12904 - The Galactic Fountain Meets The Accreting Halo

Cycle: 20, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

Name	*Institution*	*E-Mail*
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Dr. Eric D. Miller (CoI)	Massachusetts Institute of Technology	milleric@mit.edu

VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) NGC891AGN	COS/NUV	4	14-Aug-2012 21:09:09.0	yes
02	(1) NGC891AGN	COS/FUV COS/NUV	4	14-Aug-2012 21:09:21.0	yes
03	(1) NGC891AGN	COS/FUV COS/NUV	5	14-Aug-2012 21:09:30.0	yes

13 Total Orbits Used

ABSTRACT

Galaxies grow by accretion of gas in addition to mergers, but the current accretion rate onto a typical spiral is uncertain by at least an order of magnitude. Gas can accrete hot and we observe X-ray emitting gas extending several kpc above the plane around spirals. This may be a hot accretion mode, a galactic fountain, or a combination. These phenomena are best studied around edge-on galaxies, where there is unambiguous height information. A unique set of conditions exist around the nearby edge-on galaxy NGC 891, which not only has an HI map and X-ray halo extending 10 kpc from the disk, it has a bright background AGN projected 5 kpc above the disk. Metal halo absorption lines of Fe II and Mg II are seen against the AGN continuum, offering the promise of using metallicities to differentiate between fountain gas, with near-solar metallicities, and

accreted gas with 0.1-0.3 solar metallicities. We cannot achieve those goals with these low resolution NUV STIS spectra, but the proposed COS observation will permit us to determine metallicities as a function of velocity through the rotating halo. Depletions onto grains will be inferred from elemental column density ratios. These observations will determine the relative importance of fountain vs accretion and will provide the most complete picture for the properties of a gaseous halo around a normal spiral galaxy.

OBSERVING DESCRIPTION

This program is designed to obtain spectra of an AGN projected behind the halo of an edge-on galaxy, NGC 891 for the purpose of characterizing the metallicity distribution in multiple elements.

Visit

Proposal 12904, NGC891nuvACQ (01), implementation Wed Aug 15 01:09:38 GMT 2012

Diagnostic Status: Warning

Scientific Instruments: COS/NUV

Special Requirements: SCHED 100%

Comments: NUV Acquistion Image

Diagnostics

(NGC891nuvACQ (01)) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS

(NGC891nuvACQ (01)) Warning (Form): If the target coordinates are not known to 0.4" (or better) an ACQ/SEARCH should precede the ACQ/IMAGE.

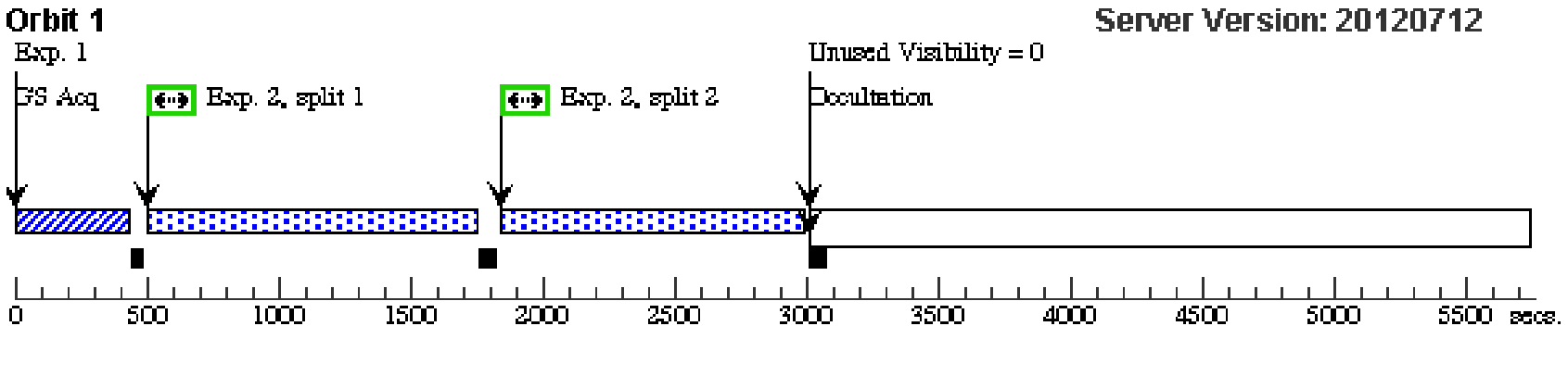
Fixed Targets

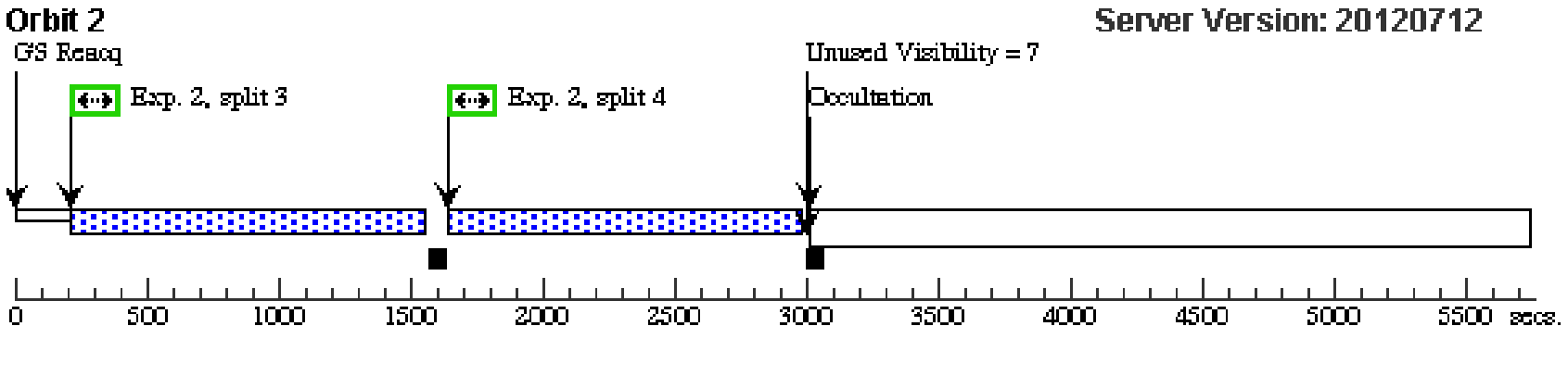
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	NGC891AGN	RA: 02 22 24.4600 (35.6019167d) Dec: +42 21 38.20 (42.36061d) Equinox: J2000		V=17.5+/-.5	Reference Frame: ICRS

