS001 and ISS TMC M150R2HZ325 (19min)
  - 2016-325T11:39 – 12:49 : Between VIMS SOLAROCC001 and DLTURN (1h10)

- Hydrazine:
  - N/A

- Special Activities:

  PIES:
  - VIMS_249SA_GAMCRUOCC001_PIE @ 2016-323T16:12
  - CIRS_249MI_MIMAS001_PIE @ 2016-324T06:00 ----- LUD –OD available by ~DOY314 (OTM463)
  - UVIS_249RH_ICYEXO001_PIE @ 2016-326T16:00

Sequence Liens (should all be SPLAT items):

- Target motion: CIRS_249SA_LIMBINT001 beginning @ 2016-324T09:40 spans 65.4 degrees over a 6h observation and will need a 20 min quiescent period for AACS within 3 hours of the violation for AACS per AACS rule of any observation >3 hours in which the target body travels > 60 degrees must include 20 minute quiescent periods every 3 hours.

- SEQ Downlink: Downlink pass for sequence request SP_249EA_G70METSEQ325 beginning @ 2016-325T14:59 has a duration of 000T08:30:00 which is shorter than 9h. Due to the viewperiod, this is the longest the pass can be. 8h30 SEQ passes have been acceptable in past SIPS.