15494 - Actively Disintegrating Astroids around a White Dwarf

Cycle: 26, 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) WD1145+017	COS/FUV COS/NUV	3	12-May-2020 15:02:29.0	yes
02	(1) WD1145+017	COS/FUV COS/NUV	3	12-May-2020 15:02:30.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
03	(1) WD1145+017	COS/FUV COS/NUV	3	12-May-2020 15:02:32.0	yes
04	(1) WD1145+017	COS/FUV COS/NUV	3	12-May-2020 15:02:33.0	yes
54	(1) WD1145+017	COS/FUV COS/NUV	3	12-May-2020 15:02:34.0	yes

15 Total Orbits Used

ABSTRACT

Recent studies show that planetary systems can be widespread around white dwarfs. It has been proposed that planetary systems are responsible for the pollution observed in a white dwarf's atmosphere and the excess infrared radiation. This scenario is greatly strengthened by the recent discovery of actively disintegrating bodies orbiting around the white dwarf WD 1145+017. In addition, this system has a heavily polluted atmosphere, a dust disk, and circumstellar gas. Our team has been monitoring this system since its discovery and our recent COS data have revealed many new surprises. We propose to continue studying this system for the next two cycles and further constrain the evolution of the disintegrating bodies: what are the main mechanisms responsible for its destruction? How is circumstellar gas produced and maintained?

OBSERVING DESCRIPTION

We aim to understand WD 1145+017 system, which has a heavily polluted atmosphere, a dust disk, at least two circumstellar gas components as well as multiple transiting objects. COS observations can uniquely monitor the pollution, circumstellar gas, and transiting objects simultaneously. Here, we propose to obtain a full FUV spectrum of this rapidly evolving object. Specifically, our goal is threefold: (i) Understand the evolution of circumstellar gas; (ii) Study the change of UV light curve; (iii) Explore new spectral features. To have a continuous coverage from 1130 to 1800 Anstrom, we request four set-ups, two with G130M (central wavelength of 1291 Angstrom and 1327 Angstrom), and two with G160M (central wavelength of 1577 Anstrom and 1623 Angstrom).

Visit

Proposal 15494, Visit 01, completed Tue May 12 19:02:35 GMT 2020

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: BETWEEN 30-MAR-2019 AND 12-APR-2019; BETWEEN 21-APR-2019 AND 09-MAY-2019

Diagnostics

(Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

Fixed Targets

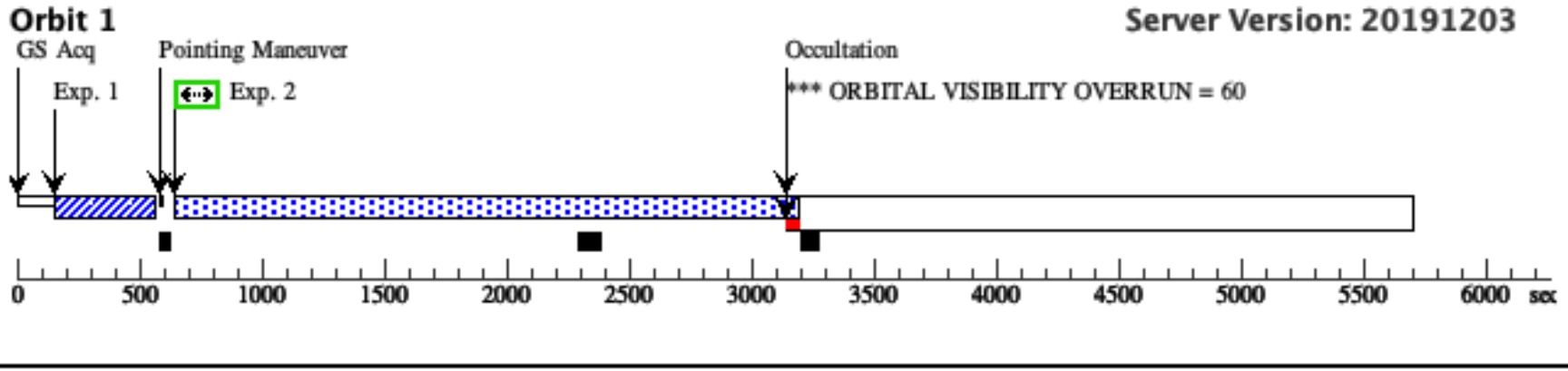
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	WD1145+017	RA: 11 48 33.6270 (177.1401125d) Dec: +01 28 59.45 (1.48318d) Equinox: J2000	Proper Motion RA: -43.3 mas/yr Proper Motion Dec: -7 mas/yr Epoch of Position: 2000	V=17.3	Reference Frame: ICRS

