

SORCE Weekly Status Report – 9/17/2009 to 9/23/2009

1. Introduction

This status report addresses the performance of the SORCE spacecraft, instruments, and ground assets during the week of Thursday, September 17, through Wednesday, September 23, 2009.

2. Spacecraft Summary (submitted by Deb McCabe, September 24)

09/17	09/18	09/19	09/20	09/21	09/22	09/23
260	261	262	263	264	265	266

OBC 6.9 revision 2 was installed 2009/260-20:42:33 for the new Torque Speed Loop (TSL). The patch was operational for two orbits to assess performance with three good reaction wheels. It was uninstalled as planned at 2009/261-00:07:34.

The TSL patch loaded was a modified version of the original patch. The gains in the control software were adjusted in order to give better pointing performance. When comparing the two patches, the revised patch has better pointing performance. In order to compare the two patches, the attitude errors were examined for a time period when the reaction wheels were idle (see attached plots). The original TSL patch has a high frequency variation which is similar to that predicted by Orbital's model. The revised patch had a lower frequency and magnitude of attitude errors. Both patches, however, have worse performance than the unmodified system. As a result, 6.9 rev. 2 will only be implemented if one of the reaction wheels starts to go bad.

Battery trickle charge rate was changed from 0.25 to 0.5A per SOACR 539 on DOY 265 in preparation for applying a taper charge regime.

Spacecraft clock was slewed 0.4 seconds in 0.1 second steps on DOY 266 and 267.

There were four MU read zero event this week.

2009/261-00:51:40
 2009/261-22:48:55
 2009/261-22:56:36
 2009/264-11:42:57

GCI lockups:			(MINUTES)		
Instrument	Lockup Time	Response Time	Duration	Lat	Lon
solstice_a	2009/260-12:10:43	2009/260-13:26:41	75.97	-21.3	-42.8
solstice_a	2009/261-12:21:58	2009/261-13:43:19	81.35	-29.3	-66.4
solstice_a	2009/264-08:12:26	2009/264-09:41:53	89.45	-36.4	-41.8
solstice_a	2009/266-08:48:32	2009/266-10:15:21	86.82	-28.2	-42.3
solstice_b	2009/262-04:17:31	2009/262-05:54:18	96.78	-38.5	-16.3
solstice_b	2009/262-11:09:13	2009/262-12:22:45	73.53	-10.7	-25.5
solstice_b	2009/263-04:23:30	2009/263-04:33:49	10.32	-24.7	-62.5
solstice_b	2009/264-04:40:04	2009/264-04:50:28	10.40	-26.9	-69.3
solstice_b	2009/266-08:47:52	2009/266-10:15:16	87.40	-29.4	-44.6
sim_a	2009/260-05:16:21	2009/260-05:19:33	3.20	-28.5	-49.3
sim_a	2009/261-05:31:15	2009/261-05:36:11	4.93	-27.5	-61.6
sim_a	2009/262-05:45:04	2009/262-05:52:49	7.75	-24.4	-77.2
sim_a	2009/264-11:31:03	2009/264-12:24:17	53.23	-29.6	-73.5
sim_a	2009/265-08:29:46	2009/265-09:27:09	57.38	-33.9	-44.5
sim_a	2009/265-10:12:12	2009/265-11:04:18	52.10	-24.3	-49.9
sim_a	2009/266-01:56:46	2009/266-02:08:10	11.40	-26.8	-40.9
sim_b	2009/260-10:27:46	2009/260-11:16:48	49.03	-32.5	-38.2
sim_b	2009/260-12:09:07	2009/260-12:53:54	44.78	-24.4	-47.4

