11085 - Europa in Eclipse: Tenuous Atmosphere, Electromagnetic Activity and Surface Luminescence

Cycle: 15, Proposal Category: GO/DD

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) EUROPA	WFPC2	1	21-May-2007 18:59:40.0	yes
02	(2) EUROPA-ECLIPSE	WFPC2	2	21-May-2007 18:59:45.0	yes
03	(2) EUROPA-ECLIPSE	WFPC2	1	21-May-2007 18:59:48.0	yes
04	(3) EUROPA-ECLIPSE-2	WFPC2	1	21-May-2007 18:59:50.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
05	(1) EUROPA	ACS/SBC	1	21-May-2007 18:59:52.0	yes
06	(2) EUROPA-ECLIPSE	ACS/SBC	1	21-May-2007 18:59:54.0	yes
07	(2) EUROPA-ECLIPSE	WFPC2	1	21-May-2007 18:59:56.0	yes

8 Total Orbits Used

ABSTRACT

We propose to image Europa during its orbital eclipse by Jupiter. This will form the basis of an investigation into the nature of the tenuous atmosphere, electromagnetic environment and surface material of Europa. We will compare the FUV oxygen line at 1356A to the optical line at 6300A and seek optical auroral hydrogen emission in Halpha. With broad continuum filters, we will search for optical emissions from other atmospheric constituents and for fluorescence of the surface material, arising from the very high level of incident energetic particle radiation. The high spatial resolution of ACS will allow us to fully resolve scales of interest and allow us to distinguish easily the different terrains on Europa's surface. In particular we wish to compare luminesence in regions dominated by ice to those of potentially organic red material.

OBSERVING DESCRIPTION

We will obtain a single ACS/SBC prism observation inside and outside eclipse. We will obtain one orbit that sweeps through all filters outside eclipse and the remaining four orbits will be inside eclipse. Three use broad filters and one uses the narrow band optical filters to seek auroral emission.

Visit

Proposal 11085, Visit 01, completed Mon May 21 22:59:58 GMT 2007

Diagnostic Status: No Diagnostics

Scientific Instruments: WFPC2

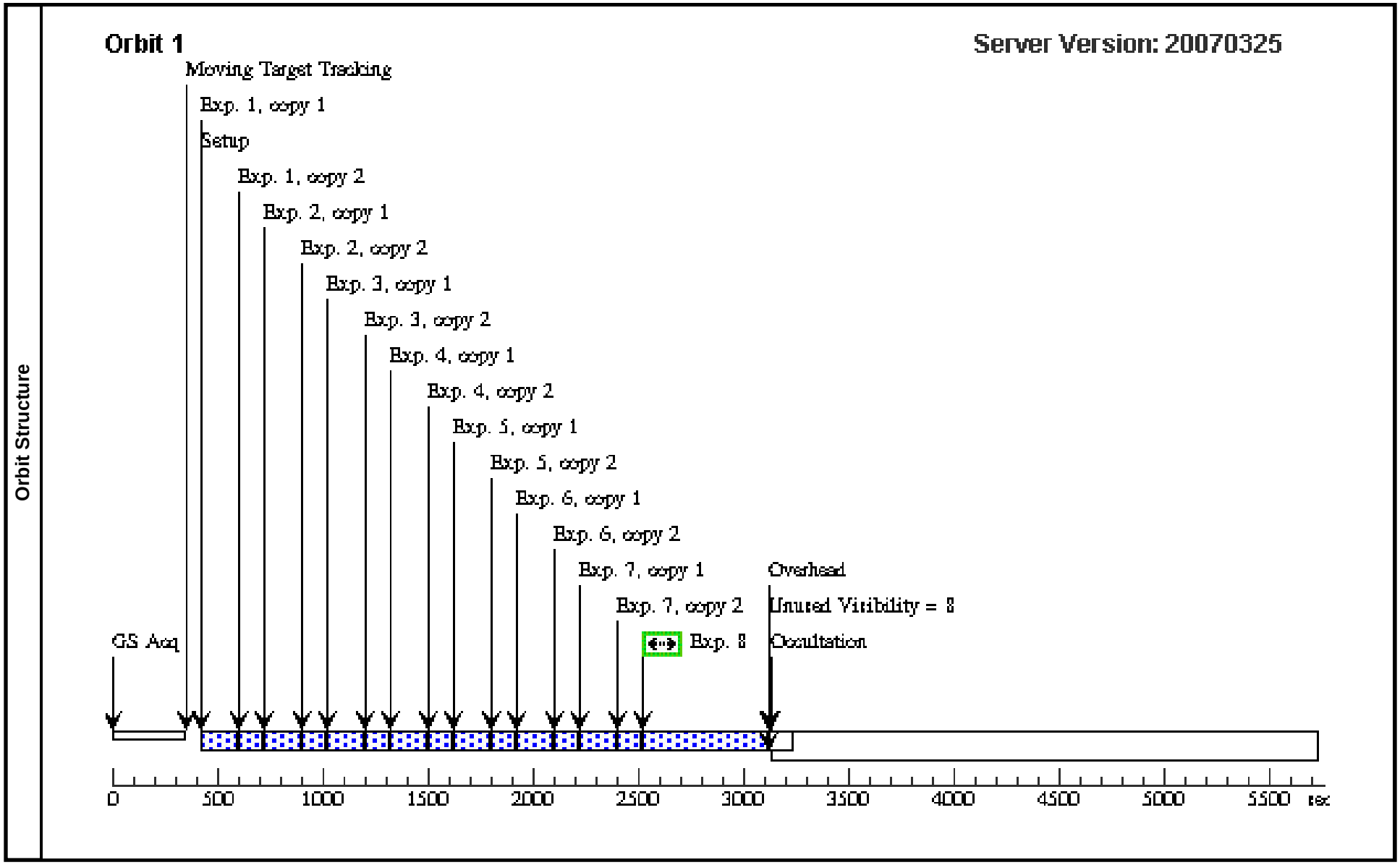
Special Requirements: (none)

