16814 - ULLYSES LMC O4 Dwarfs - COS

Cycle: 29, Proposal Category: GO/DD

(Availability Mode: SUPPORTED)

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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
1C	(1) SK-71D45	COS/FUV	1	05-Jul-2022 15:00:24.0	yes
2C	(2) VFTS-355	COS/FUV COS/NUV	3	05-Jul-2022 15:00:26.0	yes
3C	(3) VFTS-586	COS/FUV	3	05-Jul-2022 15:00:28.0	yes

7 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 16814, SK-71D45-COS (1C) Tue Jul 05 19:00:28 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV

Special Requirements: SCHED 100%

Comments: vstatus; 1C; SK-71D45; P/COS approved for submission; P/RS 22/06/22 ; intrev: complete ; P/AF 02/07/22
vcheck; Enter targ name & Inst. & Resp. Sci.; SK-71D45 ; COS ; RS
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; Yes ...
warning message that segment A countrate exceeds 15000 cts/sec but total countrate is only 16546.8 cts/sec, so well below the limit of 28000 cts/sec
vcheck; S/N ETC calcs done & documented?; N/A
vcheck; Field images checked & saved?; Yes
vcheck; Selected ACQ strategy?; Yes ...
spectroscopic acquisition using G160M/1611 and the PSA ...
the Zaritsky catalog shows several bright stars in the larger COS macro-aperture, so BOA acquisition is not possible and star is too bright for G130M/1291
vcheck; Possible ACQ or Sci spoilers?; there is a nearby bright star but the Gaia co-ordinates for the target should be sufficient
vcheck; Field BOT clear?; 3 unknown stars reported by GSCII ...
the bright star reported above is an O9V with V=13 and the extinction E(B-V) is 0.1 ...
ETC calculations for the G160M/1600 ACQ (COS.sp.1809840) and G130M/1096 science exposures (COS.sp.1809841) show that the bright object limits are not violated ...
the star is 2.41" away from the target and therefore both it and the target will not be in the aperture at the same time
vcheck; Visual BOT check for stars not in catalog?; Yes, the stars are identified by Gaia and visible in WFPC2 F170W and 555W images
vcheck; Orbit packing finalized?; Yes
vcheck; Buffer times optimized?; Yes ...
see comment field for exposure 003
vcheck; Verify visit grouping correct; N/A
vcheck; Is visit ready for int. review?; Yes
Allocated COS orbits = 1

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	SK-71D45	RA: 05 31 15.6873 (82.8153638d)	Proper Motion RA: 2.585 mas/yr	V=11.57	Reference Frame: ICRS
	Alt Name1: SK-71-45	Dec: -71 04 10.01 (-71.06945d)	Proper Motion Dec: 0.697 mas/yr	SpT=O4-5 III(f); E(B-V)=0.14; U=10.41; B=11.43; V=11.57; F160=1.940e-12; F1360=1.200e-12; F1700=1.030e-12; F2200=4.770e-13	
	Alt Name2: HD269676	Equinox: J2000	Parallax: 0"		
			Epoch of Position: 2000.0		

Comments: SK-71D45 : SK -71 45
Previous name : SK-71 45
Input file: ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
SpT = O4-5 III(f)
COS/G130M/c1096 : rn(PoWR-OB-new(PoWR_38000_3.60_m7.00_Z0.50.fits, lmc-ob-i 38-36, Z=0.500 solar, Teff=38000, log_lum=5.82, log_g=3.60, log_mdot=-7.00) (extinction lmcavg=0.140), flux1160 +- 2.0A flux=1.9e-12 Flam)
Coordinate pedigree: Gaia DR2
Calculation performed 2021-10-25T00:56:50, v0.9
---
tstatus; SK-71D45; P/COS approved for submission; S/ins not started; P/RS 22/06/22; S/xx DD/MM/YY
tcheck; APT/SIMBAD target names: ; SK-71D45 'HD 269676'
tcheck; Target info verification status?; Ok
tcheck; Coordinates & P.M. verified, epoch checked?; Yes ...
SIMBAD notes two sources HD 269676 with the appropriate spectral type and V-mag but very slightly different coordinates from USNO and HD269676A with the appropriate GAIA coordinates ...
An overlay of the GAIA sources on an HST/WFPC2 F170W image of the field shows that the GAIA coordinates are fine to use
tcheck; Adopted SED compared to Observations?; Yes ...
SK-71D45_PoWR_38000_new_sed.fits ...
the original FUSE and IUE spectra are contaminated by a bright neighboring star and therefore a revised model was calculated to match just the photometry and the COS and STIS data
Category=STAR
Description=[GIANT O, OF]
Extended=NO

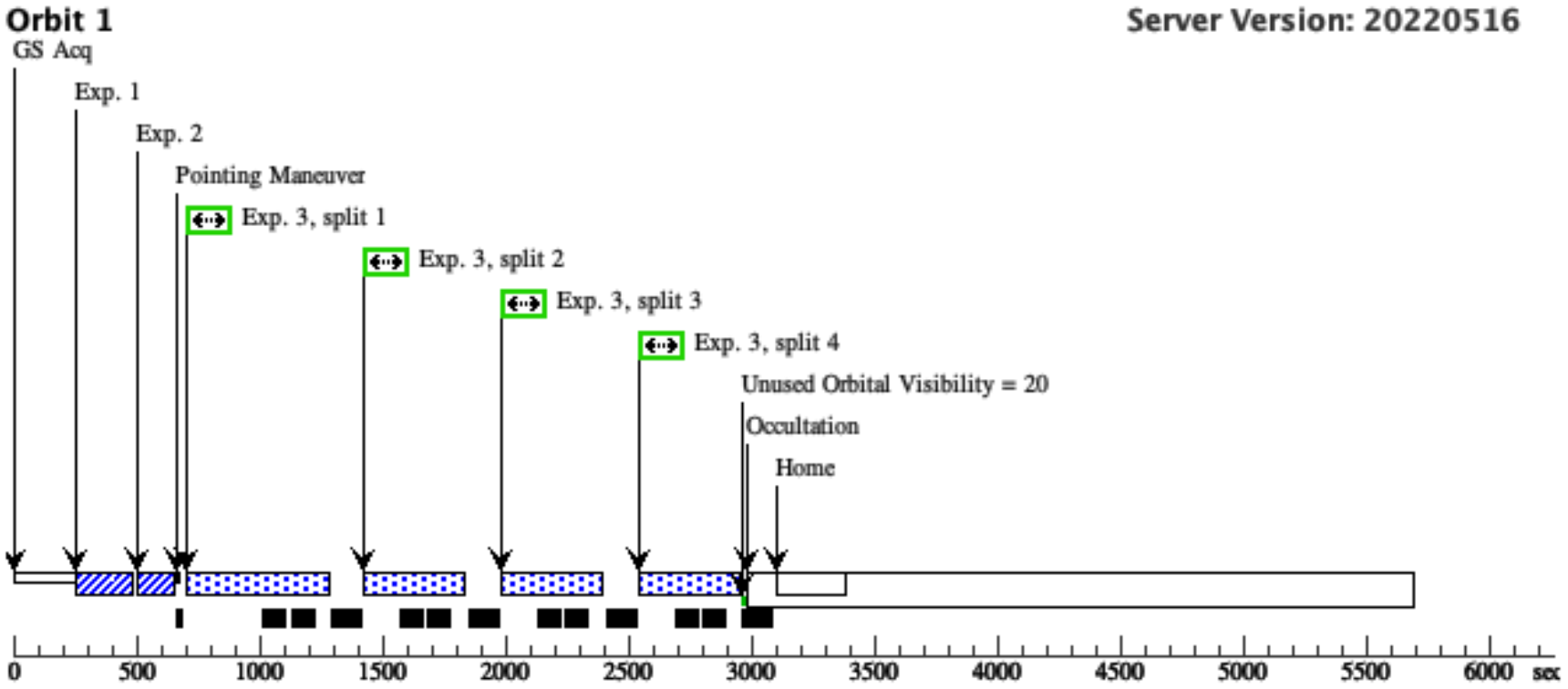
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	FUV PEAKXD (COS.sa.1808289)	(1) SK-71D45	COS/FUV, ACQ/PEAKXD, PSA	G160M 1600 A	CENTER=FLUX-WT; NUM-POS=3; STEP-SIZE=1.3			0.5 Secs (0.5 Secs) *[==>]*	***[1]***
	Comments: Exposure time not yet calculated.								
2	FUV PEAKD (COS.sa.1808289)	(1) SK-71D45	COS/FUV, ACQ/PEAKD, PSA	G160M 1600 A	CENTER=FLUX-WT-FLR; NUM-POS=5; STEP-SIZE=0.9			0.5 Secs (0.5 Secs) *[==>]*	***[1]***
	Comments: Exposure time not yet calculated.								
3	G130M/1096 (COS.sp.1808291)	(1) SK-71D45	COS/FUV, TIME-TAG, PSA	G130M 1096 A	FP-POS=ALL; BUFFER-TIME=111			357.5 Secs (1430 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	***[1]***

Comments: rn(PoWR-OB-new(PoWR_38000_3.60_m7.00_Z0.50.fits, lmc-ob-i 38-36, Z=0.500 solar, Teff=38000, log_lum=5.82, log_g=3.60, log_mdot=-7.00) (extinction lmcavg=0.140), flux1160 +- 2.0A flux=1.9e-12 Flam); cos,fuv,g130m,c1096,psa,mjd#59670; fp-pos=None, segment=None)
WARNING: operating mode = ACCUM
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O4-5 III(f)
SED = SK-71D45_COS_G130M_c1096_sed.fits
For exptime=1023.9 s, spectral region:
1080.0 +- 0.5 A achieves SNR=20.0/resel
global countrate (brightest segment): 21009.0 cts/s/segment
brightest pixel: 0.435 cts/s/pix at 1227.0 A
Calculation performed 2021-10-25T00:56:56, v0.9

The new PoWR model to fit the COS and STIS data yields a Buffer Fill Time of 142 seconds. In order to achieve maximum exposure time the Buffer Time has been set to 111 seconds.

Orbit Structure



Visit

Proposal 16814, VFTS-355-COS (2C) Tue Jul 05 19:00:29 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%

Comments: vstatus; 2C; VFTS-355; P/COS approved for submission; P/RS 22/06/22 ; intrev: complete ; P/AF 02/07/22
vcheck; Enter targ name & Inst. & Resp. Sci.; VFTS-355 ; COS ; RS
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; No
vcheck; S/N ETC calcs done & documented?; N/A
vcheck; Field images checked & saved?; Yes
vcheck; Selected ACQ strategy?; Yes ...
NUV ACQ with MIRROR A and BOA
vcheck; Possible ACQ or Sci spoilers?; No
vcheck; Field BOT clear?; Yes ...
the Zaritsky catalog shows that there is one bright star with V=16.5, however, B-V=1.5 for the star probably late G and therefore safe
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 = 3

Diagnostics

(VFTS-355-COS (2C)) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions when observing at a given COS cenwave. See the COS Instrument Handbook for exceptions that may apply to observations with G130M/1291 or G160M.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	VFTS-355 Alt Name1: 2MASS-J05382913-6857393	RA: 05 38 29.1463 (84.6214429d) Dec: -68 57 39.33 (-68.96092d) Equinox: J2000	Proper Motion RA: 1.687 mas/yr Proper Motion Dec: 0.734 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=14.12 SpT=O4 V((n))((fc))z; E(B-V)= 0.09; B=13.93; V=14.12	Reference Frame: ICRS

Comments: VFTS-355 : VFTS 355
Previous name : VFTS-355
Input file: ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
SpT = O4 V((n))((fc))z
COS/G130M/c1096 : rn(PoWR-OB-new(PoWR_42000_4.40_m7.00_Z0.50.fits, lmc-ob-i 42-44, Z=0.500 solar, Teff=42000, log_lum=4.97, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.090), johnson B mag=13.930 vegamag)
COS/G130M/c1291 : rn(PoWR-OB-new(PoWR_42000_4.40_m7.00_Z0.50.fits, lmc-ob-i 42-44, Z=0.500 solar, Teff=42000, log_lum=4.97, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.090), johnson B mag=13.930 vegamag)
COS/G160M/c1611 : rn(PoWR-OB-new(PoWR_42000_4.40_m7.00_Z0.50.fits, lmc-ob-i 42-44, Z=0.500 solar, Teff=42000, log_lum=4.97, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.090), johnson B mag=13.930 vegamag)
Coordinate pedigree: Gaia DR2
Calculation performed 2021-10-25T00:56:59, v0.9
---
tstatus; VFTS-355; P/COS approved for submission; S/ins not started; P/RS 22/06/22; S/xx DD/MM/YY
tcheck; APT/SIMBAD target names: ; VFTS-355 '2MASS J05382913-6857393'
tcheck; Target info verification status?; Ok
tcheck; Coordinates & P.M. verified, epoch checked?; Yes
tcheck; Adopted SED compared to Observations?; Yes ...
VFTS-355_COS_G130M_c1291_sed.fits
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.1808292)	(2) VFTS-355	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				7.5 Secs (7.5 Secs) *[==>]*	*[1]*
	Comments: Exposure time not yet calculated.								
2	G130M/1291-3 (COS.sp.1808295)	(2) VFTS-355	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=110.0; FP-POS=3			220 Secs (220 Secs) *[==>]*	*[1]*
	Comments: rn(PoWR-OB-new(PoWR_42000_4.40_m7.00_Z0.50.fits, lmc-ob-i 42-44, Z=0.500 solar, Teff=42000, log_lum=4.97, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.090), johnson B mag=13.930 veg amag); cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O4 V((n))((fc))z* *SED = VFTS-355_COS_G130M_c1291_sed.fits* *For exptime=317.0 s, spectral region:* *1150.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 8568.0 cts/s/segment* *brightest pixel: 0.209 cts/s/pix at 1243.5 A* *Calculation performed 2021-10-25T00:57:02, v0.9*								
3	G130M/1291-4 (COS.sp.1808295)	(2) VFTS-355	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=110; FP-POS=4			220 Secs (220 Secs) *[==>]*	*[1]*
	Comments: rn(PoWR-OB-new(PoWR_42000_4.40_m7.00_Z0.50.fits, lmc-ob-i 42-44, Z=0.500 solar, Teff=42000, log_lum=4.97, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.090), johnson B mag=13.930 veg amag); cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O4 V((n))((fc))z* *SED = VFTS-355_COS_G130M_c1291_sed.fits* *For exptime=317.0 s, spectral region:* *1150.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 8568.0 cts/s/segment* *brightest pixel: 0.209 cts/s/pix at 1243.5 A* *Calculation performed 2021-10-25T00:57:02, v0.9*								
4	G160M/1611 (COS.sp.1808296)	(2) VFTS-355	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=235; FP-POS=1			345 Secs (345 Secs) *[==>]*	*[1]*
	Comments: rn(PoWR-OB-new(PoWR_42000_4.40_m7.00_Z0.50.fits, lmc-ob-i 42-44, Z=0.500 solar, Teff=42000, log_lum=4.97, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.090), johnson B mag=13.930 veg amag); cos,fuv,g160m,c1611,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O4 V((n))((fc))z* *SED = VFTS-355_COS_G160M_c1611_sed.fits* *For exptime=816.2 s, spectral region:* *1590.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 4566.6 cts/s/segment* *brightest pixel: 0.081 cts/s/pix at 1424.0 A* *Calculation performed 2021-10-25T00:57:04, v0.9*								
5	G160M/1611 (COS.sp.1808296)	(2) VFTS-355	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=235; FP-POS=2			345 Secs (345 Secs) *[==>]*	*[1]*
	Comments: rn(PoWR-OB-new(PoWR_42000_4.40_m7.00_Z0.50.fits, lmc-ob-i 42-44, Z=0.500 solar, Teff=42000, log_lum=4.97, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.090), johnson B mag=13.930 veg amag); cos,fuv,g160m,c1611,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O4 V((n))((fc))z* *SED = VFTS-355_COS_G160M_c1611_sed.fits* *For exptime=816.2 s, spectral region:* *1590.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 4566.6 cts/s/segment* *brightest pixel: 0.081 cts/s/pix at 1424.0 A* *Calculation performed 2021-10-25T00:57:04, v0.9*								

6	G160M/161 1 (COS.sp.180 8296)	(2) VFTS-355	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=235; FP-POS=3	345 Secs (345 Secs) *[==>]*	***[1]***

Comments: rn(PoWR-OB-new(PoWR_42000_4.40_m7.00_Z0.50.fits, lmc-ob-i 42-44, Z=0.500 solar, Teff=42000, log_lum=4.97, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.090), johnson B mag=13.930 veg amag); cos,fuv,g160m,c1611,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O4 V((n))((fc))z
SED = VFTS-355_COS_G160M_c1611_sed.fits
For exptime=816.2 s, spectral region:
1590.0 +- 0.5 A achieves SNR=30.0/resel
global countrate (brightest segment): 4566.6 cts/s/segment
brightest pixel: 0.081 cts/s/pix at 1424.0 A
Calculation performed 2021-10-25T00:57:04, v0.9

7	G160M/161 1 (COS.sp.180 8296)	(2) VFTS-355	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=170; FP-POS=4	280 Secs (280 Secs) *[==>]*	***[2]***

Comments: rn(PoWR-OB-new(PoWR_42000_4.40_m7.00_Z0.50.fits, lmc-ob-i 42-44, Z=0.500 solar, Teff=42000, log_lum=4.97, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.090), johnson B mag=13.930 veg amag); cos,fuv,g160m,c1611,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O4 V((n))((fc))z
SED = VFTS-355_COS_G160M_c1611_sed.fits
For exptime=816.2 s, spectral region:
1590.0 +- 0.5 A achieves SNR=30.0/resel
global countrate (brightest segment): 4566.6 cts/s/segment
brightest pixel: 0.081 cts/s/pix at 1424.0 A
Calculation performed 2021-10-25T00:57:04, v0.9

8	G130M/109 6 (COS.sp.180 8298)	(2) VFTS-355	COS/FUV, TIME-TAG, PSA	G130M 1096 A	BUFFER-TIME=258; FP-POS=1	883 Secs (883 Secs) *[==>]*	***[2]***

Comments: rn(PoWR-OB-new(PoWR_42000_4.40_m7.00_Z0.50.fits, lmc-ob-i 42-44, Z=0.500 solar, Teff=42000, log_lum=4.97, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.090), johnson B mag=13.930 veg amag); cos,fuv,g130m,c1096,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O4 V((n))((fc))z
SED = VFTS-355_COS_G130M_c1096_sed.fits
For exptime=3072.5 s, spectral region:
1080.0 +- 0.5 A achieves SNR=20.0/resel
global countrate (brightest segment): 5923.9 cts/s/segment
brightest pixel: 0.118 cts/s/pix at 1221.5 A
Calculation performed 2021-10-25T00:57:06, v0.9

9	G130M/109 6 (COS.sp.180 8298)	(2) VFTS-355	COS/FUV, TIME-TAG, PSA	G130M 1096 A	BUFFER-TIME=260; FP-POS=2	890 Secs (890 Secs) *[==>]*	***[2]***

Comments: rn(PoWR-OB-new(PoWR_42000_4.40_m7.00_Z0.50.fits, lmc-ob-i 42-44, Z=0.500 solar, Teff=42000, log_lum=4.97, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.090), johnson B mag=13.930 veg amag); cos,fuv,g130m,c1096,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O4 V((n))((fc))z
SED = VFTS-355_COS_G130M_c1096_sed.fits
For exptime=3072.5 s, spectral region:
1080.0 +- 0.5 A achieves SNR=20.0/resel
global countrate (brightest segment): 5923.9 cts/s/segment
brightest pixel: 0.118 cts/s/pix at 1221.5 A
Calculation performed 2021-10-25T00:57:06, v0.9

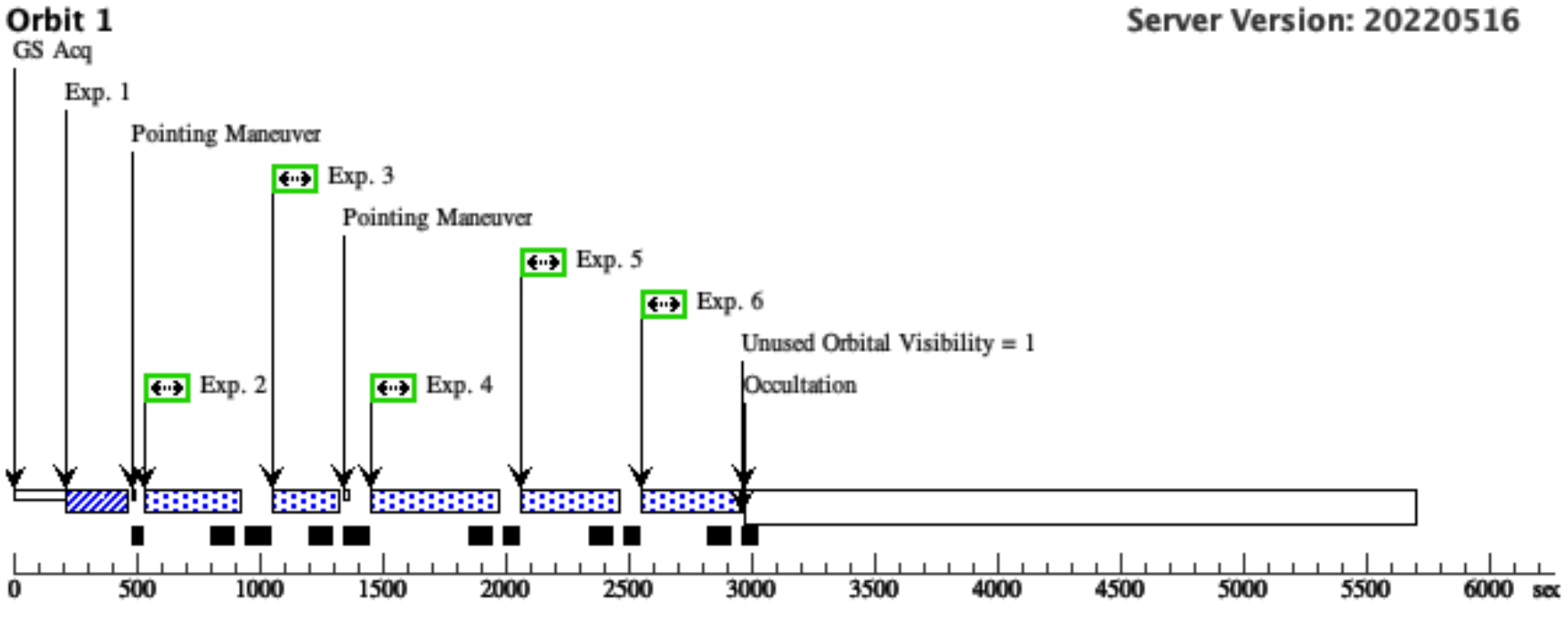
10	G130M/1096 (COS.sp.1808298)	(2) VFTS-355	COS/FUV, TIME-TAG, PSA	G130M 1096 A	BUFFER-TIME=270; FP-POS=3	1190 Secs (1190 Secs) *[==>]*	***[3]***

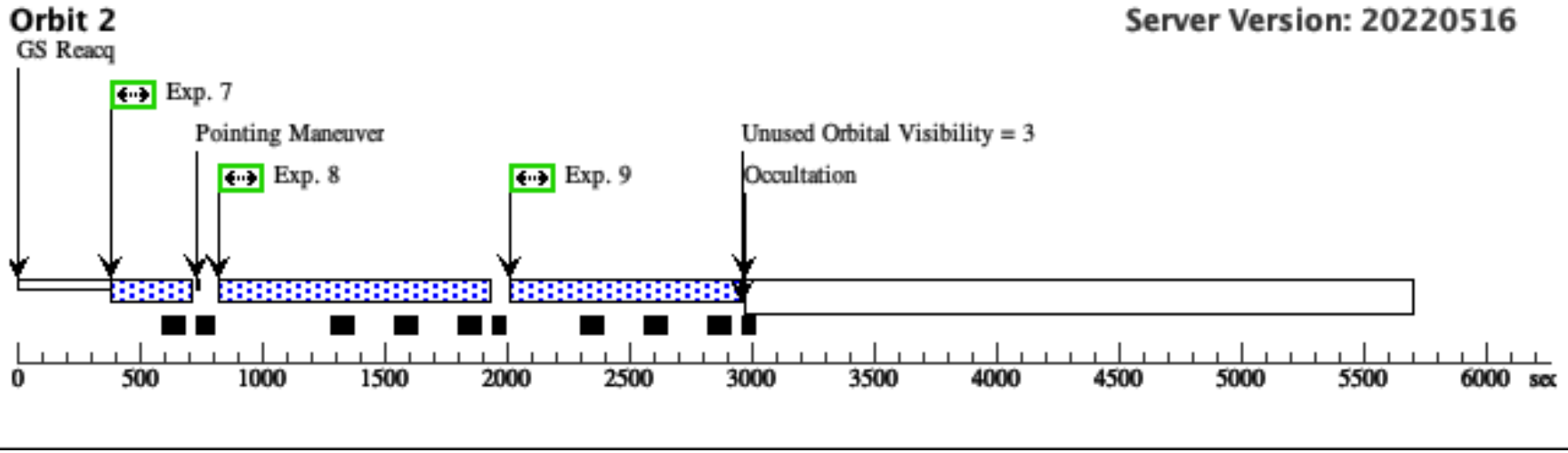
Comments: rn(PoWR-OB-new(PoWR_42000_4.40_m7.00_Z0.50.fits, lmc-ob-i 42-44, Z=0.500 solar, Teff=42000, log_lum=4.97, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.090), johnson B mag=13.930 veg amag); cos,fuv,g130m,c1096,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O4 V((n))((fc))z
SED = VFTS-355_COS_G130M_c1096_sed.fits
For exptime=3072.5 s, spectral region:
1080.0 +- 0.5 A achieves SNR=20.0/resel
global countrate (brightest segment): 5923.9 cts/s/segment
brightest pixel: 0.118 cts/s/pix at 1221.5 A
Calculation performed 2021-10-25T00:57:06, v0.9

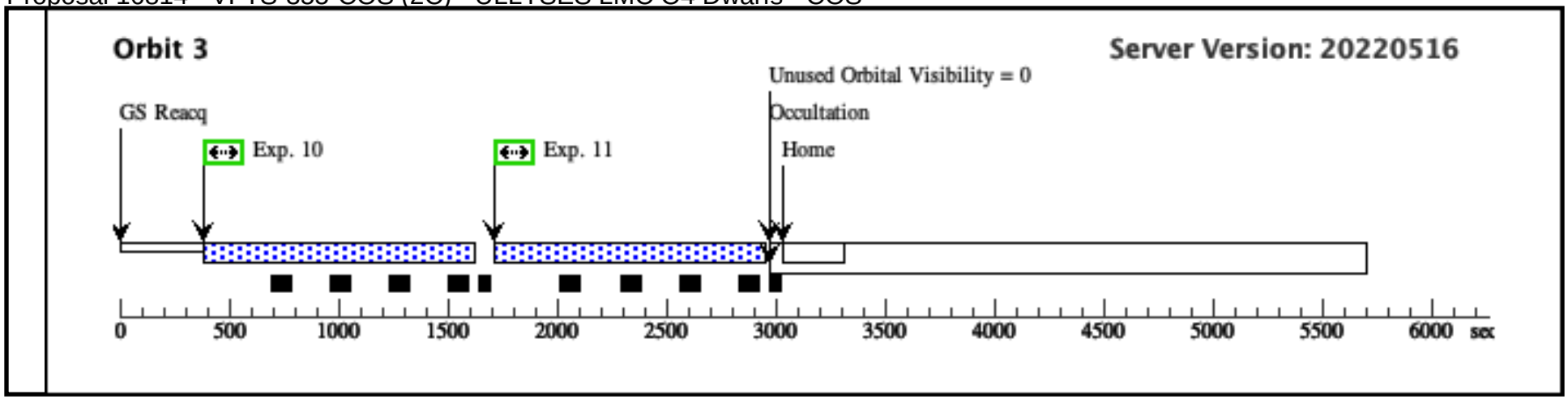
11	G130M/1096 (COS.sp.1808298)	(2) VFTS-355	COS/FUV, TIME-TAG, PSA	G130M 1096 A	BUFFER-TIME=270; FP-POS=4	1190 Secs (1190 Secs) *[==>]*	***[3]***

Comments: rn(PoWR-OB-new(PoWR_42000_4.40_m7.00_Z0.50.fits, lmc-ob-i 42-44, Z=0.500 solar, Teff=42000, log_lum=4.97, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.090), johnson B mag=13.930 veg amag); cos,fuv,g130m,c1096,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O4 V((n))((fc))z
SED = VFTS-355_COS_G130M_c1096_sed.fits
For exptime=3072.5 s, spectral region:
1080.0 +- 0.5 A achieves SNR=20.0/resel
global countrate (brightest segment): 5923.9 cts/s/segment
brightest pixel: 0.118 cts/s/pix at 1221.5 A
Calculation performed 2021-10-25T00:57:06, v0.9

Orbit Structure






Orbit 3
Server Version: 20220516
Unused Orbital Visibility = 0
GS Reacq
Occultation
Exp. 10
Exp. 11
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
sec

Visit

Proposal 16814, VFTS-586-COS (3C) Tue Jul 05 19:00:29 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: COS/FUV

Special Requirements: SCHED 100%

Comments: vstatus; 3C; VFTS-586; P/COS approved for submission; P/RS 22/06/22 ; intrev: complete ; P/AF 02/07/22
vcheck; Enter targ name & Inst. & Resp. Sci.; VFTS-586 ; COS ; RS
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; No
vcheck; S/N ETC calcs done & documented?; N/A
vcheck; Field images checked & saved?; Yes
vcheck; Selected ACQ strategy?; Yes ...
spectroscopic ACQ with G130M/1291 since there is one star in the field that will violate PSA imaging brightness limit in the case of NUV imaging ACQ with BOA
vcheck; Possible ACQ or Sci spoilers?; No
vcheck; Field BOT clear?; Yes ...
used gaiaBOT to check the field and noted one star (star 8 in the list) that, if O5V would have V=15.77
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; Yes
vcheck; Is visit ready for int. review?; Yes
Allocated COS orbits = 3

Diagnostics

(VFTS-586-COS (3C)) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions when observing at a given COS cenwave. See the COS Instrument Handbook for exceptions that may apply to observations with G130M/1291 or G160M.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	VFTS-586 Alt Name1: 2MASS-J05384539-6902514	RA: 05 38 45.3902 (84.6891258d) Dec: -69 02 51.45 (-69.04762d) Equinox: J2000	Proper Motion RA: 1.727 mas/yr Proper Motion Dec: 0.660 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15.04 SpT=O4 V((n))((fc))z; E(B-V)= 0.16; B=14.92; V=15.04; F1160 =7.420e-14; F1360=6.360e-14; F1700=5.450e-14	Reference Frame: ICRS

Comments: VFTS-586 : VFTS 586
Previous name : VFTS-586
Input file: ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
SpT = O4 V((n))((fc))z
COS/G130M/c1291 : rn(PoWR-OB-new(PoWR_45000_4.00_m7.00_Z0.50.fits, lmc-ob-i 45-40, Z=0.500 solar, Teff=45000, log_lum=5.72, log_g=4.00, log_mdot=-7.00) (extinction lmc30dor=0.160), flux1360 +- 2.0A flux=6.4e-14 Flam)
COS/G160M/c1611 : rn(PoWR-OB-new(PoWR_45000_4.00_m7.00_Z0.50.fits, lmc-ob-i 45-40, Z=0.500 solar, Teff=45000, log_lum=5.72, log_g=4.00, log_mdot=-7.00) (extinction lmc30dor=0.160), flux1700 +- 2.0A flux=5.5e-14 Flam)
Coordinate pedigree: Gaia DR2
Calculation performed 2021-10-25T00:57:09, v0.9
---
tstatus; VFTS-586; P/COS approved for submission; S/ins not started; P/RS 22/06/22; S/xx DD/MM/YY
tcheck; APT/SIMBAD target names: ; VFTS-586 '2MASS J05384539-6902514'
tcheck; Target info verification status?; Ok
tcheck; Coordinates & P.M. verified, epoch checked?; Yes
tcheck; Adopted SED compared to Observations?; Yes ...
VFTS-585_PoWR_45000_new_sed.fits ...
the IUE data were not of the correct star and a new spectrum was calculated relying on the best STIS data G230L/4300 and G230LB/2375
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.1808303)	(3) VFTS-586	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A	CENTER=FLUX-WT; NUM-POS=3; STEP-SIZE=1.3			1.0 Secs (1 Secs) *[==>]*	***[1]***
	Comments: Exposure time not yet calculated.								
2	FUV PEAK D (COS.sa.1808303)	(3) VFTS-586	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]***
	Comments: Exposure time not yet calculated.								
3	G130M/1291-3 (COS.sp.1808304)	(3) VFTS-586	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=645; FP-POS=3			1400 Secs (1400 Secs) *[==>]*	***[1]***
	Comments: rn(PoWR-OB-new(PoWR_45000_4.00_m7.00_Z0.50.fits, lmc-ob-i 45-40, Z=0.500 solar, Teff=45000, log_lum=5.72, log_g=4.00, log_mdot=-7.00) (extinction lmc30dor=0.160), flux1360 +- 2.0A flux=6.4e-14 Flam); cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O4 V((n))((fc))z* *SED = VFTS-586_COS_G130M_c1291_sed.fits* *For exptime=2454.7 s, spectral region:* *1150.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 1402.3 cts/s/segment* *brightest pixel: 0.030 cts/s/pix at 1243.5 A* *Calculation performed 2021-10-25T00:57:12, v0.9*								
4	G130M/1291-4 (COS.sp.1808304)	(3) VFTS-586	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=572; FP-POS=4			682 Secs (682 Secs) *[==>]*	***[1]***
	Comments: rn(PoWR-OB-new(PoWR_45000_4.00_m7.00_Z0.50.fits, lmc-ob-i 45-40, Z=0.500 solar, Teff=45000, log_lum=5.72, log_g=4.00, log_mdot=-7.00) (extinction lmc30dor=0.160), flux1360 +- 2.0A flux=6.4e-14 Flam); cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O4 V((n))((fc))z* *SED = VFTS-586_COS_G130M_c1291_sed.fits* *For exptime=2454.7 s, spectral region:* *1150.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 1402.3 cts/s/segment* *brightest pixel: 0.030 cts/s/pix at 1243.5 A* *Calculation performed 2021-10-25T00:57:12, v0.9*								
5	G130M/1291-4 (COS.sp.1808304)	(3) VFTS-586	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=608; FP-POS=4			718 Secs (718 Secs) *[==>]*	***[2]***
	Comments: rn(PoWR-OB-new(PoWR_45000_4.00_m7.00_Z0.50.fits, lmc-ob-i 45-40, Z=0.500 solar, Teff=45000, log_lum=5.72, log_g=4.00, log_mdot=-7.00) (extinction lmc30dor=0.160), flux1360 +- 2.0A flux=6.4e-14 Flam); cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O4 V((n))((fc))z* *SED = VFTS-586_COS_G130M_c1291_sed.fits* *For exptime=2454.7 s, spectral region:* *1150.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 1402.3 cts/s/segment* *brightest pixel: 0.030 cts/s/pix at 1243.5 A* *Calculation performed 2021-10-25T00:57:12, v0.9*								

6	G160M/161 1 (COS.sp.180 8305)	(3) VFTS-586	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=790; FP-POS=1	900 Secs (900 Secs) *[==>]*	***[2]***

Comments: rn(PoWR-OB-new(PoWR_45000_4.00_m7.00_Z0.50.fits, lmc-ob-i 45-40, Z=0.500 solar, Teff=45000, log_lum=5.72, log_g=4.00, log_mdot=-7.00) (extinction lmc30dor=0.160), flux1700 +- 2.0A flux=5.5e-14 Flam); cos,fuv,g160m,c1611,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O4 V((n))((fc))z
SED = VFTS-586_COS_G160M_c1611_sed.fits
For exptime=3893.7 s, spectral region:
1590.0 +- 0.5 A achieves SNR=30.0/resel
global countrate (brightest segment): 894.5 cts/s/segment
brightest pixel: 0.015 cts/s/pix at 1423.5 A
Calculation performed 2021-10-25T00:57:13, v0.9

7	G160M/161 1 (COS.sp.180 8305)	(3) VFTS-586	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=432; FP-POS=2	542 Secs (542 Secs) *[==>]*	***[2]***

Comments: rn(PoWR-OB-new(PoWR_45000_4.00_m7.00_Z0.50.fits, lmc-ob-i 45-40, Z=0.500 solar, Teff=45000, log_lum=5.72, log_g=4.00, log_mdot=-7.00) (extinction lmc30dor=0.160), flux1700 +- 2.0A flux=5.5e-14 Flam); cos,fuv,g160m,c1611,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O4 V((n))((fc))z
SED = VFTS-586_COS_G160M_c1611_sed.fits
For exptime=3893.7 s, spectral region:
1590.0 +- 0.5 A achieves SNR=30.0/resel
global countrate (brightest segment): 894.5 cts/s/segment
brightest pixel: 0.015 cts/s/pix at 1423.5 A
Calculation performed 2021-10-25T00:57:13, v0.9

8	G160M/161 1 (COS.sp.180 8305)	(3) VFTS-586	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=248; FP-POS=2	358 Secs (358 Secs) *[==>]*	***[3]***

Comments: rn(PoWR-OB-new(PoWR_45000_4.00_m7.00_Z0.50.fits, lmc-ob-i 45-40, Z=0.500 solar, Teff=45000, log_lum=5.72, log_g=4.00, log_mdot=-7.00) (extinction lmc30dor=0.160), flux1700 +- 2.0A flux=5.5e-14 Flam); cos,fuv,g160m,c1611,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O4 V((n))((fc))z
SED = VFTS-586_COS_G160M_c1611_sed.fits
For exptime=3893.7 s, spectral region:
1590.0 +- 0.5 A achieves SNR=30.0/resel
global countrate (brightest segment): 894.5 cts/s/segment
brightest pixel: 0.015 cts/s/pix at 1423.5 A
Calculation performed 2021-10-25T00:57:13, v0.9

9	G160M/161 1 (COS.sp.180 8305)	(3) VFTS-586	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=840; FP-POS=3	950 Secs (950 Secs) *[==>]*	***[3]***

Comments: rn(PoWR-OB-new(PoWR_45000_4.00_m7.00_Z0.50.fits, lmc-ob-i 45-40, Z=0.500 solar, Teff=45000, log_lum=5.72, log_g=4.00, log_mdot=-7.00) (extinction lmc30dor=0.160), flux1700 +- 2.0A flux=5.5e-14 Flam); cos,fuv,g160m,c1611,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O4 V((n))((fc))z
SED = VFTS-586_COS_G160M_c1611_sed.fits
For exptime=3893.7 s, spectral region:
1590.0 +- 0.5 A achieves SNR=30.0/resel
global countrate (brightest segment): 894.5 cts/s/segment
brightest pixel: 0.015 cts/s/pix at 1423.5 A
Calculation performed 2021-10-25T00:57:13, v0.9

	10	G160M/1611 (3) VFTS-586 1 (COS.sp.1808305)	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=847; FP-POS=4	957 Secs (957 Secs) *[==>]*	 ***[3]***

Comments: rn(PoWR-OB-new(PoWR_45000_4.00_m7.00_Z0.50.fits, lmc-ob-i 45-40, Z=0.500 solar, Teff=45000, log_lum=5.72, log_g=4.00, log_mdot=-7.00) (extinction lmc30dor=0.160), flux1700 +- 2.0A flux=5.5e-14 Flam); cos,fuv,g160m,c1611,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O4 V((n))((fc))z
SED = VFTS-586_COS_G160M_c1611_sed.fits
For exptime=3893.7 s, spectral region:
1590.0 +- 0.5 A achieves SNR=30.0/resel
global countrate (brightest segment): 894.5 cts/s/segment
brightest pixel: 0.015 cts/s/pix at 1423.5 A
Calculation performed 2021-10-25T00:57:13, v0.9

Orbit Structure