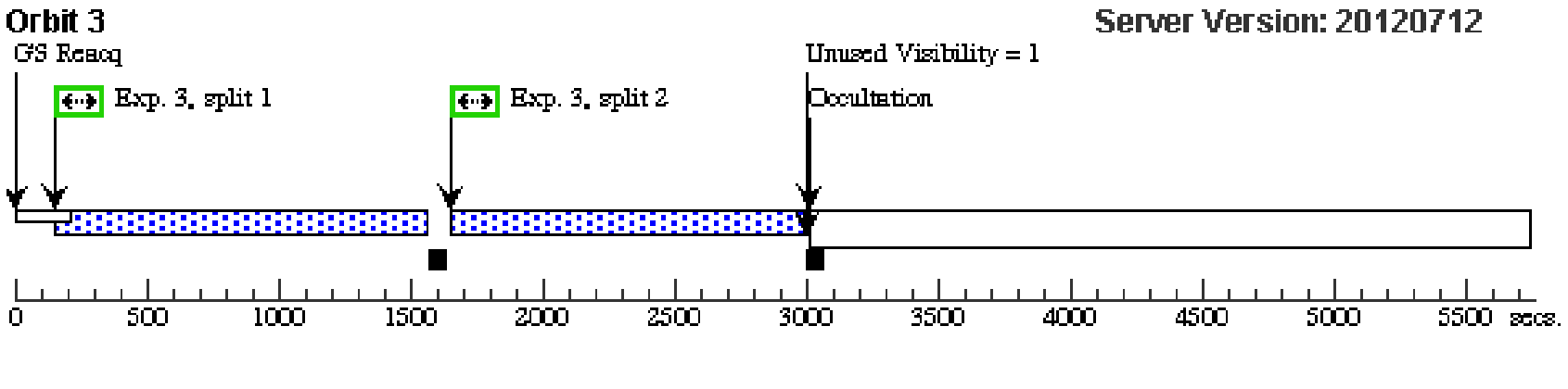
Exposures

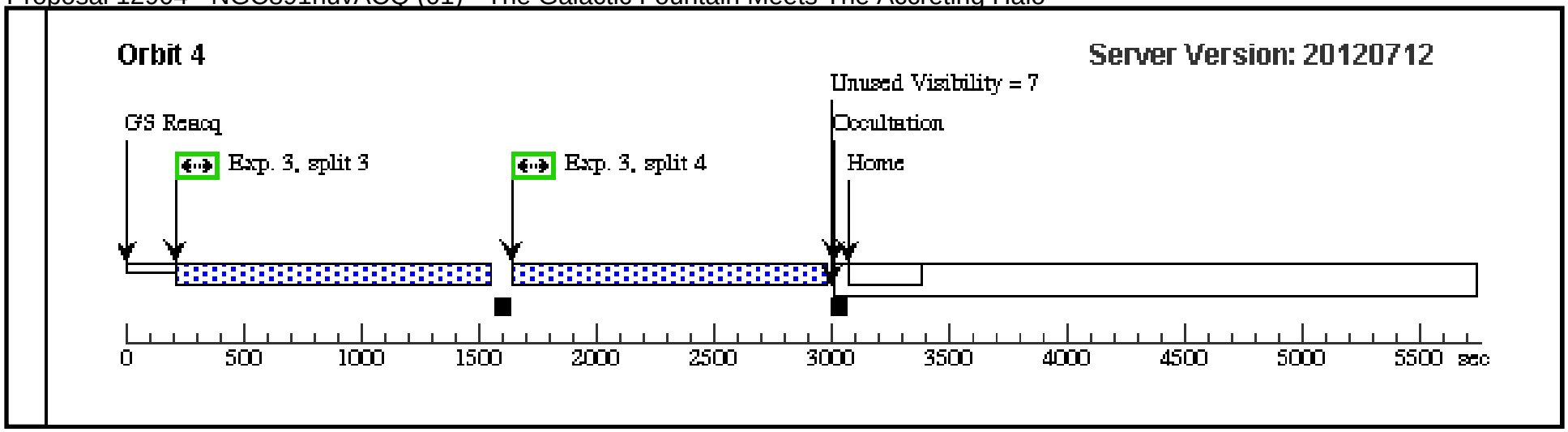
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	(417929)	(1) NGC891AGN	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				14 Secs	
								[==>]	***[1]***
2	(417788)	(1) NGC891AGN	COS/NUV, TIME-TAG, PSA	G230L 3360 A	BUFFER-TIME=2500; EXTENDED=NO; FP-POS=ALL; FLASH=YES			3030 Secs	
								[==>1137.0 Secs (Split 1)] *[==>1137.0 Secs (Split 2)]*	***[1]***
								[==>1324.0 Secs (Split 3)] *[==>1324.0 Secs (Split 4)]*	***[2]***
3	(417788)	(1) NGC891AGN	COS/NUV, TIME-TAG, PSA	G230L 3360 A	BUFFER-TIME=2500; EXTENDED=NO; FP-POS=ALL; FLASH=YES			3030 Secs	
								[==>1327.0 Secs (Split 1)] *[==>1327.0 Secs (Split 2)]*	***[3]***
								[==>1324.0 Secs (Split 3)] *[==>1324.0 Secs (Split 4)]*	***[4]***

Orbit Structure





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Exp. 3, split 4
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3000
3500
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4500
5000
5500
sec

Visit

Proposal 12904, NGC891fuv (02), implementation Wed Aug 15 01:09:42 GMT 2012

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: SCHED 100%

Diagnostics

(NGC891fuv (02)) Warning (Form): If the target coordinates are not known to 0.4" (or better) an ACQ/SEARCH should precede the ACQ/IMAGE.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	NGC891AGN	RA: 02 22 24.4600 (35.6019167d) Dec: +42 21 38.20 (42.36061d) Equinox: J2000		V=17.5+/-.5	Reference Frame: ICRS

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	(417929)	(1) NGC891AGN	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				14 Secs	
								[==>]	***[1]***
2	NGC891fuv (417789)	(1) NGC891AGN	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=6100; EXTENDED=NO; FP-POS=ALL; FLASH=YES			3030 Secs	
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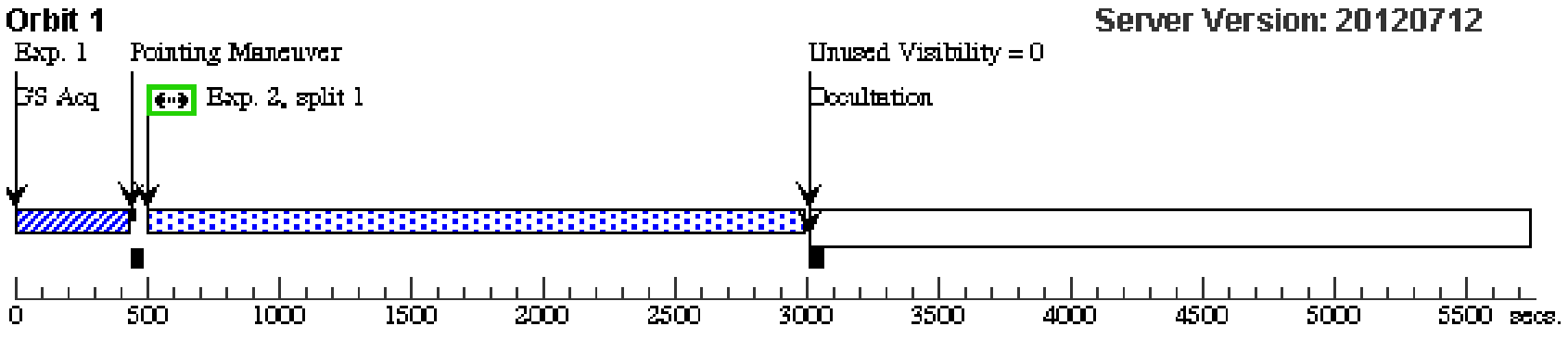
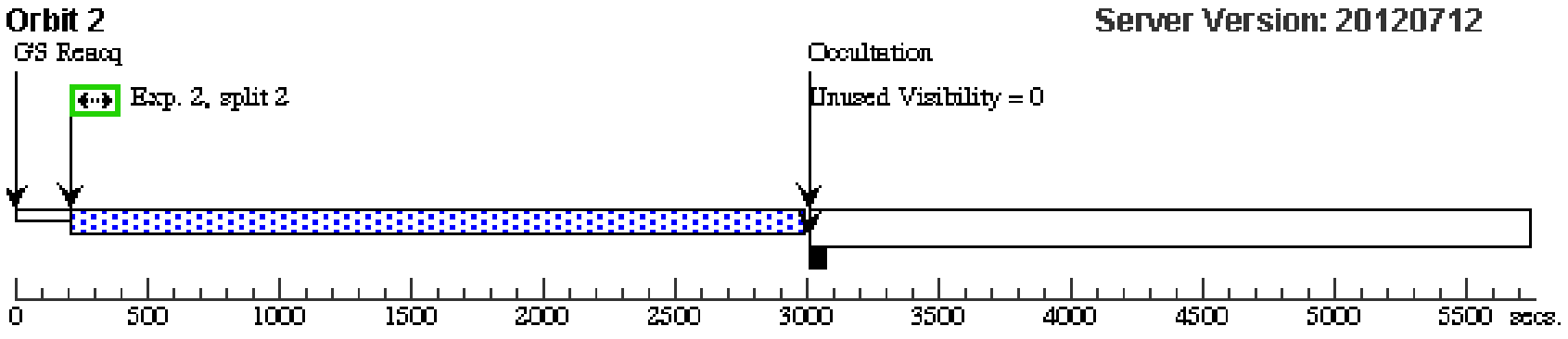
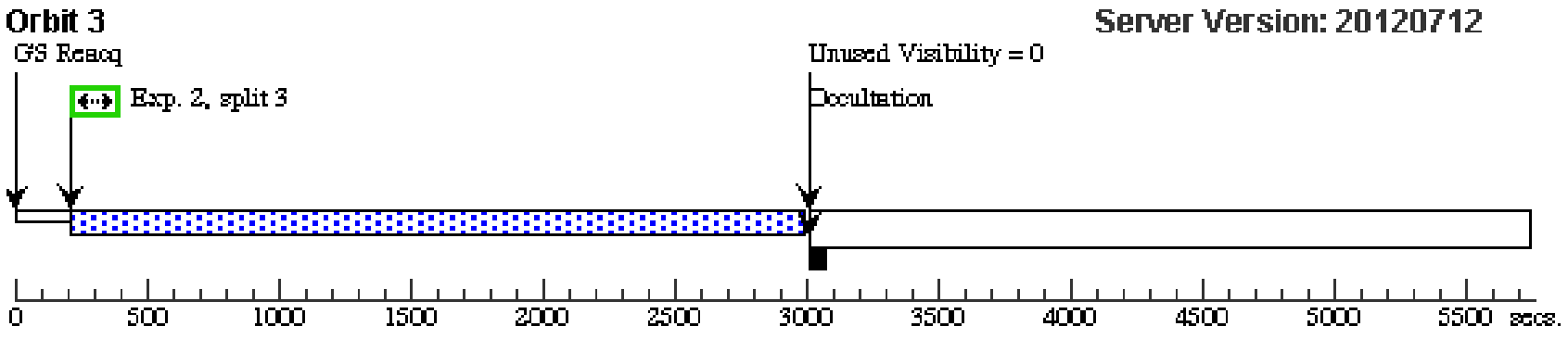
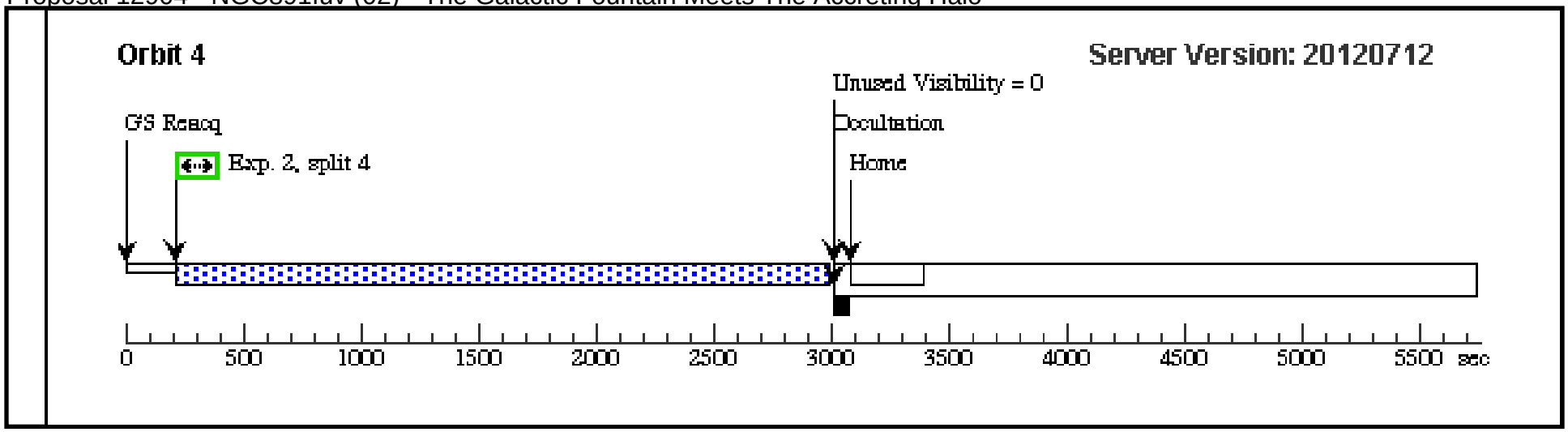
								[==>2724.0 Secs (Split 2)]	***[2]***
								[==>2724.0 Secs (Split 3)]	***[3]***
								[==>2724.0 Secs (Split 4)]	***[4]***

Orbit Structure





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GS Reacq
Occultation
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sec

Visit

Proposal 12904, NGC891fuv (03), implementation Wed Aug 15 01:09:46 GMT 2012

Diagnostic Status: Warning

Scientific Instruments: COS/NUV, COS/FUV

Special Requirements: SCHED 100%

Diagnostics

(NGC891fuv (03)) Warning (Form): If the target coordinates are not known to 0.4" (or better) an ACQ/SEARCH should precede the ACQ/IMAGE.

(NGC891fuv (03)) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	NGC891AGN	RA: 02 22 24.4600 (35.6019167d) Dec: +42 21 38.20 (42.36061d) Equinox: J2000		V=17.5+/-.5	Reference Frame: ICRS

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	(417929)	(1) NGC891AGN	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				14 Secs	
								[==>]	***[1]***
2	NGC891fuv (417789)	(1) NGC891AGN	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=6100; EXTENDED=NO; FP-POS=ALL; FLASH=YES			3030 Secs	
								[==>2312.0 Secs (Split 1)]	***[1]***
								[==>2724.0 Secs (Split 2)]	***[2]***
								[==>2724.0 Secs (Split 3)]	***[3]***
								[==>2724.0 Secs (Split 4)]	***[4]***
3	NGC891fuv (417789)	(1) NGC891AGN	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=6100; EXTENDED=NO; FP-POS=3; FLASH=YES			3030 Secs	
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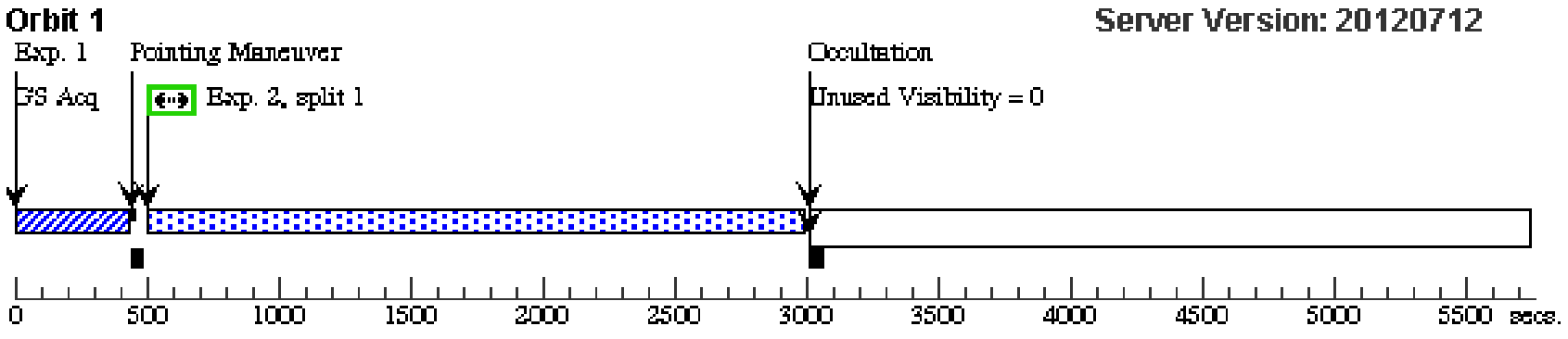
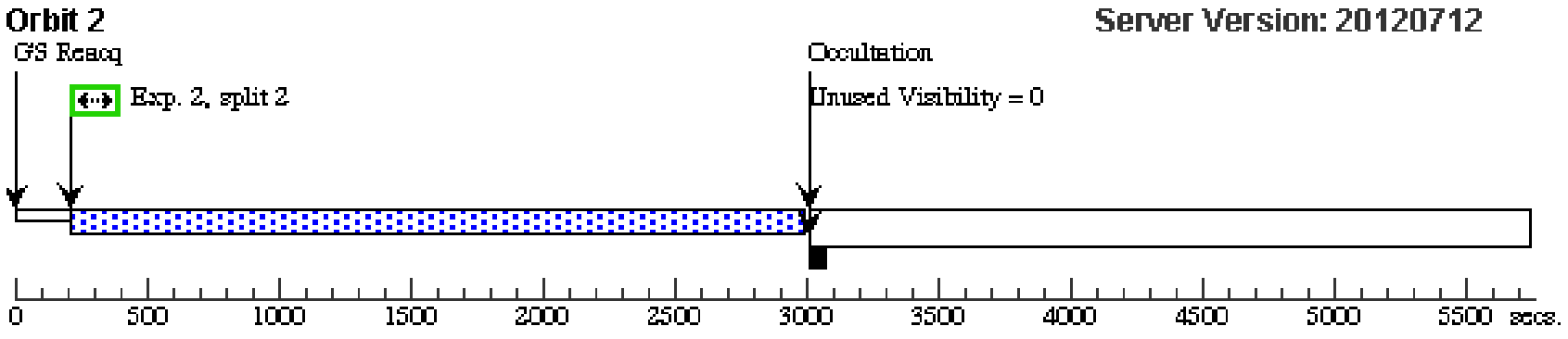
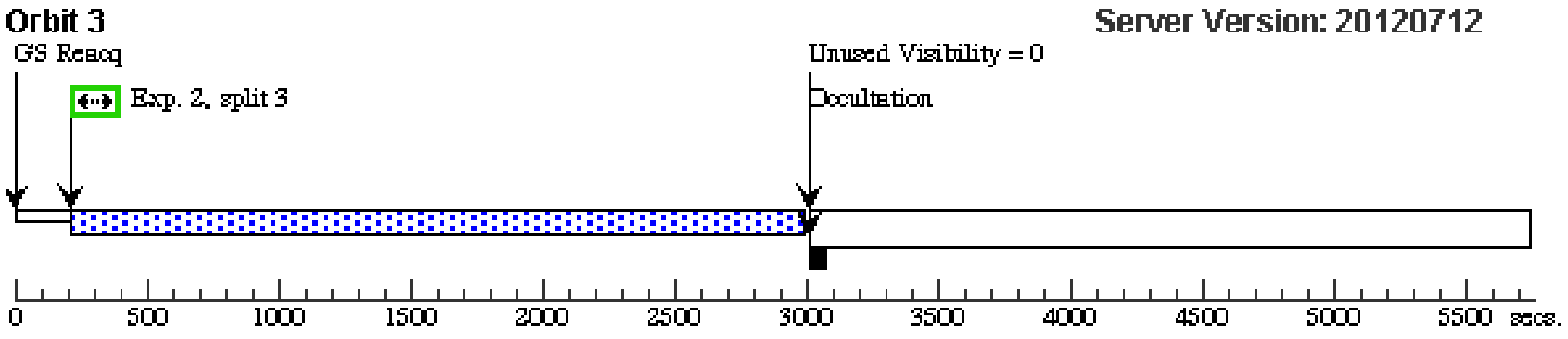
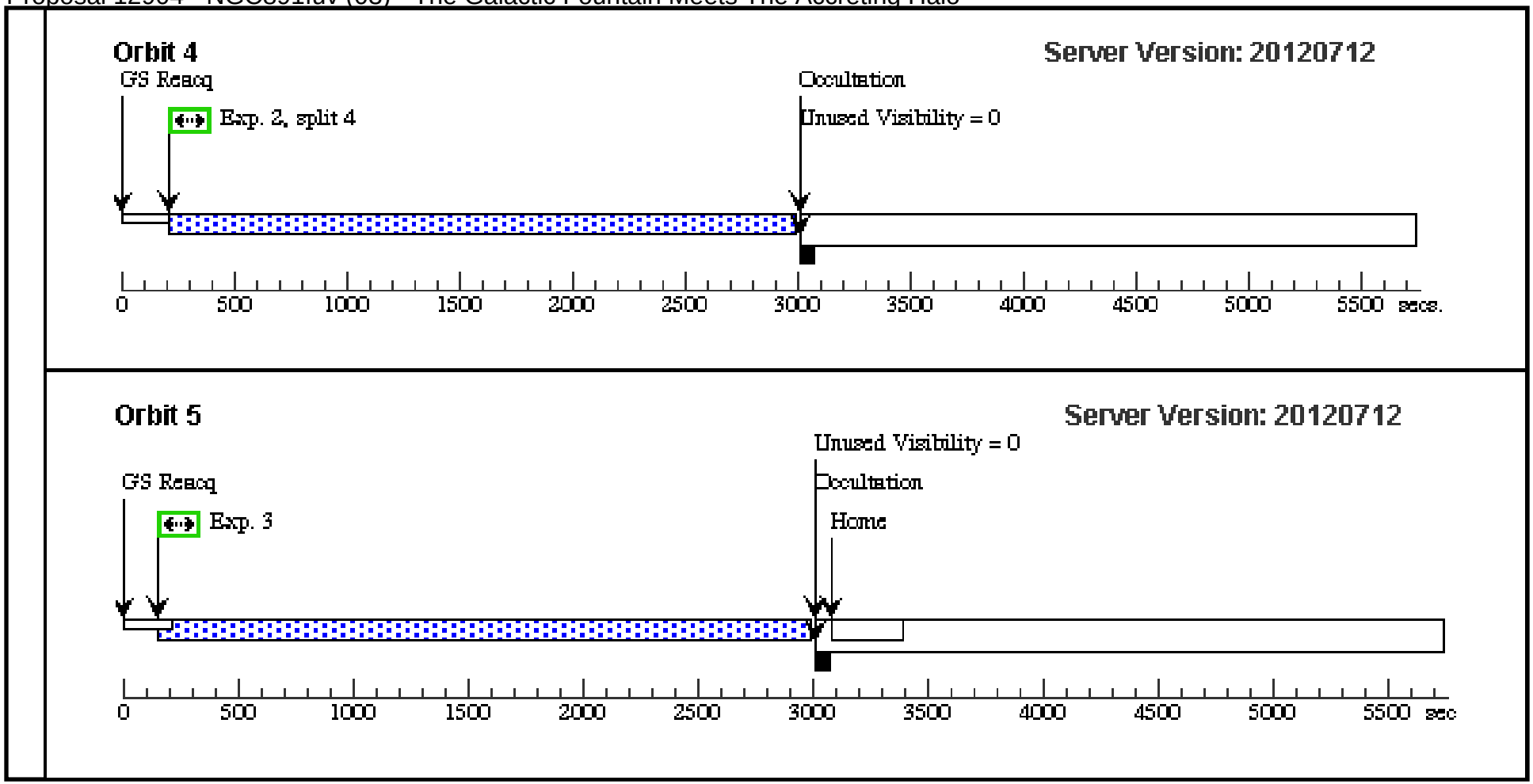
Orbit Structure





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Orbit 5
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