sim_b	2009/263-11:19:43	2009/263-12:07:19	47.60	-21.6	-49.8
sim_b	2009/265-03:14:08	2009/265-03:28:38	14.50	-18.2	-68.0
sim_b	2009/265-08:39:47	2009/265-09:27:14	47.45	-14.1	-11.3
sim_b	2009/266-03:33:59	2009/266-03:45:23	11.40	-27.3	-64.6
tim	2009/260-05:14:50	2009/260-05:20:58	6.13	-25.7	-54.3
tim	2009/260-10:26:19	2009/260-11:14:08	47.82	-34.4	-43.3
tim	2009/260-21:40:41	2009/260-22:33:56	53.25	-39.2	123.2
tim	2009/261-02:08:27	2009/261-02:23:23	14.93	-8.8	-37.7
tim	2009/261-03:54:27	2009/261-04:00:29	6.03	-28.1	-35.7
tim	2009/262-10:58:39	2009/262-11:47:43	49.07	-32.1	-58.3
tim	2009/263-04:24:53	2009/263-04:33:45	8.87	-27.3	-58.1
tim	2009/263-09:37:03	2009/263-10:27:31	50.47	-32.2	-44.1
tim	2009/263-11:18:18	2009/263-12:04:39	46.35	-24.4	-54.0
tim	2009/266-03:33:46	2009/266-03:46:43	12.95	-26.7	-65.7
tim	2009/266-10:27:54	2009/266-11:19:01	51.12	-23.7	-59.5
XPS	2009/260-01:56:38			-17.0	-17.5
XPS	2009/261-03:48:48			-16.4	-53.3
XPS	2009/262-07:33:41			-39.7	-56.2
XPS	2009/263-11:24:50			-10.1	-35.1
XPS	2009/264-09:56:38			-24.5	-39.8
XPS	2009/264-09:57:29			-22.8	-37.2
XPS	2009/265-01:51:01			-39.4	7.9
XPS	2009/266-01:54:28			-22.4	-47.8
XPS	2009/266-12:09:25			-14.0	-71.0

	SIM A	SIM B	SOL A	SOL B	TIM	XPS*
Week	7	6	4	5	11	9
Total	2121	2688	1457	1735	2340	2187

3. Ground Support / Contact Summary (submitted by D. McCabe)

Sixteen ground station contacts were performed over the past week.

	Captured VCDUS	Recorded VCDUS	%
SC housekeeping	319748	319749	100
IM housekeeping	44383	44384	100
Science	318897	318898	100

4. Instrument Status

4.1. TIM (submitted by Greg Kopp, September 23)

TIM operations during previous week

- Normal Ops (TSI data w/ Cavity B)
- Cavity A&B comparisons
- Gain AB Calibration

Current work

- Preparing for Version 10 data reprocessing
 - Updated cavity inter-comparisons show continued exponentially decreasing degradation, similar to what is applied to current Version 9 data
 - Servo gain calibrations showing continued stability

TIM anomalies during previous week

- None

4.2. SIM (submitted by Jerry Harder, September 24)

For days 2009/260 (Sept. 17) to 2009/267 (Sept. 24):

• Calibration Activities:	<u>SIM A</u>	<u>SIM B</u>
-- Prism Calibration A_cal_B	25	25
-- Prism Calibration B_cal_A	25	25
-- CCDDump	2	2
-- Image Dark	1	0
-- Image Light	1	1
-- Servo Gain 20 sec half cycle	2	2
-- Servo Gain 50 sec half cycle	1	1
-- Cruciform Scans	0	0
-- FOV Maps	0	0
• Science Activities:	<u>SIM A</u>	<u>SIM B</u>
-- ESR Full Scan Segments	13	0
-- ESR Table Scan Segments	7	0
-- 24-minute Scans	25	0
-- 24-minute Scans w/ HRT	1	1
-- IR scans	7	0