Solar System Targets

#	Name	Level 1	Level 2	Level 3	Window
(1)	EUROPA	STD=JUPITER	STD=EUROPA		NOT ECL U OF EUROPA BY JUPITER, OLG OF EUROPA BETWEEN 330.0 360.0

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(1) EUROPA	WFPC2, IMAGE, PC1-FIX	F300W	CLOCKS=YES; ATD-GAIN=15	POS TARG -11.4,-11.2		10.0 Secs X 2 *[==>(Copy 1)]* *[==>(Copy 2)]*	*[1]*
2		(1) EUROPA	WFPC2, IMAGE, PC1-FIX	F380W	CLOCKS=YES; ATD-GAIN=15	SAME POS AS 1		1.2 Secs X 2 *[==>(Copy 1)]* *[==>(Copy 2)]*	*[1]*
3		(1) EUROPA	WFPC2, IMAGE, PC1-FIX	F555W	ATD-GAIN=15	SAME POS AS 1		0.11 Secs X 2 *[==>(Copy 1)]* *[==>(Copy 2)]*	*[1]*
4		(1) EUROPA	WFPC2, IMAGE, PC1-FIX	F675W	ATD-GAIN=15	SAME POS AS 1		0.11 Secs X 2 *[==>(Copy 1)]* *[==>(Copy 2)]*	*[1]*
5		(1) EUROPA	WFPC2, IMAGE, PC1-FIX	F814W	ATD-GAIN=15	SAME POS AS 1		0.2 Secs X 2 *[==>(Copy 1)]* *[==>(Copy 2)]*	*[1]*
6		(1) EUROPA	WFPC2, IMAGE, PC1-FIX	F631N	CLOCKS=YES; ATD-GAIN=15	SAME POS AS 1		5.0 Secs X 2 *[==>(Copy 1)]* *[==>(Copy 2)]*	*[1]*
7		(1) EUROPA	WFPC2, IMAGE, PC1-FIX	F656N	CLOCKS=YES; ATD-GAIN=15	SAME POS AS 1		8.0 Secs X 2 *[==>(Copy 1)]* *[==>(Copy 2)]*	*[1]*
8		(1) EUROPA	WFPC2, IMAGE, PC1-FIX	F255W	CLOCKS=YES; CR-SPLIT=DEF; ATD-GAIN=15	SAME POS AS 1		500.0 Secs *[==>]*	*[1]*


Orbit Structure
Orbit 1
Server Version: 20070325
Moving Target Tracking
Exp. 1, copy 1
Setup
Exp. 1, copy 2
Exp. 2, copy 1
Exp. 2, copy 2
Exp. 3, copy 1
Exp. 3, copy 2
Exp. 4, copy 1
Exp. 4, copy 2
Exp. 5, copy 1
Exp. 5, copy 2
Exp. 6, copy 1
Exp. 6, copy 2
Exp. 7, copy 1
Exp. 7, copy 2
Exp. 8
Overhead
Unused Visibility = 8
Occultation
GS Acq
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11085, Visit 02, completed Mon May 21 22:59:59 GMT 2007

Diagnostic Status: No Diagnostics

Scientific Instruments: WFPC2

Special Requirements: (none)

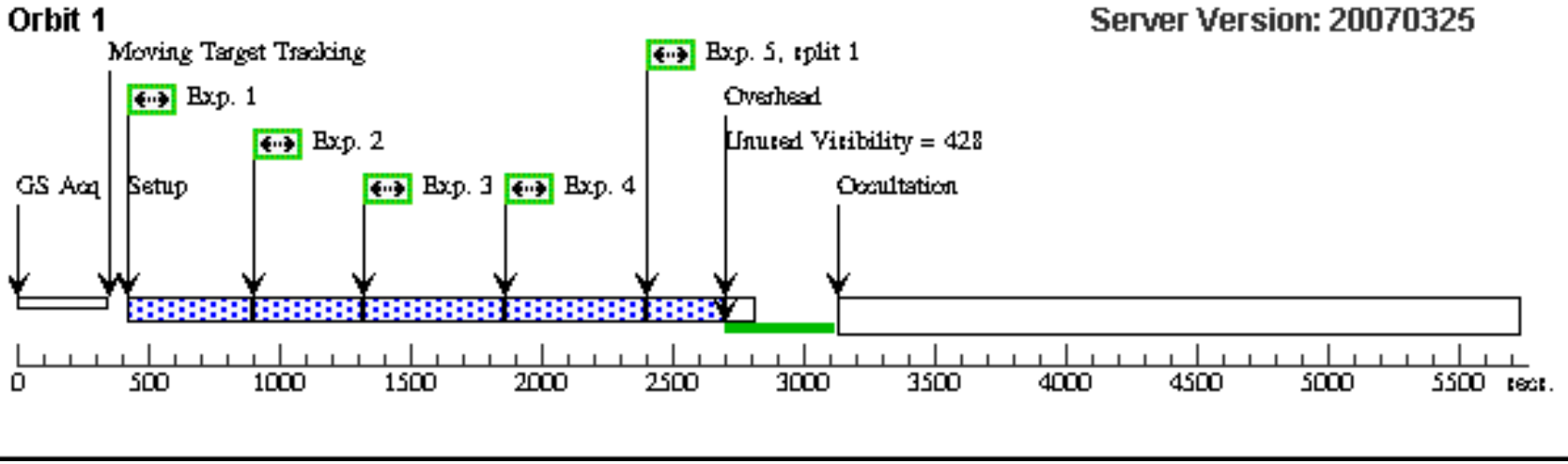
Solar System Targets

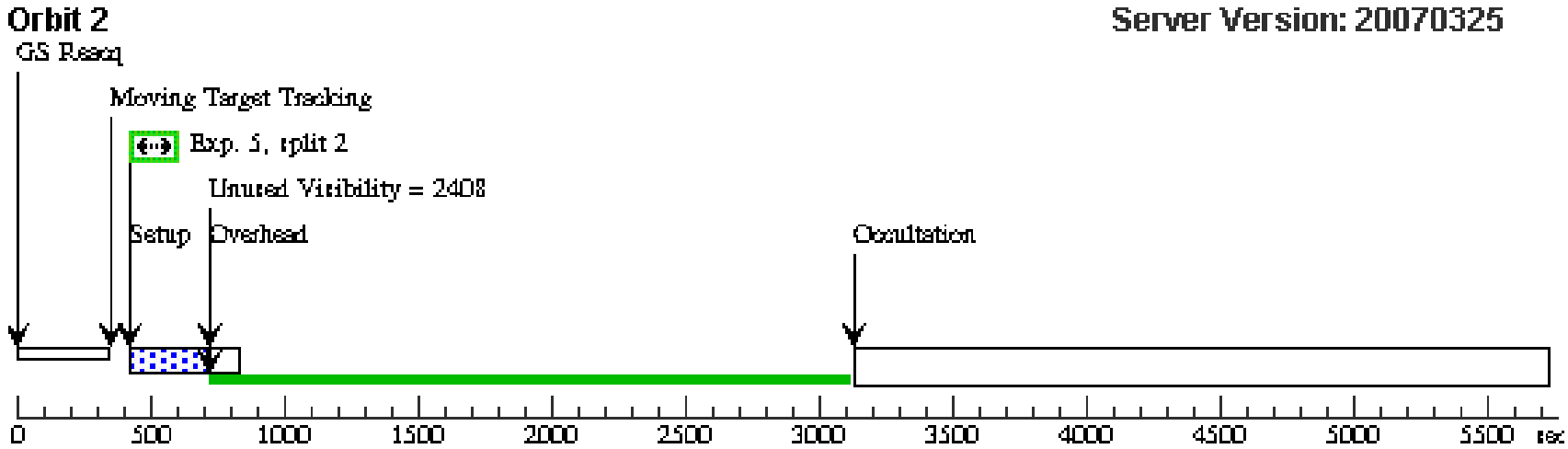
#	Name	Level 1	Level 2	Level 3	Window
(2)	EUROPA-ECLIPSE	STD=JUPITER	STD=EUROPA		ECL U OF EUROPA-ECLIPSE BY JUPITER, SEP OF EUROPA JUPITER FROM EARTH GT 3.0"

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(2) EUROPA-ECLIPSE	WFPC2, IMAGE, PC1-FIX	F555W	CLOCKS=YES; CR-SPLIT=DEF; ATD-GAIN=15	POS TARG -11.4,-11.2		300.0 Secs *[==>]*	 ***[1]***
2		(2) EUROPA-ECLIPSE	WFPC2, IMAGE, PC1-FIX	F675W	CLOCKS=YES; CR-SPLIT=DEF; ATD-GAIN=15	SAME POS AS 1		260.0 Secs *[==>]*	 ***[1]***
3		(2) EUROPA-ECLIPSE	WFPC2, IMAGE, PC1-FIX	F380W	CLOCKS=YES; CR-SPLIT=DEF; ATD-GAIN=15	SAME POS AS 1		400.0 Secs *[==>]*	 ***[1]***
4		(2) EUROPA-ECLIPSE	WFPC2, IMAGE, PC1-FIX	F300W	CLOCKS=YES; CR-SPLIT=DEF; ATD-GAIN=15	SAME POS AS 1		400.0 Secs *[==>]*	 ***[1]***
5		(2) EUROPA-ECLIPSE	WFPC2, IMAGE, PC1-FIX	F814W	CLOCKS=YES; CR-SPLIT=0.5; ATD-GAIN=15	SAME POS AS 1		400.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	 ***[1]*** ***[2]***

Orbit Structure





Visit

Proposal 11085, Visit 03, completed Mon May 21 23:00:00 GMT 2007

Diagnostic Status: No Diagnostics

Scientific Instruments: WFPC2

Special Requirements: (none)

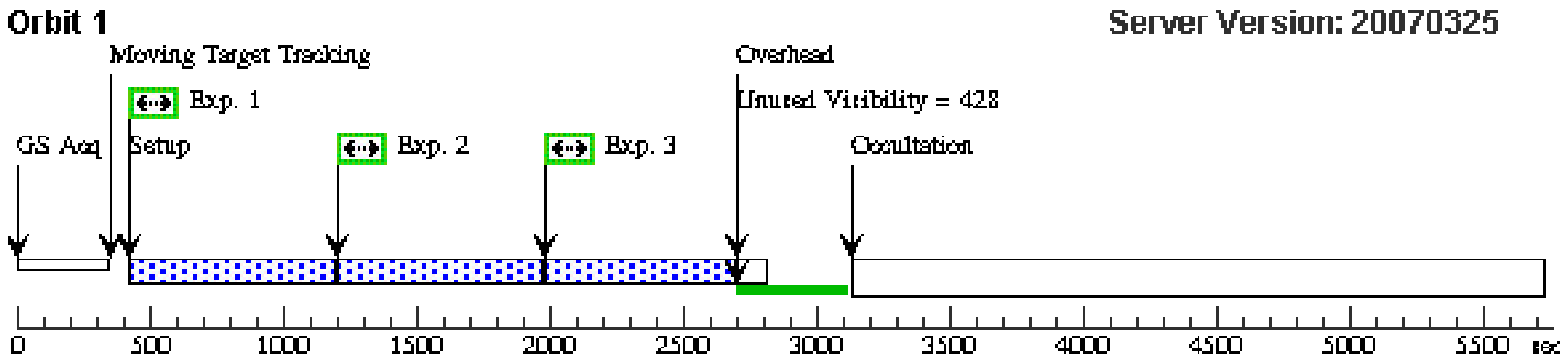
Solar System Targets

#	Name	Level 1	Level 2	Level 3	Window
(2)	EUROPA-ECLIPSE	STD=JUPITER	STD=EUROPA		ECL U OF EUROPA-ECLIPSE BY JUPITER, SEP OF EUROPA JUPITER FROM EARTH GT 3.0"

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(2) EUROPA-ECLIPSE	WFPC2, IMAGE, PC1-FIX	F380W	CLOCKS=YES; CR-SPLIT=DEF; ATD-GAIN=15	POS TARG -11.4,-1 1.2		600.0 Secs *[==>]*	*[1]*
2		(2) EUROPA-ECLIPSE	WFPC2, IMAGE, PC1-FIX	F606W	CLOCKS=YES; CR-SPLIT=DEF; ATD-GAIN=15	SAME POS AS 1		600.0 Secs *[==>]*	*[1]*
3		(2) EUROPA-ECLIPSE	WFPC2, IMAGE, PC1-FIX	F814W	CLOCKS=YES; CR-SPLIT=DEF; ATD-GAIN=15	SAME POS AS 1		600.0 Secs *[==>]*	*[1]*

Orbit Structure



Visit

Proposal 11085, Visit 04, scheduling Mon May 21 23:00:00 GMT 2007

Diagnostic Status: No Diagnostics

Scientific Instruments: WFPC2

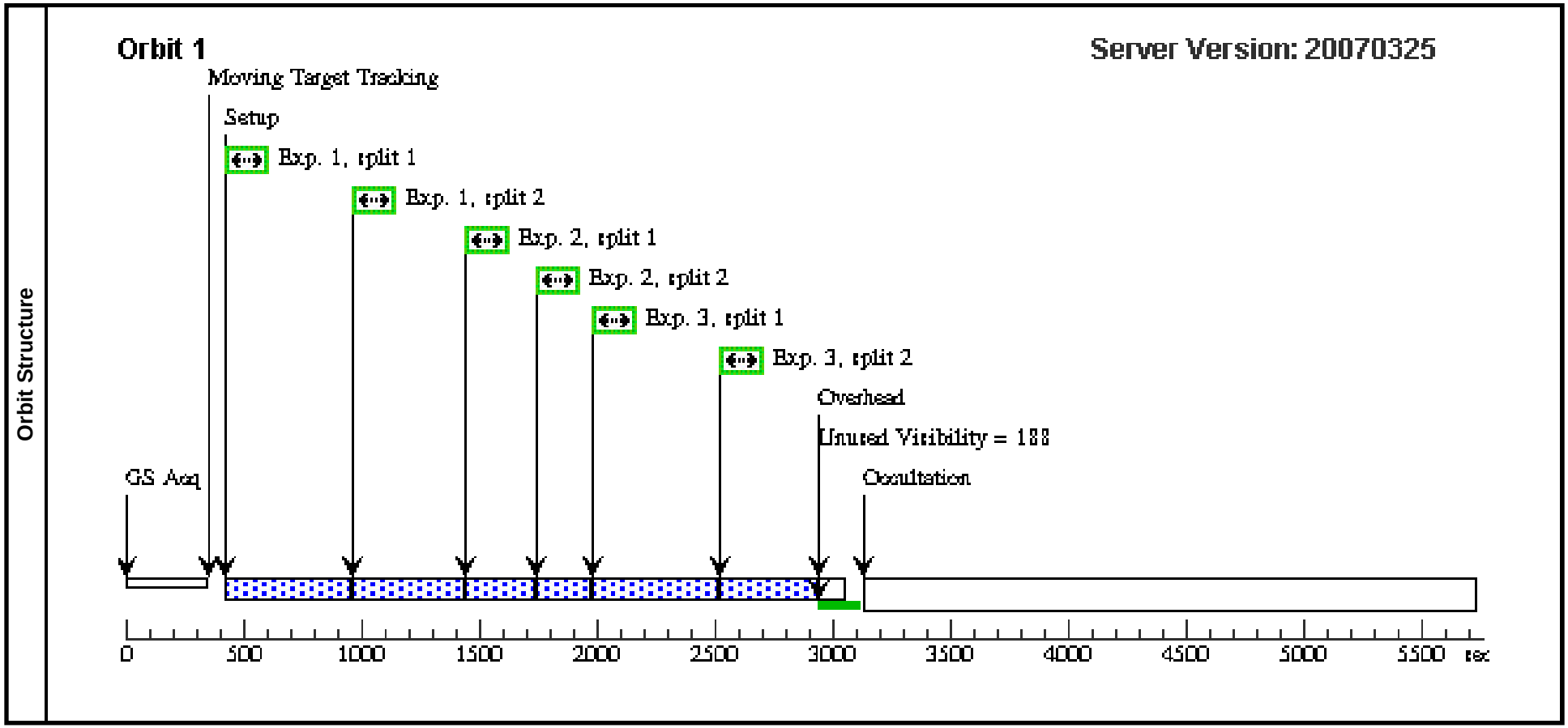
Special Requirements: (none)

