17163 - Probing the icy regoliths of Europa with imaging polarimetry

Cycle: 30, Proposal Category: GO

(Availability Mode: AVAILABLE)

INVESTIGATORS

Name	*Institution*	*E-Mail*
Dr. William B. Sparks (PI) (Contact)	**SETI Institute**	**wsparks@seti.org**
Dr. Ludmilla Kolokolova (CoI)	University of Maryland	lkolokol@umd.edu
Dr. Melissa A. McGrath (CoI)	SETI Institute	mmcgrath@seti.org
Dr. John Grunsfeld (CoI)	Endless Frontier Associates, LLC	john.m.grunsfeld@alum.mit.edu
Dr. Kevin P. Hand (CoI)	Jet Propulsion Laboratory	khand@jpl.nasa.gov
Dr. Olivier Poch (CoI) (ESA Member)	Institut de Planetologie et d'Astrophysique de Grenoble	olivier.poch@univ-grenoble-alpes.fr
Dr. Thomas Germer (CoI)	National Institute of Standards and Technology	thomas.germer@nist.gov
Mr. Louis Bergeron (CoI)	Space Telescope Science Institute	bergeron@stsci.edu
Dr. Daniel Vincent Cotton (CoI)	Monterey Institute for Research in Astronomy	daniel.cotton@gmail.com
Dr. Jeremy Bailey (CoI)	University of New South Wales Sydney	j.bailey@unsw.edu.au
Dr. Kimberly Bott (CoI)	University of California - Riverside	kim.m.bott@gmail.com

VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) EUROPA-L	ACS/WFC	2	01-Nov-2022 17:00:30.0	yes
02	(2) EUROPA-T	ACS/WFC	2	01-Nov-2022 17:00:33.0	yes
03	(1) EUROPA-L	ACS/WFC	2	01-Nov-2022 17:00:35.0	yes
53	(1) EUROPA-L	ACS/WFC	2	01-Nov-2022 17:00:37.0	yes
04	(2) EUROPA-T	ACS/WFC	2	01-Nov-2022 17:00:40.0	yes

10 Total Orbits Used

ABSTRACT

We propose to obtain high spatial resolution imaging polarimetry of the surface of Europa to localize features in the polarization phase curve which are diagnostic of fresh deposition, sintering and aging, allowing identification of regions of recent cryovolcanism and subsurface activity. We will seek a relationship between polarization and global thermal inertia maps, and between polarization and spectroscopically distinct compositional units. Polarization and thermal inertia probe regolith porosity, surface transparency, composition and topography, while spectroscopically distinct regions relate to absorbing chemical admixtures. The overall global polarization pattern will constrain the systematic ice scattering characteristics. This polarimetric suite of high-resolution HST images, with its unique emphasis on surface physics, will complement the wide variety of upcoming observations from major flagship missions JWST, Europa Clipper, JUICE and Juno as well as thermal ALMA imaging. With Europa and its global saline ocean at the forefront of strategic planning for NASA and ESA as a target of exceptional astrobiological importance, it is essential to advance our understanding of the Europa surface to the maximum.

OBSERVING DESCRIPTION

We will acquire ACS polarization images of both the leading and trailing hemispheres of Europa at two different phase angles using the F435W filter. Each visit comprises two orbits. The first pair of visits will be obtained as close as possible and the second at a phase angle within 5-10 degrees.

Visit

Proposal 17163, Europa-L-Opp (01), completed Tue Nov 01 21:00:41 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: BETWEEN 14-SEP-2022 AND 10-OCT-2022

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.17 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=47.23 Angle Between Sides= Center Pattern=false		(1-3)
(2)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.149 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=34.25 Angle Between Sides= Center Pattern=false		(4-6)

Solar System Targets

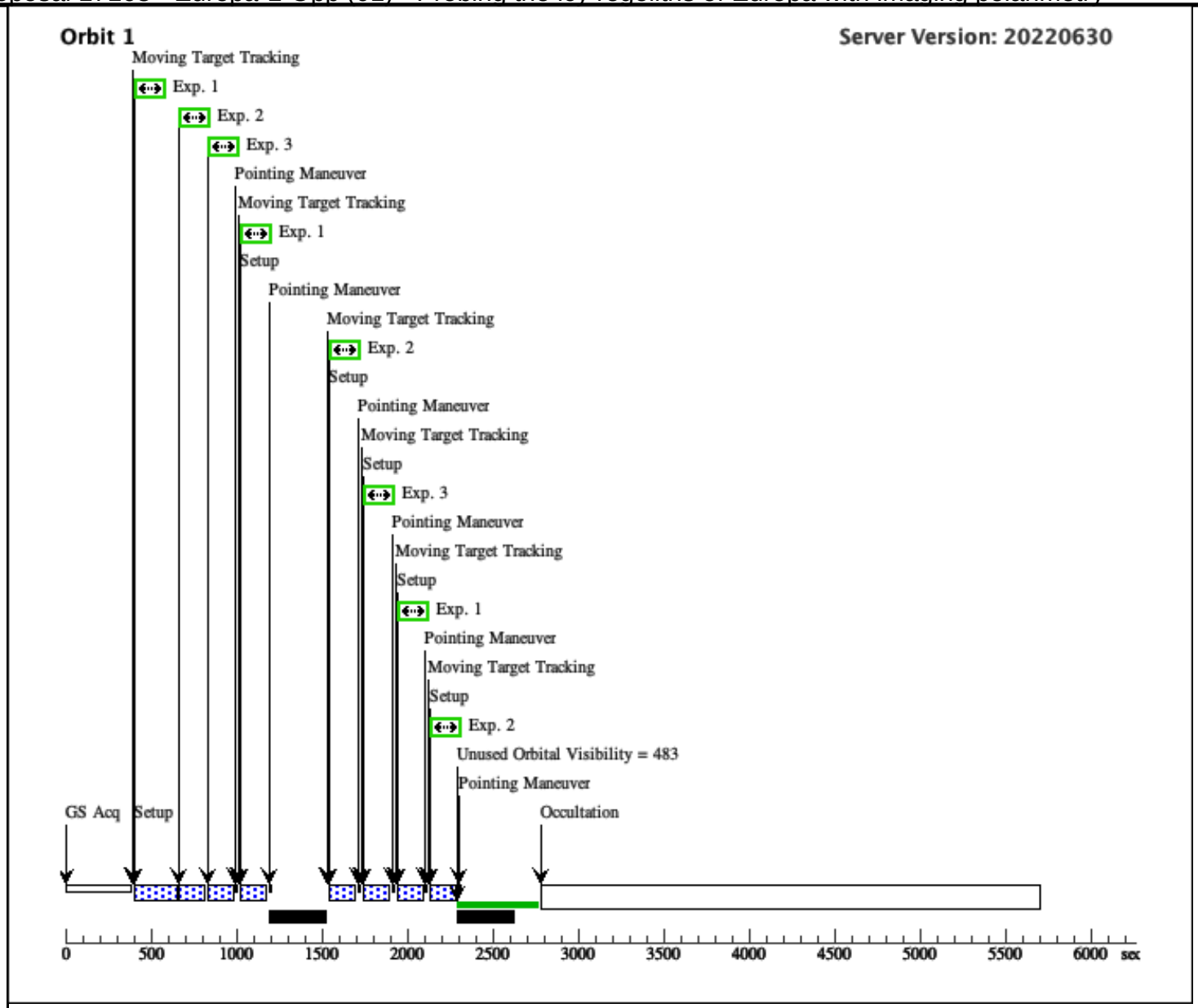
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	EUROPA-L	STD=JUPITER	STD=EUROPA		NOT OCC OF EUROPA-L BY JUPITER FROM EARTH, SEP OF EUROPA-L IO FROM EARTH GT 10", SEP OF EUROPA-L GANYMEDE FROM EARTH GT 10", SEP OF EUROPA-L CALLISTO FROM EARTH GT 10", OLG OF EUROPA-L FROM EARTH BETWEEN 30 150	EARTH

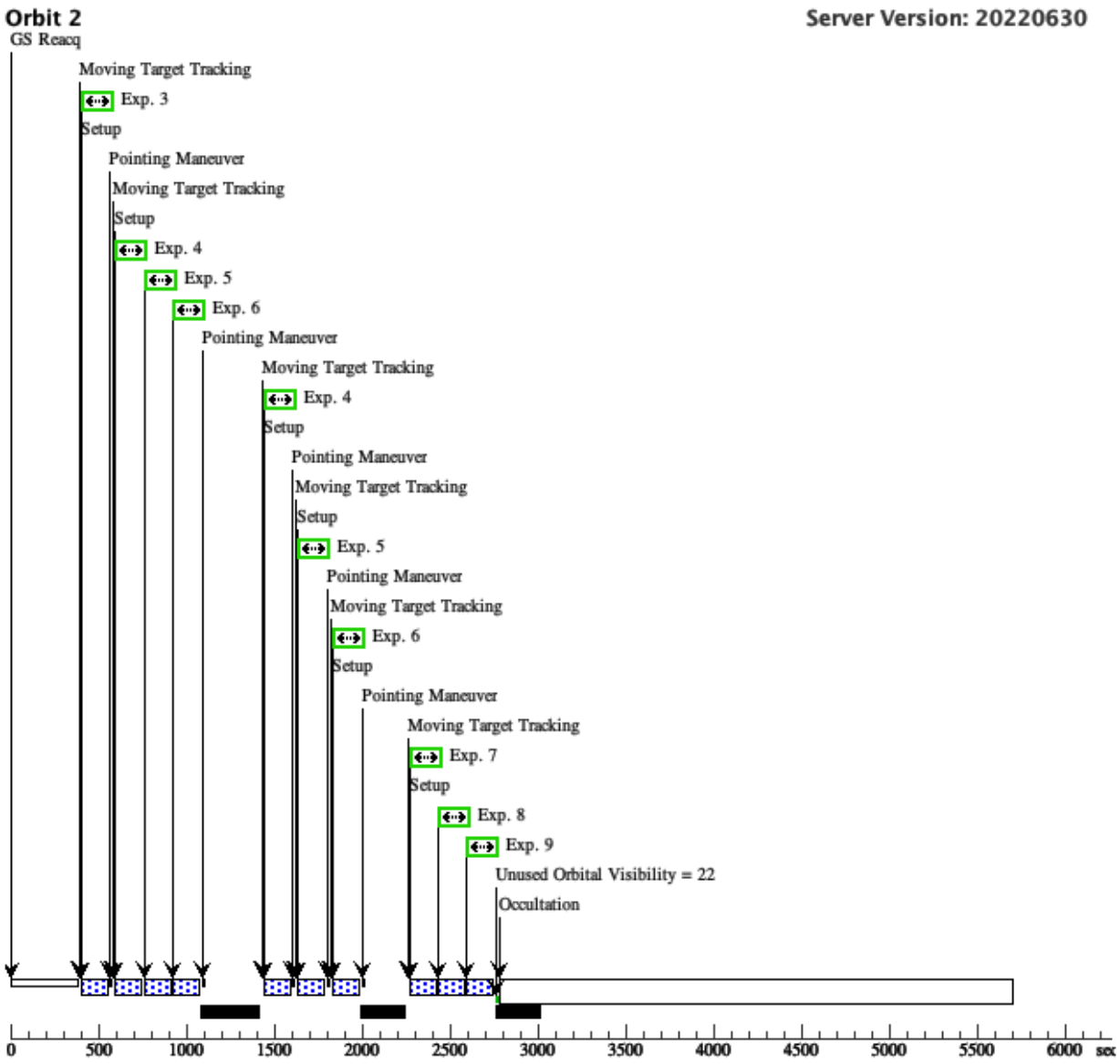
Comments: Description=Europa

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL0UV			Pattern 1, Exps 1-3 in Europa-L-Opp (01) (1)	0.5 Secs (1.5 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]***
2		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL120UV			Pattern 1, Exps 1-3 in Europa-L-Opp (01) (1)	0.5 Secs (1.5 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]***
3		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL60UV			Pattern 1, Exps 1-3 in Europa-L-Opp (01) (1)	0.5 Secs (1.5 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]*** ***[2]***
4		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL0UV			Pattern 2, Exps 4-6 in Europa-L-Opp (01) (2)	0.5 Secs (1 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[2]***
5		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL120UV			Pattern 2, Exps 4-6 in Europa-L-Opp (01) (2)	0.5 Secs (1 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[2]***
6		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL60UV			Pattern 2, Exps 4-6 in Europa-L-Opp (01) (2)	0.5 Secs (1 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[2]***
7		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL0UV				0.5 Secs (0.5 Secs) *[==>]*	 ***[2]***
8		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL120UV				0.5 Secs (0.5 Secs) *[==>]*	 ***[2]***
9		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL60UV				0.5 Secs (0.5 Secs) *[==>]*	 ***[2]***

Orbit Structure




Orbit 2
Server Version: 20220630
GS Reacq
Moving Target Tracking
Exp. 3
Setup
Pointing Maneuver
Moving Target Tracking
Setup
Exp. 4
Exp. 5
Exp. 6
Pointing Maneuver
Moving Target Tracking
Exp. 4
Setup
Pointing Maneuver
Moving Target Tracking
Setup
Exp. 5
Pointing Maneuver
Moving Target Tracking
Exp. 6
Setup
Pointing Maneuver
Moving Target Tracking
Exp. 7
Setup
Exp. 8
Exp. 9
Unused Orbital Visibility = 22
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec

Visit

Proposal 17163, Europa-T-Opp (02), completed Tue Nov 01 21:00:41 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: BETWEEN 14-SEP-2022 AND 10-OCT-2022

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.17 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=47.23 Angle Between Sides= Center Pattern=false		(1-3)
(2)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.149 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=34.25 Angle Between Sides= Center Pattern=false		(4-6)

Solar System Targets

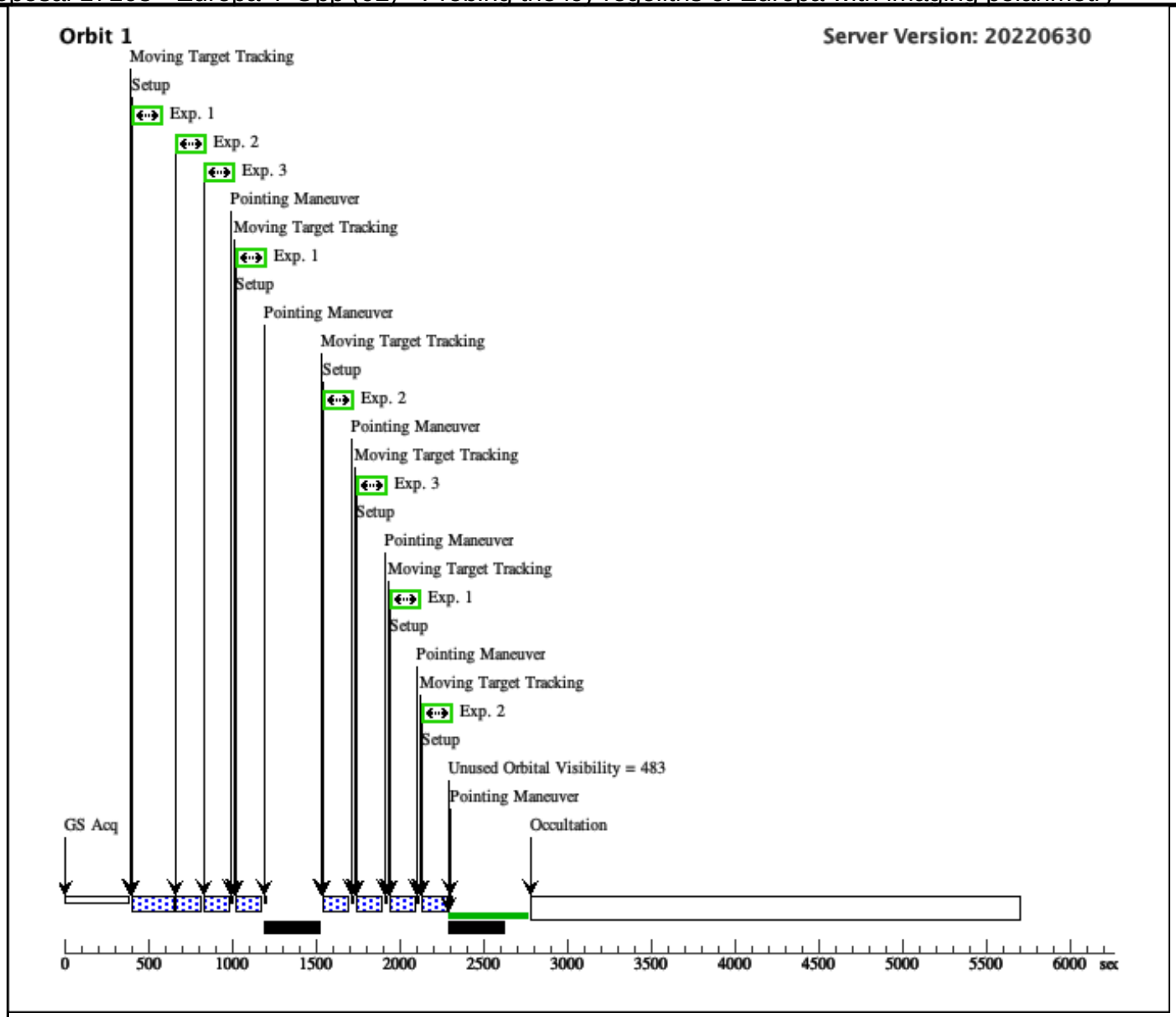
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(2)	EUROPA-T	STD=JUPITER	STD=EUROPA		NOT OCC OF EUROPA-T BY JUPITER FROM EARTH, SEP OF EUROPA-T IO FROM EARTH GT 10", SEP OF EUROPA-T GANYMEDE FROM EARTH GT 10", SEP OF EUROPA-T CALLISTO FROM EARTH GT 10", OLG OF EUROPA-T FROM EARTH BETWEEN 210 330	EARTH

