16647 - The HST probes the winds and feedback of metal poor OB stars in the tidally stripped Magellanic Bridge\

Cycle: 29, Proposal Category: GO

(UV Initiative)

(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) S0WX000267	COS/FUV	1	30-Jul-2021 14:04:53.0	yes
02	(2) S0XA000389	COS/FUV	1	30-Jul-2021 14:04:54.0	yes
03	(3) S0XA000387	COS/FUV	1	30-Jul-2021 14:04:56.0	yes
04	(4) S0XA000379	COS/FUV COS/NUV	2	30-Jul-2021 14:04:58.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
05	(5) S0XA000375	COS/FUV COS/NUV	2	30-Jul-2021 14:05:01.0	yes
06	(6) WDG-8	COS/FUV COS/NUV	1	30-Jul-2021 14:05:03.0	yes

8 Total Orbits Used

ABSTRACT

Metallicity is one of the most fundamental parameters governing both stellar and galactic evolution. However, the impact of metallicity on the physics of massive stars and their feedback is empirically not well constrained at low metallicities. The Magellanic Bridge, which is our nearest tidally interacting environment with significantly low mean metallicity Z<~0.1Zsol, offers a unique laboratory for this study. Recently three O-type and few early B-type stars in the Bridge were identified via optical spectroscopy. This newly discovered sample will allow to characterize the winds of metal-poor massive stars and to empirically establish the scaling of mass-loss with metallicity, which cannot be done by using optical data alone. We selected 6 UV brightest OB stars as targets to obtain COS FUV spectra. The spectra will be analyzed using advanced non-LTE stellar atmosphere models, thereby determining the stellar, wind parameters, and Fe abundances of individual massive stars in the Bridge. The empirical mass-loss rates at low metallicity will be used to constrain stellar evolution models. Two B stars in our sample showing high UV excess are suspected to be binaries and might hide a hot companion. The far UV spectra are crucial to identify and characterize the stripped He companions of B stars which are not found yet at low metallicity. The UV + optical spectral analysis is essential to quantify ionizing fluxes as well as mechanical energy provided by OB stars at low metallicity. Together with physics and abundances of diffuse gas from ISM lines, our study will shed light on stellar feedback and star formation, as well as constrain the formation history of the Bridge.

OBSERVING DESCRIPTION

The coordinates and proper motions of the targets are taken from GAIA DR2 catalog. We adopted different observing strategies depending on the spectral type. For O stars we use only COS-FUV and for B stars we use both FUV and NUV. In COS-FUV, we use G130M with cenwave 1291 with two allowed FP-POS, and G160M cenwave 1611 with ALL FP-POS. In COS-NUV, we use G185M with two settings cenwave 1913 and 1953, with ALL FP-POS. In the case of WDG-8, both NUV and FUV observations are planned in a sigle orbit. For other two B stars (S0XA000379, S0XA000375), FUV and NUV obesrvations will be in two consecutive orbits.

Visit

Proposal 16647, Visit 01 Fri Jul 30 18:05:05 GMT 2021

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV

Special Requirements: SCHED 30%

Fixed Targets

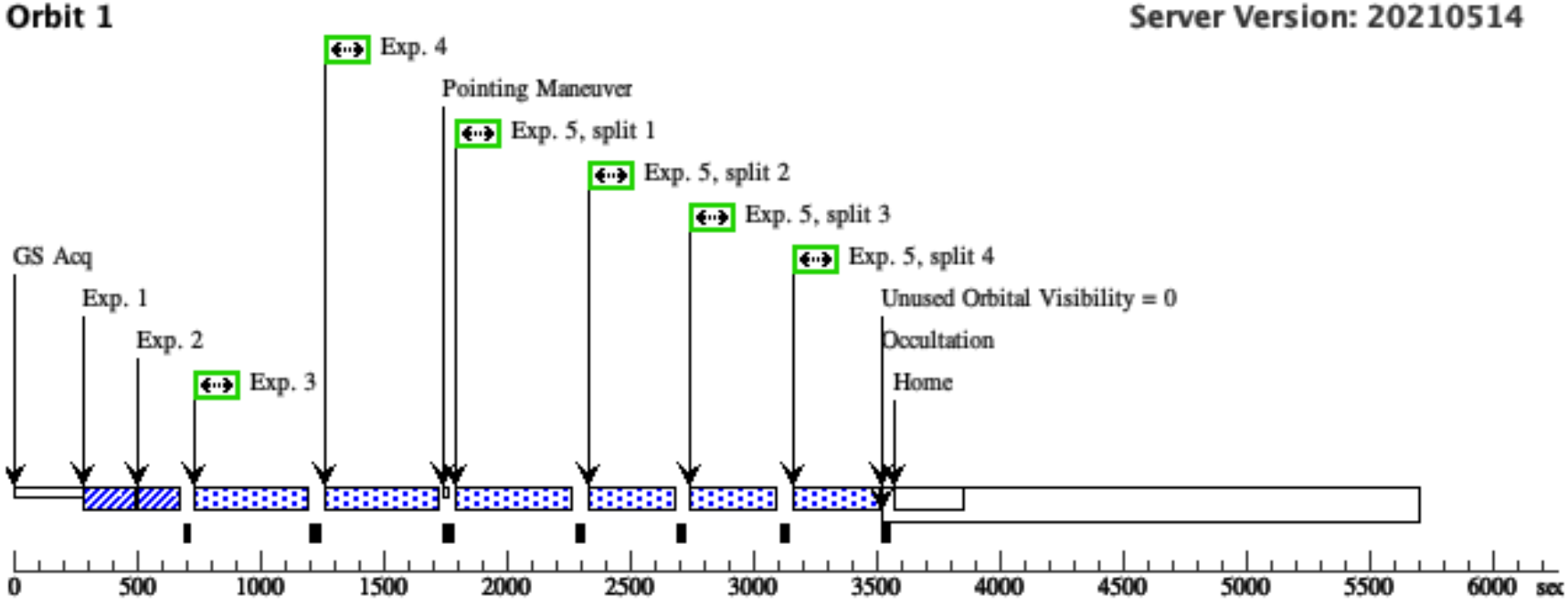
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	S0WX000267	RA: 02 14 11.8544 (33.5493933d) Dec: -74 04 42.81 (-74.07856d) Equinox: J2000	Proper Motion RA: 1.465 mas/yr Proper Motion Dec: -1.124 mas/yr Epoch of Position: 2016.0	V=14.26	Reference Frame: ICRS

