12976 - The Most Complete Template for r-process Nucleosynthesis beyond the Solar System

Cycle: 20, Proposal Category: GO

(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) HD108317	STIS/CCD STIS/NUV-MAMA	3	15-Jun-2012 21:04:28.0	yes
02	(1) HD108317	STIS/CCD STIS/NUV-MAMA	3	15-Jun-2012 21:04:41.0	yes
03	(1) HD108317	STIS/CCD STIS/NUV-MAMA	3	15-Jun-2012 21:04:52.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
04	(1) HD108317	STIS/CCD STIS/NUV-MAMA	3	15-Jun-2012 21:05:02.0	yes
05	(2) HD128279	STIS/CCD STIS/NUV-MAMA	5	15-Jun-2012 21:05:18.0	yes
06	(2) HD128279	STIS/CCD STIS/NUV-MAMA	5	15-Jun-2012 21:05:35.0	yes
07	(2) HD128279	STIS/CCD STIS/NUV-MAMA	5	15-Jun-2012 21:05:56.0	yes

27 Total Orbits Used

ABSTRACT

We propose to observe two metal-poor stars that present a unique opportunity to expand the chemical inventory to unprecedented levels in an environment beyond the solar system. The proposed observations will allow us to detect several key elements, including arsenic (As, Z=33) and selenium (Se, Z=34), that cannot be detected from the ground. These elements are key to understanding the nature of the r-process in the first generations of stars that drive chemical evolution of the Galaxy, yet their abundance in the one star where they have been detected is not fully explained by current models. We will use STIS to obtain high-resolution UV spectra from 1900 to 2380 Angstroms in two metal-poor stars enriched with modest but differing amounts of r-process material, HD 108317 and HD 128279. We will perform an abundance analysis and derive abundances or meaningful upper limits for the heavy elements Cu, Zn, Ge, As, Se, Zr, Mo, Cd, Te, Yb, Os, Ir, Pt, and Pb. This work is supported by recent laboratory experiments and theoretical studies that continue to provide data of wider interest to the atomic, nuclear, and astrophysics communities.

OBSERVING DESCRIPTION

We will use STIS to observe a 2 metal-poor stars that have been enriched by small amounts of r-process material to study elements rarely detected in late-type stellar atmospheres. The goal of these observations is to acquire as many photons as possible from 1900 to 2300A at R~30,000 for each star. There are no time constraints on the observations.

Visit

Proposal 12976, HD108317-1 (01) Sat Jun 16 01:06:06 GMT 2012

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/NUV-MAMA

Special Requirements: SCHED 100%

Fixed Targets

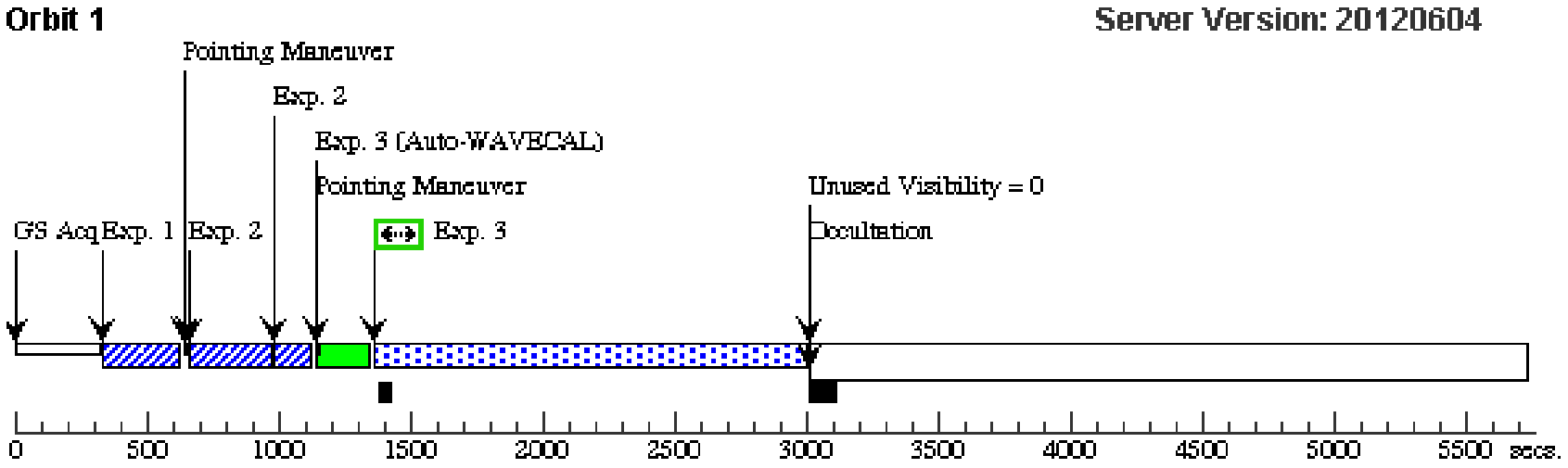
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD108317 Alt Name1: GSC00288-00288	RA: 12 26 36.8300 (186.6534583d) Dec: +05 18 9.03 (5.30251d) Equinox: J2000	Proper Motion RA: -166.39 mas/yr Proper Motion Dec: -24.49 mas/yr Parallax: 0.0057" Epoch of Position: 2000 Radial Velocity: +6.0 km/sec	V=8.03+/-0.02 (B-V)=0.60+/-0.05, E(B-V)=0.02+/-0.02, TYPE=G5III	Reference Frame: ICRS

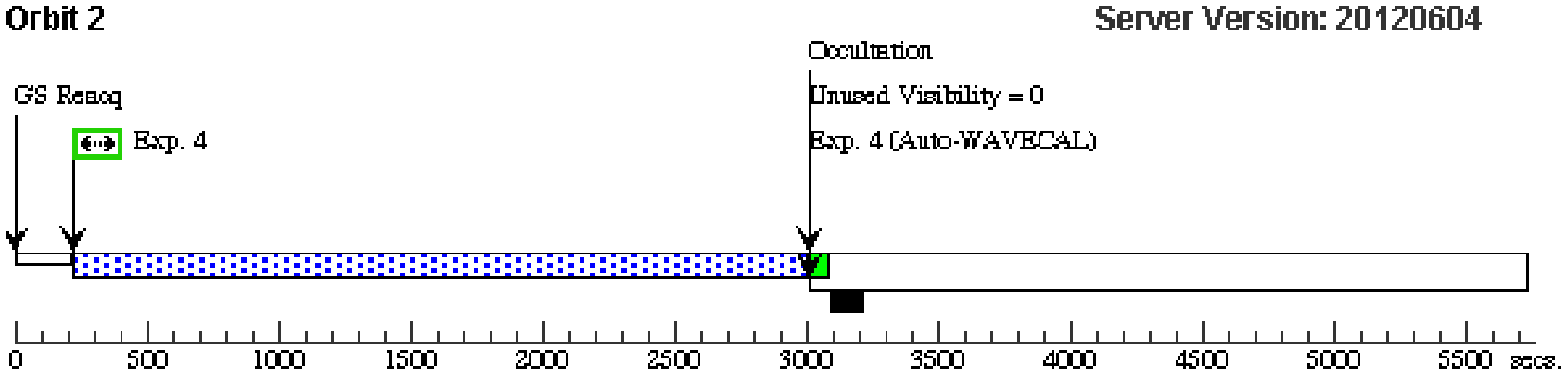
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

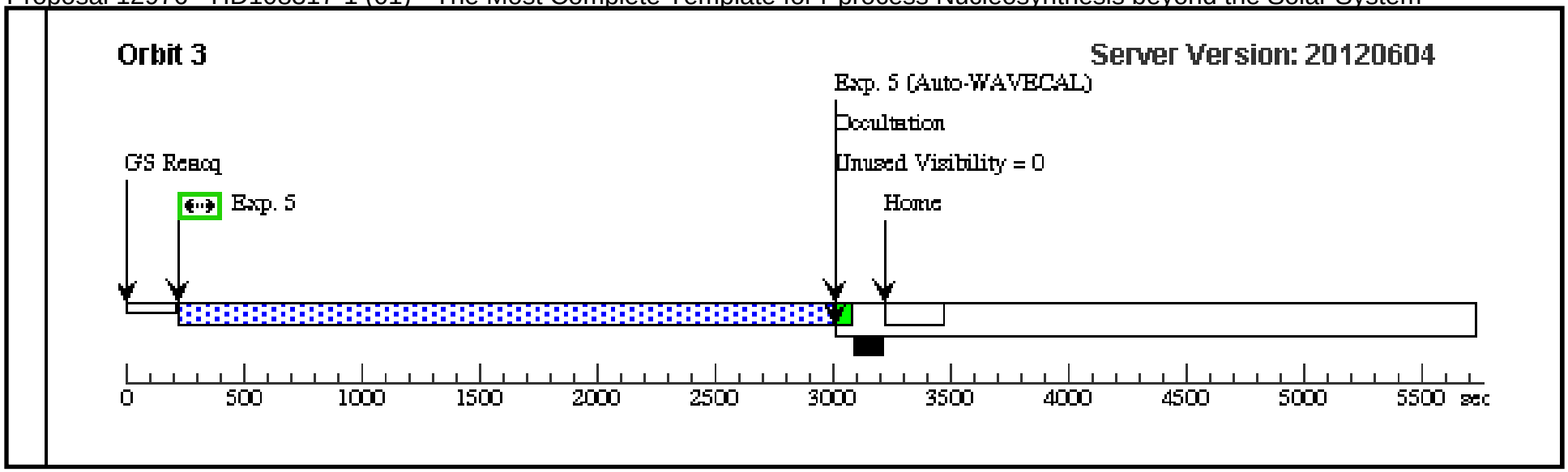
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	hd108317 - 1 - ACQ	(1) HD108317	STIS/CCD, ACQ, F25ND3	MIRROR				1 Secs *[==>]*	*[1]*
2	hd108317 - 1 - ACQ/PEAK	(1) HD108317	STIS/CCD, ACQ/PEAK, 0.2X0.05ND	MIRROR				1 Secs *[==>]*	*[1]*
3	hd108317 - 1 - science1 (STIS.sp.407453)	(1) HD108317	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				2100 Secs *[==>1625.0 Secs]*	*[1]*
4	hd108317 - 1 - science2 (STIS.sp.407453)	(1) HD108317	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				3000 Secs *[==>2763.0 Secs]*	*[2]*
5	hd108317 - 1 - science3 (STIS.sp.407453)	(1) HD108317	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				3000 Secs *[==>2763.0 Secs]*	*[3]*

Orbit Structure



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Server Version: 20120604
Exp. 5 (Auto-WAVECAL)
Occultation
Unused Visibility = 0
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Exp. 5
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sec

Visit

Proposal 12976, HD108317-2 (02) Sat Jun 16 01:06:11 GMT 2012

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/NUV-MAMA

Special Requirements: SCHED 100%

Fixed Targets

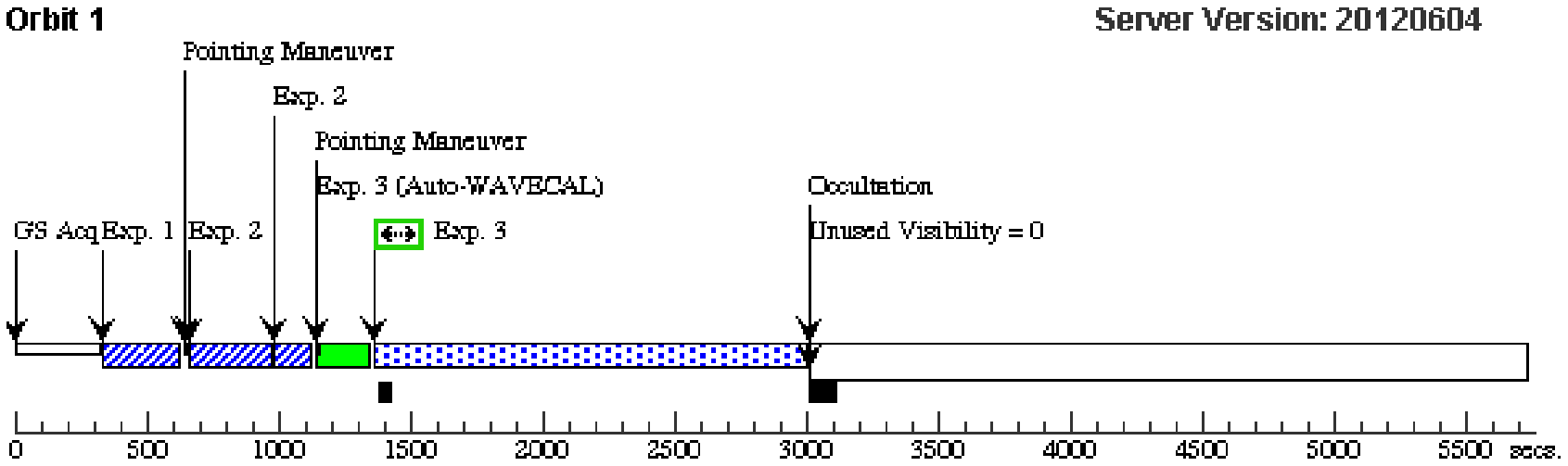
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD108317 Alt Name1: GSC00288-00288	RA: 12 26 36.8300 (186.6534583d) Dec: +05 18 9.03 (5.30251d) Equinox: J2000	Proper Motion RA: -166.39 mas/yr Proper Motion Dec: -24.49 mas/yr Parallax: 0.0057" Epoch of Position: 2000 Radial Velocity: +6.0 km/sec	V=8.03+/-0.02 (B-V)=0.60+/-0.05, E(B-V)=0.02+/-0.02, TYPE=G5III	Reference Frame: ICRS

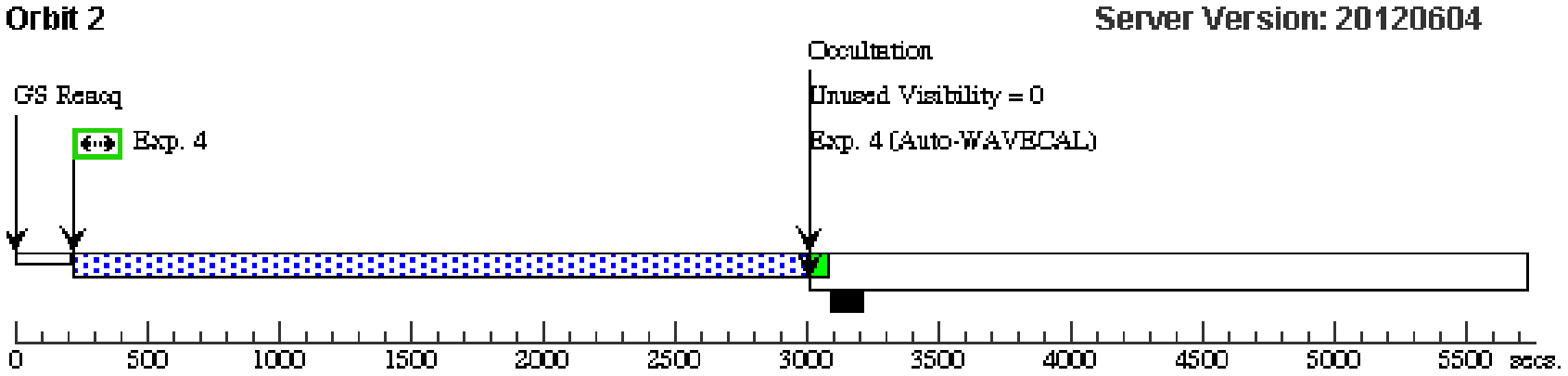
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

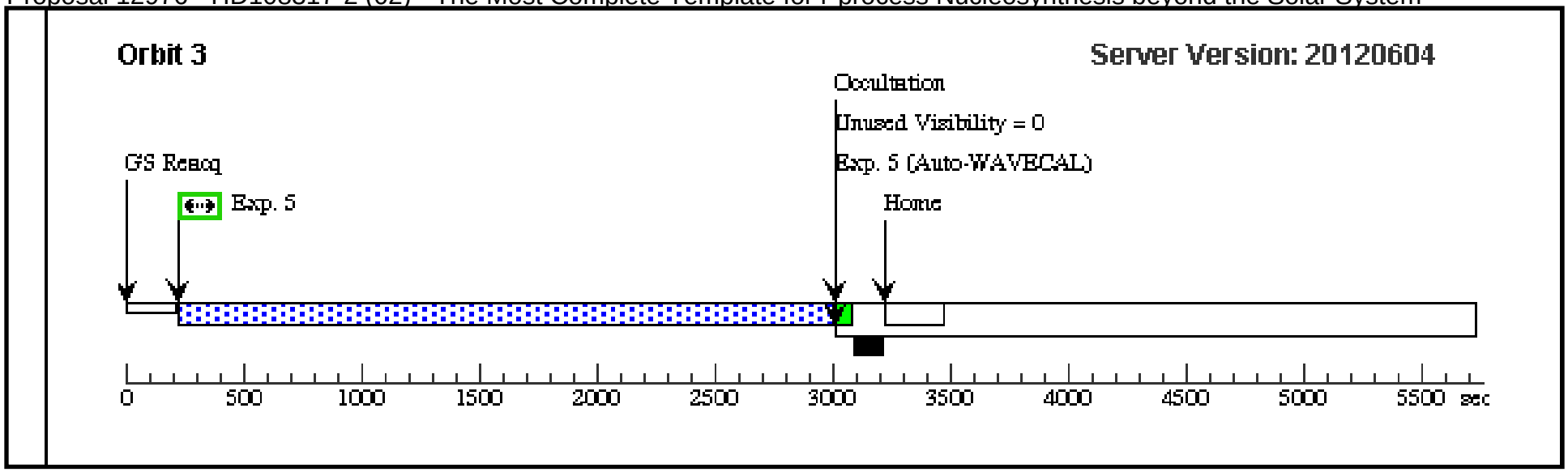
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	hd108317 - 2 - ACQ	(1) HD108317	STIS/CCD, ACQ, F25ND3	MIRROR				1 Secs *[==>]*	*[1]*
2	hd108317 - 2 - ACQ/PEAK	(1) HD108317	STIS/CCD, ACQ/PEAK, 0.2X0.05ND	MIRROR				1 Secs *[==>]*	*[1]*
3	hd108317 - 2 - science1 (STIS.sp.407453)	(1) HD108317	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				2100 Secs *[==>1625.0 Secs]*	*[1]*
4	hd108317 - 2 - science2 (STIS.sp.407453)	(1) HD108317	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				3000 Secs *[==>2763.0 Secs]*	*[2]*
5	hd108317 - 2 - science3 (STIS.sp.407453)	(1) HD108317	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				3000 Secs *[==>2763.0 Secs]*	*[3]*

Orbit Structure



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GS Reacq
Exp. 5
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sec

Visit

Proposal 12976, HD108317-3 (03) Sat Jun 16 01:06:14 GMT 2012

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/NUV-MAMA

Special Requirements: SCHED 100%

Fixed Targets

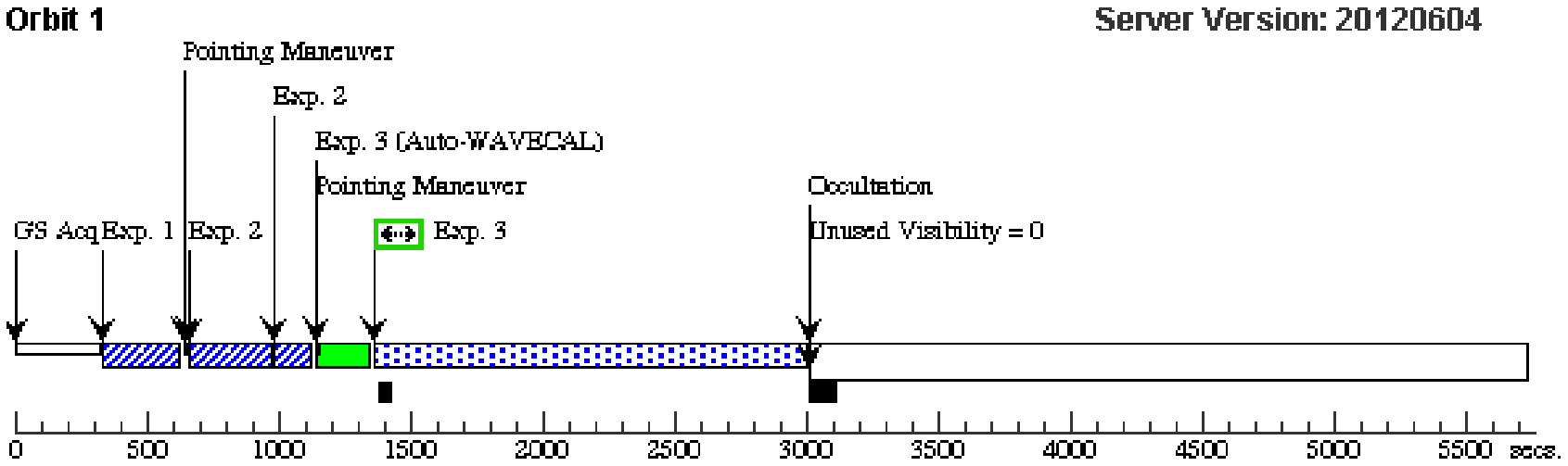
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD108317 Alt Name1: GSC00288-00288	RA: 12 26 36.8300 (186.6534583d) Dec: +05 18 9.03 (5.30251d) Equinox: J2000	Proper Motion RA: -166.39 mas/yr Proper Motion Dec: -24.49 mas/yr Parallax: 0.0057" Epoch of Position: 2000 Radial Velocity: +6.0 km/sec	V=8.03+/-0.02 (B-V)=0.60+/-0.05, E(B-V)=0.02+/-0.02, TYPE=G5III	Reference Frame: ICRS

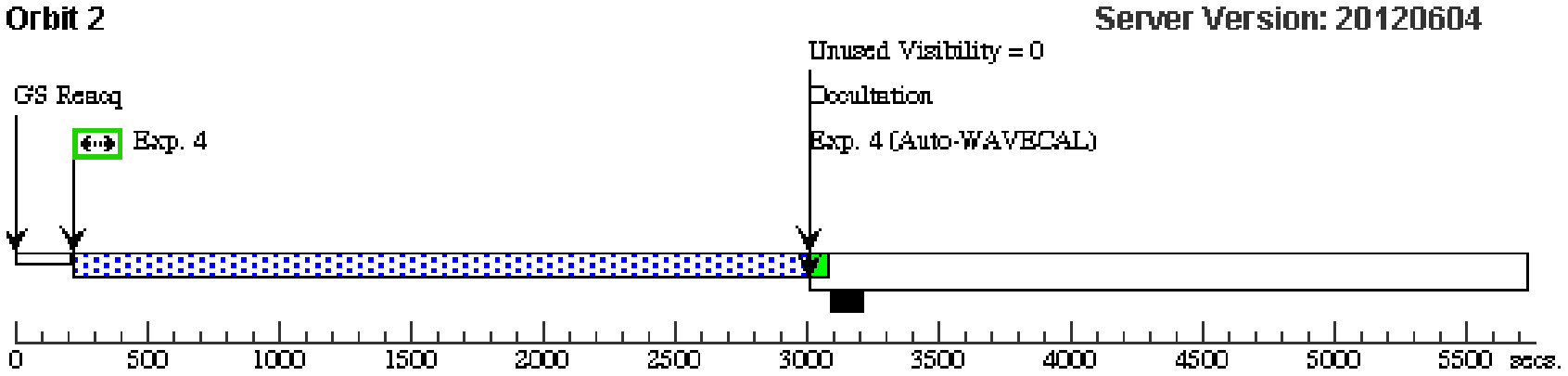
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

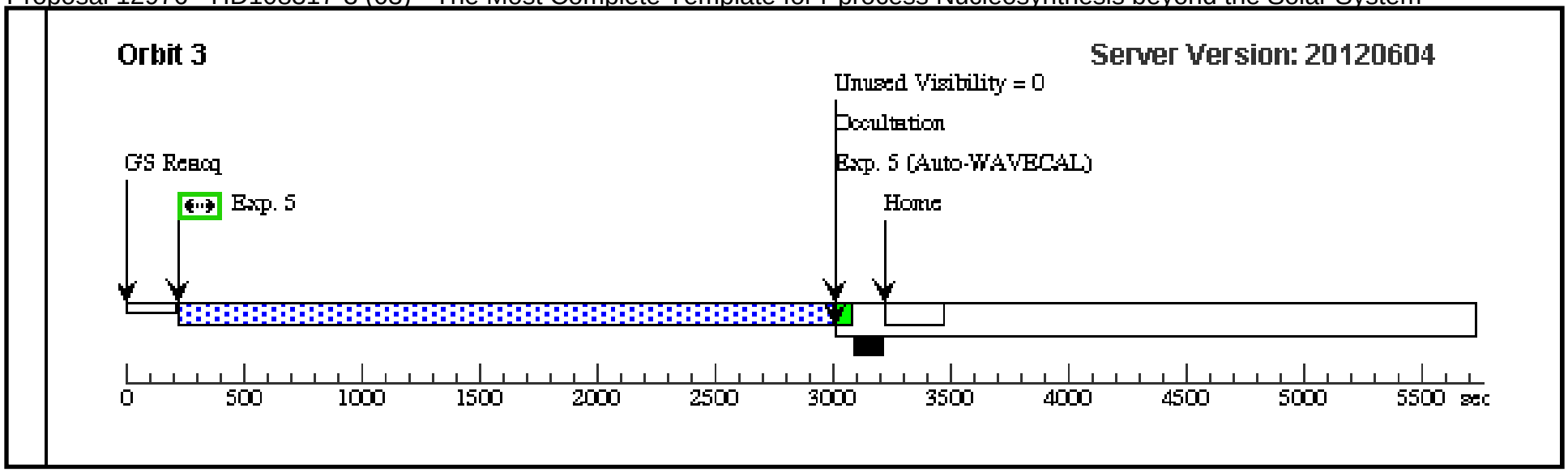
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	hd108317 - 3 - ACQ	(1) HD108317	STIS/CCD, ACQ, F25ND3	MIRROR				1 Secs *[==>]*	*[1]*
2	hd108317 - 3 - ACQ/PEAK	(1) HD108317	STIS/CCD, ACQ/PEAK, 0.2X0.05ND	MIRROR				1 Secs *[==>]*	*[1]*
3	hd108317 - 3 - science1 (STIS.sp.407453)	(1) HD108317	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				2100 Secs *[==>1625.0 Secs]*	*[1]*
4	hd108317 - 3 - science2 (STIS.sp.407453)	(1) HD108317	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				3000 Secs *[==>2763.0 Secs]*	*[2]*
5	hd108317 - 3 - science3 (STIS.sp.407453)	(1) HD108317	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				3000 Secs *[==>2763.0 Secs]*	*[3]*

Orbit Structure



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Visit

Proposal 12976, HD108317-4 (04) Sat Jun 16 01:06:17 GMT 2012

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/NUV-MAMA

Special Requirements: SCHED 100%

Fixed Targets

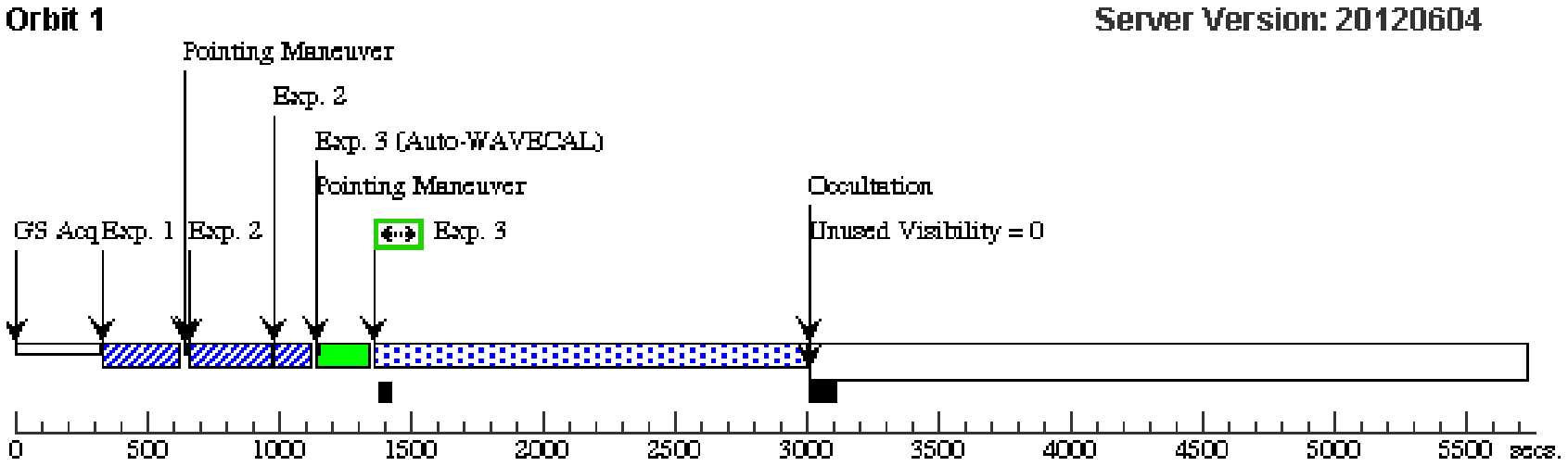
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD108317 Alt Name1: GSC00288-00288	RA: 12 26 36.8300 (186.6534583d) Dec: +05 18 9.03 (5.30251d) Equinox: J2000	Proper Motion RA: -166.39 mas/yr Proper Motion Dec: -24.49 mas/yr Parallax: 0.0057" Epoch of Position: 2000 Radial Velocity: +6.0 km/sec	V=8.03+/-0.02 (B-V)=0.60+/-0.05, E(B-V)=0.02+/-0.02, TYPE=G5III	Reference Frame: ICRS

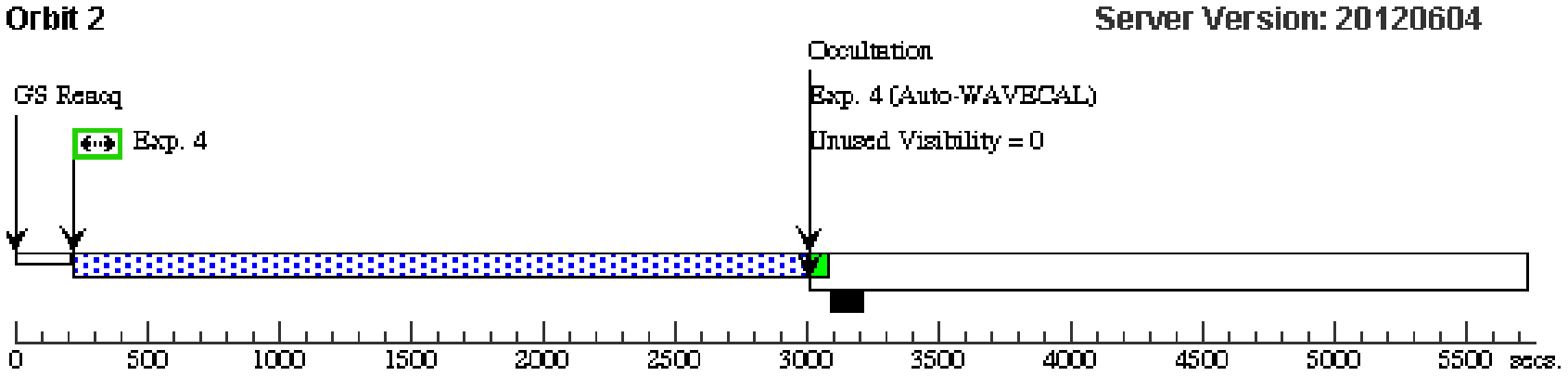
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

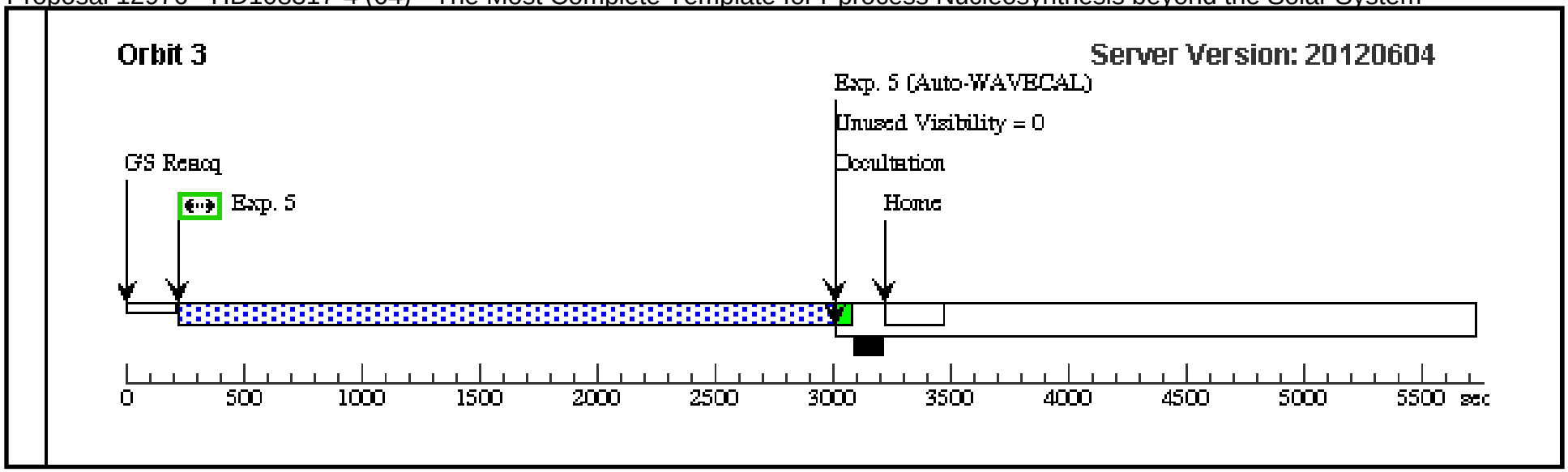
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	hd108317 - 4 - ACQ	(1) HD108317	STIS/CCD, ACQ, F25ND3	MIRROR				1 Secs *[==>]*	*[1]*
2	hd108317 - 4 - ACQ/PEAK	(1) HD108317	STIS/CCD, ACQ/PEAK, 0.2X0.05ND	MIRROR				1 Secs *[==>]*	*[1]*
3	hd108317 - 4 - science1 (STIS.sp.407453)	(1) HD108317	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				2100 Secs *[==>1625.0 Secs]*	*[1]*
4	hd108317 - 4 - science2 (STIS.sp.407453)	(1) HD108317	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				3000 Secs *[==>2763.0 Secs]*	*[2]*
5	hd108317 - 4 - science3 (STIS.sp.407453)	(1) HD108317	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				3000 Secs *[==>2763.0 Secs]*	*[3]*

Orbit Structure



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Occultation
GS Reacq
Exp. 5
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Visit

Proposal 12976, HD128279-1 (05) Sat Jun 16 01:06:19 GMT 2012

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/NUV-MAMA

Special Requirements: (none)

Fixed Targets

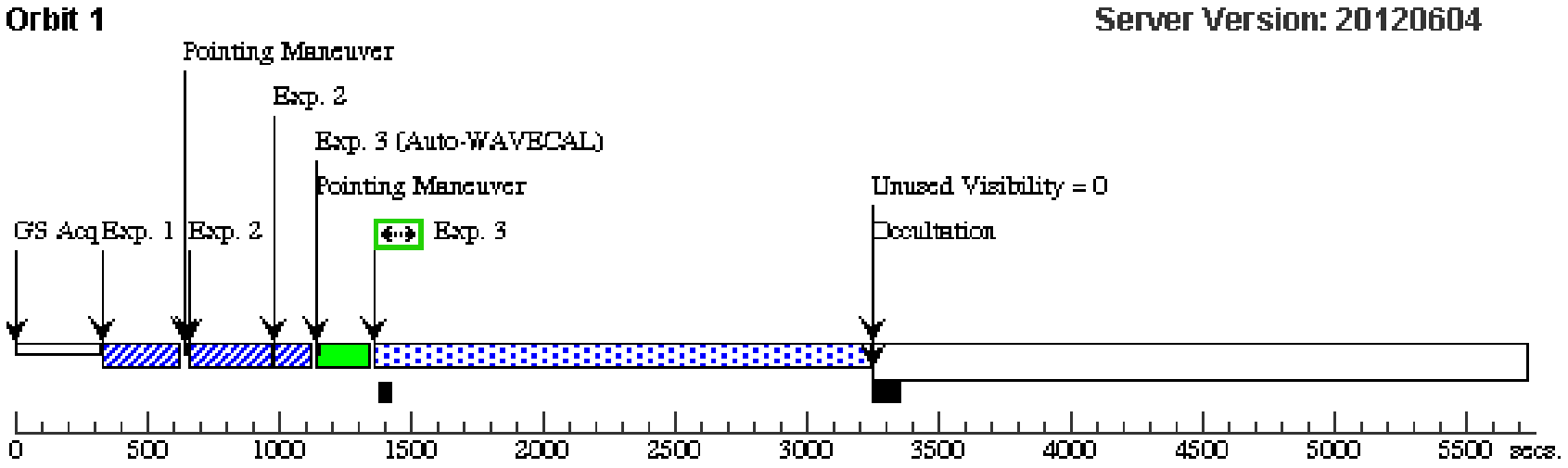
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	HD128279	RA: 14 36 48.5110 (219.2021292d) Dec: -29 06 46.65 (-29.11296d) Equinox: J2000	Proper Motion RA: +62.11 mas/yr Proper Motion Dec: -342.6 mas/yr Parallax: 0.0061" Epoch of Position: 2000 Radial Velocity: -76.0 km/sec	V=7.97+/-0.05 (B-V)=0.60+/-0.05, E(B-V)=0.10+/-0.05, TYPE=G5III	Reference Frame: ICRS

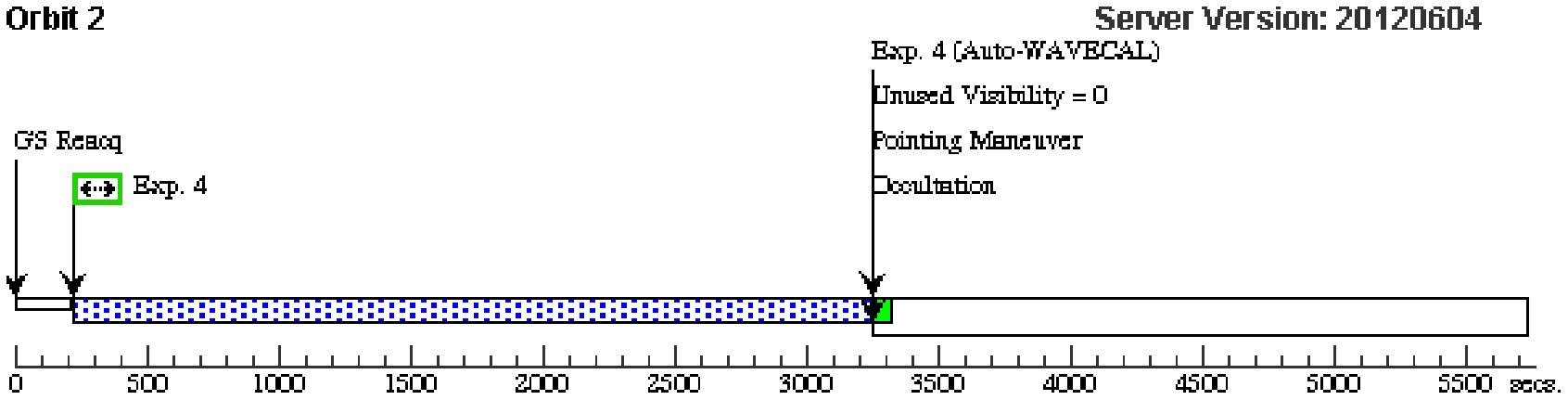
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

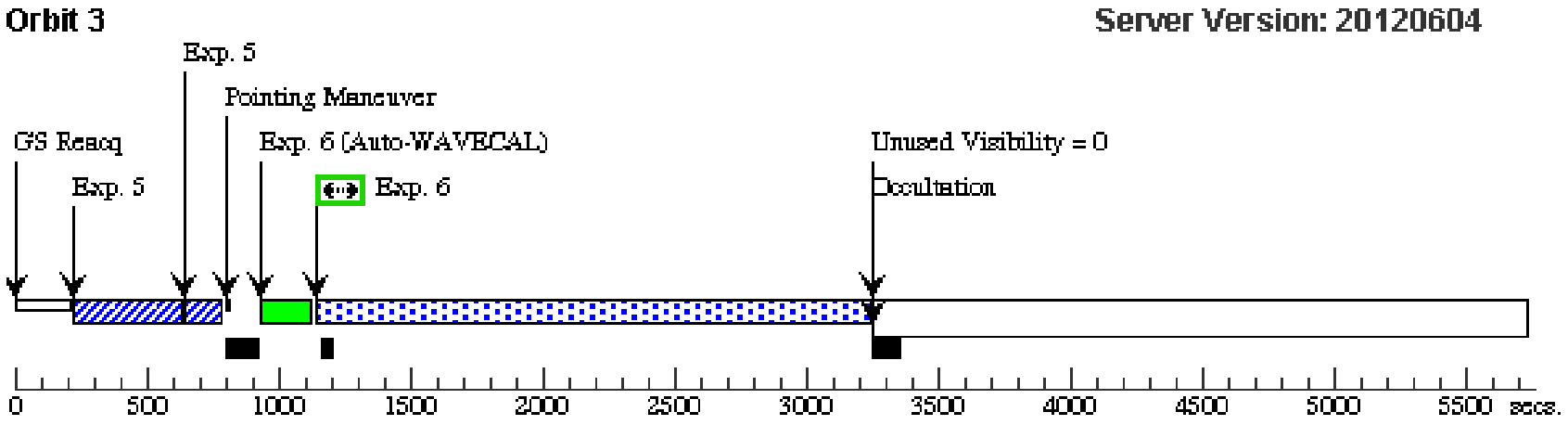
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	HD128279 - 1 - ACQ	(2) HD128279	STIS/CCD, ACQ, F25ND3	MIRROR				1 Secs *[==>]*	***[1]***
2	HD128279 - 1 - ACQ/PEAK	(2) HD128279	STIS/CCD, ACQ/PEAK, 0.2X0.05ND	MIRROR				1 Secs *[==>]*	***[1]***
3	HD128279 - 1 - science1 (STIS.sp.407454)	(2) HD128279	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				1900 Secs *[==>1863.0 Secs]*	***[1]***
4	HD128279 - 1 - science2 (STIS.sp.407454)	(2) HD128279	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				3100 Secs *[==>3001.0 Secs]*	***[2]***
5	HD128279 - 1 - ACQ/PEAK	(2) HD128279	STIS/CCD, ACQ/PEAK, 0.2X0.05ND	MIRROR				1 Secs *[==>]*	***[3]***
6	HD128279 - 1 - science3 (STIS.sp.407454)	(2) HD128279	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				2100 Secs *[==>2082.0 Secs]*	***[3]***
7	HD128279 - 1 - science4 (STIS.sp.407454)	(2) HD128279	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				3100 Secs *[==>3001.0 Secs]*	***[4]***
8	HD128279 - 1 - science5 (STIS.sp.407454)	(2) HD128279	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				3100 Secs *[==>3001.0 Secs]*	***[5]***

Orbit Structure



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Exp. 6
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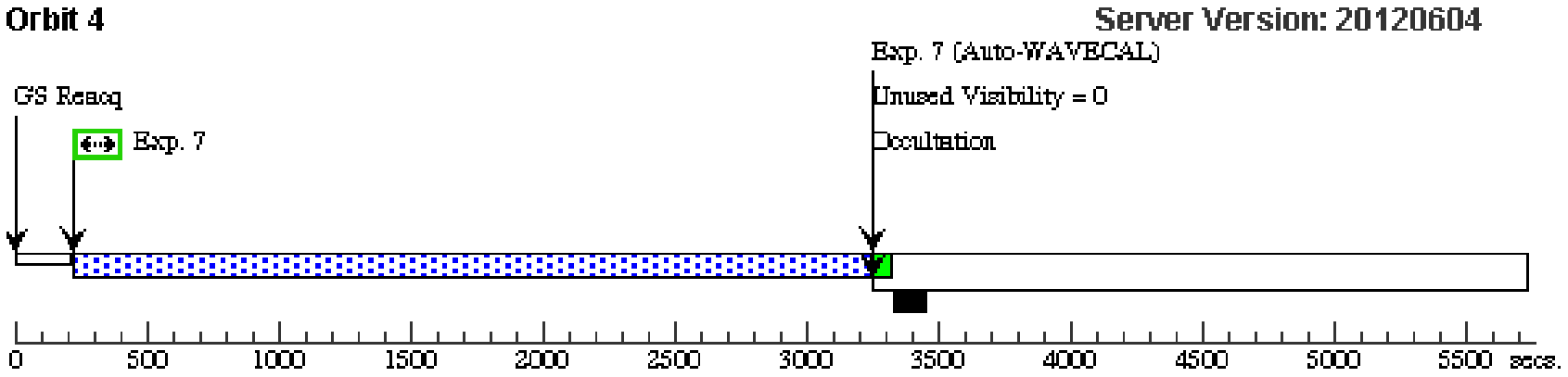
secs.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Exp. 7 (Auto-WAVECAL)
GS Reacq
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Exp. 7
Occultation
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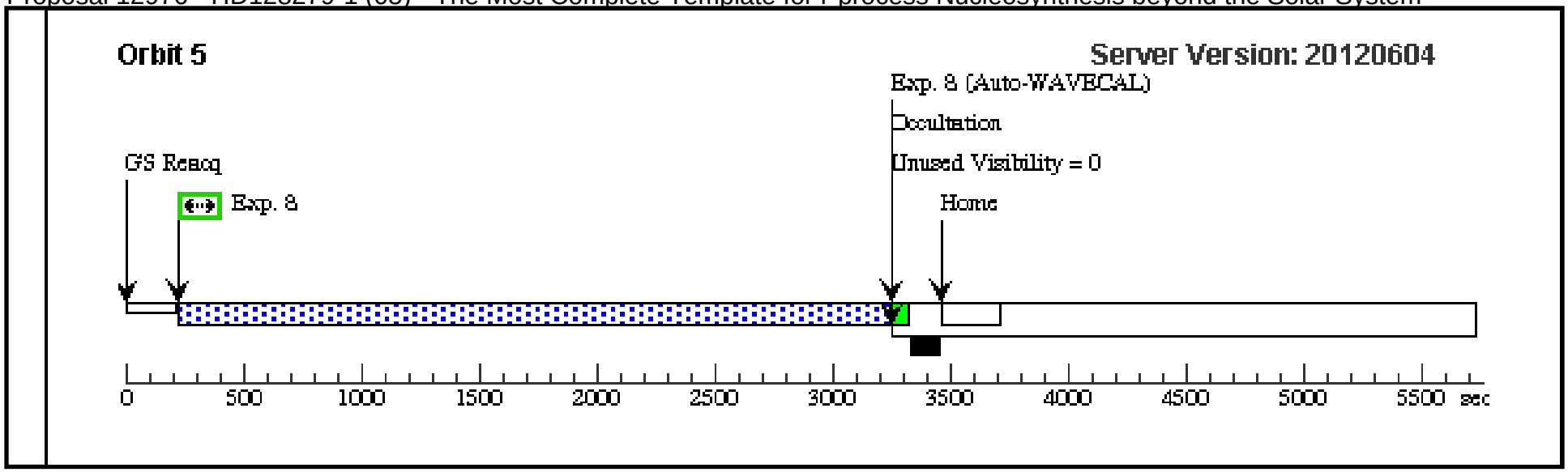
secs.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Visit

Proposal 12976, HD128279-2 (06) Sat Jun 16 01:06:24 GMT 2012

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/NUV-MAMA

Special Requirements: (none)

Fixed Targets

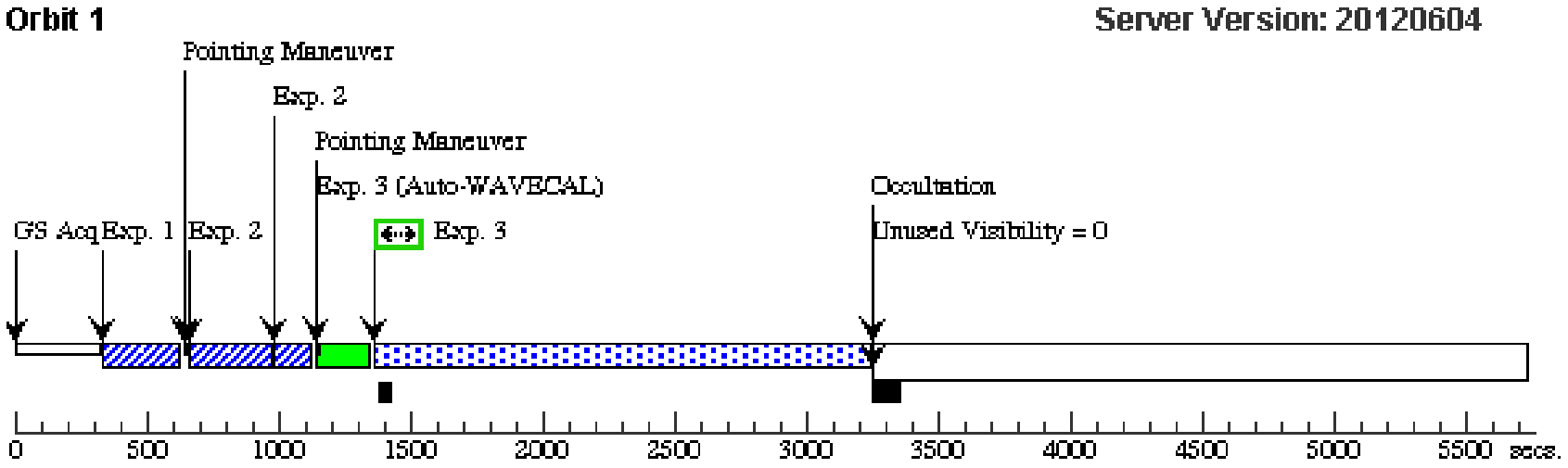
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	HD128279	RA: 14 36 48.5110 (219.2021292d) Dec: -29 06 46.65 (-29.11296d) Equinox: J2000	Proper Motion RA: +62.11 mas/yr Proper Motion Dec: -342.6 mas/yr Parallax: 0.0061" Epoch of Position: 2000 Radial Velocity: -76.0 km/sec	V=7.97+/-0.05 (B-V)=0.60+/-0.05, E(B-V)=0.10+/-0.05, TYPE=G5III	Reference Frame: ICRS

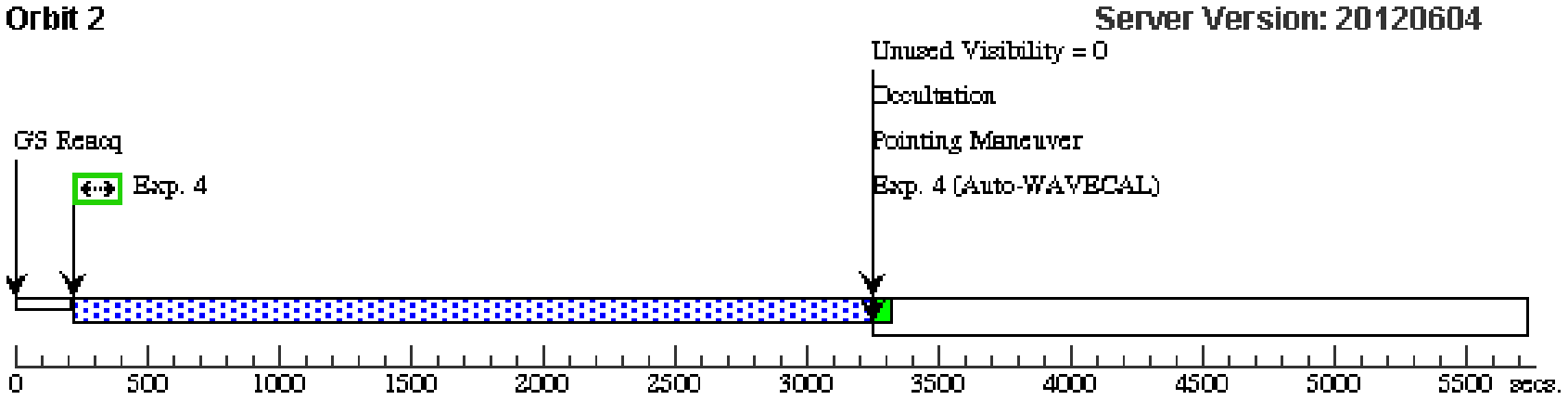
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

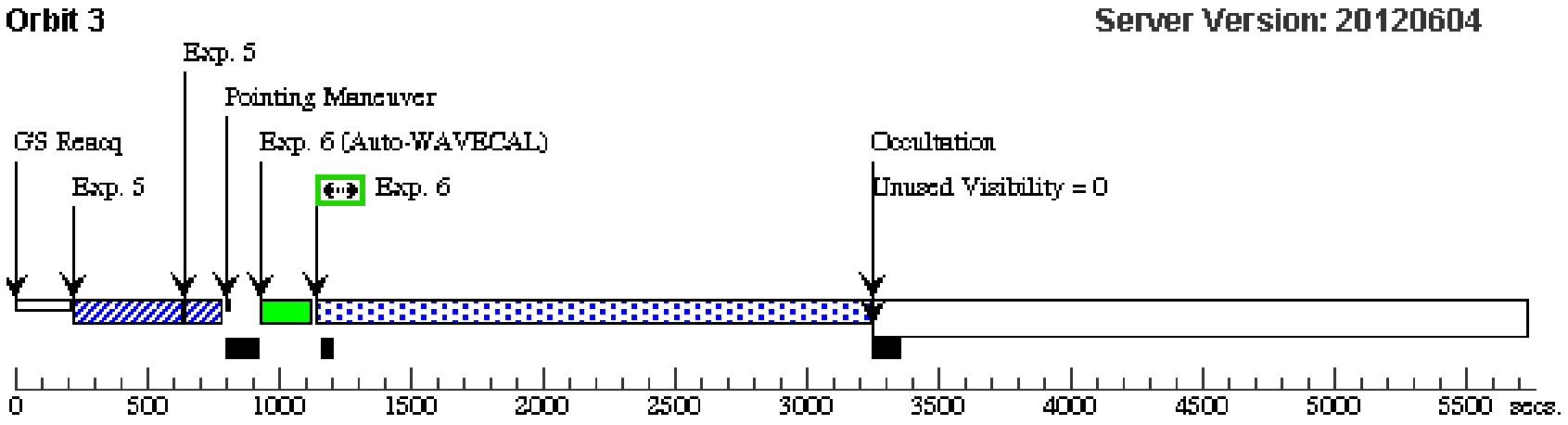
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	HD128279 - 2 - ACQ	(2) HD128279	STIS/CCD, ACQ, F25ND3	MIRROR				1 Secs *[==>]*	*[1]*
2	HD128279 - 2 - ACQ/PEAK	(2) HD128279	STIS/CCD, ACQ/PEAK, 0.2X0.05ND	MIRROR				1 Secs *[==>]*	*[1]*
3	HD128279 - 2 - science1 (STIS.sp.407454)	(2) HD128279	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				1900 Secs *[==>1863.0 Secs]*	*[1]*
4	HD128279 - 2 - science2 (STIS.sp.407454)	(2) HD128279	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				3100 Secs *[==>3001.0 Secs]*	*[2]*
5	HD128279 - 2 - ACQ/PEAK	(2) HD128279	STIS/CCD, ACQ/PEAK, 0.2X0.05ND	MIRROR				1 Secs *[==>]*	*[3]*
6	HD128279 - 2 - science3 (STIS.sp.407454)	(2) HD128279	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				2100 Secs *[==>2082.0 Secs]*	*[3]*
7	HD128279 - 2 - science4 (STIS.sp.407454)	(2) HD128279	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				3100 Secs *[==>3001.0 Secs]*	*[4]*
8	HD128279 - 2 - science5 (STIS.sp.407454)	(2) HD128279	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				3100 Secs *[==>3001.0 Secs]*	*[5]*

Orbit Structure



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Exp. 5
Pointing Maneuver
GS Reacq
Exp. 6 (Auto-WAVECAL)
Occultation
Exp. 5
Exp. 6
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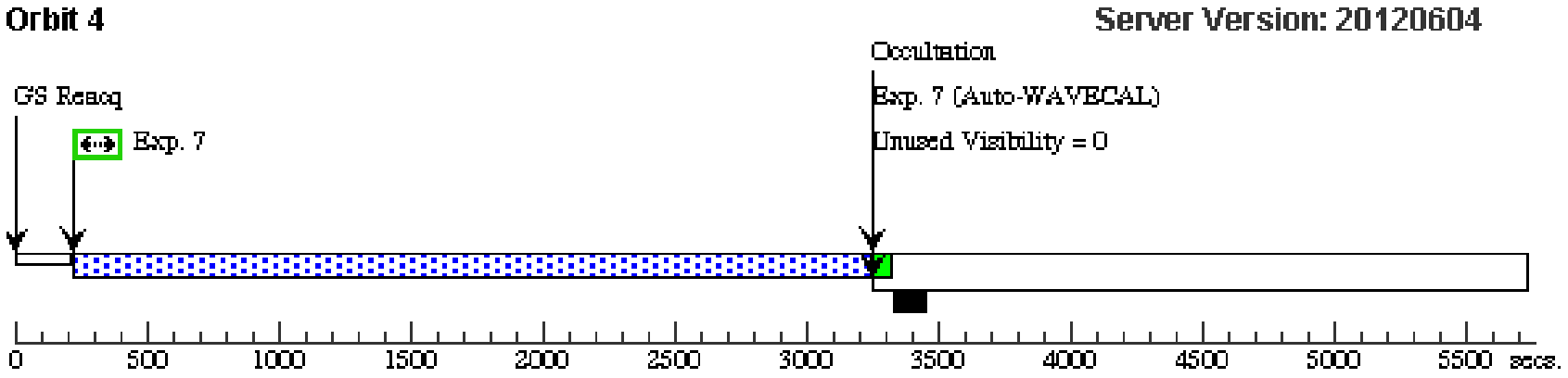
5000
5500
secs.


Orbit 4
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Occultation
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Exp. 7 (Auto-WAVECAL)
Exp. 7
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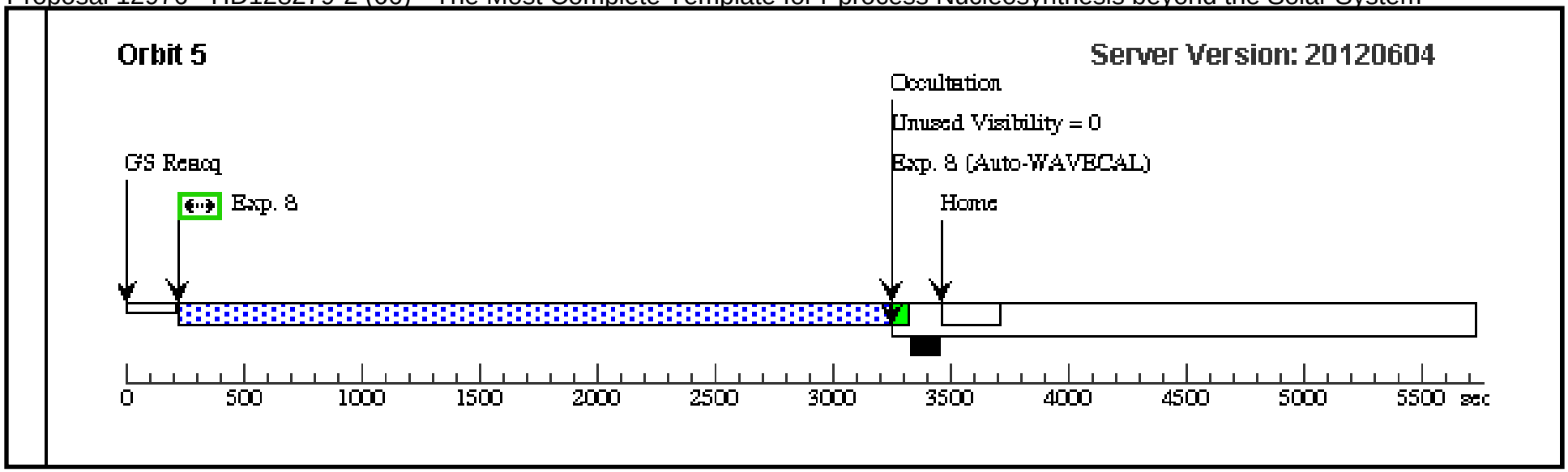
Orbit 5
Server Version: 20120604
Occultation
Unused Visibility = 0
Exp. 8 (Auto-WAVECAL)
GS Reacq
Exp. 8
Home
0
500
1000
1500
2000
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3000
3500
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4500
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5500
sec

Visit

Proposal 12976, HD128279-3 (07) Sat Jun 16 01:06:28 GMT 2012

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/NUV-MAMA

Special Requirements: (none)

Fixed Targets

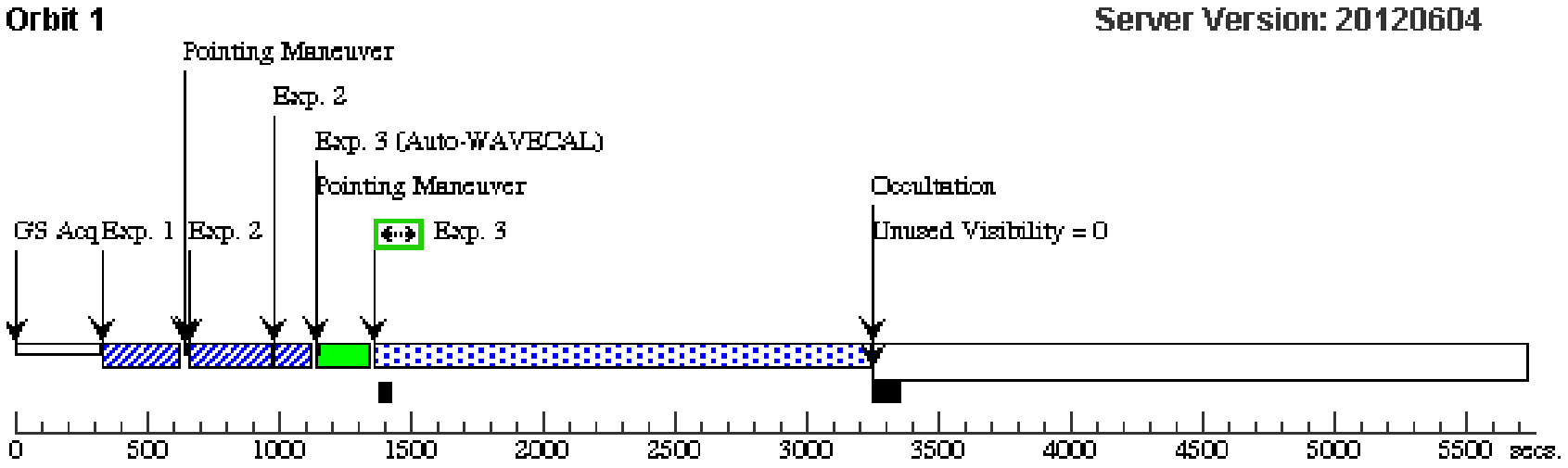
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	HD128279	RA: 14 36 48.5110 (219.2021292d) Dec: -29 06 46.65 (-29.11296d) Equinox: J2000	Proper Motion RA: +62.11 mas/yr Proper Motion Dec: -342.6 mas/yr Parallax: 0.0061" Epoch of Position: 2000 Radial Velocity: -76.0 km/sec	V=7.97+/-0.05 (B-V)=0.60+/-0.05, E(B-V)=0.10+/-0.05, TYPE=G5III	Reference Frame: ICRS

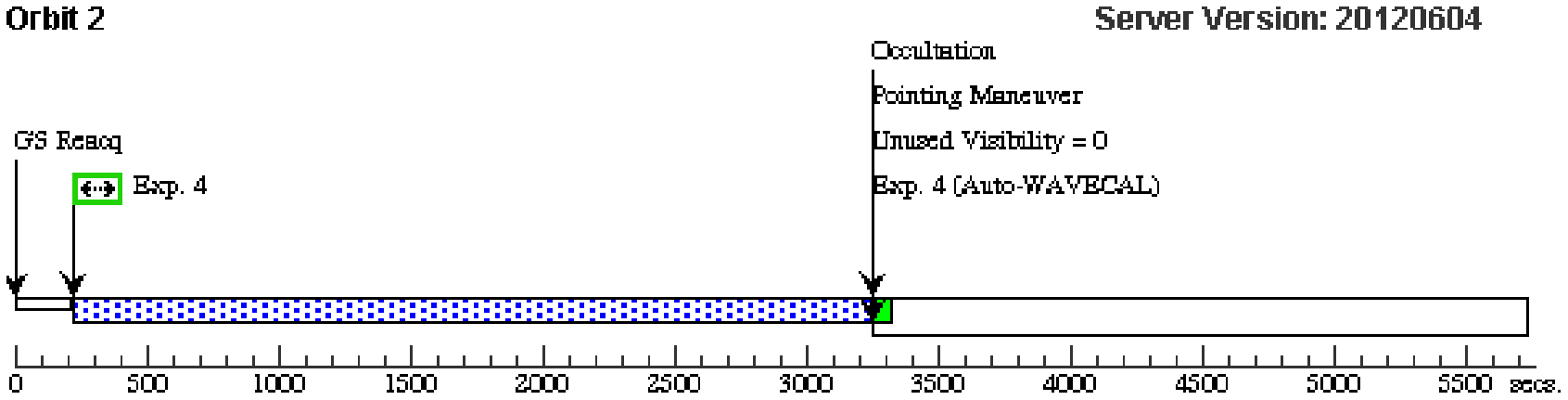
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

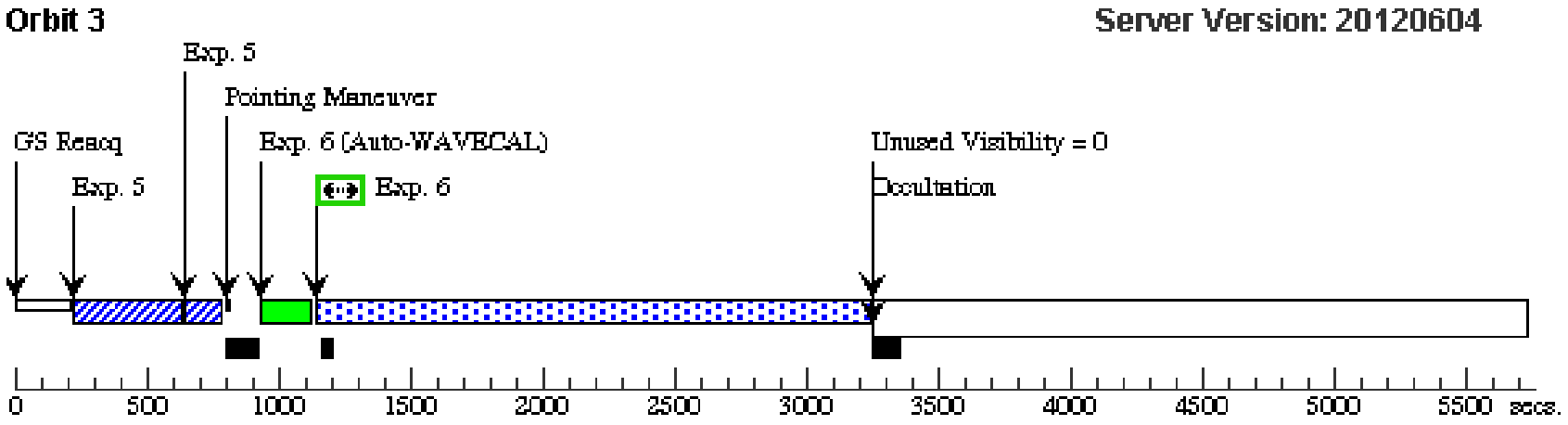
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	HD128279 - 3 - ACQ	(2) HD128279	STIS/CCD, ACQ, F25ND3	MIRROR				1 Secs *[==>]*	*[1]*
2	HD128279 - 3 - ACQ/PEAK	(2) HD128279	STIS/CCD, ACQ/PEAK, 0.2X0.05ND	MIRROR				1 Secs *[==>]*	*[1]*
3	HD128279 - 3 - science1 (STIS.sp.407454)	(2) HD128279	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				1900 Secs *[==>1863.0 Secs]*	*[1]*
4	HD128279 - 3 - science2 (STIS.sp.407454)	(2) HD128279	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				3100 Secs *[==>3001.0 Secs]*	*[2]*
5	HD128279 - 3 - ACQ/PEAK	(2) HD128279	STIS/CCD, ACQ/PEAK, 0.2X0.05ND	MIRROR				1 Secs *[==>]*	*[3]*
6	HD128279 - 3 - science3 (STIS.sp.407454)	(2) HD128279	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				2100 Secs *[==>2082.0 Secs]*	*[3]*
7	HD128279 - 3 - science4 (STIS.sp.407454)	(2) HD128279	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				3100 Secs *[==>3001.0 Secs]*	*[4]*
8	HD128279 - 3 - science5 (STIS.sp.407454)	(2) HD128279	STIS/NUV-MAMA, ACCUM, 0.2X0.06	E230M 1978 A				3100 Secs *[==>3001.0 Secs]*	*[5]*

Orbit Structure






Orbit 3
Server Version: 20120604
Exp. 5
Pointing Maneuver
GS Reacq
Exp. 6 (Auto-WAVECAL)
Unused Visibility = 0
Exp. 5
Exp. 6
Occultation
0
500
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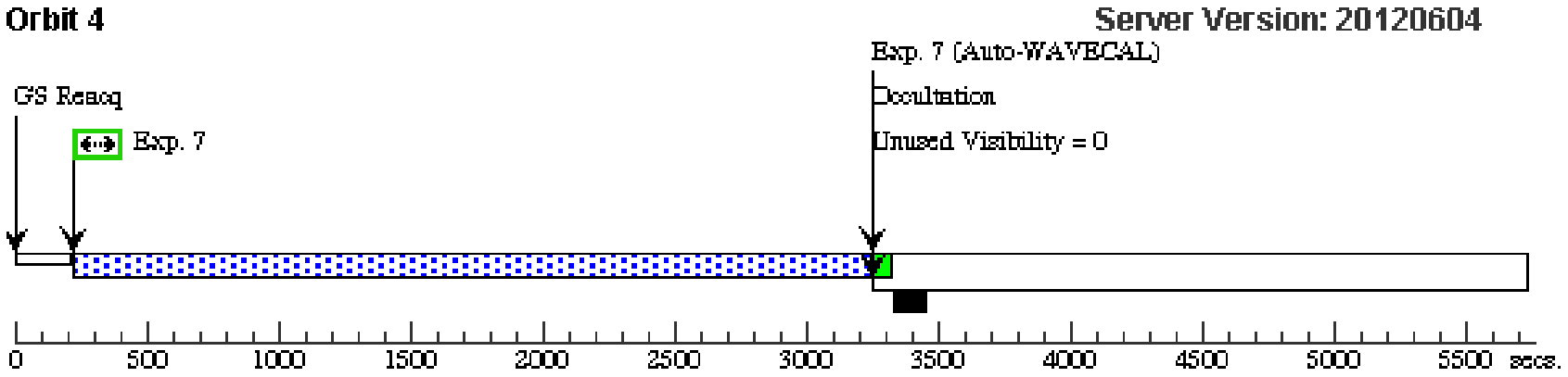
secs.


Orbit 4
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Exp. 7 (Auto-WAVECAL)
GS Reacq
Occultation
Exp. 7
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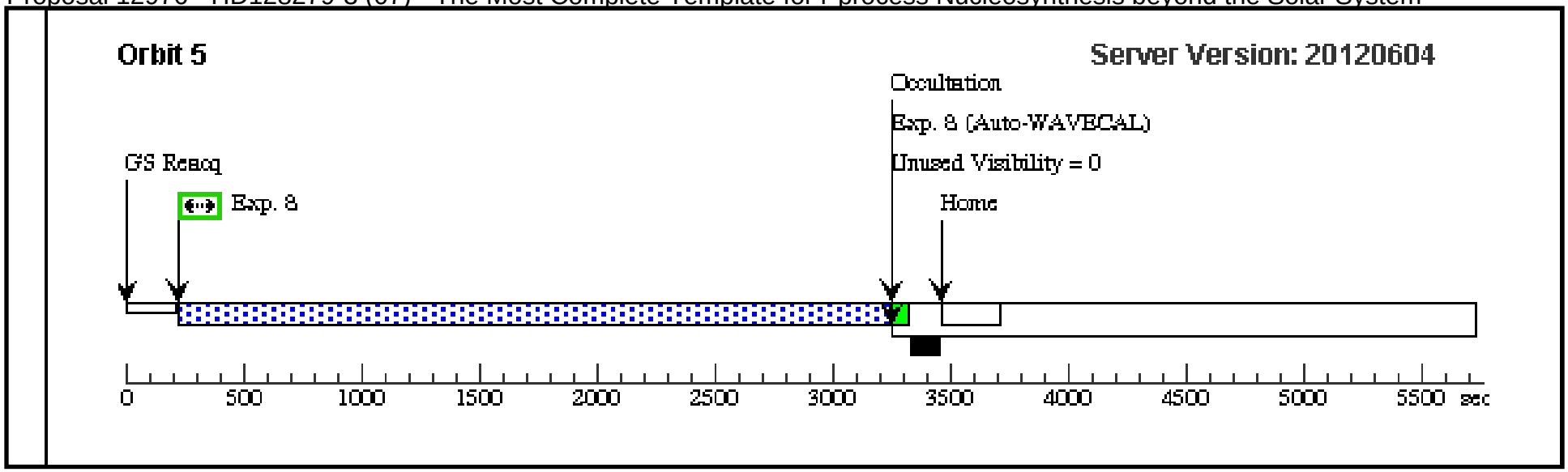
secs.


Orbit 5
Server Version: 20120604
Occultation
Exp. 8 (Auto-WAVECAL)
Unused Visibility = 0
GS Reacq
Exp. 8
Home
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sec