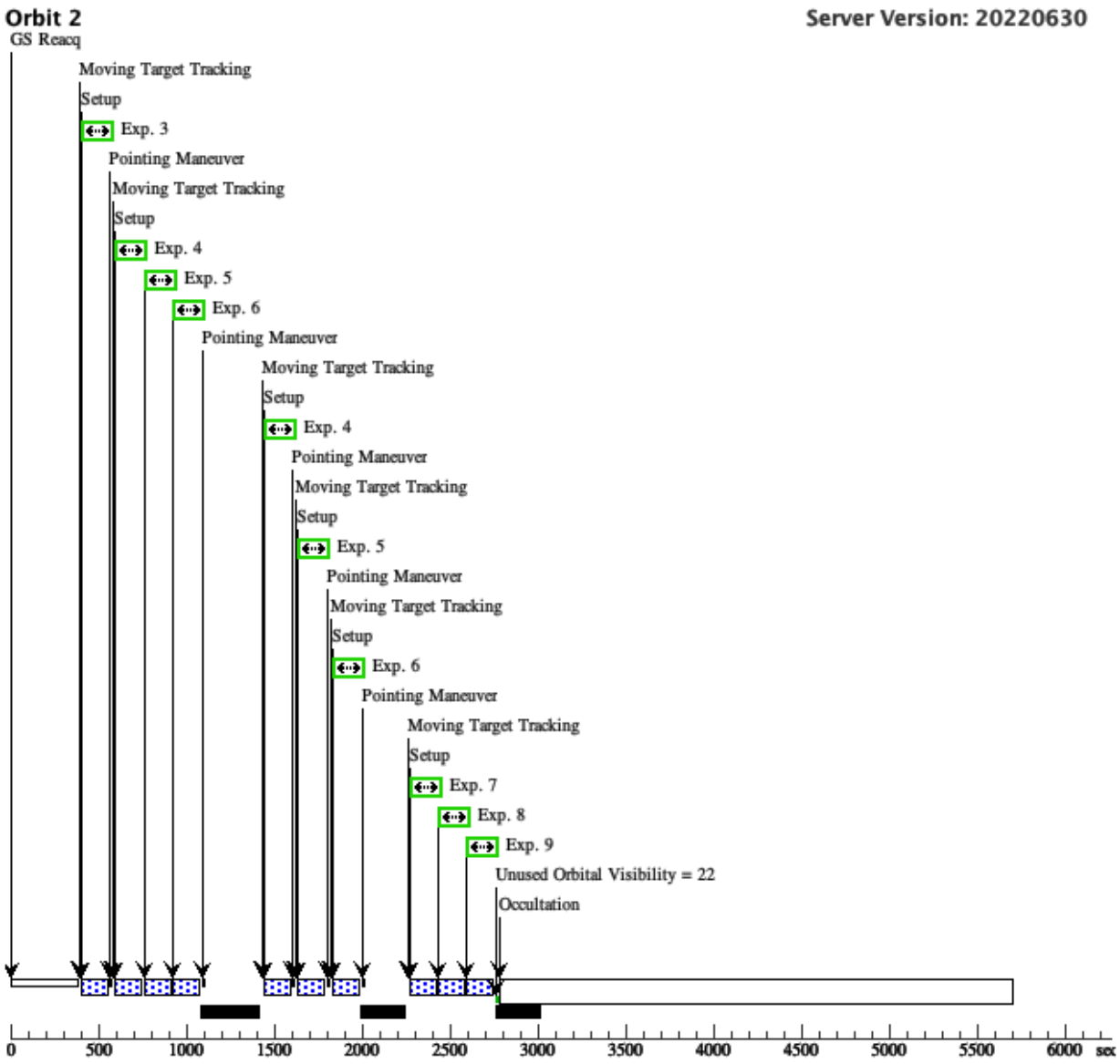
Comments: Description=Europa

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(2) EUROPA-T	ACS/WFC, ACCUM, WFC	F435W POL0UV			Pattern 1, Exps 1-3 in Europa-T-Opp (02) (1)	0.5 Secs (1.5 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
2		(2) EUROPA-T	ACS/WFC, ACCUM, WFC	F435W POL120UV			Pattern 1, Exps 1-3 in Europa-T-Opp (02) (1)	0.5 Secs (1.5 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
3		(2) EUROPA-T	ACS/WFC, ACCUM, WFC	F435W POL60UV			Pattern 1, Exps 1-3 in Europa-T-Opp (02) (1)	0.5 Secs (1.5 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]*** ***[2]***
4		(2) EUROPA-T	ACS/WFC, ACCUM, WFC	F435W POL0UV			Pattern 2, Exps 4-6 in Europa-T-Opp (02) (2)	0.5 Secs (1 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[2]***
5		(2) EUROPA-T	ACS/WFC, ACCUM, WFC	F435W POL120UV			Pattern 2, Exps 4-6 in Europa-T-Opp (02) (2)	0.5 Secs (1 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[2]***
6		(2) EUROPA-T	ACS/WFC, ACCUM, WFC	F435W POL60UV			Pattern 2, Exps 4-6 in Europa-T-Opp (02) (2)	0.5 Secs (1 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[2]***
7		(2) EUROPA-T	ACS/WFC, ACCUM, WFC	F435W POL0UV				0.5 Secs (0.5 Secs) *[==>]*	 ***[2]***
8		(2) EUROPA-T	ACS/WFC, ACCUM, WFC	F435W POL120UV				0.5 Secs (0.5 Secs) *[==>]*	 ***[2]***
9		(2) EUROPA-T	ACS/WFC, ACCUM, WFC	F435W POL60UV				0.5 Secs (0.5 Secs) *[==>]*	 ***[2]***

Orbit Structure




Orbit 2
Server Version: 20220630
GS Reacq
Moving Target Tracking
Setup
Exp. 3
Pointing Maneuver
Moving Target Tracking
Setup
Exp. 4
Exp. 5
Exp. 6
Pointing Maneuver
Moving Target Tracking
Setup
Exp. 4
Pointing Maneuver
Moving Target Tracking
Setup
Exp. 5
Pointing Maneuver
Moving Target Tracking
Setup
Exp. 6
Pointing Maneuver
Moving Target Tracking
Setup
Exp. 7
Exp. 8
Exp. 9
Unused Orbital Visibility = 22
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec

Visit

Proposal 17163, Europa-L-noop (03), failed Tue Nov 01 21:00:41 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: BETWEEN 20-OCT-2022 AND 21-NOV-2022

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.17 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=47.23 Angle Between Sides= Center Pattern=false		(1-3)
(2)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.149 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=34.25 Angle Between Sides= Center Pattern=false		(4-6)

Solar System Targets

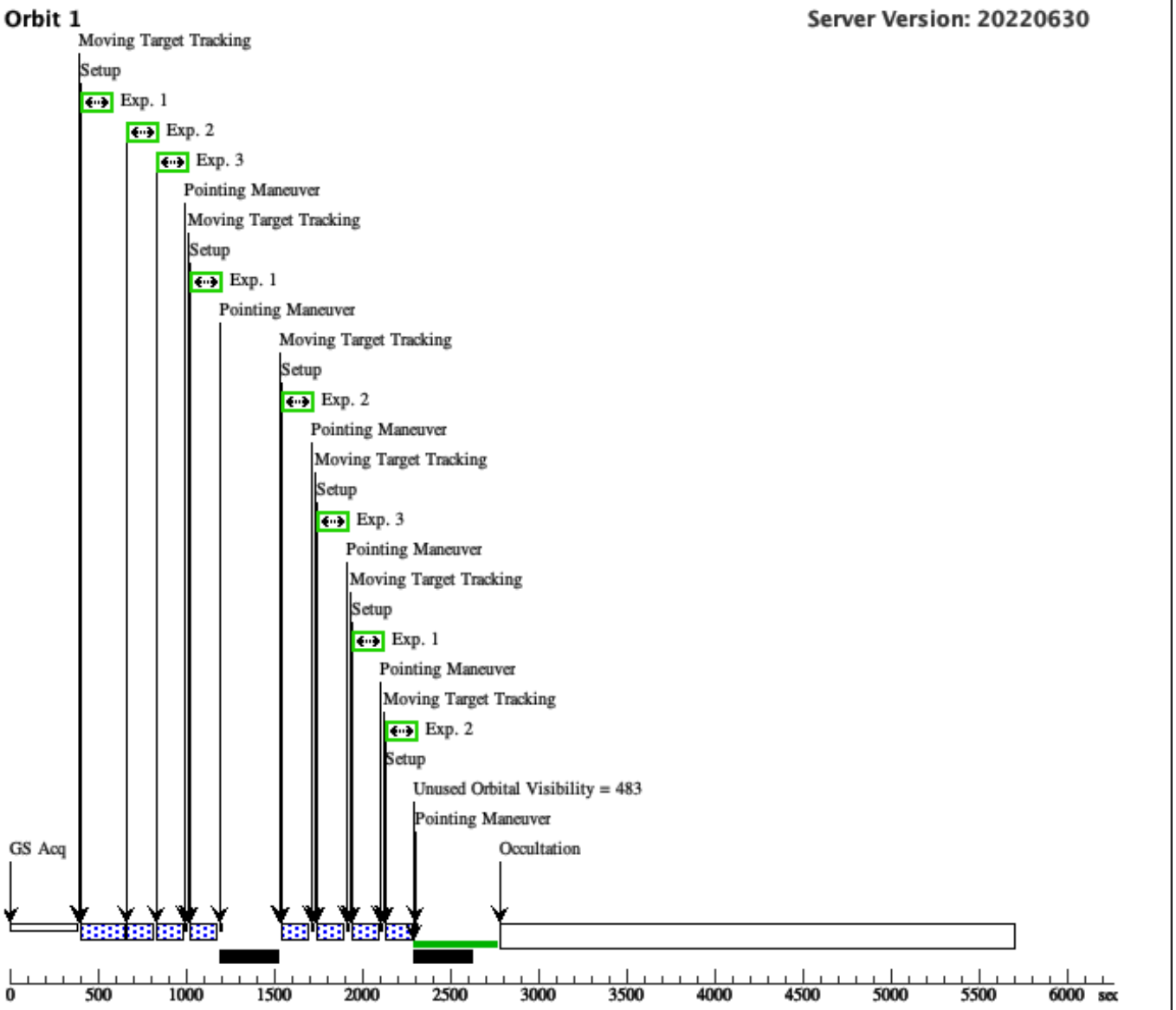
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	EUROPA-L	STD=JUPITER	STD=EUROPA		NOT OCC OF EUROPA-L BY JUPITER FROM EARTH, SEP OF EUROPA-L IO FROM EARTH GT 10", SEP OF EUROPA-L GANYMEDE FROM EARTH GT 10", SEP OF EUROPA-L CALLISTO FROM EARTH GT 10", OLG OF EUROPA-L FROM EARTH BETWEEN 30 150	EARTH

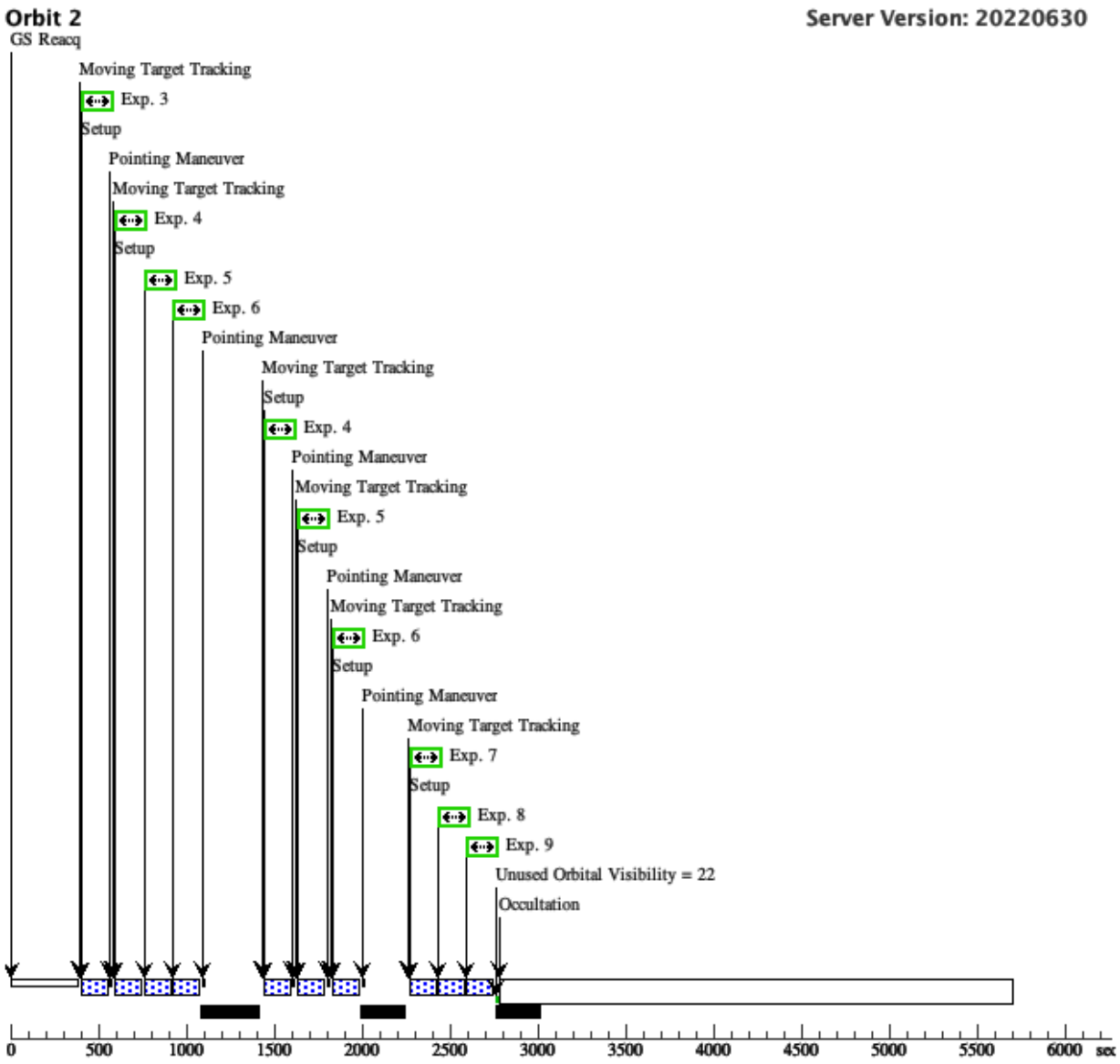
Comments: Description=Europa

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL0UV			Pattern 1, Exps 1-3 in Europa-L-noop (03) (1)	0.5 Secs (1.5 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]***
2		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL120UV			Pattern 1, Exps 1-3 in Europa-L-noop (03) (1)	0.5 Secs (1.5 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]***
3		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL60UV			Pattern 1, Exps 1-3 in Europa-L-noop (03) (1)	0.5 Secs (1.5 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]*** ***[2]***
4		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL0UV			Pattern 2, Exps 4-6 in Europa-L-noop (03) (2)	0.5 Secs (1 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[2]***
5		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL120UV			Pattern 2, Exps 4-6 in Europa-L-noop (03) (2)	0.5 Secs (1 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[2]***
6		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL60UV			Pattern 2, Exps 4-6 in Europa-L-noop (03) (2)	0.5 Secs (1 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[2]***
7		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL0UV				0.5 Secs (0.5 Secs) *[==>]*	 ***[2]***
8		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL120UV				0.5 Secs (0.5 Secs) *[==>]*	 ***[2]***
9		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL60UV				0.5 Secs (0.5 Secs) *[==>]*	 ***[2]***

Orbit Structure




Orbit 2
Server Version: 20220630
GS Reacq
Moving Target Tracking
Exp. 3
Setup
Pointing Maneuver
Moving Target Tracking
Exp. 4
Setup
Exp. 5
Exp. 6
Pointing Maneuver
Moving Target Tracking
Setup
Exp. 4
Pointing Maneuver
Moving Target Tracking
Exp. 5
Setup
Pointing Maneuver
Moving Target Tracking
Exp. 6
Setup
Pointing Maneuver
Moving Target Tracking
Exp. 7
Setup
Exp. 8
Exp. 9
Unused Orbital Visibility = 22
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec

Visit

Proposal 17163, Europa-L-noop (53) Tue Nov 01 21:00:41 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: BEFORE 12-DEC-2022:00:00:00

Comments: Duplicate of visit 03 which failed

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.17 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=47.23 Angle Between Sides= Center Pattern=false		(1-3)
(2)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.149 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=34.25 Angle Between Sides= Center Pattern=false		(4-6)

Solar System Targets

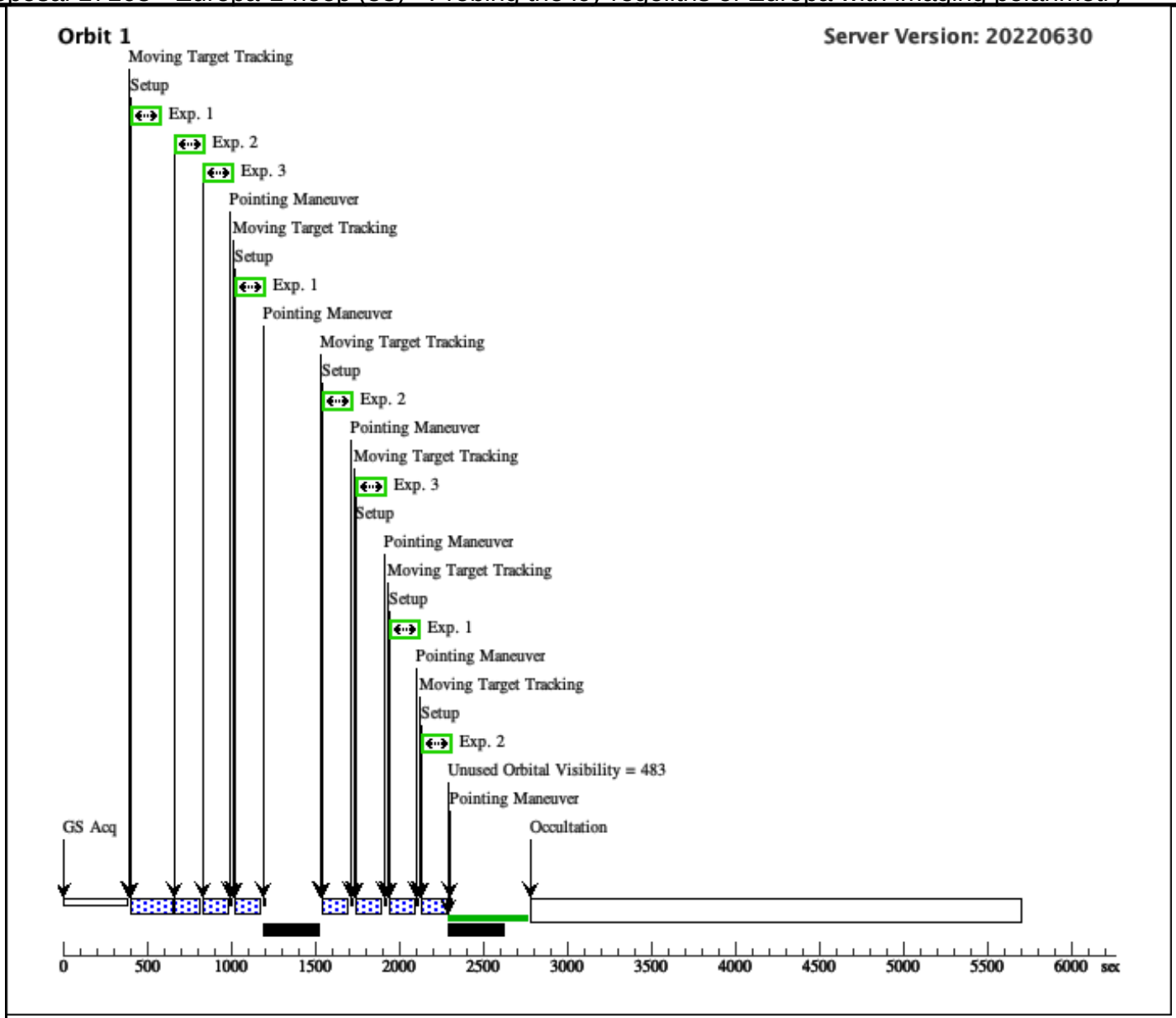
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	EUROPA-L	STD=JUPITER	STD=EUROPA		NOT OCC OF EUROPA-L BY JUPITER FROM EARTH, SEP OF EUROPA-L IO FROM EARTH GT 10", SEP OF EUROPA-L GANYMEDE FROM EARTH GT 10", SEP OF EUROPA-L CALLISTO FROM EARTH GT 10", OLG OF EUROPA-L FROM EARTH BETWEEN 30 150	EARTH

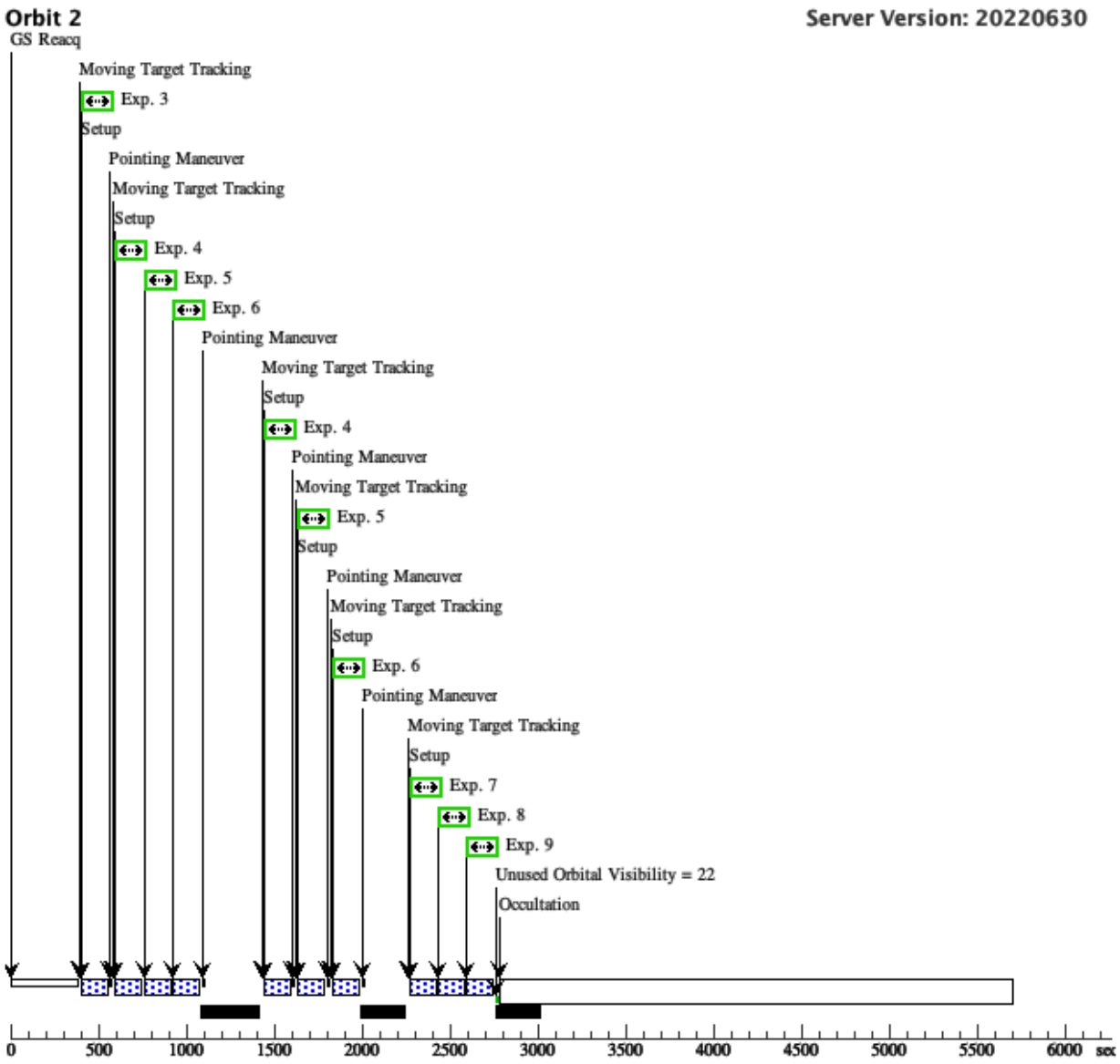
Comments: Description=Europa

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL0UV			Pattern 1, Exps 1-3 in Europa-L-noop (53) (1)	0.5 Secs (1.5 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]***
2		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL120UV			Pattern 1, Exps 1-3 in Europa-L-noop (53) (1)	0.5 Secs (1.5 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]***
3		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL60UV			Pattern 1, Exps 1-3 in Europa-L-noop (53) (1)	0.5 Secs (1.5 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]*** ***[2]***
4		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL0UV			Pattern 2, Exps 4-6 in Europa-L-noop (53) (2)	0.5 Secs (1 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[2]***
5		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL120UV			Pattern 2, Exps 4-6 in Europa-L-noop (53) (2)	0.5 Secs (1 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[2]***
6		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL60UV			Pattern 2, Exps 4-6 in Europa-L-noop (53) (2)	0.5 Secs (1 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[2]***
7		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL0UV				0.5 Secs (0.5 Secs) *[==>]*	 ***[2]***
8		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL120UV				0.5 Secs (0.5 Secs) *[==>]*	 ***[2]***
9		(1) EUROPA-L	ACS/WFC, ACCUM, WFC	F435W POL60UV				0.5 Secs (0.5 Secs) *[==>]*	 ***[2]***

Orbit Structure




Orbit 2
Server Version: 20220630
GS Reacq
Moving Target Tracking
Exp. 3
Setup
Pointing Maneuver
Moving Target Tracking
Setup
Exp. 4
Exp. 5
Exp. 6
Pointing Maneuver
Moving Target Tracking
Setup
Exp. 4
Pointing Maneuver
Moving Target Tracking
Exp. 5
Setup
Pointing Maneuver
Moving Target Tracking
Setup
Exp. 6
Pointing Maneuver
Moving Target Tracking
Setup
Exp. 7
Exp. 8
Exp. 9
Unused Orbital Visibility = 22
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec

Visit

Proposal 17163, Europa-T-nopp (04), completed Tue Nov 01 21:00:41 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: BETWEEN 20-OCT-2022 AND 21-NOV-2022

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.17 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=47.23 Angle Between Sides= Center Pattern=false		(1-3)
(2)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.149 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=34.25 Angle Between Sides= Center Pattern=false		(4-6)

Solar System Targets

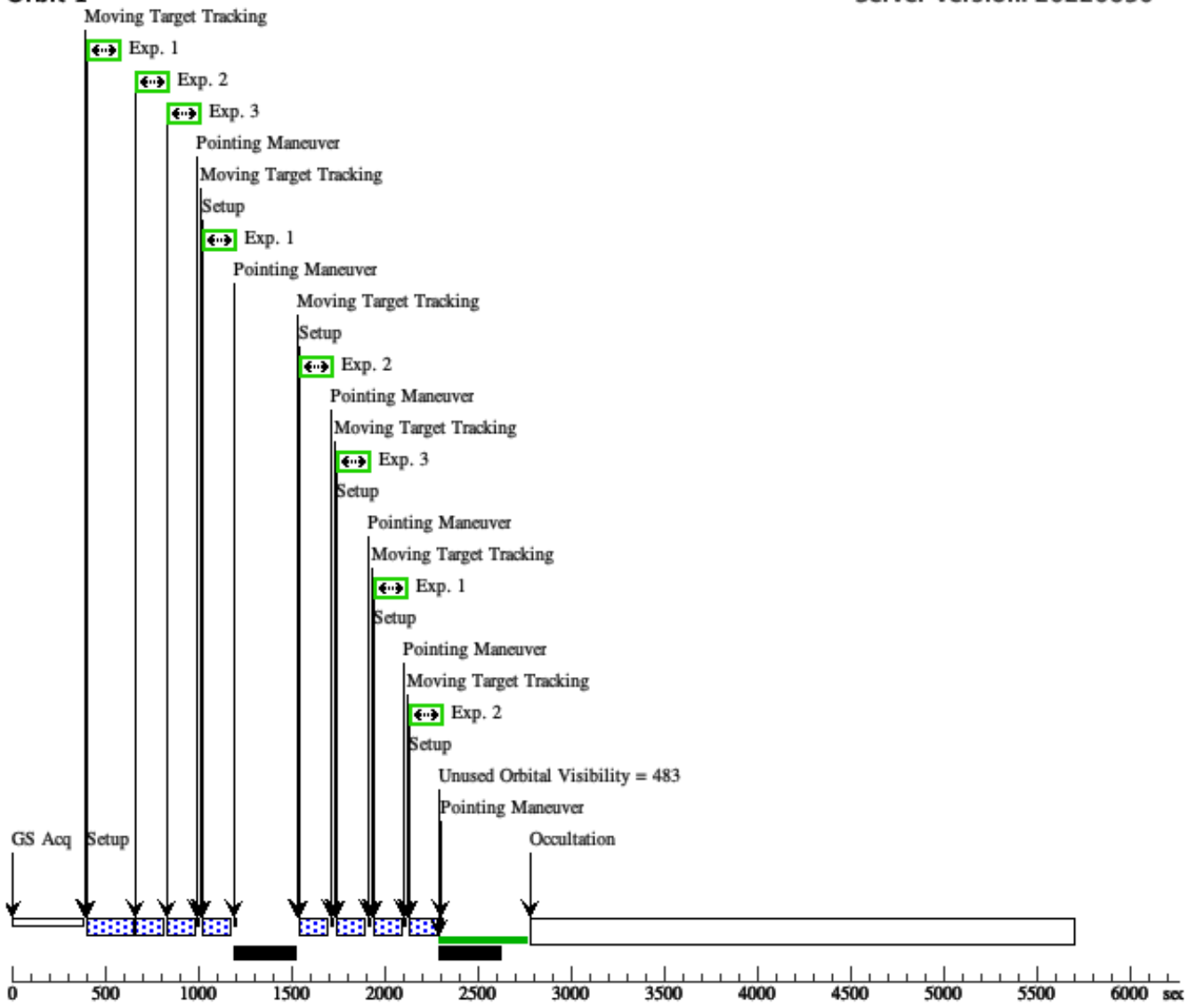
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(2)	EUROPA-T	STD=JUPITER	STD=EUROPA		NOT OCC OF EUROPA-T BY JUPITER FROM EARTH, SEP OF EUROPA-T IO FROM EARTH GT 10", SEP OF EUROPA-T GANYMEDE FROM EARTH GT 10", SEP OF EUROPA-T CALLISTO FROM EARTH GT 10", OLG OF EUROPA-T FROM EARTH BETWEEN 210 330	EARTH

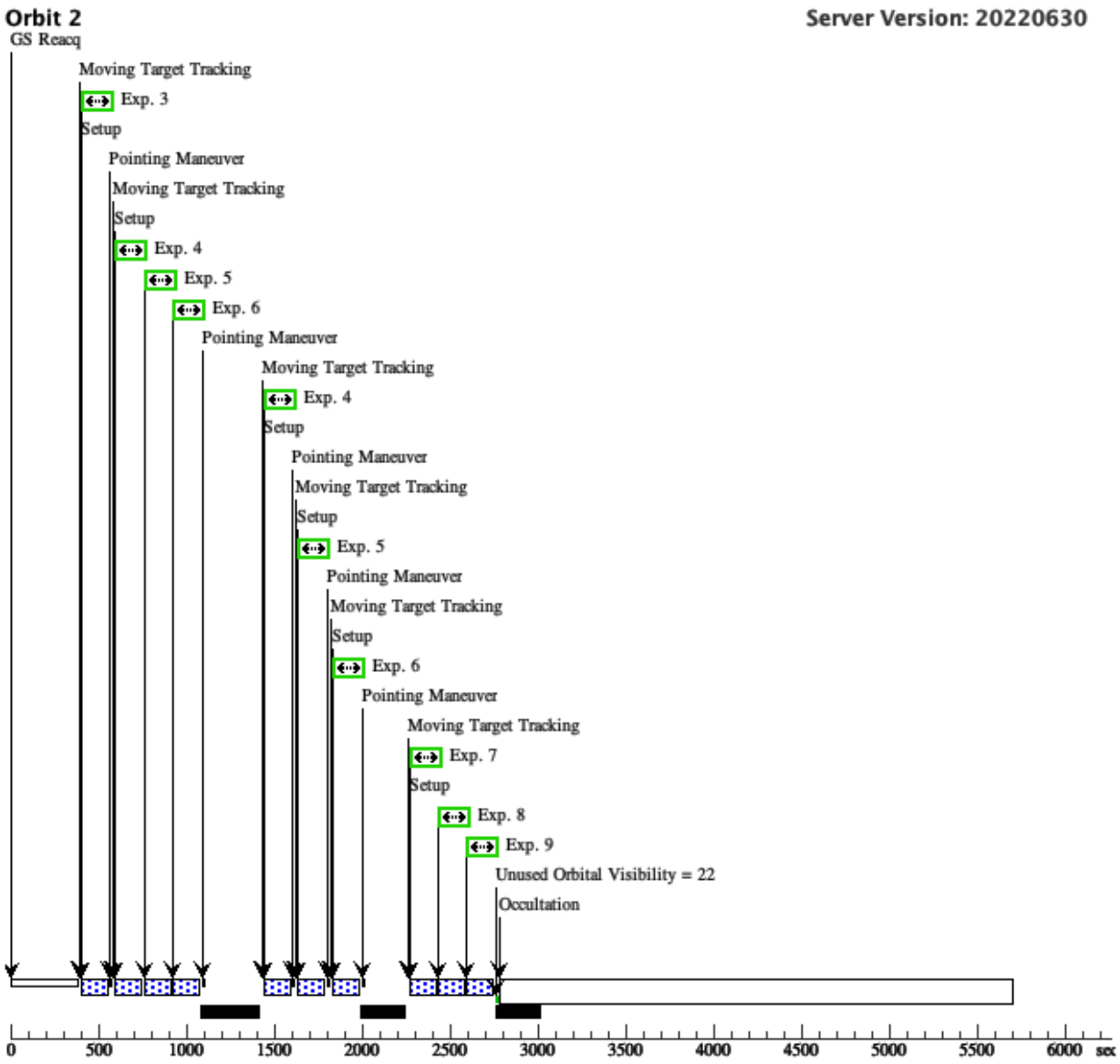
Comments: Description=Europa

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(2) EUROPA-T	ACS/WFC, ACCUM, WFC	F435W POL0UV			Pattern 1, Exps 1-3 in Europa-T-nopp (04) (1)	0.5 Secs (1.5 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]***
2		(2) EUROPA-T	ACS/WFC, ACCUM, WFC	F435W POL120UV			Pattern 1, Exps 1-3 in Europa-T-nopp (04) (1)	0.5 Secs (1.5 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]***
3		(2) EUROPA-T	ACS/WFC, ACCUM, WFC	F435W POL60UV			Pattern 1, Exps 1-3 in Europa-T-nopp (04) (1)	0.5 Secs (1.5 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	 ***[1]*** ***[2]***
4		(2) EUROPA-T	ACS/WFC, ACCUM, WFC	F435W POL0UV			Pattern 2, Exps 4-6 in Europa-T-nopp (04) (2)	0.5 Secs (1 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[2]***
5		(2) EUROPA-T	ACS/WFC, ACCUM, WFC	F435W POL120UV			Pattern 2, Exps 4-6 in Europa-T-nopp (04) (2)	0.5 Secs (1 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[2]***
6		(2) EUROPA-T	ACS/WFC, ACCUM, WFC	F435W POL60UV			Pattern 2, Exps 4-6 in Europa-T-nopp (04) (2)	0.5 Secs (1 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[2]***
7		(2) EUROPA-T	ACS/WFC, ACCUM, WFC	F435W POL0UV				0.5 Secs (0.5 Secs) *[==>]*	 ***[2]***
8		(2) EUROPA-T	ACS/WFC, ACCUM, WFC	F435W POL120UV				0.5 Secs (0.5 Secs) *[==>]*	 ***[2]***
9		(2) EUROPA-T	ACS/WFC, ACCUM, WFC	F435W POL60UV				0.5 Secs (0.5 Secs) *[==>]*	 ***[2]***

Orbit Structure




Orbit 2
Server Version: 20220630
GS Reacq
Moving Target Tracking
Exp. 3
Setup
Pointing Maneuver
Moving Target Tracking
Setup
Exp. 4
Exp. 5
Exp. 6
Pointing Maneuver
Moving Target Tracking
Exp. 4
Setup
Pointing Maneuver
Moving Target Tracking
Setup
Exp. 5
Pointing Maneuver
Moving Target Tracking
Setup
Exp. 6
Pointing Maneuver
Moving Target Tracking
Exp. 7
Setup
Exp. 8
Exp. 9
Unused Orbital Visibility = 22
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec