



12244 - Mapping Ganymede's time variable aurora in the search for a subsurface ocean

Cycle: 18, Proposal Category: GO

(Availability Mode: AVAILABLE)

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) GANYMEDE1A DARK	S/C STIS/CCD STIS/FUV-MAMA	5	08-Aug-2011 21:02:20.0	yes
02	(2) GANYMEDE1B	STIS/CCD STIS/FUV-MAMA	5	08-Aug-2011 21:03:01.0	yes
03	(3) GANYMEDE2A	STIS/CCD STIS/FUV-MAMA	5	08-Aug-2011 21:03:40.0	yes
04	(4) GANYMEDE2B	STIS/CCD STIS/FUV-MAMA	5	08-Aug-2011 21:04:13.0	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>
11	(5) GANYMEDE1A-REPEAT DARK	S/C STIS/CCD STIS/FUV-MAMA	5	08-Aug-2011 21:04:50.0	yes

25 Total Orbits Used

ABSTRACT

A very exciting, unresolved question about Jupiter's moon Ganymede is whether Ganymede harbors a saline subsurface water ocean under its icy crust. A saline, electrically conductive water ocean will modify Ganymede's magnetic field environment and thus also the locations of Ganymede's northern and southern auroral ovals. Without an ocean, Ganymede's auroral ovals will rock by ~ 10 degrees towards and away from Jupiter within 5.25 hours. However, with an ocean the shift will be up to only ~ 4 degrees. We propose two visits of five consecutive STIS orbits at eastern elongation to monitor and resolve with sufficient precision the shift in locations of Ganymede's auroral ovals to determine whether an ocean is present on Ganymede. Addressing this question is timely as NASA/ESA are planning a Jupiter system mission including a Ganymede orbiter with the objective to characterize Ganymede as potential habitat.

OBSERVING DESCRIPTION

We propose 5 consecutive orbits in two visits (10 orbits total) with STIS to observe Ganymede's auroral ovals at eastern elongation. With STIS we will be able to separate reflected sun light on Ganymede's surface from the two oxygen lines OI 1356 Å and OI 1304 Å, which are emitted from Ganymede's oxygen atmosphere along its auroral ovals. We propose to center the disk of Ganymede (maximum diameter ~ 2.0 arcseconds) to obtain a symmetric field of view around the disk of Ganymede. We are requesting a total of 10 orbits at eastern elongation, i.e. for the leading/downstream (longitude 90 degrees) hemisphere of Ganymede. The eastern elongation has been previously observed by STIS within a time span of two hours, only (ID: 8224). We also request that each of the two visits starts within a time window of one hour prior to when Ganymede is at 20 or 200 degree system three longitude (i.e. in a coordinate system rotating with Jupiter and describing the orientation of Jupiter's magnetic field). In this way we make certain that we cover both extreme locations of Ganymede's auroral ovals, i.e. the maximum rocking of the ovals within each visit. Measuring the maximum degree of the rocking is the key observational objective of our proposal.

Proposal 12244 - Visit 01 - Mapping Ganymede's time variable aurora in the search for a subsurface ocean

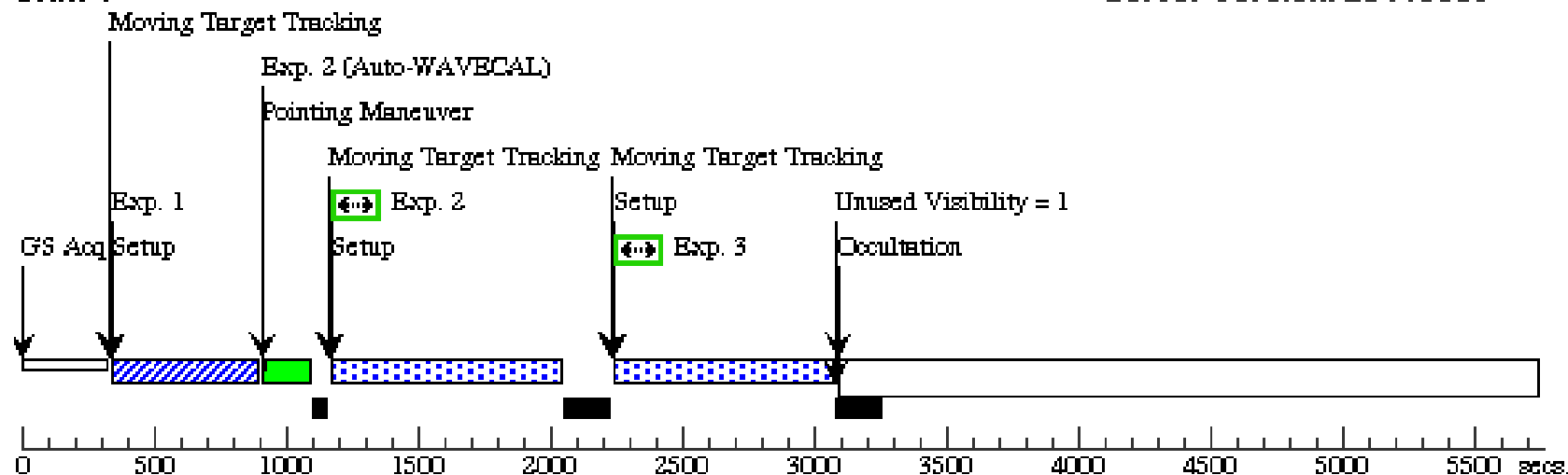
Visit	Proposal 12244, Visit 01, failed Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD, S/C, STIS/FUV-MAMA Special Requirements: GROUP 01,03 WITHIN 90D; ON HOLD ; VISIBILITY INTERVAL 51.5 M <i>On Hold Comments: Execute either visit 01 or visit 02</i>						Tue Aug 09 01:05:03 GMT 2011
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(1)	GANYMEDE1A	STD=JUPITER	STD=GANYMEDE		OLG OF JUPITER BETWEEN 330 30, OLG OF GANYMEDE FROM EARTH BETWEEN 70 110, CML OF JUPITER FROM GANYMEDE BETWEEN 179 100	EARTH

Proposal 12244 - Visit 01 - Mapping Ganymede's time variable aurora in the search for a subsurface ocean

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	ACQ	(1) GANYMEDE1A	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=DIFFUSE; CHECKBOX=37; DIFFUSE-CENTER=GEOMETRIC-CENTER	GS ACQ SCENARIO BASE1B3		0.1 Secs [==>]	[1]
	2	Post-Acq Science	(1) GANYMEDE1A	STIS/FUV-MAMA, TIME-TAG, 52X2	G140L 1425 A	BUFFER-TIME=414			813 Secs [==>]	[1]
	3	Post-Acq Science	(1) GANYMEDE1A	STIS/FUV-MAMA, TIME-TAG, 52X2	G140L 1425 A	BUFFER-TIME=414			813 Secs [==>]	[1]
	4	Science	(1) GANYMEDE1A	STIS/FUV-MAMA, TIME-TAG, 52X2	G140L 1425 A	BUFFER-TIME=605			1194 Secs [==>]	[2]
	5	Science	(1) GANYMEDE1A	STIS/FUV-MAMA, TIME-TAG, 52X2	G140L 1425 A	BUFFER-TIME=605			1194 Secs [==>]	[2]
	6	ACQ	(1) GANYMEDE1A	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=DIFFUSE; CHECKBOX=37; DIFFUSE-CENTER=GEOMETRIC-CENTER	NEW OBSET FULL ACQ; GS ACQ SCENARIO BASE1B3		0.1 Secs [==>]	[3]
	7	Science	(1) GANYMEDE1A	STIS/FUV-MAMA, TIME-TAG, 52X2	G140L 1425 A	BUFFER-TIME=605			813 Secs [==>]	[3]
	8	Science	(1) GANYMEDE1A	STIS/FUV-MAMA, TIME-TAG, 52X2	G140L 1425 A	BUFFER-TIME=605			813 Secs [==>]	[3]
	9	Science	(1) GANYMEDE1A	STIS/FUV-MAMA, TIME-TAG, 52X2	G140L 1425 A	BUFFER-TIME=605			1194 Secs [==>]	[4]
	10	Science	(1) GANYMEDE1A	STIS/FUV-MAMA, TIME-TAG, 52X2	G140L 1425 A	BUFFER-TIME=605			1194 Secs [==>]	[4]
	11	Spacecraft Exposure	DARK	S/C, DATA, NONE			SAA CONTOUR 25; QASISTATES OMC E SI HOLD HOLD; QASISTATES STIS SI OBSERVE OBSERVE; QASISTATES STIS CCD OPERATE OPERATE; QASISTATES STIS MA1 HVON HVON		1980 Secs [==>]	[4]
	12	Science	(1) GANYMEDE1A	STIS/FUV-MAMA, TIME-TAG, 52X2	G140L 1425 A	BUFFER-TIME=605			1209 Secs [==>]	[5]
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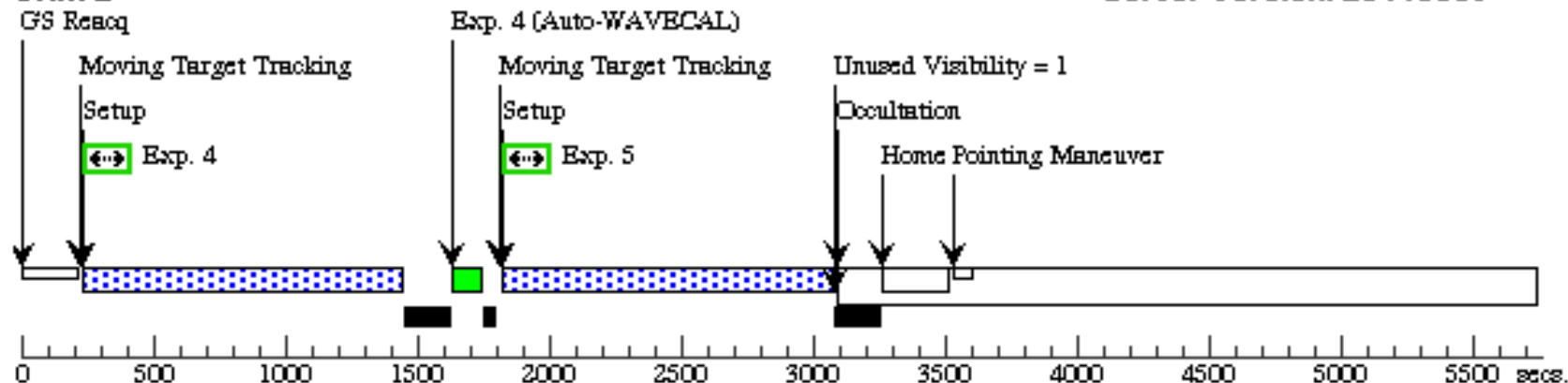
Orbit 1

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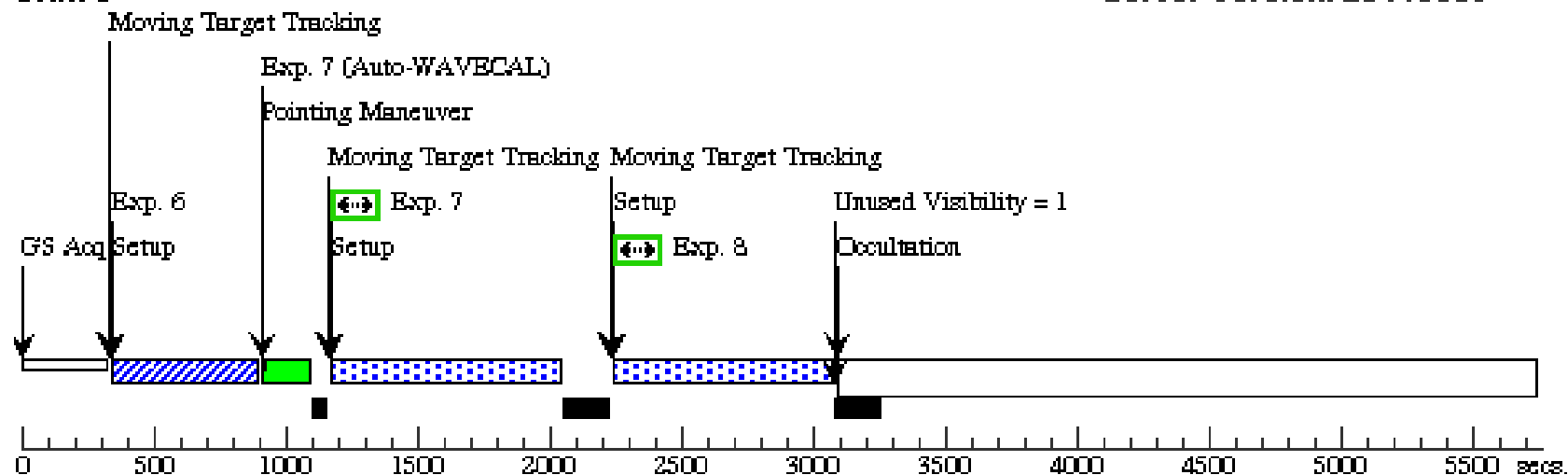
Orbit 2

Server Version: 20110509



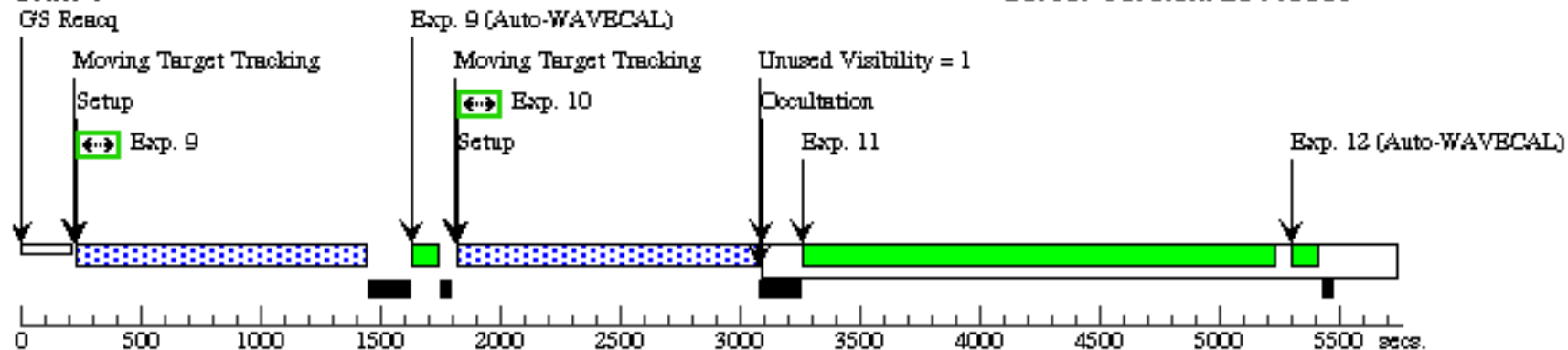
Orbit 3

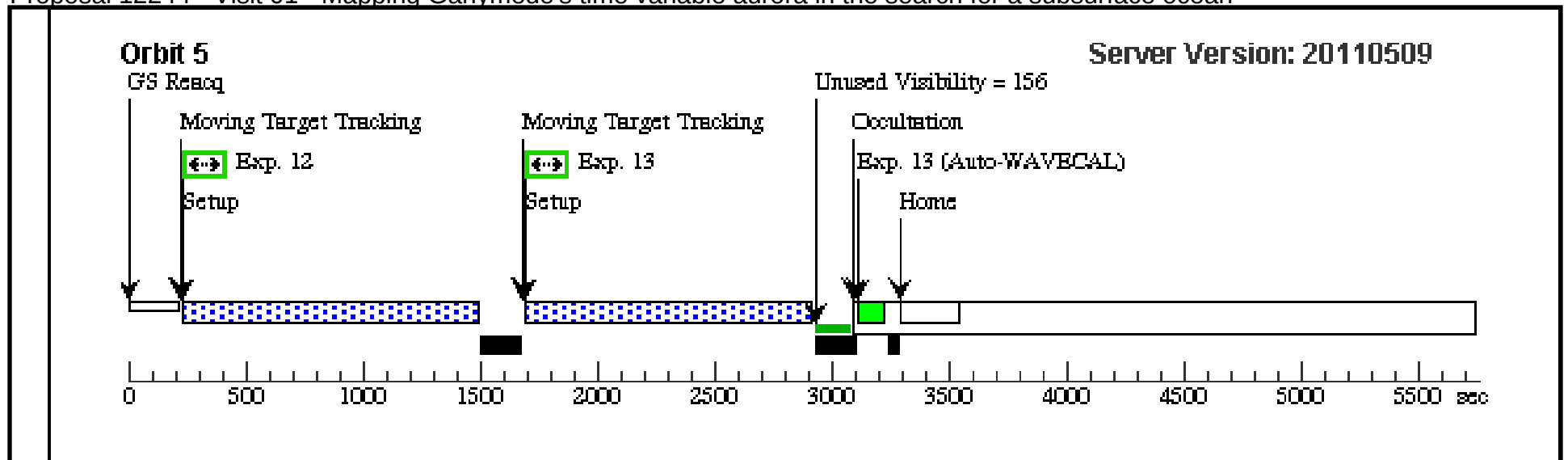
Server Version: 20110509



Orbit 4

Server Version: 20110509



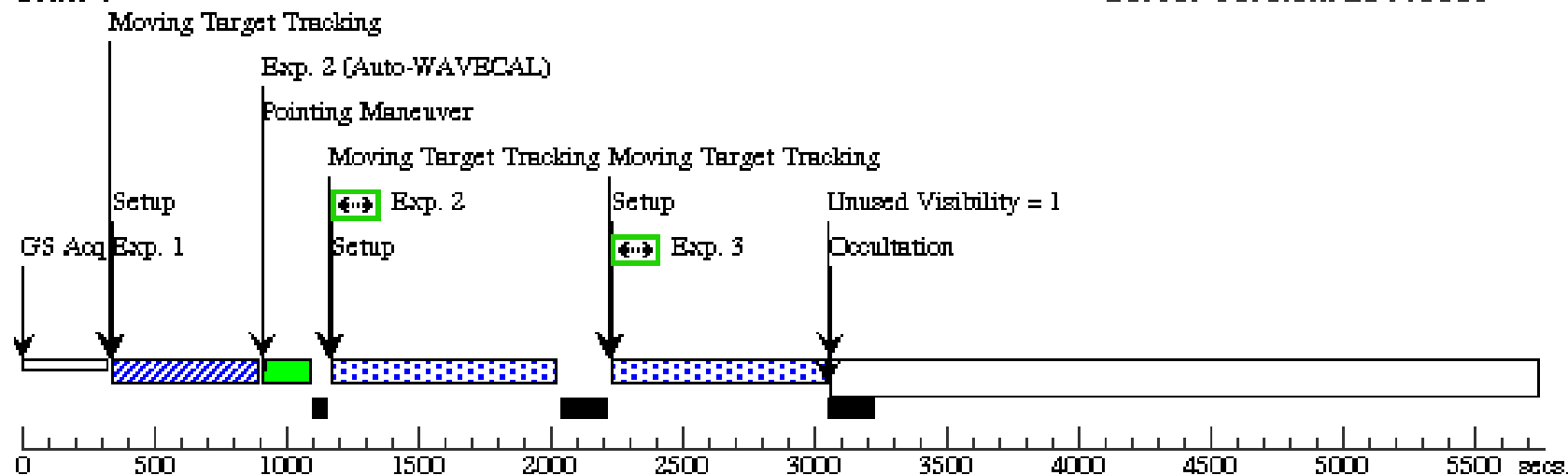


Proposal 12244 - Visit 02 - Mapping Ganymede's time variable aurora in the search for a subsurface ocean

Visit	Proposal 12244, Visit 02, withdrawn								Tue Aug 09 01:05:07 GMT 2011	
	Diagnostic Status: No Diagnostics									
	Scientific Instruments: STIS/CCD, STIS/FUV-MAMA									
	Special Requirements: ON HOLD ; VISIBILITY INTERVAL 51 M									
On Hold Comments: Execute either visit 01 or visit 02										
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(2)	GANYMEDE1B	STD=JUPITER	STD=GANYMEDE		OLG OF JUPITER BETWEEN 330 30, OLG OF GANYMEDE FROM EARTH BETWEEN 70 110, CML OF JUPITER FROM GANYMEDE BETWEEN 11 287	EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	ACQ	(2) GANYMEDE1B	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=DIFFUSE; CHECKBOX=37; DIFFUSE-CENTER=GEOMETRIC-CENTER	GS ACQ SCENARIO BASE1B3		0.1 Secs [==>]	[1]
	2	Post-Acq Science	(2) GANYMEDE1B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=399			798 Secs [==>]	[1]
	3	Post-Acq Science	(2) GANYMEDE1B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=399			798 Secs [==>]	[1]
	4	Science	(2) GANYMEDE1B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[2]
	5	Science	(2) GANYMEDE1B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[2]
	6	Science	(2) GANYMEDE1B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[3]
	7	Science	(2) GANYMEDE1B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[3]
	8	Science	(2) GANYMEDE1B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[4]
	9	Science	(2) GANYMEDE1B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[4]
	10	Science	(2) GANYMEDE1B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[5]
	11	Science	(2) GANYMEDE1B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[5]

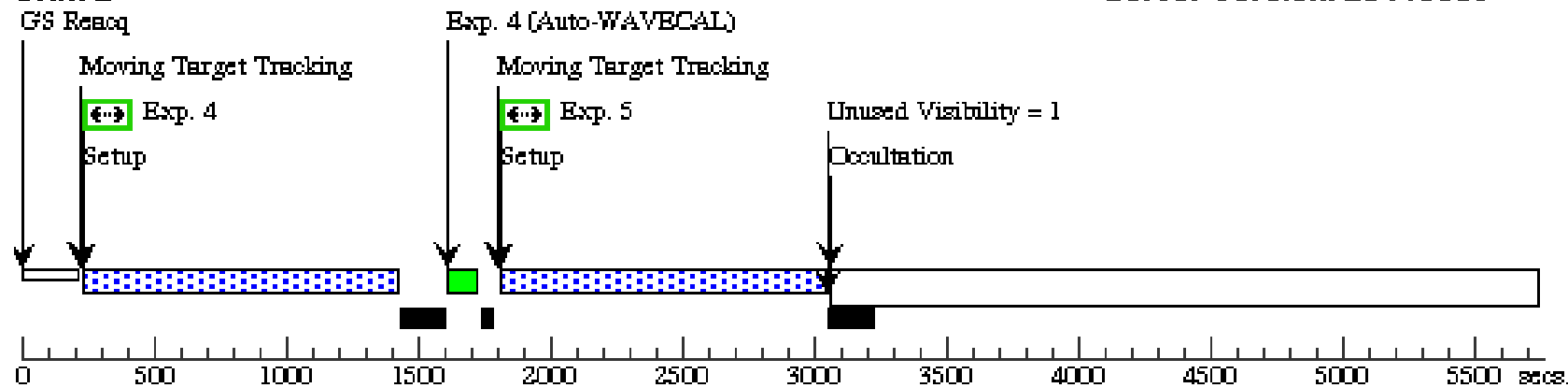
Orbit 1

Server Version: 20110509



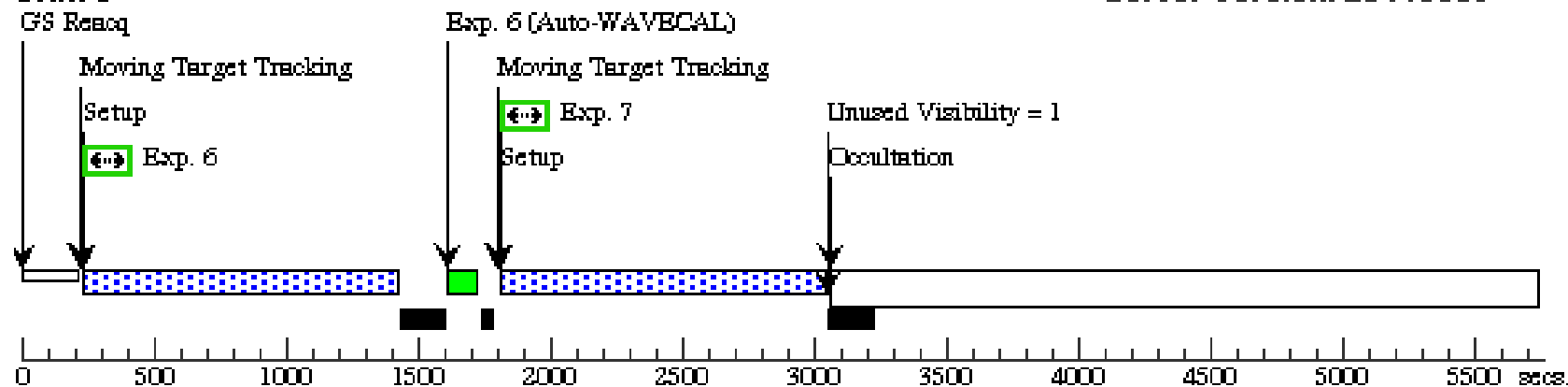
Orbit 2

Server Version: 20110509



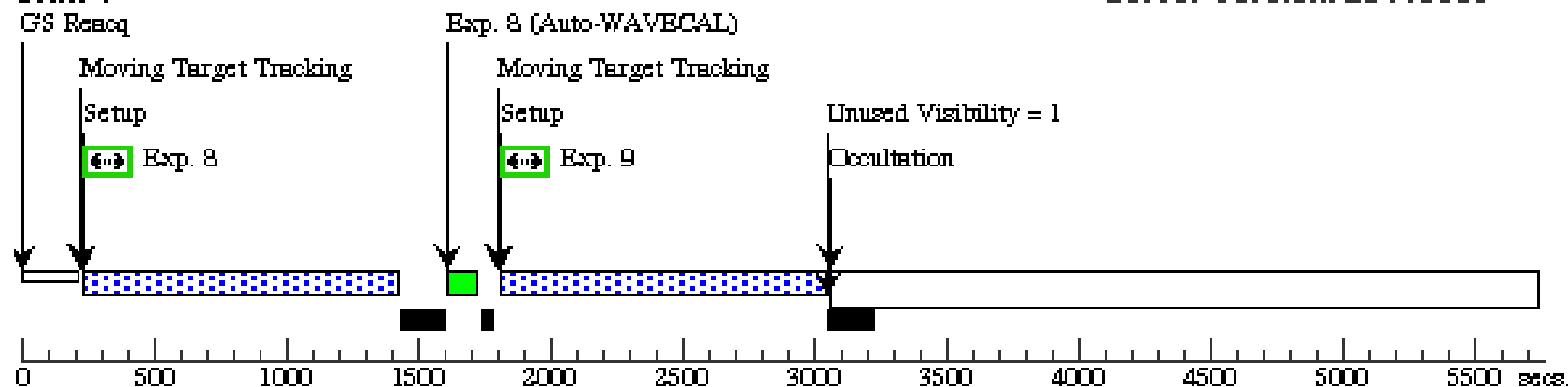
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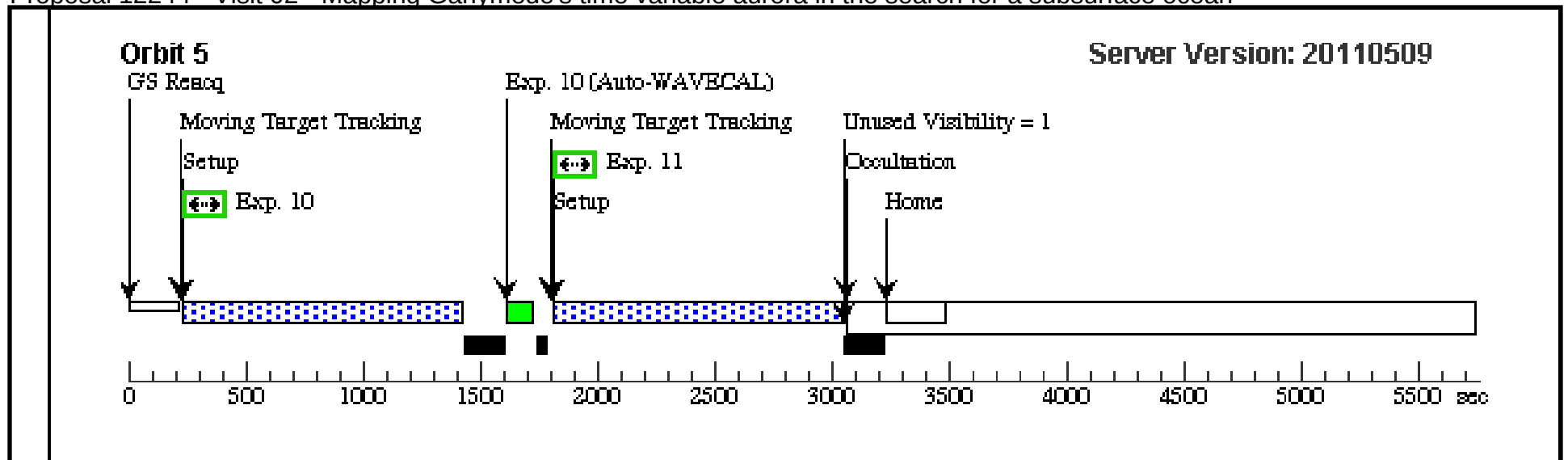
Server Version: 20110509



Orbit 4

Server Version: 20110509



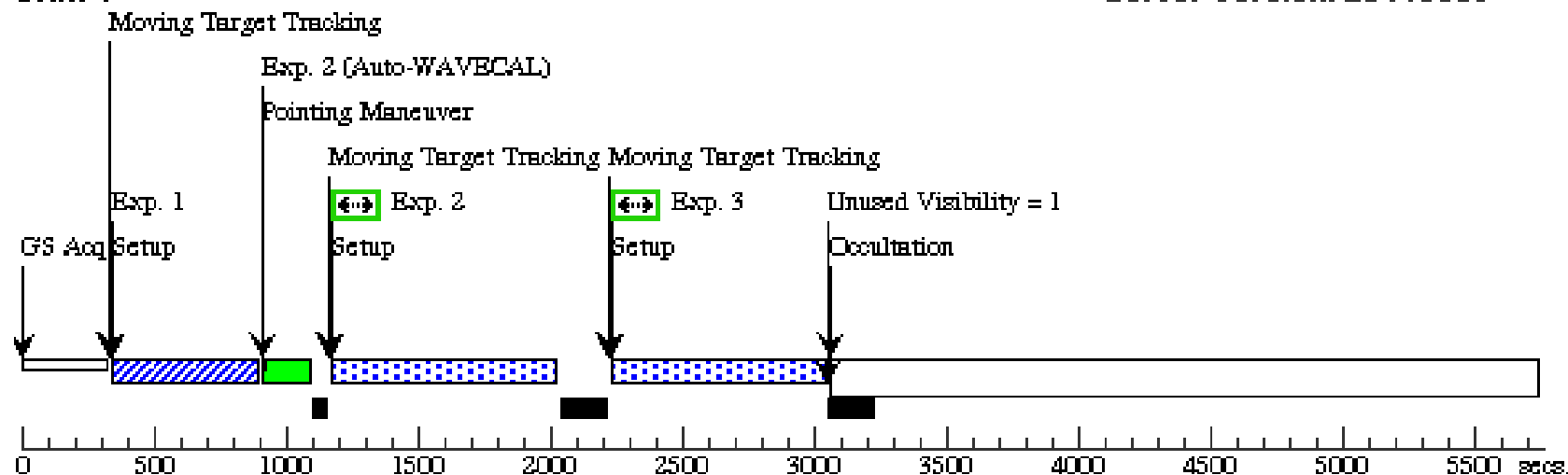


Proposal 12244 - Visit 03 - Mapping Ganymede's time variable aurora in the search for a subsurface ocean

Visit	Proposal 12244, Visit 03, completed Tue Aug 09 01:05:10 GMT 2011									
	Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: ON HOLD ; VISIBILITY INTERVAL 51 M <i>On Hold Comments: Execute either visit 03 or visit 04</i>									
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(3)	GANYMEDE2A	STD=JUPITER	STD=GANYMEDE		OLG OF JUPITER BETWEEN 296 40, OLG OF GANYMEDE FROM EARTH BETWEEN 70 111, CML OF JUPITER FROM GANYMEDE BETWEEN 184 112	EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	ACQ	(3) GANYMEDE2A	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=DIFFUSE; CHECKBOX=37; DIFFUSE-CENTER=GEOMETRIC-CENTER	GS ACQ SCENARIO BASE1B3		0.1 Secs [==>]	[1]
	2	Post-Acq Science	(3) GANYMEDE2A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=399			798 Secs [==>]	[1]
	3	Post-Acq Science	(3) GANYMEDE2A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=399			798 Secs [==>]	[1]
	4	Science	(3) GANYMEDE2A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[2]
	5	Science	(3) GANYMEDE2A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[2]
	6	Science	(3) GANYMEDE2A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[3]
	7	Science	(3) GANYMEDE2A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[3]
	8	Science	(3) GANYMEDE2A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[4]
	9	Science	(3) GANYMEDE2A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[4]
	10	Science	(3) GANYMEDE2A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[5]
	11	Science	(3) GANYMEDE2A	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[5]

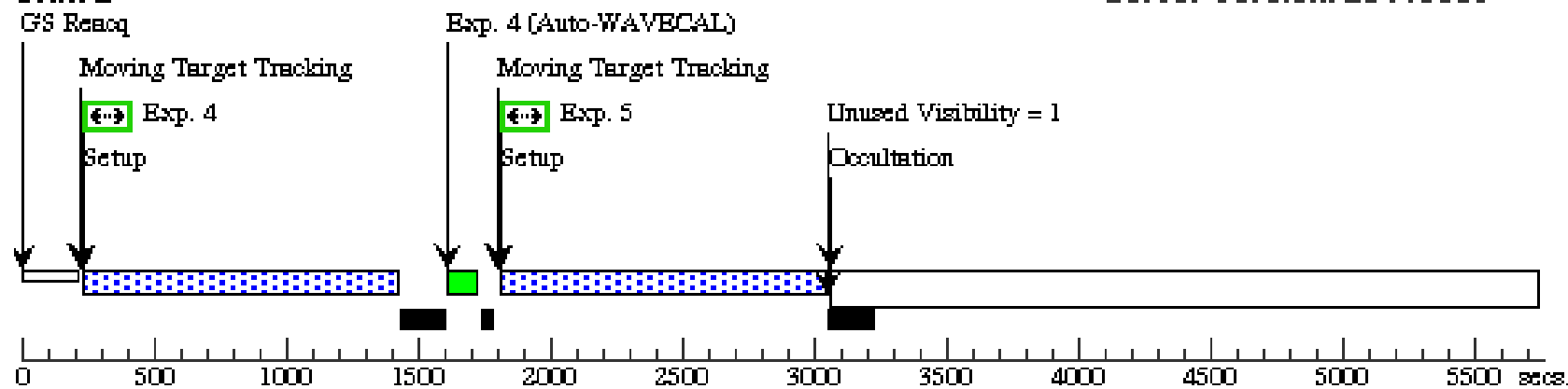
Orbit 1

Server Version: 20110509



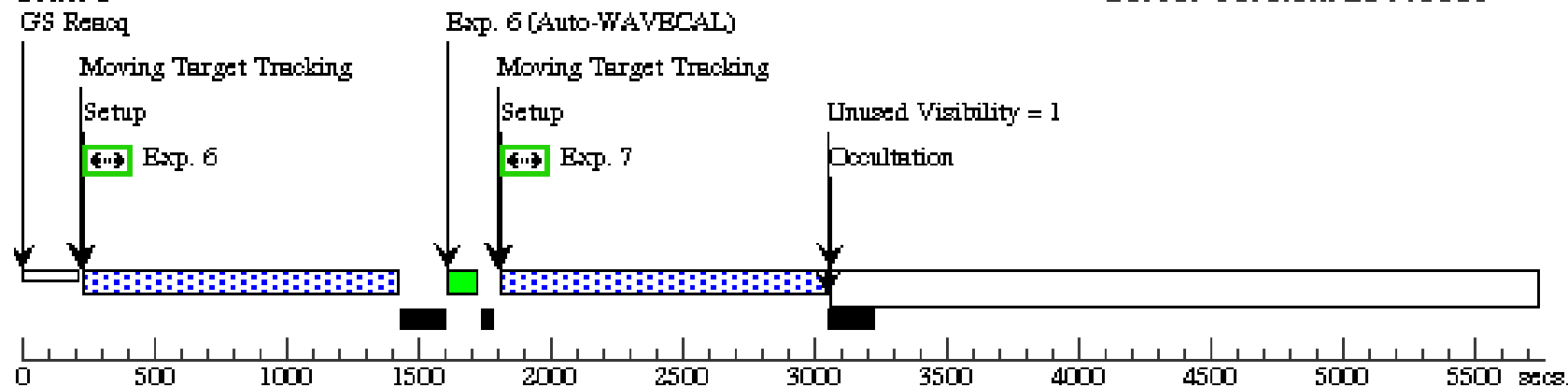
Orbit 2

Server Version: 20110509



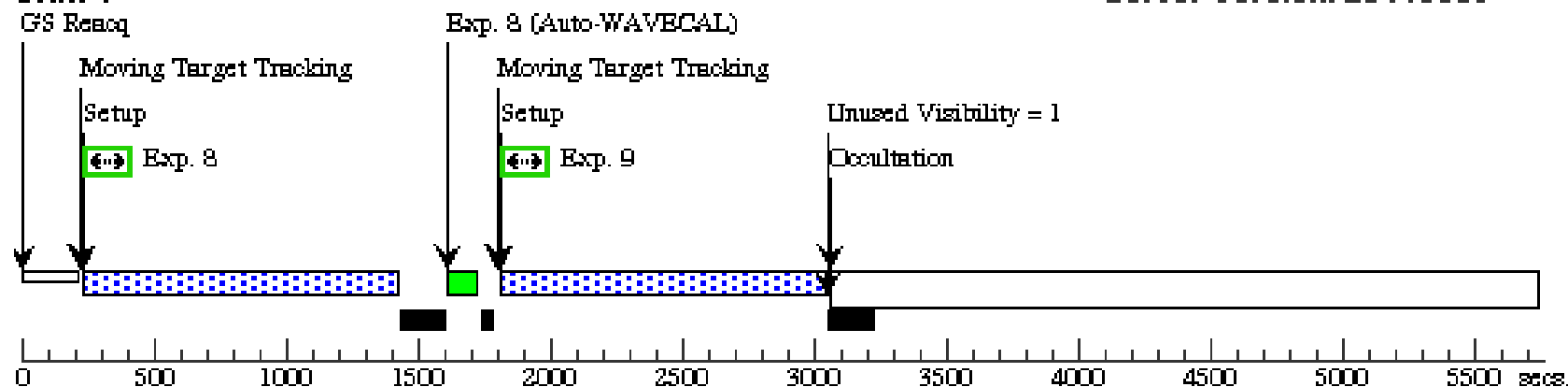
Orbit 3

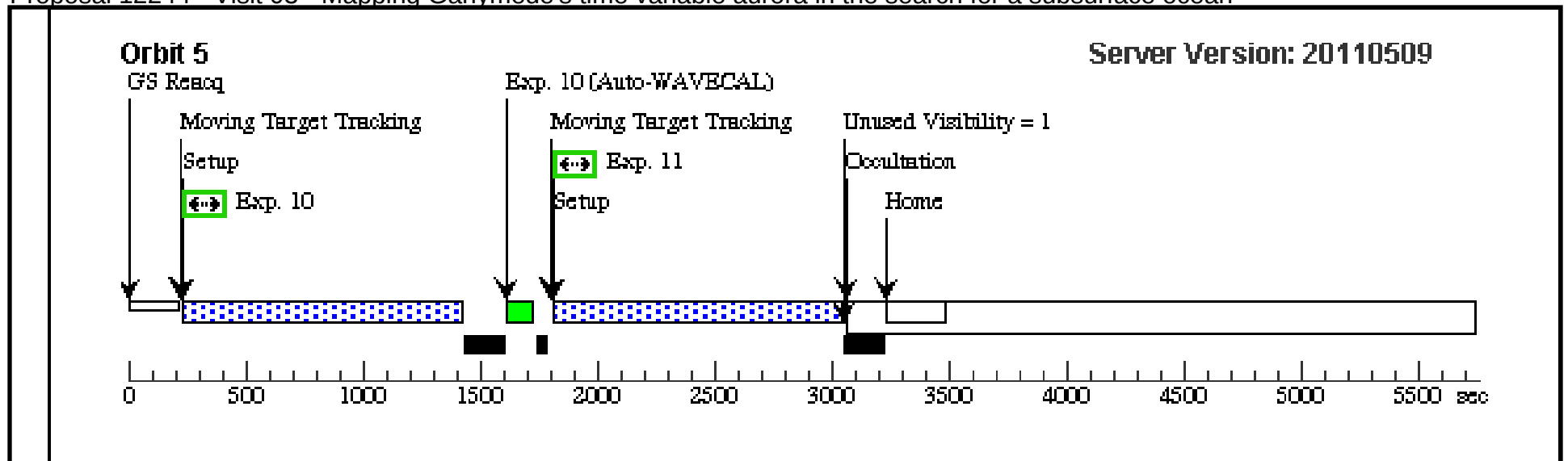
Server Version: 20110509



Orbit 4

Server Version: 20110509



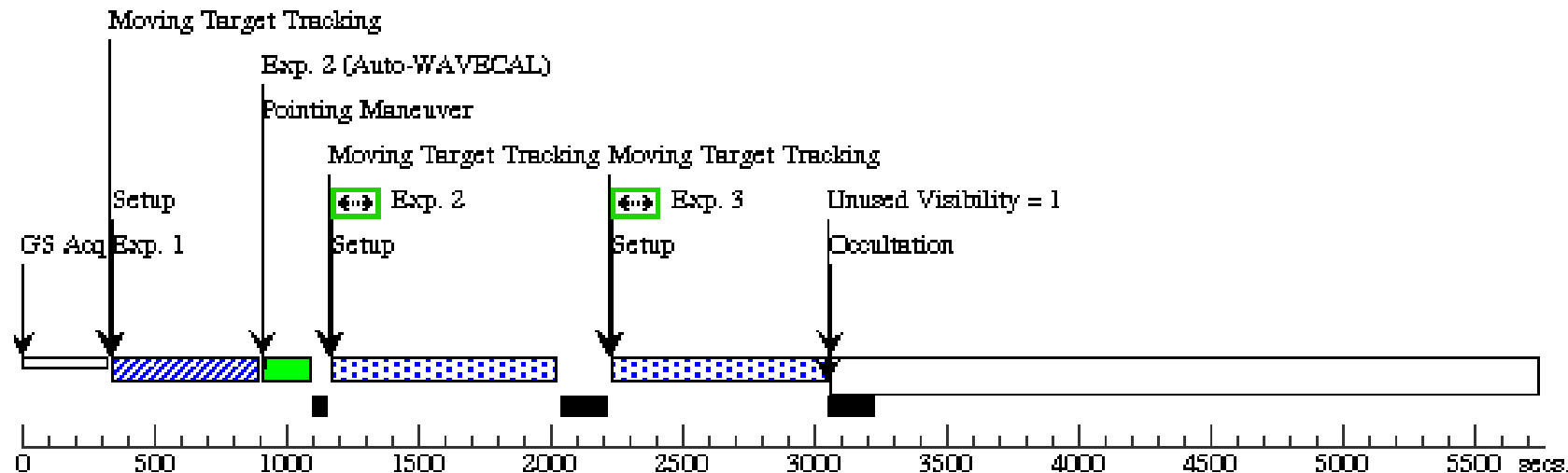


Proposal 12244 - Visit 04 - Mapping Ganymede's time variable aurora in the search for a subsurface ocean

Visit	Proposal 12244, Visit 04, withdrawn Tue Aug 09 01:05:13 GMT 2011									
	Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: ON HOLD ; VISIBILITY INTERVAL 51 M <i>On Hold Comments: Execute either visit 03 or visit 04</i>									
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center			
	(4)	GANYMEDE2B	STD=JUPITER	STD=GANYMEDE		OLG OF JUPITER BETWEEN 296 40, OLG OF GANYMEDE FROM EARTH BETWEEN 69 110, CML OF JUPITER FROM GANYMEDE BETWEEN 11 305	EARTH			
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	ACQ	(4) GANYMEDE2B	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=DIFFUSE; CHECKBOX=37; DIFFUSE-CENTER=GEOMETRIC-CENTER	GS ACQ SCENARIO BASE1B3		0.1 Secs [==>]	[1]
	2	Post-Acq Science	(4) GANYMEDE2B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=399			798 Secs [==>]	[1]
	3	Post-Acq Science	(4) GANYMEDE2B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=399			798 Secs [==>]	[1]
	4	Science	(4) GANYMEDE2B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[2]
	5	Science	(4) GANYMEDE2B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[2]
	6	Science	(4) GANYMEDE2B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[3]
	7	Science	(4) GANYMEDE2B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[3]
	8	Science	(4) GANYMEDE2B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[4]
	9	Science	(4) GANYMEDE2B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[4]
	10	Science	(4) GANYMEDE2B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[5]
	11	Science	(4) GANYMEDE2B	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=590			1179 Secs [==>]	[5]

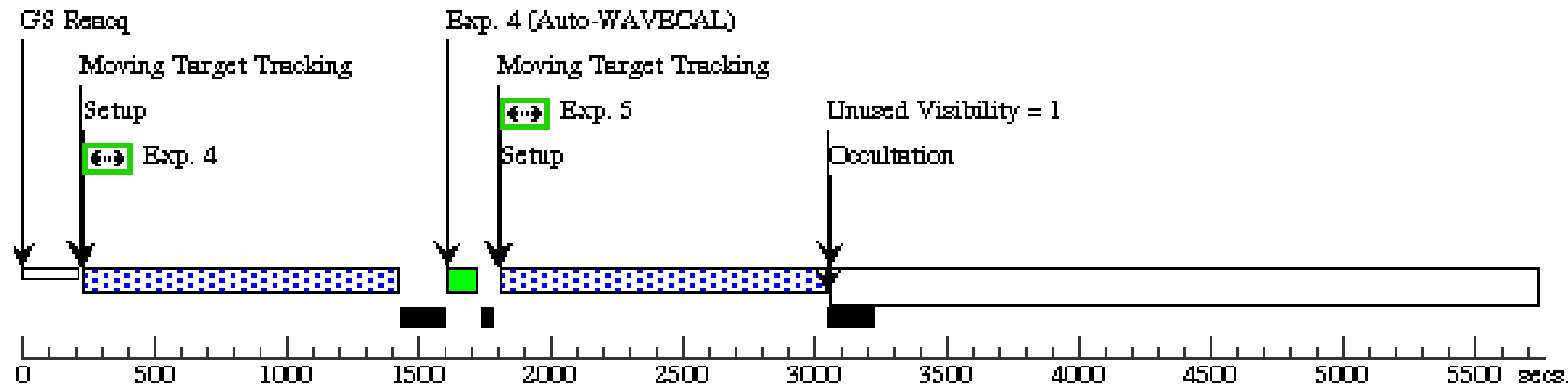
Orbit 1

Server Version: 20110509



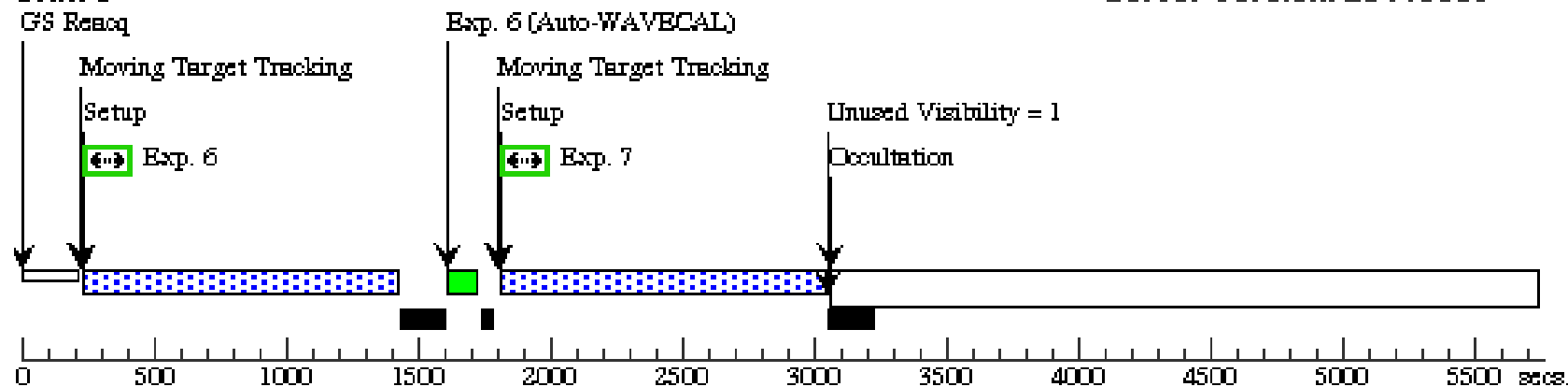
Orbit 2

Server Version: 20110509



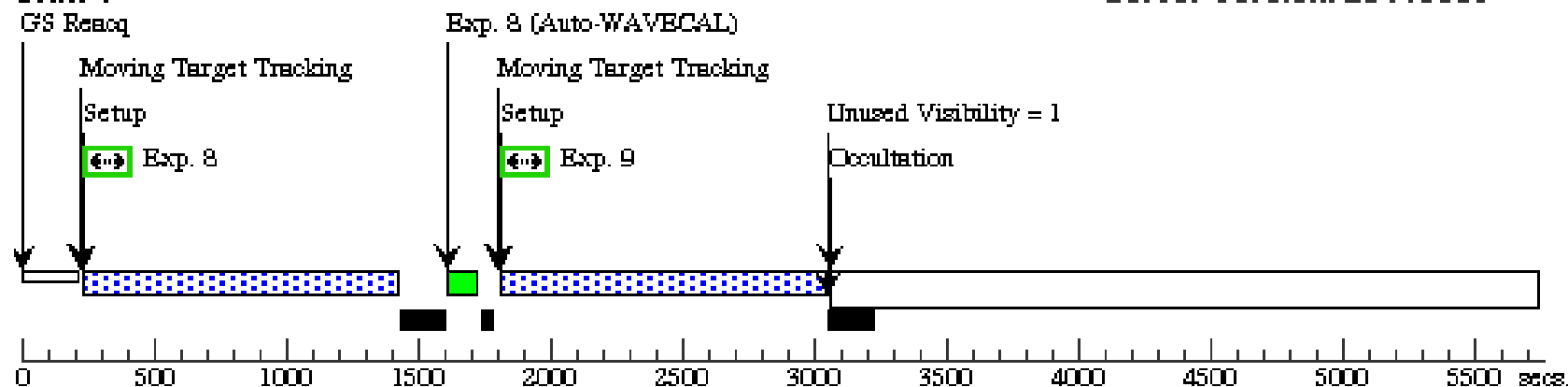
Orbit 3

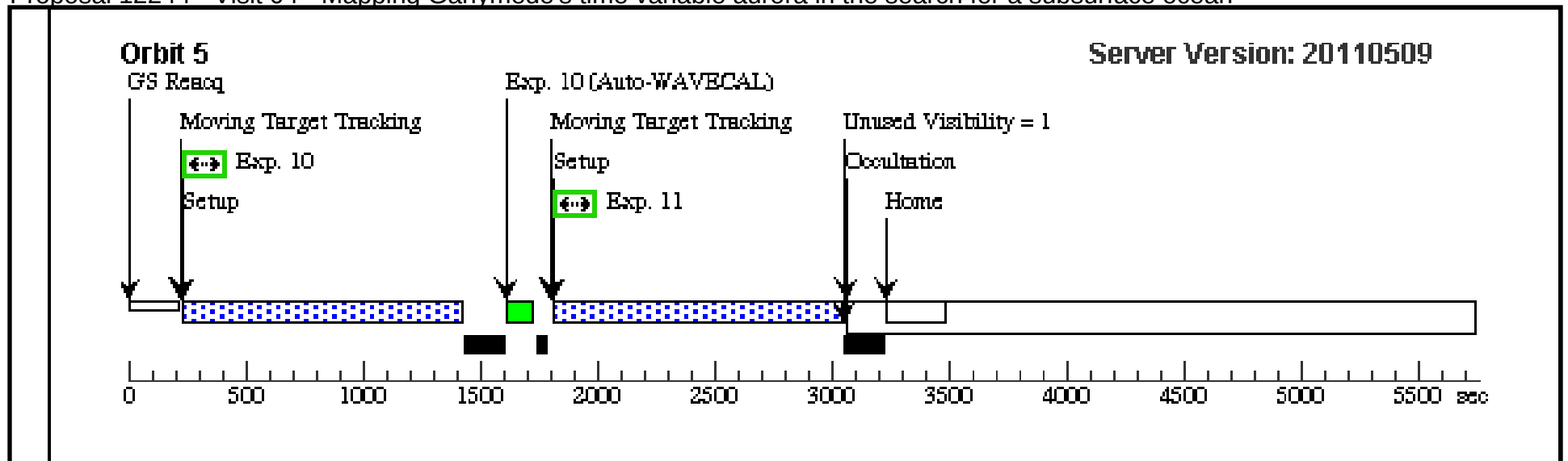
Server Version: 20110509



Orbit 4

Server Version: 20110509





Proposal 12244 - Visit 11 - Mapping Ganymede's time variable aurora in the search for a subsurface ocean

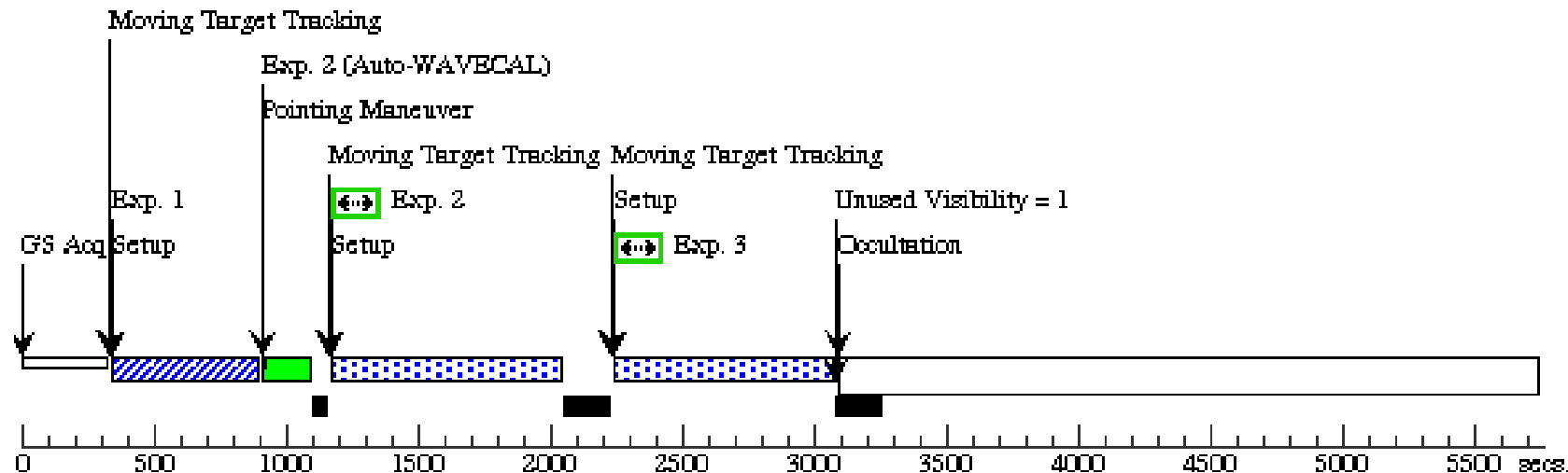
Visit	Proposal 12244, Visit 11, implementation Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD, S/C, STIS/FUV-MAMA Special Requirements: ON HOLD ; VISIBILITY INTERVAL 51.5 M <i>Comments: Repeat of failed visit 01.</i> <i>On Hold Comments: Execute either visit 01 or visit 02</i>						Tue Aug 09 01:05:15 GMT 2011
Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(5)	GANYMEDE1A-REPEAT	STD=JUPITER	STD=GANYMEDE		OLG OF JUPITER BETWEEN 330 30, OLG OF GANYMEDE FROM EARTH BETWEEN 70 110, CML OF JUPITER FROM GANYMEDE BETWEEN 170 100	EARTH

Proposal 12244 - Visit 11 - Mapping Ganymede's time variable aurora in the search for a subsurface ocean

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	ACQ	(5) GANYMEDE1A -REPEAT	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=DIFFUSE; CHECKBOX=37; DIFFUSE-CENTER=GEOMETRIC-CENTER	GS ACQ SCENARIO BASE1B3		0.1 Secs [==>]	[1]
	2	Post-Acq Science	(5) GANYMEDE1A -REPEAT	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=414			813 Secs [==>]	[1]
	3	Post-Acq Science	(5) GANYMEDE1A -REPEAT	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=414			813 Secs [==>]	[1]
	4	Science	(5) GANYMEDE1A -REPEAT	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=605			1194 Secs [==>]	[2]
	5	Science	(5) GANYMEDE1A -REPEAT	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=605			1194 Secs [==>]	[2]
	6	ACQ	(5) GANYMEDE1A -REPEAT	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=DIFFUSE; CHECKBOX=37; DIFFUSE-CENTER=GEOMETRIC-CENTER	NEW OBSET FULL ACQ; GS ACQ SCENARIO BASE1B3		0.1 Secs [==>]	[3]
	7	Science	(5) GANYMEDE1A -REPEAT	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=605			813 Secs [==>]	[3]
	8	Science	(5) GANYMEDE1A -REPEAT	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=605			813 Secs [==>]	[3]
	9	Science	(5) GANYMEDE1A -REPEAT	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=605			1194 Secs [==>]	[4]
	10	Science	(5) GANYMEDE1A -REPEAT	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=605			1194 Secs [==>]	[4]
	11	Spacecraft Exposure	DARK	S/C, DATA, NONE			SAA CONTOUR 25; QASISTATES OMC SI HOLD HOLD; QASISTATES STIS SI OBSERVE OBSERVE; QASISTATES STIS CCD OPERATE OPERATE; QASISTATES STIS MA1 HVON HVON		1980 Secs [==>]	[4]
	12	Science	(5) GANYMEDE1A -REPEAT	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=605			1209 Secs [==>]	[5]
	13	Science	(5) GANYMEDE1A -REPEAT	STIS/FUV-MAMA, TIME-TAG, 52X2D1	G140L 1425 A	BUFFER-TIME=605			1209 Secs [==>]	[5]

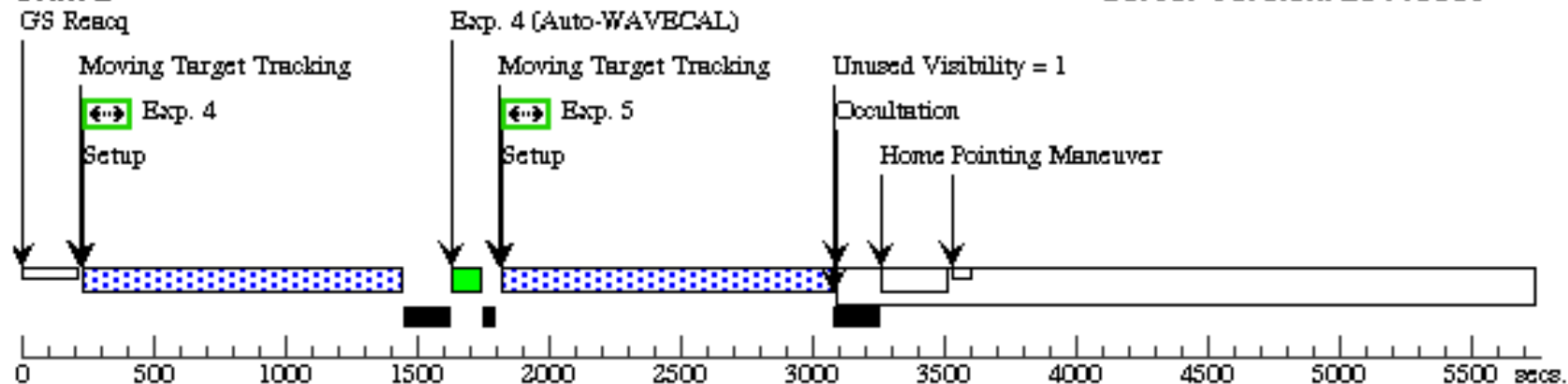
Orbit 1

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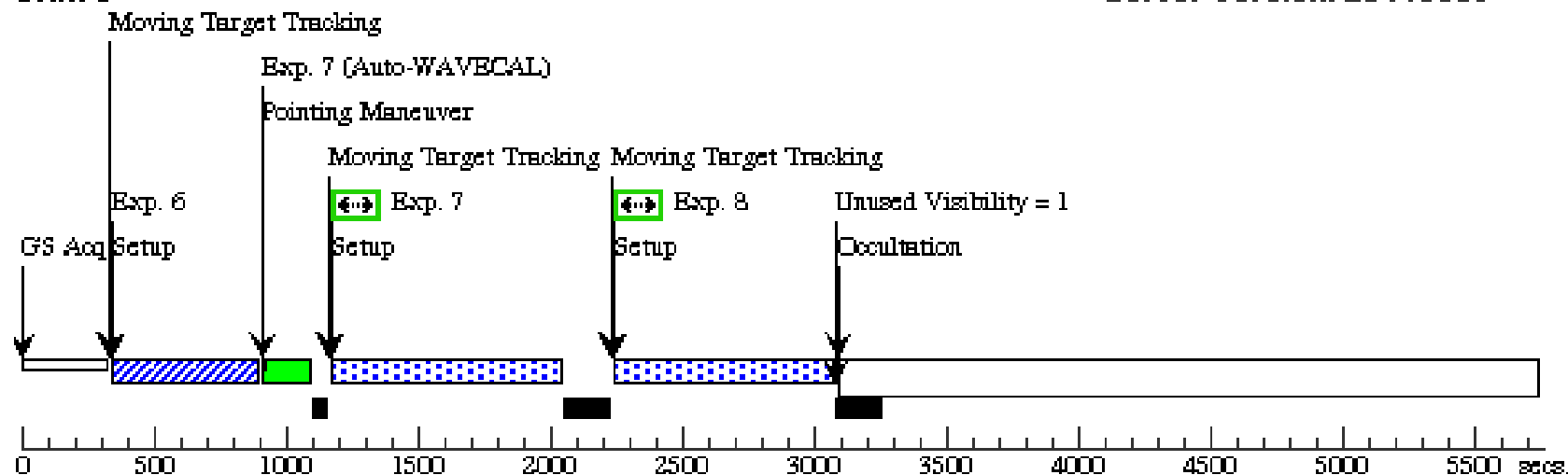
Orbit 2

Server Version: 20110509



Orbit 3

Server Version: 20110509



Orbit 4

Server Version: 20110509