Solar System Targets

#	Name	Level 1	Level 2	Level 3	Window
(3)	EUROPA-ECLIPSE-2	STD=JUPITER	STD=EUROPA		ECL U OF EUROPA-ECLIPSE BY JUPITER, SEP OF EUROPA JUPITER FROM EARTH GT 2.0"

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(3) EUROPA-ECLIPSE-2	WFPC2, IMAGE, PC1-FIX	F656N	CLOCKS=YES; CR-SPLIT=DEF; ATD-GAIN=15	POS TARG -11.4,-11.2	Same Alignment	800.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	 ***[1]***
2		(3) EUROPA-ECLIPSE-2	WFPC2, IMAGE, PC1-FIX	F675W	CLOCKS=YES; CR-SPLIT=0.5; ATD-GAIN=15	SAME POS AS 1	Same Alignment	320.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	 ***[1]***
3		(3) EUROPA-ECLIPSE-2	WFPC2, IMAGE, PC1-FIX	F631N	CLOCKS=YES; CR-SPLIT=DEF; ATD-GAIN=15	SAME POS AS 1	Same Alignment	800.0 Secs *[==>(Split 1)]* *[==>(Split 2)]*	 ***[1]***


Orbit Structure
Orbit 1
Server Version: 20070325
Moving Target Tracking
Setup
Exp. 1, split 1
Exp. 1, split 2
Exp. 2, split 1
Exp. 2, split 2
Exp. 3, split 1
Exp. 3, split 2
Overhead
Unused Visibility = 188
GS Acq
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11085, Visit 05, completed Mon May 21 23:00:01 GMT 2007

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/SBC

Special Requirements: GROUP 05,06 WITHIN 15.0H

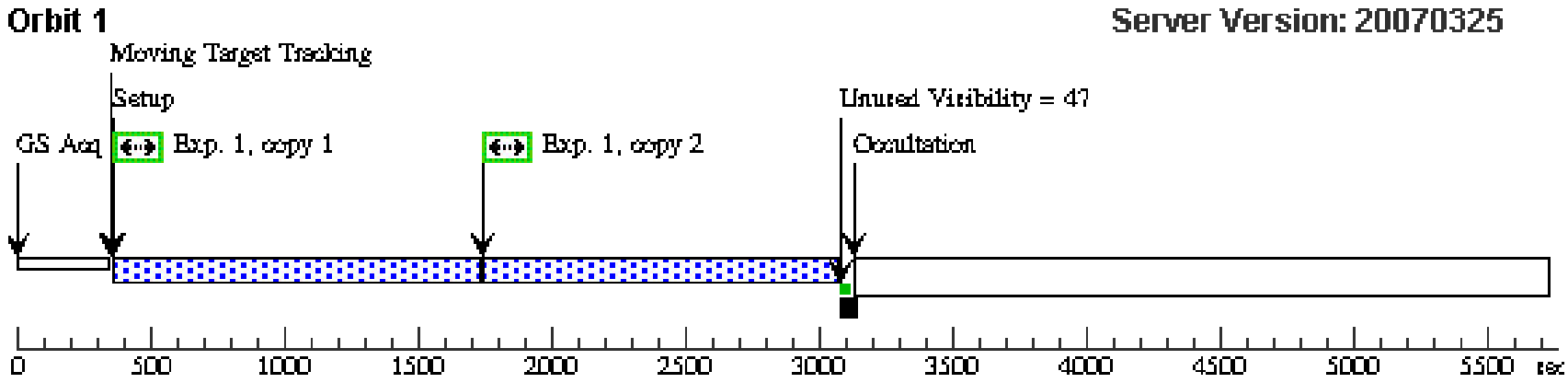
Solar System Targets

#	Name	Level 1	Level 2	Level 3	Window
(1)	EUROPA	STD=JUPITER	STD=EUROPA		NOT ECL U OF EUROPA BY JUPITER, OLG OF EUROPA BETWEEN 330.0 360.0

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(1) EUROPA	ACS/SBC, ACCUM, SBC	PR130L				1300.0 Secs X 2	
								[==>(Copy 1)]	
								[==>(Copy 2)]	***[1]***

Orbit Structure



Visit

Proposal 11085, Visit 06, completed Mon May 21 23:00:01 GMT 2007

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/SBC

Special Requirements: (none)

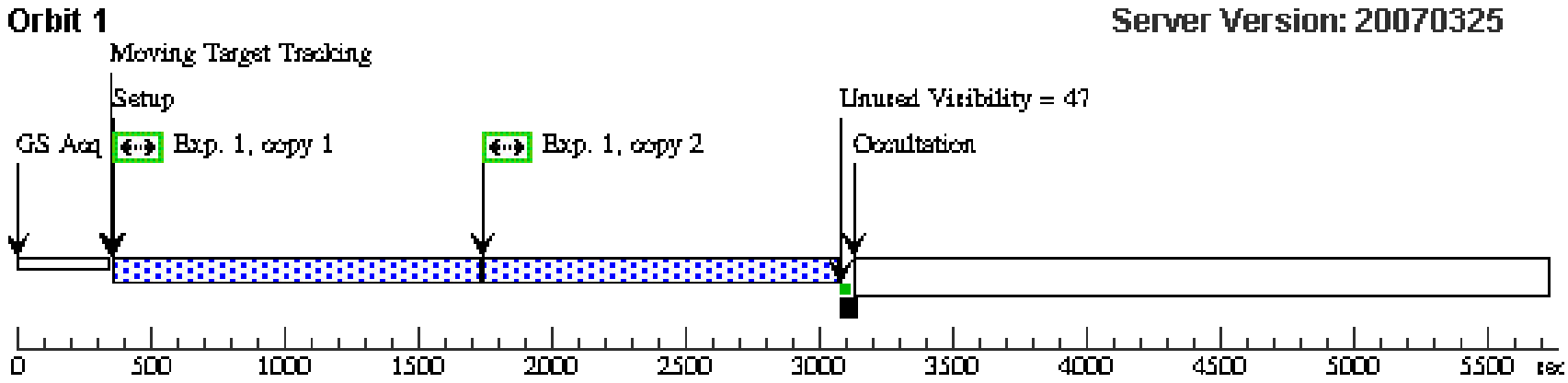
Solar System Targets

#	Name	Level 1	Level 2	Level 3	Window
(2)	EUROPA-ECLIPSE	STD=JUPITER	STD=EUROPA		ECL U OF EUROPA-ECLIPSE BY JUPITER, SEP OF EUROPA JUPITER FROM EARTH GT 3.0"

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(2) EUROPA-ECLIPSE	ACS/SBC, ACCUM, SBC	PR130L				1300.0 Secs X 2 *[==>(Copy 1)]* *[==>(Copy 2)]*	***[1]***

Orbit Structure



Visit

Proposal 11085, Visit 07, scheduling Mon May 21 23:00:01 GMT 2007

Diagnostic Status: No Diagnostics

Scientific Instruments: WFPC2

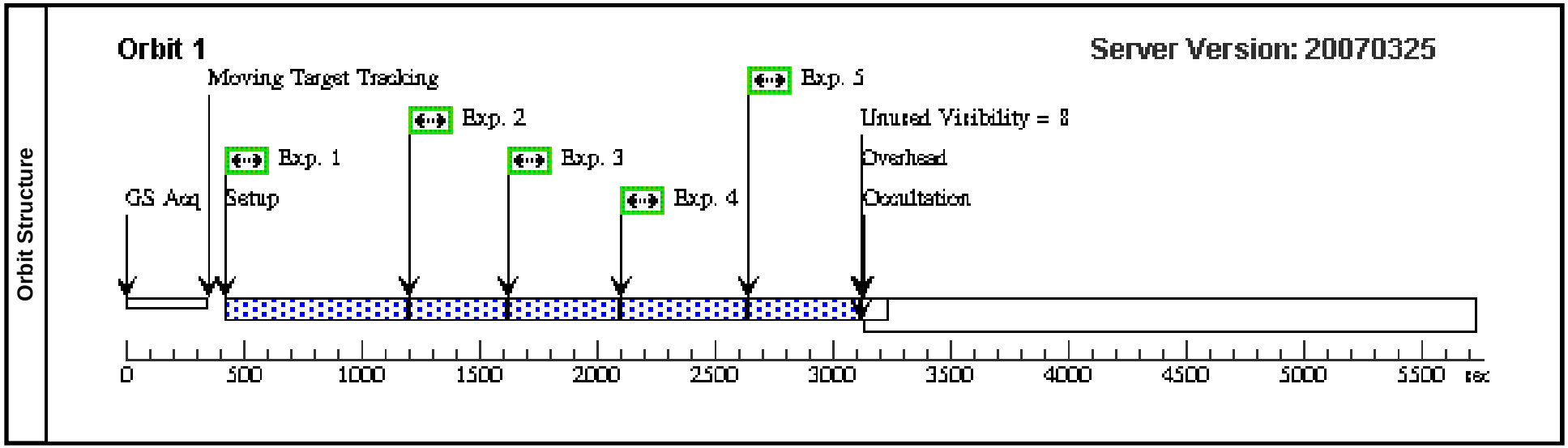
Special Requirements: (none)

Solar System Targets

#	Name	Level 1	Level 2	Level 3	Window
(2)	EUROPA-ECLIPSE	STD=JUPITER	STD=EUROPA		ECL U OF EUROPA-ECLIPSE BY JUPITER, SEP OF EUROPA JUPITER FROM EARTH GT 3.0"

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(2) EUROPA-ECLIPSE	WFPC2, IMAGE, PC1-FIX	F300W	CLOCKS=YES; CR-SPLIT=DEF; ATD-GAIN=15	POS TARG -11.4,-11.2		600.0 Secs *[==>]*	***[1]***
2		(2) EUROPA-ECLIPSE	WFPC2, IMAGE, PC1-FIX	F675W	CLOCKS=YES; CR-SPLIT=DEF; ATD-GAIN=15	SAME POS AS 1		260.0 Secs *[==>]*	***[1]***
3		(2) EUROPA-ECLIPSE	WFPC2, IMAGE, PC1-FIX	F555W	CLOCKS=YES; CR-SPLIT=DEF; ATD-GAIN=15	SAME POS AS 1		300.0 Secs *[==>]*	***[1]***
4		(2) EUROPA-ECLIPSE	WFPC2, IMAGE, PC1-FIX	F380W	CLOCKS=YES; CR-SPLIT=DEF; ATD-GAIN=15	SAME POS AS 1		400.0 Secs *[==>]*	***[1]***
5		(2) EUROPA-ECLIPSE	WFPC2, IMAGE, PC1-FIX	F814W	CLOCKS=YES; CR-SPLIT=DEF; ATD-GAIN=15	SAME POS AS 1		400.0 Secs *[==>]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20070325
Moving Target Tracking
Exp. 5
Exp. 2
Unused Visibility = 8
Exp. 1
Exp. 3
Overhead
GS Acq
Setup
Exp. 4
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec