16810 - ULLYSES LMC O2 Dwarfs - COS

Cycle: 29, Proposal Category: GO/DD

(Availability Mode: SUPPORTED)

INVESTIGATORS

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Dr. W. Van Dyke Dixon (CoI)	Space Telescope Science Institute	dixon@stsci.edu

VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
1C	(1) VFTS-169	COS/FUV COS/NUV	2	19-Apr-2022 14:01:57.0	yes
1D	(1) VFTS-169	COS/FUV COS/NUV	2	19-Apr-2022 14:01:58.0	yes
1E	(1) VFTS-169	COS/FUV COS/NUV	3	19-Apr-2022 14:01:59.0	yes
2C	(2) VFTS-506	COS/FUV	2	19-Apr-2022 14:02:00.0	yes

9 Total Orbits Used

ABSTRACT

The Space Telescope Science Institute (STScI) Director has decided to devote up to 1000 orbits of Director's Discretionary time in observing Cycles 27-29 to a new Hubble Ultraviolet Legacy program focused on star formation and associated stellar physics. This new program, ULLYSES (UV Legacy Library of Young Stars as Essential Standards), will provide a UV spectroscopic reference sample of young (< 10 Myr) high- and low-mass stars. It will target over ~150 OB stars in the Magellanic Clouds and lower metallicity galaxies in the Local Group, and ~40 T Tauri stars and brown dwarfs in the Milky Way. In addition, ULLYSES will monitor 4 typical T Tauri stars over different rotational phases through at least three rotation

periods, and over timescales of months to years. The resulting library will provide template spectra of massive stars at metallicities substantially below the well studied, while the low mass sample will cover a wide range of ages, accretion rates, and masses, including objects down to well below 0.5 M_sun. The legacy of this large UV dataset on the first 10 Myr of stellar evolution will be enhanced by complementary datasets obtained by the scientific community. In addition to the core goals of the program related to stellar astrophysics of low and high mass stars, this data will also enable exciting science in the fields of ISM, CGM, jets, and exoplanets. ULLYSES will be modeled after the Frontier Fields program: all data obtained will be non-proprietary. The implementation team at STScI is developing high-level science data products and a sophisticated database and website for disseminating data from the ULLYSES program and ancillary datasets for the ULLYSES target sample from space and ground-based facilities.

OBSERVING DESCRIPTION

This proposal includes a subset of the massive ULLYSES stars being observed in the Magellanic clouds.

Depending on target brightness, the main FUV spectral range will generally use either the STIS E140M setting or the combination of the COS c1291 + c1611 settings. Sufficiently bright stars without good FUSE data in the archive will also be observed with the COS c1096 setting to provide coverage at shorter wavelengths. Where time permits, stars of type O9 or later will also be observed with STIS E230M/1978, while for supergiants of spectral type B5 or later E230M/2707 may also be included. Where possible, targets of a given spectral type were selected to span both a range in extinction and in rotation rates to support a variety of stellar and ISM studies.

Signal-to-noise requirements used to determine the desired exposures times were defined as follows:
COS/G130M/c1096: 20 / nine-pixel resel at 1080 A
COS/G130M/c1291: 30 / six-pixel resel at 1150 A
COS/G160M/c1611: 30 / six-pixel resel at 1590 A
COS/G185M/c1953: 30 / three-pixel resel at 1860 A
COS/G185M/c1986: 30 / three-pixel resel at 1980 A
STIS/E140M/c1425: 20 / two-pixel resel at 1200 A
STIS/E230M/c1978: 20 / two-pixel resel at 1800 A
STIS/E230M/c2707: 20 / two-pixel resel at 2800 A
The actual implemented exposure times may be adjusted to efficiently use HST orbits, but should always provide at least 80% of the desired time as defined by the above requirements.

Additional details about the scientific motivation and technical implementation strategy of the ULLYSES observations can be found at http://www.stsci.edu/stsci-research/research-topics-and-programs/ullyses. The ULLYSES program is based on the recommendations of a working group led by Sally Oey; the full text of that group's report can be found at http://www.stsci.edu/files/live/sites/www/files/home/stsci-research/research-topics-and-programs/ullyses/_documents/HSTUV-report-ULLYSES.pdf.

Visit

Proposal 16810, VFTS-169-COS-c1291_i (1C) Tue Apr 19 18:02:01 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%

Comments: vstatus; 1C; VFTS-169; P/COS approved for submission; P/RS 28/02/22 ; intrev: complete ; P/JRD 19/04/22
vcheck; Enter targ name & Inst. & Resp. Sci.; VFTS-169 ; COS ; RS
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; No
vcheck; S/N ETC calcs done & documented?; Yes
vcheck; Field images checked & saved?; Yes
vcheck; Selected ACQ strategy?; Yes ...
NUV ACQ with MIRROR B and PSA which has been done previously in program 15629
vcheck; Possible ACQ or Sci spoilers?; No
vcheck; Field BOT clear?; Yes ...
checked the WFC3/F275W image as well as the stars listed in the Zaritsky catalog as well as the Massey catalog ...
brightest star apart from target in the PSA macroaperture has V=17.5 and ETC calculation cos.ta.1745382 clears V=17 O5V for PSA MIRROR B Imaging ...
brightest star in the BOA macroaperture has V=14.6 and ETC calculation cos.ta.1745381 clears V=14 O5V for BOA MIRROR B Imaging
vcheck; Visual BOT check for stars not in catalog?; Yes
vcheck; Orbit packing finalized?; Yes
vcheck; Buffer times optimized?; Yes
vcheck; Verify visit grouping correct; N/A
vcheck; Is visit ready for int. review?; Yes
Allocated COS orbits = 7 ...
split into three visits of 2, 2, and 3 orbits

Fixed Targets

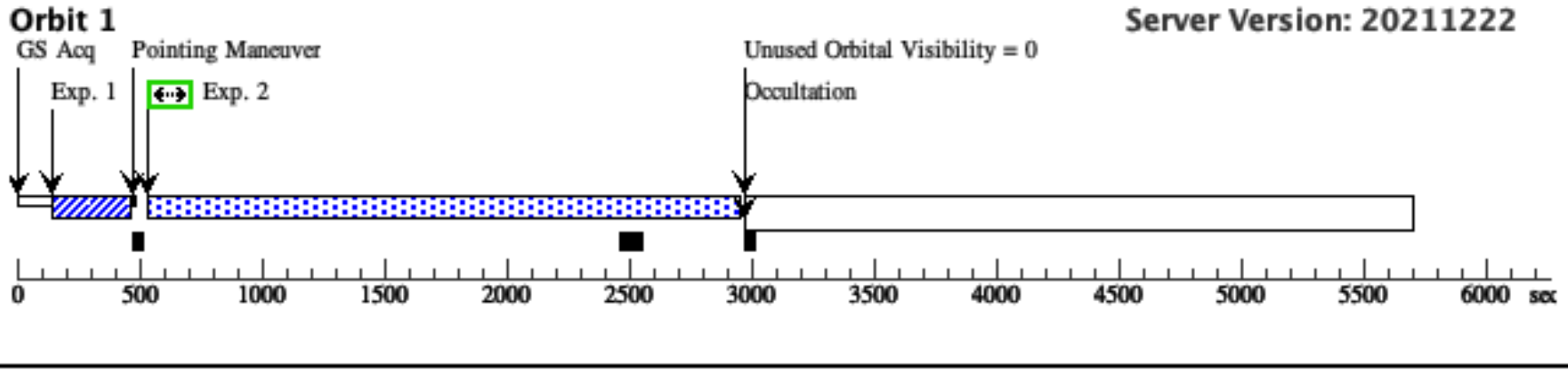
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	VFTS-169	RA: 05 37 49.9180 (84.4579917d)	Proper Motion RA: 1.648 mas/yr	V=14.59	Reference Frame: ICRS
	Alt Name1: ST92-1-71	Dec: -69 10 27.88 (-69.17441d)	Proper Motion Dec: 0.635 mas/yr	SpT=O2.5 V(n)((f*)); E(B-V)=0.31; B=14.62; V=14.59; F1160=1.700e-14; F1360=2.380e-14; F1700=3.010e-14	
		Equinox: J2000	Parallax: 0"		
			Epoch of Position: 2000.0		

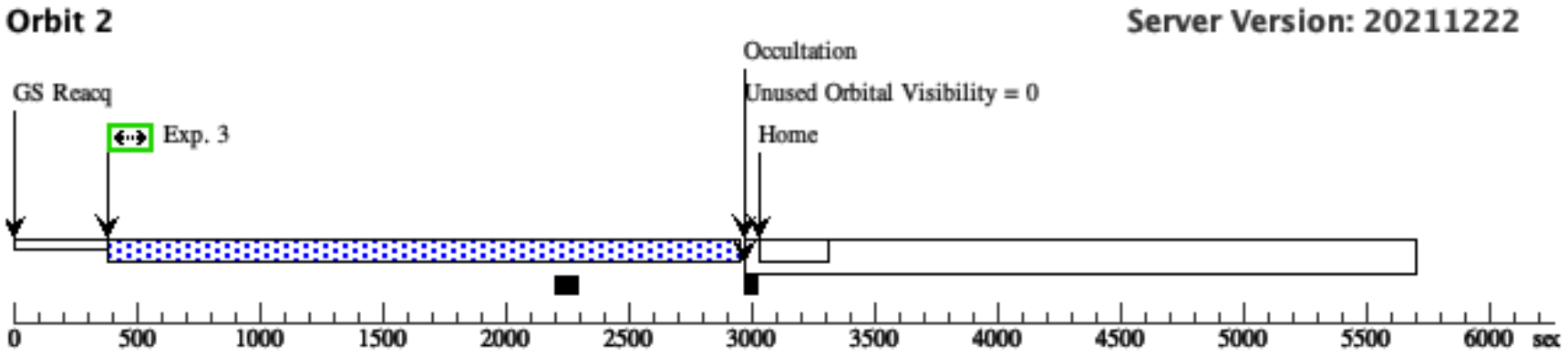
Comments: VFTS-169 : ST92-1-71, VFTS 169
Previous name : ST92 1-71
Input file: ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
SpT = O2.5 V(n)((f))*
COS/G130M/c1291 : rn(PoWR-OB-new(PoWR_47000_4.20_m7.00_Z0.50.fits, lmc-ob-i 47-42, Z=0.500 solar, Teff=47000, log_lum=5.58, log_g=4.20, log_mdot=-7.00) (extinction lmc30dor=0.310), flux1360 +-2.0A flux=2.4e-14 Flam)
COS/G160M/c1611 : rn(PoWR-OB-new(PoWR_47000_4.20_m7.00_Z0.50.fits, lmc-ob-i 47-42, Z=0.500 solar, Teff=47000, log_lum=5.58, log_g=4.20, log_mdot=-7.00) (extinction lmc30dor=0.310), flux1700 +-2.0A flux=3e-14 Flam)
Coordinate pedigree: Gaia DR2
Calculation performed 2021-10-25T00:55:12, v0.9
---
tstatus; VFTS-169; P/COS approved for submission; S/ins not started; P/RS 28/02/22; S/xx DD/MM/YY
tcheck; APT/SIMBAD target names: ; VFTS-169 "[M2002] LMC 169366"
tcheck; Target info verification status?; Ok
tcheck; Coordinates & P.M. verified, epoch checked?; Yes
tcheck; Adopted SED compared to Observations?; Yes ...
PoWR SED modified to use E(B-V)=0.47 and normalized to Johnson B=14.62
Category=STAR
Description=[MAIN SEQUENCE O, OF]
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.1719111)	(1) VFTS-169	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				4.2 Secs (4.2 Secs) *[==>]*	 ***[1]***
	Comments: Mirror A, BOA requires 43 sec for S/N of 30 (COS.ta.1719110) and 97 sec for S/N of 45 (COS.ta.1719109).								
2	G130M/1291-3 (COS.sp.1719114)	(1) VFTS-169	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=1779; FP-POS=3			2254 Secs (2254 Secs) *[==>]*	 ***[1]***
	Comments: rn(PoWR-OB-new(PoWR_47000_4.20_m7.00_Z0.50.fits, lmc-ob-i 47-42, Z=0.500 solar, Teff=47000, log_lum=5.58, log_g=4.20, log_mdot=-7.00) (extinction lmc30dor=0.310), flux1360 +- 2.0A flux=2.4e-14 Flam); cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O2.5 V(n)((f*))* *SED = VFTS-169_COS_G130M_c1291_sed.fits* *For exptime=9314.2 s, spectral region:* *1150.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 582.8 cts/s/segment* *brightest pixel: 0.010 cts/s/pix at 1243.5 A* *Calculation performed 2021-10-25T00:55:14, v0.9*								
3	G130M/1291-4 (COS.sp.1719114)	(1) VFTS-169	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=1779; FP-POS=4			2514 Secs (2514 Secs) *[==>]*	 ***[2]***
	Comments: rn(PoWR-OB-new(PoWR_47000_4.20_m7.00_Z0.50.fits, lmc-ob-i 47-42, Z=0.500 solar, Teff=47000, log_lum=5.58, log_g=4.20, log_mdot=-7.00) (extinction lmc30dor=0.310), flux1360 +- 2.0A flux=2.4e-14 Flam); cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O2.5 V(n)((f*))* *SED = VFTS-169_COS_G130M_c1291_sed.fits* *For exptime=9314.2 s, spectral region:* *1150.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 582.8 cts/s/segment* *brightest pixel: 0.010 cts/s/pix at 1243.5 A* *Calculation performed 2021-10-25T00:55:14, v0.9*								

Orbit Structure





Visit

Proposal 16810, VFTS-169-COS-c1291_ii (1D) Tue Apr 19 18:02:01 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%

Comments: vstatus; 1C; VFTS-169; P/COS approved for submission; P/RS 28/02/22 ; intrev: complete ; P/JRD 19/04/22
vcheck; Enter targ name & Inst. & Resp. Sci.; VFTS-169 ; COS ; RS
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; No
vcheck; S/N ETC calcs done & documented?; Yes
vcheck; Field images checked & saved?; Yes
vcheck; Selected ACQ strategy?; Yes ...
NUV ACQ with MIRROR B and PSA which has been done previously in program 15629
vcheck; Possible ACQ or Sci spoilers?; No
vcheck; Field BOT clear?; Yes ...
checked the WFC3/F275W image as well as the stars listed in the Zaritsky catalog as well as the Massey catalog ...
brightest star apart from target in the PSA macroaperture has V=17.5 and ETC calculation cos.ta.1745382 clears V=17 O5V for PSA MIRROR B Imaging ...
brightest star in the BOA macroaperture has V=14.6 and ETC calculation cos.ta.1745381 clears V=14 O5V for BOA MIRROR B Imaging
vcheck; Visual BOT check for stars not in catalog?; Yes
vcheck; Orbit packing finalized?; Yes
vcheck; Buffer times optimized?; Yes
vcheck; Verify visit grouping correct; N/A
vcheck; Is visit ready for int. review?; Yes
Allocated COS orbits = 7 ...
split into three visits of 2, 2, and 3 orbits

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	VFTS-169	RA: 05 37 49.9180 (84.4579917d)	Proper Motion RA: 1.648 mas/yr	V=14.59	Reference Frame: ICRS
	Alt Name1: ST92-1-71	Dec: -69 10 27.88 (-69.17441d)	Proper Motion Dec: 0.635 mas/yr	SpT=O2.5 V(n)((f*)); E(B-V)=0 .31; B=14.62; V=14.59; F1160= 1.700e-14; F1360=2.380e-14; F 1700=3.010e-14	
		Equinox: J2000	Parallax: 0"		
			Epoch of Position: 2000.0		

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Previous name : ST92 1-71
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COS/G160M/c1611 : rn(PoWR-OB-new(PoWR_47000_4.20_m7.00_Z0.50.fits, lmc-ob-i 47-42, Z=0.500 solar, Teff=47000, log_lum=5.58, log_g=4.20, log_mdot=-7.00) (extinction lmc30dor=0.310), flux1700 +- 2.0A flux=3e-14 Flam)
Coordinate pedigree: Gaia DR2
Calculation performed 2021-10-25T00:55:12, v0.9
---
tstatus; VFTS-169; P/COS approved for submission; S/ins not started; P/RS 28/02/22; S/xx DD/MM/YY
tcheck; APT/SIMBAD target names: ; VFTS-169 "[M2002] LMC 169366"
tcheck; Target info verification status?; Ok
tcheck; Coordinates & P.M. verified, epoch checked?; Yes
tcheck; Adopted SED compared to Observations?; Yes ...
PoWR SED modified to use E(B-V)=0.47 and normalized to Johnson B=14.62
Category=STAR
Description=[MAIN SEQUENCE O, OF]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
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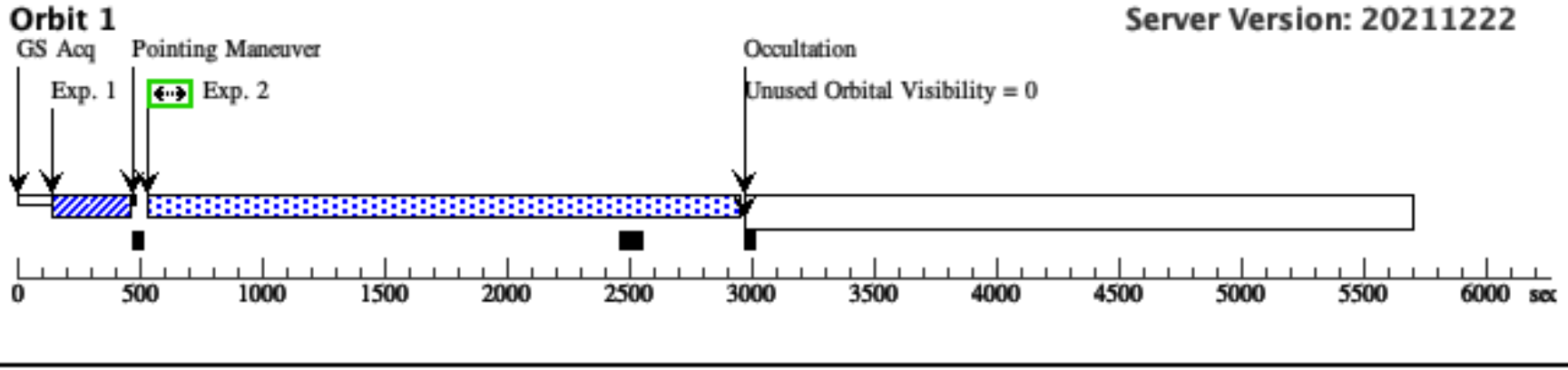
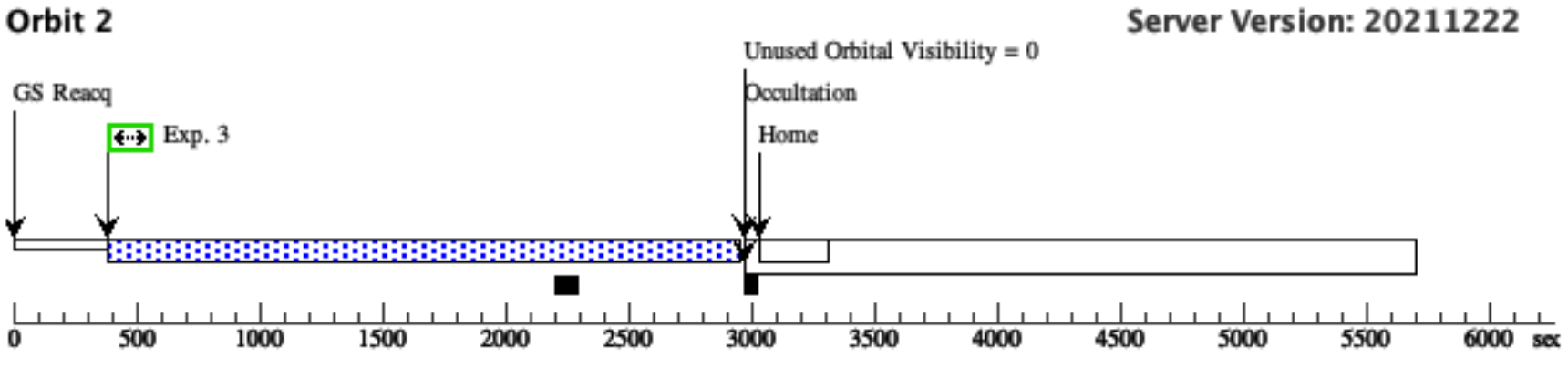
Comments: Mirror A, BOA requires 43 sec for S/N of 30 (COS.ta.1719110) and 97 sec for S/N of 45 (COS.ta.1719109).									
2	G130M/1291-3 (COS.sp.1719114)	(1) VFTS-169	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=17 79; FP-POS=3			2254 Secs (2254 Secs) *[==>]*	 ***[1]***
Comments: rn(PoWR-OB-new(PoWR_47000_4.20_m7.00_Z0.50.fits, lmc-ob-i 47-42, Z=0.500 solar, Teff=47000, log_lum=5.58, log_g=4.20, log_mdot=-7.00) (extinction lmc30dor=0.310), flux1360 +- 2.0A flux=2.4e-14 Flam); cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O2.5 V(n)((f*))* *SED = VFTS-169_COS_G130M_c1291_sed.fits* *For exptime=9314.2 s, spectral region:* *1150.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 582.8 cts/s/segment* *brightest pixel: 0.010 cts/s/pix at 1243.5 A* *Calculation performed 2021-10-25T00:55:14, v0.9*									
3	G130M/1291-4 (COS.sp.1719114)	(1) VFTS-169	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=17 79; FP-POS=4			2514 Secs (2514 Secs) *[==>]*	 ***[2]***
Comments: rn(PoWR-OB-new(PoWR_47000_4.20_m7.00_Z0.50.fits, lmc-ob-i 47-42, Z=0.500 solar, Teff=47000, log_lum=5.58, log_g=4.20, log_mdot=-7.00) (extinction lmc30dor=0.310), flux1360 +- 2.0A flux=2.4e-14 Flam); cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O2.5 V(n)((f*))* *SED = VFTS-169_COS_G130M_c1291_sed.fits* *For exptime=9314.2 s, spectral region:* *1150.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 582.8 cts/s/segment* *brightest pixel: 0.010 cts/s/pix at 1243.5 A* *Calculation performed 2021-10-25T00:55:14, v0.9*									

Orbit Structure





Visit

Proposal 16810, VFTS-169-COS-c1611 (1E) Tue Apr 19 18:02:01 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%

Comments: vstatus; 1C; VFTS-169; P/COS approved for submission; P/RS 28/02/22 ; intrev: complete ; P/JRD 19/04/22
vcheck; Enter targ name & Inst. & Resp. Sci.; VFTS-169 ; COS ; RS
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; No
vcheck; S/N ETC calcs done & documented?; Yes
vcheck; Field images checked & saved?; Yes
vcheck; Selected ACQ strategy?; Yes ...
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vcheck; Possible ACQ or Sci spoilers?; No
vcheck; Field BOT clear?; Yes ...
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brightest star apart from target in the PSA macroaperture has V=17.5 and ETC calculation cos.ta.1745382 clears V=17 O5V for PSA MIRROR B Imaging ...
brightest star in the BOA macroaperture has V=14.6 and ETC calculation cos.ta.1745381 clears V=14 O5V for BOA MIRROR B Imaging
vcheck; Visual BOT check for stars not in catalog?; Yes
vcheck; Orbit packing finalized?; Yes
vcheck; Buffer times optimized?; Yes
vcheck; Verify visit grouping correct; N/A
vcheck; Is visit ready for int. review?; Yes
Allocated COS orbits = 7 ...
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Fixed Targets

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		Equinox: J2000	Parallax: 0"		
			Epoch of Position: 2000.0		

Comments: VFTS-169 : ST92-1-71, VFTS 169
Previous name : ST92 1-71
Input file: ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
SpT = O2.5 V(n)((f))*
COS/G130M/c1291 : rn(PoWR-OB-new(PoWR_47000_4.20_m7.00_Z0.50.fits, lmc-ob-i 47-42, Z=0.500 solar, Teff=47000, log_lum=5.58, log_g=4.20, log_mdot=-7.00) (extinction lmc30dor=0.310), flux1360 +-2.0A flux=2.4e-14 Flam)
COS/G160M/c1611 : rn(PoWR-OB-new(PoWR_47000_4.20_m7.00_Z0.50.fits, lmc-ob-i 47-42, Z=0.500 solar, Teff=47000, log_lum=5.58, log_g=4.20, log_mdot=-7.00) (extinction lmc30dor=0.310), flux1700 +-2.0A flux=3e-14 Flam)
Coordinate pedigree: Gaia DR2
Calculation performed 2021-10-25T00:55:12, v0.9
---
tstatus; VFTS-169; P/COS approved for submission; S/ins not started; P/RS 28/02/22; S/xx DD/MM/YY
tcheck; APT/SIMBAD target names: ; VFTS-169 "[M2002] LMC 169366"
tcheck; Target info verification status?; Ok
tcheck; Coordinates & P.M. verified, epoch checked?; Yes
tcheck; Adopted SED compared to Observations?; Yes ...
PoWR SED modified to use E(B-V)=0.47 and normalized to Johnson B=14.62
Category=STAR
Description=[MAIN SEQUENCE O, OF]
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.1719111)	(1) VFTS-169	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				4.2 Secs (4.2 Secs) *[==>]*	*[1]*
	Comments: Mirror A, BOA requires 43 sec for S/N of 30 (COS.ta.1719110) and 97 sec for S/N of 45 (COS.ta.1719109).								
2	G160M/1611-1 (COS.sp.1719117)	(1) VFTS-169	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=1590; FP-POS=1			1700 Secs (1700 Secs) *[==>]*	*[1]*
	Comments: rn(PoWR-OB-new(PoWR_47000_4.20_m7.00_Z0.50.fits, lmc-ob-i 47-42, Z=0.500 solar, Teff=47000, log_lum=5.58, log_g=4.20, log_mdot=-7.00) (extinction lmc30dor=0.310), flux1700 +- 2.0A flux=3e-14 Flam); cos,fuv,g160m,c1611,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O2.5 V(n)((f*))* *SED = VFTS-169_COS_G160M_c1611_sed.fits* *For exptime=7482.9 s, spectral region:* *1590.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 454.1 cts/s/segment* *brightest pixel: 0.007 cts/s/pix at 1423.5 A* *Calculation performed 2021-10-25T00:55:16, v0.9*								
3	G160M/1611-2i (COS.sp.1719117)	(1) VFTS-169	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=2659; FP-POS=2			400 Secs (400 Secs) *[==>]*	*[1]*
	Comments: rn(PoWR-OB-new(PoWR_47000_4.20_m7.00_Z0.50.fits, lmc-ob-i 47-42, Z=0.500 solar, Teff=47000, log_lum=5.58, log_g=4.20, log_mdot=-7.00) (extinction lmc30dor=0.310), flux1700 +- 2.0A flux=3e-14 Flam); cos,fuv,g160m,c1611,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O2.5 V(n)((f*))* *SED = VFTS-169_COS_G160M_c1611_sed.fits* *For exptime=7482.9 s, spectral region:* *1590.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 454.1 cts/s/segment* *brightest pixel: 0.007 cts/s/pix at 1423.5 A* *Calculation performed 2021-10-25T00:55:16, v0.9*								
4	G160M/1611-2ii (COS.sp.1719117)	(1) VFTS-169	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=1190; FP-POS=2			1300 Secs (1300 Secs) *[==>]*	*[2]*
	Comments: rn(PoWR-OB-new(PoWR_47000_4.20_m7.00_Z0.50.fits, lmc-ob-i 47-42, Z=0.500 solar, Teff=47000, log_lum=5.58, log_g=4.20, log_mdot=-7.00) (extinction lmc30dor=0.310), flux1700 +- 2.0A flux=3e-14 Flam); cos,fuv,g160m,c1611,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O2.5 V(n)((f*))* *SED = VFTS-169_COS_G160M_c1611_sed.fits* *For exptime=7482.9 s, spectral region:* *1590.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 454.1 cts/s/segment* *brightest pixel: 0.007 cts/s/pix at 1423.5 A* *Calculation performed 2021-10-25T00:55:16, v0.9*								
5	G160M/1611-3i (COS.sp.1719117)	(1) VFTS-169	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=2659; FP-POS=3			1109 Secs (1109 Secs) *[==>]*	*[2]*
	Comments: rn(PoWR-OB-new(PoWR_47000_4.20_m7.00_Z0.50.fits, lmc-ob-i 47-42, Z=0.500 solar, Teff=47000, log_lum=5.58, log_g=4.20, log_mdot=-7.00) (extinction lmc30dor=0.310), flux1700 +- 2.0A flux=3e-14 Flam); cos,fuv,g160m,c1611,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O2.5 V(n)((f*))* *SED = VFTS-169_COS_G160M_c1611_sed.fits* *For exptime=7482.9 s, spectral region:* *1590.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 454.1 cts/s/segment* *brightest pixel: 0.007 cts/s/pix at 1423.5 A* *Calculation performed 2021-10-25T00:55:16, v0.9*								

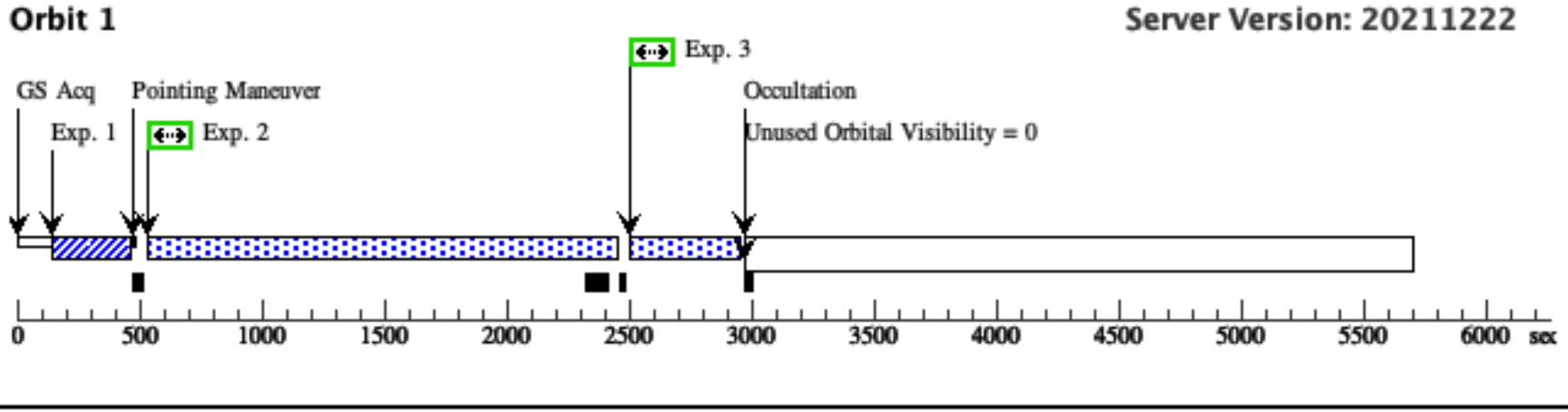
6	G160M/161 1-3ii (COS.sp.171 9117)	(1) VFTS-169	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=490; FP-POS=3	600 Secs (600 Secs) *[==>]*	**[3]**

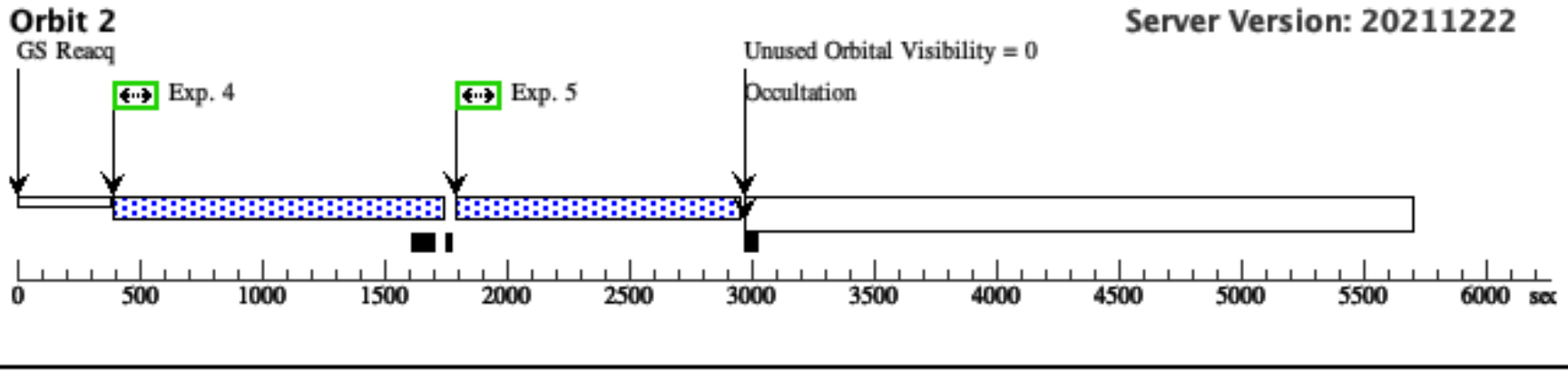
Comments: rn(PoWR-OB-new(PoWR_47000_4.20_m7.00_Z0.50.fits, lmc-ob-i 47-42, Z=0.500 solar, Teff=47000, log_lum=5.58, log_g=4.20, log_mdot=-7.00) (extinction lmc30dor=0.310), flux1700 +- 2.0A flux=3e-14 Flam); cos,fuv,g160m,c1611,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O2.5 V(n)((f))*
SED = VFTS-169_COS_G160M_c1611_sed.fits
For exptime=7482.9 s, spectral region:
1590.0 +- 0.5 A achieves SNR=30.0/resel
global countrate (brightest segment): 454.1 cts/s/segment
brightest pixel: 0.007 cts/s/pix at 1423.5 A
Calculation performed 2021-10-25T00:55:16, v0.9

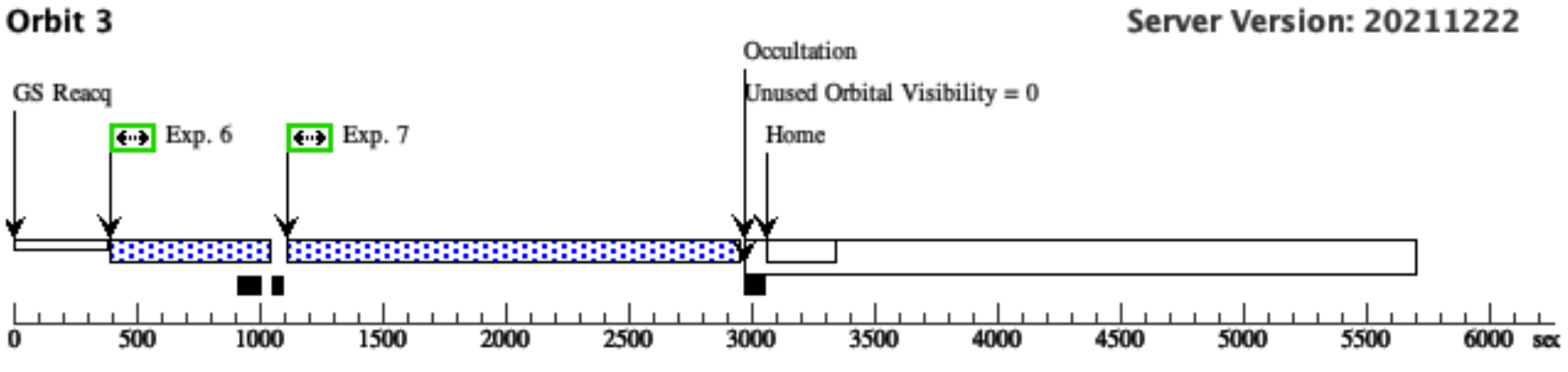
7	G160M/161 1-4 (COS.sp.171 9117)	(1) VFTS-169	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=2659; FP-POS=4	1790 Secs (1790 Secs) *[==>]*	**[3]**

Comments: rn(PoWR-OB-new(PoWR_47000_4.20_m7.00_Z0.50.fits, lmc-ob-i 47-42, Z=0.500 solar, Teff=47000, log_lum=5.58, log_g=4.20, log_mdot=-7.00) (extinction lmc30dor=0.310), flux1700 +- 2.0A flux=3e-14 Flam); cos,fuv,g160m,c1611,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O2.5 V(n)((f))*
SED = VFTS-169_COS_G160M_c1611_sed.fits
For exptime=7482.9 s, spectral region:
1590.0 +- 0.5 A achieves SNR=30.0/resel
global countrate (brightest segment): 454.1 cts/s/segment
brightest pixel: 0.007 cts/s/pix at 1423.5 A
Calculation performed 2021-10-25T00:55:16, v0.9

Orbit Structure







Visit

Proposal 16810, VFTS-506-COS (2C) Tue Apr 19 18:02:01 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV

Special Requirements: SCHED 100%

Comments: vstatus; 2C; VFTS-506; P/COS approved for submission; P/RS 19/04/22 ; intrev: complete ; P/JRD 19/04/22
vcheck; Enter targ name & Inst. & Resp. Sci.; VFTS-506 ; COS ; RS
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; No
vcheck; S/N ETC calcs done & documented?; Yes
vcheck; Field images checked & saved?; Yes
vcheck; Selected ACQ strategy?; Yes ...
FUV Spectroscopic ACQ using PSA and G130M/1291 which is required by two bright stars in the overlap region of the BOA and PSA macroapertures ...
these stars 4" and 6" from the target have peak count rates within 2% of the target in a WFC3/UVIS/F275W image ...
and are about 0.5 and 0.9 magnitude brighter, respectively, than the target in the GAIA g-band which means they will violate the PSA MIRROR A brightness limit ...
and therefore Imaging ACQ is not possible
vcheck; Possible ACQ or Sci spoilers?; No ...
The co-ordinates of the target are very well known so this should not pose a problem
vcheck; Field BOT clear?; Yes ...
as an additional check for the nearby bright stars, ETC calculations using the target model spectrum but normalized half-magnitude brighter (U=11.97) showed there was no safety issue (COS.sp.1745711, 1745712)
vcheck; Visual BOT check for stars not in catalog?; Okay
vcheck; Orbit packing finalized?; Yes
vcheck; Buffer times optimized?; Yes
vcheck; Verify visit grouping correct; N/A
vcheck; Is visit ready for int. review?; Yes
Allocated COS orbits = 2

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	VFTS-506	RA: 05 38 41.5495 (84.6731229d)	Proper Motion RA: 2.323 mas/yr	V=13.31	Reference Frame: ICRS
	Alt Name1: P93-0871	Dec: -69 05 19.51 (-69.08875d)	Proper Motion Dec: 1.316 mas/yr	SpT=ON2 V((n))((f*)); E(B-V)= 0.29; U=12.47; B=13.32; V=13. 31	
		Equinox: J2000	Parallax: 0"		
			Epoch of Position: 2000.0		

Comments: VFTS-506 : P93-0871, VFTS 506
Previous name : P93-0871
Input file: ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
SpT = ON2 V((n))((f))*
COS/G130M/c1291 : rn(PoWR-OB-new(PoWR_47000_4.20_m7.00_Z0.50.fits, lmc-ob-i 47-42, Z=0.500 solar, Teff=47000, log_lum=5.58, log_g=4.20, log_mdot=-7.00) (extinction lmc30dor=0.290), johnson U mag=12.470 vegamag)
COS/G160M/c1611 : rn(PoWR-OB-new(PoWR_47000_4.20_m7.00_Z0.50.fits, lmc-ob-i 47-42, Z=0.500 solar, Teff=47000, log_lum=5.58, log_g=4.20, log_mdot=-7.00) (extinction lmc30dor=0.290), johnson U mag=12.470 vegamag)
Coordinate pedigree: Gaia DR2
Calculation performed 2021-10-25T00:55:21, v0.9
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tstatus; VFTS-506; P/COS approved for submission; S/ins not started; P/RS 28/02/22; S/xx DD/MM/YY
tcheck; APT/SIMBAD target names: ; VFTS-506 "[P93] 871"
tcheck; Target info verification status?; Ok
tcheck; Coordinates & P.M. verified, epoch checked?; Yes
tcheck; Adopted SED compared to Observations?; Yes ...
PoWR SED modified to use E(B-V)=0.32 and normalized to Johnson U=12.47
Category=STAR
Description=[MAIN SEQUENCE O, OF]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	FUV PEAK XD (COS.sa.1719120)	(2) VFTS-506	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A	CENTER=FLUX-WT; NUM-POS=3; STEP-SIZE=1.3			1.0 Secs (1 Secs) *[==>]*	***[1]***
2	FUV PEAK D (COS.sa.1719120)	(2) VFTS-506	COS/FUV, ACQ/PEAKD, PSA	G130M 1291 A	CENTER=FLUX-WT-FLR; NUM-POS=5; STEP-SIZE=0.9			1.0 Secs (1 Secs) *[==>]*	***[1]***
3	G130M/1291-3 (COS.sp.1719121)	(2) VFTS-506	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=2300; FP-POS=3			1027 Secs (1027 Secs) *[==>]*	***[1]***
	Comments: rn(PoWR-OB-new(PoWR_47000_4.20_m7.00_Z0.50.fits, lmc-ob-i 47-42, Z=0.500 solar, Teff=47000, log_lum=5.58, log_g=4.20, log_mdot=-7.00) (extinction lmc30dor=0.290), johnson U mag=12.470 v egamag); cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: ON2 V((n))((f*))* *SED = VFTS-506_COS_G130M_c1291_sed.fits* *For exptime=943.9 s, spectral region:* *1150.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 3642.3 cts/s/segment* *brightest pixel: 0.093 cts/s/pix at 1243.5 A* *Calculation performed 2021-10-25T00:55:24, v0.9*								
4	G130M/1291-4 (COS.sp.1719121)	(2) VFTS-506	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=2300; FP-POS=4			1027 Secs (1027 Secs) *[==>]*	***[1]***
	Comments: rn(PoWR-OB-new(PoWR_47000_4.20_m7.00_Z0.50.fits, lmc-ob-i 47-42, Z=0.500 solar, Teff=47000, log_lum=5.58, log_g=4.20, log_mdot=-7.00) (extinction lmc30dor=0.290), johnson U mag=12.470 v egamag); cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: ON2 V((n))((f*))* *SED = VFTS-506_COS_G130M_c1291_sed.fits* *For exptime=943.9 s, spectral region:* *1150.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 3642.3 cts/s/segment* *brightest pixel: 0.093 cts/s/pix at 1243.5 A* *Calculation performed 2021-10-25T00:55:24, v0.9*								
5	G160M/1611 (COS.sp.1719123)	(2) VFTS-506	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=4255; FP-POS=ALL			535 Secs (2140 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	***[2]***
	Comments: rn(PoWR-OB-new(PoWR_47000_4.20_m7.00_Z0.50.fits, lmc-ob-i 47-42, Z=0.500 solar, Teff=47000, log_lum=5.58, log_g=4.20, log_mdot=-7.00) (extinction lmc30dor=0.290), johnson U mag=12.470 v egamag); cos,fuv,g160m,c1611,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: ON2 V((n))((f*))* *SED = VFTS-506_COS_G160M_c1611_sed.fits* *For exptime=1042.8 s, spectral region:* *1590.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 3103.0 cts/s/segment* *brightest pixel: 0.049 cts/s/pix at 1423.5 A* *Calculation performed 2021-10-25T00:55:26, v0.9*								

Orbit Structure