



12041 - COS-GTO: Io Atmosphere/STIS

Cycle: 18, Proposal Category: GTO/COS

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
01	(1) IO-30W	COS/NUV	1	23-Aug-2011 21:01:40.0	yes
02	(2) IO-90W	COS/NUV	1	23-Aug-2011 21:01:53.0	yes
03	(3) IO-150W	COS/NUV	1	23-Aug-2011 21:02:08.0	yes
04	(4) IO-210W	COS/NUV	1	23-Aug-2011 21:02:17.0	yes
05	(5) IO-270W	COS/NUV	1	23-Aug-2011 21:02:26.0	yes
06	(6) IO-330W	COS/NUV	1	23-Aug-2011 21:02:36.0	yes
07	(9) IO-200W-COPY	STIS/CCD STIS/NUV-MAMA	1	23-Aug-2011 21:02:43.0	yes
08	(7) IO-200W	STIS/CCD STIS/NUV-MAMA	1	23-Aug-2011 21:02:49.0	yes

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
09	(7) IO-200W	STIS/CCD STIS/NUV-MAMA	1	23-Aug-2011 21:02:55.0	yes
10	(7) IO-200W	STIS/CCD STIS/NUV-MAMA	1	23-Aug-2011 21:03:01.0	yes
11	(7) IO-200W	STIS/CCD STIS/NUV-MAMA	1	23-Aug-2011 21:03:06.0	yes
12	(8) IO-250W	STIS/CCD STIS/NUV-MAMA	1	23-Aug-2011 21:03:12.0	yes
13	(8) IO-250W	STIS/CCD STIS/NUV-MAMA	1	23-Aug-2011 21:03:18.0	yes
14	(8) IO-250W	STIS/CCD STIS/NUV-MAMA	1	23-Aug-2011 21:03:24.0	yes
15	(8) IO-250W	STIS/CCD STIS/NUV-MAMA	1	23-Aug-2011 21:03:32.0	yes
16	(8) IO-250W	STIS/CCD STIS/NUV-MAMA	1	23-Aug-2011 21:03:37.0	yes

16 Total Orbits Used

ABSTRACT

We will use six HST orbits with COS to observe the disk-integrated longitudinal distribution of Io's atmosphere, and ten HST orbits with STIS to provide complementary disk-resolved information at key locations. We will use the COS G225M grating to observe four SO₂ absorption bands, which can be used to determine SO₂ atmospheric density. Disk-integrated 19 micron observations of the atmosphere indicate that the anti-Jupiter hemisphere of Io has an atmospheric density roughly ten times greater than the Jupiter-facing side (Spencer et al. 2005), and mm-wave observations suggest a similar pattern. However the infrared and mm-wave observations cannot easily separate atmospheric density from atmospheric temperature, so these results are model-dependent. Sparse 2100 – 2300 Å disk-resolved observations (McGrath et al. 2000, Jessup et al. 2004) tell a consistent story, but do not cover enough of Io's surface to provide full confirmation of the long-wavelength result. We will therefore observe Io's disk-integrated atmospheric density at six longitudes, roughly 30, 90, 150, 210, 270, and 330 W, to confirm the 19 micron results and improve our ability to model the 19-micron data.

Proposal 12041 (STScI Edit Number: 10, Created: Tuesday, August 23, 2011 8:03:46 PM EST) - Overview

With STIS, we plan disk-resolved 2000-3200 Å spectroscopy of Io's SO₂ atmosphere. Our observations will target low-latitude regions away from active plumes (in contrast to our Cycle 10 observations (Jessup et al. 2004) which targeted the Prometheus plume), to look for the effect of plumes on the atmosphere. We will also look at the variation of low-latitude atmospheric abundance with terrain type, to look for explanations for the large longitudinal variations in atmospheric pressure to be studied with COS. Finally, we will look at a variety of regions at two different times of day to determine the extent of diurnal variations in the atmosphere, which are expected if the atmosphere is dominantly supported by frost sublimation.

OBSERVING DESCRIPTION

We will use the COS G225M grating to observe Io at six longitudes, roughly 30, 90, 150, 210, 270, and 330 W, for one orbit each. We will also use the STIS G230L grating with the 0.1" slit to observe the same low-latitude locations on Io for 5 orbits at each of two different central longitudes, roughly 200 W and 250 W, to determine the variation in SO₂ abundance with time of day.

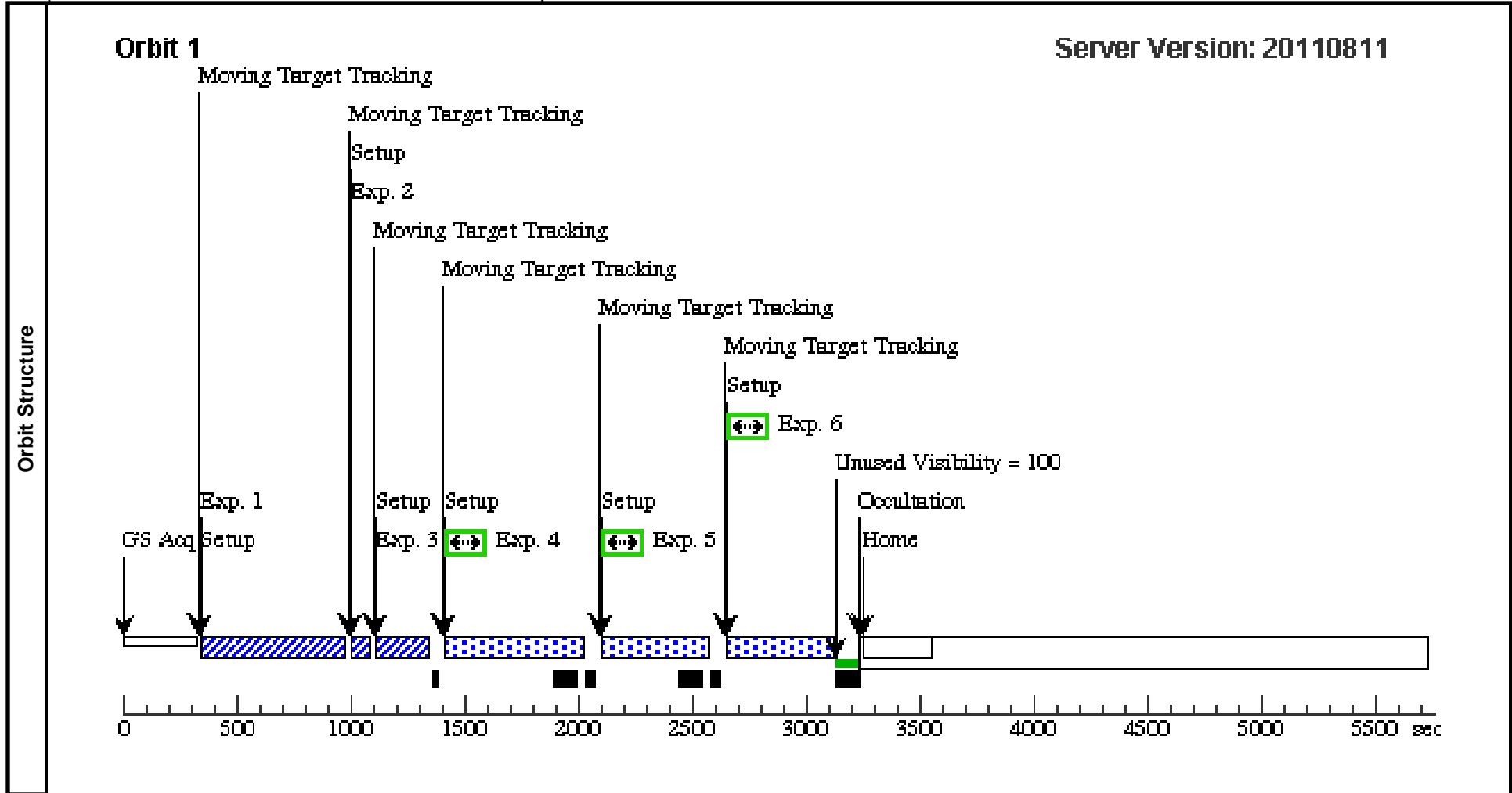
ADDITIONAL COMMENTS

The STIS observations are treated as ten separate visits so that they can be shuffled as necessary to fit within the orbital longitude constraint- there may be room for 2 - 3 consecutive visits within a given rotation of Io. We are doing a diffuse acquisition for all the STIS visits because accurate pointing is critical.

Proposal 12041 - Visit 01 - COS-GTO: Io Atmosphere/STIS

Wed Aug 24 01:03:47 GMT 2011

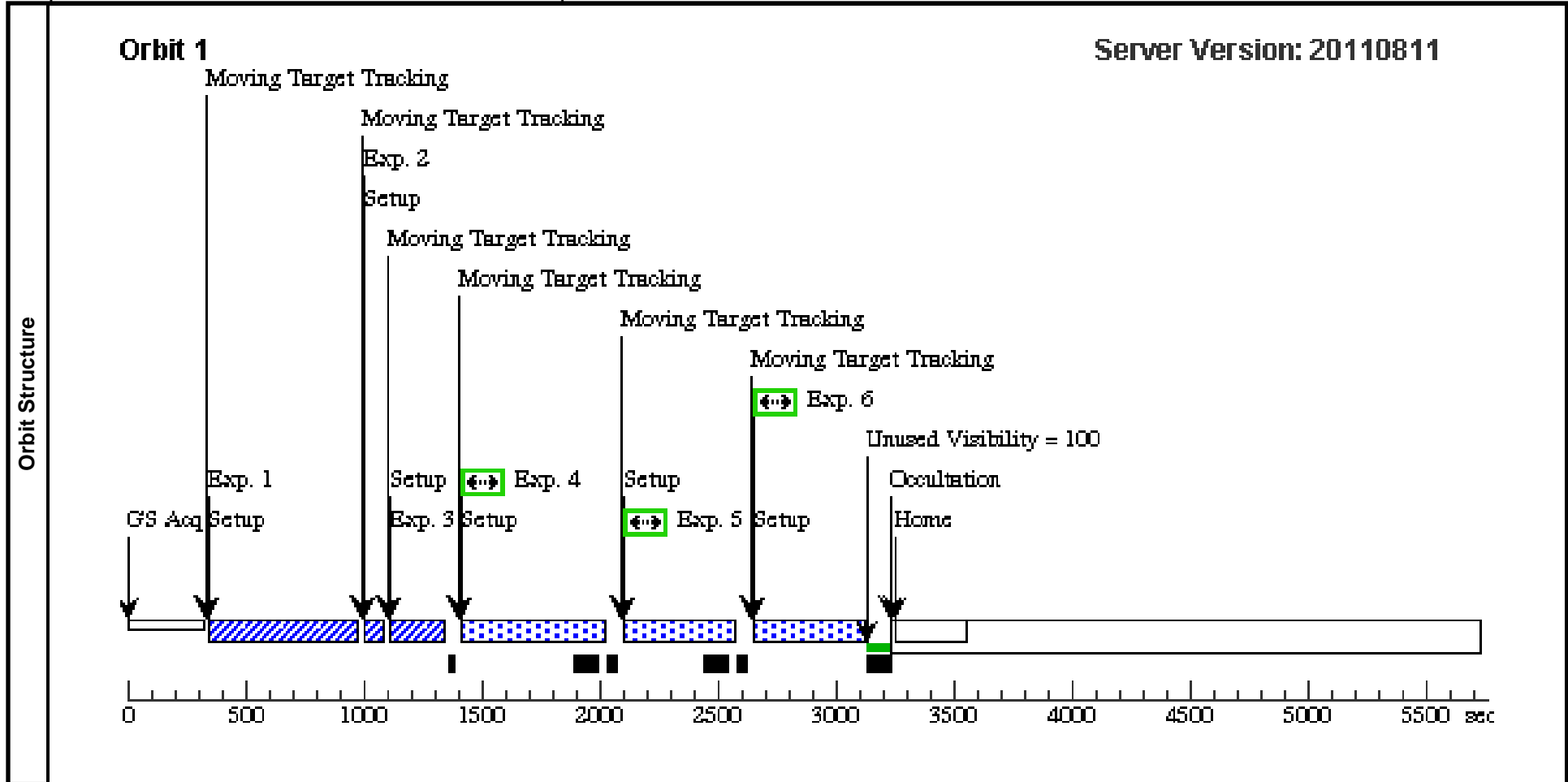
Visit	Proposal 12041, Visit 01, completed Diagnostic Status: No Diagnostics Scientific Instruments: COS/NUV Special Requirements: (none)									
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center		
	(1)	IO-30W	STD=JUPITER	STD=IO			CML OF IO-30W FROM EARTH BETWEEN 20 40	EARTH		
	<i>Comments: 20 degree target window --> 145 minutes of Io's 1.769-day orbit</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	Search	(1) IO-30W	COS/NUV, ACQ/SEARCH, PSA	G230L 3000 A	SCAN-SIZE=3	GS ACQ SCENARI O BASE1B3		3 Secs [==>]	[1]
	<i>Comments: Spectroscopic ACQ ETC: COS.A208428, with composite spectrum of Io, based on (1) direct flux measurements (below 2300Å) and (2) albedo measurements + solar flux scaled for Io distance/size. Scaled to mV=5.3, but makes only slight difference from unscaled spectrum.</i> ACQ/Search 0.5 mags brighter: COS.A208433 0.5 mags dimmer: COS.A208435 All need < 1.0s to get S/N = 40									
	2	PeakXD	(1) IO-30W	COS/NUV, ACQ/PEAKXD, PSA	G230L 3000 A				3 Secs [==>]	[1]
	<i>Comments: Spectroscopic ACQ ETC: COS.A208443, with composite spectrum of Io, based on (1) direct flux measurements (below 2300Å) and (2) albedo measurements + solar flux scaled for Io distance/size. Scaled to mV=5.3, but makes only slight difference from unscaled spectrum.</i> ACQ/Search 0.5 mags brighter: COS.A208440 0.5 mags dimmer: COS.A208439 All need < 1.0s to get S/N = 40									
	3	PeakD	(1) IO-30W	COS/NUV, ACQ/PEAKD, PSA	G230L 3000 A	NUM-POS=7.0; STEP-SIZE=1.2			3 Secs [==>]	[1]
	4	Science1	(1) IO-30W	COS/NUV, TIME-TAG, PSA	G225M 2217 A	BUFFER-TIME=34 0; FP-POS=2			450 Secs [==>]	[1]
	<i>Comments: ETC: COSA208450 gives buffer time 2/3 of 12434</i>									
	5	Science2	(1) IO-30W	COS/NUV, TIME-TAG, PSA	G225M 2217 A	BUFFER-TIME=34 0; FP-POS=3			450 Secs [==>]	[1]
	<i>Comments: ETC: COSA208450 gives buffer time 2/3 of 12434</i>									
	6	Science3	(1) IO-30W	COS/NUV, TIME-TAG, PSA	G225M 2217 A	BUFFER-TIME=45 0; FP-POS=4			450 Secs [==>]	[1]
	<i>Comments: ETC: COSA208450 gives buffer time 2/3 of 12434</i>									



Proposal 12041 - Visit 02 - COS-GTO: Io Atmosphere/STIS

Wed Aug 24 01:03:49 GMT 2011

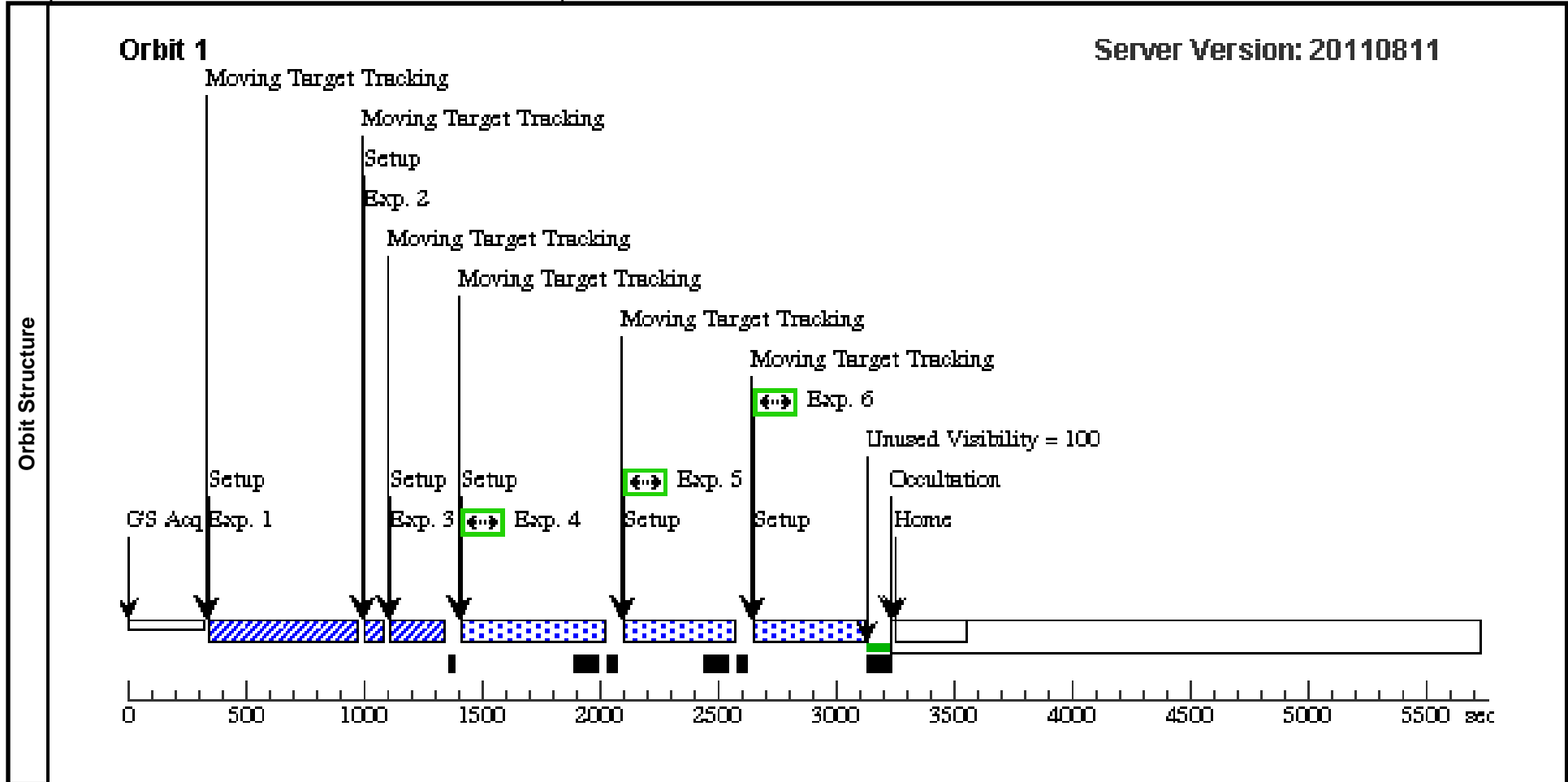
Visit	Proposal 12041, Visit 02, completed Diagnostic Status: No Diagnostics Scientific Instruments: COS/NUV Special Requirements: (none)										
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(2)	IO-90W	STD=JUPITER	STD=IO			CML OF IO-90W FROM EARTH BETWEEN 80 100	EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit	
	1	Search	(2) IO-90W	COS/NUV, ACQ/SEARCH, PSA	G230L 3000 A	SCAN-SIZE=3	GS ACQ SCENARI O BASE1B3		3 Secs [==>]	[1]	
	<i>Comments: Spectroscopic ACQ ETC: COS.A208428, with composite spectrum of Io, based on (1) direct flux measurements (below 2300Å) and (2) albedo measurements + solar flux scaled for Io distance/size. Scaled to mV=5.3, but makes only slight difference from unscaled spectrum.</i> ACQ/Search 0.5 mags brighter: COS.A208433 0.5 mags dimmer: COS.A208435 All need < 1.0s to get S/N = 40										
	2	PeakXD	(2) IO-90W	COS/NUV, ACQ/PEAKXD, PSA	G230L 3000 A				3 Secs [==>]	[1]	
	<i>Comments: Spectroscopic ACQ ETC: COS.A208443, with composite spectrum of Io, based on (1) direct flux measurements (below 2300Å) and (2) albedo measurements + solar flux scaled for Io distance/size. Scaled to mV=5.3, but makes only slight difference from unscaled spectrum.</i> ACQ/Search 0.5 mags brighter: COS.A208440 0.5 mags dimmer: COS.A208439 All need < 1.0s to get S/N = 40										
	3	PeakD	(2) IO-90W	COS/NUV, ACQ/PEAKD, PSA	G230L 3000 A	NUM-POS=7.0; STEP-SIZE=1.2			3 Secs [==>]	[1]	
	4	Science1	(2) IO-90W	COS/NUV, TIME-TAG, PSA	G225M 2217 A	BUFFER-TIME=34 0; FP-POS=2			450 Secs [==>]	[1]	
<i>Comments: ETC: COSA208450 gives buffer time 2/3 of 12434</i>											
5	Science2	(2) IO-90W	COS/NUV, TIME-TAG, PSA	G225M 2217 A	BUFFER-TIME=34 0; FP-POS=3			450 Secs [==>]	[1]		
<i>Comments: ETC: COSA208450 gives buffer time 2/3 of 12434</i>											
6	Science3	(2) IO-90W	COS/NUV, TIME-TAG, PSA	G225M 2217 A	BUFFER-TIME=45 0; FP-POS=4			450 Secs [==>]	[1]		
<i>Comments: ETC: COSA208450 gives buffer time 2/3 of 12434</i>											



Proposal 12041 - Visit 03 - COS-GTO: Io Atmosphere/STIS

Wed Aug 24 01:03:50 GMT 2011

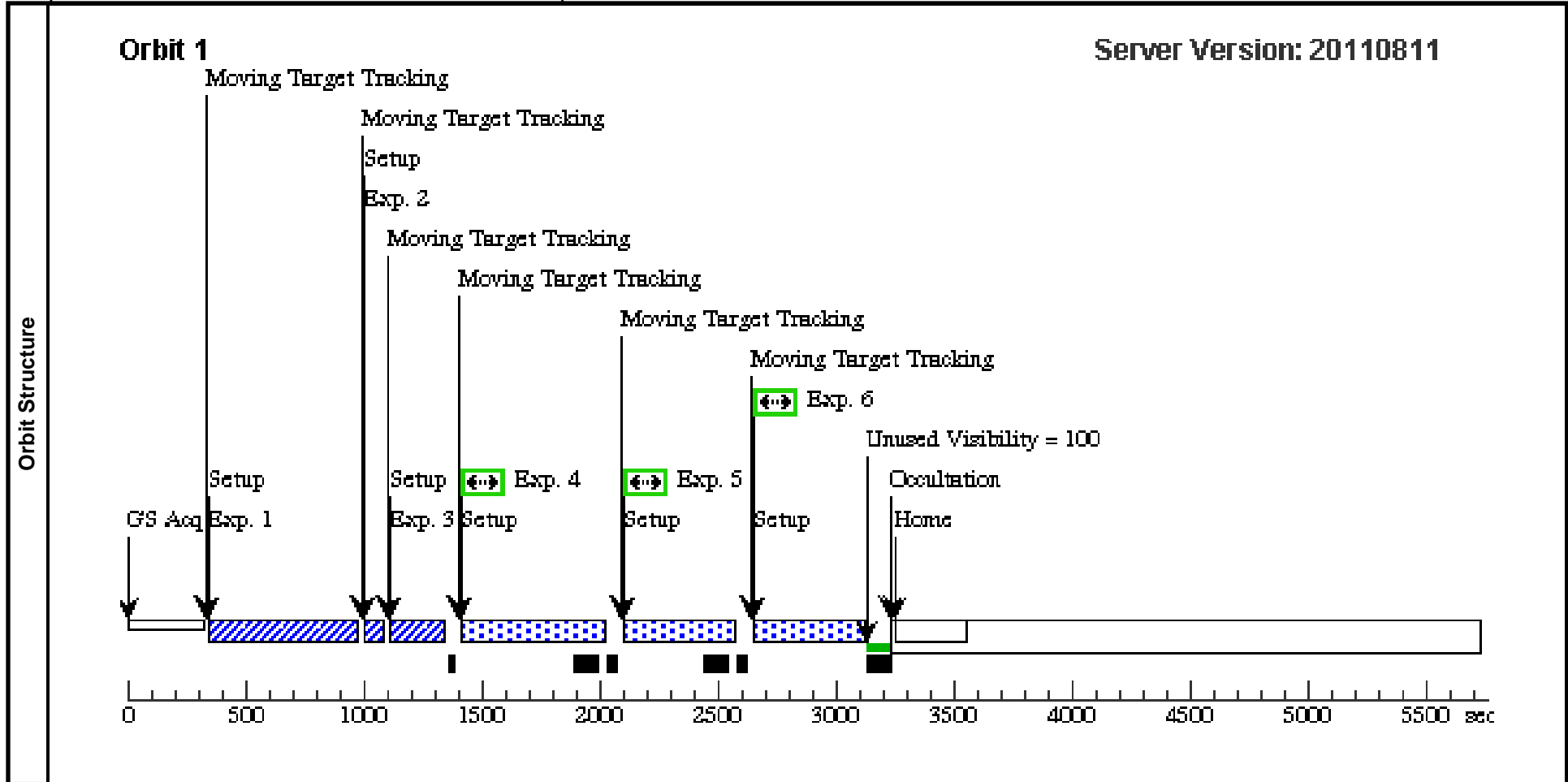
Visit	Proposal 12041, Visit 03, completed Diagnostic Status: No Diagnostics Scientific Instruments: COS/NUV Special Requirements: (none)										
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(3)	IO-150W	STD=JUPITER	STD=IO			CML OF IO-150W FROM EARTH BETWEEN 140 160	EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit	
	1	Search	(3) IO-150W	COS/NUV, ACQ/SEARCH, PSA	G230L 3000 A	SCAN-SIZE=3	GS ACQ SCENARI O BASE1B3		3 Secs [==>]	[1]	
	<i>Comments: Spectroscopic ACQ ETC: COS.A208428, with composite spectrum of Io, based on (1) direct flux measurements (below 2300Å) and (2) albedo measurements + solar flux scaled for Io distance/size. Scaled to mV=5.3, but makes only slight difference from unscaled spectrum.</i> ACQ/Search 0.5 mags brighter: COS.A208433 0.5 mags dimmer: COS.A208435 All need < 1.0s to get S/N = 40										
	2	PeakXD	(3) IO-150W	COS/NUV, ACQ/PEAKXD, PSA	G230L 3000 A				3 Secs [==>]	[1]	
	<i>Comments: Spectroscopic ACQ ETC: COS.A208443, with composite spectrum of Io, based on (1) direct flux measurements (below 2300Å) and (2) albedo measurements + solar flux scaled for Io distance/size. Scaled to mV=5.3, but makes only slight difference from unscaled spectrum.</i> ACQ/Search 0.5 mags brighter: COS.A208440 0.5 mags dimmer: COS.A208439 All need < 1.0s to get S/N = 40										
	3	PeakD	(3) IO-150W	COS/NUV, ACQ/PEAKD, PSA	G230L 3000 A	NUM-POS=7.0; STEP-SIZE=1.2			3 Secs [==>]	[1]	
	4	Science1	(3) IO-150W	COS/NUV, TIME-TAG, PSA	G225M 2217 A	BUFFER-TIME=34 0; FP-POS=2			450 Secs [==>]	[1]	
<i>Comments: ETC: COSA208450 gives buffer time 2/3 of 12434</i>											
5	Science2	(3) IO-150W	COS/NUV, TIME-TAG, PSA	G225M 2217 A	BUFFER-TIME=34 0; FP-POS=3			450 Secs [==>]	[1]		
<i>Comments: ETC: COSA208450 gives buffer time 2/3 of 12434</i>											
6	Science3	(3) IO-150W	COS/NUV, TIME-TAG, PSA	G225M 2217 A	BUFFER-TIME=45 0; FP-POS=4			450 Secs [==>]	[1]		
<i>Comments: ETC: COSA208450 gives buffer time 2/3 of 12434</i>											



