



14912 - High-precision asteroseismology of the accreting white dwarf in GW Lib through simultaneous HST and K2 observations

Cycle: 24, Proposal Category: GO

(UV Initiative)

(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) GW-LIB	COS/FUV COS/NUV	4	01-Aug-2017 15:04:23.0	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>
1B	(2) GW-LIB-SAFE-TARGET	COS/FUV COS/NUV	4	01-Aug-2017 15:04:24.0	yes
1A	(1) GW-LIB	S/C	1	01-Aug-2017 15:04:25.0	yes
02	(1) GW-LIB	COS/FUV COS/NUV	3	01-Aug-2017 15:04:26.0	yes
2B	(2) GW-LIB-SAFE-TARGET	COS/FUV COS/NUV	3	01-Aug-2017 15:04:28.0	yes
2A	(1) GW-LIB	S/C	1	01-Aug-2017 15:04:28.0	yes
03	(1) GW-LIB	COS/FUV COS/NUV	2	01-Aug-2017 15:04:29.0	yes
3B	(2) GW-LIB-SAFE-TARGET	COS/FUV COS/NUV	2	01-Aug-2017 15:04:30.0	yes
3A	(1) GW-LIB	S/C	1	01-Aug-2017 15:04:31.0	yes

21 Total Orbits Used

ABSTRACT

Our insight into the interior structures of stars is, literally, superficial, as most information is derived from observations the stellar photosphere, which represents only a tiny fraction of the total mass. Asteroseismology, the study of stellar pulsations, has the power to probe deep below the surface. For white dwarfs, asteroseismology can measure the composition of the degenerate core, the masses of the non-degenerate He and H layers, and rotation rates. This research area is rapidly progressing thanks to the uninterrupted long time-series observations obtained by Kepler/K2.

GW Lib is the prototypical pulsating white dwarf in a cataclysmic variable, enabling the most definitive analysis of how accretion of mass, angular momentum, and energy affects the internal structure of the star. GW Lib falls into the footprint of K2 Campaign 15 (Aug-Nov 2017), and we will obtain 80 days of photometry every 58.8s which we will use to carry out the most detailed asteroseismological analysis of this star possible for the foreseeable future. In order to make full use of this unmatched photometric dataset, we request three HST/COS visits of GW Lib spread throughout Campaign 15 to (1) accurately measure the effective temperature, (2) unambiguously identify the pulsation modes, and (3) constrain the surface eigenfunctions of this rapidly rotating star. Concurrent measurement of these properties is essential for a complete seismological analysis and requires UV observations due to optical contamination from accretion. These mid-cycle observations will conclude our 15-year HST campaign on

this pulsating white dwarf, from quiescence through its 2007 outburst and back into quiescence.

OBSERVING DESCRIPTION

The goal of this proposal is to obtain COS G140L ultraviolet spectroscopy of the pulsating white dwarf in the cataclysmic variable GW Lib simultaneous with the K2 Campaign 15 observations of this star. Campaign 15 will run from August 23 - November 20, 2017. GW Lib has been observed with STIS (Program 8103) and COS (Programs 11639, 12231, 12870, 13807). The previous COS observations with the G140L grating are:

LB1A01020, LBJ501010, LB1A01020, LBJ501010, LC1V07010, LCJ301010

Our science goals require to cover the Ly alpha absorption of the white dwarf, thus we choose the 1105A central wavelength. Target acquisition is done in dispersed light, as in our previous COS observations.

GW Lib is a cataclysmic variable, hence there is the possibility that it goes into a dwarf nova outburst. This is extremely unlikely, as the outburst period of the system is ~25 years, and the last outburst was in 2007. Nevertheless, we will follow the standard procedure for COS observations of cataclysmic variables, i.e. we will provide intense ground-based monitoring of the system right up to the HST observations (~24h), and STScI/GSFC will then remove the safety pin (=coordinate offset) for the observations to go ahead. This has been practiced ~40 times in HST program 12870.

One caveat is that GW Lib will be visible from the ground only until ~mid September, so we have defined the observations as follows: Visit #1 should be about 5 days after the beginning of Campaign 15 (to ensure that K2 has settled in the field), and then Visit #2 and #3 will follow ~5 and ~10 days later.

We are currently investigating if we could use Swift to provide the brightness measurements required to ensure the safety of COS, in which case Visit #3 could be pushed back towards October or November.

2017-July-21: change to ACQ/IMAGE acquisitions.

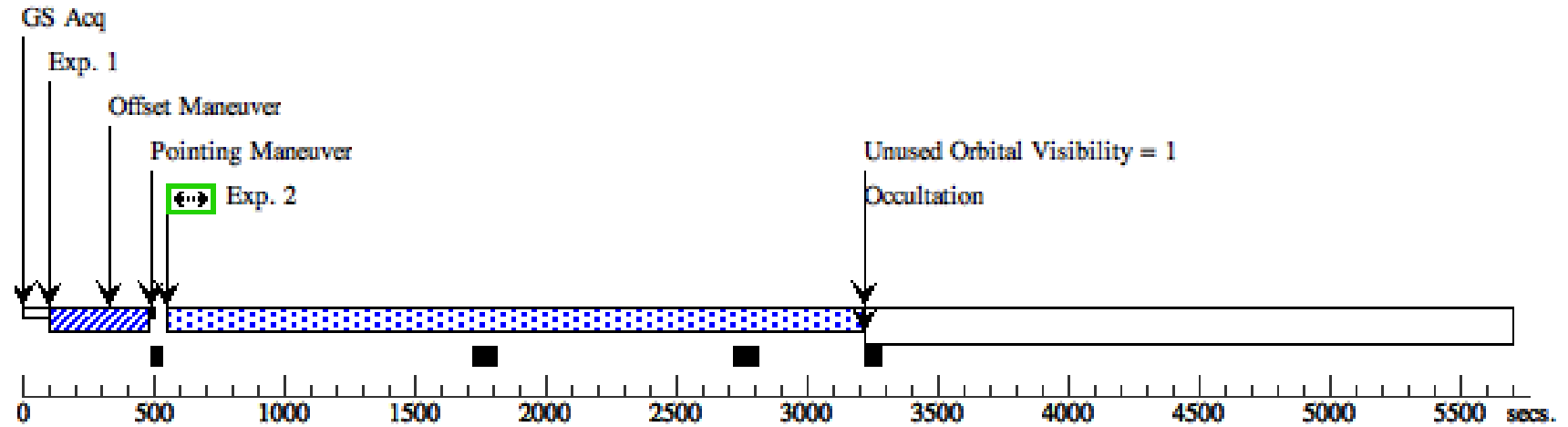
2017-July-29: fixed small orbit overruns in Visit 01 and 03

Proposal 14912 - GW LIB #1 IMAGING ACQ (01) - High-precision asteroseismology of the accreting white dwarf in GW Lib through si...

Visit	Proposal 14912, GW LIB #1 IMAGING ACQ (01), implementation										Tue Aug 01 19:04:32 GMT 2017
	Diagnostic Status: No Diagnostics										
	Scientific Instruments: COS/FUV, COS/NUV										
	Special Requirements: ORIENT 230D TO 115 D; BETWEEN 28-AUG-2017:00:00:00 AND 02-SEP-2017:00:00:00										
	Comments: This should be scheduled in evening-local time. Flags need to be cleared during the work day.										
This visit uses ACQ/IMAGE - needs the offsets etc. to be fixed.											
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(1)	GW-LIB	RA: 15 19 55.3400 (229.9805833d)		Proper Motion RA: -63.7 mas/yr		V=16.5+/-0.3		Reference Frame: ICRS		
			Dec: -25 00 24.58 (-25.00683d)		Proper Motion Dec: 16.5 mas/yr						
			Equinox: J2000		Epoch of Position: 2000.0						
	Comments: GW Lib was observed with COS/G140L as part of programs 11639, 12231, 12870 and 13807, data sets:										
LB1A01020											
LBJ501010											
LC1V07010											
LCJ301010											
Extended=NO											
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	GW-Lib AC Q/IMAGE (COS.ta.101 4181)	(1) GW-LIB	COS/NUV, ACQ/IMAGE, PSA	MIRRORB		USE OFFSET V01S AF		30 Secs (30 Secs)		
									[==>]		[1]
	2	GW-Lib FP- 1 (COS.sp.914 449)	(1) GW-LIB	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=10 00; FP-POS=1; FLASH=YES	USE OFFSET V01S AF		2472 Secs (2472 Secs)		
									[==>]		[1]
	3	GW-Lib FP- 2 (COS.sp.914 449)	(1) GW-LIB	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=10 00; FP-POS=2; FLASH=YES	USE OFFSET V01S AF		2939 Secs (2939 Secs)		
									[==>]		[2]
4	GW-Lib FP- 3 (COS.sp.914 449)	(1) GW-LIB	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=10 00; FP-POS=3; FLASH=YES	USE OFFSET V01S AF		2939 Secs (2939 Secs)			
								[==>]		[3]	
5	GW-Lib FP- 4 (COS.sp.914 449)	(1) GW-LIB	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=10 00; FP-POS=4; FLASH=YES	USE OFFSET V01S AF		2939 Secs (2939 Secs)			
								[==>]		[4]	

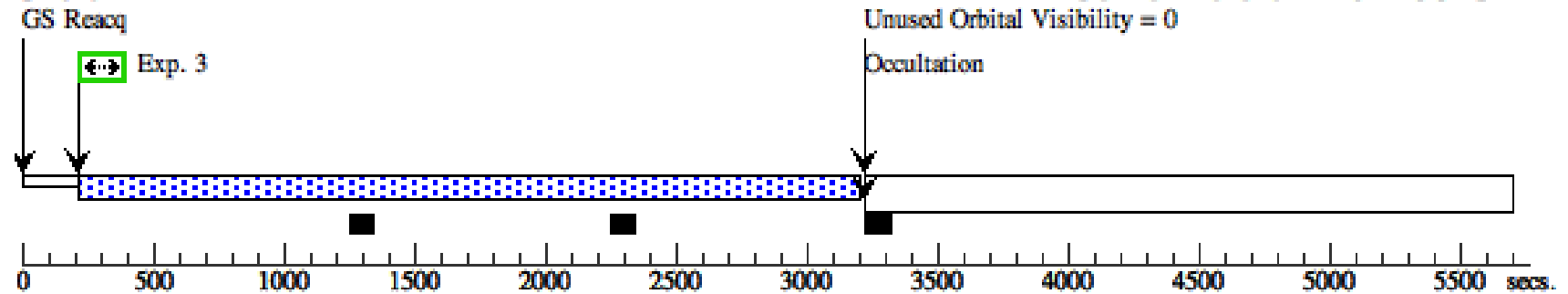
Orbit 1

Server Version: 20170613



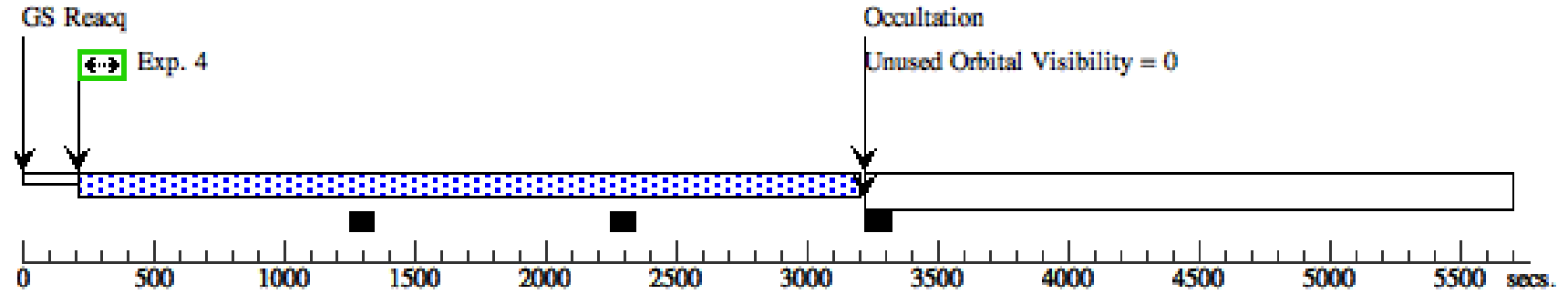
Orbit 2

Server Version: 20170613



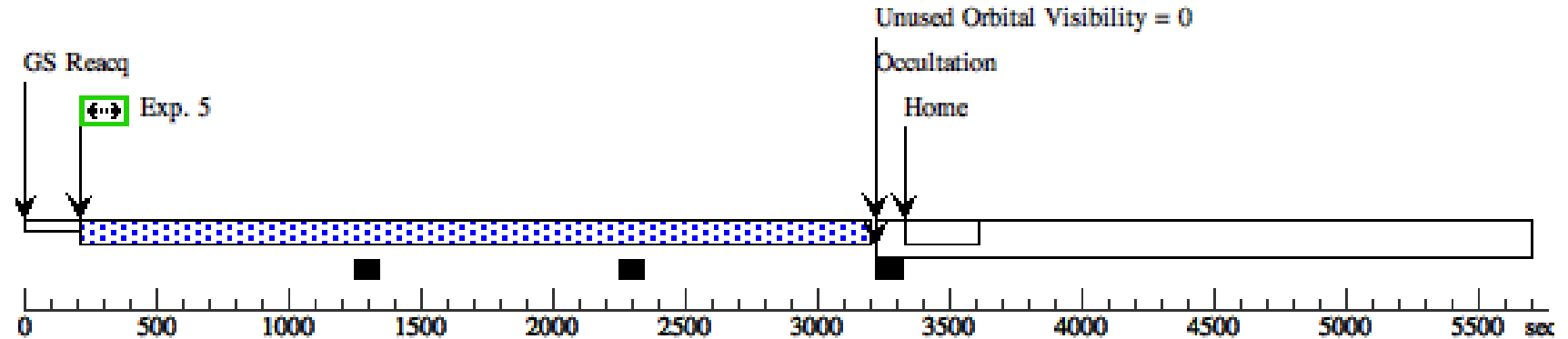
Orbit 3

Server Version: 20170613



Orbit 4

Server Version: 20170613

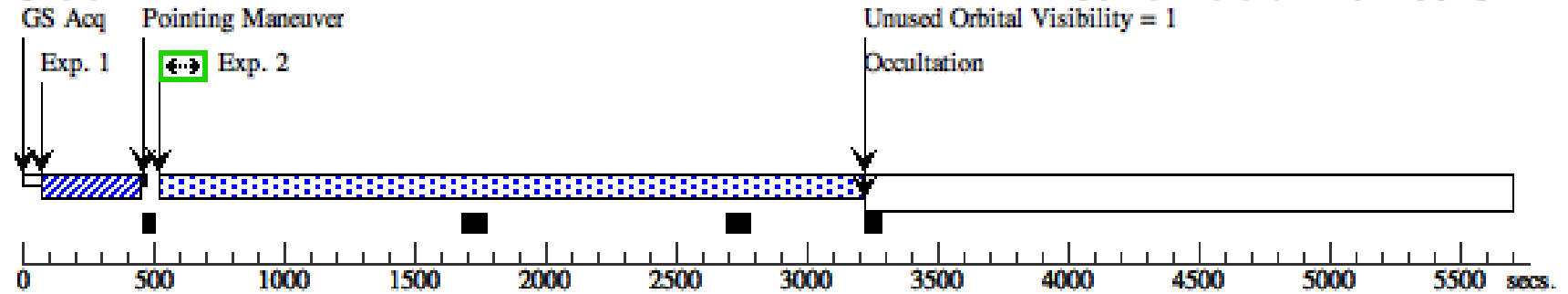


Proposal 14912 - GW LIB BOP ONLY IMAGING ACQ (1B) - High-precision asteroseismology of the accreting white dwarf in GW Lib ...

Visit	Proposal 14912, GW LIB_BOP_ONLY IMAGING ACQ (1B), implementation										Tue Aug 01 19:04:32 GMT 2017
	Diagnostic Status: No Diagnostics										
	Scientific Instruments: COS/FUV, COS/NUV										
	Special Requirements: ORIENT 230D TO 115 D										
	Comments: This visit is for BOP checking the safe target only and should not execute onboard HST.										
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections		Fluxes		Miscellaneous	
	(1)	GW-LIB	RA: 15 19 55.3400 (229.9805833d) Dec: -25 00 24.58 (-25.00683d) Equinox: J2000			Proper Motion RA: -63.7 mas/yr Proper Motion Dec: 16.5 mas/yr Epoch of Position: 2000.0		V=16.5+/-0.3		Reference Frame: ICRS	
	Comments: GW Lib was observed with COS/G140L as part of programs 11639, 12231, 12870 and 13807, data sets:										
	LB1A01020 LBJ501010 LC1V07010 LCJ301010 Extended=NO										
	(2)	GW-LIB-SAFE-TARGET	Offset from GW-LIB RA Offset: 0.44 Secs Dec Offset: 7.691 Arcsec					V=16.5+/-0.3		Offset Position (GW-LIB-SAFE-TARGET)	
Comments: This target is a blank piece of sky which is the bright object safe pointing and is 9.817 arcseconds away at a PA 38.4 degrees from GW-LIB.											
GW Lib was observed with COS/G140L as part of programs 11639, 12231, 12870 and 13807, data sets:											
LB1A01020 LBJ501010 LC1V07010 LCJ301010 Extended=NO											
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	GW-Lib AC Q/IMAGE (COS.ta.101 4181)	(2) GW-LIB-SAFE-TARGET	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				30 Secs (30 Secs)		
									[==>]		[1]
	2	GW-Lib FP-1 (COS.sp.914 449)	(2) GW-LIB-SAFE-TARGET	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=10 00; FP-POS=1; FLASH=YES			2505 Secs (2505 Secs)		
									[==>]		[1]
	3	GW-Lib FP-2 (COS.sp.914 449)	(2) GW-LIB-SAFE-TARGET	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=10 00; FP-POS=2; FLASH=YES			2939 Secs (2939 Secs)		
									[==>]		[2]
	4	GW-Lib FP-3 (COS.sp.914 449)	(2) GW-LIB-SAFE-TARGET	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=10 00; FP-POS=3; FLASH=YES			2939 Secs (2939 Secs)		
									[==>]		[3]
	5	GW-Lib FP-4 (COS.sp.914 449)	(2) GW-LIB-SAFE-TARGET	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=10 00; FP-POS=4; FLASH=YES			2939 Secs (2939 Secs)		
								[==>]		[4]	

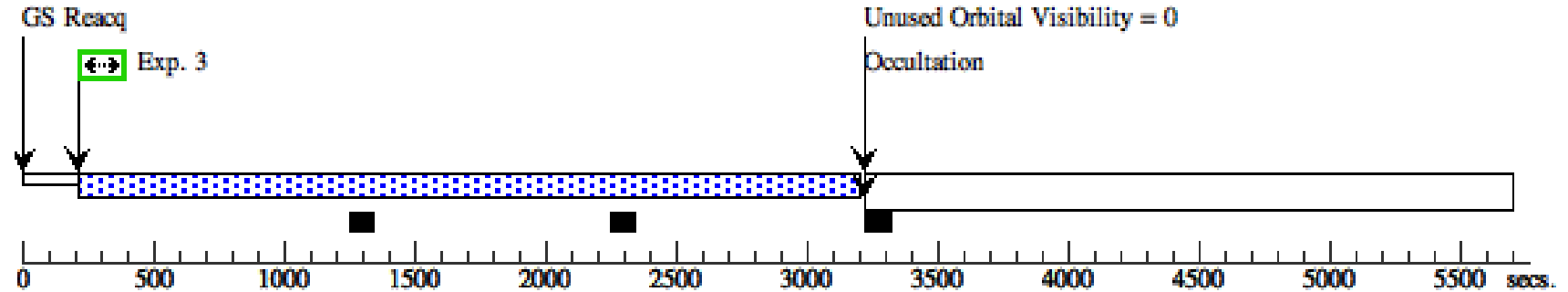
Orbit 1

Server Version: 20170613



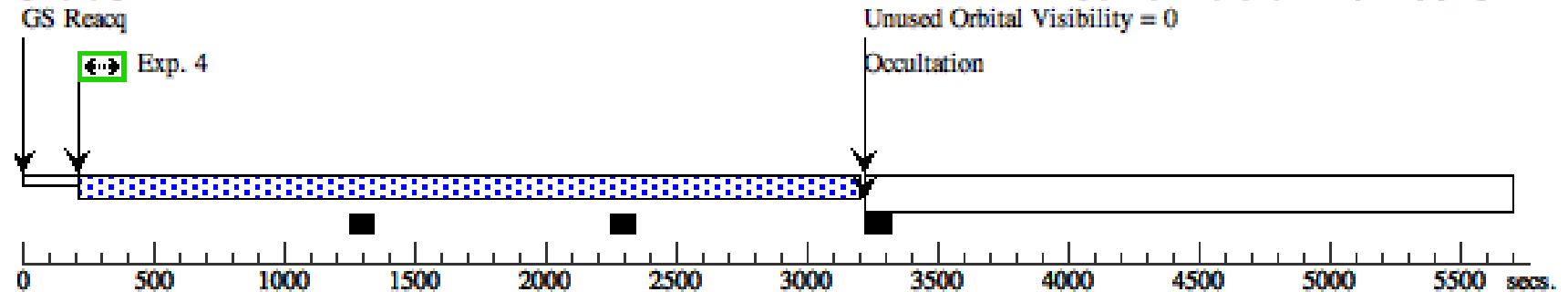
Orbit 2

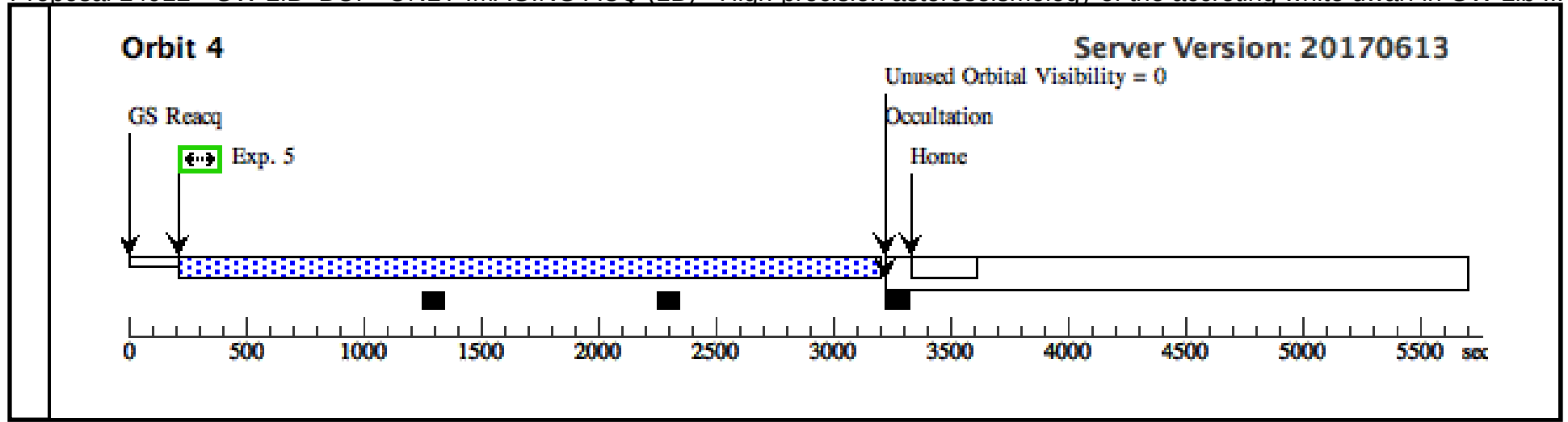
Server Version: 20170613



Orbit 3

Server Version: 20170613



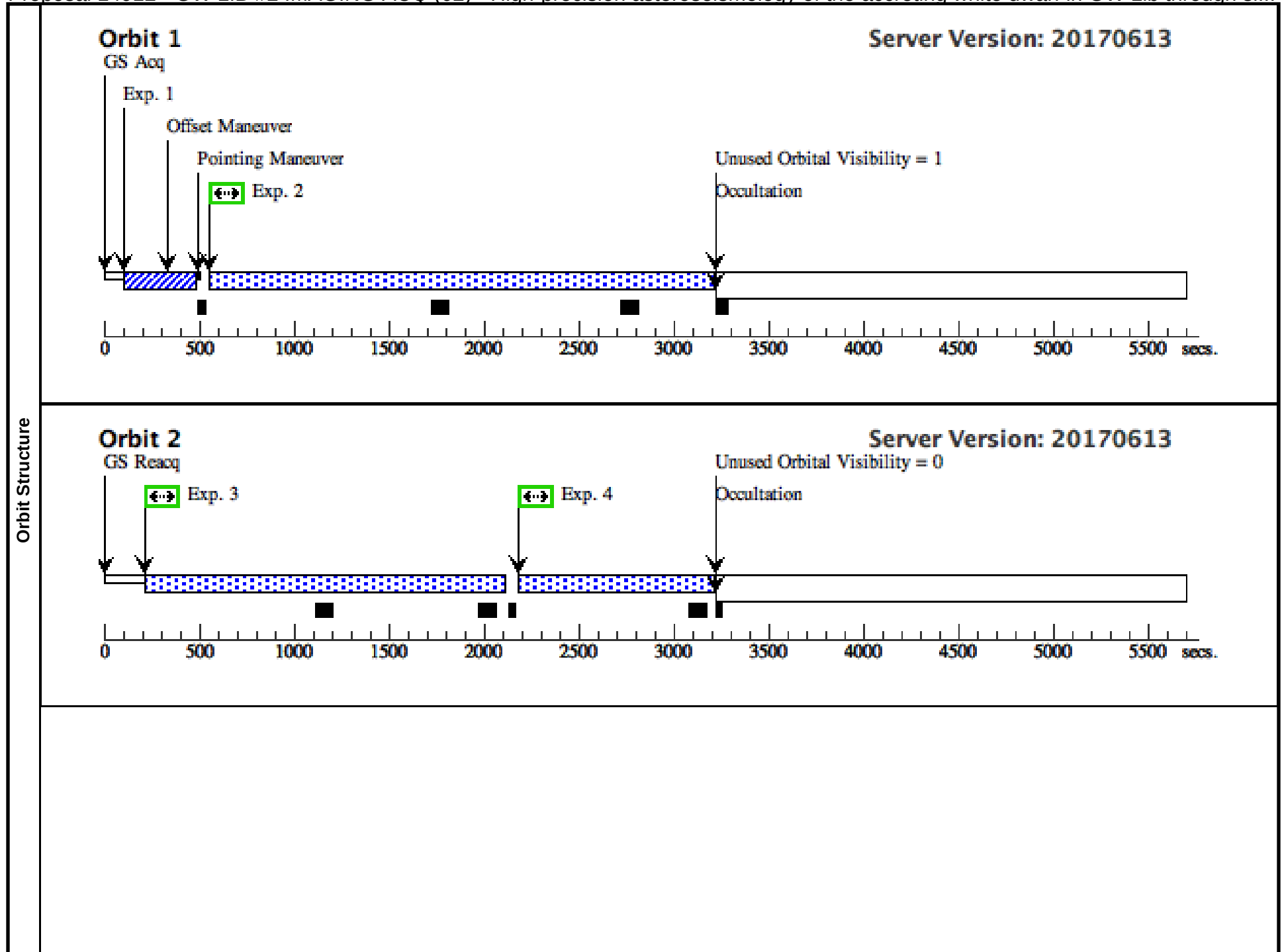


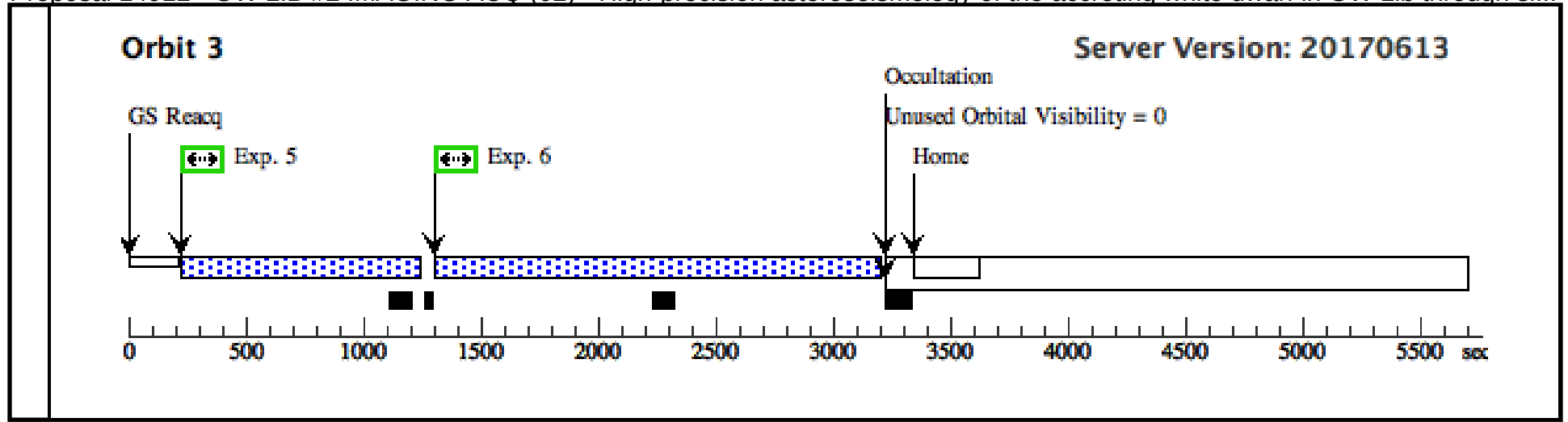
Proposal 14912 - S/C Visit (1A) - High-precision asteroseismology of the accreting white dwarf in GW Lib through simultaneous HST a...

Visit	Proposal 14912, S/C Visit (1A), implementation					Tue Aug 01 19:04:32 GMT 2017				
	Diagnostic Status: No Diagnostics									
	Scientific Instruments: S/C									
	Special Requirements: ORIENT 230D TO 115 D									
	Comments: This visit allocates and sets up the safe position offset slot for visit 01 which will use that slot. This S/C visit should go earlier in the week while visit 01 will be at least 3 days later. Note: weekends are to be avoided since the CS must clear the target within 24 hours of HST execution.									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	GW-LIB	RA: 15 19 55.3400 (229.9805833d) Dec: -25 00 24.58 (-25.00683d) Equinox: J2000	Proper Motion RA: -63.7 mas/yr Proper Motion Dec: 16.5 mas/yr Epoch of Position: 2000.0	V=16.5+/-0.3	Reference Frame: ICRS				
	Comments: GW Lib was observed with COS/G140L as part of programs 11639, 12231, 12870 and 13807, data sets: LB1A01020 LBJ501010 LC1V07010 LCJ301010 Extended=NO									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) GW-LIB	S/C, DATA, V1			POS TARG 230.913, -239.275; SAVE OFFSET V01 SAF; SPEC COM INSTR ECSLOTSET; QESIPARM ANGL E 38.4; QESIPARM DIST 9. 817		5 Secs (5 Secs) [==>]	[1]
Orbit Structure	Orbit 1 Server Version: 20170613 Exp. 1 GS AcqUnused Orbital Visibility = 2887 Occultation 0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 sec									

Proposal 14912 - GW LIB #2 IMAGING ACQ (02) - High-precision asteroseismology of the accreting white dwarf in GW Lib through si...

Visit	Proposal 14912, GW LIB #2 IMAGING ACQ (02), implementation										Tue Aug 01 19:04:32 GMT 2017
	Diagnostic Status: No Diagnostics										
	Scientific Instruments: COS/FUV, COS/NUV										
	Special Requirements: ORIENT 230D TO 115 D; AFTER 01 BY 5 D TO 8 D										
	Comments: This should be scheduled in evening-local time. Flags need to be cleared during the work day.										
This visit uses ACQ/IMAGE - needs the offsets etc. to be fixed.											
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous					
	(1)	GW-LIB	RA: 15 19 55.3400 (229.9805833d) Dec: -25 00 24.58 (-25.00683d) Equinox: J2000	Proper Motion RA: -63.7 mas/yr Proper Motion Dec: 16.5 mas/yr Epoch of Position: 2000.0	V=16.5+/-0.3	Reference Frame: ICRS					
	Comments: GW Lib was observed with COS/G140L as part of programs 11639, 12231, 12870 and 13807, data sets:										
	LB1A01020										
	LB1J501010										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	GW-Lib AC Q/IMAGE (COS.ta.101 4181)	(1) GW-LIB	COS/NUV, ACQ/IMAGE, PSA	MIRRORB		USE OFFSET V02S AF		30 Secs (30 Secs)		
									[==>]		[1]
	2	GW-Lib FP-1 (COS.sp.914 449)	(1) GW-LIB	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=10 00; FP-POS=1; FLASH=YES	USE OFFSET V02S AF		2472 Secs (2472 Secs)		
									[==>]		[1]
3	GW-Lib FP-2 (COS.sp.914 449)	(1) GW-LIB	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=86 0; FP-POS=2; FLASH=YES	USE OFFSET V02S AF		1850 Secs (1850 Secs)			
								[==>]		[2]	
4	GW-Lib FP-3 (COS.sp.914 449)	(1) GW-LIB	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=86 4; FP-POS=3; FLASH=YES	USE OFFSET V02S AF		974 Secs (974 Secs)			
								[==>]		[2]	
5	GW-Lib FP-3 (COS.sp.914 449)	(1) GW-LIB	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=86 4; FP-POS=3; FLASH=YES	USE OFFSET V02S AF		974 Secs (974 Secs)			
								[==>]		[3]	
6	GW-Lib FP-4 (COS.sp.914 449)	(1) GW-LIB	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=89 1; FP-POS=4; FLASH=YES	USE OFFSET V02S AF		1850 Secs (1850 Secs)			
								[==>]		[3]	





Proposal 14912 - GW LIB BOP ONLY IMAGING ACQ (2B) - High-precision asteroseismology of the accreting white dwarf in GW Lib ...

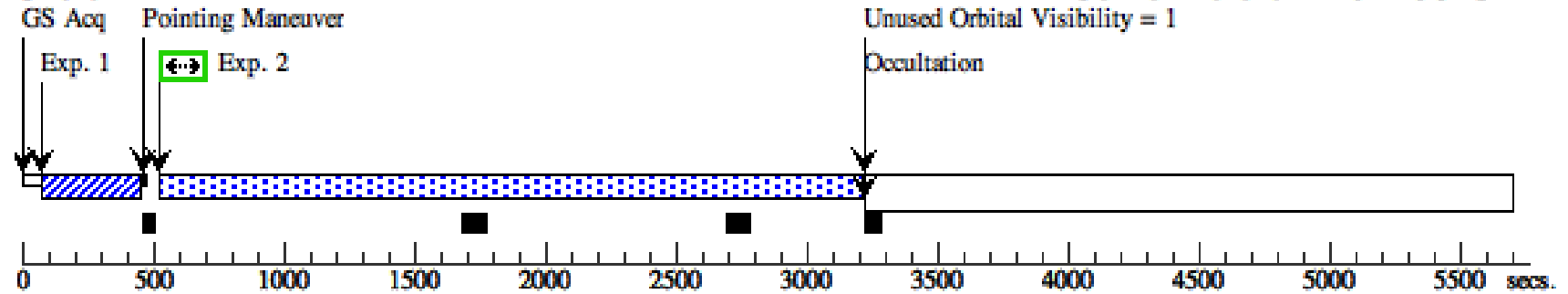
Visit	Proposal 14912, GW LIB_BOP_ONLY IMAGING ACQ (2B), implementation Tue Aug 01 19:04:32 GMT 2017				
	Diagnostic Status: No Diagnostics Scientific Instruments: COS/FUV, COS/NUV Special Requirements: ORIENT 230D TO 115 D <i>Comments: This visit is for BOP checking the safe target only and should not execute onboard HST.</i>				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes
	(1)	GW-LIB	RA: 15 19 55.3400 (229.9805833d) Dec: -25 00 24.58 (-25.00683d) Equinox: J2000	Proper Motion RA: -63.7 mas/yr Proper Motion Dec: 16.5 mas/yr Epoch of Position: 2000.0	V=16.5+/-0.3
Fixed Targets	Miscellaneous Reference Frame: ICRS				
	<i>Comments: GW Lib was observed with COS/G140L as part of programs 11639, 12231, 12870 and 13807, data sets:</i> LB1A01020 LBJ501010 LC1V07010 LCJ301010 Extended=NO				
Fixed Targets	(2)	GW-LIB-SAFE-TARGET	Offset from GW-LIB RA Offset: 0.44 Secs Dec Offset: 7.691 Arcsec		V=16.5+/-0.3
	Offset Position (GW-LIB-SAFE-TARGET) <i>Comments: This target is a blank piece of sky which is the bright object safe pointing and is 9.817 arcseconds away at a PA 38.4 degrees from GW-LIB.</i> GW Lib was observed with COS/G140L as part of programs 11639, 12231, 12870 and 13807, data sets: LB1A01020 LBJ501010 LC1V07010 LCJ301010 Extended=NO				

Proposal 14912 - GW LIB BOP ONLY IMAGING ACQ (2B) - High-precision asteroseismology of the accreting white dwarf in GW Lib ...

Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	GW-Lib AC Q/IMAGE (COS.ta.101 4181)	(2) GW-LIB-SAFE- TARGET	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				30 Secs (30 Secs) [==>]	[1]
	2	GW-Lib FP- 1 (COS.sp.914 449)	(2) GW-LIB-SAFE- TARGET	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=10 00; FP-POS=1; FLASH=YES			2505 Secs (2505 Secs) [==>]	[1]
	3	GW-Lib FP- 2 (COS.sp.914 449)	(2) GW-LIB-SAFE- TARGET	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=92 1; FP-POS=2; FLASH=YES			1950 Secs (1950 Secs) [==>]	[2]
	4	GW-Lib FP- 3 (COS.sp.914 449)	(2) GW-LIB-SAFE- TARGET	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=86 6; FP-POS=3; FLASH=YES			874 Secs (874 Secs) [==>]	[2]
	5	GW-Lib FP- 3 (COS.sp.914 449)	(2) GW-LIB-SAFE- TARGET	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=82 6; FP-POS=3; FLASH=YES			934 Secs (934 Secs) [==>]	[3]
	6	GW-Lib FP- 4 (COS.sp.914 449)	(2) GW-LIB-SAFE- TARGET	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=89 1; FP-POS=4; FLASH=YES			1890 Secs (1890 Secs) [==>]	[3]

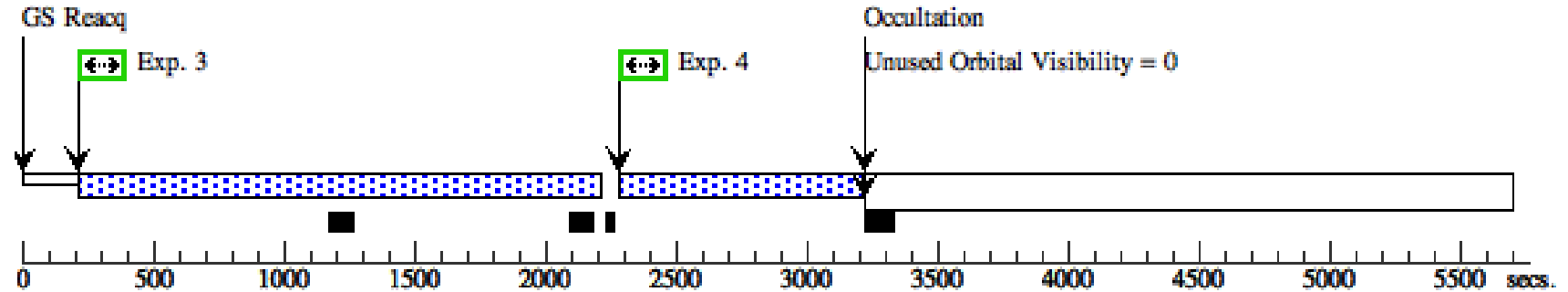
Orbit 1

Server Version: 20170613



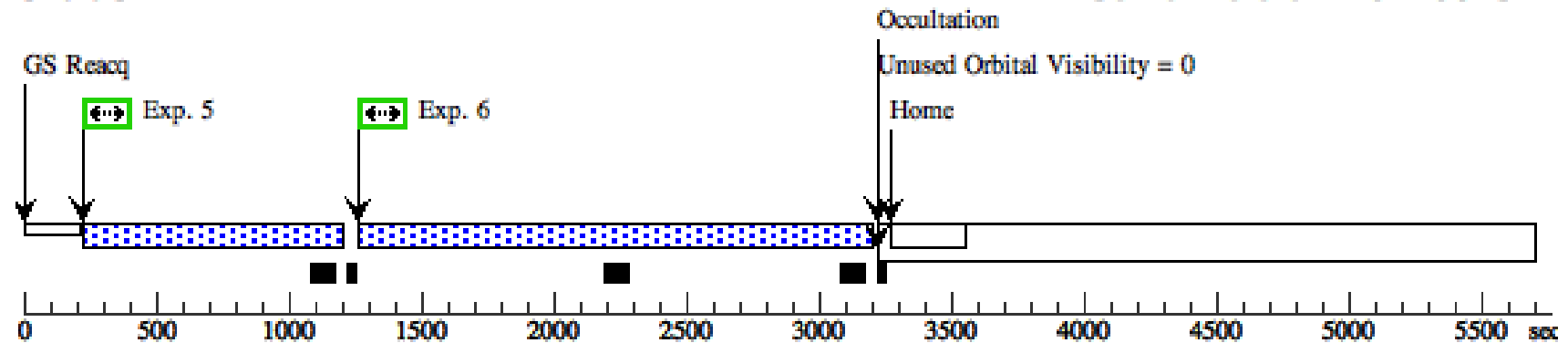
Orbit 2

Server Version: 20170613



Orbit 3

Server Version: 20170613



Proposal 14912 - S/C Visit (2A) - High-precision asteroseismology of the accreting white dwarf in GW Lib through simultaneous HST a...

Visit	Proposal 14912, S/C Visit (2A), implementation					Tue Aug 01 19:04:33 GMT 2017				
	Diagnostic Status: No Diagnostics									
	Scientific Instruments: S/C									
	Special Requirements: ORIENT 230D TO 115 D									
	Comments: This visit allocates and sets up the safe position offset slot for visit 02 which will use that slot. This S/C visit should go earlier in the week while visit 02 will be at least 3 days later. Note: weekends are to be avoided since the CS must clear the target within 24 hours of HST execution.									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	GW-LIB	RA: 15 19 55.3400 (229.9805833d) Dec: -25 00 24.58 (-25.00683d) Equinox: J2000	Proper Motion RA: -63.7 mas/yr Proper Motion Dec: 16.5 mas/yr Epoch of Position: 2000.0	V=16.5+/-0.3	Reference Frame: ICRS				
	Comments: GW Lib was observed with COS/G140L as part of programs 11639, 12231, 12870 and 13807, data sets: LB1A01020 LBJ501010 LC1V07010 LCJ301010 Extended=NO									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) GW-LIB	S/C, DATA, V1			POS TARG 230.914, -239.275; SAVE OFFSET V02 SAF; SPEC COM INSTR ECSLOTSET; QESIPARM ANGL E 38.4; QESIPARM DIST 9.817		5 Secs (5 Secs) [==>]	[1]
Orbit Structure	Orbit 1 Exp. 1 GS AcqUnused Orbital Visibility = 2887 Occultation									
	Server Version: 20170613									

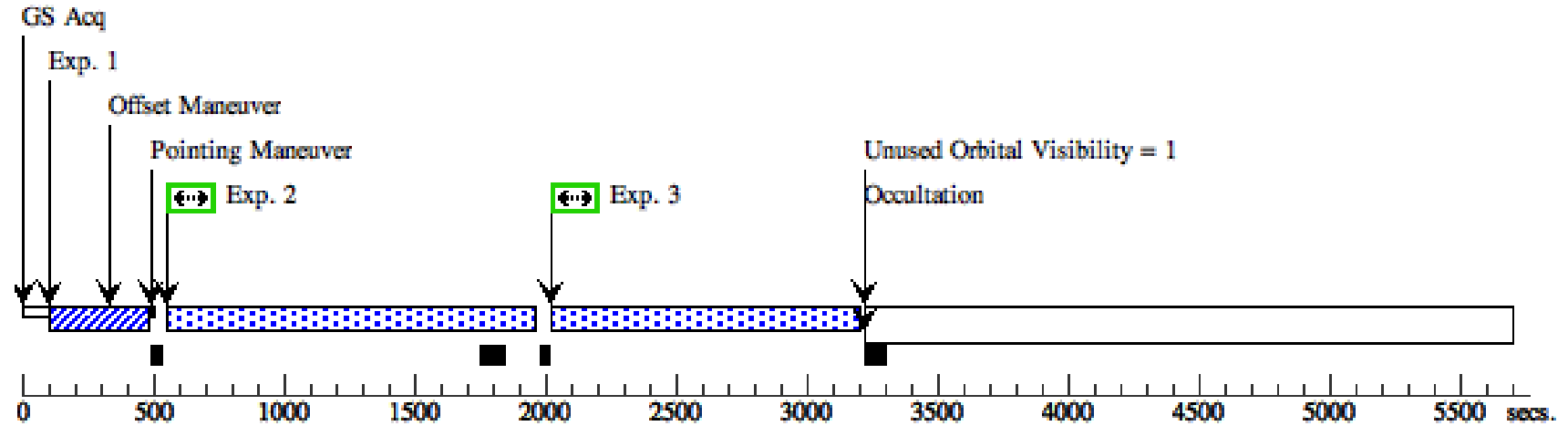
Proposal 14912 - GW LIB #3 IMAGING ACQ (03) - High-precision asteroseismology of the accreting white dwarf in GW Lib through si...

Visit	Proposal 14912, GW LIB #3 IMAGING ACQ (03), implementation										Tue Aug 01 19:04:33 GMT 2017	
	Diagnostic Status: No Diagnostics											
	Scientific Instruments: COS/FUV, COS/NUV											
	Special Requirements: ORIENT 230D TO 115 D; AFTER 02 BY 5 D TO 8 D											
	Comments: This should be scheduled in evening-local time. Flags need to be cleared during the work day.											
This visit uses ACQ/IMAGE - needs the offsets etc. to be fixed.												
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(1)	GW-LIB	RA: 15 19 55.3400 (229.9805833d)			Proper Motion RA: -63.7 mas/yr		V=16.5+/-0.3		Reference Frame: ICRS		
			Dec: -25 00 24.58 (-25.00683d)			Proper Motion Dec: 16.5 mas/yr						
			Equinox: J2000			Epoch of Position: 2000.0						
	Comments: GW Lib was observed with COS/G140L as part of programs 11639, 12231, 12870 and 13807, data sets:											
LB1A01020												
LBJ501010												
LC1V07010												
LCJ301010												
Extended=NO												
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture		Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	GW-Lib AC Q/IMAGE (COS.ta.101 4181)	(1) GW-LIB	COS/NUV, ACQ/IMAGE, PSA		MIRRORB		USE OFFSET V03S AF		30 Secs (30 Secs)		
										[==>]		[1]
	2	GW-Lib FP-1 (COS.sp.914 449)	(1) GW-LIB	COS/FUV, TIME-TAG, PSA		G140L 1105 A	BUFFER-TIME=10 36; FP-POS=1; FLASH=YES	USE OFFSET V03S AF		1228 Secs (1228 Secs)		
										[==>]		[1]
	3	GW-Lib FP-2 (COS.sp.914 449)	(1) GW-LIB	COS/FUV, TIME-TAG, PSA		G140L 1105 A	BUFFER-TIME=16 46; FP-POS=2; FLASH=YES	USE OFFSET V03S AF		1129 Secs (1129 Secs)		
										[==>]		[1]
4	GW-Lib FP-3 (COS.sp.914 449)	(1) GW-LIB	COS/FUV, TIME-TAG, PSA		G140L 1105 A	BUFFER-TIME=65 2; FP-POS=3; FLASH=YES	USE OFFSET V03S AF		1412 Secs (1412 Secs)			
									[==>]		[2]	
5	GW-Lib FP-4 (COS.sp.914 449)	(1) GW-LIB	COS/FUV, TIME-TAG, PSA		G140L 1105 A	BUFFER-TIME=65 2; FP-POS=4; FLASH=YES	USE OFFSET V03S AF		1412 Secs (1412 Secs)			
									[==>]		[2]	

Orbit Structure

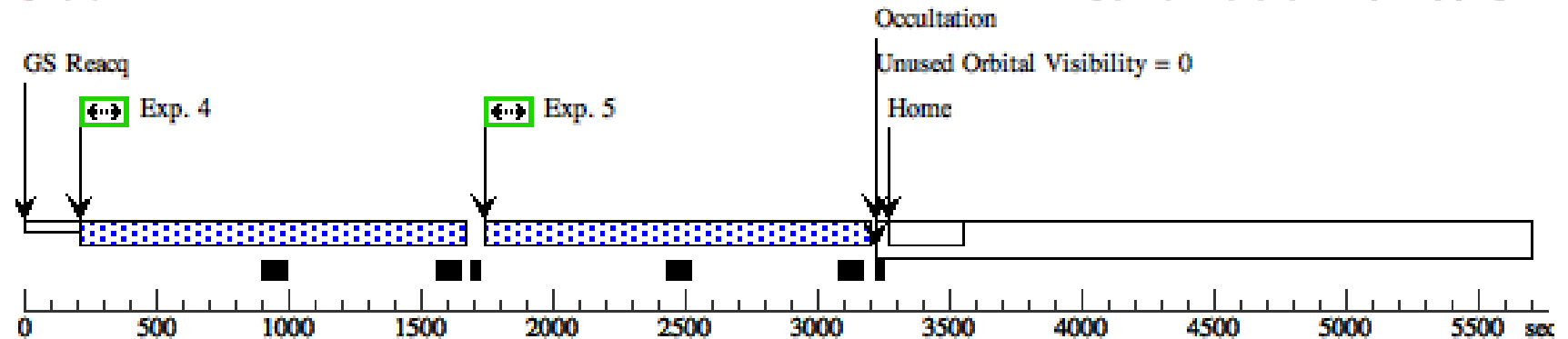
Orbit 1

Server Version: 20170613



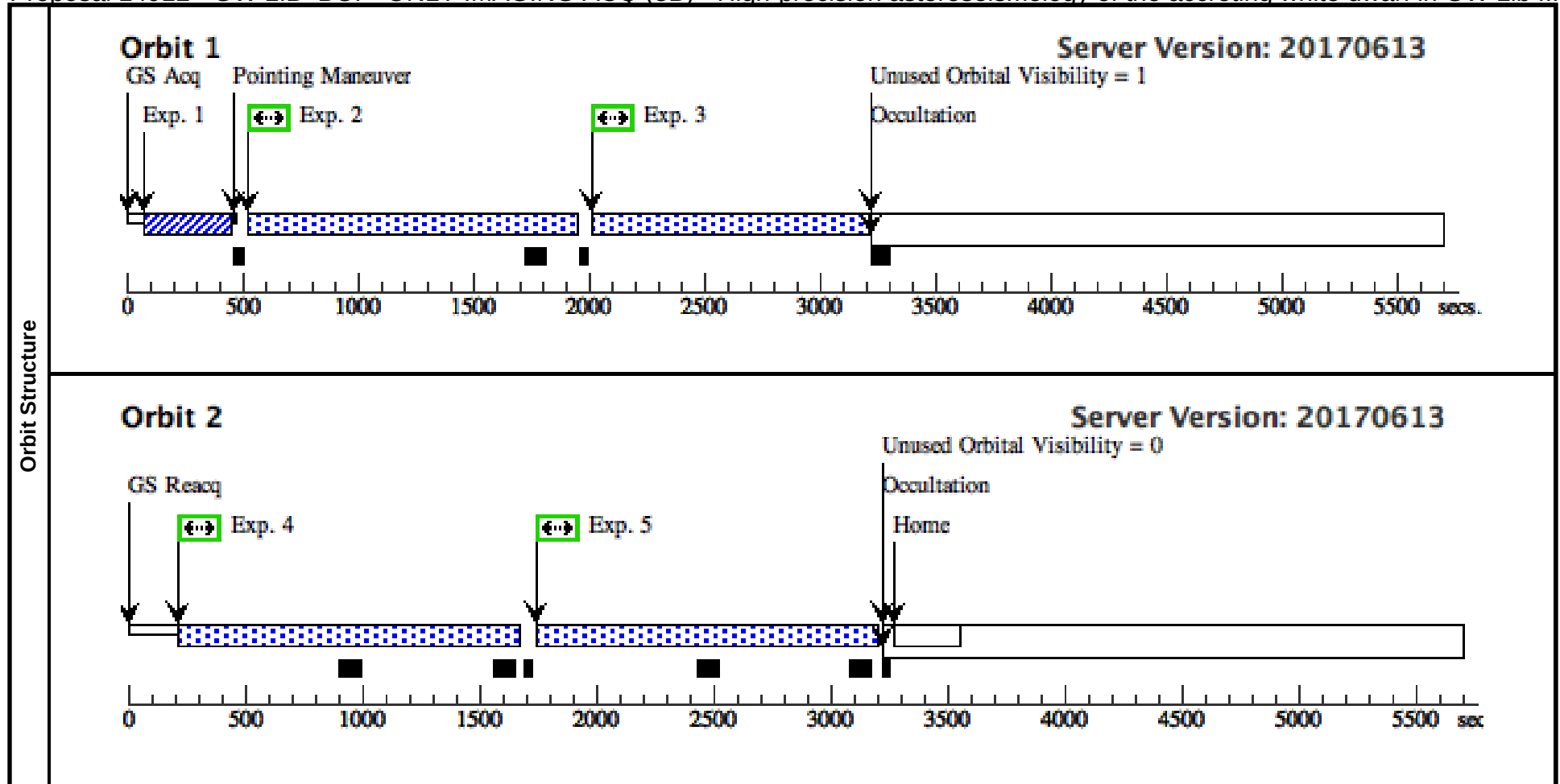
Orbit 2

Server Version: 20170613



Proposal 14912 - GW LIB BOP ONLY IMAGING ACQ (3B) - High-precision asteroseismology of the accreting white dwarf in GW Lib ...

Visit	Proposal 14912, GW LIB_BOP_ONLY IMAGING ACQ (3B), implementation										Tue Aug 01 19:04:33 GMT 2017	
	Diagnostic Status: No Diagnostics											
	Scientific Instruments: COS/FUV, COS/NUV											
	Special Requirements: ORIENT 230D TO 115 D											
Comments: This visit is for BOP checking the safe target only and should not execute onboard HST.												
Fixed Targets	#	Name	Target Coordinates			Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(1)	GW-LIB	RA: 15 19 55.3400 (229.9805833d) Dec: -25 00 24.58 (-25.00683d) Equinox: J2000			Proper Motion RA: -63.7 mas/yr Proper Motion Dec: 16.5 mas/yr Epoch of Position: 2000.0		V=16.5+/-0.3		Reference Frame: ICRS		
	Comments: GW Lib was observed with COS/G140L as part of programs 11639, 12231, 12870 and 13807, data sets: LB1A01020 LBJ501010 LC1V07010 LCJ301010 Extended=NO											
	(2)	GW-LIB-SAFE-TARGET	Offset from GW-LIB RA Offset: 0.44 Secs Dec Offset: 7.691 Arcsec					V=16.5+/-0.3		Offset Position (GW-LIB-SAFE-TARGET)		
Comments: This target is a blank piece of sky which is the bright object safe pointing and is 9.817 arcseconds away at a PA 38.4 degrees from GW-LIB. GW Lib was observed with COS/G140L as part of programs 11639, 12231, 12870 and 13807, data sets: LB1A01020 LBJ501010 LC1V07010 LCJ301010 Extended=NO												
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit	
	1	GW-Lib AC Q/IMAGE (COS.ta.101 4181)	(2) GW-LIB-SAFE-TARGET	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				30 Secs (30 Secs)			
									[==>]		[1]	
	2	GW-Lib FP-1 (COS.sp.914 449)	(2) GW-LIB-SAFE-TARGET	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=10 36; FP-POS=1; FLASH=YES			1245 Secs (1245 Secs)			
									[==>]		[1]	
	3	GW-Lib FP-2 (COS.sp.914 449)	(2) GW-LIB-SAFE-TARGET	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=16 46; FP-POS=2; FLASH=YES			1145 Secs (1145 Secs)			
									[==>]		[1]	
	4	GW-Lib FP-3 (COS.sp.914 449)	(2) GW-LIB-SAFE-TARGET	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=65 2; FP-POS=3; FLASH=YES			1412 Secs (1412 Secs)			
								[==>]		[2]		
5	GW-Lib FP-4 (COS.sp.914 449)	(2) GW-LIB-SAFE-TARGET	COS/FUV, TIME-TAG, PSA	G140L 1105 A	BUFFER-TIME=65 2; FP-POS=4; FLASH=YES			1412 Secs (1412 Secs)				
								[==>]		[2]		



Proposal 14912 - S/C Visit (3A) - High-precision asteroseismology of the accreting white dwarf in GW Lib through simultaneous HST a...

Visit	Proposal 14912, S/C Visit (3A), implementation						Tue Aug 01 19:04:33 GMT 2017			
	Diagnostic Status: No Diagnostics									
	Scientific Instruments: S/C Special Requirements: ORIENT 230D TO 115 D Comments: This visit allocates and sets up the safe position offset slot for visit 03 which will use that slot. This S/C visit should go earlier in the week while visit 03 will be at least 3 days later. Note: weekends are to be avoided since the CS must clear the target within 24 hours of HST execution.									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	GW-LIB	RA: 15 19 55.3400 (229.9805833d) Dec: -25 00 24.58 (-25.00683d) Equinox: J2000	Proper Motion RA: -63.7 mas/yr Proper Motion Dec: 16.5 mas/yr Epoch of Position: 2000.0	V=16.5+/-0.3	Reference Frame: ICRS				
	Comments: GW Lib was observed with COS/G140L as part of programs 11639, 12231, 12870 and 13807, data sets: LB1A01020 LBJ501010 LC1V07010 LCJ301010 Extended=NO									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) GW-LIB	S/C, DATA, V1			POS TARG 230.914, -239.275; SAVE OFFSET V03 SAF; SPEC COM INSTR ECSLOTSET; QESIPARM ANGL E 38.4; QESIPARM DIST 9.817		5 Secs (5 Secs) [==>]	[1]
Orbit Structure	Orbit 1 Exp. 1 GS AcqUnused Orbital Visibility = 2887 Occultation									
	Server Version: 20170613									