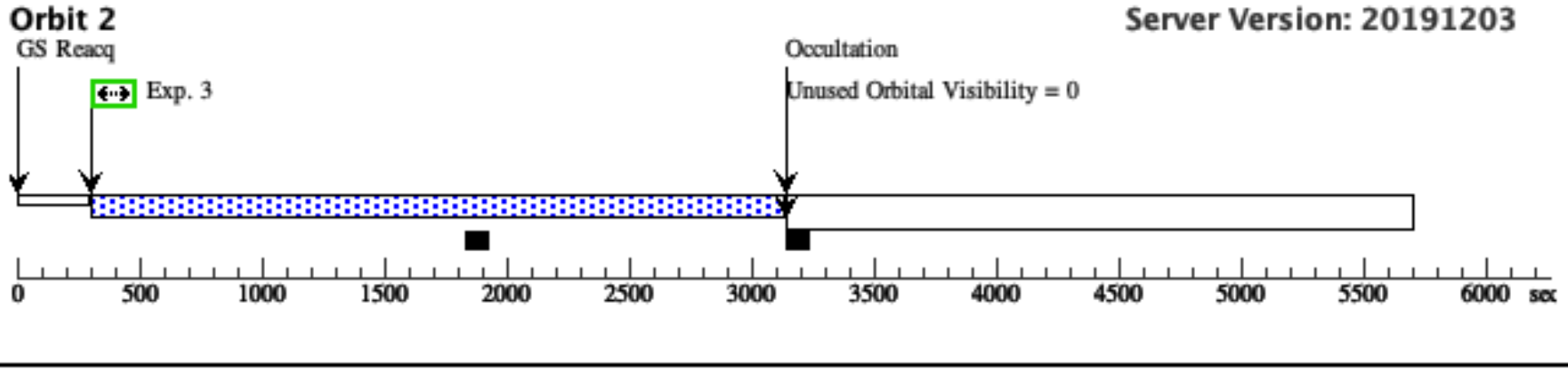
Comments:
Category=STAR
Description=[DB]
Extended=NO

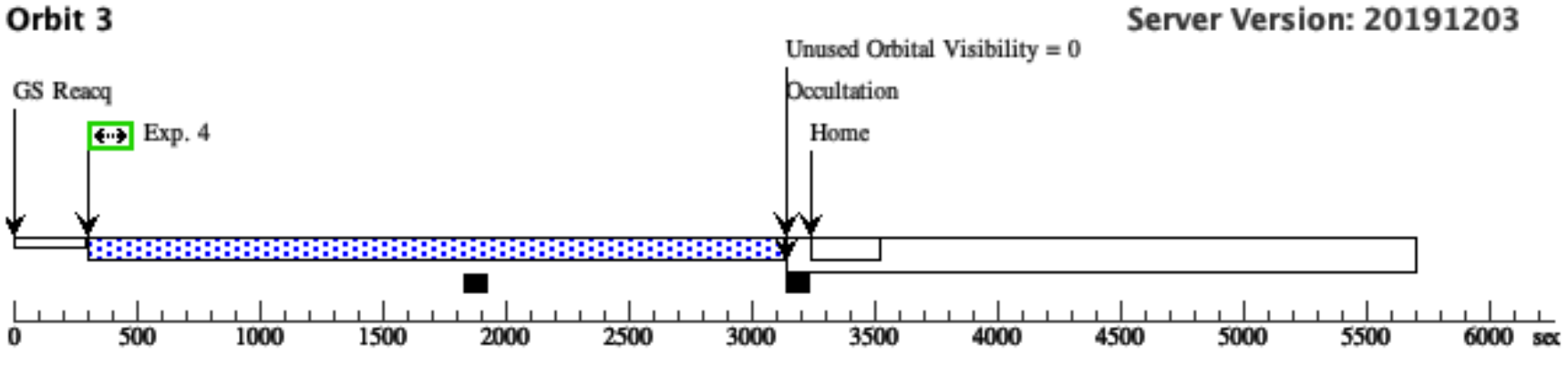
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ/IMAGE (COS.ta.1006248)	(1) WD1145+017	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				60 Secs (60 Secs) *[==>]*	*[1]*
2	WD1145_G130M_FPPOS3 (COS.sp.1006250)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			2000 Secs (2377 Secs) *[==>2377.0 Secs]*	*[1]*
3	WD1145_G130M_FPPOS3 (COS.sp.1006250)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			2000 Secs (2776 Secs) *[==>2776.0 Secs]*	*[2]*
4	WD1145_G130M_FPPOS3 (COS.sp.1006250)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=3; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			2000 Secs (2776 Secs) *[==>2776.0 Secs]*	*[3]*

Orbit Structure







Visit

Proposal 15494, Visit 02, completed Tue May 12 19:02:35 GMT 2020

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: AFTER_01 BY 9.8_Orbits TO 10.2_Orbits

Diagnostics

(Visit 02) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

Fixed Targets

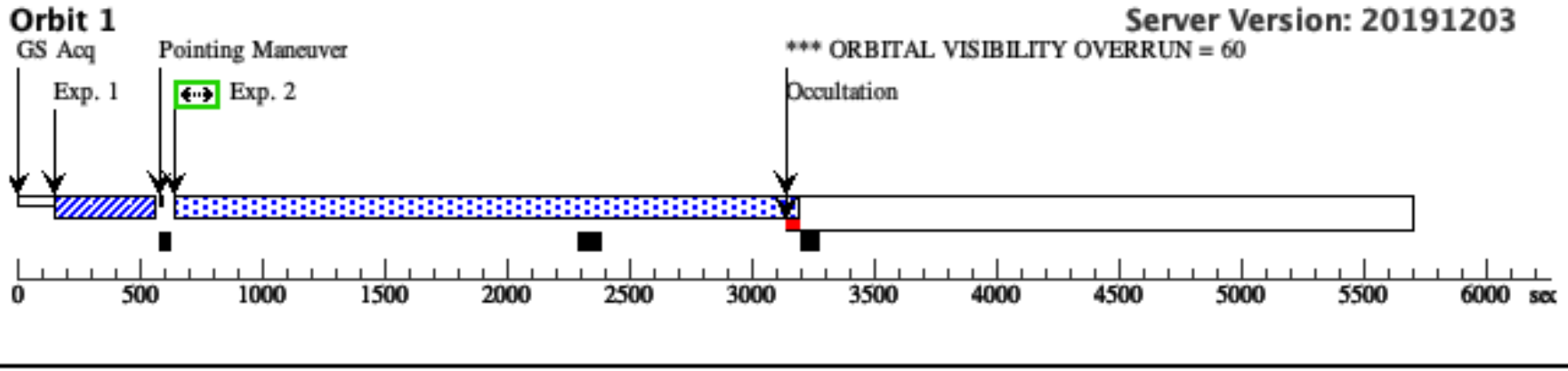
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	WD1145+017	RA: 11 48 33.6270 (177.1401125d) Dec: +01 28 59.45 (1.48318d) Equinox: J2000	Proper Motion RA: -43.3 mas/yr Proper Motion Dec: -7 mas/yr Epoch of Position: 2000	V=17.3	Reference Frame: ICRS

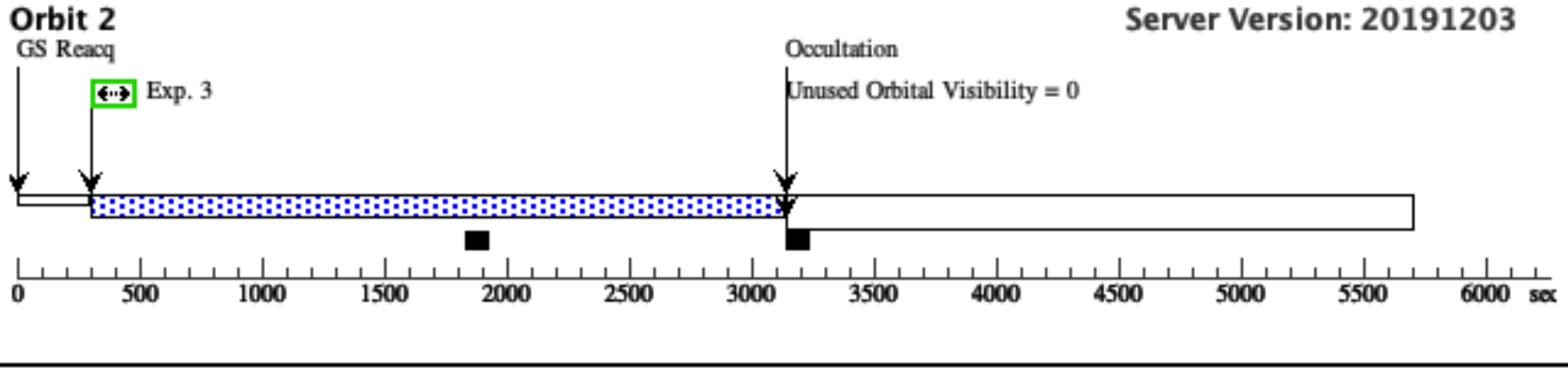
Comments:
Category=STAR
Description=[DB]
Extended=NO

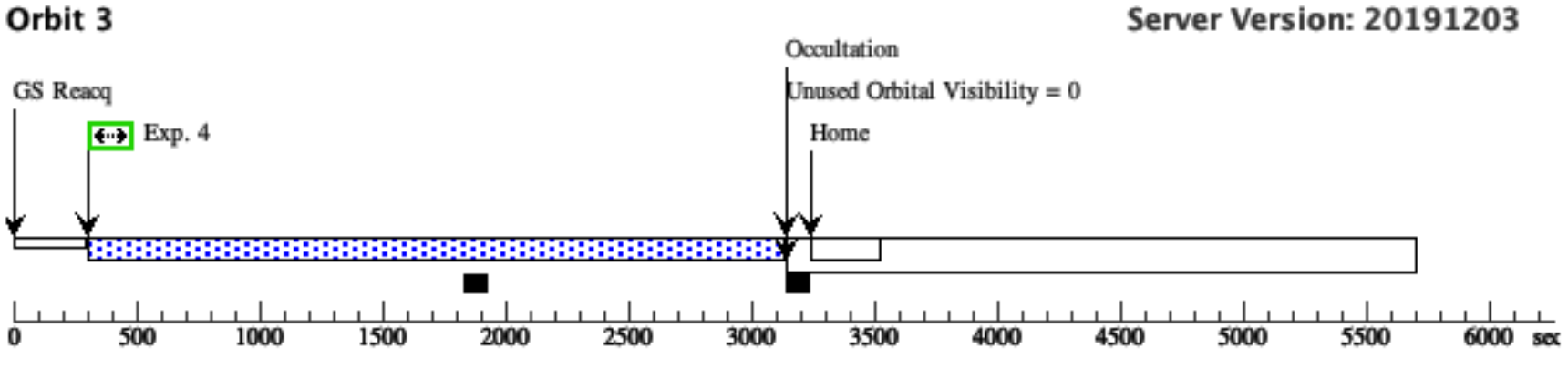
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ/IMAGE (COS.ta.1006248)	(1) WD1145+017	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				60 Secs (60 Secs) *[==>]*	*[1]*
2	WD1145_G130M_FPPOS4 (COS.sp.1006250)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			2000 Secs (2377 Secs) *[==>2377.0 Secs]*	*[1]*
3	WD1145_G130M_FPPOS4 (COS.sp.1006250)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			2000 Secs (2776 Secs) *[==>2776.0 Secs]*	*[2]*
4	WD1145_G130M_FPPOS4 (COS.sp.1006250)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G130M 1291 A	FP-POS=4; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			2000 Secs (2776 Secs) *[==>2776.0 Secs]*	*[3]*

Orbit Structure







Visit

Proposal 15494, Visit 03, completed Tue May 12 19:02:35 GMT 2020

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: BETWEEN 19-JAN-2020:00:00:00 AND 07-FEB-2020:00:00:00; BETWEEN 16-FEB-2020:00:00:00 AND 04-MAR-2020:00:00:00; BETWEEN 14-MAR-2020:00:00:00 AND 01-APR-2020:00:00:00; BETWEEN 10-APR-2020:00:00:00 AND 29-APR-2020:00:00:00

Fixed Targets

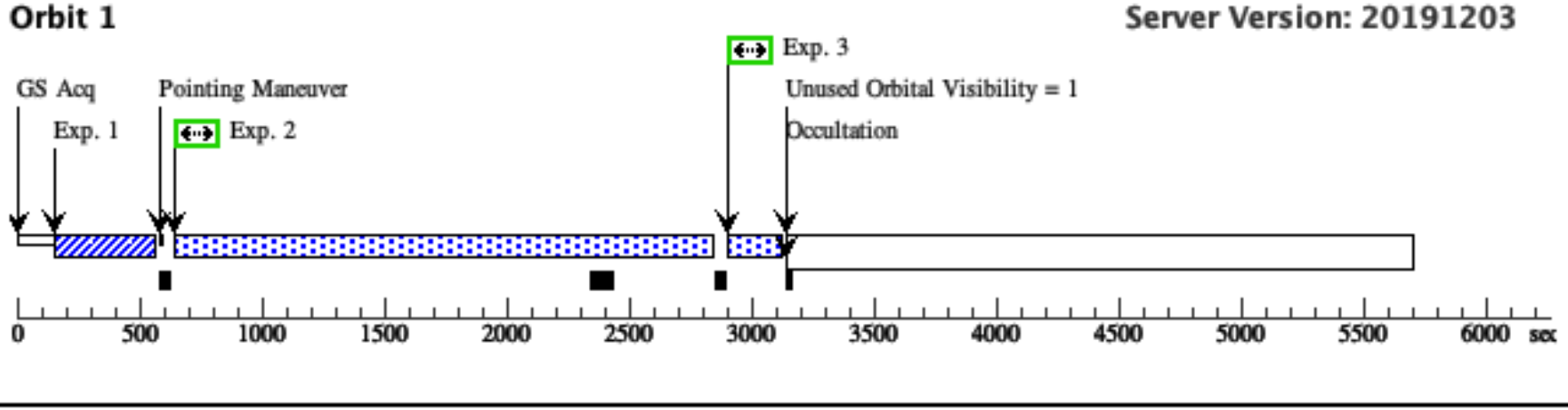
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	WD1145+017	RA: 11 48 33.6270 (177.1401125d) Dec: +01 28 59.45 (1.48318d) Equinox: J2000	Proper Motion RA: -43.3 mas/yr Proper Motion Dec: -7 mas/yr Epoch of Position: 2000	V=17.3	Reference Frame: ICRS

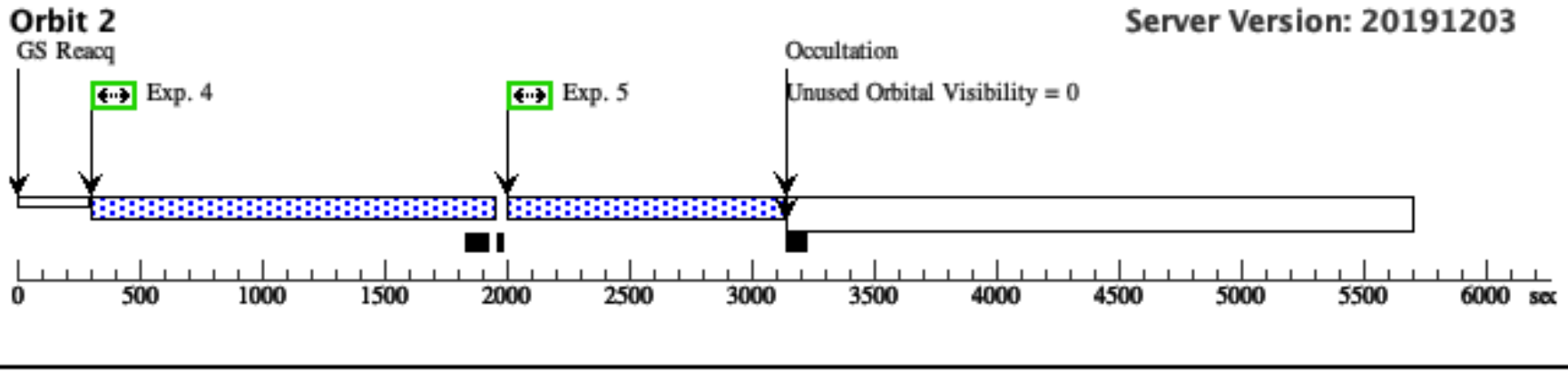
Comments:
Category=STAR
Description=[DB]
Extended=NO

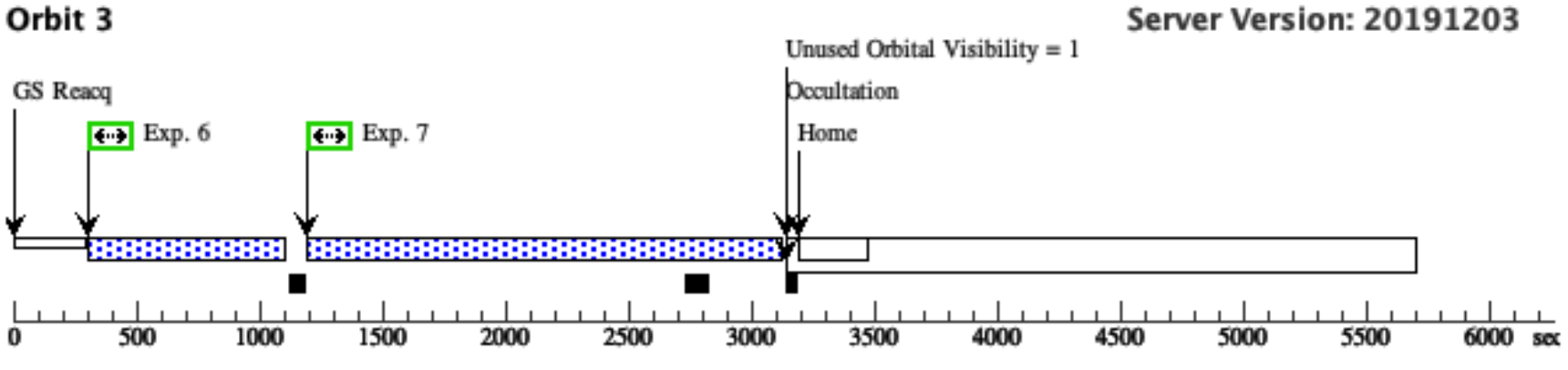
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ/IMAGE (COS.ta.1006248)	(1) WD1145+017	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				60 Secs (60 Secs) *[==>]*	***[1]***
2	WD1145_G160M (COS.sp.1006252)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G160M 1623 A	FP-POS=1; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			2100 Secs (1974 Secs) *[==>1974.0 Secs]*	***[1]***
3	WD1145_G160M (COS.sp.1006252)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G160M 1623 A	FP-POS=2; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			291 Secs (165 Secs) *[==>165.0 Secs]*	***[1]***
4	WD1145_G160M (COS.sp.1006252)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G160M 1623 A	FP-POS=2; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			1620 Secs (1597 Secs) *[==>1597.0 Secs]*	***[2]***
5	WD1145_G160M (COS.sp.1006252)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G160M 1623 A	FP-POS=3; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			1097 Secs (1074 Secs) *[==>1074.0 Secs]*	***[2]***
6	WD1145_G160M (COS.sp.1006252)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G160M 1623 A	FP-POS=3; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			787 Secs (754 Secs) *[==>754.0 Secs]*	***[3]***
7	WD1145_G160M (COS.sp.1006252)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G160M 1623 A	FP-POS=4; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			1911 Secs (1878 Secs) *[==>1878.0 Secs]*	***[3]***

Orbit Structure







Visit

Proposal 15494, Visit 04, failed Tue May 12 19:02:35 GMT 2020

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: AFTER 03 BY 9.8 Orbits TO 10.2 Orbits

Fixed Targets

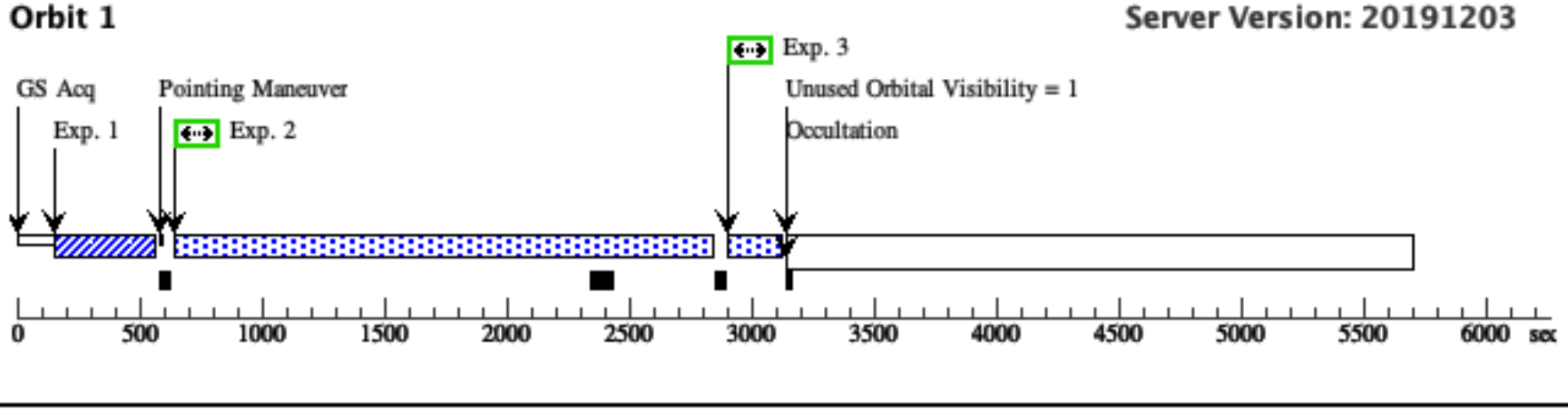
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	WD1145+017	RA: 11 48 33.6270 (177.1401125d) Dec: +01 28 59.45 (1.48318d) Equinox: J2000	Proper Motion RA: -43.3 mas/yr Proper Motion Dec: -7 mas/yr Epoch of Position: 2000	V=17.3	Reference Frame: ICRS

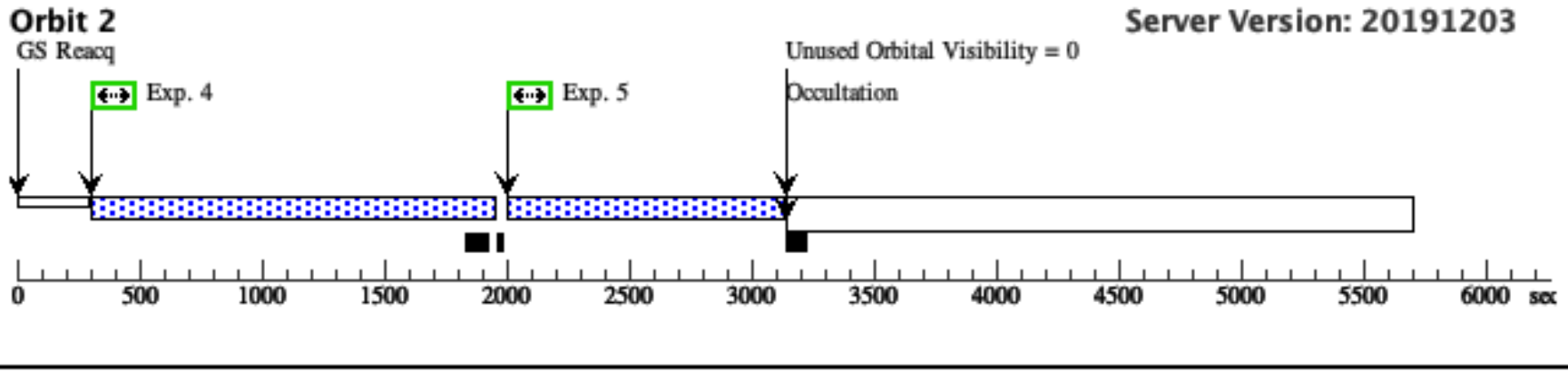
Comments:
Category=STAR
Description=[DB]
Extended=NO

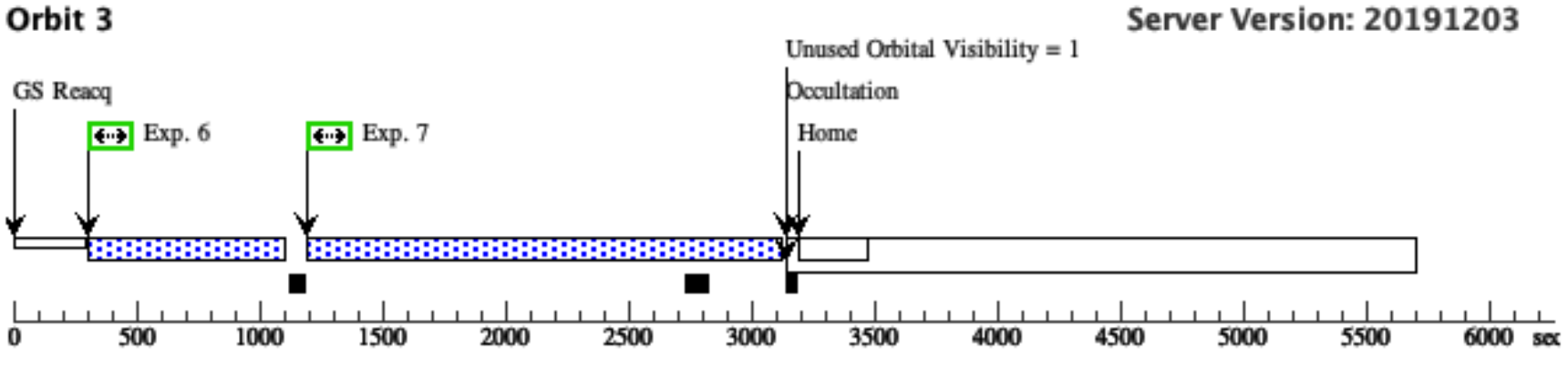
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ/IMAGE (COS.ta.1006248)	(1) WD1145+017	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				60 Secs (60 Secs) *[==>]*	***[1]***
2	WD1145_G160M (COS.sp.1006252)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G160M 1623 A	FP-POS=1; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			2100 Secs (1974 Secs) *[==>1974.0 Secs]*	***[1]***
3	WD1145_G160M (COS.sp.1006252)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G160M 1623 A	FP-POS=2; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			291 Secs (165 Secs) *[==>165.0 Secs]*	***[1]***
4	WD1145_G160M (COS.sp.1006252)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G160M 1623 A	FP-POS=2; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			1620 Secs (1597 Secs) *[==>1597.0 Secs]*	***[2]***
5	WD1145_G160M (COS.sp.1006252)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G160M 1623 A	FP-POS=3; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			1097 Secs (1074 Secs) *[==>1074.0 Secs]*	***[2]***
6	WD1145_G160M (COS.sp.1006252)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G160M 1623 A	FP-POS=3; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			787 Secs (754 Secs) *[==>754.0 Secs]*	***[3]***
7	WD1145_G160M (COS.sp.1006252)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G160M 1623 A	FP-POS=4; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			1911 Secs (1878 Secs) *[==>1878.0 Secs]*	***[3]***

Orbit Structure







Visit

Proposal 15494, Visit 54 Tue May 12 19:02:35 GMT 2020

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	WD1145+017	RA: 11 48 33.6270 (177.1401125d) Dec: +01 28 59.45 (1.48318d) Equinox: J2000	Proper Motion RA: -43.3 mas/yr Proper Motion Dec: -7 mas/yr Epoch of Position: 2000	V=17.3	Reference Frame: ICRS

Comments:
Category=STAR
Description=[DB]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ/IMAGE (COS.ta.1006248)	(1) WD1145+017	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				60 Secs (60 Secs) *[==>]*	*[1]*
2	WD1145_G160M (COS.sp.1006252)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G160M 1623 A	FP-POS=1; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			2100 Secs (1974 Secs) *[==>1974.0 Secs]*	*[1]*
3	WD1145_G160M (COS.sp.1006252)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G160M 1623 A	FP-POS=2; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			291 Secs (165 Secs) *[==>165.0 Secs]*	*[1]*
4	WD1145_G160M (COS.sp.1006252)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G160M 1623 A	FP-POS=2; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			1620 Secs (1597 Secs) *[==>1597.0 Secs]*	*[2]*
5	WD1145_G160M (COS.sp.1006252)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G160M 1623 A	FP-POS=3; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			1097 Secs (1074 Secs) *[==>1074.0 Secs]*	*[2]*
6	WD1145_G160M (COS.sp.1006252)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G160M 1623 A	FP-POS=3; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			787 Secs (754 Secs) *[==>754.0 Secs]*	*[3]*
7	WD1145_G160M (COS.sp.1006252)	(1) WD1145+017	COS/FUV, TIME-TAG, PSA	G160M 1623 A	FP-POS=4; FLASH=YES; SEGMENT=BOTH; BUFFER-TIME=1500			1911 Secs (1878 Secs) *[==>1878.0 Secs]*	*[3]*

Orbit Structure