



13040 - Investigation of Emission Anomalies from Europa's Atmosphere: Search for Possible Plumes

Cycle: 20, Proposal Category: GO
(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) EUROPA-EAST-A	STIS/CCD STIS/FUV-MAMA	5	02-Oct-2012 21:53:30.0	yes
03	(3) EUROPA-EAST-B	STIS/CCD STIS/FUV-MAMA	5	02-Oct-2012 21:54:06.0	yes
02	(2) EUROPA-WEST-A	STIS/CCD STIS/FUV-MAMA	5	02-Oct-2012 21:54:43.0	yes
04	(4) EUROPA-WEST-B	STIS/CCD STIS/FUV-MAMA	5	02-Oct-2012 21:55:17.0	yes

20 Total Orbits Used

ABSTRACT

Previous HST/STIS and HST/ACS observations of Jupiter's satellite Europa combined with models of Europa's icy surface provide exciting hints that Europa might exhibit plume activity similar to the water geyser activity recently discovered on Saturn's satellite Enceladus. During previous HST campaigns a surplus of emission from Europa's tenuous oxygen atmosphere at 90 and 230 degrees west longitude was found. These longitudes are consistent with independent predictions for possible plume locations from tidal surface models by Nimmo et al. The previous HST/ACS observations of Europa's leading side however suffered a strong red leak problem and the two diagnostic emission patterns from the oxygen multiplets OI 1304 Å and OI 1356 Å could not be spatially separated. The previous HST/STIS observations of Europa's trailing hemisphere exhibited the emission anomaly near the limb of the disk. Therefore we ask for two visits of five consecutive HST/STIS orbits at OLGs near 90 and 230 degrees to observe the emission anomalies near the central meridian. With these observations we will further constrain the emission anomalies and investigate if Europa indeed exhibits plume activity. The discovery of plumes on Europa would provide observational samples of subsurface materials possibly including material from a sub-surface water ocean.

OBSERVING DESCRIPTION

We propose 5 consecutive orbits in two visits (10 orbits total) with STIS to observe Europa's atmospheric UV emission at two different viewing geometries. During both visits we search for emission anomalies from Europa's surface. One visit is proposed to view Europa's leading side near CML=90 degrees where we expect an emission anomaly. This viewing geometry occurs when Europa is at eastern elongation, i.e. near OLG=90 degrees. A second visit is proposed to view Europa's trailing hemisphere near CML=230 degrees. This viewing geometry occurs when Europa is at western elongation, i.e. near OLG=230 degrees. With STIS we will be able to separate reflected sun light on Europa's surface from the two oxygen lines OI 1356 Å and OI 1304 Å, which are emitted from Europa's oxygen atmosphere. Additionally we are interested in the spatial structure of the Ly-alpha emission (HI 1216 Å) and carbon line (CII 1335 Å), which are reflected from Europa's surface. We propose to center the disk of Europa (maximum diameter ~1.2") to obtain a symmetric field of view around the disk of Europa.

The western elongation (OLG approx 270 degrees) has been previously observed by STIS (ID: 8224). The emission anomaly at western elongation is expected to be located near CML=230 degrees west longitude in Europa planetographic coordinates. Therefore we propose to revisit the western elongation, but at slightly different OLG, i.e. OLG approx 230 degrees.

Proposal 13040 (STScI Edit Number: 1, Created: Tuesday, October 2, 2012 8:55:29 PM EST) - Overview

The eastern elongation (OLG approx 90 degrees) has been previously observed with ACS (ID:11186). Due to the red leak problem, we propose to revisit this elongation with STIS observations. Near 90 degrees west longitude in Europa planetographic coordinates we also expect an emission anomaly. The location of this anomaly is near the central meridian when we observe at OLG near 90 degrees.

Due to the blotch on the MAMA detector we propose to use the pseudo aperture 52X2D1.

For the science output it is desirable if Europa covers the maximum range of Jovian magnetic latitudes. This condition is met if during each visit the CML OF JUPITER FROM EUROPA lies BETWEEN 184 AND 100 degrees or the CML OF JUPITER FROM EUROPA lies BETWEEN 11 AND 287 degrees. This condition could be relaxed in case of scheduling conflicts.

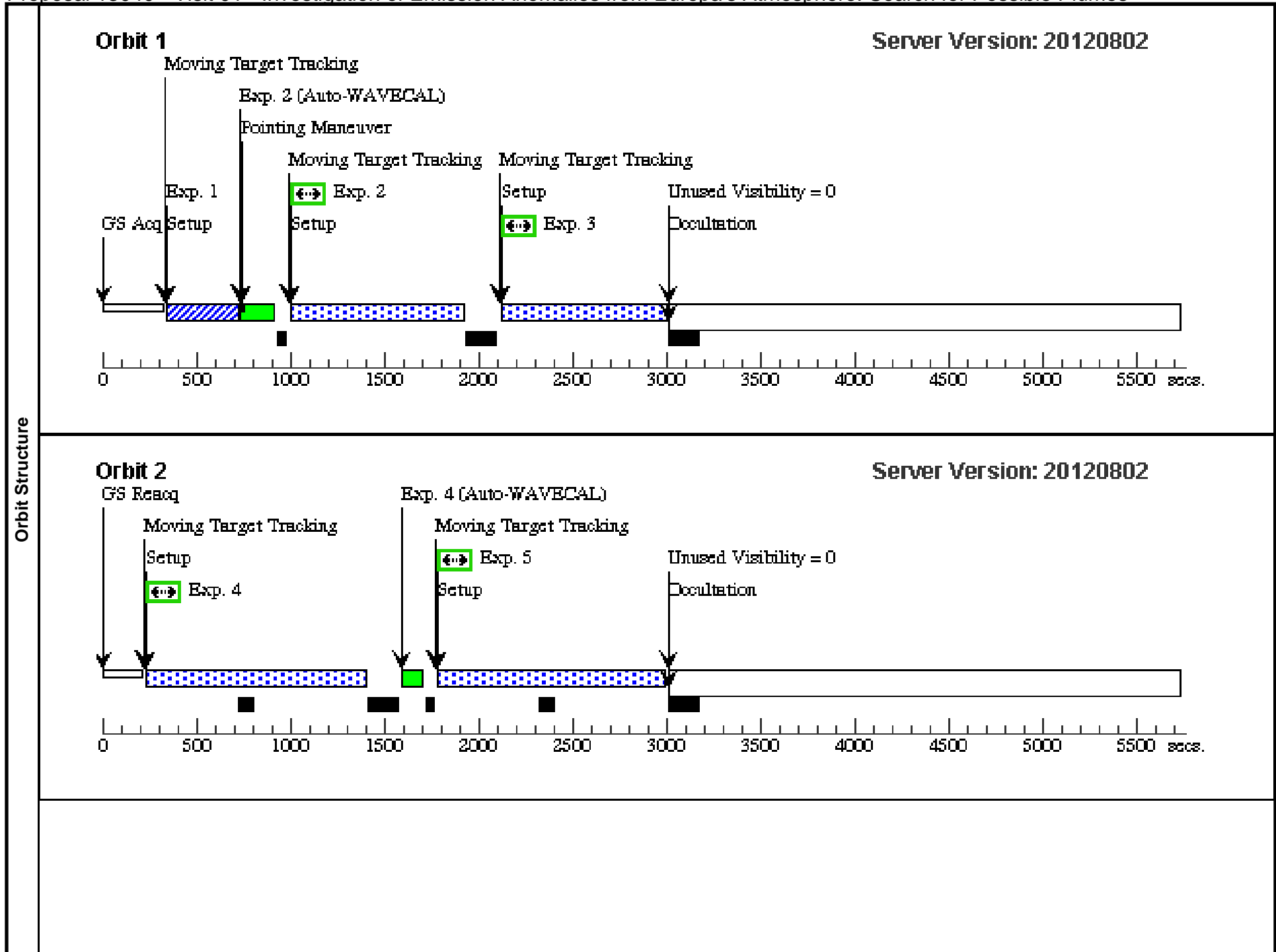
Proposal 13040 - Visit 01 - Investigation of Emission Anomalies from Europa's Atmosphere: Search for Possible Plumes

Wed Oct 03 01:55:30 GMT 2012

Visit	<p>Proposal 13040, Visit 01, implementation</p> <p>Diagnostic Status: Warning</p> <p>Scientific Instruments: STIS/CCD, STIS/FUV-MAMA</p> <p>Special Requirements: SCHED 100%; ON HOLD</p> <p><i>On Hold Comments: Execute either Visit 1 (EUROPA-EAST-A) or Visit 3 (EUROPA-EAST-B)</i></p>							
	Diagnostics	<p>(Science (01.002)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (01.003)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (01.004)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (01.005)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (01.006)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (01.007)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (01.008)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (01.009)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (01.010)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (01.011)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p>						
Solar System Targets		#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)		EUROPA-EAST-A	STD=JUPITER	STD=EUROPA		SEP OF EUROPA-EAST-A JUPITER FROM EARTH GT 30", SEP OF EUROPA-EAST-A CALLISTO FROM EARTH GT 10", SEP OF EUROPA-EAST-A IO FROM EARTH GT 10", SEP OF EUROPA-EAST-A GANYMEDE FROM EARTH GT 10", OLG OF JUPITER FROM EARTH BETWEEN 330 30, CML OF EUROPA FROM EARTH BETWEEN 60 120, CML OF JUPITER FROM EUROPA BETWEEN 11 287	EARTH	

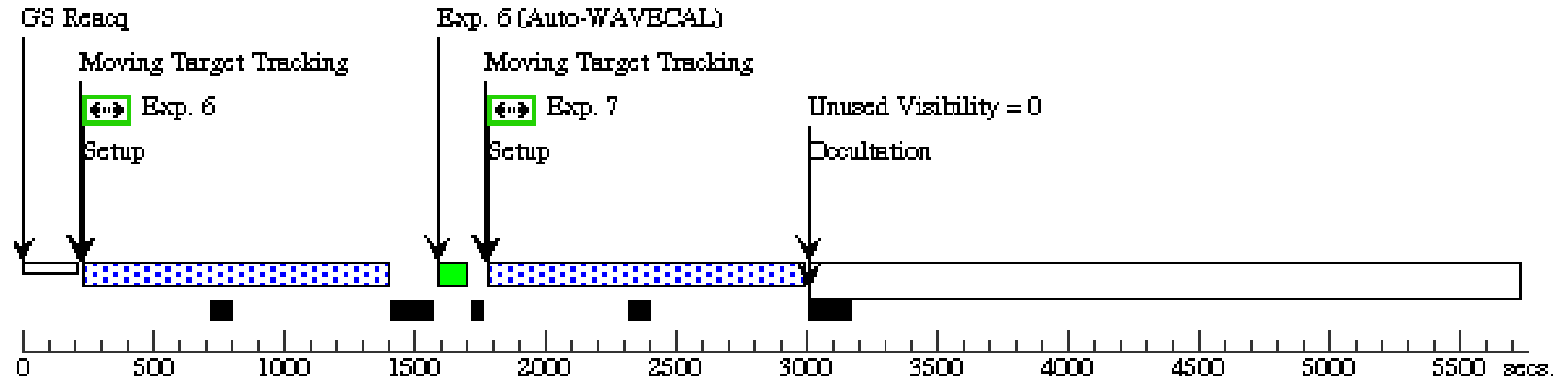
Proposal 13040 - Visit 01 - Investigation of Emission Anomalies from Europa's Atmosphere: Search for Possible Plumes

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	ACQ	(1) EUROPA-EAST-A	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=DIFFUSE; CHECKBOX=23; DIFFUSE-CENTER=GEOMETRIC-CENTER			0.1 Secs [=>]	[1]
	2	Science	(1) EUROPA-EAST-A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			865 Secs [=>]	[1]
	3	Science	(1) EUROPA-EAST-A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			865 Secs [=>]	[1]
	4	Science	(1) EUROPA-EAST-A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1159 Secs [=>]	[2]
	5	Science	(1) EUROPA-EAST-A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1159 Secs [=>]	[2]
	6	Science	(1) EUROPA-EAST-A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1159 Secs [=>]	[3]
	7	Science	(1) EUROPA-EAST-A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1159 Secs [=>]	[3]
	8	Science	(1) EUROPA-EAST-A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1159 Secs [=>]	[4]
	9	Science	(1) EUROPA-EAST-A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1159 Secs [=>]	[4]
	10	Science	(1) EUROPA-EAST-A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1159 Secs [=>]	[5]
11	Science	(1) EUROPA-EAST-A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1159 Secs [=>]	[5]	



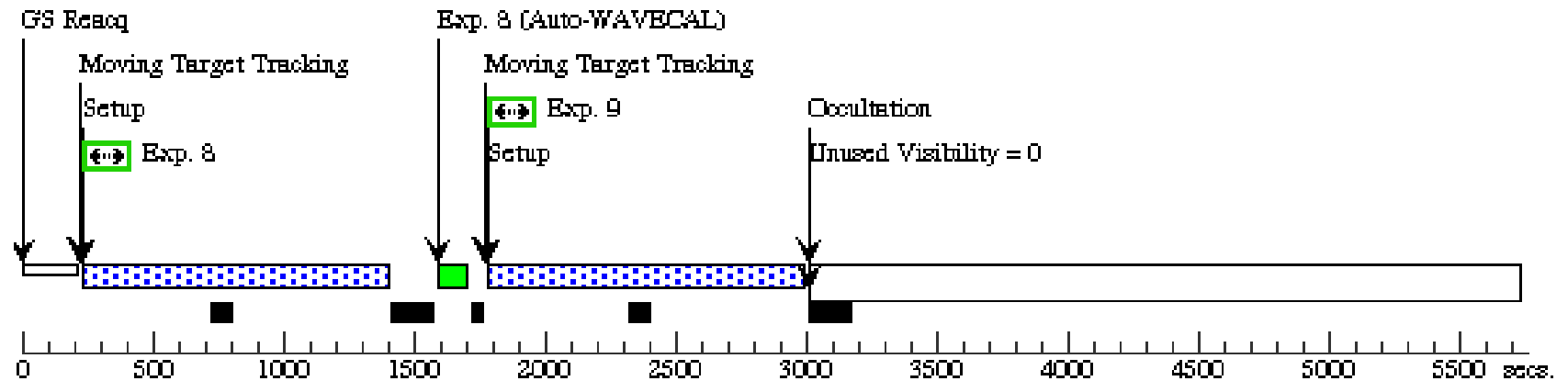
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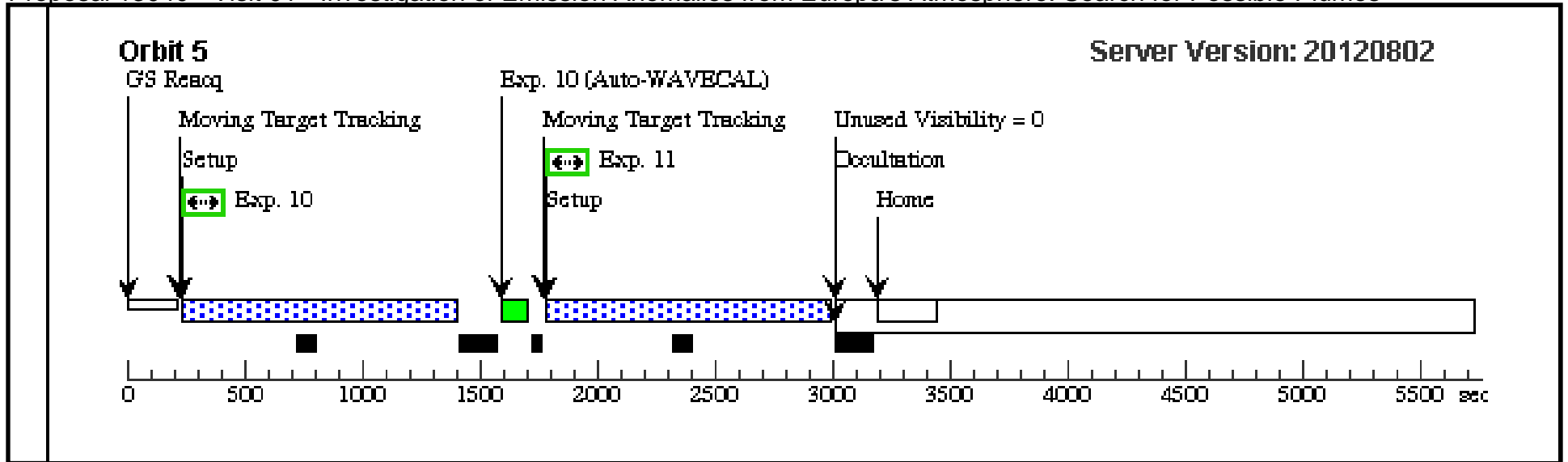
Orbit 3



Server Version: 20120802

Orbit 4





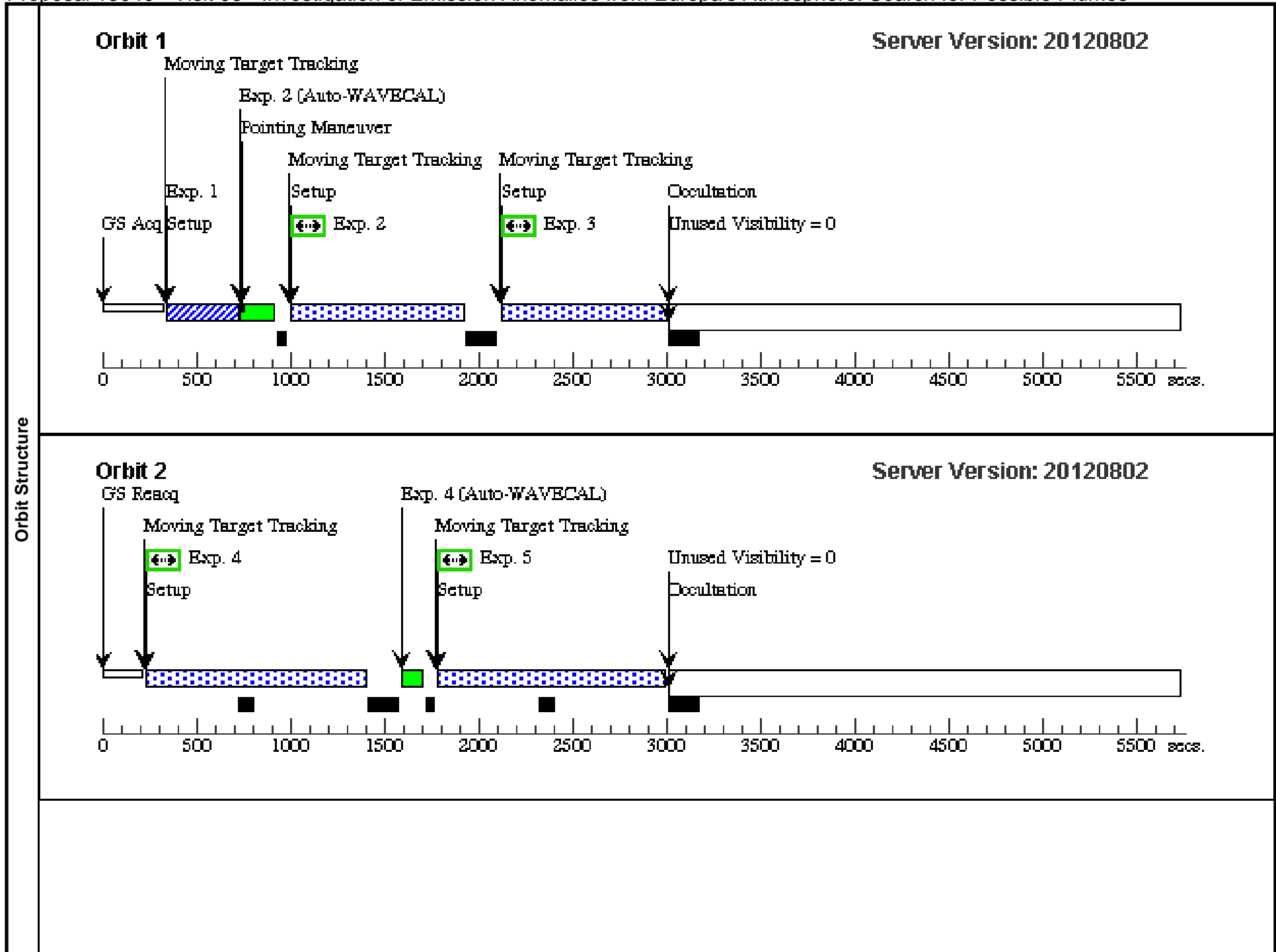
Proposal 13040 - Visit 03 - Investigation of Emission Anomalies from Europa's Atmosphere: Search for Possible Plumes

Wed Oct 03 01:55:36 GMT 2012

Visit	<p>Proposal 13040, Visit 03, withdrawn</p> <p>Diagnostic Status: Warning</p> <p>Scientific Instruments: STIS/CCD, STIS/FUV-MAMA</p> <p>Special Requirements: SCHED 100%; ON HOLD</p> <p><i>On Hold Comments: Execute either visit 1 (EUROPA-EAST-A) or visit 3 (EUROPA-EAST-B)</i></p>							
	Diagnostics	<p>(Science (03.002)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (03.003)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (03.004)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (03.005)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (03.006)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (03.007)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (03.008)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (03.009)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (03.010)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (03.011)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p>						
Solar System Targets		#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(3)		EUROPA-EAST-B	STD=JUPITER	STD=EUROPA		SEP OF EUROPA-EAST-B JUPITER FROM EARTH GT 30", SEP OF EUROPA-EAST-B CALLISTO FROM EARTH GT 10", SEP OF EUROPA-EAST-B IO FROM EARTH GT 10", SEP OF EUROPA-EAST-B GANYMEDE FROM EARTH GT 10", OLG OF JUPITER FROM EARTH BETWEEN 330 30, CML OF EUROPA FROM EARTH BETWEEN 60 120, CML OF JUPITER FROM EUROPA BETWEEN 184 100	EARTH	

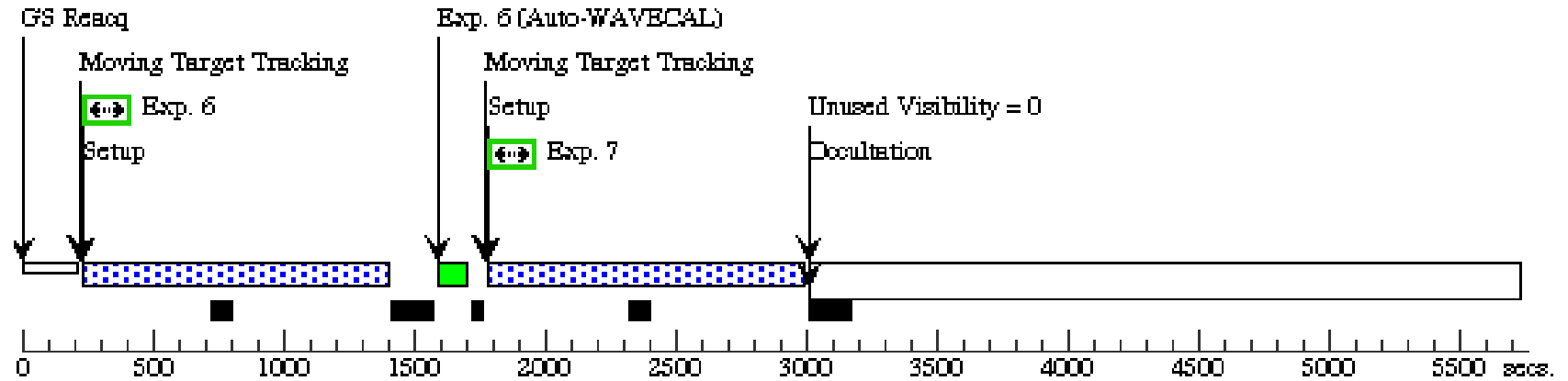
Proposal 13040 - Visit 03 - Investigation of Emission Anomalies from Europa's Atmosphere: Search for Possible Plumes

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	ACQ	(3) EUROPA-EAST-B	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=DIFFUSE; CHECKBOX=23; DIFFUSE-CENTER=GEOMETRIC-CENTER			0.1 Secs [==>]	[1]
	2	Science	(3) EUROPA-EAST-B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			865 Secs [==>]	[1]
	3	Science	(3) EUROPA-EAST-B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			865 Secs [==>]	[1]
	4	Science	(3) EUROPA-EAST-B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1141 Secs [==>1159.0 Secs]	[2]
	5	Science	(3) EUROPA-EAST-B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1141 Secs [==>1159.0 Secs]	[2]
	6	Science	(3) EUROPA-EAST-B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1141 Secs [==>1159.0 Secs]	[3]
	7	Science	(3) EUROPA-EAST-B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1141 Secs [==>1159.0 Secs]	[3]
	8	Science	(3) EUROPA-EAST-B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1141 Secs [==>1159.0 Secs]	[4]
	9	Science	(3) EUROPA-EAST-B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1141 Secs [==>1159.0 Secs]	[4]
	10	Science	(3) EUROPA-EAST-B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1141 Secs [==>1159.0 Secs]	[5]
11	Science	(3) EUROPA-EAST-B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1141 Secs [==>1159.0 Secs]	[5]	



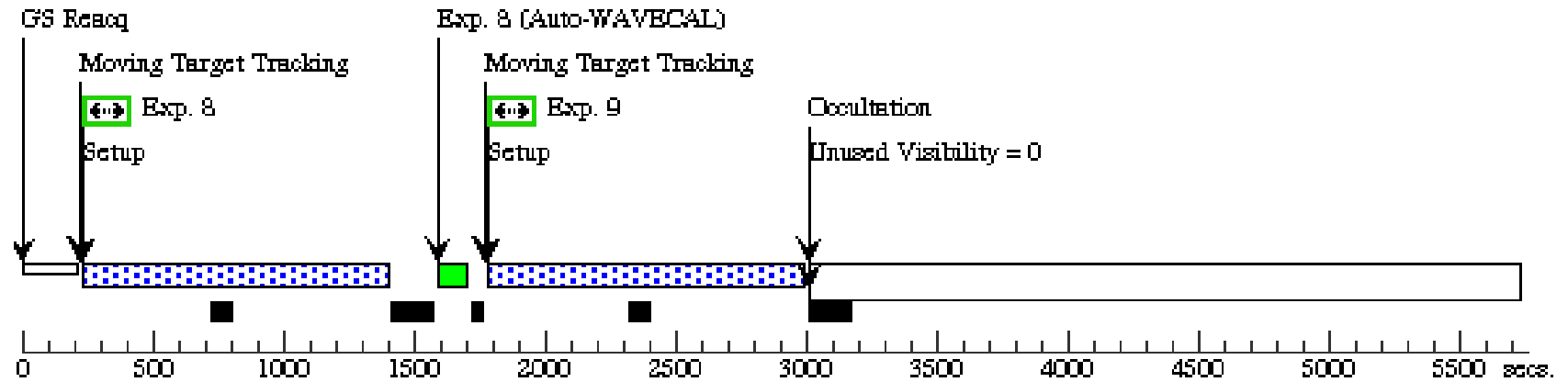
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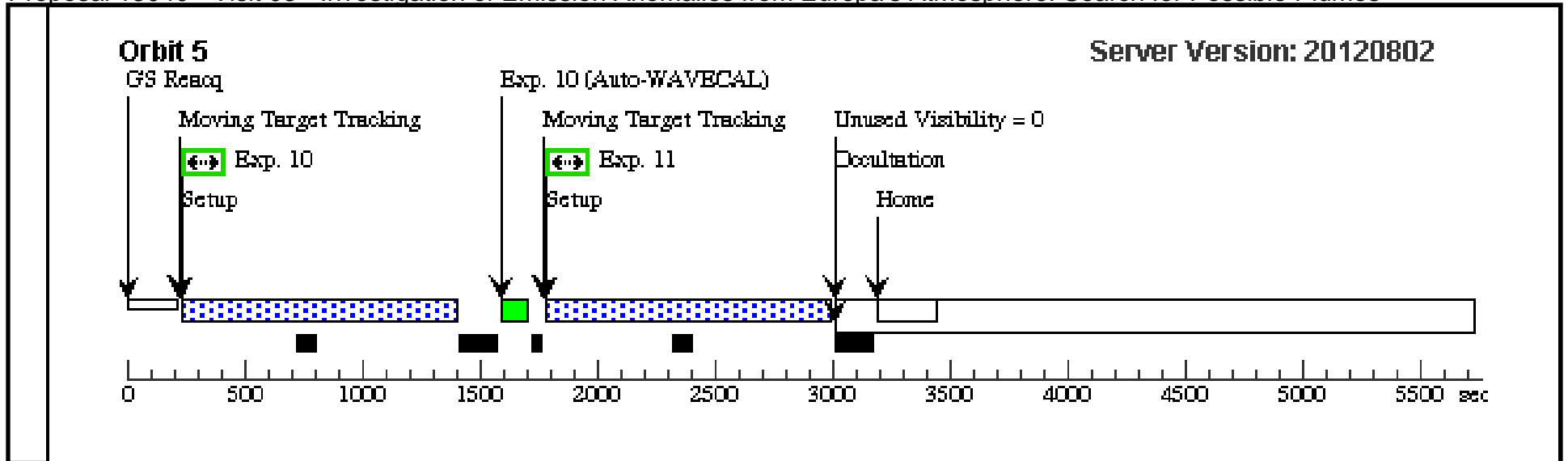
Orbit 3



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Orbit 4





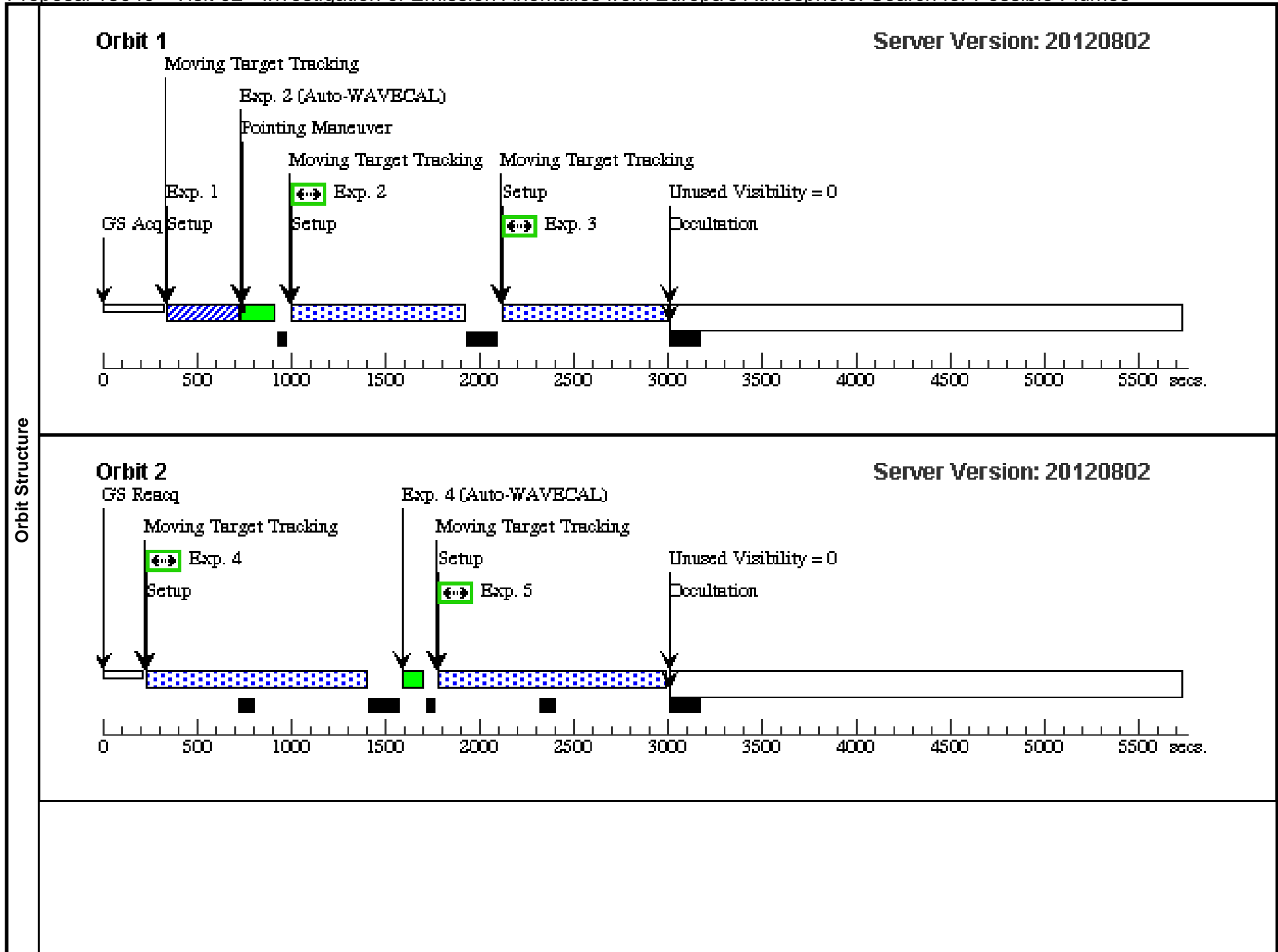
Proposal 13040 - Visit 02 - Investigation of Emission Anomalies from Europa's Atmosphere: Search for Possible Plumes

Wed Oct 03 01:55:41 GMT 2012

Visit	<p>Proposal 13040, Visit 02, implementation</p> <p>Diagnostic Status: Warning</p> <p>Scientific Instruments: STIS/CCD, STIS/FUV-MAMA</p> <p>Special Requirements: SCHED 100%; ON HOLD</p> <p><i>On Hold Comments: Execute either Visit 2 (EUROPA-WEST-A) or Visit 4 (EUROPA-WEST-B)</i></p>							
	Diagnostics	<p>(Science (02.002)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (02.003)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (02.004)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (02.005)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (02.006)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (02.007)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (02.008)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (02.009)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (02.010)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (02.011)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p>						
Solar System Targets		#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(2)		EUROPA-WEST-A	STD=JUPITER	STD=EUROPA			SEP OF EUROPA-WEST-A JUPITER FROM EARTH GT 30", SEP OF EUROPA-WEST-A CALLISTO FROM EARTH GT 10", SEP OF EUROPA-WEST-A IO FROM EARTH GT 10", SEP OF EUROPA-WEST-A GANYMEDE FROM EARTH GT 10", OLG OF JUPITER FROM EARTH BETWEEN 330 30, CML OF EUROPA FROM EARTH BETWEEN 200 260, CML OF JUPITER FROM EUROPA BETWEEN 11 287	EARTH

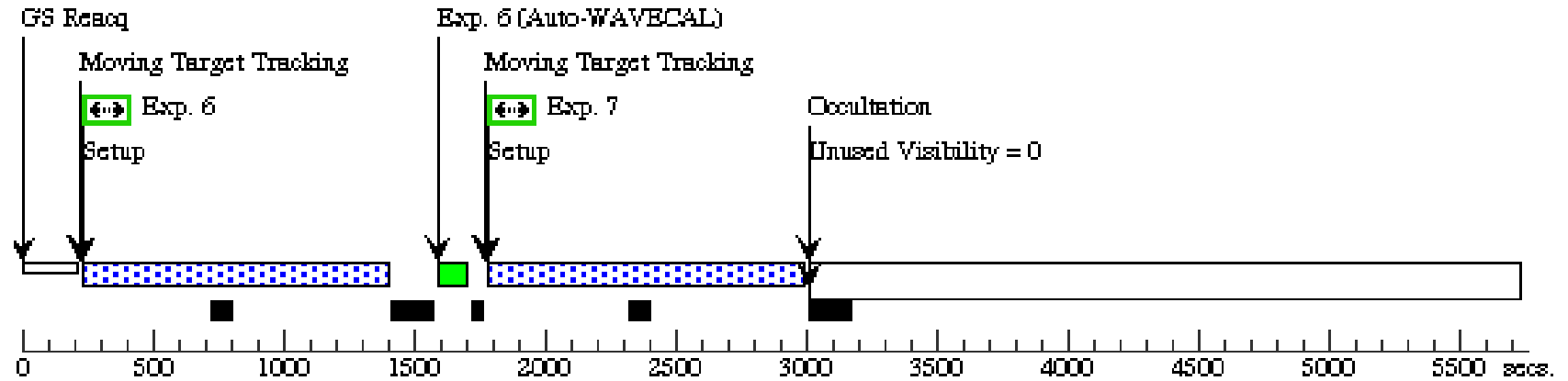
Proposal 13040 - Visit 02 - Investigation of Emission Anomalies from Europa's Atmosphere: Search for Possible Plumes

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	ACQ	(2) EUROPA-WEST -A	STIS/CCD, ACQ, F28X50LP	MIRROR		ACQTYPE=DIFFUSE; CHECKBOX=23; DIFFUSE-CENTER=GEOMETRIC-CENTER	GS ACQ SCENARIO O BASE1B3	0.1 Secs [=>]	[1]
	2	Science	(2) EUROPA-WEST -A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A		BUFFER-TIME=50 0		778 Secs [=>865.0 Secs]	[1]
	3	Science	(2) EUROPA-WEST -A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A		BUFFER-TIME=50 0		778 Secs [=>865.0 Secs]	[1]
	4	Science	(2) EUROPA-WEST -A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A		BUFFER-TIME=50 0		1159 Secs [=>]	[2]
	5	Science	(2) EUROPA-WEST -A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A		BUFFER-TIME=50 0		1159 Secs [=>]	[2]
	6	Science	(2) EUROPA-WEST -A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A		BUFFER-TIME=50 0		1159 Secs [=>]	[3]
	7	Science	(2) EUROPA-WEST -A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A		BUFFER-TIME=50 0		1159 Secs [=>]	[3]
	8	Science	(2) EUROPA-WEST -A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A		BUFFER-TIME=50 0		1159 Secs [=>]	[4]
	9	Science	(2) EUROPA-WEST -A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A		BUFFER-TIME=50 0		1159 Secs [=>]	[4]
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11	Science	(2) EUROPA-WEST -A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A		BUFFER-TIME=50 0		975 Secs [=>1159.0 Secs]	[5]	



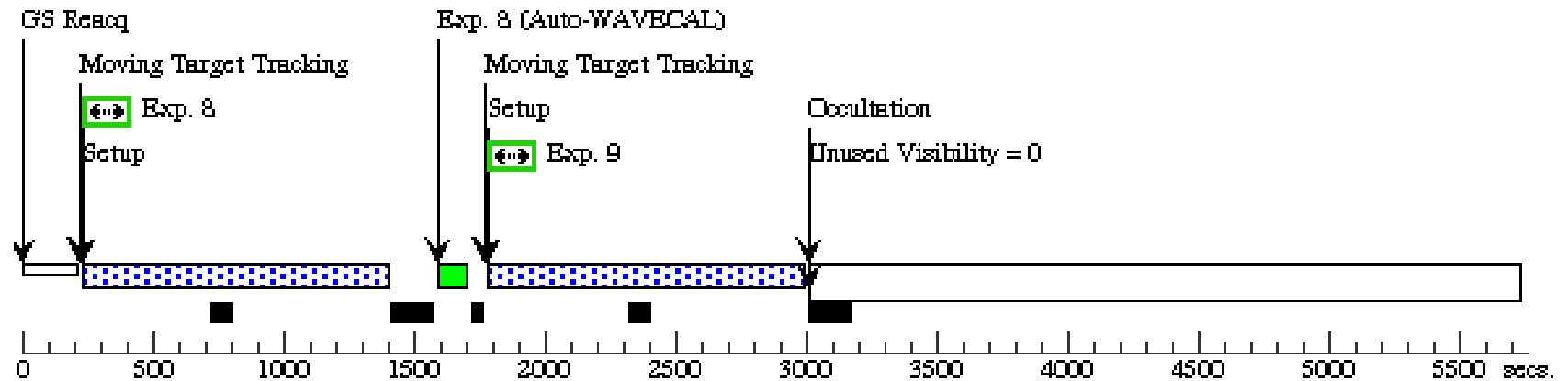
Server Version: 20120802

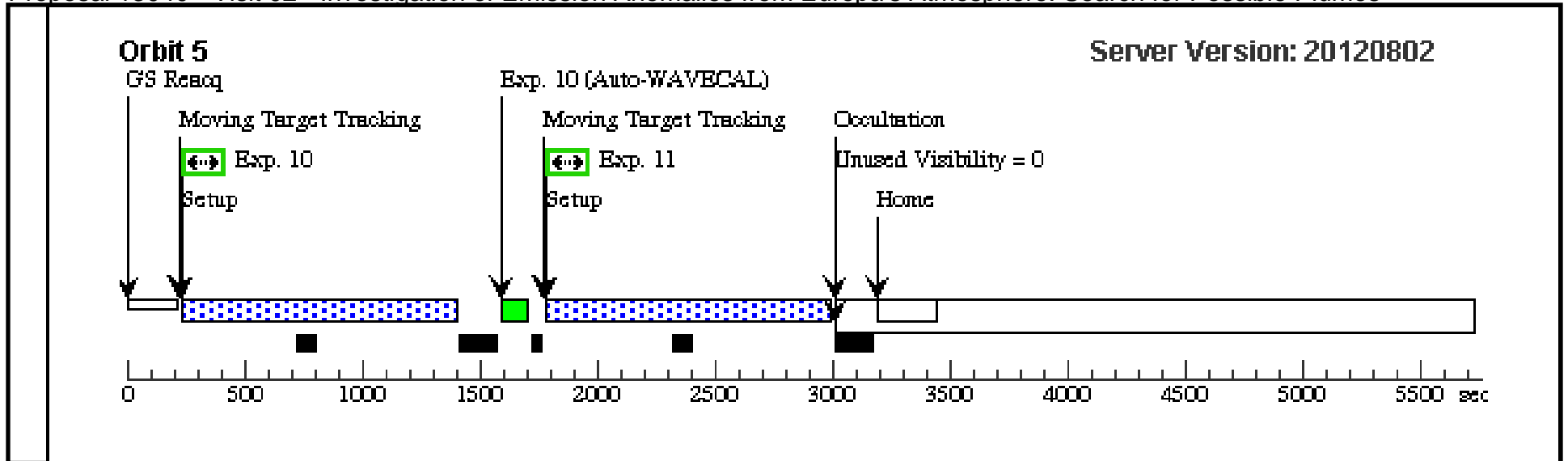
Orbit 3



Server Version: 20120802

Orbit 4





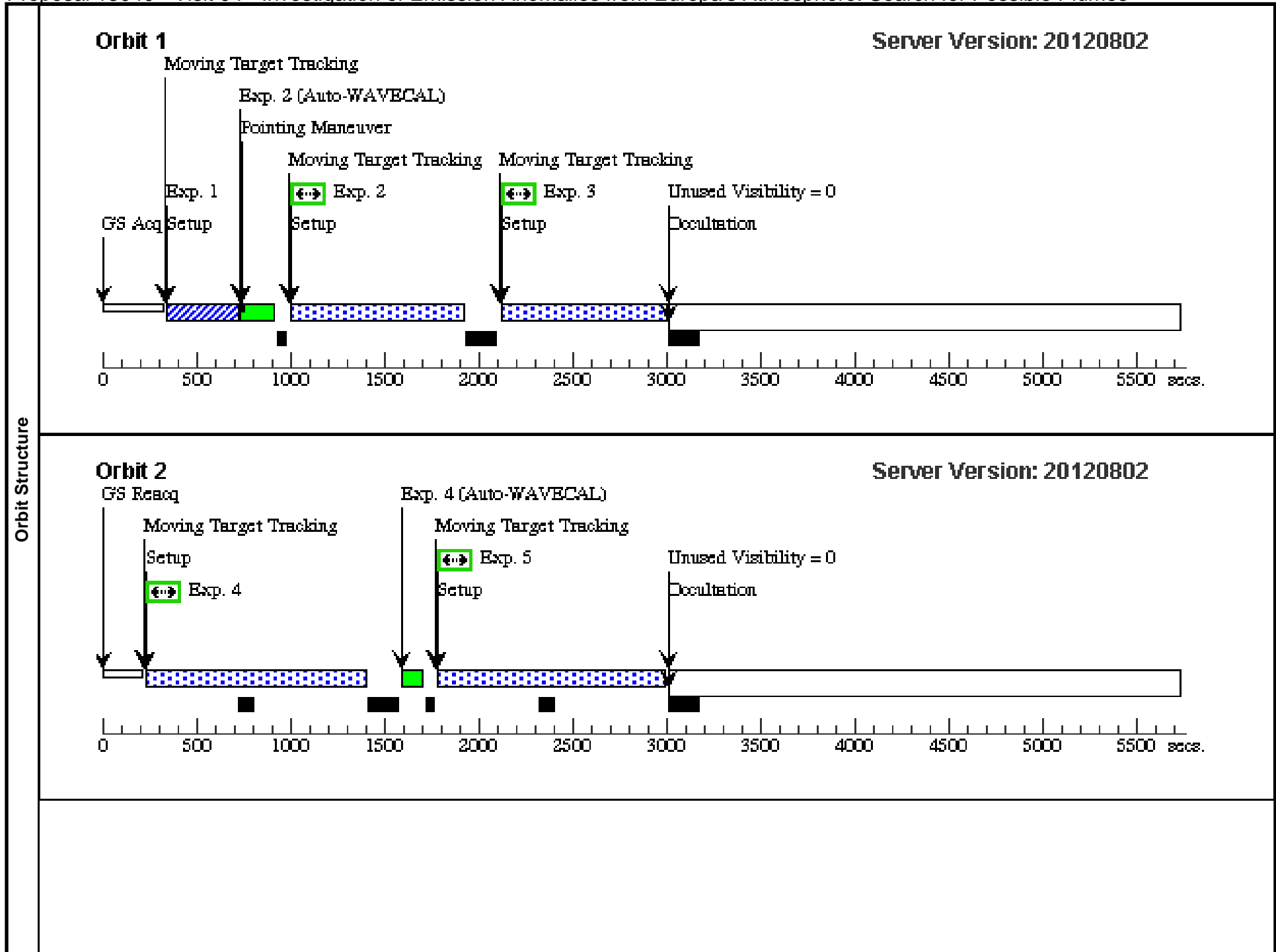
Proposal 13040 - Visit 04 - Investigation of Emission Anomalies from Europa's Atmosphere: Search for Possible Plumes

Wed Oct 03 01:55:46 GMT 2012

Visit	<p>Proposal 13040, Visit 04, withdrawn</p> <p>Diagnostic Status: Warning</p> <p>Scientific Instruments: STIS/CCD, STIS/FUV-MAMA</p> <p>Special Requirements: SCHED 100%; ON HOLD</p> <p><i>On Hold Comments: Execute either Visit 2 (EUROPA-WEST-A) or Visit 4 (EUROPA-WEST-B)</i></p>							
	Diagnostics	<p>(Science (04.002)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (04.003)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (04.004)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (04.005)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (04.006)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (04.007)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (04.008)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (04.009)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (04.010)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p> <p>(Science (04.011)) Warning (Form): Sensitive exposures should have an ETC run number provided.</p>						
Solar System Targets		#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(4)		EUROPA-WEST-B	STD=JUPITER	STD=EUROPA		SEP OF EUROPA-WEST-B JUPITER FROM EARTH GT 30", SEP OF EUROPA-WEST-B CALLISTO FROM EARTH GT 10", SEP OF EUROPA-WEST-B IO FROM EARTH GT 10", SEP OF EUROPA-WEST-B GANYMEDE FROM EARTH GT 10", OLG OF JUPITER FROM EARTH BETWEEN 330 30, CML OF EUROPA FROM EARTH BETWEEN 200 260, CML OF JUPITER FROM EUROPA BETWEEN 184 100	EARTH	

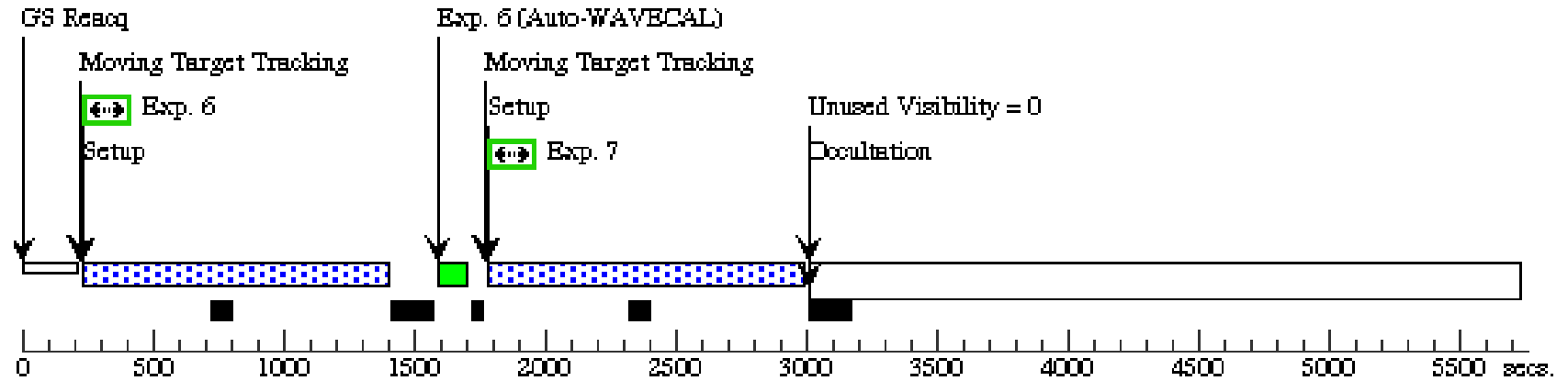
Proposal 13040 - Visit 04 - Investigation of Emission Anomalies from Europa's Atmosphere: Search for Possible Plumes

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	ACQ	(4) EUROPA-WEST -B	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=DIFFUSE; SE;	CHECKBOX=23; DIFFUSE-CENTER=GEOMETRIC-CENTER		0.1 Secs [==>]	[1]
	2	Science	(4) EUROPA-WEST -B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			778 Secs [==>865.0 Secs]	[1]
	3	Science	(4) EUROPA-WEST -B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			778 Secs [==>865.0 Secs]	[1]
	4	Science	(4) EUROPA-WEST -B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1159 Secs [==>]	[2]
	5	Science	(4) EUROPA-WEST -B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1159 Secs [==>]	[2]
	6	Science	(4) EUROPA-WEST -B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1159 Secs [==>]	[3]
	7	Science	(4) EUROPA-WEST -B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1159 Secs [==>]	[3]
	8	Science	(4) EUROPA-WEST -B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1159 Secs [==>]	[4]
	9	Science	(4) EUROPA-WEST -B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			1159 Secs [==>]	[4]
	10	Science	(4) EUROPA-WEST -B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			975 Secs [==>1159.0 Secs]	[5]
11	Science	(4) EUROPA-WEST -B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=50 0			975 Secs [==>1159.0 Secs]	[5]	



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