Proposal 12041 - Visit 04 - COS-GTO: Io Atmosphere/STIS

Wed Aug 24 01:03:51 GMT 2011

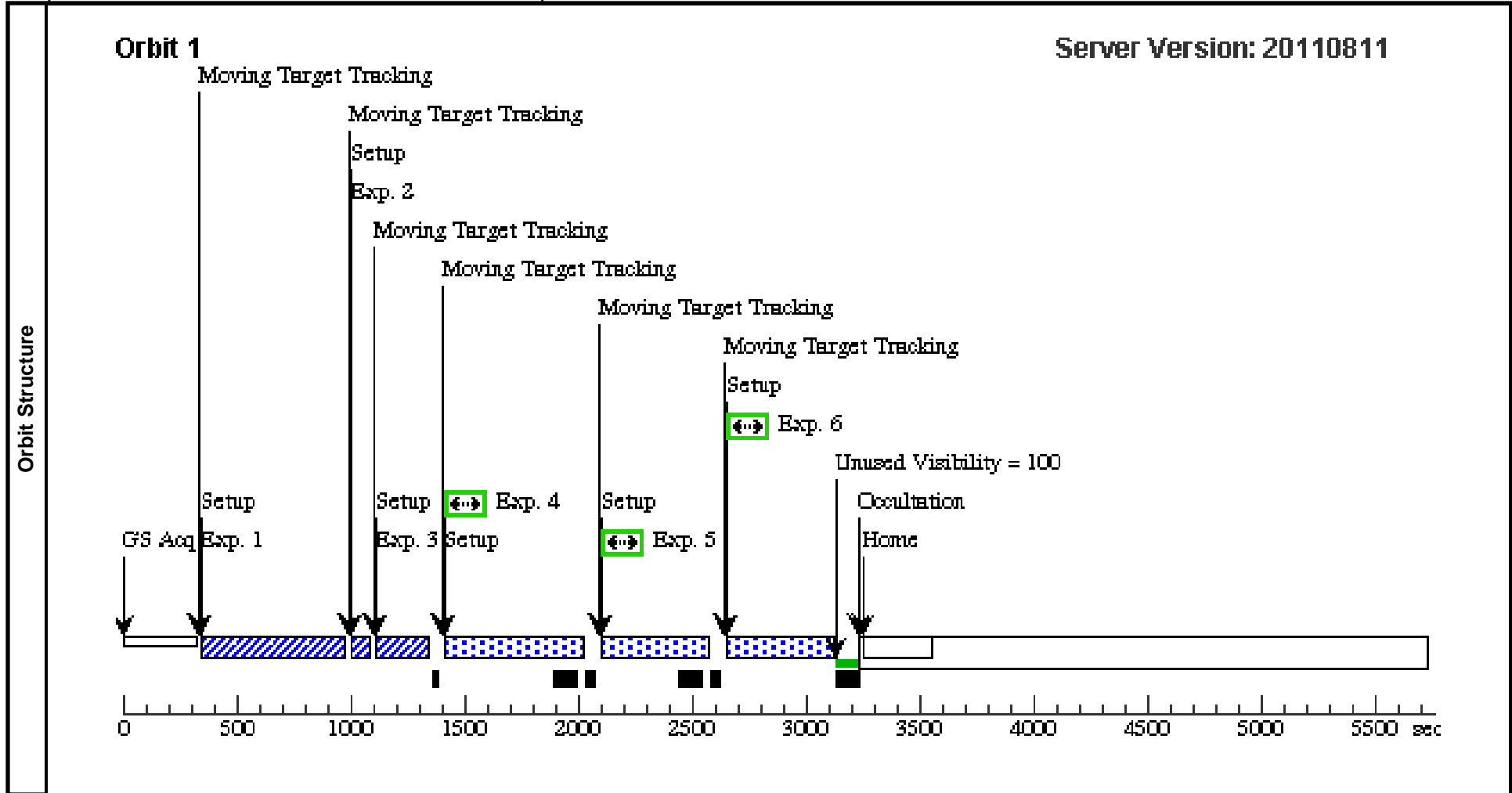
Visit	Proposal 12041, Visit 04, completed Diagnostic Status: No Diagnostics Scientific Instruments: COS/NUV Special Requirements: (none)									
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center		
	(4)	IO-210W	STD=JUPITER	STD=IO			CML OF IO-210W FROM EARTH BETWEEN 200 215	EARTH		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	Search	(4) IO-210W	COS/NUV, ACQ/SEARCH, PSA	G230L 3000 A	SCAN-SIZE=3	GS ACQ SCENARI O BASE1B3		3 Secs [==>]	[1]
	<i>Comments: Spectroscopic ACQ ETC: COS.A208428, with composite spectrum of Io, based on (1) direct flux measurements (below 2300Å) and (2) albedo measurements + solar flux scaled for Io distance/size. Scaled to mV=5.3, but makes only slight difference from unscaled spectrum.</i> ACQ/Search 0.5 mags brighter: COS.A208433 0.5 mags dimmer: COS.A208435 All need < 1.0s to get S/N = 40									
2	PeakXD	(4) IO-210W	COS/NUV, ACQ/PEAKXD, PSA	G230L 3000 A					3 Secs [==>]	[1]
	<i>Comments: Spectroscopic ACQ ETC: COS.A208443, with composite spectrum of Io, based on (1) direct flux measurements (below 2300Å) and (2) albedo measurements + solar flux scaled for Io distance/size. Scaled to mV=5.3, but makes only slight difference from unscaled spectrum.</i> ACQ/Search 0.5 mags brighter: COS.A208440 0.5 mags dimmer: COS.A208439 All need < 1.0s to get S/N = 40									
3	PeakD	(4) IO-210W	COS/NUV, ACQ/PEAKD, PSA	G230L 3000 A		NUM-POS=7.0; STEP-SIZE=1.2			3 Secs [==>]	[1]
4	Science1	(4) IO-210W	COS/NUV, TIME-TAG, PSA	G225M 2217 A		BUFFER-TIME=34 0; FP-POS=2			450 Secs [==>]	[1]
	<i>Comments: ETC: COSA208450 gives buffer time 2/3 of 12434</i>									
5	Science2	(4) IO-210W	COS/NUV, TIME-TAG, PSA	G225M 2217 A		BUFFER-TIME=34 0; FP-POS=3			450 Secs [==>]	[1]
	<i>Comments: ETC: COSA208450 gives buffer time 2/3 of 12434</i>									
6	Science3	(4) IO-210W	COS/NUV, TIME-TAG, PSA	G225M 2217 A		BUFFER-TIME=45 0; FP-POS=4			450 Secs [==>]	[1]
	<i>Comments: ETC: COSA208450 gives buffer time 2/3 of 12434</i>									



Proposal 12041 - Visit 05 - COS-GTO: Io Atmosphere/STIS

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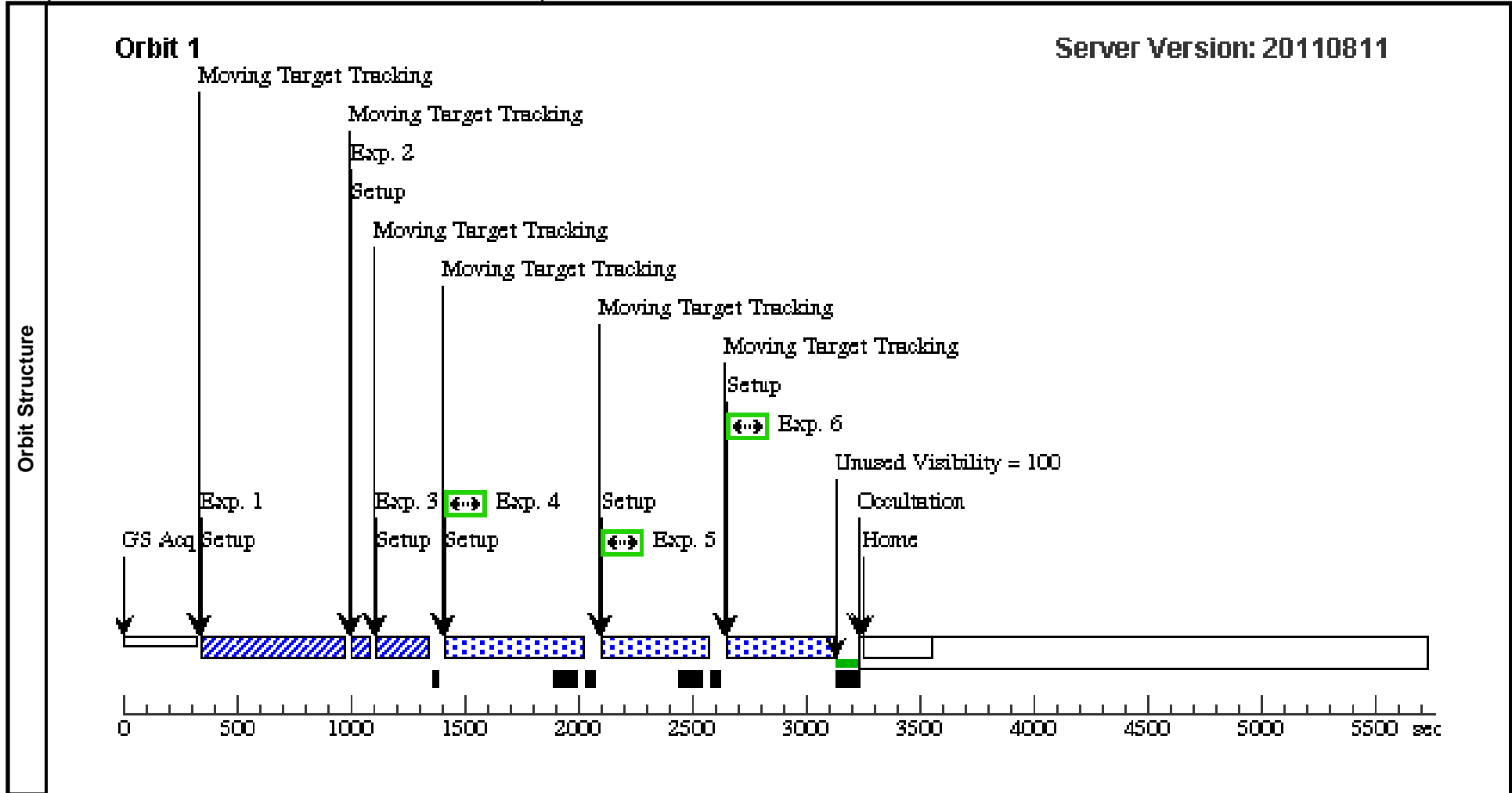
Visit	Proposal 12041, Visit 05, completed Diagnostic Status: No Diagnostics Scientific Instruments: COS/NUV Special Requirements: (none)									
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center		
	(5)	IO-270W	STD=JUPITER	STD=IO			CML OF IO-270W FROM EARTH BETWEEN 260 280	EARTH		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	Search	(5) IO-270W	COS/NUV, ACQ/SEARCH, PSA	G230L 3000 A	SCAN-SIZE=3	GS ACQ SCENARI O BASE1B3		3 Secs [==>]	[1]
	<i>Comments: Spectroscopic ACQ ETC: COS.A208428, with composite spectrum of Io, based on (1) direct flux measurements (below 2300Å) and (2) albedo measurements + solar flux scaled for Io distance/size. Scaled to mV=5.3, but makes only slight difference from unscaled spectrum.</i> ACQ/Search 0.5 mags brighter: COS.A208433 0.5 mags dimmer: COS.A208435 All need < 1.0s to get S/N = 40									
2	PeakXD	(5) IO-270W	COS/NUV, ACQ/PEAKXD, PSA	G230L 3000 A					3 Secs [==>]	[1]
	<i>Comments: Spectroscopic ACQ ETC: COS.A208443, with composite spectrum of Io, based on (1) direct flux measurements (below 2300Å) and (2) albedo measurements + solar flux scaled for Io distance/size. Scaled to mV=5.3, but makes only slight difference from unscaled spectrum.</i> ACQ/Search 0.5 mags brighter: COS.A208440 0.5 mags dimmer: COS.A208439 All need < 1.0s to get S/N = 40									
3	PeakD	(5) IO-270W	COS/NUV, ACQ/PEAKD, PSA	G230L 3000 A		NUM-POS=7.0; STEP-SIZE=1.2			3 Secs [==>]	[1]
4	Science1	(5) IO-270W	COS/NUV, TIME-TAG, PSA	G225M 2217 A		BUFFER-TIME=34 0; FP-POS=2			450 Secs [==>]	[1]
	<i>Comments: ETC: COSA208450 gives buffer time 2/3 of 12434</i>									
5	Science2	(5) IO-270W	COS/NUV, TIME-TAG, PSA	G225M 2217 A		BUFFER-TIME=34 0; FP-POS=3			450 Secs [==>]	[1]
	<i>Comments: ETC: COSA208450 gives buffer time 2/3 of 12434</i>									
6	Science3	(5) IO-270W	COS/NUV, TIME-TAG, PSA	G225M 2217 A		BUFFER-TIME=45 0; FP-POS=4			450 Secs [==>]	[1]
	<i>Comments: ETC: COSA208450 gives buffer time 2/3 of 12434</i>									



Proposal 12041 - Visit 06 - COS-GTO: Io Atmosphere/STIS

Wed Aug 24 01:03:53 GMT 2011

Visit	Proposal 12041, Visit 06, completed Diagnostic Status: No Diagnostics Scientific Instruments: COS/NUV Special Requirements: (none)										
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(6)	IO-330W	STD=JUPITER	STD=IO			CML OF IO-330W FROM EARTH BETWEEN 320 340	EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit	
	1	Search	(6) IO-330W	COS/NUV, ACQ/SEARCH, PSA	G230L 3000 A	SCAN-SIZE=3	GS ACQ SCENARI O BASE1B3		3 Secs [==>]	[1]	
	<i>Comments: Spectroscopic ACQ ETC: COS.A208428, with composite spectrum of Io, based on (1) direct flux measurements (below 2300Å) and (2) albedo measurements + solar flux scaled for Io distance/size. Scaled to mV=5.3, but makes only slight difference from unscaled spectrum.</i> ACQ/Search 0.5 mags brighter: COS.A208433 0.5 mags dimmer: COS.A208435 All need < 1.0s to get S/N = 40										
	2	PeakXD	(6) IO-330W	COS/NUV, ACQ/PEAKXD, PSA	G230L 3000 A				3 Secs [==>]	[1]	
	<i>Comments: Spectroscopic ACQ ETC: COS.A208443, with composite spectrum of Io, based on (1) direct flux measurements (below 2300Å) and (2) albedo measurements + solar flux scaled for Io distance/size. Scaled to mV=5.3, but makes only slight difference from unscaled spectrum.</i> ACQ/Search 0.5 mags brighter: COS.A208440 0.5 mags dimmer: COS.A208439 All need < 1.0s to get S/N = 40										
	3	PeakD	(6) IO-330W	COS/NUV, ACQ/PEAKD, PSA	G230L 3000 A	NUM-POS=7.0; STEP-SIZE=1.2			3 Secs [==>]	[1]	
	4	Science1	(6) IO-330W	COS/NUV, TIME-TAG, PSA	G225M 2217 A	BUFFER-TIME=34 0; FP-POS=2			450 Secs [==>]	[1]	
<i>Comments: ETC: COSA208450 gives buffer time 2/3 of 12434</i>											
5	Science2	(6) IO-330W	COS/NUV, TIME-TAG, PSA	G225M 2217 A	BUFFER-TIME=34 0; FP-POS=3			450 Secs [==>]	[1]		
<i>Comments: ETC: COSA208450 gives buffer time 2/3 of 12434</i>											
6	Science3	(6) IO-330W	COS/NUV, TIME-TAG, PSA	G225M 2217 A	BUFFER-TIME=45 0; FP-POS=4			450 Secs [==>]	[1]		
<i>Comments: ETC: COSA208450 gives buffer time 2/3 of 12434</i>											



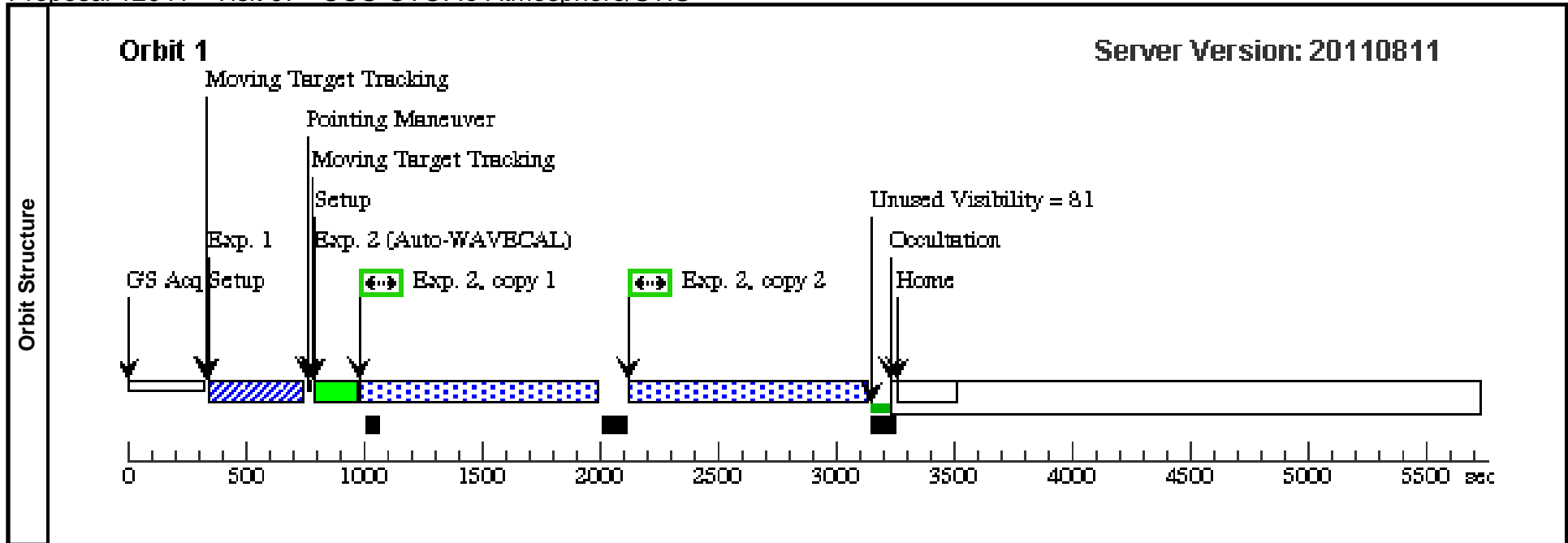
Proposal 12041 - Visit 07 - COS-GTO: Io Atmosphere/STIS

Wed Aug 24 01:03:53 GMT 2011

Visit	<p>Proposal 12041, Visit 07, completed</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: STIS/CCD, STIS/NUV-MAMA</p> <p>Special Requirements: ORIENT 81D TO 81 D</p> <p>Comments: Visit 1 of 5 to Io longitude 200</p> <p>The long spatial dimension of the STIS slit should be oriented 64 degrees counterclockwise from Io north, i.e. position angle 38.5 deg CCW from celestial north for the 2010 apparition, which should be roughly 19 degrees off-nominal, because Io north is close to ecliptic north, and the nominal orientation is 45 degrees counterclockwise from ecliptic north.</p> <p>The orient angles listed place the slit roughly 19 (+/- 1.5) deg off nominal</p> <p>The equivalent (+180) value is also listed, and is equally good.</p>
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	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center								
(9)	IO-200W-COPY	STD=JUPITER	STD=IO	TYPE=PGRAPHIC, LONG=220, LAT=0	CML OF IO-200W FROM EARTH BETWEEN 192 208	EARTH									

Exposures	#	Label	Target	Config, Mode, Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	Io acquisition	(9) IO-200W-COPY	STIS/CCD, ACQ, F28X50LP	MIRROR	DIFFUSE-CENTER=GEOMETRIC-CENTER;	ACQTYPE=DIFFUSE;	GS ACQ SCENARIO BASE1BN3		0.1 Secs [==>]
<p>Comments: Acquisition of the geometric center of Io's disk, prior to offset to the specific lat/long for the science exposure</p>										
2	Science exposure	(9) IO-200W-COPY	STIS/NUV-MAMA, ACCUM, 52X0.1	G230L 2376 A					1000 Secs X 2 [==>(Copy 1)] [==>(Copy 2)]	[1]



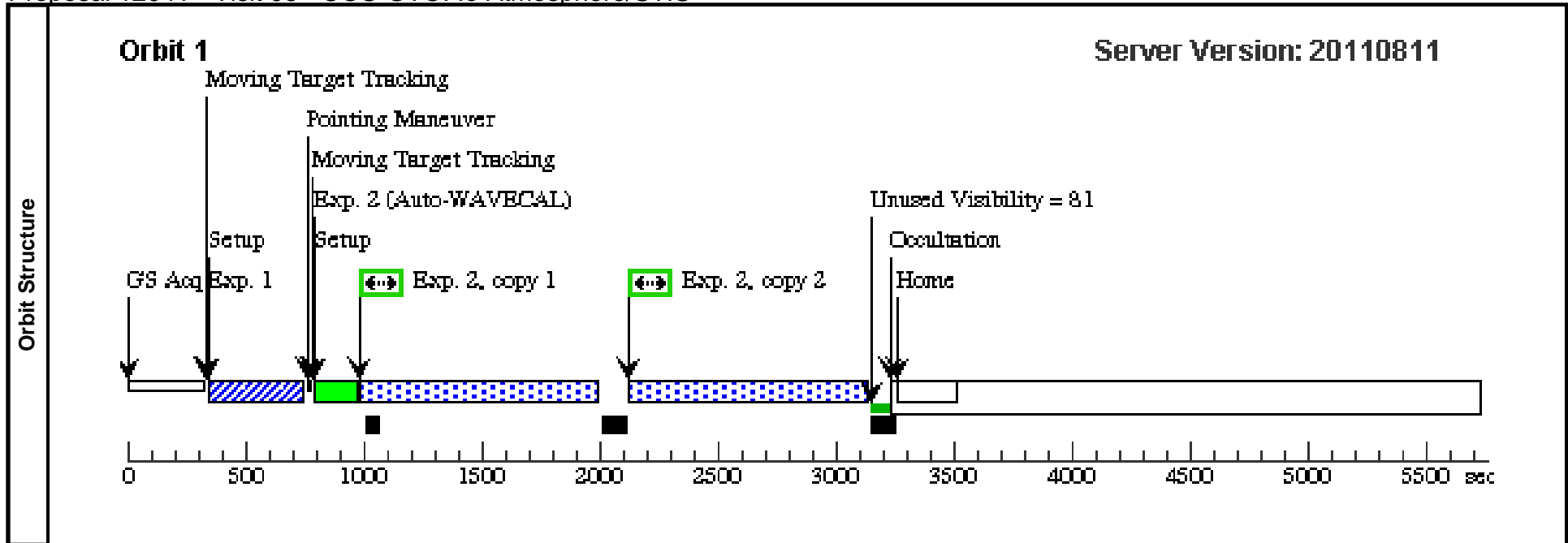
Proposal 12041 - Visit 08 - COS-GTO: Io Atmosphere/STIS

Wed Aug 24 01:03:54 GMT 2011

Visit	<p>Proposal 12041, Visit 08, implementation</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: STIS/CCD, STIS/NUV-MAMA</p> <p>Special Requirements: ORIENT 87D TO 90 D; ORIENT 267D TO 270 D</p> <p>Comments: Visit 2 of 5 to Io longitude 200</p> <p>The long spatial dimension of the STIS slit should be oriented 64 degrees counterclockwise from Io north, i.e. position angle 38.5 deg CCW from celestial north for the 2010 apparition, which should be roughly 19 degrees off-nominal, because Io north is close to ecliptic north, and the nominal orientation is 45 degrees counterclockwise from ecliptic north.</p> <p>The orient angles listed place the slit roughly 19 (+/- 1.5) deg off nominal</p> <p>The equivalent (+180) value is also listed, and is equally good.</p>
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	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center								
(7)	IO-200W	STD=JUPITER	STD=IO	TYPE=PGRAPHIC, LONG=235, LAT=5	CML OF IO-200W FROM EARTH BETWEEN 188 212, RANGE JUPITER EARTH LT 4.8	EARTH									

Exposures	#	Label	Target	Config, Mode, Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	Io acquisition	(7) IO-200W	STIS/CCD, ACQ, F28X50LP	MIRROR	DIFFUSE-CENTER=GEOMETRIC-CENTER;	ACQTYPE=DIFFUSE;	GS ACQ SCENARIO BASE1BN3		0.1 Secs [==>]
<p>Comments: Acquisition of the geometric center of Io's disk, prior to offset to the specific lat/long for the science exposure</p>										
2	Science exposure	(7) IO-200W	STIS/NUV-MAMA, ACCUM, 52X0.1	G230L 2376 A					1000 Secs X 2 [==>(Copy 1)] [==>(Copy 2)]	[1]



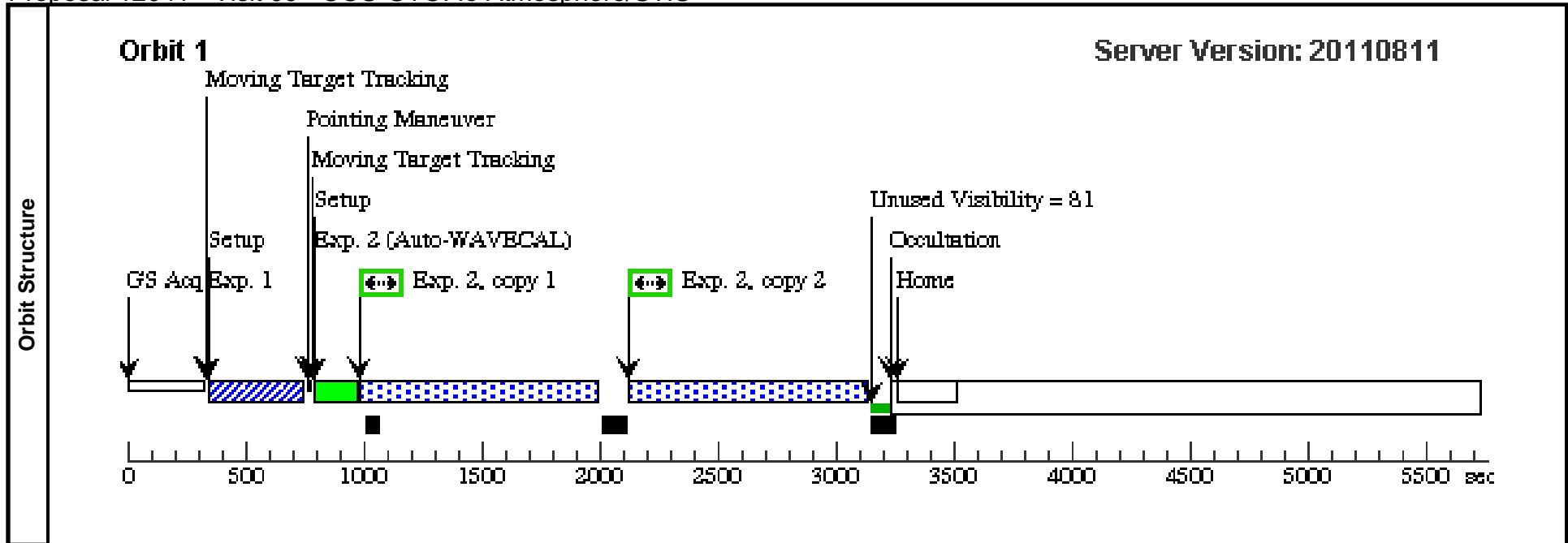
Proposal 12041 - Visit 09 - COS-GTO: Io Atmosphere/STIS

Wed Aug 24 01:03:55 GMT 2011

Visit	<p>Proposal 12041, Visit 09, implementation</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: STIS/CCD, STIS/NUV-MAMA</p> <p>Special Requirements: ORIENT 87D TO 90 D; ORIENT 267D TO 270 D</p> <p>Comments: Visit 3 of 5 to Io longitude 200</p> <p>The long spatial dimension of the STIS slit should be oriented 64 degrees counterclockwise from Io north, i.e. position angle 38.5 deg CCW from celestial north for the 2010 apparition, which should be roughly 19 degrees off-nominal, because Io north is close to ecliptic north, and the nominal orientation is 45 degrees counterclockwise from ecliptic north.</p> <p>The orient angles listed place the slit roughly 19 (+/- 1.5) deg off nominal</p> <p>The equivalent (+180) value is also listed, and is equally good.</p>						
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Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(7)	IO-200W	STD=JUPITER	STD=IO	TYPE=PGRAPHIC, LONG=235, LAT=5	CML OF IO-200W FROM EARTH BETWEEN 188 212, RANGE JUPITER EARTH LT 4.8	EARTH
<p>Comments: 14 degree target window --> 100 minutes of Io's 1.769-day orbit (though the window may be reduced on the low-CML side by the need to keep a minimum distance from Jupiter)</p> <p>The range limit ensures good spatial resolution</p>							

Exposures	#	Label	Target	Config, Mode, Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	Io acquisition	(7) IO-200W	STIS/CCD, ACQ, F28X50LP	MIRROR	DIFFUSE-CENTER=GEOMETRIC-CENTER;	ACQTYPE=DIFFUSE;	GS ACQ SCENARIO BASE1BN3		0.1 Secs [==>]
<p>Comments: Acquisition of the geometric center of Io's disk, prior to offset to the specific lat/long for the science exposure</p>										
2	Science exposure	(7) IO-200W	STIS/NUV-MAMA, ACCUM, 52X0.1	G230L 2376 A					1000 Secs X 2 [==>(Copy 1)] [==>(Copy 2)]	[1]



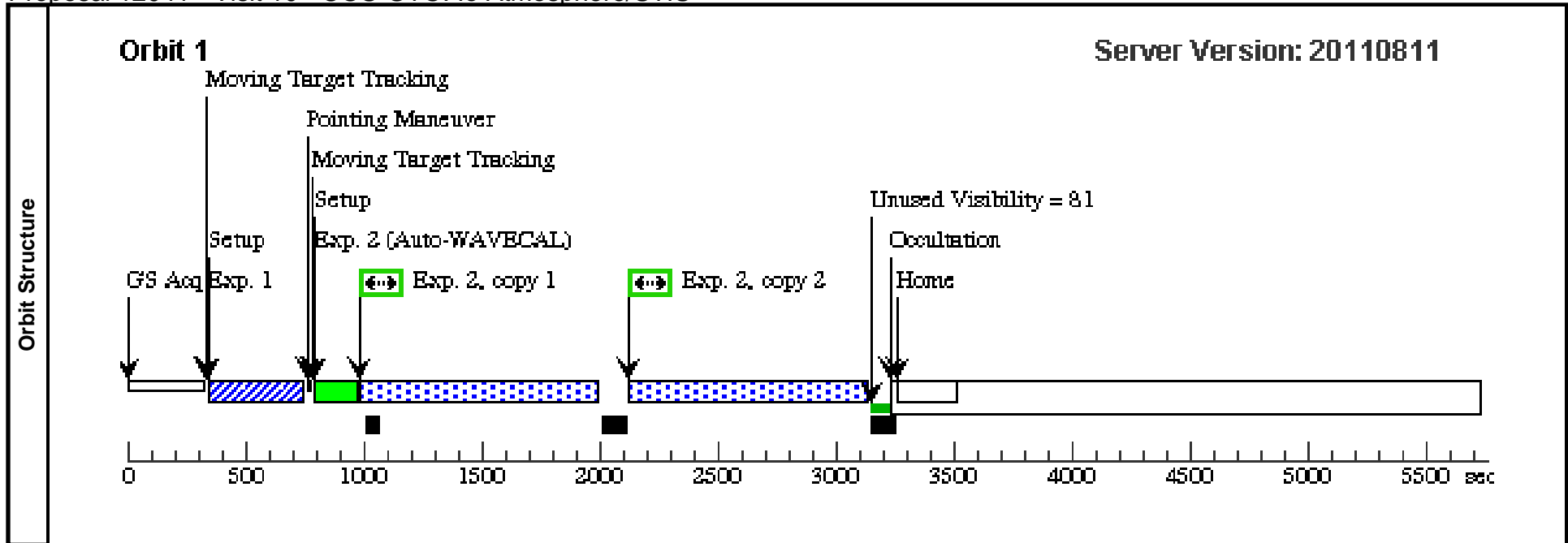
Proposal 12041 - Visit 10 - COS-GTO: Io Atmosphere/STIS

Wed Aug 24 01:03:55 GMT 2011

Visit	<p>Proposal 12041, Visit 10, implementation</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: STIS/CCD, STIS/NUV-MAMA</p> <p>Special Requirements: ORIENT 87D TO 90 D; ORIENT 267D TO 270 D</p> <p>Comments: Visit 4 of 5 to Io longitude 200</p> <p>The long spatial dimension of the STIS slit should be oriented 64 degrees counterclockwise from Io north, i.e. position angle 38.5 deg CCW from celestial north for the 2010 apparition, which should be roughly 19 degrees off-nominal, because Io north is close to ecliptic north, and the nominal orientation is 45 degrees counterclockwise from ecliptic north.</p> <p>The orient angles listed place the slit roughly 19 (+/- 1.5) deg off nominal</p> <p>The equivalent (+180) value is also listed, and is equally good.</p>
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	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center								
(7)	IO-200W	STD=JUPITER	STD=IO	TYPE=PGRAPHIC, LONG=235, LAT=5	CML OF IO-200W FROM EARTH BETWEEN 188 212, RANGE JUPITER EARTH LT 4.8	EARTH									

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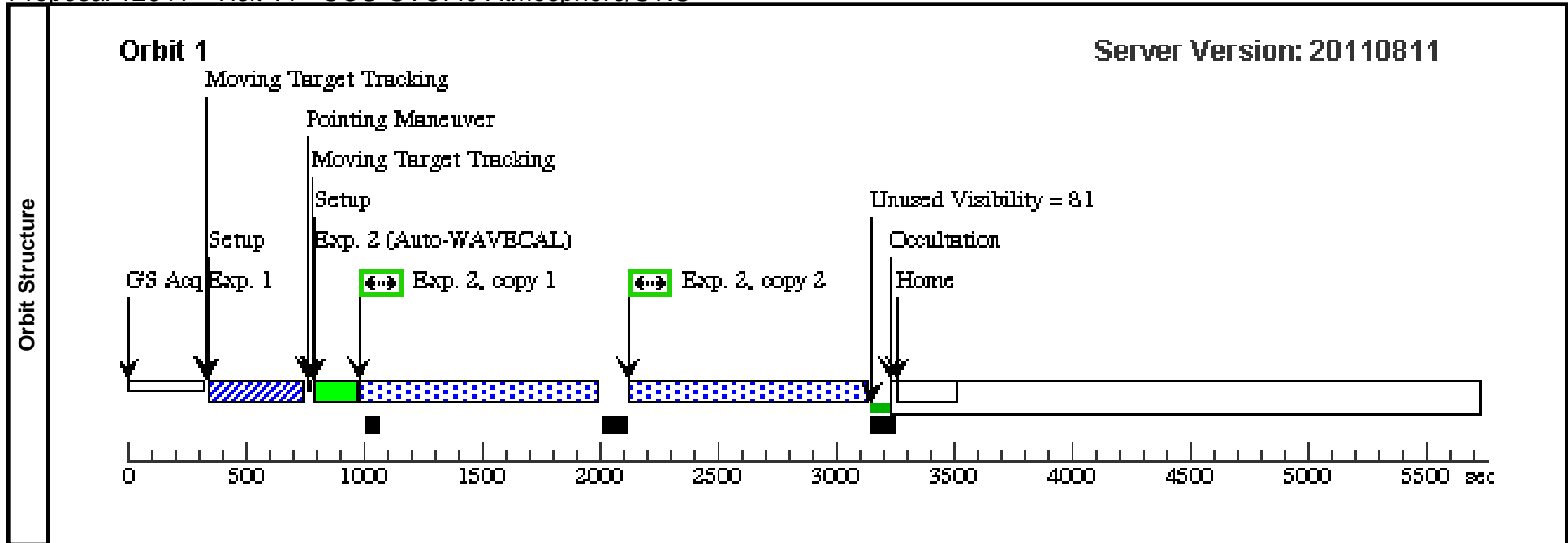
Proposal 12041 - Visit 11 - COS-GTO: Io Atmosphere/STIS

Wed Aug 24 01:03:56 GMT 2011

Visit	<p>Proposal 12041, Visit 11, implementation</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: STIS/CCD, STIS/NUV-MAMA</p> <p>Special Requirements: ORIENT 87D TO 90 D; ORIENT 267D TO 270 D</p> <p>Comments: Visit 5 of 5 to Io longitude 200</p> <p>The long spatial dimension of the STIS slit should be oriented 64 degrees counterclockwise from Io north, i.e. position angle 38.5 deg CCW from celestial north for the 2010 apparition, which should be roughly 19 degrees off-nominal, because Io north is close to ecliptic north, and the nominal orientation is 45 degrees counterclockwise from ecliptic north.</p> <p>The orient angles listed place the slit roughly 19 (+/- 1.5) deg off nominal</p> <p>The equivalent (+180) value is also listed, and is equally good.</p>
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(7)	IO-200W	STD=JUPITER	STD=IO	TYPE=PGRAPHIC, LONG=235, LAT=5	CML OF IO-200W FROM EARTH BETWEEN 188 212, RANGE JUPITER EARTH LT 4.8	EARTH									

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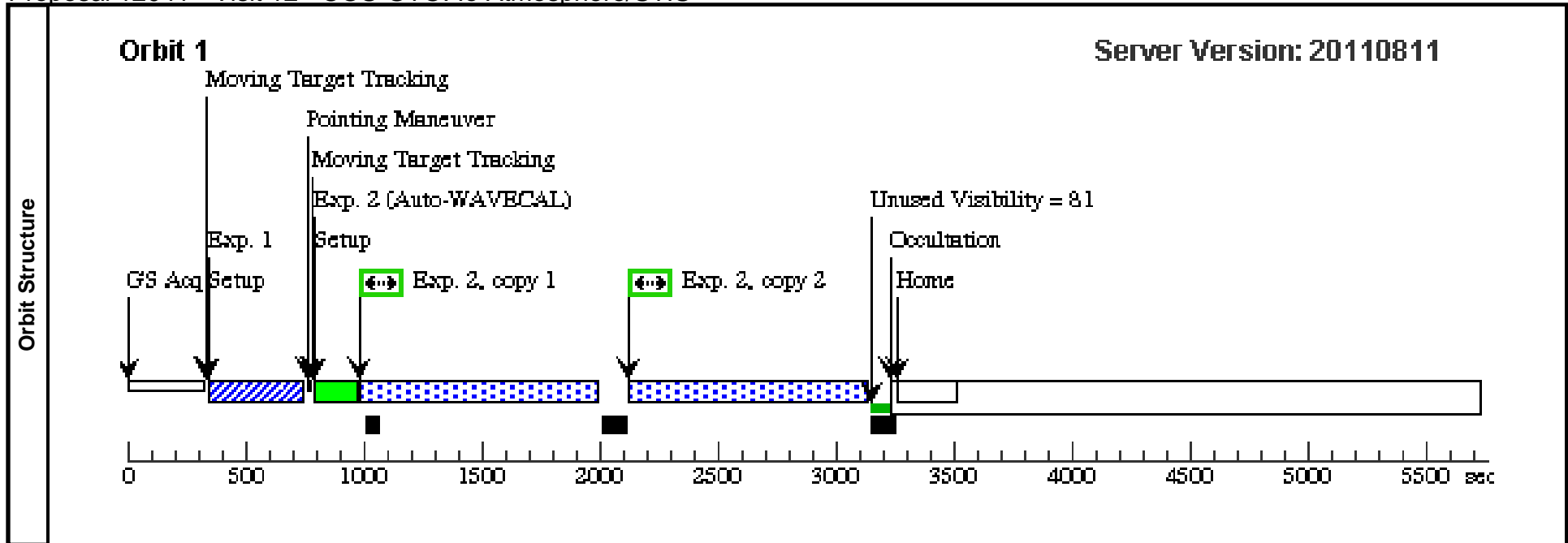
Proposal 12041 - Visit 12 - COS-GTO: Io Atmosphere/STIS

Wed Aug 24 01:03:56 GMT 2011

Visit	<p>Proposal 12041, Visit 12, implementation</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: STIS/CCD, STIS/NUV-MAMA</p> <p>Special Requirements: ORIENT 87D TO 90 D; ORIENT 267D TO 270.0 D</p> <p><i>Comments: Visit 1 of 5 to Io longitude 250</i></p> <p><i>The long spatial dimension of the STIS slit should be oriented 64 degrees counterclockwise from Io north, i.e. position angle 38.5 deg CCW from celestial north for the 2010 apparition, which should be roughly 19 degrees off-nominal, because Io north is close to ecliptic north, and the nominal orientation is 45 degrees counterclockwise from ecliptic north.</i></p> <p><i>The orient angles listed place the slit roughly 19 (+/- 1.5) deg off nominal</i></p> <p><i>The equivalent (+180) value is also listed, and is equally good.</i></p>
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(8)	IO-250W	STD=JUPITER	STD=IO	TYPE=PGRAPHIC, LONG=235, LAT=5	CML OF IO-250W FROM EARTH BETWEEN 238 262, RANGE JUPITER EARTH LT 4.8	EARTH									

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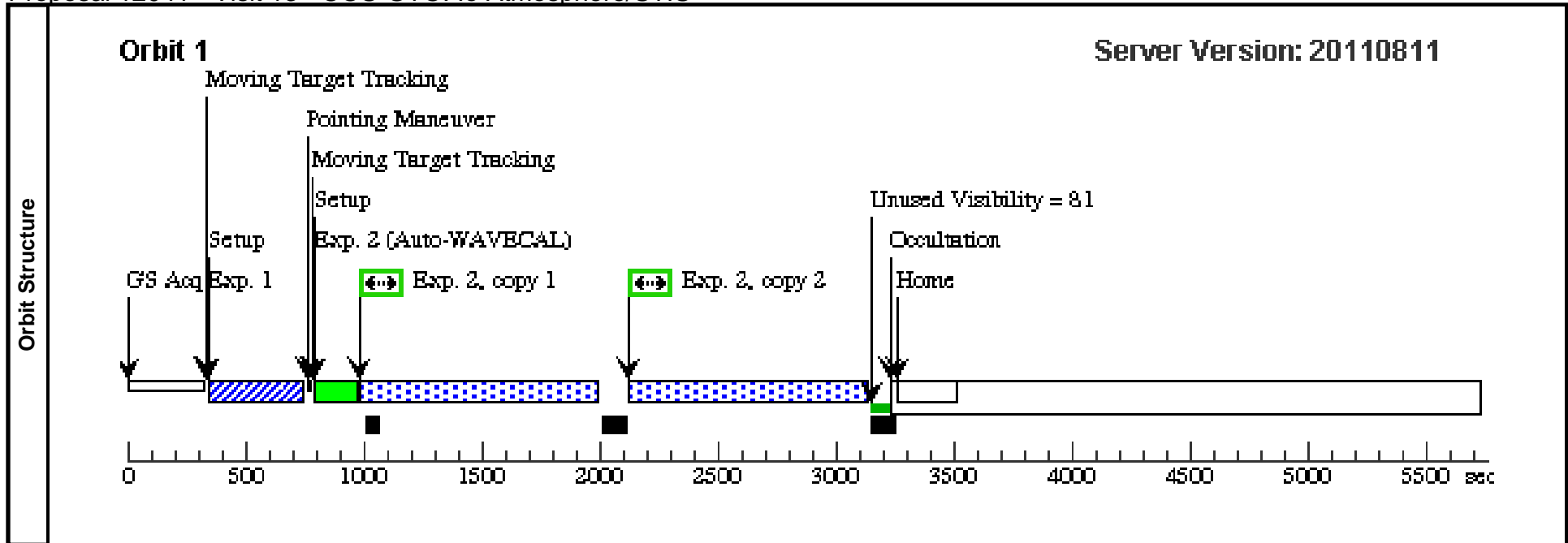
Proposal 12041 - Visit 13 - COS-GTO: Io Atmosphere/STIS

Wed Aug 24 01:03:56 GMT 2011

Visit	<p>Proposal 12041, Visit 13, implementation</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: STIS/CCD, STIS/NUV-MAMA</p> <p>Special Requirements: ORIENT 87D TO 90 D; ORIENT 267D TO 270 D</p> <p>Comments: Visit 2 of 5 to Io longitude 250</p> <p>The long spatial dimension of the STIS slit should be oriented 64 degrees counterclockwise from Io north, i.e. position angle 38.5 deg CCW from celestial north for the 2010 apparition, which should be roughly 19 degrees off-nominal, because Io north is close to ecliptic north, and the nominal orientation is 45 degrees counterclockwise from ecliptic north.</p> <p>The orient angles listed place the slit roughly 19 (+/- 1.5) deg off nominal</p> <p>The equivalent (+180) value is also listed, and is equally good.</p>
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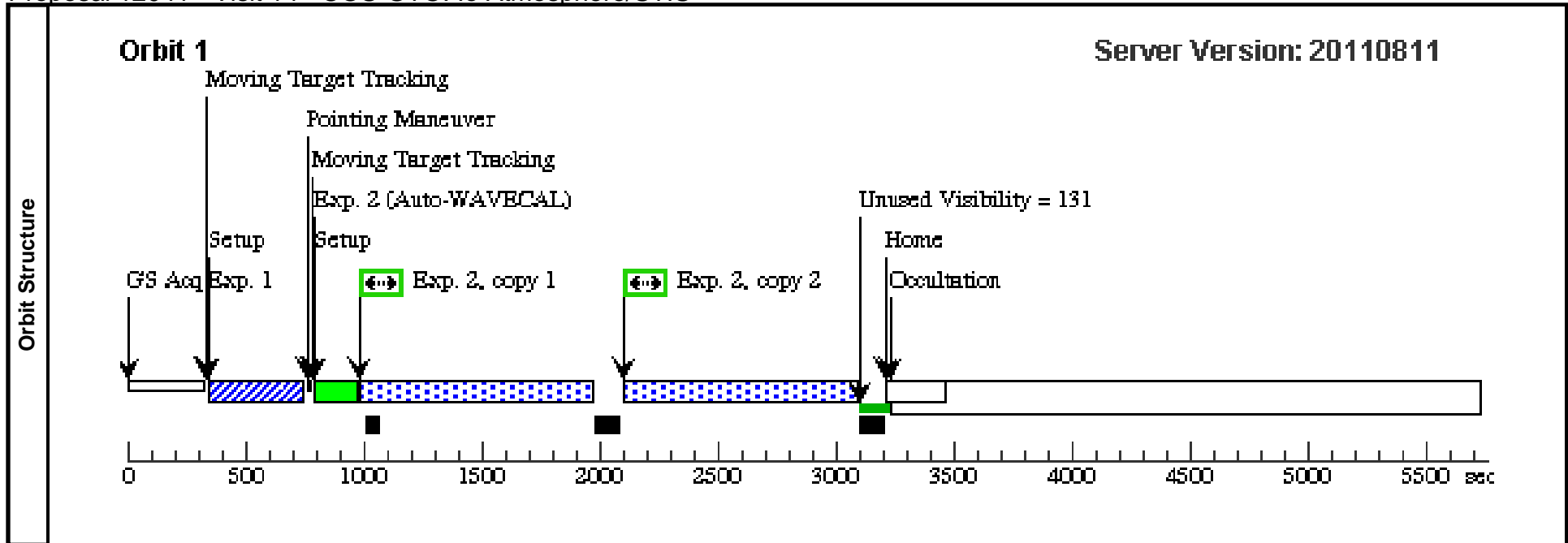
Proposal 12041 - Visit 14 - COS-GTO: Io Atmosphere/STIS

Wed Aug 24 01:03:57 GMT 2011

Visit	<p>Proposal 12041, Visit 14, implementation</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: STIS/CCD, STIS/NUV-MAMA</p> <p>Special Requirements: ORIENT 87D TO 90 D; ORIENT 267D TO 270 D</p> <p>Comments: Visit 3 of 5 to Io longitude 250</p> <p>The long spatial dimension of the STIS slit should be oriented 64 degrees counterclockwise from Io north, i.e. position angle 38.5 deg CCW from celestial north for the 2010 apparition, which should be roughly 19 degrees off-nominal, because Io north is close to ecliptic north, and the nominal orientation is 45 degrees counterclockwise from ecliptic north.</p> <p>The orient angles listed place the slit roughly 19 (+/- 1.5) deg off nominal</p> <p>The equivalent (+180) value is also listed, and is equally good.</p>
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Exposures	#	Label	Target	Config, Mode, Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	Io acquisition	(8) IO-250W	STIS/CCD, ACQ, F28X50LP	MIRROR	DIFFUSE-CENTER=GEOMETRIC-CENTER;	ACQTYPE=DIFFUSE;	GS ACQ SCENARIO BASE1BN3		0.1 Secs [==>]
<p>Comments: Acquisition of the geometric center of Io's disk, prior to offset to the specific lat/long for the science exposure</p>										
2	Science exposure	(8) IO-250W	STIS/NUV-MAMA, ACCUM, 52X0.1	G230L 2376 A					975 Secs X 2 [==>(Copy 1)] [==>(Copy 2)]	[1]



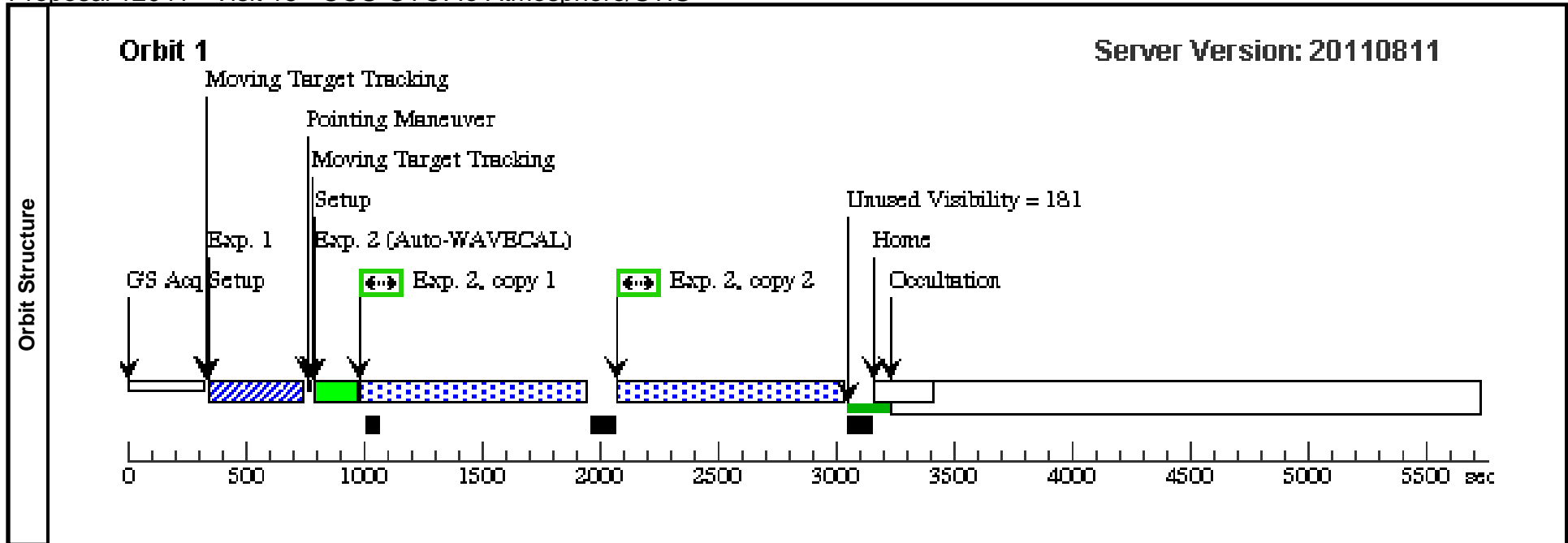
Proposal 12041 - Visit 15 - COS-GTO: Io Atmosphere/STIS

Wed Aug 24 01:03:57 GMT 2011

Visit	<p>Proposal 12041, Visit 15, implementation</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: STIS/CCD, STIS/NUV-MAMA</p> <p>Special Requirements: ORIENT 87D TO 90 D; ORIENT 267D TO 270 D</p> <p>Comments: Visit 4 of 5 to Io longitude 250</p> <p>The long spatial dimension of the STIS slit should be oriented 64 degrees counterclockwise from Io north, i.e. position angle 38.5 deg CCW from celestial north for the 2010 apparition, which should be roughly 19 degrees off-nominal, because Io north is close to ecliptic north, and the nominal orientation is 45 degrees counterclockwise from ecliptic north.</p> <p>The orient angles listed place the slit roughly 19 (+/- 1.5) deg off nominal</p> <p>The equivalent (+180) value is also listed, and is equally good.</p>						
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	(8)	IO-250W	STD=JUPITER	STD=IO	TYPE=PGRAPHIC, LONG=235, LAT=5	CML OF IO-250W FROM EARTH BETWEEN 238 262, RANGE JUPITER EARTH LT 4.8	EARTH
<p>Comments: 14 degree target window --> 100 minutes of Io's 1.769-day orbit</p> <p>The range limit ensures good spatial resolution</p>							

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	1	Io acquisition	(8) IO-250W	STIS/CCD, ACQ, F28X50LP	MIRROR	DIFFUSE-CENTER=GEOMETRIC-CENTER;	ACQTYPE=DIFFUSE;	GS ACQ SCENARIO BASE1BN3		0.1 Secs [==>]
<p>Comments: Acquisition of the geometric center of Io's disk, prior to offset to the specific lat/long for the science exposure</p>										
2	Science exposure	(8) IO-250W	STIS/NUV-MAMA, ACCUM, 52X0.1	G230L 2376 A					950 Secs X 2 [==>(Copy 1)] [==>(Copy 2)]	[1]



Proposal 12041 - Visit 16 - COS-GTO: Io Atmosphere/STIS

Wed Aug 24 01:03:58 GMT 2011

Visit	<p>Proposal 12041, Visit 16, implementation</p> <p>Diagnostic Status: No Diagnostics</p> <p>Scientific Instruments: STIS/CCD, STIS/NUV-MAMA</p> <p>Special Requirements: ORIENT 87D TO 90 D; ORIENT 267D TO 270 D</p> <p>Comments: Visit 5 of 5 to Io longitude 250</p> <p>The long spatial dimension of the STIS slit should be oriented 64 degrees counterclockwise from Io north, i.e. position angle 38.5 deg CCW from celestial north for the 2010 apparition, which should be roughly 19 degrees off-nominal, because Io north is close to ecliptic north, and the nominal orientation is 45 degrees counterclockwise from ecliptic north.</p> <p>The orient angles listed place the slit roughly 19 (+/- 1.5) deg off nominal</p> <p>The equivalent (+180) value is also listed, and is equally good.</p>						
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Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
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	1	Io acquisition	(8) IO-250W	STIS/CCD, ACQ, F28X50LP	MIRROR	DIFFUSE-CENTER=GEOMETRIC-CENTER;	ACQTYPE=DIFFUSE;	GS ACQ SCENARIO BASE1BN3		0.1 Secs [==>]
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