16811 - ULLYSES LMC O2 Giants - COS and STIS

Cycle: 29, Proposal Category: GO/DD

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

Visit	***Targets used in Visit***	***Configurations used in Visit***	***Orbits Used***	***Last Orbit Planner Run***	***OP Current with Visit?***
1C	(1) N11-ELS-026	COS/FUV COS/NUV	1	07-Mar-2023 17:00:23.0	yes
1D	(1) N11-ELS-026	COS/FUV COS/NUV	1	07-Mar-2023 17:00:24.0	yes
1S	(1) N11-ELS-026 WAVE	STIS/CCD STIS/FUV-MAMA	2	07-Mar-2023 17:00:25.0	yes
2C	(2) N11-ELS-031	COS/FUV	2	07-Mar-2023 17:00:26.0	yes
3C	(3) SK-68D137	COS/FUV COS/NUV	2	07-Mar-2023 17:00:28.0	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 16811, N11-ELS-026-COS (1C), scheduling Tue Mar 07 22:00:28 GMT 2023

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; GROUP 1C,1S WITHIN 14D

Comments: vstatus; 1C; N11-ELS-026; P/COS approved for submission; P/RP 19/10/22 ; intrev: complete ; P/AF 18/10/22
vcheck; Enter targ name & Inst. & Resp. Sci.; N11-ELS-026 ; COS ; RP
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 ... ACQ/IMAGE BOA MIRRORA
vcheck; Possible ACQ or Sci spoilers?; No
vcheck; Field BOT clear?; Yes ...
There are 3 unknown targets in the field that are unaccounted for:
1) S1IW147730 - This matches in the Gaia catalog as star DR3 4662180029084397824 with an assumed Vmag of 19.1 if an O5 V star; this clears for both PSA and BOA G130M grating
2) S1IW147738 - This matches in the Gaia catalog as star DR3 4662180029084397184 with an assumed Vmag of 19.0 if an O5 V star; this clears for both PSA and BOA G130M grating
3) S1IW147728 - This matches in the Gaia catalog as star DR3 4662180063444129920 with an assumed Vmag of 19.1 if an O5 V star; this clears for both PSA and BOA G130M grating
Additionally, all other stars identified within a radius of 22" of the source in the Gaia catalog have an assumed Vmag of 15.4 or higher if an O5V star, so they all clear for both the PSA and BOA G130M grating.
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; Yes ... a loose grouping of within 14 days of the associated STIS observation of this target
vcheck; Is visit ready for int. review?; Yes
Allocated COS orbits = 1

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	N11-ELS-026 Alt Name1: ELS2006-N11-026	RA: 04 56 52.5334 (74.2188892d) Dec: -66 19 56.23 (-66.33229d) Equinox: J2000	Proper Motion RA: 1.7555 mas/yr Proper Motion Dec: 0.0229 mas/yr Parallax: 0" Epoch of Position: 2016	V=13.51 SpT=O2.5 III(f*); E(B-V)=0.11; B=13.34; V=13.51	Reference Frame: ICRS

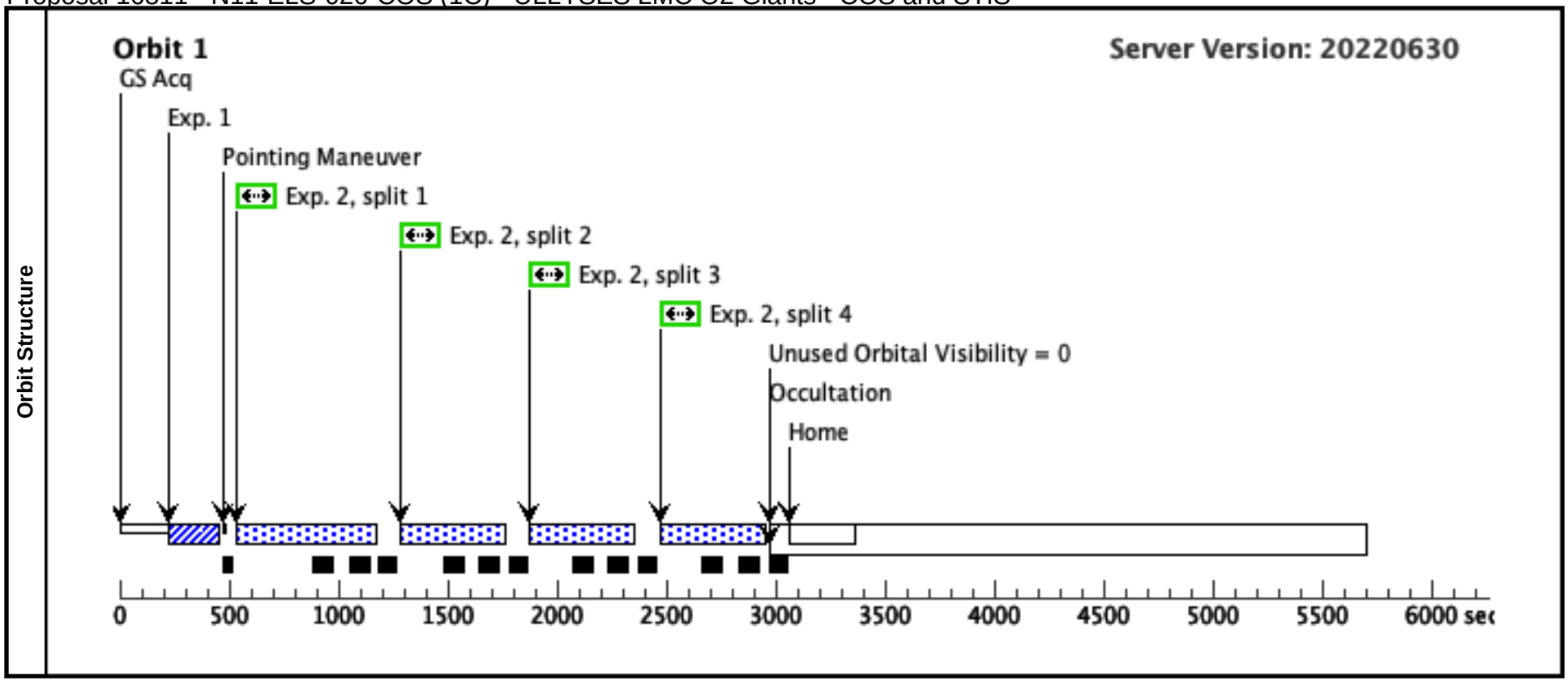
Comments: N11-ELS-026 : [ELS2006] N11 026
Previous name : N11-026
Input file: ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
SpT = O2.5 III(f)*
COS/G130M/c1096 : rn(PoWR-OB-new(PoWR_48000_4.20_m7.00_Z0.50.fits, lmc-ob-i 48-42, Z=0.500 solar, Teff=48000, log_lum=5.66, log_g=4.20, log_mdot=-7.00) (extinction lmcavg=0.110), johnson B mag=13.340 vegamag)
COS/G130M/c1291 : rn(PoWR-OB-new(PoWR_48000_4.20_m7.00_Z0.50.fits, lmc-ob-i 48-42, Z=0.500 solar, Teff=48000, log_lum=5.66, log_g=4.20, log_mdot=-7.00) (extinction lmcavg=0.110), johnson B mag=13.340 vegamag)
COS/G160M/c1611 : rn(PoWR-OB-new(PoWR_48000_4.20_m7.00_Z0.50.fits, lmc-ob-i 48-42, Z=0.500 solar, Teff=48000, log_lum=5.66, log_g=4.20, log_mdot=-7.00) (extinction lmcavg=0.110), johnson B mag=13.340 vegamag)
Coordinate pedigree: Gaia DR2
Calculation performed 2021-10-25T00:55:41, v0.9
---
tstatus; N11-ELS-026; P/COS approved for submission; S/ins not started; P/RP 19/10/22; S/xx DD/MM/YY
tcheck; APT/SIMBAD target names: ; SIMBAD names = [ELS2006] N11 026, Gaia DR3 4662179994748782464
tcheck; Target info verification status?; Yes
tcheck; Coordinates & P.M. verified, epoch checked?; Yes ... updated to DR3
tcheck; Adopted SED compared to Observations?; Yes
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	ACQ/Image (COS.ta.1820595)	(1) N11-ELS-026	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				5 Secs (5 Secs) *[==>]*	***[1]***
Comments: Expected S/N of ~30.									
2	G130M/1096 (COS.sp.1823017)	(1) N11-ELS-026	COS/FUV, TIME-TAG, PSA	G130M 1096 A	BUFFER-TIME=161; FP-POS=ALL			432 Secs (1727 Secs) *[==>432.0 Secs (Split 1)]* *[==>432.0 Secs (Split 2)]* *[==>432.0 Secs (Split 3)]* *[==>431.0 Secs (Split 4)]*	***[1]***

Comments: rn(PoWR-OB-new(PoWR_48000_4.20_m7.00_Z0.50.fits, lmc-ob-i 48-42, Z=0.500 solar, Teff=48000, log_lum=5.66, log_g=4.20, log_mdot=-7.00) (extinction lmcavg=0.110), johnson B mag=13.340 veg amag); cos,fuv,g130m,c1096,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O2.5 III(f)*
SED = N11-ELS-26_COS_G130M_c1096_sed.fits
For exptime=2088.6 s, spectral region:
1080.0 +- 0.5 A achieves SNR=20.0/resel
global countrate (brightest segment): 9302.2 cts/s/segment
brightest pixel: 0.185 cts/s/pix at 1220.0 A
Calculation performed 2021-10-25T00:55:48, v0.9

The model created from the above parameters was used for the ETC calculations. Expected S/N of ~17 at 1080A.


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

Visit

Proposal 16811, N11-ELS-026-COS (1D), implementation Tue Mar 07 22:00:29 GMT 2023

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; GROUP 1D,1S WITHIN 14D

Comments: vstatus; 1D; N11-ELS-026; P/COS approved for submission; P/RP 19/10/22 ; intrev: complete ; P/AF 18/10/22
vcheck; Enter targ name & Inst. & Resp. Sci.; N11-ELS-026 ; COS ; RP
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 ... ACQ/IMAGE BOA MIRRORA
vcheck; Possible ACQ or Sci spoilers?; No
vcheck; Field BOT clear?; Yes ...
There are 3 unknown targets in the field that are unaccounted for:
1) S1IW147730 - This matches in the Gaia catalog as star DR3 4662180029084397824 with an assumed Vmag of 19.1 if an O5 V star; this clears for both PSA and BOA G130M grating
2) S1IW147738 - This matches in the Gaia catalog as star DR3 4662180029084397184 with an assumed Vmag of 19.0 if an O5 V star; this clears for both PSA and BOA G130M grating
3) S1IW147728 - This matches in the Gaia catalog as star DR3 4662180063444129920 with an assumed Vmag of 19.1 if an O5 V star; this clears for both PSA and BOA G130M grating
Additionally, all other stars identified within a radius of 22" of the source in the Gaia catalog have an assumed Vmag of 15.4 or higher if an O5V star, so they all clear for both the PSA and BOA G130M grating.
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; Yes ... a loose grouping of within 14 days of the associated STIS observation of this target
vcheck; Is visit ready for int. review?; Yes
Allocated COS orbits = 1

3/7/23 AF: Visit 1D is an exact copy of visit 1C. Its purpose is to "top up" the G130M/1096 exposure. The loose timing requirement with the associated STIS observation is desired, but not required.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	N11-ELS-026 Alt Name1: ELS2006-N11-026	RA: 04 56 52.5334 (74.2188892d) Dec: -66 19 56.23 (-66.33229d) Equinox: J2000	Proper Motion RA: 1.7555 mas/yr Proper Motion Dec: 0.0229 mas/yr Parallax: 0" Epoch of Position: 2016	V=13.51 SpT=O2.5 III(f*); E(B-V)=0.11; B=13.34; V=13.51	Reference Frame: ICRS

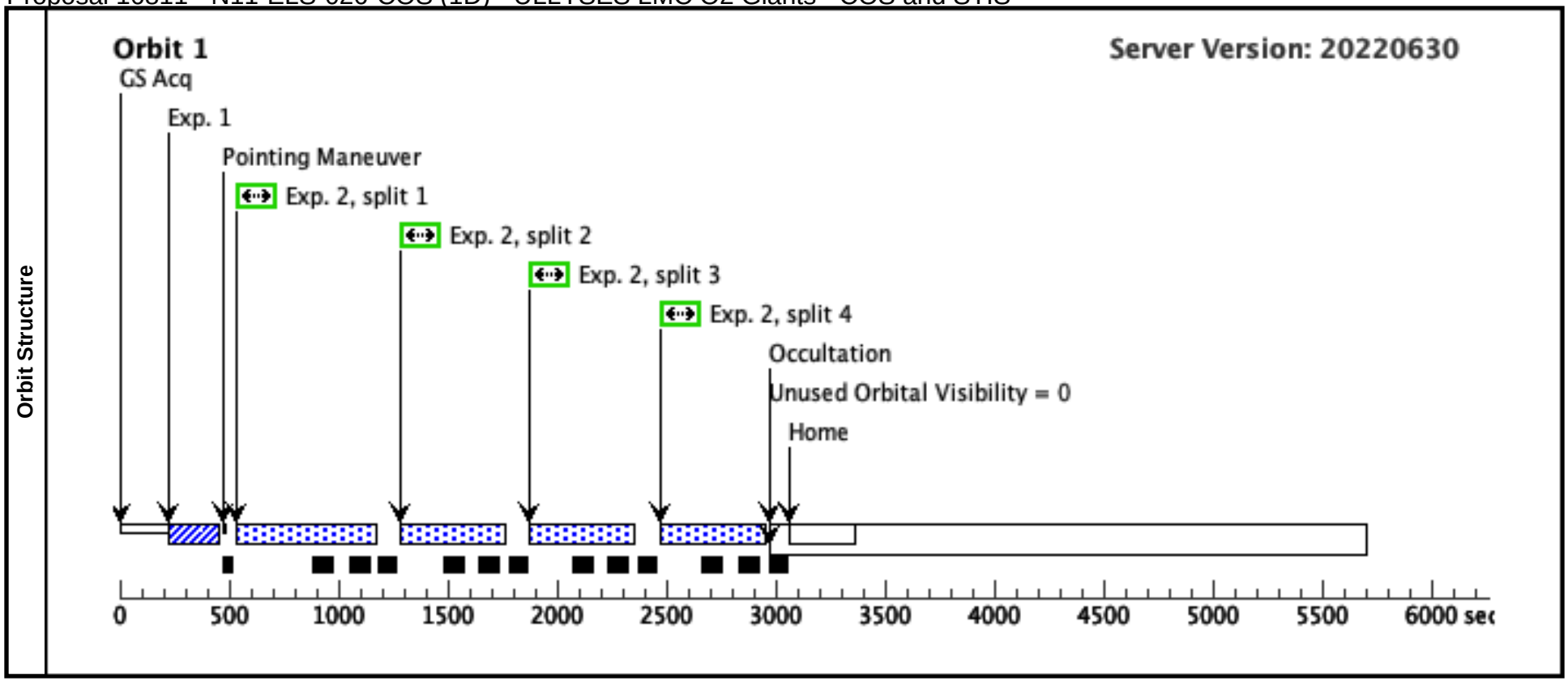
Comments: N11-ELS-026 : [ELS2006] N11 026
Previous name : N11-026
Input file: ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
SpT = O2.5 III(f)*
COS/G130M/c1096 : rn(PoWR-OB-new(PoWR_48000_4.20_m7.00_Z0.50.fits, lmc-ob-i 48-42, Z=0.500 solar, Teff=48000, log_lum=5.66, log_g=4.20, log_mdot=-7.00) (extinction lmcavg=0.110), johnson B mag=13.340 vegamag)
COS/G130M/c1291 : rn(PoWR-OB-new(PoWR_48000_4.20_m7.00_Z0.50.fits, lmc-ob-i 48-42, Z=0.500 solar, Teff=48000, log_lum=5.66, log_g=4.20, log_mdot=-7.00) (extinction lmcavg=0.110), johnson B mag=13.340 vegamag)
COS/G160M/c1611 : rn(PoWR-OB-new(PoWR_48000_4.20_m7.00_Z0.50.fits, lmc-ob-i 48-42, Z=0.500 solar, Teff=48000, log_lum=5.66, log_g=4.20, log_mdot=-7.00) (extinction lmcavg=0.110), johnson B mag=13.340 vegamag)
Coordinate pedigree: Gaia DR2
Calculation performed 2021-10-25T00:55:41, v0.9
---
tstatus; N11-ELS-026; P/COS approved for submission; S/ins not started; P/RP 19/10/22; S/xx DD/MM/YY
tcheck; APT/SIMBAD target names: ; SIMBAD names = [ELS2006] N11 026, Gaia DR3 4662179994748782464
tcheck; Target info verification status?; Yes
tcheck; Coordinates & P.M. verified, epoch checked?; Yes ... updated to DR3
tcheck; Adopted SED compared to Observations?; Yes
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	ACQ/Image (COS.ta.1820595)	(1) N11-ELS-026	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				5 Secs (5 Secs) *[==>]*	***[1]***
Comments: Expected S/N of ~30.									
2	G130M/1096 (COS.sp.1823017)	(1) N11-ELS-026	COS/FUV, TIME-TAG, PSA	G130M 1096 A	BUFFER-TIME=161; FP-POS=ALL			432 Secs (1727 Secs) *[==>432.0 Secs (Split 1)]* *[==>432.0 Secs (Split 2)]* *[==>432.0 Secs (Split 3)]* *[==>431.0 Secs (Split 4)]*	***[1]***

Comments: rn(PoWR-OB-new(PoWR_48000_4.20_m7.00_Z0.50.fits, lmc-ob-i 48-42, Z=0.500 solar, Teff=48000, log_lum=5.66, log_g=4.20, log_mdot=-7.00) (extinction lmcavg=0.110), johnson B mag=13.340 veg amag); cos,fuv,g130m,c1096,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O2.5 III(f)*
SED = N11-ELS-26_COS_G130M_c1096_sed.fits
For exptime=2088.6 s, spectral region:
1080.0 +- 0.5 A achieves SNR=20.0/resel
global countrate (brightest segment): 9302.2 cts/s/segment
brightest pixel: 0.185 cts/s/pix at 1220.0 A
Calculation performed 2021-10-25T00:55:48, v0.9

The model created from the above parameters was used for the ETC calculations. Expected S/N of ~17 at 1080A.


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

Visit

Proposal 16811, N11-ELS-026-STIS (1S), scheduling Tue Mar 07 22:00:29 GMT 2023

Diagnostic Status: No Diagnostics

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

Special Requirements: SCHED 100%; GROUP 1S,1C WITHIN 14D

Comments: vstatus; 1S; N11-ELS-026; P/STIS approved for submission; P/RP 19/10/22 ; intrev: complete ; P/AF 18/10/22
vcheck; Enter targ name & Inst. & Resp. Sci.; N11-ELS-026 ; STIS ; RP
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
vcheck; Possible ACQ or Sci spoilers?; No
vcheck; Field BOT clear?; Yes
vcheck; Visual BOT check for stars not in catalog?; Yes ...
All stars in the Gaia catalog within a 22" radius of the target are clear for this target.
vcheck; Orbit packing finalized?; Yes
vcheck; Buffer times optimized?; Yes
vcheck; Verify visit grouping correct; Yes ... a loose grouping of within 14 days of the associated COS observation of this target
vcheck; Is visit ready for int. review?; Yes
Allocated STIS orbits = 2

Fixed Targets

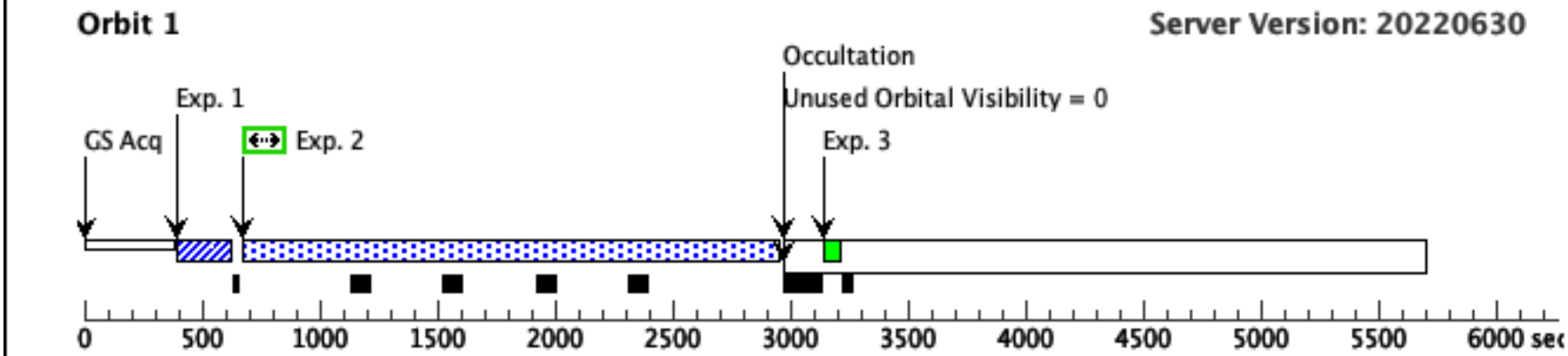
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	N11-ELS-026 Alt Name1: ELS2006-N11-026	RA: 04 56 52.5334 (74.2188892d) Dec: -66 19 56.23 (-66.33229d) Equinox: J2000	Proper Motion RA: 1.7555 mas/yr Proper Motion Dec: 0.0229 mas/yr Parallax: 0" Epoch of Position: 2016	V=13.51 SpT=O2.5 III(f*); E(B-V)=0.11; B=13.34; V=13.51	Reference Frame: ICRS

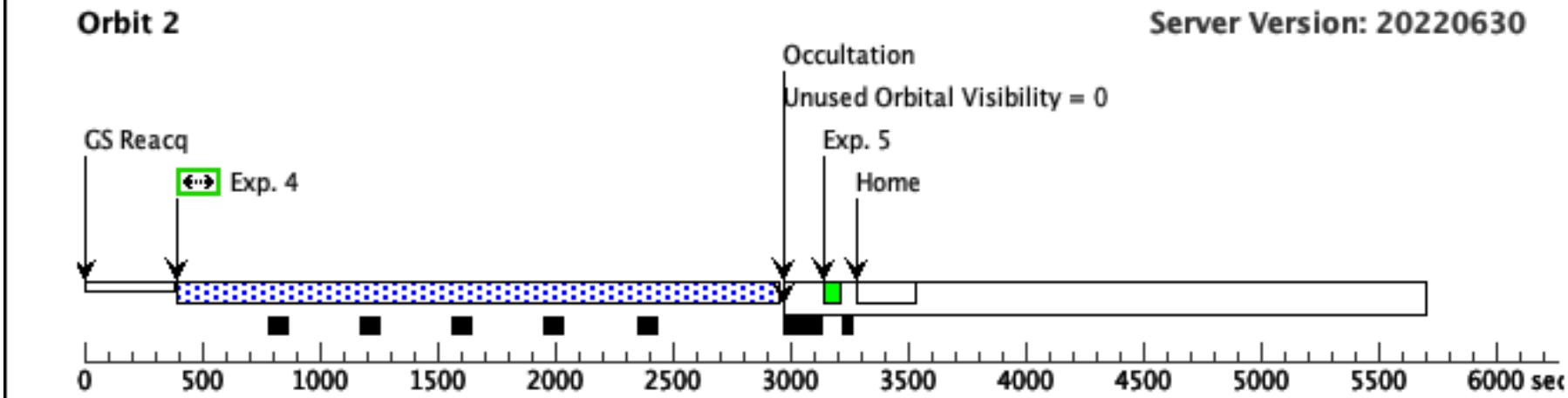
Comments: N11-ELS-026 : [ELS2006] N11 026
Previous name : N11-026
Input file: ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
SpT = O2.5 III(f)*
COS/G130M/c1096 : rn(PoWR-OB-new(PoWR_48000_4.20_m7.00_Z0.50.fits, lmc-ob-i 48-42, Z=0.500 solar, Teff=48000, log_lum=5.66, log_g=4.20, log_mdot=-7.00) (extinction lmcavg=0.110), johnson B mag=13.340 vegamag)
COS/G130M/c1291 : rn(PoWR-OB-new(PoWR_48000_4.20_m7.00_Z0.50.fits, lmc-ob-i 48-42, Z=0.500 solar, Teff=48000, log_lum=5.66, log_g=4.20, log_mdot=-7.00) (extinction lmcavg=0.110), johnson B mag=13.340 vegamag)
COS/G160M/c1611 : rn(PoWR-OB-new(PoWR_48000_4.20_m7.00_Z0.50.fits, lmc-ob-i 48-42, Z=0.500 solar, Teff=48000, log_lum=5.66, log_g=4.20, log_mdot=-7.00) (extinction lmcavg=0.110), johnson B mag=13.340 vegamag)
Coordinate pedigree: Gaia DR2
Calculation performed 2021-10-25T00:55:41, v0.9
---
tstatus; N11-ELS-026; P/COS approved for submission; S/ins not started; P/RP 19/10/22; S/xx DD/MM/YY
tcheck; APT/SIMBAD target names: ; SIMBAD names = [ELS2006] N11 026, Gaia DR3 4662179994748782464
tcheck; Target info verification status?; Yes
tcheck; Coordinates & P.M. verified, epoch checked?; Yes ... updated to DR3
tcheck; Adopted SED compared to Observations?; Yes
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	ACQ (STIS.ta.1823367)	(1) N11-ELS-026	STIS/CCD, ACQ, F28X50LP	MIRROR	ACQTYPE=POINT			0.1 Secs (0.1 Secs) *[==>]*	***[1]***
Comments: For ETC purposes, we used the model photometry which has V=13.34 and E(B-V) = 0.11 with an O5 V Kurucz model provided by default in the ETC. *We expect a S/N ~ 40 with these assumptions.*									
2	E140M/1425 (STIS.sp.1823375)	(1) N11-ELS-026	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	WAVECAL=NO; BUFFER-TIME=391			2196 Secs (2196 Secs) *[==>]*	***[1]***
Comments: We use the same model that was derived for visit 1C for the ETC calculations. *We expect a S/N of ~15 at 1200A with the combined STIS E140M data. At 1250A, which is near the peak of the blaze function for the order, we expect a S/N of closer to 30 with the combined STIS E140M data.*									
3	E140M/1425 WAVECAL	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				*[==>]*	***[1]***
4	E140M/1425 (STIS.sp.1823375)	(1) N11-ELS-026	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	WAVECAL=NO; BUFFER-TIME=391			2548 Secs (2548 Secs) *[==>]*	***[2]***
Comments: We use the same model that was derived for visit 1C for the ETC calculations. *We expect a S/N of ~15 at 1200A with the combined STIS E140M data. At 1250A, which is near the peak of the blaze function for the order, we expect a S/N of closer to 30 with the combined STIS E140M data.*									
5	E140M/1425 WAVECAL	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				*[==>]*	***[2]***

Orbit Structure





Visit

Proposal 16811, N11-ELS-031-COS (2C), scheduling Tue Mar 07 22:00:29 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: COS/FUV

Special Requirements: SCHED 100%

Comments: vstatus; 2C; N11-ELS-031; P/COS approved for submission; P/RP 19/10/22 ; intrev: complete ; P/AF 18/10/22
vcheck; Enter targ name & Inst. & Resp. Sci.; N11-ELS-031 ; COS ; RP
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/PEAKs
vcheck; Possible ACQ or Sci spoilers?; No
vcheck; Field BOT clear?; Yes ...
There is one "unknown" object. This object:
- is not in the GAIA catalog (the closest object is BRRG 75, which clears)
- falls outside of the PSA region of concern, so it is only of concern for the BOA.
vcheck; Visual BOT check for stars not in catalog?; Yes ...
There are three other stars in the field that are bright enough to be of concern for the PSA, but they are outside of the 8" radius needed to be cleared by the PSA, and they clear the BOA. The BOA clears for G130M for O5V stars of magnitude 9.4 (and G160M at 8.5). These stars are:
1) BRRG 75; 74.18030927 -66.41736397; unknown SpT so assume O5V Vmag of 12.6; ~17" away from target
2) PGMW 3100; 74.18836667 -66.419661; SpT O5III(f+) Vmag of 13.6; ~18" away from target
3) BRRG 67; 74.1792455 -66.41753516; unknown SpT so assume O5V Vmag of 14.01; ~15" away from target
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

(N11-ELS-031-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)	N11-ELS-031 Alt Name1: ELS2006-N11-031	RA: 04 56 42.5123 (74.1771346d) Dec: -66 25 18.22 (-66.42173d) Equinox: J2000	Proper Motion RA: 1.8013 mas/yr Proper Motion Dec: -0.0132 mas/yr Parallax: 0" Epoch of Position: 2016	V=13.68 SpT=ON2 III(f*); E(B-V)=0.27; U=13.16; B=13.67; V=13.68; F1700=1.400e-13; F2200=7.200e-14	Reference Frame: ICRS

Comments: N11-ELS-031 : [ELS2006] N11 031
Previous name : N11-031
Input file: ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
SpT = ON2 III(f)*
COS/G130M/c1291 : rn(PoWR-OB-new(PoWR_50000_4.40_m7.00_Z0.50.fits, lmc-ob-i 50-44, Z=0.500 solar, Teff=50000, log_lum=5.55, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.270), flux1700 +- 2.0A flux=1.4e-13 Flam)
COS/G160M/c1611 : rn(PoWR-OB-new(PoWR_50000_4.40_m7.00_Z0.50.fits, lmc-ob-i 50-44, Z=0.500 solar, Teff=50000, log_lum=5.55, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.270), flux1700 +- 2.0A flux=1.4e-13 Flam)
Coordinate pedigree: Gaia DR2
Calculation performed 2021-10-25T00:55:31, v0.9
---
tstatus; N11-ELS-031; P/COS approved for submission; S/ins not started; P/RP 19/10/22; S/xx DD/MM/YY
tcheck; APT/SIMBAD target names: ; SIMBAD: LH 10-3061, [ELS2006] N11 031, Gaia DR3 4662155839859944064
tcheck; Target info verification status?; Yes
tcheck; Coordinates & P.M. verified, epoch checked?; Yes ... updated to DR3
tcheck; Adopted SED compared to Observations?; Yes ...
- model updated E(B-V) from 0.27 to 0.30
- used the PoWR_46000_4.00_m6.74_Z0.14.fits model instead, which was originally slated for the O2 III stars.
- the PoWR_50000_4.40_m7.00_Z0.50.fits model requires an increase of E(B-V) to 0.33 essentially identical results.
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.182 1039)	(2) N11-ELS-031	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: Expected S/N of ~40 with updated model.								
2	FUV PEAK D (COS.sa.182 1039)	(2) N11-ELS-031	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: Expected S/N of ~40 with updated model.								
3	G130M/1291-3 (COS.sp.182 1045)	(2) N11-ELS-031	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=307; FP-POS=3			1033 Secs (1033 Secs) [==>]	[1]
	Comments: rn(PoWR-OB-new(PoWR_50000_4.40_m7.00_Z0.50.fits, lmc-ob-i 50-44, Z=0.500 solar, Teff=50000, log_lum=5.55, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.270), flux1700 +- 2.0A flux=1.4e-13 Flam); cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv Spectral type: ON2 III(f) SED = N11-ELS-31_COS_G130M_c1291_sed.fits For exptime=1293.5 s, spectral region: 1150.0 +- 0.5 A achieves SNR=30.0/resel global countrate (brightest segment): 2739.3 cts/s/segment brightest pixel: 0.066 cts/s/pix at 1243.5 A Calculation performed 2021-10-25T00:55:34, v0.9 ---------- Compared to above, an updated model was used where E(B-V) was updated from 0.27 to 0.30 and using the PoWR_46000_4.00_m6.74_Z0.14.fits model instead, which was originally slated for the O2 III stars. Using the PoWR_50000_4.40_m7.00_Z0.50.fits model requires an increase of E(B-V) to 0.33 to gain similar results to this. Expected S/N of ~33 with the two combined FP-POS per resel at 1150A.*								
4	G130M/1291-4 (COS.sp.182 1045)	(2) N11-ELS-031	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=307; FP-POS=4			1033 Secs (1033 Secs) [==>]	[1]
	Comments: rn(PoWR-OB-new(PoWR_50000_4.40_m7.00_Z0.50.fits, lmc-ob-i 50-44, Z=0.500 solar, Teff=50000, log_lum=5.55, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.270), flux1700 +- 2.0A flux=1.4e-13 Flam); cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None) From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv Spectral type: ON2 III(f) SED = N11-ELS-31_COS_G130M_c1291_sed.fits For exptime=1293.5 s, spectral region: 1150.0 +- 0.5 A achieves SNR=30.0/resel global countrate (brightest segment): 2739.3 cts/s/segment brightest pixel: 0.066 cts/s/pix at 1243.5 A Calculation performed 2021-10-25T00:55:34, v0.9 ---------- Compared to above, an updated model was used where E(B-V) was updated from 0.27 to 0.30 and using the PoWR_46000_4.00_m6.74_Z0.14.fits model instead, which was originally slated for the O2 III stars. Using the PoWR_50000_4.40_m7.00_Z0.50.fits model requires an increase of E(B-V) to 0.33 to gain similar results to this. Expected S/N of ~33 with the two combined FP-POS per resel at 1150A.*								

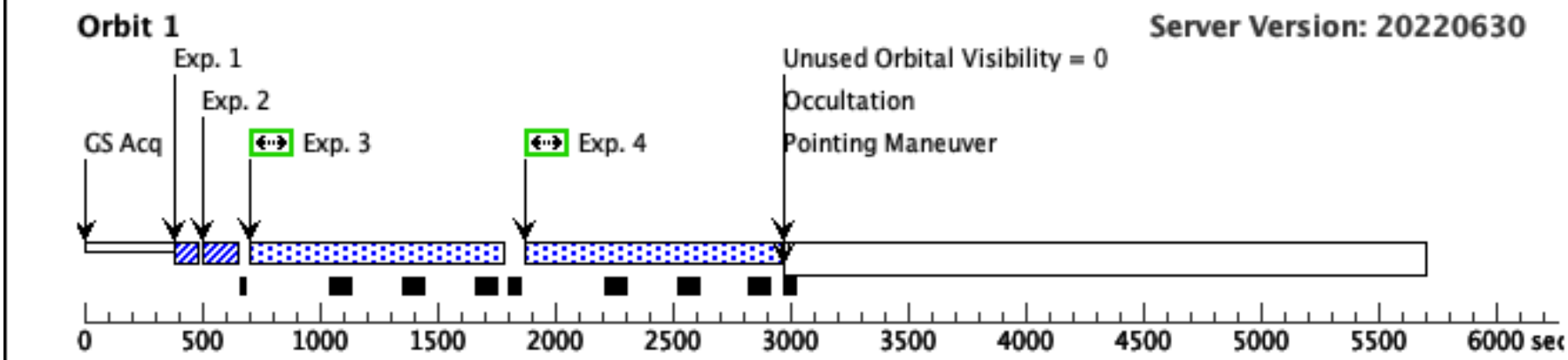
	5	G160M/1611 (COS.sp.1821043)	(2) N11-ELS-031	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=594; FP-POS=ALL	499 Secs (1996 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	***[2]***

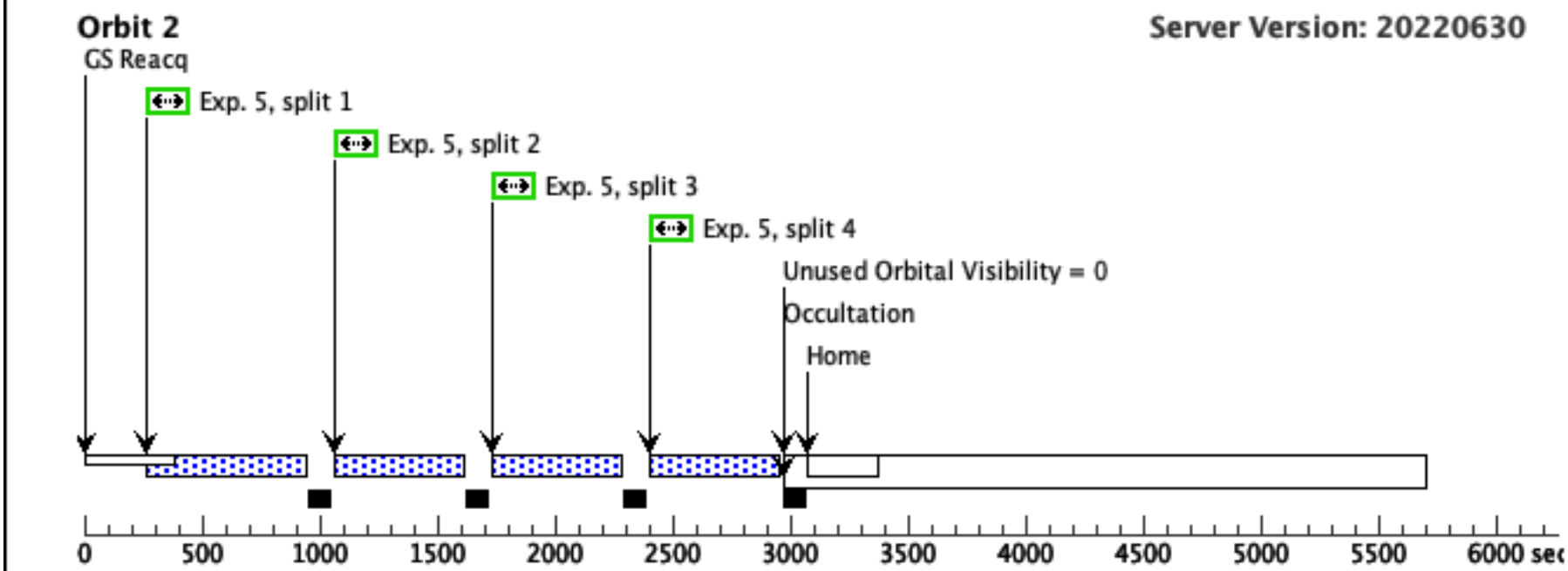
Comments: rn(PoWR-OB-new(PoWR_50000_4.40_m7.00_Z0.50.fits, lmc-ob-i 50-44, Z=0.500 solar, Teff=50000, log_lum=5.55, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.270), flux1700 +- 2.0A flux=1.4e-13 Flam); cos,fuv,g160m,c1611,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: ON2 III(f)*
SED = N11-ELS-31_COS_G160M_c1611_sed.fits
For exptime=1524.9 s, spectral region:
1590.0 +- 0.5 A achieves SNR=30.0/resel
global countrate (brightest segment): 2201.3 cts/s/segment
brightest pixel: 0.034 cts/s/pix at 1423.5 A
Calculation performed 2021-10-25T00:55:36, v0.9

Compared to above, an updated model was used where E(B-V) was updated from 0.27 to 0.30 and using the PoWR_46000_4.00_m6.74_Z0.14.fits model instead, which was originally slated for the O2 III stars. Using the PoWR_50000_4.40_m7.00_Z0.50.fits model requires an increase of E(B-V) to 0.33 to gain similar results to this.

Expected S/N of ~33 with the four combined FP-POS per resel at 1590A.

Orbit Structure





Visit

Proposal 16811, SK-68D137-COS (3C), scheduling Tue Mar 07 22:00:29 GMT 2023

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%

Comments: vstatus; 3C; SK-68D137; P/COS approved for submission; P/RP 19/10/22 ; intrev: complete ; P/AF 18/10/22
vcheck; Enter targ name & Inst. & Resp. Sci.; SK-68D137 ; COS ; RP
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; Yes ...
The screening violation is our target, which we have cleared with the models.
vcheck; S/N ETC calcs done & documented?; Yes
vcheck; Field images checked & saved?; Yes
vcheck; Selected ACQ strategy?; Yes ... ACQ/IMAGE BOA MIRRORA
vcheck; Possible ACQ or Sci spoilers?; No
vcheck; Field BOT clear?; No ...
See above. The target is assumed to not clear, but our ETC calculations show it is safe.
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 = 2

Diagnostics

(SK-68D137-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)	SK-68D137 Alt Name1: M2002-170808 Alt Name2: SK-68-137	RA: 05 38 24.6840 (84.6028500d) Dec: -68 52 32.93 (-68.87581d) Equinox: J2000	Proper Motion RA: 1.5963 mas/yr Proper Motion Dec: 1.0390 mas/yr Parallax: 0" Epoch of Position: 2016	V=13.29 SpT=O2 III(f*); E(B-V)=0.21; U=12.24; B=13.22; V=13.29; F1160=1.500e-13; F1360=2.050e-13; F1700=2.290e-13; F2200=1.210e-13	Reference Frame: ICRS

Comments: SK-68D137 : M2002-170808, SK -68 137
Previous name : Sk -68 137
Input file: ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
SpT = O2 III(f)*
COS/G130M/c1291 : rn(PoWR-OB-new(PoWR_50000_4.40_m7.00_Z0.50.fits, lmc-ob-i 50-44, Z=0.500 solar, Teff=50000, log_lum=5.55, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.210), flux1360 +- 2.0A flux=2.1e-13 Flam)
COS/G160M/c1611 : rn(PoWR-OB-new(PoWR_50000_4.40_m7.00_Z0.50.fits, lmc-ob-i 50-44, Z=0.500 solar, Teff=50000, log_lum=5.55, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.210), flux1700 +- 2.0A flux=2.3e-13 Flam)
Coordinate pedigree: Gaia DR2
Calculation performed 2021-10-25T00:55:51, v0.9
---
tstatus; SK-68D137; P/COS approved for submission; S/ins not started; P/RP 19/10/22; S/xx DD/MM/YY
tcheck; APT/SIMBAD target names: ; SIMBAD: SK -68 137
tcheck; Target info verification status?; Yes
tcheck; Coordinates & P.M. verified, epoch checked?; Yes ... updated to DR3
tcheck; Adopted SED compared to Observations?; Yes ...
An updated model was used with the SMC extinction curve because this star falls in the "LMC2 supershell region" (see extinction curve for Sk-68 140 in Gordon et al. 2003, ApJ, 594, 279) where there is a less prominant extinction bump at 2175A. An E(B-V) of 0.21 was used and the model was normalized at 1700A with a flux of 2.3E-13. This matches the blue wavelength data (FUSE & FOS) well up until ~1900A.
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	ACQ/Image (COS.ta.182 1123)	(3) SK-68D137	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				6 Secs (6 Secs) *[==>]*	***[1]***

Comments: Expected S/N of ~30 with updated model.

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
2	G130M/129 1-3 (COS.sp.182 1128)	(3) SK-68D137	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=31 6; FP-POS=3			1059 Secs (1059 Secs) *[==>]*	***[1]***

Comments: rn(PoWR-OB-new(PoWR_50000_4.40_m7.00_Z0.50.fits, lmc-ob-i 50-44, Z=0.500 solar, Teff=50000, log_lum=5.55, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.210), flux1360 +- 2.0A flux=2.1e-13 Flam); cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O2 III(f)*
SED = SK-68D137_COS_G130M_c1291_sed.fits
For exptime=848.6 s, spectral region:
1150.0 +- 0.5 A achieves SNR=30.0/resel
global countrate (brightest segment): 3818.1 cts/s/segment
brightest pixel: 0.093 cts/s/pix at 1243.5 A
Calculation performed 2021-10-25T00:55:54, v0.9

Compared to above, an updated model was used with the SMC extinction curve because this star falls in the "LMC2 supershell region" (see extinction curve for Sk-68 140 in Gordon et al. 2003, ApJ, 594, 279) where t here is a less prominant extinction bump at 2175A. An E(B-V) of 0.21 was used and the model was normalized at 1700A with a flux of 2.3E-13.

Expected S/N of ~36 with the two combined FP-POS per resel at 1150A.

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
3	G130M/129 1-4 (COS.sp.182 1128)	(3) SK-68D137	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=31 6; FP-POS=4			1059 Secs (1059 Secs) *[==>]*	***[1]***

Comments: rn(PoWR-OB-new(PoWR_50000_4.40_m7.00_Z0.50.fits, lmc-ob-i 50-44, Z=0.500 solar, Teff=50000, log_lum=5.55, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.210), flux1360 +- 2.0A flux=2.1e-13 Flam); cos,fuv,g130m,c1291,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O2 III(f)*
SED = SK-68D137_COS_G130M_c1291_sed.fits
For exptime=848.6 s, spectral region:
1150.0 +- 0.5 A achieves SNR=30.0/resel
global countrate (brightest segment): 3818.1 cts/s/segment
brightest pixel: 0.093 cts/s/pix at 1243.5 A
Calculation performed 2021-10-25T00:55:54, v0.9

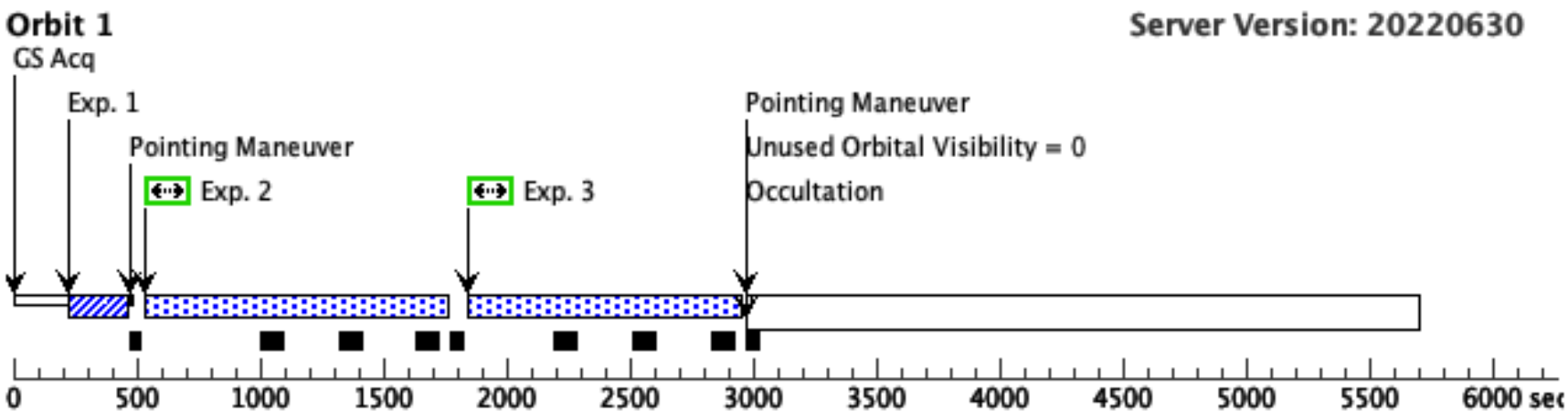
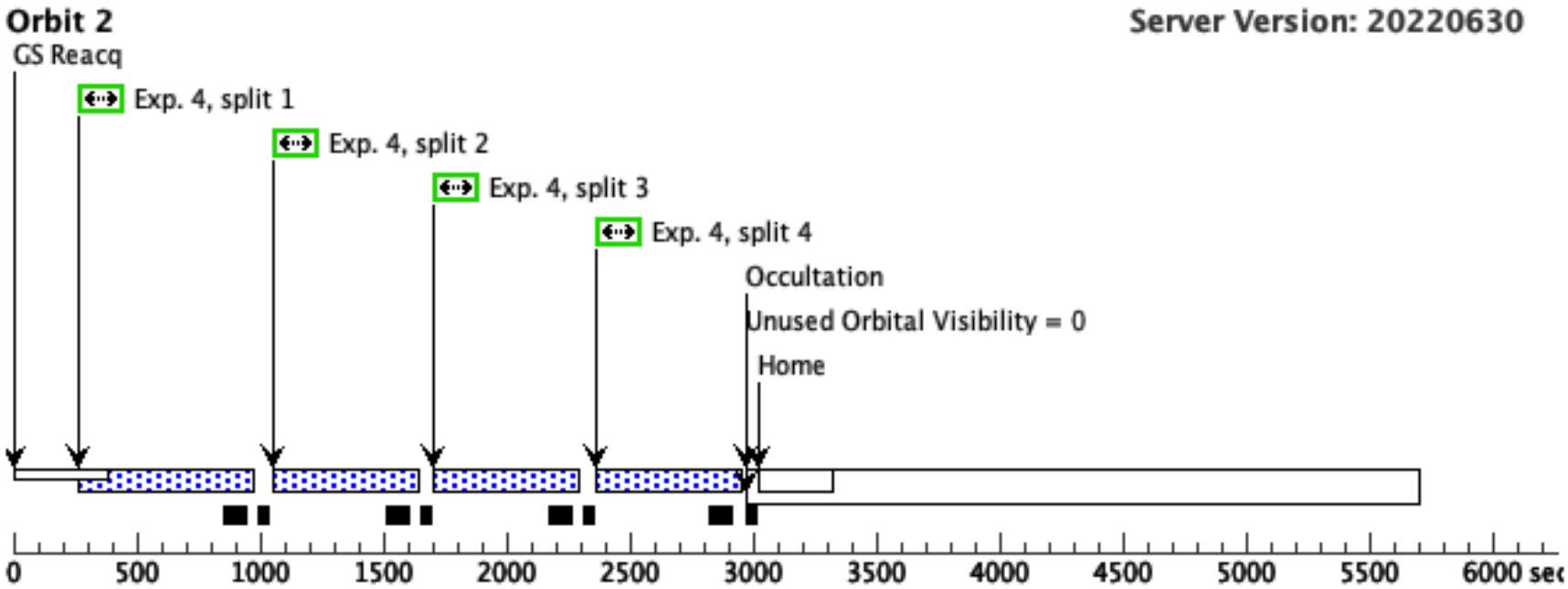
Compared to above, an updated model was used with the SMC extinction curve because this star falls in the "LMC2 supershell region" (see extinction curve for Sk-68 140 in Gordon et al. 2003, ApJ, 594, 279) where t here is a less prominant extinction bump at 2175A. An E(B-V) of 0.21 was used and the model was normalized at 1700A with a flux of 2.3E-13.

Expected S/N of ~36 with the two combined FP-POS per resel at 1150A.

	4	G160M/1611 (COS.sp.1821130)	(3) SK-68D137	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_50000_4.40_m7.00_Z0.50.fits, lmc-ob-i 50-44, Z=0.500 solar, Teff=50000, log_lum=5.55, log_g=4.40, log_mdot=-7.00) (extinction lmcavg=0.210), flux1700 +- 2.0A flux=2.3e-13 Flam); cos,fuv,g160m,c1611,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O2 III(f)*
SED = SK-68D137_COS_G160M_c1611_sed.fits
For exptime=917.3 s, spectral region:
1590.0 +- 0.5 A achieves SNR=30.0/resel
global countrate (brightest segment): 3731.2 cts/s/segment
brightest pixel: 0.060 cts/s/pix at 1423.5 A
Calculation performed 2021-10-25T00:55:55, v0.9

Compared to above, an updated model was used with the SMC extinction curve because this star falls in the "LMC2 supershell region" (see extinction curve for Sk-68 140 in Gordon et al. 2003, ApJ, 594, 279) where t here is a less prominant extinction bump at 2175A. An E(B-V) of 0.21 was used and the model was normalized at 1700A with a flux of 2.3E-13.

Expected S/N of ~40 with the two combined FP-POS per resel at 1590A.

Orbit Structure