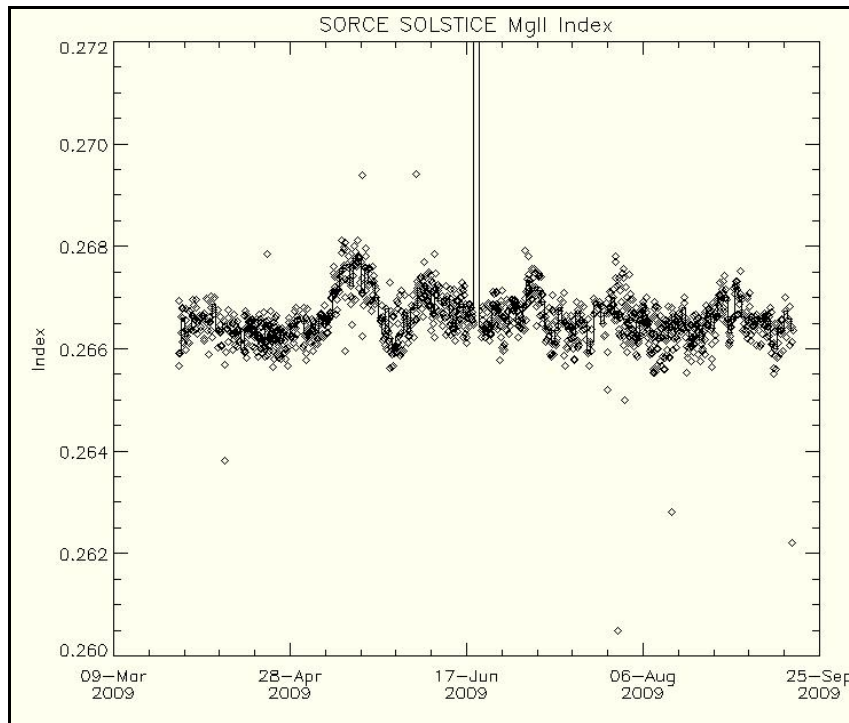
SIM Additional Activities

- Gerard Thuillier from CRNS, France, came to LASP for four days. During this time the SIM team completed the paper "The visible solar spectrum measured by the SIM spectrometer placed on board the *SORCE* satellite: Comparison with recent observations", which will be submitted to *Solar Physics* very soon.

4.3. SOLSTICE (submitted by Marty Snow, Sept. 24)

For days 2009/260 (Sept. 17) to 2009/267 (Sept. 24):

- SOLSTICE A grating drive errors: None
- SOLSTICE B grating drive errors: None
- Data Gaps for SOLSTICE A (date, length in minutes):
2009/260, 13:27:28 77 minutes
2009/261, 13:44:06 82 minutes
2009/264, 09:42:40 90 minutes
2009/266, 10:16:13 88 minutes
- Data Gaps for SOLSTICE B (date, length in minutes):
2009/262, 05:55:06 98 minutes
2009/262, 12:23:32 74 minutes
2009/263, 04:34:51 11 minutes
2009/264, 04:51:15 11 minutes
2009/266, 10:16:20 88 minutes

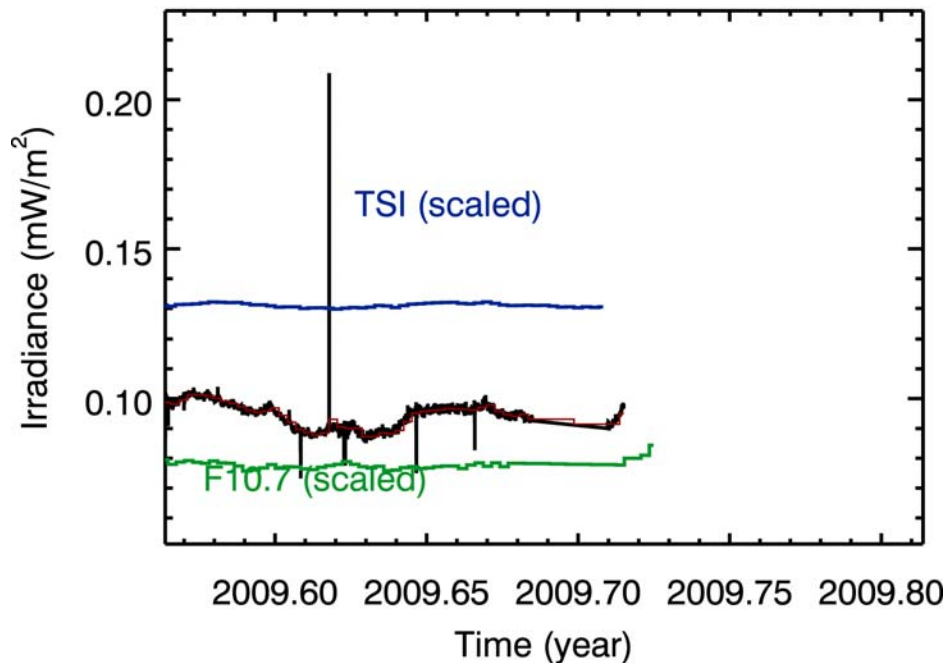


4.4. XPS (submitted by Tom Woods, 24 September)

For days 2009/255 (Sept. 12) to 2009/266 (Sept. 23):

- Number of XPS GCI errors: 12
- SORCE XPS Data Gaps: None
- SORCE XPS Calibration Experiment Duration:
1121.00 sec (19 integrations) at 2009/257 22:50
- Flares: None above class M1.0

SORCE XPS 0.0- 7.0 nm



5. **Planning** (automated report submitted by Jay Kominek, September 24)

Plans completed 17 September – 24 September:

SORCE Spacecraft

Activity	Total	Total Time
Solar Rolls	375	11:24
Stellar Rolls	511	14:18
Ram Avoidance	0	0:00
Solar Alignment	4	1:12
Stellar Alignment	0	0:00
Field of View Maps	0	0:00
FSS Calibration	0	0:00
Station Contacts	17	3:57
GCI Checks	824	0:13
State Vector Upload	7	0:21
MU Checksum	1	0:12

SIM A (Primary)

Solar Activity	Total	Total Time
ESR Mode	7	5:11
ESR Mode with HRT	0	0:00
IR Scan	7	6:57
Quick Scan	25	10:06
Quick Scan HRT	1	0:24
Calibration Activity		
Fixed Wavelength	0	0:00
Servo Gain Calibration	2	1:20
Solar Alignment	0	0:00
Field of View Map	0	0:00
Prism Calibration	0	0:00
Image Light	1	0:06
Image Dark	1	0:05
ESR Full Scan	13	7:57
Dark	52	0:39
Special Activity		
Power Cycle Checks	208	13:52

SIM B (Secondary)

Solar Activity	Total	Total Time
ESR Mode	0	0:00
ESR Mode with HRT	0	0:00
IR Scan	0	0:00
Quick Scan	0	0:00
Quick Scan HRT	0	0:00
Calibration Activity		
Fixed Wavelength	0	0:00
Servo Gain Calibration	2	1:20
Solar Alignment	0	0:00
Field of View Map	0	0:00
Prism Calibration	0	0:00
Image Light	1	0:06
Image Dark	1	0:05
ESR Full Scan	0	0:00
Dark	2	0:01
Special Activity		
Power Cycle Checks	208	13:34

SOLSTICE A (MUV)

Solar Activity	Total	Total Time
Normal Scan	93	72:02
Quick Scan	46	11:55
Mini Quick Scan	41	10:31
Stellar Activity		
Fixed Wavelength	0	0:00
Companion	0	0:00
Stellar Scan	0	0:00
Zero Order Scan	0	0:00
Number Unique Targets	0	0:00
Calibration Activity		
Filter Calibration	1	1:01
Fixed Wavelength	0	0:00
AB Comparison	1	1:00
Mini 64 Scan	7	6:58
MUV Solar Alignment	2	0:34
FUV Solar Alignment	2	0:38
MUV Stellar Alignment	0	0:00
FUV Stellar Alignment	0	0:00
MUV Field of View Map	0	0:00
FUV Field of View Map	0	0:00
Special Activity		
Power Cycle Checks	104	4:28
Step Response Test	1	0:02

SOLSTICE B (FUV)

Solar Activity	Total	Total Time
Normal Scan	94	79:46
Quick Scan	47	8:25
Mini Quick Scan	42	7:20
Stellar Activity		
Fixed Wavelength	578	20:42
Companion	108	6:18
Stellar Scan	9	1:04
Zero Order Scan	411	12:01
Number Unique Targets	48	40:40
Calibration Activity		
Fixed Wavelength	0	0:00
AB Comparison	1	1:00
Mini 64 Seam	8	7:02
MUV Solar Alignment	2	0:34
FUV Solar Alignment	2	0:38
MUV Stellar Alignment	2	0:18
FUV Stellar Alignment	0	0:00
MUV Field of View Map	0	0:00
FUV Field of View Map	0	0:00
Special Activity		
Power Cycle Checks	104	4:37
Step Response Test	1	0:02

TIM

Solar Activity	Total	Total Time
Normal Solar	99	94:28
Normal Eclipse	120	54:16
Calibration Activity		
Degradation A	1	1:03
Degradation C	1	1:03
Aliveness D	0	0:00

Gain Calibration AB	1	6:00
Gain Calibration CD	0	0:00
Solar Alignment	2	1:17
Field of View Map	0	0:00

Special Activity

Power Cycle Checks	201	8:39
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XPS

Calibration Activity

Calibration	0	0:00
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Since December 2005, XPS is activated for a continuous 1-min integration at filter wheel position 6 (0.1-18 nm range) and only has a monthly calibration experiment.

6. Data Processing Summary

TIM (submitted by Doug Lindholm, 20 Aug 2009)

- Status
 - Version 9 routine processing is ongoing.
 - Version 9 TSI data are available on LISIRD, the SORCE web site, and the GES DISC with the new LASP ASCII file format.
 - Dark irradiances have been processed and are being evaluated
- Work in progress
 - Preparing for version 10 reprocessing.
 - Code modifications (generalizations) to support Glory TIM data processing.
- Future Plans
 - Field of view analysis and pointing correction.

SOLSTICE (submitted by Doug Lindholm, 10 September 2009)

- Status
 - Version 10 Solstice data has been release!
 - Routine data processing is producing version 10 level 3 FUV and MUV SOLSTICE data products. These are available on the SORCE web site and LISIRD.
 - MgII index is being produced routinely and is available on the SORCE web site.
- Work in Progress
 - Debugging shift in wavelength correction.
 - Evaluating tasks for version 11 reprocessing.
 - Filter experiment analysis to Improve dead time correction and filter transmission.
- Future Plans
 - Analysis of instrument misalignment calibration.
 - Analysis of level 3 uncertainties.
 - Improved Jan 2006 slit anomaly correction.
 - Improvement of field of view maps.

SIM (submitted by Doug Lindholm, 10 September 2009)

- Status
 - The routine processing of version 17 data is ongoing.
 - The level 3 data products are available on the SORCE web site and LISIRD.
- Work in Progress

- Calibration to improve the quality of early mission data.
 - Testing of new SIM exposure time algorithm.
- Future Plans
 - Process SIM B.
 - Investigate UV degradation.
 - Consider field of view correction for data affected by the filter wheel anomaly.

XPS (submitted by Brian Templeman, 10 September 2009)

- Version 9 XPS data are being routinely reprocessed and released.
- The safe-hold events in January did not appear to affect data quality.
- **SORCE XPS Data Processing Statistics for 2009/243 to 2009/249**

Total level 1b Observations Processed:	27031
Percent used in level 2 Processing:	54.3598
Total level 3 Observations Processed:	14694