Comments:
Category=EXT-STAR
Description=[GIANT O]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(1526494)	(1) S0WX000267	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A				3.5 Secs (3.5 Secs) *[==>]*	***[1]***
2	(1526494)	(1) S0WX000267	COS/FUV, ACQ/PEAKD, PSA	G130M 1291 A	CENTER=DEF; NUM-POS=5; SEGMENT=BOTH; STEP-SIZE=0.9			3.5 Secs (3.5 Secs) *[==>]*	***[1]***
3	(1526498)	(1) S0WX000267	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; SEGMENT=BOTH; FLASH=YES; BUFFER-TIME=1451			411 Secs (411 Secs) *[==>]*	***[1]***
4	(1526498)	(1) S0WX000267	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; SEGMENT=BOTH; FLASH=YES; BUFFER-TIME=1451			411 Secs (411 Secs) *[==>]*	***[1]***
5	(1526504)	(1) S0WX000267	COS/FUV, TIME-TAG, PSA	G160M 1611 A	SEGMENT=BOTH; FLASH=YES; FP-POS=ALL; BUFFER-TIME=2077			298 Secs (1192 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	***[1]***

Orbit Structure



Visit

Proposal 16647, Visit 02

Fri Jul 30 18:05:05 GMT 2021

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV

Special Requirements: SCHED 30%

Fixed Targets

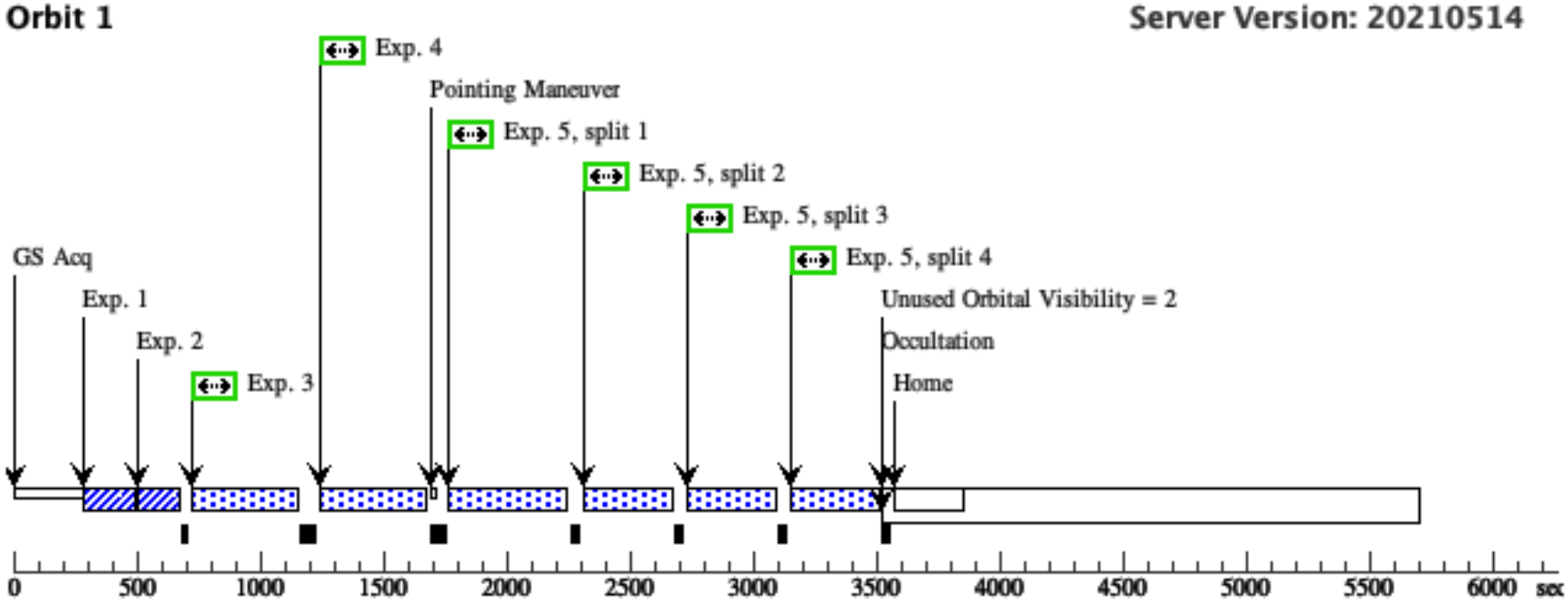
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	S0XA000389	RA: 02 11 55.0316 (32.9792983d) Dec: -74 12 37.10 (-74.21031d) Equinox: J2000	Proper Motion RA: 1.475 mas/yr Proper Motion Dec: -1.075 mas/yr Epoch of Position: 2016.0	V=15.24	Reference Frame: ICRS

Comments:
Category=EXT-STAR
Description=[MAIN SEQUENCE O]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(1526795)	(2) S0XA000389	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A				2.8 Secs (2.8 Secs) *[==>]*	***[1]***
2	(1526795)	(2) S0XA000389	COS/FUV, ACQ/PEAKD, PSA	G130M 1291 A	CENTER=DEF; NUM-POS=5; SEGMENT=BOTH; STEP-SIZE=0.9			2.8 Secs (2.8 Secs) *[==>]*	***[1]***
3	(1526810)	(2) S0XA000389	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; SEGMENT=BOTH; FLASH=YES; BUFFER-TIME=689			380 Secs (380 Secs) *[==>]*	***[1]***
4	(1526810)	(2) S0XA000389	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; SEGMENT=BOTH; FLASH=YES; BUFFER-TIME=689			380 Secs (380 Secs) *[==>]*	***[1]***
5	(1526835)	(2) S0XA000389	COS/FUV, TIME-TAG, PSA	G160M 1611 A	SEGMENT=BOTH; FLASH=YES; FP-POS=ALL; BUFFER-TIME=1498			305 Secs (1220 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	***[1]***

Orbit Structure



Visit

Proposal 16647, Visit 03 Fri Jul 30 18:05:05 GMT 2021

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV

Special Requirements: SCHED 30%

Fixed Targets

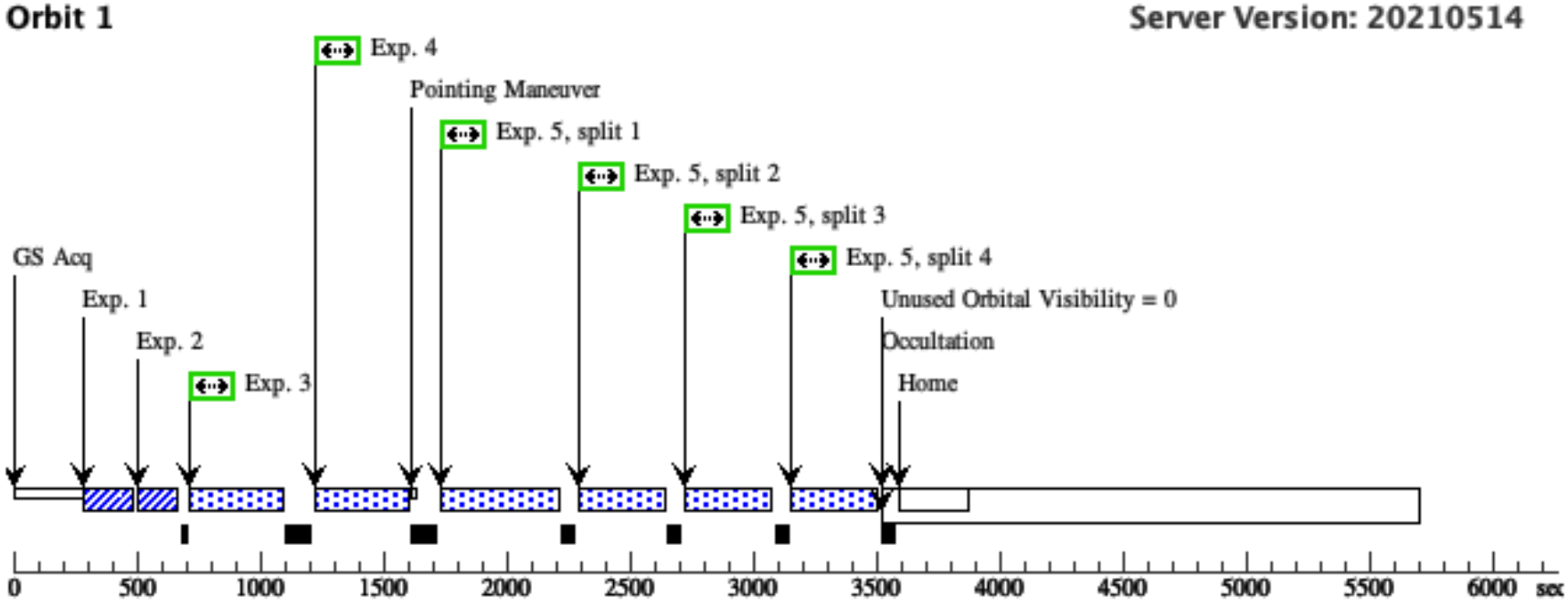
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	S0XA000387	RA: 02 12 4.8204 (33.0200850d) Dec: -74 11 57.71 (-74.19936d) Equinox: J2000	Proper Motion RA: 1.468 mas/yr Proper Motion Dec: -1.064 mas/yr Epoch of Position: 2016.0	V=15.16	Reference Frame: ICRS

Comments:
Category=EXT-STAR
Description=[MAIN SEQUENCE O]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(1526836)	(3) S0XA000387	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A				2 Secs (2 Secs) *[==>]*	***[1]***
2	(1526836)	(3) S0XA000387	COS/FUV, ACQ/PEAKD, PSA	G130M 1291 A	CENTER=DEF; NUM-POS=5; SEGMENT=BOTH; STEP-SIZE=0.9			2 Secs (2 Secs) *[==>]*	***[1]***
3	(1526845)	(3) S0XA000387	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; SEGMENT=BOTH; FLASH=YES; BUFFER-TIME=348			328 Secs (328 Secs) *[==>]*	***[1]***
4	(1526845)	(3) S0XA000387	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; SEGMENT=BOTH; FLASH=YES; BUFFER-TIME=348			328 Secs (328 Secs) *[==>]*	***[1]***
5	(1526846)	(3) S0XA000387	COS/FUV, TIME-TAG, PSA	G160M 1611 A	SEGMENT=BOTH; FLASH=YES; FP-POS=ALL; BUFFER-TIME=821			300 Secs (1200 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	***[1]***

Orbit Structure



Visit

Proposal 16647, Visit 04 Fri Jul 30 18:05:05 GMT 2021

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 30%

Fixed Targets

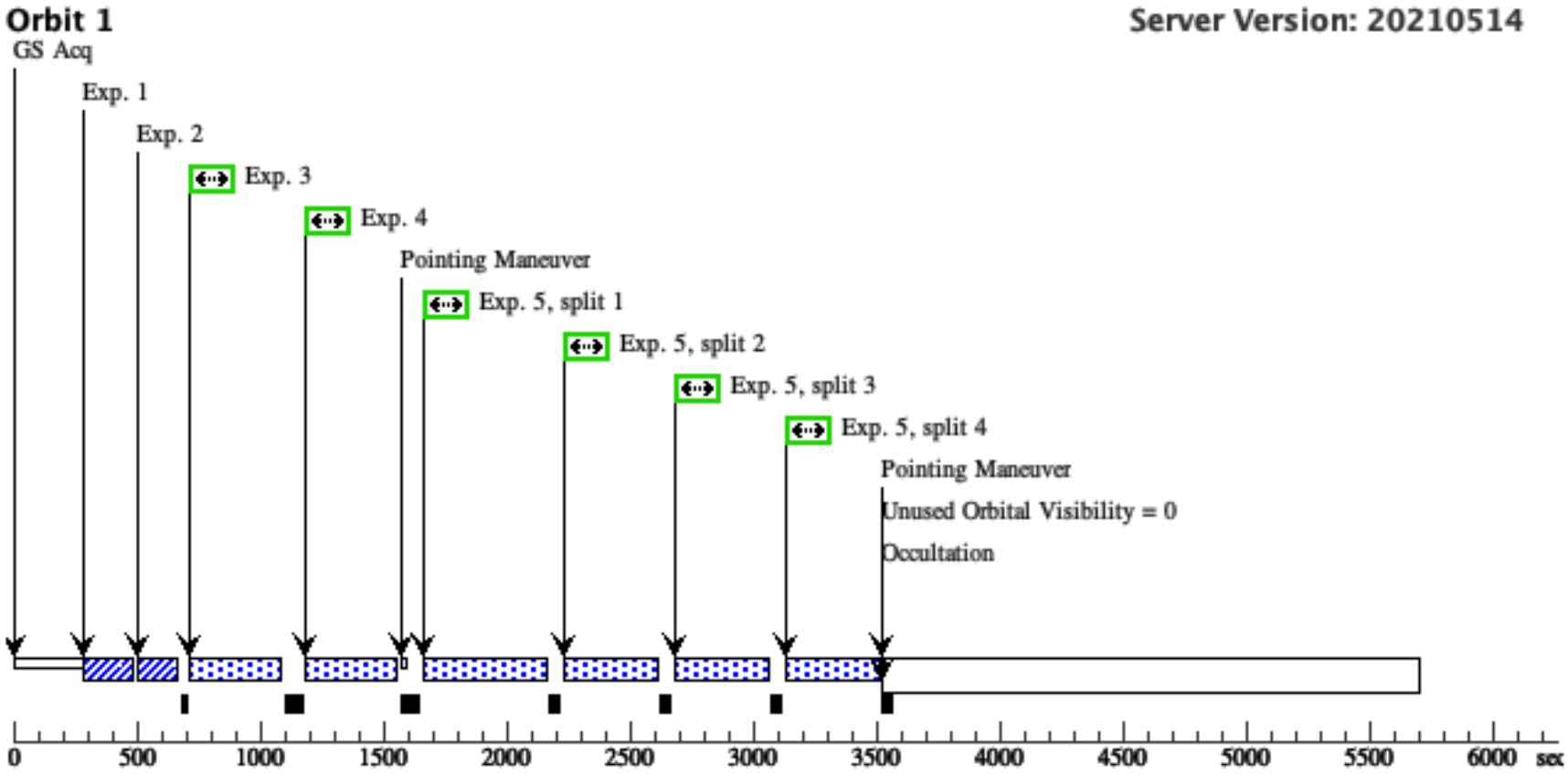
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	S0XA000379	RA: 02 12 9.8583 (33.0410763d) Dec: -74 10 26.40 (-74.17400d) Equinox: J2000	Proper Motion RA: 1.474 mas/yr Proper Motion Dec: -1.091 mas/yr Epoch of Position: 2016.0	V=14.29	Reference Frame: ICRS

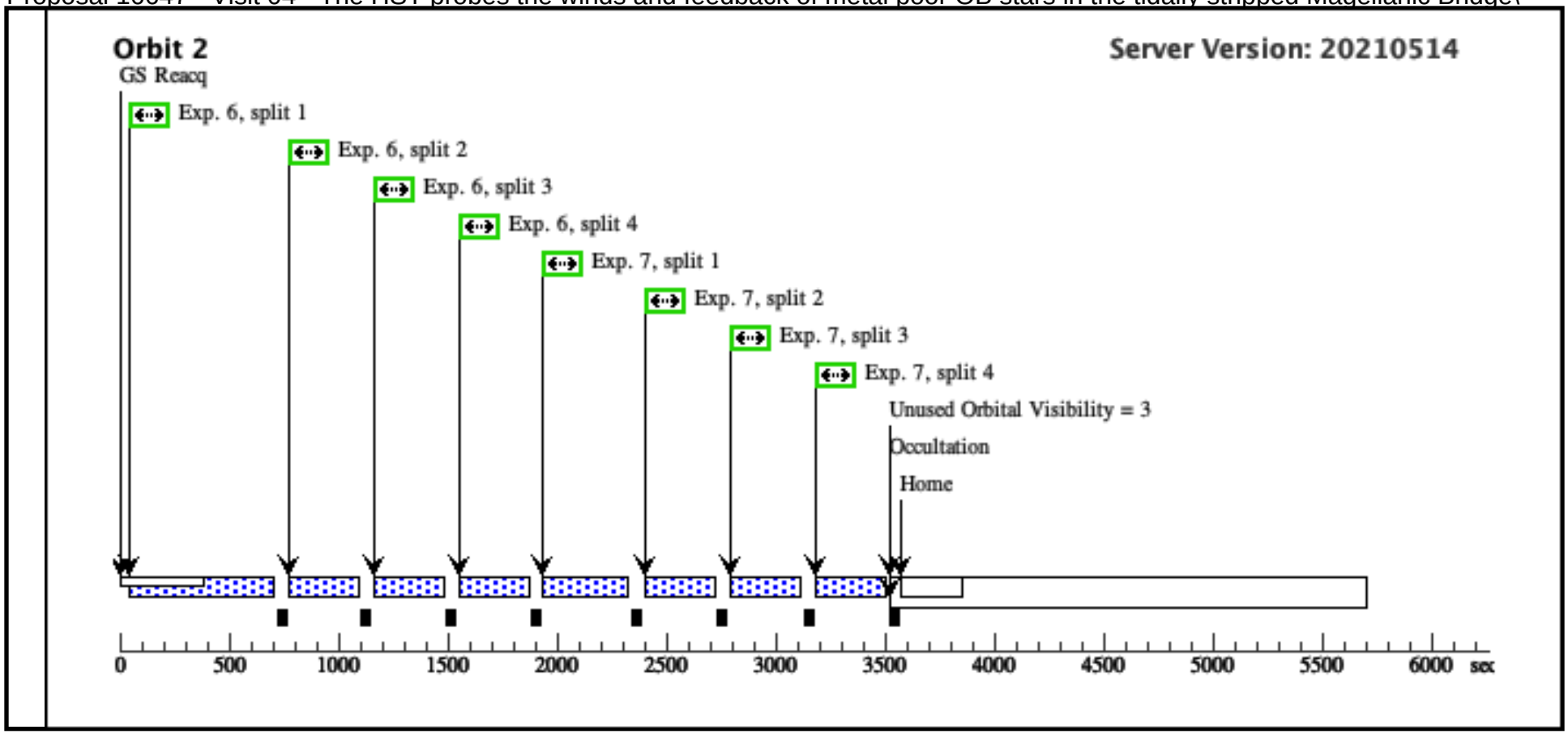
Comments:
Category=EXT-STAR
Description=[B0-B2 III-I]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(1526861)	(4) S0XA000379	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A				2 Secs (2 Secs) *[==>]*	***[1]***
2	(1526861)	(4) S0XA000379	COS/FUV, ACQ/PEAKD, PSA	G130M 1291 A	CENTER=DEF; NUM-POS=5; SEGMENT=BOTH; STEP-SIZE=0.9			2 Secs (2 Secs) *[==>]*	***[1]***
3	(1526857)	(4) S0XA000379	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; SEGMENT=BOTH; FLASH=YES; BUFFER-TIME=502			321 Secs (321 Secs) *[==>]*	***[1]***
4	(1526857)	(4) S0XA000379	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; SEGMENT=BOTH; FLASH=YES; BUFFER-TIME=502			321 Secs (321 Secs) *[==>]*	***[1]***
5	(1526858)	(4) S0XA000379	COS/FUV, TIME-TAG, PSA	G160M 1611 A	SEGMENT=BOTH; FLASH=YES; FP-POS=ALL; BUFFER-TIME=1021			325 Secs (1300 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	***[1]***
6	(1528023)	(4) S0XA000379	COS/NUV, TIME-TAG, PSA	G185M 1986 A	BUFFER-TIME=982; FLASH=YES; FP-POS=ALL			300 Secs (1200 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	***[2]***
7	(1526899)	(4) S0XA000379	COS/NUV, TIME-TAG, PSA	G185M 1953 A	BUFFER-TIME=973; FLASH=YES; FP-POS=ALL			305 Secs (1220 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	***[2]***

Orbit Structure




Orbit 2
Server Version: 20210514
GS Reacq
Exp. 6, split 1
Exp. 6, split 2
Exp. 6, split 3
Exp. 6, split 4
Exp. 7, split 1
Exp. 7, split 2
Exp. 7, split 3
Exp. 7, split 4
Unused Orbital Visibility = 3
Occultation
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec

Visit

Proposal 16647, Visit 05 Fri Jul 30 18:05:05 GMT 2021

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 30%

Fixed Targets

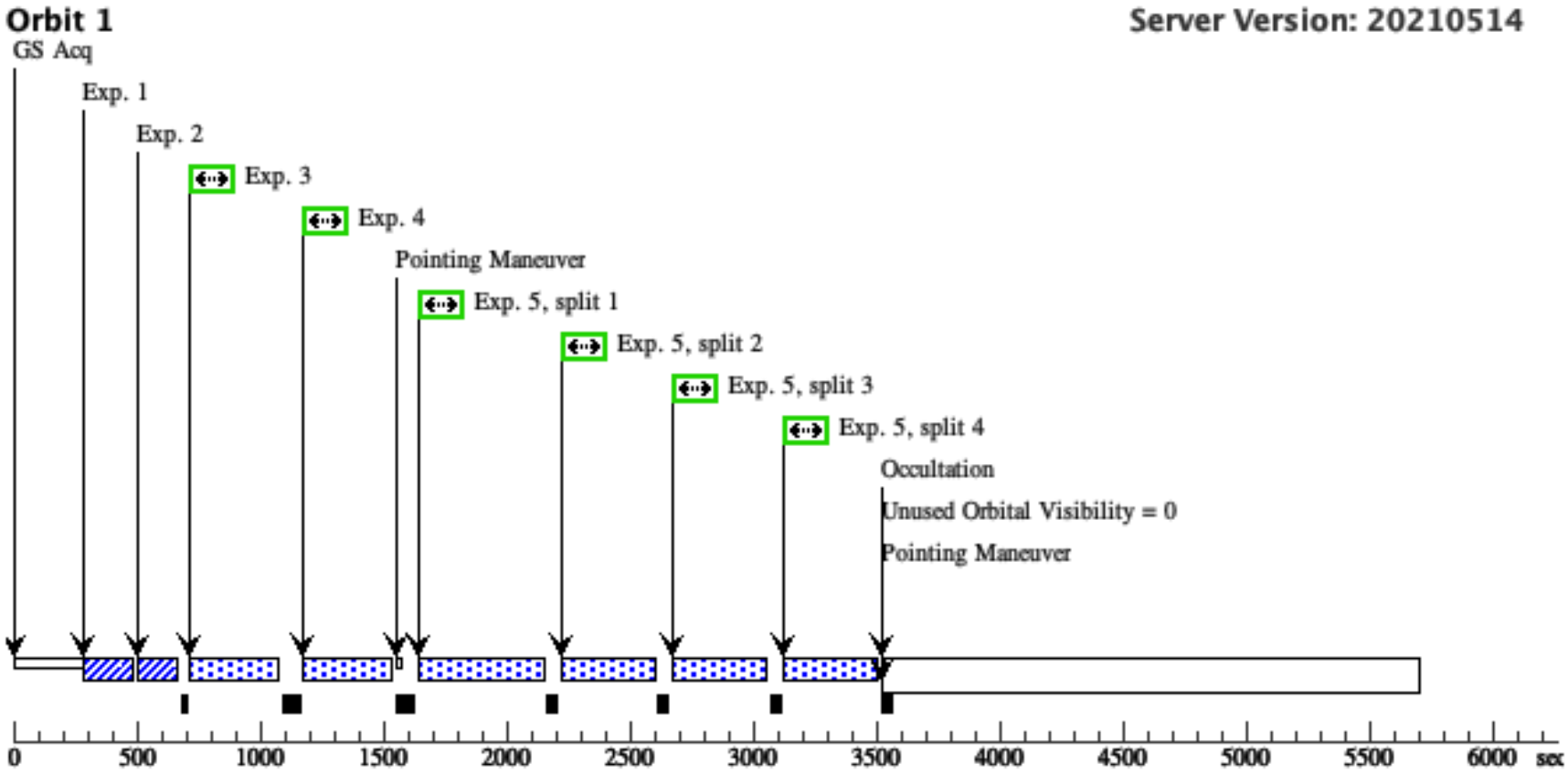
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	S0XA000375	RA: 02 12 17.8513 (33.0743804d) Dec: -74 09 51.14 (-74.16421d) Equinox: J2000	Proper Motion RA: 0.997 mas/yr Proper Motion Dec: 0.116 mas/yr Epoch of Position: 2016.0	V=14.48	Reference Frame: ICRS

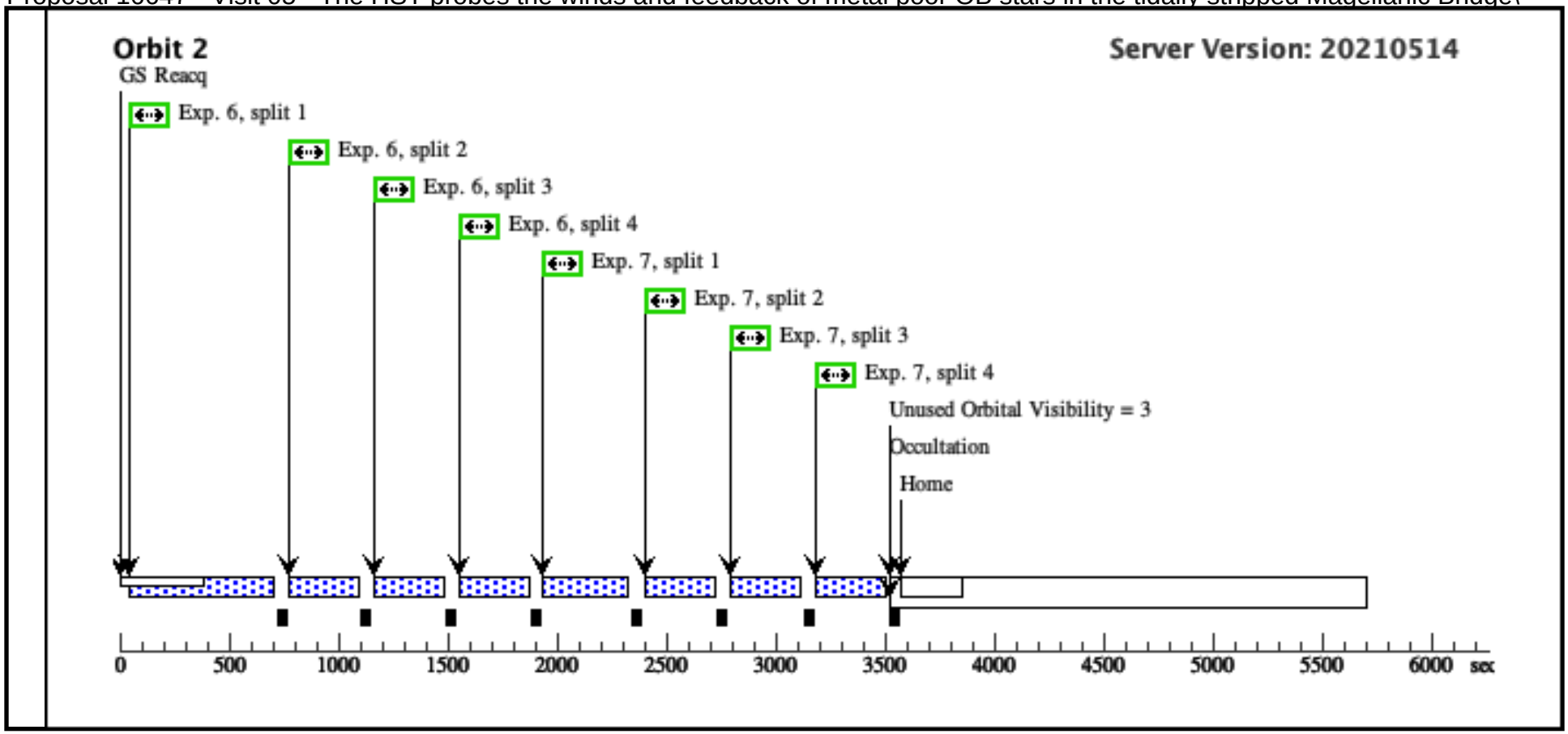
Comments:
Category=EXT-STAR
Description=[B0-B2 III-I]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(1526860)	(5) S0XA000375	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A				2 Secs (2 Secs) *[==>]*	*[1]*
2	(1526860)	(5) S0XA000375	COS/FUV, ACQ/PEAKD, PSA	G130M 1291 A	CENTER=DEF; NUM-POS=5; SEGMENT=BOTH; STEP-SIZE=0.9			2 Secs (2 Secs) *[==>]*	*[1]*
3	(1526864)	(5) S0XA000375	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; SEGMENT=BOTH; FLASH=YES; BUFFER-TIME=521			311 Secs (311 Secs) *[==>]*	*[1]*
4	(1526864)	(5) S0XA000375	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; SEGMENT=BOTH; FLASH=YES; BUFFER-TIME=521			311 Secs (311 Secs) *[==>]*	*[1]*
5	(1526863)	(5) S0XA000375	COS/FUV, TIME-TAG, PSA	G160M 1611 A	SEGMENT=BOTH; FLASH=YES; FP-POS=ALL; BUFFER-TIME=1096			330 Secs (1320 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	*[1]*
6	(1528013)	(5) S0XA000375	COS/NUV, TIME-TAG, PSA	G185M 1986 A	BUFFER-TIME=1003; FLASH=YES; FP-POS=ALL			300 Secs (1200 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	*[2]*
7	(1526883)	(5) S0XA000375	COS/NUV, TIME-TAG, PSA	G185M 1953 A	BUFFER-TIME=994; FLASH=YES; FP-POS=ALL			305 Secs (1220 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	*[2]*

Orbit Structure




Orbit 2
Server Version: 20210514
GS Reacq
Exp. 6, split 1
Exp. 6, split 2
Exp. 6, split 3
Exp. 6, split 4
Exp. 7, split 1
Exp. 7, split 2
Exp. 7, split 3
Exp. 7, split 4
Unused Orbital Visibility = 3
Occultation
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec

Visit

Proposal 16647, Visit 06 Fri Jul 30 18:05:05 GMT 2021

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 30%

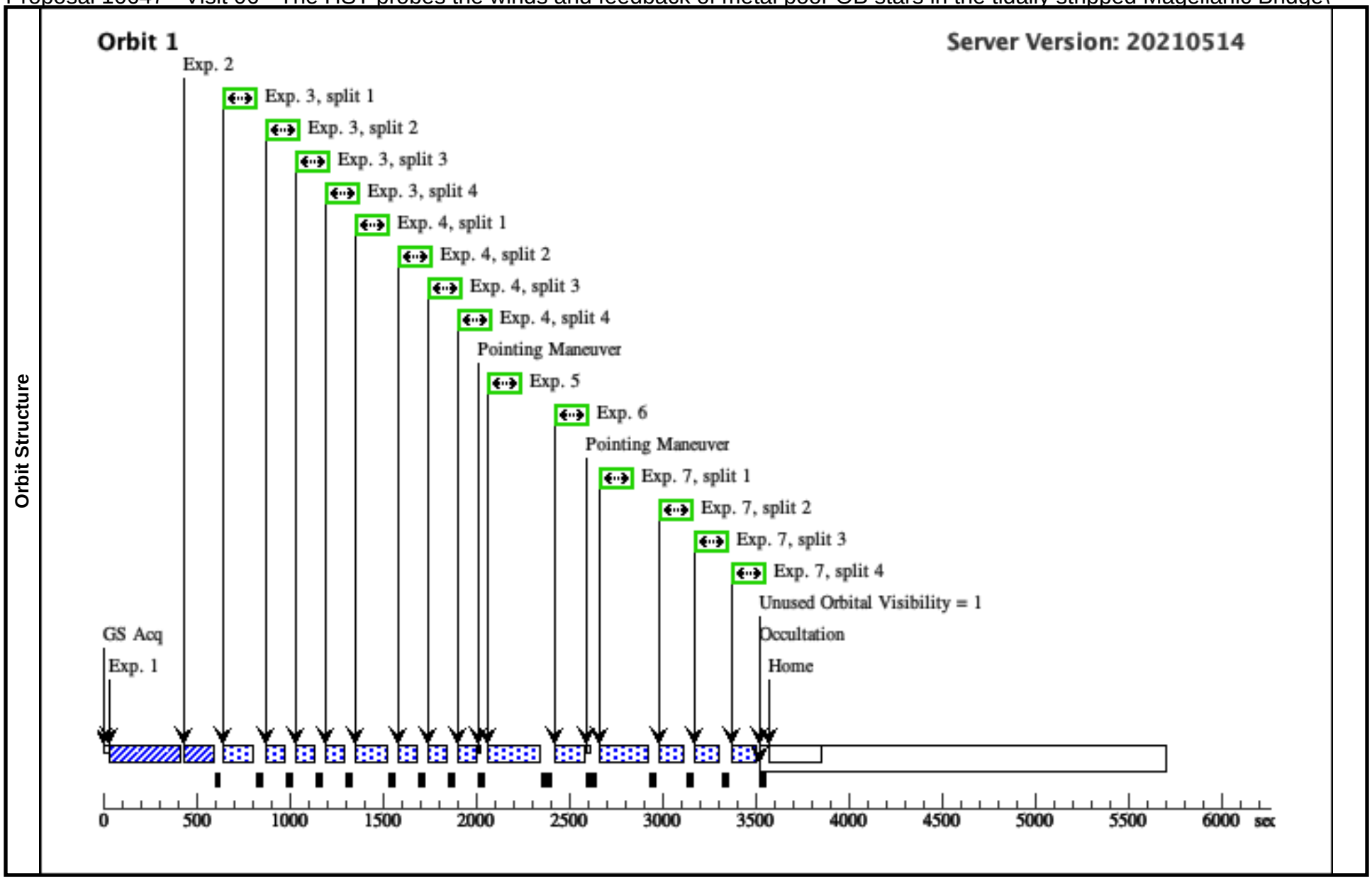
Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	WDG-8	RA: 02 13 25.4179 (33.3559079d) Dec: -74 31 20.30 (-74.52231d) Equinox: J2000	Proper Motion RA: 1.584 mas/yr Proper Motion Dec: -1.213 mas/yr Epoch of Position: 2016.0	V=12.16	Reference Frame: ICRS

Comments:
Category=EXT-STAR
Description=[B3-B5 III-I]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(1528038)	(6) WDG-8	COS/NUV, ACQ/PEAKXD, PSA	G185M 1953 A				3 Secs (3 Secs) *[==>]*	***[1]***
2	(1528038)	(6) WDG-8	COS/NUV, ACQ/PEAKD, PSA	G185M 1953 A	CENTER=DEF; NUM-POS=5; STEP-SIZE=0.9			3 Secs (3 Secs) *[==>]*	***[1]***
3	(1529206)	(6) WDG-8	COS/NUV, TIME-TAG, PSA	G185M 1953 A	BUFFER-TIME=627; FLASH=YES; FP-POS=ALL			82 Secs (328 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	***[1]***
4	(1529214)	(6) WDG-8	COS/NUV, TIME-TAG, PSA	G185M 1986 A	BUFFER-TIME=620; FLASH=YES; FP-POS=ALL			82 Secs (328 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	***[1]***
5	(1529257)	(6) WDG-8	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=281; FLASH=YES; FP-POS=3; SEGMENT=BOTH			106 Secs (106 Secs) *[==>]*	***[1]***
6	(1529257)	(6) WDG-8	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; SEGMENT=BOTH; FLASH=YES; BUFFER-TIME=281			106 Secs (106 Secs) *[==>]*	***[1]***
7	(1529282)	(6) WDG-8	COS/FUV, TIME-TAG, PSA	G160M 1611 A	SEGMENT=BOTH; FLASH=YES; FP-POS=ALL; BUFFER-TIME=371			82 Secs (328 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20210514
Exp. 2
Exp. 3, split 1
Exp. 3, split 2
Exp. 3, split 3
Exp. 3, split 4
Exp. 4, split 1
Exp. 4, split 2
Exp. 4, split 3
Exp. 4, split 4
Pointing Maneuver
Exp. 5
Exp. 6
Pointing Maneuver
Exp. 7, split 1
Exp. 7, split 2
Exp. 7, split 3
Exp. 7, split 4
Unused Orbital Visibility = 1
Occultation
Home
GS Acq
Exp. 1
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec