16813 - ULLYSES LMC O3 Supergiants - COS

Cycle: 29, Proposal Category: GO/DD

(Availability Mode: SUPPORTED)

INVESTIGATORS

Name	*Institution*
Dr. Julia Christine Roman-Duval (PI) (Contact)	**Space Telescope Science Institute**
Dr. Kenneth Sembach (CoI)	Space Telescope Science Institute
Dr. TalaWanda R. Monroe (CoI)	Space Telescope Science Institute
Joanna Taylor (CoI)	Space Telescope Science Institute
Dr. Travis C Fischer (CoI) (ESA Member)	Space Telescope Science Institute - ESA
Dr. William J. Fischer (CoI)	Space Telescope Science Institute
Dr. Alexander W. Fullerton (CoI) (Contact)	Space Telescope Science Institute
Dr. Alessandra Aloisi (CoI)	Space Telescope Science Institute
Christopher Britt (CoI)	Space Telescope Science Institute
Dr. Thomas M. Brown (CoI)	Space Telescope Science Institute
Ivo Busko (CoI)	Space Telescope Science Institute
Dr. Joleen Carlberg (CoI)	Space Telescope Science Institute
Dr. Gisella De Rosa (CoI)	Space Telescope Science Institute
Elaine M Frazer (CoI)	Space Telescope Science Institute
Dr. Svea S Hernandez (CoI)	Space Telescope Science Institute - ESA - JWST
Dr. Alec S. Hirschauer (CoI)	Space Telescope Science Institute
Dr. Bethan Lesley James (CoI)	Space Telescope Science Institute - ESA - JWST
Robert Jedrzejewski (CoI)	Space Telescope Science Institute
Sean Lockwood (CoI)	Space Telescope Science Institute
Dr. Cristina Oliveira (CoI)	Space Telescope Science Institute
Rachel Plesha (CoI)	Space Telescope Science Institute
Dr. Charles R. Proffitt (CoI)	Space Telescope Science Institute

Name	*Institution*
Dr. I. Neill Reid (CoI)	Space Telescope Science Institute
Dr. Adric R. Riedel (CoI)	Space Telescope Science Institute
Dr. David J. Sahnow (CoI)	Space Telescope Science Institute
Dr. Ravi Sankrit (CoI) (Contact)	Space Telescope Science Institute
Dr. Richard Shaw (CoI)	Space Telescope Science Institute
Dr. Linda J. Smith (CoI)	Space Telescope Science Institute
Dr. Sangmo Tony Sohn (CoI)	Space Telescope Science Institute
Dr. Debopam Som (CoI)	Space Telescope Science Institute
Dr. Leonardo Ubeda (CoI)	Space Telescope Science Institute
Dr. Daniel E. Welty (CoI)	Space Telescope Science Institute
Dr. W. Van Dyke Dixon (CoI)	Space Telescope Science Institute

VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
1C	(1) MCPS083.91120-69.69685	COS/FUV	3	07-Mar-2023 17:00:50.0	yes
2C	(2) SK-68D133	COS/FUV	2	07-Mar-2023 17:00:52.0	yes
2D	(2) SK-68D133	COS/FUV	1	07-Mar-2023 17:00:53.0	yes
3C	(3) VFTS-180	COS/FUV	2	07-Mar-2023 17:00:55.0	yes

8 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 16813, MCPS083.91120-69.69685-COS (1C), scheduling Tue Mar 07 22:00:55 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: COS/FUV

Special Requirements: SCHED 100%

Comments: vstatus; 1C; MCPS083.91120-69.69685; P/COS approved for submission; P/RS 25/08/22 ; intrev: completed ; P/JRD 30/08/22
vcheck; Enter targ name & Inst. & Resp. Sci.; MCPS083.91120-69.69685 ; COS ; RS
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; warning for irregularly variable sources in all spectroscopic calculations ...
not a problem since the source flux is not variable
vcheck; S/N ETC calcs done & documented?; N/A
vcheck; Field images checked & saved?; Yes
vcheck; Selected ACQ strategy?; Yes ...
spectroscopic acq because several bright stars in the larger macroaperture would violate PSA/MIRRORA safety limits
vcheck; Possible ACQ or Sci spoilers?; No
vcheck; Field BOT clear?; Yes ...
the bright stars in the larger macroaperture are magnitudes fainter than the brightness limit for BOA
vcheck; Visual BOT check for stars not in catalog?; OK
vcheck; Orbit packing finalized?; Yes
vcheck; Buffer times optimized?; Yes ...
buffer time is 111 sec for c1291 equal to exposure time for c1611 and 2/3 BFT for c1096
vcheck; Verify visit grouping correct; N/A
vcheck; Is visit ready for int. review?; Yes
Allocated COS orbits = 3

Diagnostics

(MCPS083.91120-69.69685-COS (1C)) 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
(1)	MCPS083.91120-69.69685 Alt Name1: AAOMEGA-181 Alt Name2: MCPS-083.91120-69.69685	RA: 05 35 38.6709 (83.9111287d) Dec: -69 41 48.91 (-69.69692d) Equinox: J2000	Proper Motion RA: 1.819 mas/yr Proper Motion Dec: 0.551 mas/yr Parallax: 0" Epoch of Position: 2000	V=13.28 SpT=O3 If*; E(B-V)=0.14; U=12.34; B=13.14; V=13.28	Reference Frame: ICRS

Comments: MCPS083.91120-69.69685 : AAOMEGA-181, MCPS 083.91120-69.69685
Previous name : [AAOmega]-181
Input file: ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
*SpT = O3 If**
COS/G130M/c1096 : rn(PoWR-OB-new(PoWR_42000_4.00_m7.00_Z0.50.fits, lmc-ob-i 42-40, Z=0.500 solar, Teff=42000, log_lum=5.48, log_g=4.00, log_mdot=-7.00) (extinction lmcavg=0.140), johnson U mag=12.340 vegamag)
COS/G130M/c1291 : rn(PoWR-OB-new(PoWR_42000_4.00_m7.00_Z0.50.fits, lmc-ob-i 42-40, Z=0.500 solar, Teff=42000, log_lum=5.48, log_g=4.00, log_mdot=-7.00) (extinction lmcavg=0.140), johnson U mag=12.340 vegamag)
COS/G160M/c1611 : rn(PoWR-OB-new(PoWR_42000_4.00_m7.00_Z0.50.fits, lmc-ob-i 42-40, Z=0.500 solar, Teff=42000, log_lum=5.48, log_g=4.00, log_mdot=-7.00) (extinction lmcavg=0.140), johnson U mag=12.340 vegamag)
Coordinate pedigree: Gaia DR2
Calculation performed 2021-10-25T00:56:20, v0.9
---
tstatus; MCPS083.91120-69.69685; P/COS approved for submission; S/ins not started; P/RS 25/08/22; S/xx DD/MM/YY
tcheck; APT/SIMBAD target names: ; MCPS083.91120-69.69685 'MCPS 083.91120-69.69685'
tcheck; Target info verification status?; OK
tcheck; Coordinates & P.M. verified, epoch checked?; Yes Gaia DR3
tcheck; Adopted SED compared to Observations?; Yes ...
MCPS083.91120-69.69685_adopted_sed.fit PoWR model fit to UBV
Category=STAR
Description=[SUPERGIANT O, OF]
Extended=NO

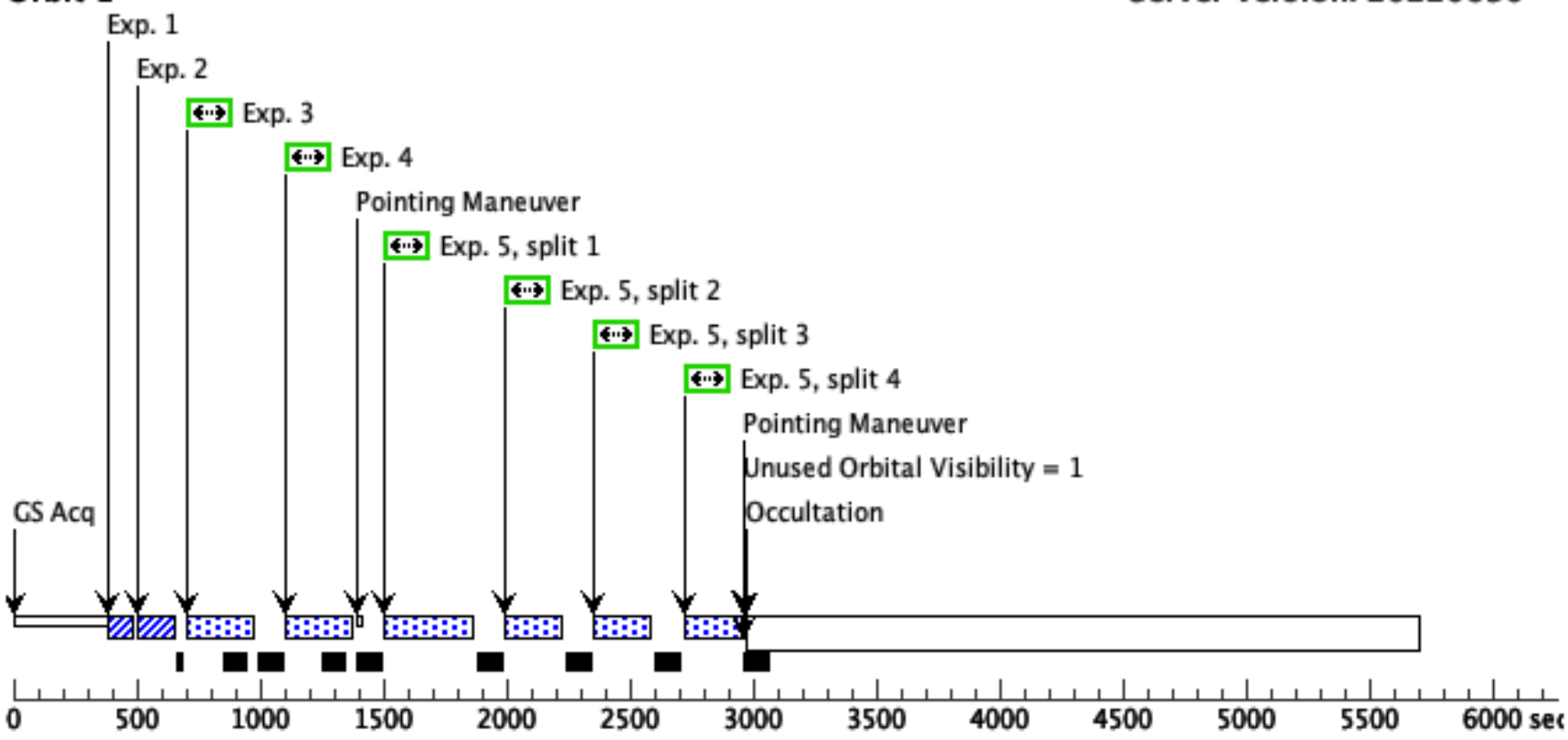
Exposures

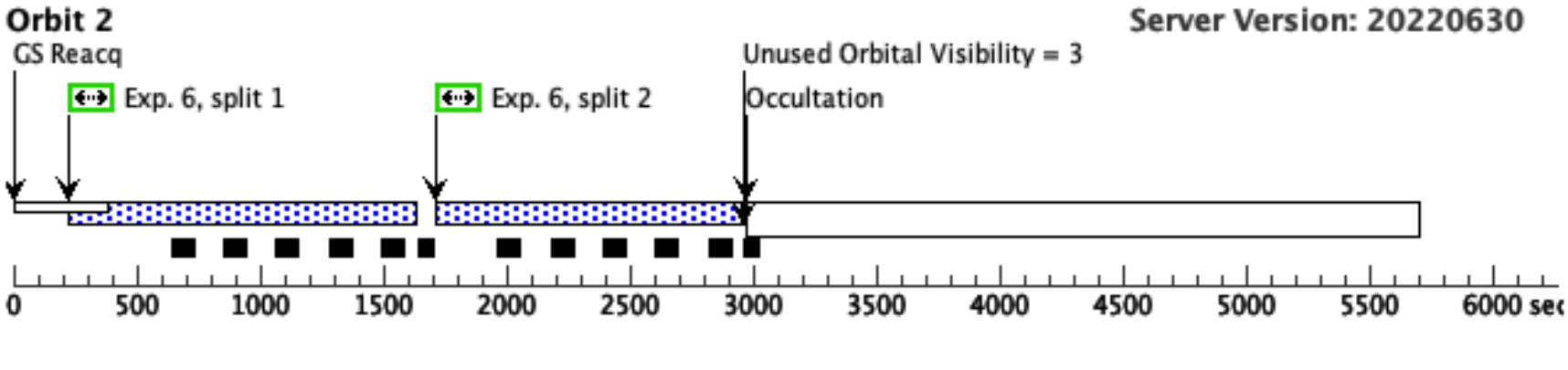
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	FUV PEAK XD (COS.sa.1819624)	(1) MCPS083.91120-69.69685	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A	CENTER=FLUX-WT; NUM-POS=3; STEP-SIZE=1.3			0.5 Secs (0.5 Secs) *[==>]*	***[1]***
	Comments: Exposure time calculated.								
2	FUV PEAK D (COS.sa.1819624)	(1) MCPS083.91120-69.69685	COS/FUV, ACQ/PEAKD, PSA	G130M 1291 A	CENTER=FLUX-WT-FLR; NUM-POS=5; STEP-SIZE=0.9			0.5 Secs (0.5 Secs) *[==>]*	***[1]***
	Comments: Exposure time calculated.								
3	G130M/1291-3 (COS.sp.1819627)	(1) MCPS083.91120-69.69685	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=111; FP-POS=3			221 Secs (221 Secs) *[==>]*	***[1]***
	Comments: rn(PoWR-OB-new(PoWR_42000_4.00_m7.00_Z0.50.fits, lmc-ob-i 42-40, Z=0.500 solar, Teff=42000, log_lum=5.48, log_g=4.00, log_mdot=-7.00) (extinction lmcavg=0.140), johnson U mag=12.340 veg amag); cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O3 If** *SED = MCPS083.91120-69.69685_COS_G130M_c1291_sed.fits* *For exptime=310.9 s, spectral region:* *1150.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 9310.8 cts/s/segment* *brightest pixel: 0.226 cts/s/pix at 1243.5 A* *Calculation performed 2021-10-25T00:56:24, v0.9*								
4	G130M/1291-4 (COS.sp.1819627)	(1) MCPS083.91120-69.69685	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=111; FP-POS=4			221 Secs (221 Secs) *[==>]*	***[1]***
	Comments: rn(PoWR-OB-new(PoWR_42000_4.00_m7.00_Z0.50.fits, lmc-ob-i 42-40, Z=0.500 solar, Teff=42000, log_lum=5.48, log_g=4.00, log_mdot=-7.00) (extinction lmcavg=0.140), johnson U mag=12.340 veg amag); cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O3 If** *SED = MCPS083.91120-69.69685_COS_G130M_c1291_sed.fits* *For exptime=310.9 s, spectral region:* *1150.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 9310.8 cts/s/segment* *brightest pixel: 0.226 cts/s/pix at 1243.5 A* *Calculation performed 2021-10-25T00:56:24, v0.9*								
5	G160M/1611 (COS.sp.1819628)	(1) MCPS083.91120-69.69685	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=1822; FP-POS=ALL			182 Secs (728 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	***[1]***
	Comments: rn(PoWR-OB-new(PoWR_42000_4.00_m7.00_Z0.50.fits, lmc-ob-i 42-40, Z=0.500 solar, Teff=42000, log_lum=5.48, log_g=4.00, log_mdot=-7.00) (extinction lmcavg=0.140), johnson U mag=12.340 veg amag); cos,fuv,g160m,c1611,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O3 If** *SED = MCPS083.91120-69.69685_COS_G160M_c1611_sed.fits* *For exptime=606.4 s, spectral region:* *1590.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 5768.7 cts/s/segment* *brightest pixel: 0.100 cts/s/pix at 1424.0 A* *Calculation performed 2021-10-25T00:56:25, v0.9*								

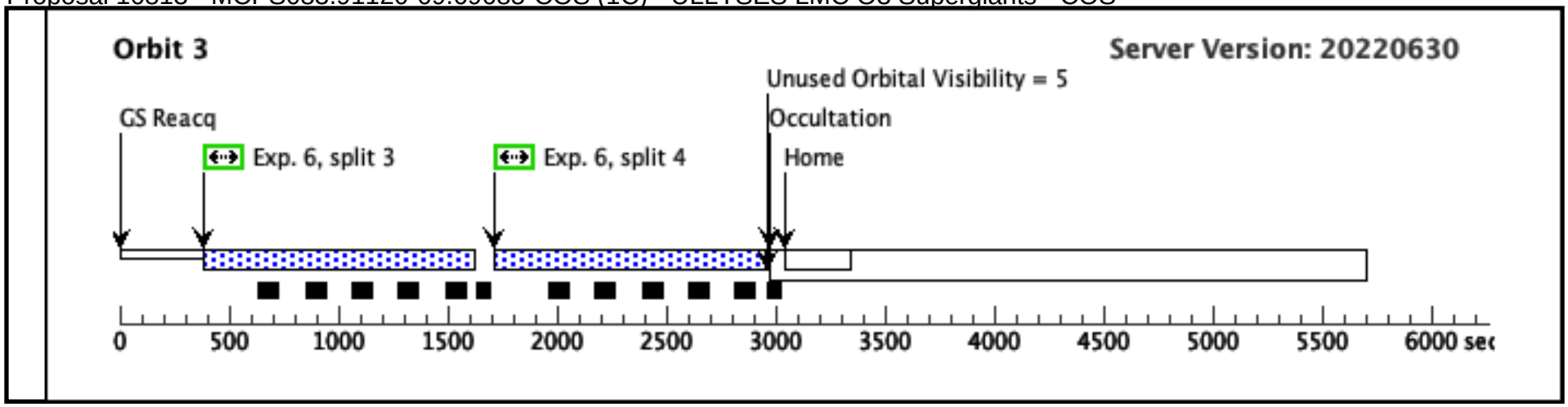
	6	G130M/1096 (COS.sp.1819626)	(1) MCPS083.91120 -69.69685	COS/FUV, TIME-TAG, PSA	G130M 1096 A	BUFFER-TIME=213; FP-POS=ALL	1183 Secs (4732 Secs)	
							[==>(Split 1)] *[==>(Split 2)]*	***[2]***
							[==>(Split 3)] *[==>(Split 4)]*	***[3]***

Comments: rn(PoWR-OB-new(PoWR_42000_4.00_m7.00_Z0.50.fits, lmc-ob-i 42-40, Z=0.500 solar, Teff=42000, log_lum=5.48, log_g=4.00, log_mdot=-7.00) (extinction lmcavg=0.140), johnson U mag=12.340 veg amag); cos,fuv,g130m,c1096,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
*Spectral type: O3 If**
SED = MCPS083.91120-69.69685_COS_G130M_c1096_sed.fits
For exptime=3305.9 s, spectral region:
1080.0 +- 0.5 A achieves SNR=20.0/resel
global countrate (brightest segment): 6362.6 cts/s/segment
brightest pixel: 0.129 cts/s/pix at 1220.0 A
Calculation performed 2021-10-25T00:56:27, v0.9

Orbit Structure






Orbit 3
Server Version: 20220630
Unused Orbital Visibility = 5
GS Reacq
Occultation
Exp. 6, split 3
Exp. 6, split 4
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec

Visit

Proposal 16813, SK-68D133-COS (2C), scheduling Tue Mar 07 22:00:56 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: COS/FUV

Special Requirements: SCHED 100%

Comments: vstatus; 2C; SK-68D133; P/COS approved for submission; P/RS 25/08/22 ; intrev: completed ; P/JRD 30/08/22
vcheck; Enter targ name & Inst. & Resp. Sci.; SK-68D133 ; COS ; RS
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; warning for irregularly variable sources in all spectroscopic calculations ...
not a problem since the source flux is not variable
vcheck; S/N ETC calcs done & documented?; N/A
vcheck; Field images checked & saved?; Yes
vcheck; Selected ACQ strategy?; Yes ...
spectroscopic acq because a few stars in the larger macroaperture are bright enough to violate PSA/MIRRORA safety limits
vcheck; Possible ACQ or Sci spoilers?; No
vcheck; Field BOT clear?; Yes
vcheck; Visual BOT check for stars not in catalog?; OK
vcheck; Orbit packing finalized?; Yes
vcheck; Buffer times optimized?; Yes ...
buffer time set to 111 sec for c1291 and equal to exposure time for c1611
vcheck; Verify visit grouping correct; N/A
vcheck; Is visit ready for int. review?; Yes
Allocated COS orbits = 2

Diagnostics

(SK-68D133-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)	SK-68D133 Alt Name1: AAOMEGA-248 Alt Name2: SK-68-133	RA: 05 37 1.3097 (84.2554571d) Dec: -68 46 6.01 (-68.76834d) Equinox: J2000	Proper Motion RA: 1.45 mas/yr Proper Motion Dec: 0.862 mas/yr Parallax: 0" Epoch of Position: 2000	V=13.15 SpT=OC3.5 III(f*); E(B-V)=0.16; U=12.02; B=13.03; V=13.15	Reference Frame: ICRS

Comments: SK-68D133 : AAOMEGA-248, SK -68 133
Previous name : Sk-68 133
Input file: ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
SpT = OC3.5 III(f)*
COS/G130M/c1096 : rn(PoWR-OB-new(PoWR_42000_3.80_m7.00_Z0.50.fits, lmc-ob-i 42-38, Z=0.500 solar, Teff=42000, log_lum=5.82, log_g=3.80, log_mdot=-7.00) (extinction lmcavg=0.160), johnson U mag=12.020 vegamag)
COS/G130M/c1291 : rn(PoWR-OB-new(PoWR_42000_3.80_m7.00_Z0.50.fits, lmc-ob-i 42-38, Z=0.500 solar, Teff=42000, log_lum=5.82, log_g=3.80, log_mdot=-7.00) (extinction lmcavg=0.160), johnson U mag=12.020 vegamag)
COS/G160M/c1611 : rn(PoWR-OB-new(PoWR_42000_3.80_m7.00_Z0.50.fits, lmc-ob-i 42-38, Z=0.500 solar, Teff=42000, log_lum=5.82, log_g=3.80, log_mdot=-7.00) (extinction lmcavg=0.160), johnson U mag=12.020 vegamag)
Coordinate pedigree: Gaia DR2
Calculation performed 2021-10-25T00:56:31, v0.9
---
tstatus; SK-68D133; P/COS approved for submission; S/ins not started; P/RS 25/08/22; S/xx DD/MM/YY
tcheck; APT/SIMBAD target names: ; SK-68D133 'SK -68 133'
tcheck; Target info verification status?; OK
tcheck; Coordinates & P.M. verified, epoch checked?; Yes Gaia DR3
tcheck; Adopted SED compared to Observations?; Yes ...
SK-68D133_adopted_sed.fits PoWR model fit to UBV
Category=STAR
Description=[GIANT O, OF]
Extended=NO

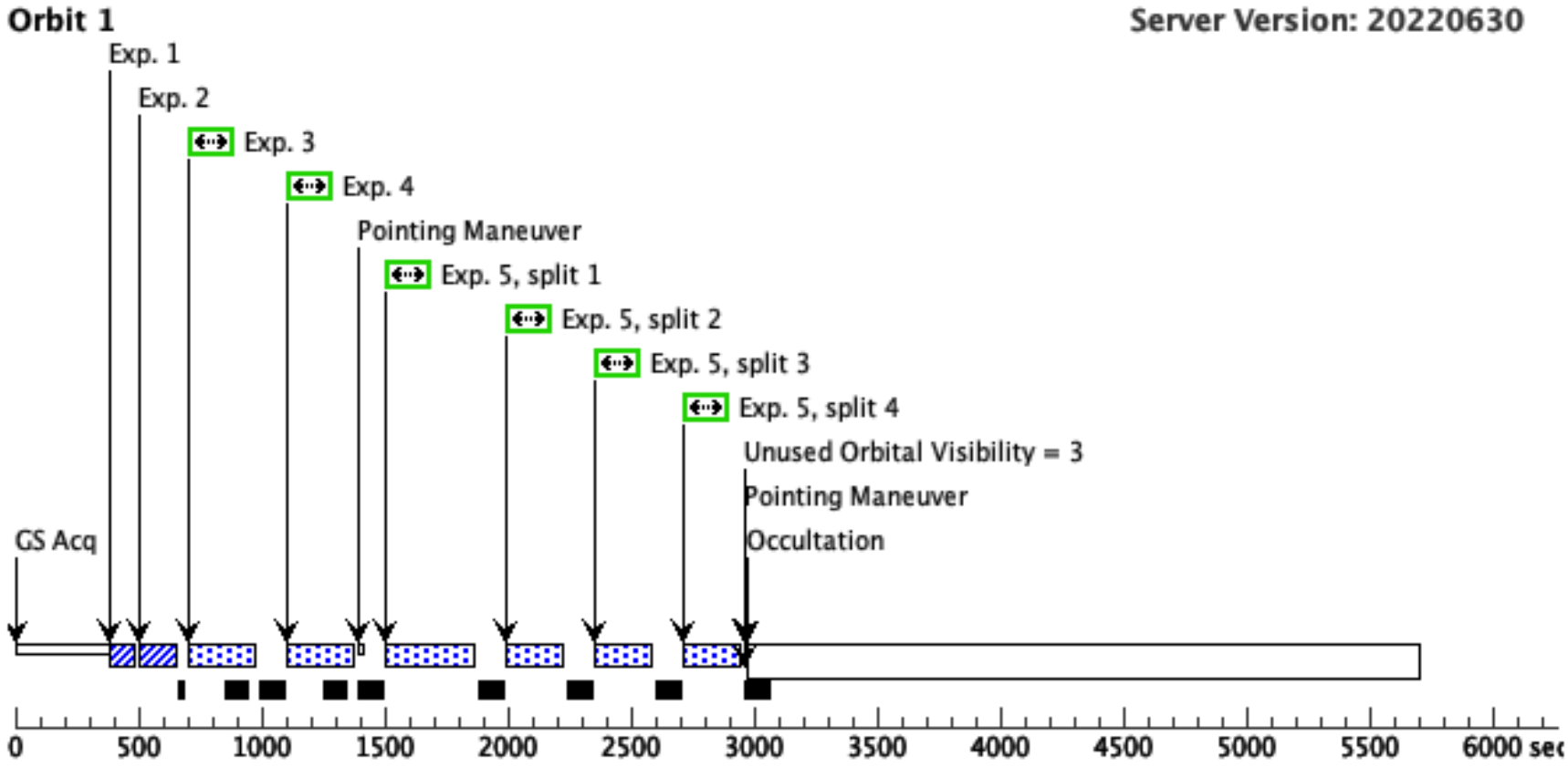
Exposures

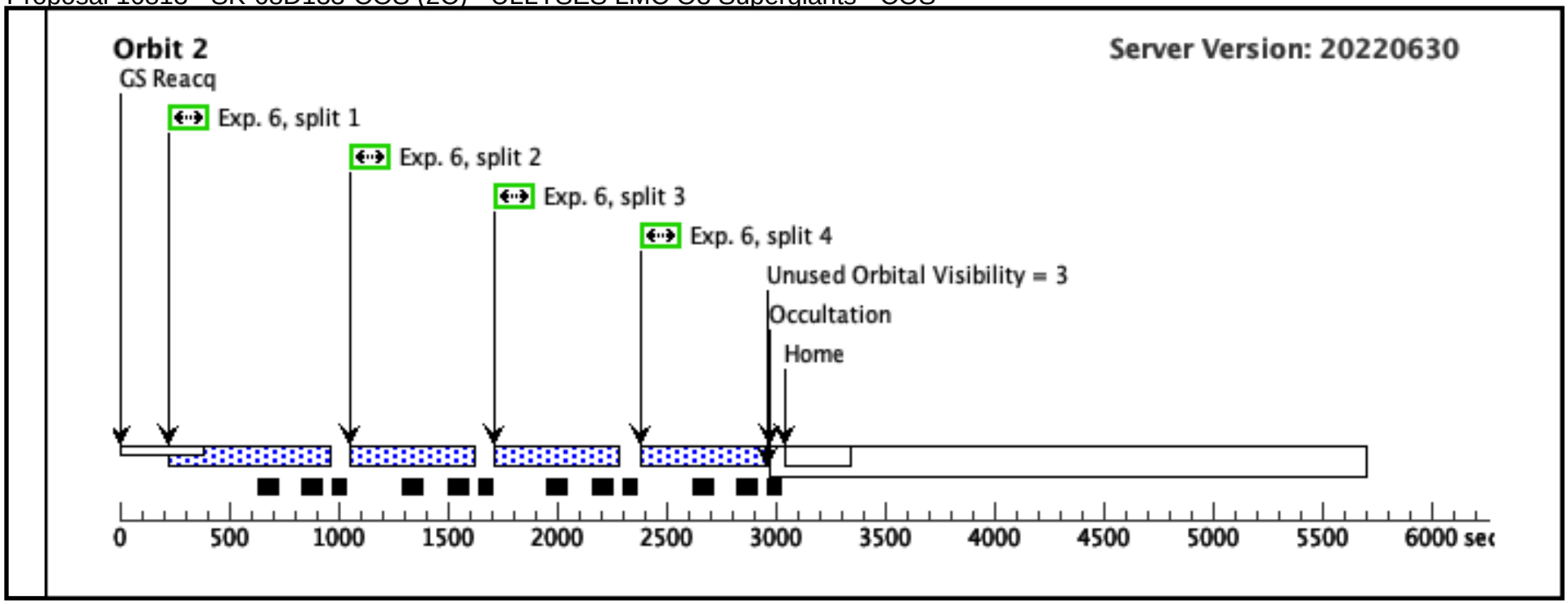
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	FUV PEAK XD (COS.sa.1819632)	(2) SK-68D133	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A	CENTER=FLUX-WT; NUM-POS=3; STEP-SIZE=1.3			0.5 Secs (0.5 Secs) *[==>]*	***[1]***
	Comments: Exposure time calculated.								
2	FUV PEAK D (COS.sa.1819632)	(2) SK-68D133	COS/FUV, ACQ/PEAKD, PSA	G130M 1291 A	CENTER=FLUX-WT-FLR; NUM-POS=5; STEP-SIZE=0.9			0.5 Secs (0.5 Secs) *[==>]*	***[1]***
	Comments: Exposure time calculated.								
3	G130M/1291-3 (COS.sp.1819635)	(2) SK-68D133	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=111; FP-POS=3			222 Secs (222 Secs) *[==>]*	***[1]***
	Comments: rn(PoWR-OB-new(PoWR_42000_3.80_m7.00_Z0.50.fits, lmc-ob-i 42-38, Z=0.500 solar, Teff=42000, log_lum=5.82, log_g=3.80, log_mdot=-7.00) (extinction lmcavg=0.160), johnson U mag=12.020 veg amag); cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: OC3.5 III(f*)* *SED = SK-68D133_COS_G130M_c1291_sed.fits* *For exptime=279.1 s, spectral region:* *1150.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 10799.0 cts/s/segment* *brightest pixel: 0.260 cts/s/pix at 1243.5 A* *Calculation performed 2021-10-25T00:56:34, v0.9*								
4	G130M/1291-4 (COS.sp.1819635)	(2) SK-68D133	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=111; FP-POS=4			222 Secs (222 Secs) *[==>]*	***[1]***
	Comments: rn(PoWR-OB-new(PoWR_42000_3.80_m7.00_Z0.50.fits, lmc-ob-i 42-38, Z=0.500 solar, Teff=42000, log_lum=5.82, log_g=3.80, log_mdot=-7.00) (extinction lmcavg=0.160), johnson U mag=12.020 veg amag); cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: OC3.5 III(f*)* *SED = SK-68D133_COS_G130M_c1291_sed.fits* *For exptime=279.1 s, spectral region:* *1150.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 10799.0 cts/s/segment* *brightest pixel: 0.260 cts/s/pix at 1243.5 A* *Calculation performed 2021-10-25T00:56:34, v0.9*								
5	G160M/1611 (COS.sp.1819636)	(2) SK-68D133	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=181; FP-POS=ALL			181 Secs (724 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	***[1]***
	Comments: rn(PoWR-OB-new(PoWR_42000_3.80_m7.00_Z0.50.fits, lmc-ob-i 42-38, Z=0.500 solar, Teff=42000, log_lum=5.82, log_g=3.80, log_mdot=-7.00) (extinction lmcavg=0.160), johnson U mag=12.020 veg amag); cos,fuv,g160m,c1611,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: OC3.5 III(f*)* *SED = SK-68D133_COS_G160M_c1611_sed.fits* *For exptime=469.7 s, spectral region:* *1590.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 7149.1 cts/s/segment* *brightest pixel: 0.122 cts/s/pix at 1423.5 A* *Calculation performed 2021-10-25T00:56:36, v0.9*								

	6	G130M/1096 (COS.sp.1819633)	(2) SK-68D133	COS/FUV, TIME-TAG, PSA	G130M 1096 A	BUFFER-TIME=205; FP-POS=ALL	520 Secs (2080 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	***[2]***

Comments: rn(PoWR-OB-new(PoWR_42000_3.80_m7.00_Z0.50.fits, lmc-ob-i 42-38, Z=0.500 solar, Teff=42000, log_lum=5.82, log_g=3.80, log_mdot=-7.00) (extinction lmcavg=0.160), johnson U mag=12.020 veg amag); cos,fuv,g130m,c1096,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: OC3.5 III(f)*
SED = SK-68D133_COS_G130M_c1096_sed.fits
For exptime=3080.2 s, spectral region:
1080.0 +- 0.5 A achieves SNR=20.0/resel
global countrate (brightest segment): 7324.6 cts/s/segment
brightest pixel: 0.149 cts/s/pix at 1220.0 A
Calculation performed 2021-10-25T00:56:37, v0.9

Orbit Structure




Orbit 2
Server Version: 20220630
GS Reacq
Exp. 6, split 1
Exp. 6, split 2
Exp. 6, split 3
Exp. 6, split 4
Unused Orbital Visibility = 3
Occultation
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec

Visit

Proposal 16813, SK-68D133-COS (2D), implementation Tue Mar 07 22:00:56 GMT 2023

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV

Special Requirements: SCHED 100%

Comments: vstatus; 2D; SK-68D133; P/COS approved for submission; P/RS 25/08/22 ; intrev: completed ; P/JRD 30/08/22
vcheck; Enter targ name & Inst. & Resp. Sci.; SK-68D133 ; COS ; RS
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; warning for irregularly variable sources in all spectroscopic calculations ...
not a problem since the source flux is not variable
vcheck; S/N ETC calcs done & documented?; N/A
vcheck; Field images checked & saved?; Yes
vcheck; Selected ACQ strategy?; Yes ...
spectroscopic acq because a few stars in the larger macroaperture are bright enough to violate PSA/MIRRORA safety limits
vcheck; Possible ACQ or Sci spoilers?; No
vcheck; Field BOT clear?; Yes
vcheck; Visual BOT check for stars not in catalog?; OK
vcheck; Orbit packing finalized?; Yes
vcheck; Buffer times optimized?; Yes ...
buffer time set to 111 sec for c1291 and equal to exposure time for c1611
vcheck; Verify visit grouping correct; N/A
vcheck; Is visit ready for int. review?; Yes
Allocated COS orbits = 2

7/3/23 AF: Visit 2D provides 1 orbit of additional exposure time with the COS G130M/1096 configuration. To implement Visit 2D:
- the dispersed-light target acqusition from Visit 2C was copied "as is"
- the exposure time for FP-POS = ALL was adjusted to fit into the single orbit allocation: 394 s per FP-POS. The buffer time was re-optimized to be 222 s.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	SK-68D133 Alt Name1: AAOMEGA-248 Alt Name2: SK-68-133	RA: 05 37 1.3097 (84.2554571d) Dec: -68 46 6.01 (-68.76834d) Equinox: J2000	Proper Motion RA: 1.45 mas/yr Proper Motion Dec: 0.862 mas/yr Parallax: 0" Epoch of Position: 2000	V=13.15 SpT=OC3.5 III(f*); E(B-V)=0.16; U=12.02; B=13.03; V=13.15	Reference Frame: ICRS

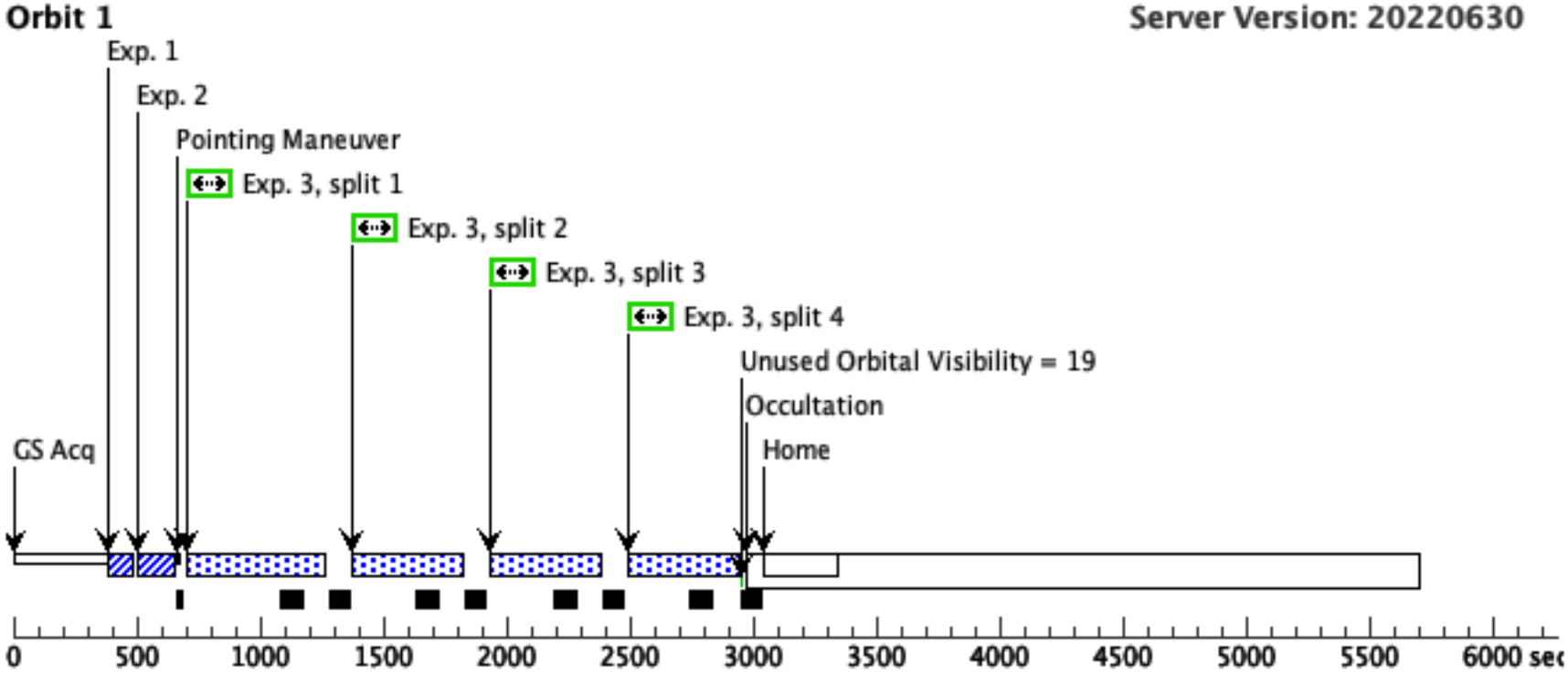
Comments: SK-68D133 : AAOMEGA-248, SK -68 133
Previous name : Sk-68 133
Input file: ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
SpT = OC3.5 III(f)*
COS/G130M/c1096 : rn(PoWR-OB-new(PoWR_42000_3.80_m7.00_Z0.50.fits, lmc-ob-i 42-38, Z=0.500 solar, Teff=42000, log_lum=5.82, log_g=3.80, log_mdot=-7.00) (extinction lmcavg=0.160), johnson U mag=12.020 vegamag)
COS/G130M/c1291 : rn(PoWR-OB-new(PoWR_42000_3.80_m7.00_Z0.50.fits, lmc-ob-i 42-38, Z=0.500 solar, Teff=42000, log_lum=5.82, log_g=3.80, log_mdot=-7.00) (extinction lmcavg=0.160), johnson U mag=12.020 vegamag)
COS/G160M/c1611 : rn(PoWR-OB-new(PoWR_42000_3.80_m7.00_Z0.50.fits, lmc-ob-i 42-38, Z=0.500 solar, Teff=42000, log_lum=5.82, log_g=3.80, log_mdot=-7.00) (extinction lmcavg=0.160), johnson U mag=12.020 vegamag)
Coordinate pedigree: Gaia DR2
Calculation performed 2021-10-25T00:56:31, v0.9
---
tstatus; SK-68D133; P/COS approved for submission; S/ins not started; P/RS 25/08/22; S/xx DD/MM/YY
tcheck; APT/SIMBAD target names: ; SK-68D133 'SK -68 133'
tcheck; Target info verification status?; OK
tcheck; Coordinates & P.M. verified, epoch checked?; Yes Gaia DR3
tcheck; Adopted SED compared to Observations?; Yes ...
SK-68D133_adopted_sed.fits PoWR model fit to UBV
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.1819632)	(2) SK-68D133	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A	CENTER=FLUX-WT; NUM-POS=3; STEP-SIZE=1.3			0.5 Secs (0.5 Secs) *[==>]*	***[1]***
	Comments: Exposure time calculated.								
2	FUV PEAKD (COS.sa.1819632)	(2) SK-68D133	COS/FUV, ACQ/PEAKD, PSA	G130M 1291 A	CENTER=FLUX-WT-FLR; NUM-POS=5; STEP-SIZE=0.9			0.5 Secs (0.5 Secs) *[==>]*	***[1]***
	Comments: Exposure time calculated.								
3	G130M/1096 (COS.sp.1819633)	(2) SK-68D133	COS/FUV, TIME-TAG, PSA	G130M 1096 A	BUFFER-TIME=222; FP-POS=ALL			394 Secs (1576 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	***[1]***

Comments: rn(PoWR-OB-new(PoWR_42000_3.80_m7.00_Z0.50.fits, lmc-ob-i 42-38, Z=0.500 solar, Teff=42000, log_lum=5.82, log_g=3.80, log_mdot=-7.00) (extinction lmcavg=0.160), johnson U mag=12.020 veg amag); cos,fuv,g130m,c1096,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: OC3.5 III(f)*
SED = SK-68D133_COS_G130M_c1096_sed.fits
For exptime=3080.2 s, spectral region:
1080.0 +- 0.5 A achieves SNR=20.0/resel
global countrate (brightest segment): 7324.6 cts/s/segment
brightest pixel: 0.149 cts/s/pix at 1220.0 A
Calculation performed 2021-10-25T00:56:37, v0.9

Orbit Structure



Visit

Proposal 16813, VFTS-180-COS (3C), scheduling Tue Mar 07 22:00:56 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: COS/FUV

Special Requirements: SCHED 100%

Comments: vstatus; 3C; VFTS-180; P/COS approved for submission; P/RS 25/08/22 ; intrev: completed ; P/JRD 30/08/22
vcheck; Enter targ name & Inst. & Resp. Sci.; VFTS-180 ; 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 because several bright stars in the larger macroaperture would violate PSA/MIRRORA safety limits
vcheck; Possible ACQ or Sci spoilers?; No
vcheck; Field BOT clear?; Yes ...
the bright stars in the larger macroaperture are magnitudes fainter than the brightness limit for BOA
vcheck; Visual BOT check for stars not in catalog?; OK
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

Diagnostics

(VFTS-180-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-180	RA: 05 37 51.3386 (84.4639108d)	Proper Motion RA: 1.582 mas/yr	V=13.54	Reference Frame: ICRS
	Alt Name1: BAT99-93	Dec: -69 09 46.69 (-69.16297d)	Proper Motion Dec: 0.618 mas/yr	SpT=O3 If*; E(B-V)=0.20; B=13.46; V=13.54; F1160=1.460e-13; F1360=1.320e-13; F1700=1.430e-13; F2200=7.310e-14	
	Alt Name2: TSWR3	Equinox: J2000	Parallax: 0"		
			Epoch of Position: 2000		

Comments: VFTS-180 : BAT99-93, TSWR3, VFTS 180
Previous name : TSWR3
Input file: ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
*SpT = O3 If**
Note: Some exptime deducted due to outside program(s).
COS/G130M/c1291 : rn(PoWR-OB-new(PoWR_42000_3.80_m7.00_Z0.50.fits, lmc-ob-i 42-38, Z=0.500 solar, Teff=42000, log_lum=5.82, log_g=3.80, log_mdot=-7.00) (extinction lmc30dor=0.200), flux1360 +-2.0A flux=1.3e-13 Flam)
COS/G160M/c1611 : rn(PoWR-OB-new(PoWR_42000_3.80_m7.00_Z0.50.fits, lmc-ob-i 42-38, Z=0.500 solar, Teff=42000, log_lum=5.82, log_g=3.80, log_mdot=-7.00) (extinction lmc30dor=0.200), flux1700 +-2.0A flux=1.4e-13 Flam)
Coordinate pedigree: Gaia DR2
Calculation performed 2021-10-25T00:56:41, v0.9

---

tstatus; VFTS-180; P/COS approved for submission; S/ins not started; P/RS 25/08/22; S/xx DD/MM/YY
tcheck; APT/SIMBAD target names: ; VFTS-180 'VFTS 180' 'Brey 74a'
tcheck; Target info verification status?; OK
tcheck; Coordinates & P.M. verified, epoch checked?; Yes Gaia DR3
tcheck; Adopted SED compared to Observations?; Yes ...
VFTS-180_adopted_sed.fit PoWR fit to STIS IUE UBV
Category=STAR
Description=[SUPERGIANT 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.1819646)	(3) VFTS-180	COS/FUV, ACQ/PEAKXD, PSA	G130M 1291 A	CENTER=FLUX-WT; NUM-POS=3; STEP-SIZE=1.3			1.2 Secs (1.2 Secs) *[==>]*	***[1]***
	Comments: Exposure time calculated.								
2	FUV PEAK D (COS.sa.1819646)	(3) VFTS-180	COS/FUV, ACQ/PEAKD, PSA	G130M 1291 A	CENTER=FLUX-WT-FLR; NUM-POS=5; STEP-SIZE=0.9			1.2 Secs (1.2 Secs) *[==>]*	***[1]***
	Comments: Exposure time calculated.								
3	G130M/1291-3 (COS.sp.1819648)	(3) VFTS-180	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=307; FP-POS=3			1030 Secs (1030 Secs) *[==>]*	***[1]***
	Comments: rn(PoWR-OB-new(PoWR_42000_3.80_m7.00_Z0.50.fits, lmc-ob-i 42-38, Z=0.500 solar, Teff=42000, log_lum=5.82, log_g=3.80, log_mdot=-7.00) (extinction lmc30dor=0.200), flux1360 +- 2.0A flux=1.3e-13 Flam); cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O3 If** *SED = VFTS-180_COS_G130M_c1291_sed.fits* *For exptime=1328.3 s, spectral region:* *1150.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 2498.1 cts/s/segment* *brightest pixel: 0.056 cts/s/pix at 1243.5 A* *Calculation performed 2021-10-25T00:56:43, v0.9*								
4	G130M/1291-4 (COS.sp.1819648)	(3) VFTS-180	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=307; FP-POS=4			1030 Secs (1030 Secs) *[==>]*	***[1]***
	Comments: rn(PoWR-OB-new(PoWR_42000_3.80_m7.00_Z0.50.fits, lmc-ob-i 42-38, Z=0.500 solar, Teff=42000, log_lum=5.82, log_g=3.80, log_mdot=-7.00) (extinction lmc30dor=0.200), flux1360 +- 2.0A flux=1.3e-13 Flam); cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O3 If** *SED = VFTS-180_COS_G130M_c1291_sed.fits* *For exptime=1328.3 s, spectral region:* *1150.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 2498.1 cts/s/segment* *brightest pixel: 0.056 cts/s/pix at 1243.5 A* *Calculation performed 2021-10-25T00:56:43, v0.9*								
5	G160M/1611 (COS.sp.1819667)	(3) VFTS-180	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=425; FP-POS=ALL			535 Secs (2140 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	***[2]***
	Comments: rn(PoWR-OB-new(PoWR_42000_3.80_m7.00_Z0.50.fits, lmc-ob-i 42-38, Z=0.500 solar, Teff=42000, log_lum=5.82, log_g=3.80, log_mdot=-7.00) (extinction lmc30dor=0.200), flux1700 +- 2.0A flux=1.4e-13 Flam); cos,fuv,g160m,c1611,psa,mjd#59670; fp-pos=None, segment=None) *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O3 If** *SED = VFTS-180_COS_G160M_c1611_sed.fits* *For exptime=1486.0 s, spectral region:* *1590.0 +- 0.5 A achieves SNR=30.0/resel* *global countrate (brightest segment): 2218.8 cts/s/segment* *brightest pixel: 0.037 cts/s/pix at 1423.5 A* *Calculation performed 2021-10-25T00:56:45, v0.9*								

Orbit Structure