16256 - A Sensitive Test for Far Ultraviolet CO absorption in the Outflow of our Nearest Supernova Progenitor - Antares

Cycle: 28, 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) -ALF-SCO	STIS/CCD STIS/NUV-MAMA	3	06-Jul-2020 14:00:24.0	yes
02	(1) -ALF-SCO	STIS/CCD STIS/FUV-MAMA	3	06-Jul-2020 14:00:25.0	yes
03	(1) -ALF-SCO	STIS/CCD STIS/NUV-MAMA	4	06-Jul-2020 14:00:26.0	yes
04	(1) -ALF-SCO	STIS/CCD STIS/FUV-MAMA	3	06-Jul-2020 14:00:27.0	yes
05	(1) -ALF-SCO	STIS/CCD STIS/NUV-MAMA	4	06-Jul-2020 14:00:29.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
06	(1) -ALF-SCO	STIS/CCD STIS/FUV-MAMA	3	06-Jul-2020 14:00:30.0	yes
07	(1) -ALF-SCO	STIS/CCD STIS/FUV-MAMA	3	06-Jul-2020 14:00:31.0	yes

23 Total Orbits Used

ABSTRACT

The massive red supergiant Antares (alpha Sco A: M1 Iab) is an excellent star to test theoretical models of mass loss because its distance, age, stellar parameters, mass-loss rate, and interstellar reddening are well established. The early-M supergiants pose a particular challenge for models of mass loss driven by radiation pressure on molecules and/or dust: The circumstellar molecular abundances and dust-to-gas mass ratios are lower than for later-M spectral-types, but they still manage to drive massive winds.

We request deep FUV and NUV observations to perform an extremely sensitive test for the most robust circumstellar molecule, CO, by observing its Fourth-Positive electronic bands against the FUV continuum of the M supergiant Antares. These observations will enable us measure any CO present in the outflow, and to place upper-limits on the effective radiation acceleration it can provide. The proposed observations will also provide an invaluable dataset for Antares, the oft neglected southern twin of Betelgeuse, and our nearest Type II supernova progenitor.

OBSERVING DESCRIPTION

This is a STIS spectroscopic program to observe the NUV and FUV spectrum of the M 1.5 Iab supergiant in the Antares (alpha Sco) system.

The M supergiant has a B3 V main-sequence orbital companion 2.67 arcsec West (PA=275 deg, Period >1250 years). The bright object constraint for non-variable objects within 5 arcsec of the target, namely the global count rate <200,00 cnt/s, requires that all the science observations be made with the 31x0.05 NDA aperture. This then requires the use of the ORIENT constraint to avoid placing the B star near the long aperture.

ORIENT: To place the long slit (31x0.05 arcsec) perpendicular to the stellar line of centers the +Y-axis should be 275-90=185 deg. The U3 axis is 45 deg from +Y, so the optimum ORIENT value is 185+45 = 230 deg, also in the opposite direction ORIENT=50 deg. We adopt a +/-45 deg ORIENT range on each direction giving bounds for each Visit as 5 to 95 deg AND 185-275 deg.

For the safety simulations in the STIS ETC we use the observed B star FUV and NUV spectrum (photospheric continuum) compiled from IUE Large Aperture spectra. For the faint M supergiant the science simulations use a slightly reddened, i.e. additional reddening of E(B-V)=0.1, HST STIS spectra of Betelgeuse (M2 Iab).

OBSERVATIONS:

ACQ: The ACQ is made with the STIS CCD with the F5ND5 aperture. [The M (V=0.91) star is ~400 times brighter than the B sar (V=5.91)]
Using the Castelli & Kurucz model M0I Teff=3650 K with E(B-V)=0.30 V=0.91 a S/N=145 is reached for Texp=0.1 sec. [STIS.ta.1447745]
We note that the position and proper motions are the best available (van Leeuwen 2007 Revised Hipparcos) which is tied to the ICRS frame.

PEAKUP: The PEAPKUP is made with G430M @5471 Ang in the 31x0.05 NDA aperture (which is also the science aperture).
Using the same model, a Texp=0.1 sec gives S/N=100 pre res. element. [STIS.sp.1447778]

SCIENCE: The earlier visits include the NUV where the M supergiant is bright enough to check the ACQ/PEAKUP sequence, and system throughout. No Visit schedule constraint is requested.
Subsequent Visits are a mix of FUV and NUV spectra, so that the FUV analysis can be initiated towards the beginning of the project. We use ACCUM to increase exposure times, and
put AUTO-WAVECAL at end of 2nd and subsequent orbits.

Science safety simulations assuming the B star is centered in the aperture, using observed IUE spectra:
E230H-2762 STIS sp.1447788 entire detector 159,196 cnt/s
E230H-2513 STIS.sp.1448283 ditto 191,248 cnt/s
E230H-2263 STIS.sp.1448287 ditto 174,589 cnt/s
E140H-1526 STIS.sp.1448300 ditto 170,242 cnt/s

All science observations use the 31x0.05 NDA aperture

Visit 1: 3 orbits E230H-2762 - Texp science ~6,200 sec [more in ACCUM, same for all below]

Visit 2: 3 orbits E140H-1598 - Texp science ~6,200 sec

Visit 3: 4 orbits E230H-2513 - Texp science ~8,500 sec

Visit 4: 3 orbits E140H-1598 - Texp science ~6,200 sec

Visit 5: 4 orbits E230H-2263 - Texp science ~6,200 sec

Visit 6: 3 orbits E140H-1598 - Texp science ~6,200 sec

Visit 7: 3 orbits E140H-1598 - Texp science ~6,200 sec

Visit

Proposal 16256, E230H-c2762 MgII (01), implementation Mon Jul 06 18:00:31 GMT 2020

Diagnostic Status: No Diagnostics

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

Special Requirements: ORIENT 5D TO 95 D; ORIENT 185D TO 275 D

Comments: First Visit. Strong stellar signal - use this to verify ACQ and PEAK-UP, and photon throughputs work as intended

Fixed Targets

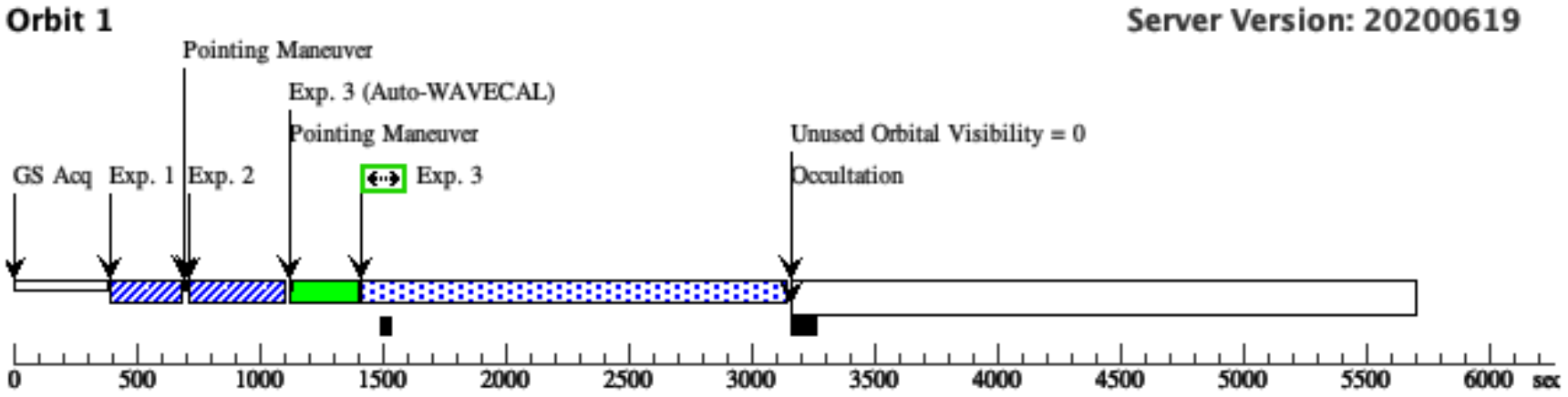
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	-ALF-SCO Alt Name1: ANTARES	RA: 16 29 24.4457 (247.3518571d) Dec: -26 25 55.57 (-26.43210d) Equinox: J2000	Proper Motion RA: -9.015825259862894E-4 sec of time/yr Proper Motion Dec: -0.023299999907067104 arcsec/yr Parallax: 5.89E-03" Epoch of Position: 2015.5 Radial Velocity: -3.50 km/sec	V=0.91+/-0.15	Reference Frame: ICRS

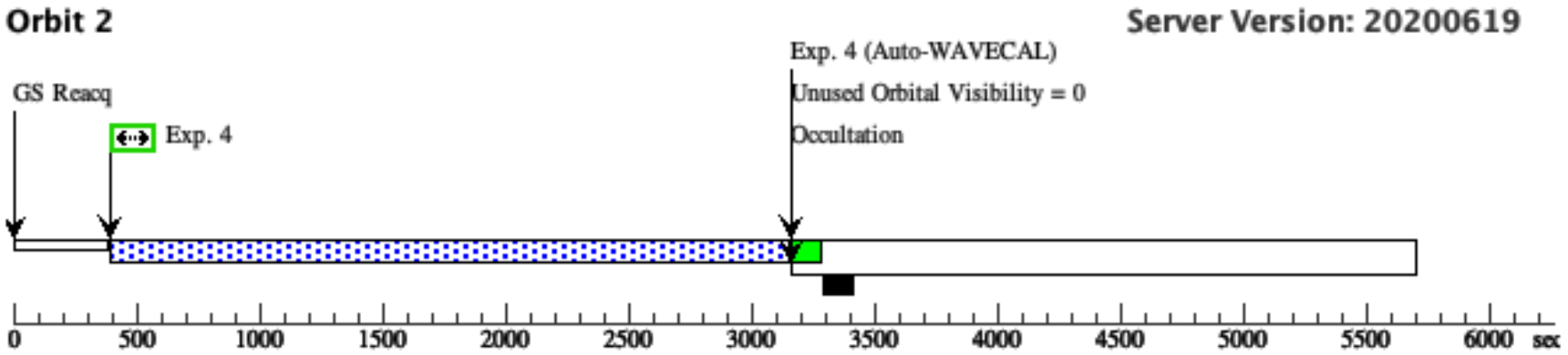
Comments: ICRS
Category=STAR
Description=[CIRCUMSTELLAR MATTER, EMISSION LINE STAR, M III-I]
Extended=NO

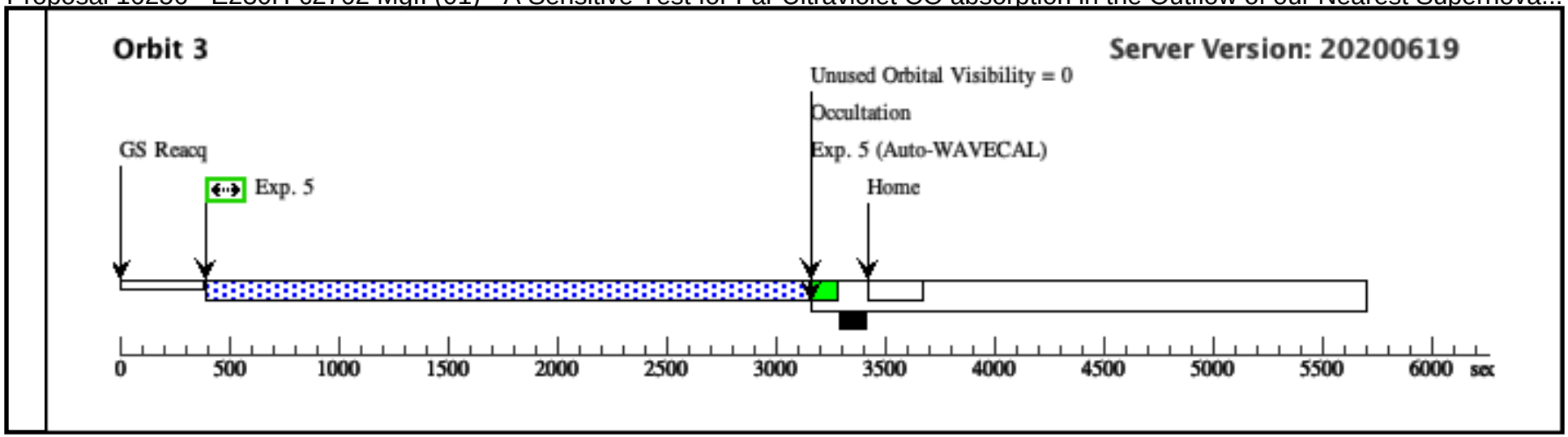
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(1447745)	(1) -ALF-SCO	STIS/CCD, ACQ, F25ND5	MIRROR				0.1 Secs (0.1 Secs) *[==>]*	*[1]*
2	(1447778)	(1) -ALF-SCO	STIS/CCD, ACQ/PEAK, 31X0.05NDA	G430M 5471 A				0.1 Secs (0.1 Secs) *[==>]*	*[1]*
3	Science Mg II E230H 1st Orbit (1447787)	(1) -ALF-SCO	STIS/NUV-MAMA, ACCUM, 31X0.05NDA	E230H 2762 A				1668 Secs (1668 Secs) *[==>]*	*[1]*
Comments: First science observation									
4	Science Mg II E230H 2nd Orbit 2nd Exposure (1447787)	(1) -ALF-SCO	STIS/NUV-MAMA, ACCUM, 31X0.05NDA	E230H 2762 A				2743 Secs (2743 Secs) *[==>]*	*[2]*
5	Science Mg II E230H 3rd Orbit 2nd exposure (1447787)	(1) -ALF-SCO	STIS/NUV-MAMA, ACCUM, 31X0.05NDA	E230H 2762 A				2692 Secs (2692 Secs) *[==>]*	*[3]*

Orbit Structure



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GS Reacq
Exp. 5
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1500
2000
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3000
3500
4000
4500
5000
5500
6000
sec

Visit

Proposal 16256, E140H CO Fourth-Positive (02), implementation Mon Jul 06 18:00:31 GMT 2020

Diagnostic Status: No Diagnostics

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

Special Requirements: ORIENT 5D TO 95 D; ORIENT 185D TO 275 D

Comments: This Visit should come after Visit 1 - to check the ACQ/PEAK and throughput.

FUV spectrum. M supergiant is significantly fainter in the NUV that the FUV.
This is the 1st of 4 identical Visits - each of 3 orbits

Fixed Targets

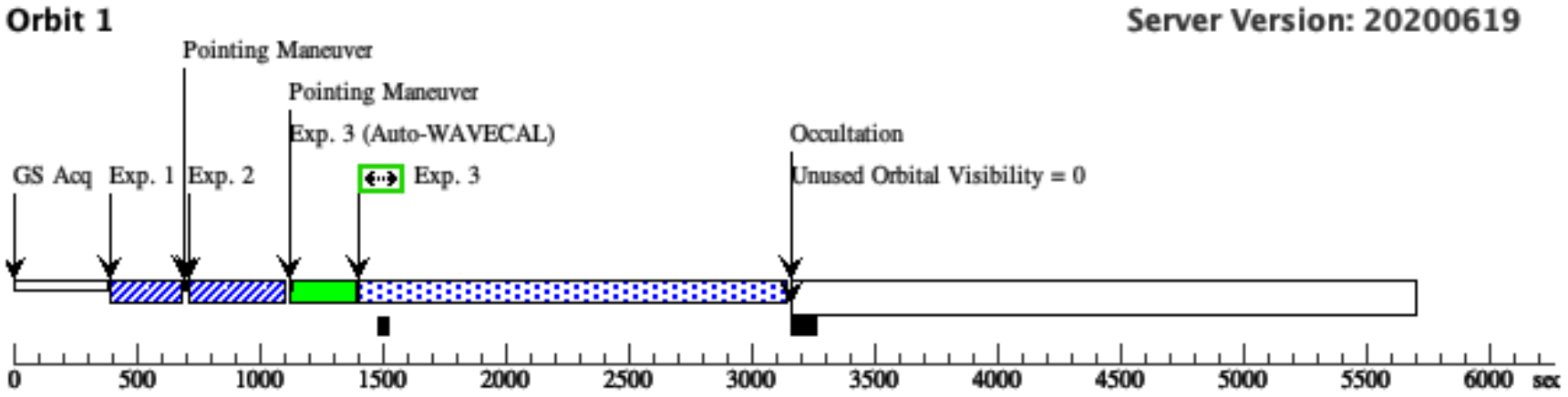
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	-ALF-SCO Alt Name1: ANTARES	RA: 16 29 24.4457 (247.3518571d) Dec: -26 25 55.57 (-26.43210d) Equinox: J2000	Proper Motion RA: -9.015825259862894E-4 sec of time/yr Proper Motion Dec: -0.023299999907067104 arcsec/yr Parallax: 5.89E-03" Epoch of Position: 2015.5 Radial Velocity: -3.50 km/sec	V=0.91+/-0.15	Reference Frame: ICRS

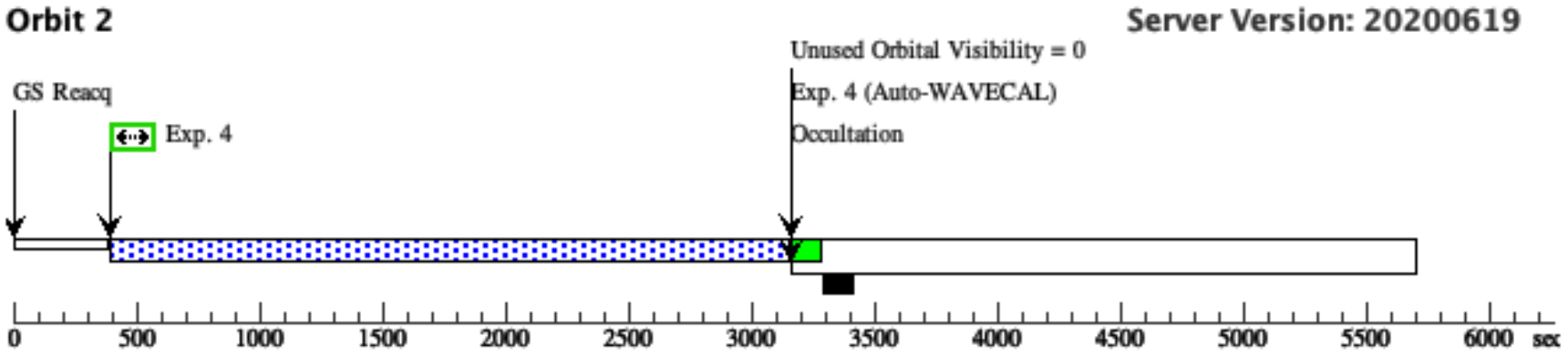
Comments: ICRS
Category=STAR
Description=[CIRCUMSTELLAR MATTER, EMISSION LINE STAR, M III-I]
Extended=NO

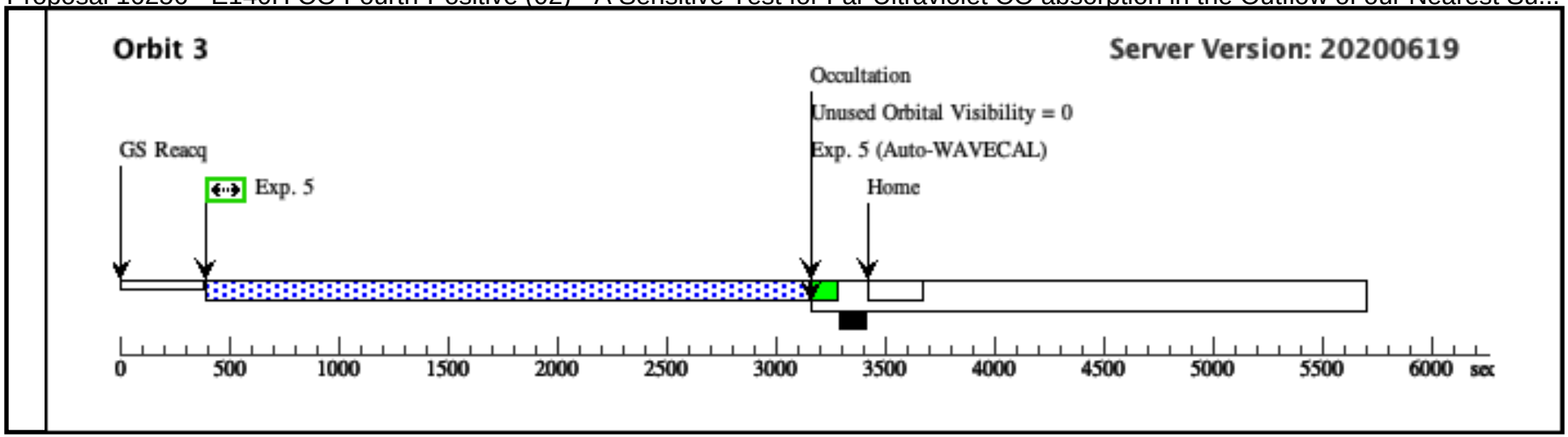
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ (1447745)	(1) -ALF-SCO	STIS/CCD, ACQ, F25ND5	MIRROR				0.1 Secs (0.1 Secs) *[==>]*	***[1]***
2	PEAKUP (1447778)	(1) -ALF-SCO	STIS/CCD, ACQ/PEAK, 31X0.05NDA	G430M 5471 A				0.1 Secs (0.1 Secs) *[==>]*	***[1]***
3	Science FUV E140H 1st Orbit Only Exposure (1448301)	(1) -ALF-SCO	STIS/FUV-MAMA, ACCUM, 31X0.05NDA	E140H 1526 A				1678 Secs (1678 Secs) *[==>]*	***[1]***
4	Science FUV E140H 2nd Orbit Only Exposure (1448301)	(1) -ALF-SCO	STIS/FUV-MAMA, ACCUM, 31X0.05NDA	E140H 1526 A				2743 Secs (2743 Secs) *[==>]*	***[2]***
5	Science FUV E140H 3rd Orbit Only Exposure (1448301)	(1) -ALF-SCO	STIS/FUV-MAMA, ACCUM, 31X0.05NDA	E140H 1526 A				2692 Secs (2692 Secs) *[==>]*	***[3]***

Orbit Structure



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Server Version: 20200619
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GS Reacq
Exp. 5
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1000
1500
2000
2500
3000
3500
4000
4500
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5500
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sec

Visit

Proposal 16256, E230H-c2513 MgII (03), implementation Mon Jul 06 18:00:32 GMT 2020

Diagnostic Status: No Diagnostics

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

Special Requirements: ORIENT 5D TO 95 D; ORIENT 185D TO 275 D

Comments: First Visit. Strong stellar signal - use this to verify ACQ and PEAK-UP, and photon throughputs work as intended

Fixed Targets

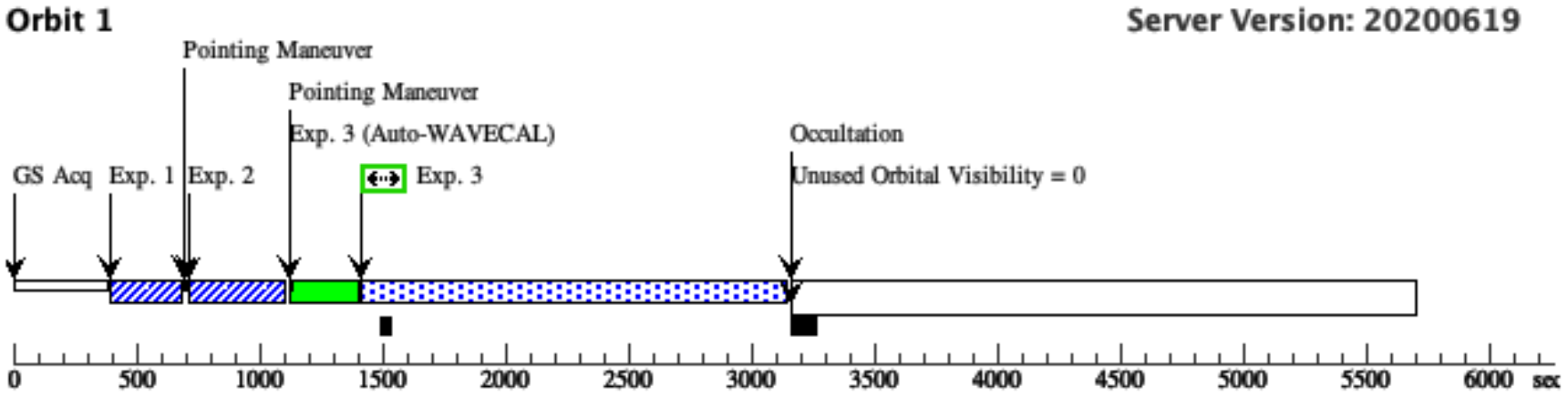
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	-ALF-SCO Alt Name1: ANTARES	RA: 16 29 24.4457 (247.3518571d) Dec: -26 25 55.57 (-26.43210d) Equinox: J2000	Proper Motion RA: -9.015825259862894E-4 sec of time/yr Proper Motion Dec: -0.023299999907067104 arcsec/yr Parallax: 5.89E-03" Epoch of Position: 2015.5 Radial Velocity: -3.50 km/sec	V=0.91+/-0.15	Reference Frame: ICRS

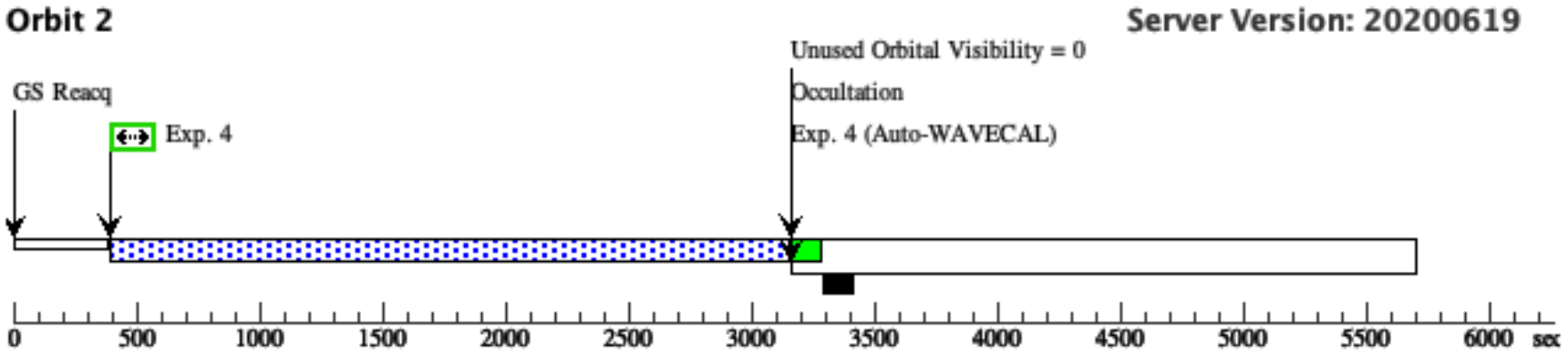
Comments: ICRS
Category=STAR
Description=[CIRCUMSTELLAR MATTER, EMISSION LINE STAR, M III-I]
Extended=NO

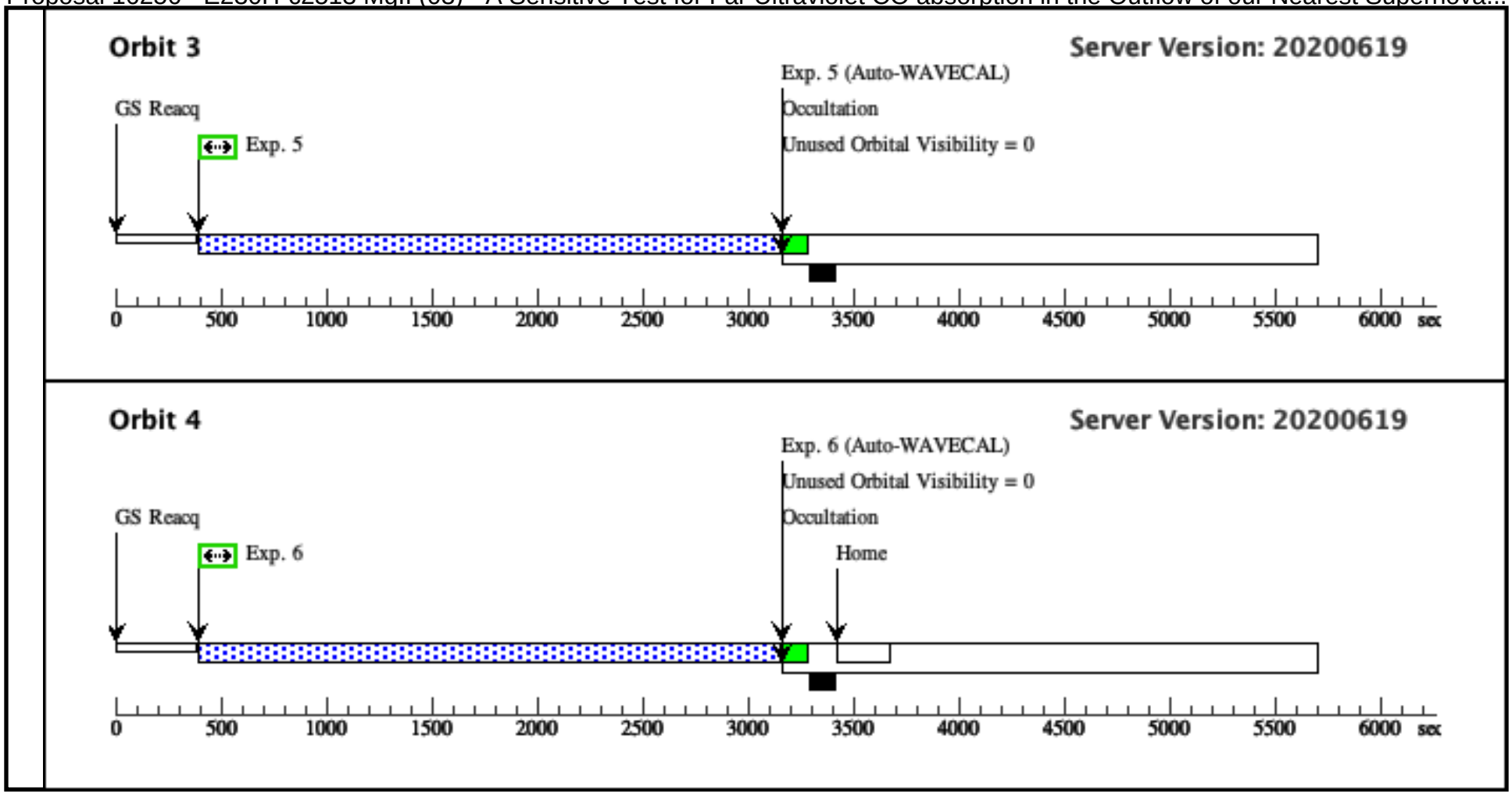
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(1447745)	(1) -ALF-SCO	STIS/CCD, ACQ, F25ND5	MIRROR				0.1 Secs (0.1 Secs) *[==>]*	***[1]***
2	(1447778)	(1) -ALF-SCO	STIS/CCD, ACQ/PEAK, 31X0.05NDA	G430M 5471 A				0.1 Secs (0.1 Secs) *[==>]*	***[1]***
3	Science Mg II E230H 1st Orbit (1448275)	(1) -ALF-SCO	STIS/NUV-MAMA, ACCUM, 31X0.05NDA	E230H 2513 A				1668 Secs (1668 Secs) *[==>]*	***[1]***
Comments: First science observation									
4	Science Mg II E230H 2nd Orbit (1448275)	(1) -ALF-SCO	STIS/NUV-MAMA, ACCUM, 31X0.05NDA	E230H 2513 A				2743 Secs (2743 Secs) *[==>]*	***[2]***
5	Science Mg II E230H 3rd Orbit (1448275)	(1) -ALF-SCO	STIS/NUV-MAMA, ACCUM, 31X0.05NDA	E230H 2513 A				2692 Secs (2692 Secs) *[==>]*	***[3]***
6	Science Mg II E230H 4th Orbit (1448275)	(1) -ALF-SCO	STIS/NUV-MAMA, ACCUM, 31X0.05NDA	E230H 2513 A				2692 Secs (2692 Secs) *[==>]*	***[4]***

Orbit Structure



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Occultation
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sec
Orbit 4
Server Version: 20200619
Exp. 6 (Auto-WAVECAL)
Unused Orbital Visibility = 0
GS Reacq
Occultation
Exp. 6
Home
0
500
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2500
3000
3500
4000
4500
5000
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6000
sec

Visit

Proposal 16256, E140H CO Fourth-Positive (04), implementation Mon Jul 06 18:00:32 GMT 2020

Diagnostic Status: No Diagnostics

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

Special Requirements: ORIENT 5D TO 95 D; ORIENT 185D TO 275 D

Comments: FUV spectrum. M supergiant is significantly fainter in the NUV that the FUV.
This is the 1st of 4 identical Visits - each of 3 orbits

Fixed Targets

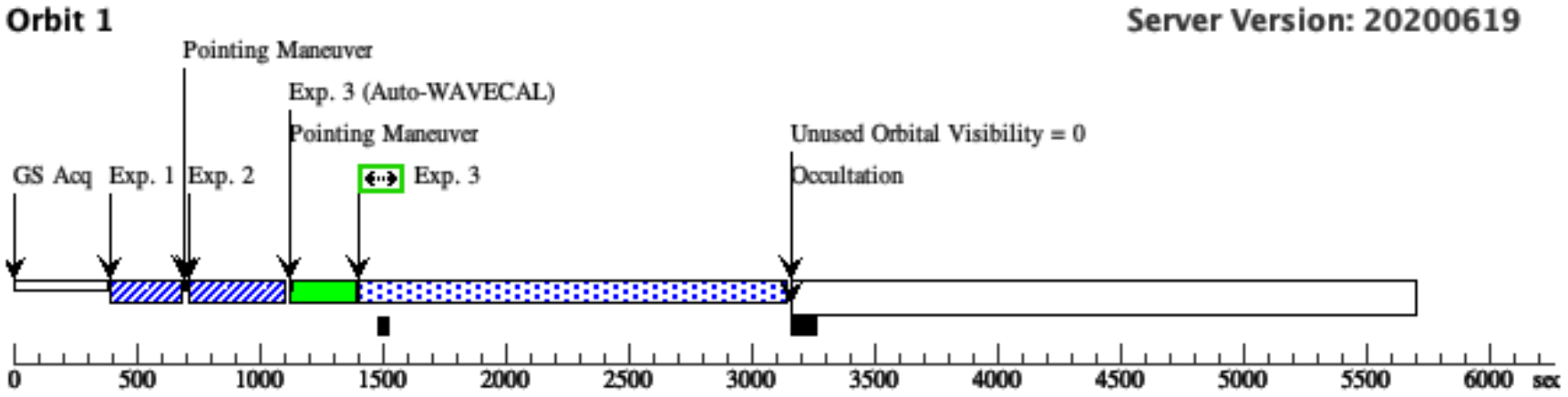
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	-ALF-SCO Alt Name1: ANTARES	RA: 16 29 24.4457 (247.3518571d) Dec: -26 25 55.57 (-26.43210d) Equinox: J2000	Proper Motion RA: -9.015825259862894E-4 sec of time/yr Proper Motion Dec: -0.023299999907067104 arcsec/yr Parallax: 5.89E-03" Epoch of Position: 2015.5 Radial Velocity: -3.50 km/sec	V=0.91+/-0.15	Reference Frame: ICRS

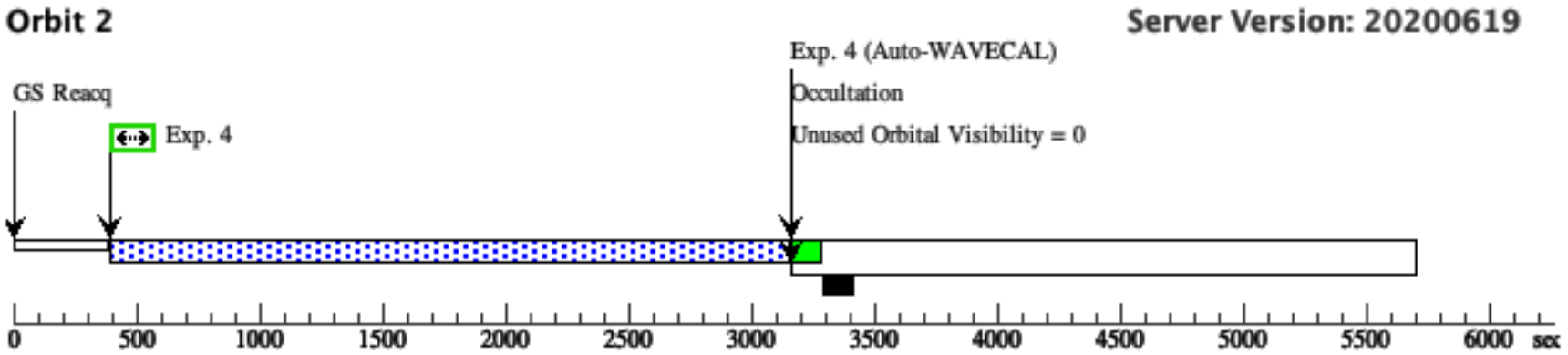
Comments: ICRS
Category=STAR
Description=[CIRCUMSTELLAR MATTER, EMISSION LINE STAR, M III-I]
Extended=NO

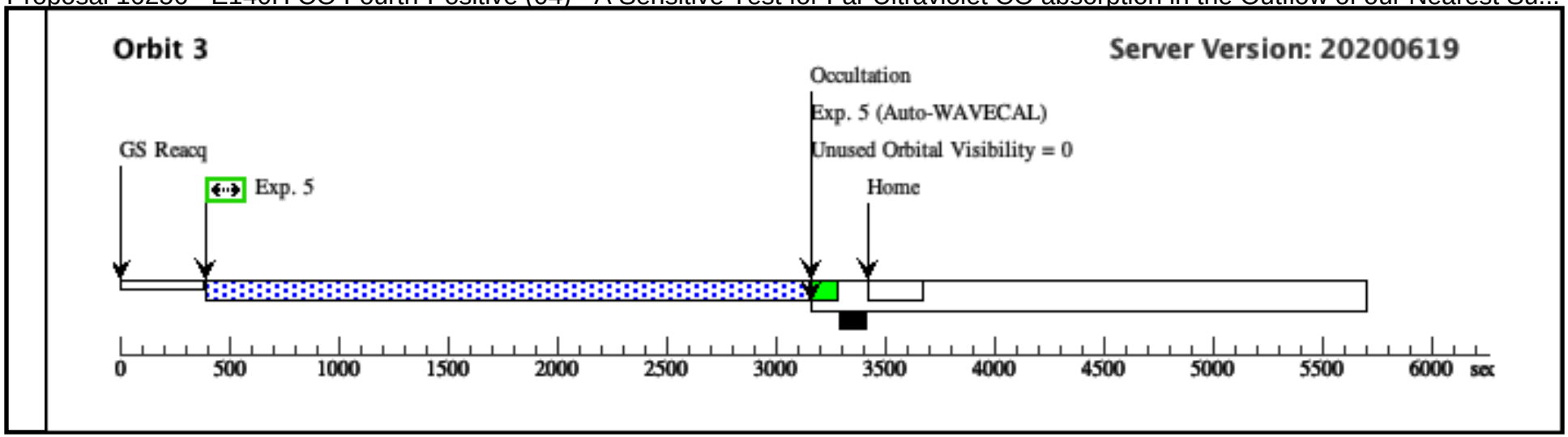
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ (1447745)	(1) -ALF-SCO	STIS/CCD, ACQ, F25ND5	MIRROR				0.1 Secs (0.1 Secs) *[==>]*	 ***[1]***
2	PEAKUP (1447778)	(1) -ALF-SCO	STIS/CCD, ACQ/PEAK, 31X0.05NDA	G430M 5471 A				0.1 Secs (0.1 Secs) *[==>]*	 ***[1]***
3	Science FUV E140H 1st Orbit Only Exposure (1448301)	(1) -ALF-SCO	STIS/FUV-MAMA, ACCUM, 31X0.05NDA	E140H 1526 A				1678 Secs (1678 Secs) *[==>]*	 ***[1]***
4	Science FUV E140H 2nd Orbit Only Exposure (1448301)	(1) -ALF-SCO	STIS/FUV-MAMA, ACCUM, 31X0.05NDA	E140H 1526 A				2743 Secs (2743 Secs) *[==>]*	 ***[2]***
5	Science FUV E140H 3rd Orbit Only Exposure (1448301)	(1) -ALF-SCO	STIS/FUV-MAMA, ACCUM, 31X0.05NDA	E140H 1526 A				2692 Secs (2692 Secs) *[==>]*	 ***[3]***

Orbit Structure






Orbit 3
Server Version: 20200619
Occultation
Exp. 5 (Auto-WAVECAL)
Unused Orbital Visibility = 0
GS Reacq
Exp. 5
Home
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500
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1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec

Visit

Proposal 16256, E230H-c2263 MgII (05), implementation Mon Jul 06 18:00:32 GMT 2020

Diagnostic Status: No Diagnostics

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

Special Requirements: ORIENT 5D TO 95 D; ORIENT 185D TO 275 D

Comments: Covers emisison lines from C II] 2325 and SI II] 2350 and numerous Fe II lines

Fixed Targets

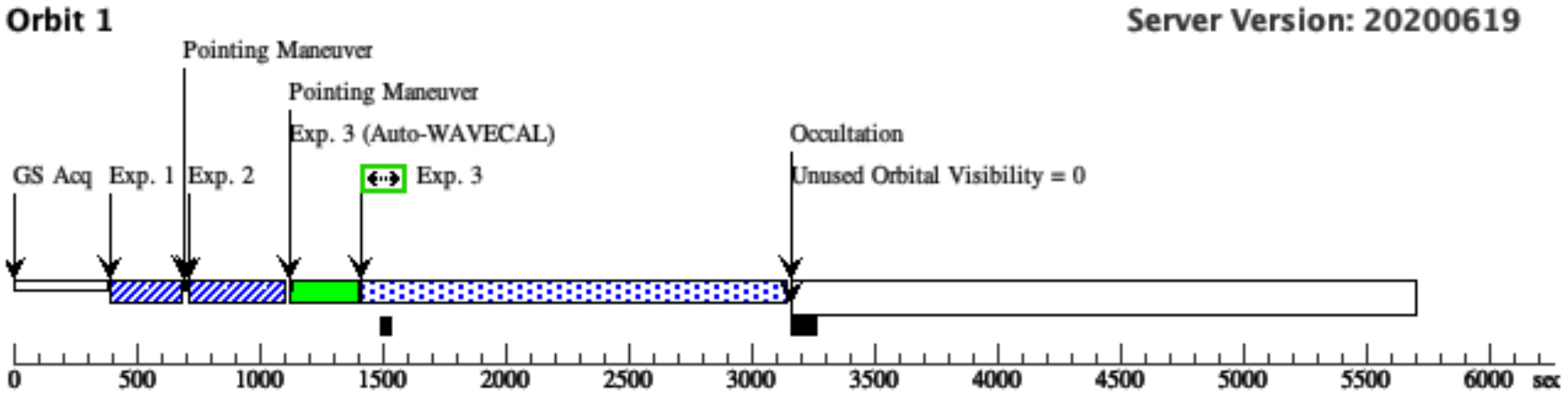
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	-ALF-SCO Alt Name1: ANTARES	RA: 16 29 24.4457 (247.3518571d) Dec: -26 25 55.57 (-26.43210d) Equinox: J2000	Proper Motion RA: -9.015825259862894E-4 sec of time/yr Proper Motion Dec: -0.023299999907067104 arcsec/yr Parallax: 5.89E-03" Epoch of Position: 2015.5 Radial Velocity: -3.50 km/sec	V=0.91+/-0.15	Reference Frame: ICRS

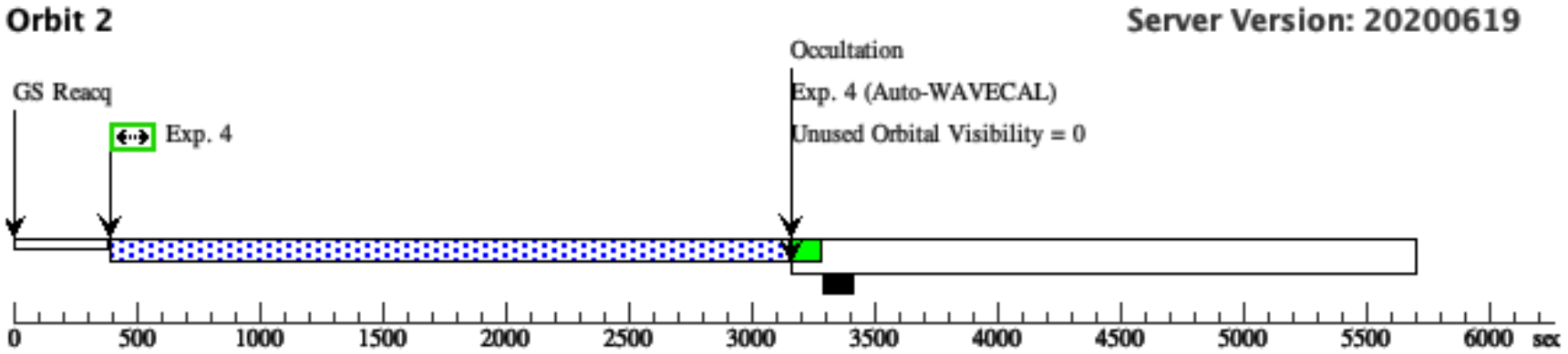
Comments: ICRS
Category=STAR
Description=[CIRCUMSTELLAR MATTER, EMISSION LINE STAR, M III-I]
Extended=NO

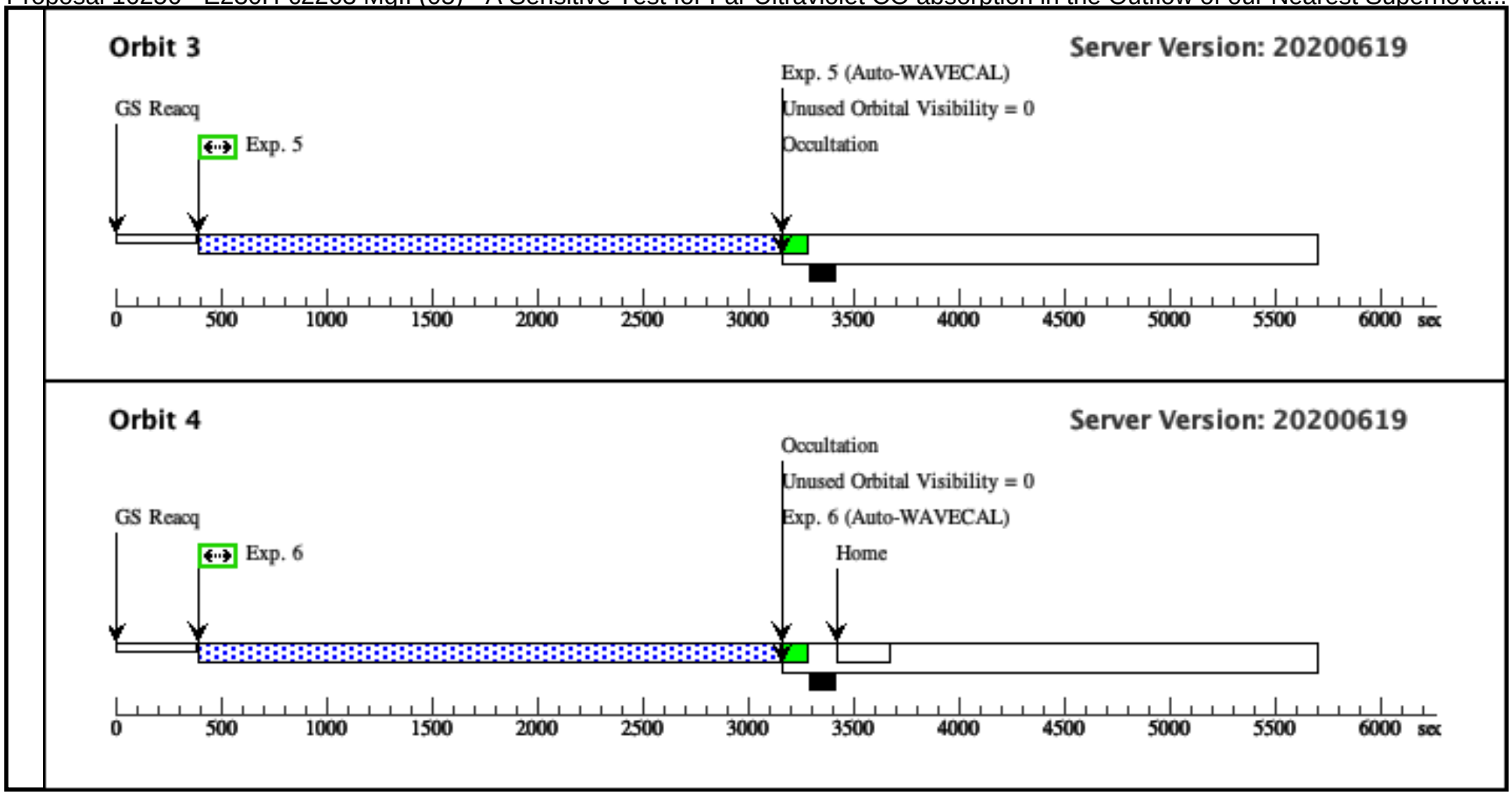
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(1447745)	(1) -ALF-SCO	STIS/CCD, ACQ, F25ND5	MIRROR				0.1 Secs (0.1 Secs) *[==>]*	***[1]***
2	(1447778)	(1) -ALF-SCO	STIS/CCD, ACQ/PEAK, 31X0.05NDA	G430M 5471 A				0.1 Secs (0.1 Secs) *[==>]*	***[1]***
3	Science Mg II E230H 1st Orbit (1448286)	(1) -ALF-SCO	STIS/NUV-MAMA, ACCUM, 31X0.05NDA	E230H 2263 A				1668 Secs (1668 Secs) *[==>]*	***[1]***
Comments: First science observation									
4	Science Mg II E230H 2nd Orbit (1448286)	(1) -ALF-SCO	STIS/NUV-MAMA, ACCUM, 31X0.05NDA	E230H 2263 A				2743 Secs (2743 Secs) *[==>]*	***[2]***
5	Science Mg II E230H 3rd Orbit (1448286)	(1) -ALF-SCO	STIS/NUV-MAMA, ACCUM, 31X0.05NDA	E230H 2263 A				2692 Secs (2692 Secs) *[==>]*	***[3]***
6	Science Mg II E230H 4th Orbit (1448286)	(1) -ALF-SCO	STIS/NUV-MAMA, ACCUM, 31X0.05NDA	E230H 2263 A				2692 Secs (2692 Secs) *[==>]*	***[4]***

Orbit Structure






Orbit 3
Server Version: 20200619
Exp. 5 (Auto-WAVECAL)
GS Reacq
Unused Orbital Visibility = 0
Exp. 5
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec
Orbit 4
Server Version: 20200619
Occultation
Unused Orbital Visibility = 0
GS Reacq
Exp. 6 (Auto-WAVECAL)
Exp. 6
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec

Visit

Proposal 16256, E140H CO Fourth-Positive (06), implementation Mon Jul 06 18:00:32 GMT 2020

Diagnostic Status: No Diagnostics

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

Special Requirements: ORIENT 5D TO 95 D; ORIENT 185D TO 275 D

Comments: FUV spectrum. M supergiant is significantly fainter in the NUV that the FUV.
This is the 1st of 4 identical Visits - each of 3 orbits

Fixed Targets

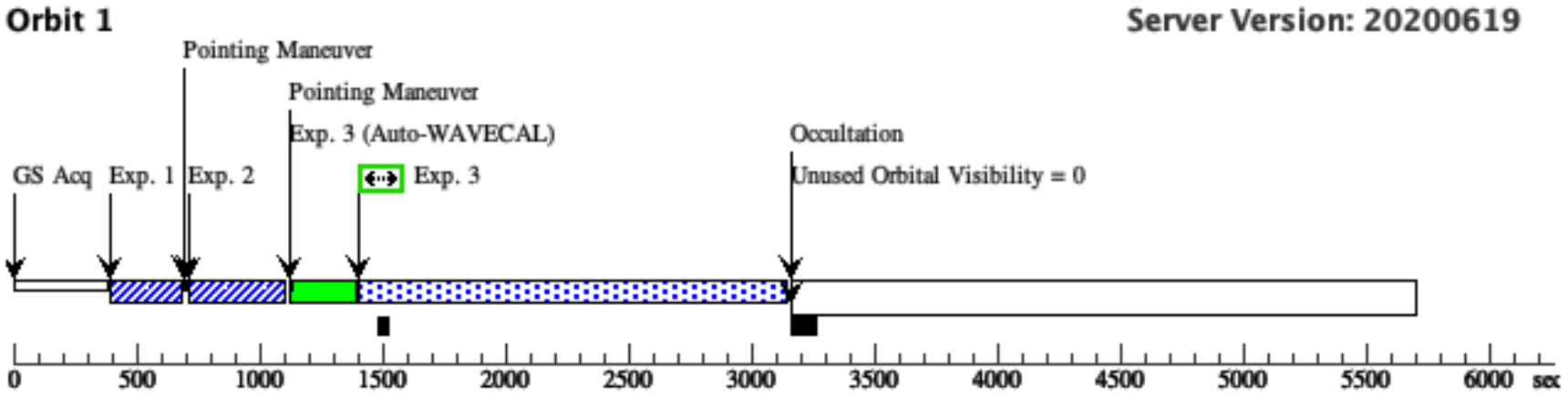
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	-ALF-SCO Alt Name1: ANTARES	RA: 16 29 24.4457 (247.3518571d) Dec: -26 25 55.57 (-26.43210d) Equinox: J2000	Proper Motion RA: -9.015825259862894E-4 sec of time/yr Proper Motion Dec: -0.023299999907067104 arcsec/yr Parallax: 5.89E-03" Epoch of Position: 2015.5 Radial Velocity: -3.50 km/sec	V=0.91+/-0.15	Reference Frame: ICRS

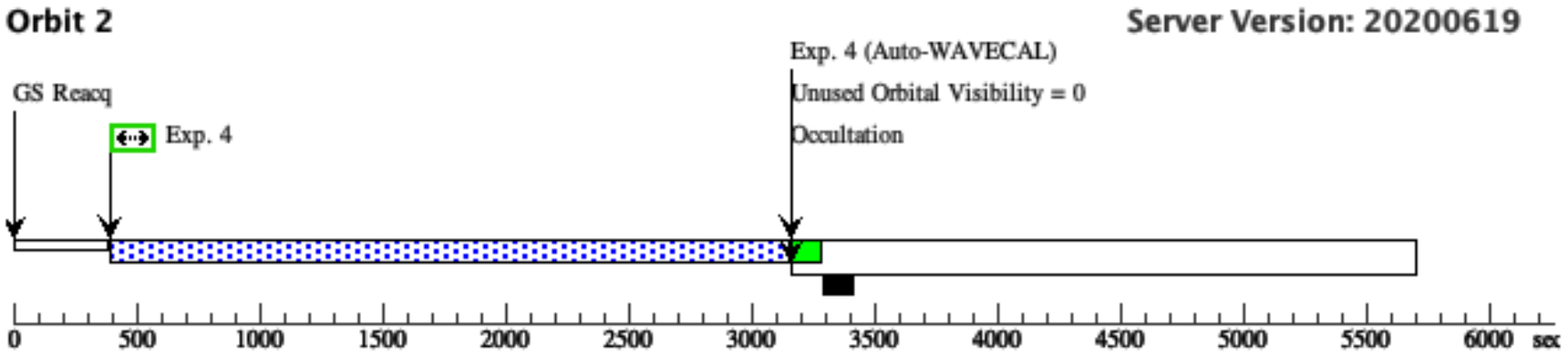
Comments: ICRS
Category=STAR
Description=[CIRCUMSTELLAR MATTER, EMISSION LINE STAR, M III-I]
Extended=NO

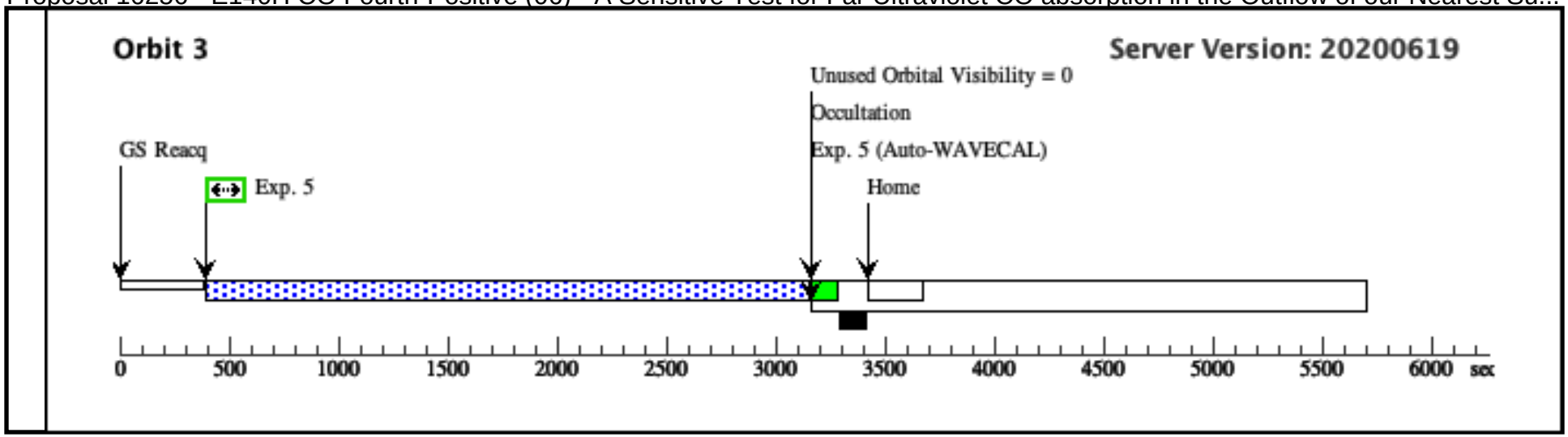
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ (1447745)	(1) -ALF-SCO	STIS/CCD, ACQ, F25ND5	MIRROR				0.1 Secs (0.1 Secs) *[==>]*	 ***[1]***
2	PEAKUP (1447778)	(1) -ALF-SCO	STIS/CCD, ACQ/PEAK, 31X0.05NDA	G430M 5471 A				0.1 Secs (0.1 Secs) *[==>]*	 ***[1]***
3	Science FUV E140H 1st Orbit Only Exposure (1448301)	(1) -ALF-SCO	STIS/FUV-MAMA, ACCUM, 31X0.05NDA	E140H 1526 A				1678 Secs (1678 Secs) *[==>]*	 ***[1]***
4	Science FUV E140H 2nd Orbit Only Exposure (1448301)	(1) -ALF-SCO	STIS/FUV-MAMA, ACCUM, 31X0.05NDA	E140H 1526 A				2743 Secs (2743 Secs) *[==>]*	 ***[2]***
5	Science FUV E140H 3rd Orbit Only Exposure (1448301)	(1) -ALF-SCO	STIS/FUV-MAMA, ACCUM, 31X0.05NDA	E140H 1526 A				2692 Secs (2692 Secs) *[==>]*	 ***[3]***

Orbit Structure






Orbit 3
Server Version: 20200619
Unused Orbital Visibility = 0
Occultation
Exp. 5 (Auto-WAVECAL)
GS Reacq
Exp. 5
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec

Visit

Proposal 16256, E140H CO Fourth-Positive (07), implementation Mon Jul 06 18:00:32 GMT 2020

Diagnostic Status: No Diagnostics

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

Special Requirements: ORIENT 5D TO 95 D; ORIENT 185D TO 275 D

Comments: FUV spectrum. M supergiant is significantly fainter in the NUV that the FUV.
This is the 1st of 4 identical Visits - each of 3 orbits

Fixed Targets

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Comments: ICRS
Category=STAR
Description=[CIRCUMSTELLAR MATTER, EMISSION LINE STAR, M III-I]
Extended=NO

Exposures

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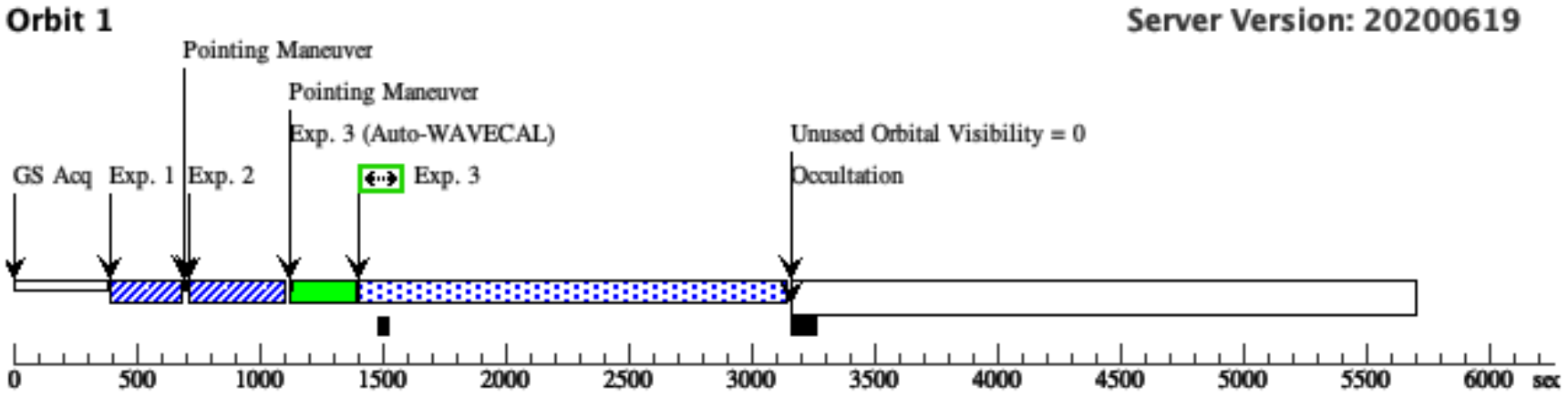
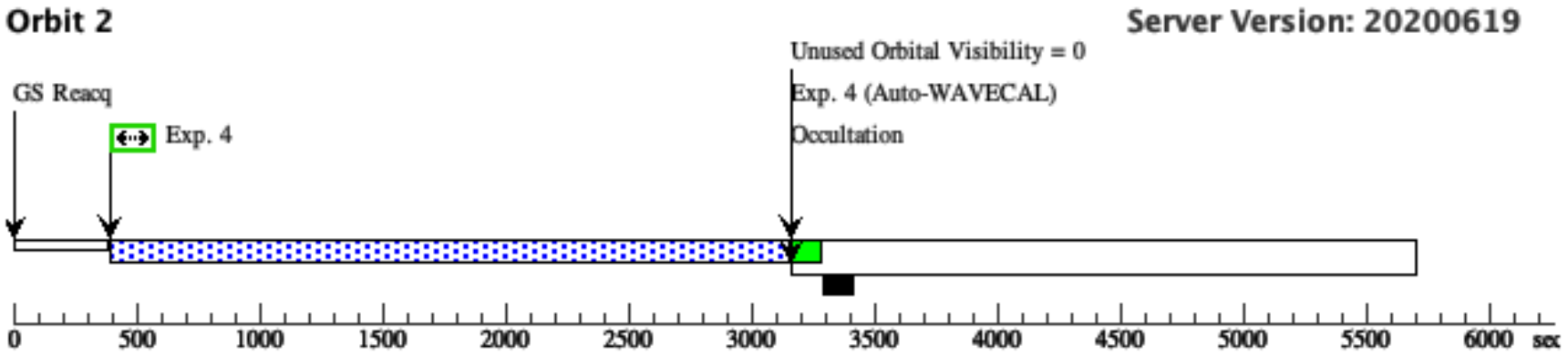
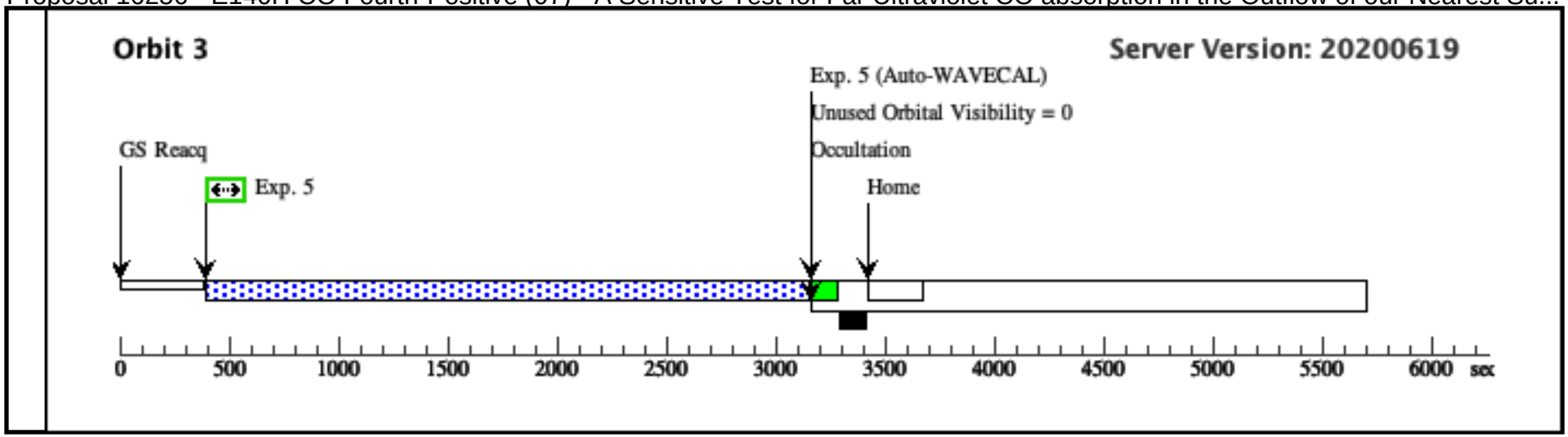
3	Science FUV E140H 1st Orbit Only Exposure (1448301)	(1) -ALF-SCO	STIS/FUV-MAMA, ACCUM, 31X0.05NDA	E140H 1526 A				1678 Secs (1678 Secs) *[==>]*	 ***[1]***
4	Science FUV E140H 2nd Orbit Only Exposure (1448301)	(1) -ALF-SCO	STIS/FUV-MAMA, ACCUM, 31X0.05NDA	E140H 1526 A				2743 Secs (2743 Secs) *[==>]*	 ***[2]***
5	Science FUV E140H 3rd Orbit Only Exposure (1448301)	(1) -ALF-SCO	STIS/FUV-MAMA, ACCUM, 31X0.05NDA	E140H 1526 A				2692 Secs (2692 Secs) *[==>]*	 ***[3]***

Orbit Structure






Orbit 3
Server Version: 20200619
Exp. 5 (Auto-WAVECAL)
Unused Orbital Visibility = 0
Occultation
GS Reacq
Exp. 5
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec