16825 - ULLYSES LMC O7 Supergiants - COS and STIS

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-66D152	COS/FUV COS/NUV	2	29-Aug-2022 12:01:38.0	yes
1S	(1) SK-66D152 WAVE	STIS/CCD STIS/FUV-MAMA	2	29-Aug-2022 12:01:40.0	yes
2C	(2) SK-69D83 WAVE	COS/FUV COS/NUV	1	29-Aug-2022 12:01:41.0	yes
2S	(2) SK-69D83 WAVE	STIS/CCD STIS/FUV-MAMA	1	29-Aug-2022 12:01:42.0	yes

6 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 16825, SK-66D152-COS (1C) Mon Aug 29 16:01:42 GMT 2022

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%

Comments: vstatus; 1C; SK-66D152; P/COS approved for submission ; P/COS 20/07/22 ; intrev: complete ; P/JRD 26/08/22
vcheck; Enter targ name & Inst. & Resp. Sci.; SK-66D152; COS; WVD
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?; ACQ/Image (34 s) with MIRRORB and BOA
vcheck; Possible ACQ or Sci spoilers?; No
vcheck; Field BOT clear?; YES
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
vcheck; Is visit ready for int. review?; YES
Allocated COS orbits = 2

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	SK-66D152	RA: 05 34 18.7262 (83.5780258d)	Proper Motion RA: 0 mas/yr	V=12.58	Reference Frame: ICRS
	Alt Name1: SK-66-152	Dec: -66 08 42.25 (-66.14507d)	Proper Motion Dec: 0 mas/yr	SpT=O7 Ib(f); E(B-V)=0.07; U=11.33; B=12.38; V=12.58; F1160=1.590e-12; F1360=1.250e-12; F1700=7.440e-13; F2200=4.510e-13	
	Alt Name2: HD271366	Equinox: J2000	Parallax: 0"		
			Epoch of Position: 2016		

Comments: SK-66D152 : SK -66 152
Previous name : Sk -66 152
Input file: ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
SpT = O7 Ib(f)
COS/G130M/c1096 : rn(PoWR-OB-new(PoWR_35000_3.40_m7.00_Z0.50.fits, lmc-ob-i 35-34, Z=0.500 solar, Teff=35000, log_lum=5.91, log_g=3.40, log_mdot=-7.00) (extinction lmcavg=0.070), flux1160 +- 2.0A flux=1.6e-12 Flam)
Coordinate pedigree: Gaia DR2
Calculation performed 2021-10-25T01:01:12, v0.9
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tstatus; SK-66D152; P/COS approved for submission; S/STIS complete; P/WVD 20/07/22; S/JRD 26/08/22
tcheck; APT/SIMBAD target names: ; HD 271366, 2MASS J05341873-6608422
tcheck; Target info verification status?; OK
tcheck; Coordinates & P.M. verified, epoch checked?; Yes. Used coordinates from Gaia DR3
tcheck; Adopted SED compared to Observations?; Model reasonably approximates FUV SED.
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	ACQ/Image (1814976)	(1) SK-66D152	COS/NUV, ACQ/IMAGE, BOA	MIRRORB				34 Secs (34 Secs) *[==>]*	***[1]***

Comments: According to Gaia DR2, there are no objects in the COS macro aperture brighter than G = 17.04, which corresponds to V = 17.45 for an O5 V star. Tables 10.2 and 10.4 of the COS IHB indicate that O5 V stars with V > 14.7 are safe for spectroscopic exposures with G130M, and those with V > 16.3 are safe for imaging exposures with PSA+MIRRORB. Thus, these stars pose no threat to the health and safety of the C OS detectors.

All ETC calculations were performed with the model sk66d152_sed_new.fits, a PoWR model scaled to match the observed flux at 1360 A. (PoWR_35000_3.40_m7.00_Z0.50.fits, lmc-ob-i 35-34, Z=0.500 solar, Teff=3 5000, log_lum=5.91, log_g=3.40, log_mdot=-7.00) (extinction lmcavg=0.080), flux1360 +- 2.0A flux=1.2e-12 Flam)

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
2	G130M/109 6/FP-POS-1 (1814977)	(1) SK-66D152	COS/FUV, TIME-TAG, PSA	G130M 1096 A	FP-POS=1; BUFFER-TIME=11 1			958 Secs (958 Secs) *[==>]*	***[1]***

Comments: rn(PoWR-OB-new(PoWR_35000_3.40_m7.00_Z0.50.fits, lmc-ob-i 35-34, Z=0.500 solar, Teff=35000, log_lum=5.91, log_g=3.40, log_mdot=-7.00) (extinction lmcavg=0.070), flux1160 +- 2.0A flux=1.6e-12 Flam); cos,fuv,g130m,c1096,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O7 Ib(f)
SED = SK-66D152_COS_G130M_c1096_sed.fits
For exptime=1108.4 s, spectral region:
1080.0 +- 0.5 A achieves SNR=20.0/resel
global countrate (brightest segment): 17129.7 cts/s/segment
brightest pixel: 0.344 cts/s/pix at 1216.5 A
Calculation performed 2021-10-25T01:01:18, v0.9

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All ETC calculations were performed with the model sk66d152_sed_new.fits, a PoWR model scaled to match the observed flux at 1360 A. (PoWR_35000_3.40_m7.00_Z0.50.fits, lmc-ob-i 35-34, Z=0.500 solar, Teff=3 5000, log_lum=5.91, log_g=3.40, log_mdot=-7.00) (extinction lmcavg=0.080), flux1360 +- 2.0A flux=1.2e-12 Flam)

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The expected global count rate for SK-66D152 is about 16,700 cts/s on FUVA (and just a few 100s on FUVB). This prediction is fairly robust given the existence of an archival IUE spectrum. While the screening limit for COS is 15,000 cts/s for one segment, the actual limit is 30,000 cts/s for both segments combined. High count rates are only problematic above 21,000 cts/s due to dead time issues. So for this target, we can safely se t up the observations with SEGMENT = BOTH. This will avoid the rather long wavelength gap between 1096/FUVB and the STIS spectrum and will maximize the archival value of the spectrum.

The BUFFER-TIME should be 94 seconds, but using values less than 111 seconds causes APT to truncate the exposure at twice the buffer time, so I have set BUFFER-TIME to 111 seconds. The buffer time output in t he ETC is 141s, so we still have a 25% margin in target brightness before data starts getting lost. Given that the SED was constrained with an IUE spectrum, this should be conservative enough.

3	G130M/109 6/FP-POS-2 (1814977)	(1) SK-66D152	COS/FUV, TIME-TAG, PSA	G130M 1096 A	FP-POS=2; BUFFER-TIME=11 1	959 Secs (959 Secs) [==>]	[1]

Comments: rn(PoWR-OB-new(PoWR_35000_3.40_m7.00_Z0.50.fits, lmc-ob-i 35-34, Z=0.500 solar, Teff=35000, log_lum=5.91, log_g=3.40, log_mdot=-7.00) (extinction lmcavg=0.070), flux1160 +- 2.0A flux=1.6e-12 Flam); cos,fuv,g130m,c1096,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O7 Ib(f)
SED = SK-66D152_COS_G130M_c1096_sed.fits
For exptime=1108.4 s, spectral region:
1080.0 +- 0.5 A achieves SNR=20.0/resel
global countrate (brightest segment): 17129.7 cts/s/segment
brightest pixel: 0.344 cts/s/pix at 1216.5 A
Calculation performed 2021-10-25T01:01:18, v0.9

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All ETC calculations were performed with the model sk66d152_sed_new.fits, a PoWR model scaled to match the observed flux at 1360 A. (PoWR_35000_3.40_m7.00_Z0.50.fits, lmc-ob-i 35-34, Z=0.500 solar, Teff=35000, log_lum=5.91, log_g=3.40, log_mdot=-7.00) (extinction lmcavg=0.080), flux1360 +- 2.0A flux=1.2e-12 Flam)

==

The expected global count rate for SK-66D152 is about 16,700 cts/s on FUVA (and just a few 100s on FUVB). This prediction is fairly robust given the existence of an archival IUE spectrum. While the screening limit for COS is 15,000 cts/s for one segment, the actual limit is 30,000 cts/s for both segments combined. High count rates are only problematic above 21,000 cts/s due to dead time issues. So for this target, we can safely set up the observations with SEGMENT = BOTH. This will avoid the rather long wavelength gap between 1096/FUVB and the STIS spectrum and will maximize the archival value of the spectrum.

The BUFFER-TIME should be 94 seconds, but using values less than 111 seconds causes APT to truncate the exposure at twice the buffer time, so I have set BUFFER-TIME to 111 seconds. The buffer time output in the ETC is 141s, so we still have a 25% margin in target brightness before data starts getting lost. Given that the SED was constrained with an IUE spectrum, this should be conservative enough.

4	G130M/109 6/FP-POS-3 (1814977)	(1) SK-66D152	COS/FUV, TIME-TAG, PSA	G130M 1096 A	FP-POS=3; BUFFER-TIME=11 1	1150 Secs (1150 Secs) [==>]	[2]

Comments: rn(PoWR-OB-new(PoWR_35000_3.40_m7.00_Z0.50.fits, lmc-ob-i 35-34, Z=0.500 solar, Teff=35000, log_lum=5.91, log_g=3.40, log_mdot=-7.00) (extinction lmcavg=0.070), flux1160 +- 2.0A flux=1.6e-12 Flam); cos,fuv,g130m,c1096,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O7 Ib(f)
SED = SK-66D152_COS_G130M_c1096_sed.fits
For exptime=1108.4 s, spectral region:
1080.0 +- 0.5 A achieves SNR=20.0/resel
global countrate (brightest segment): 17129.7 cts/s/segment
brightest pixel: 0.344 cts/s/pix at 1216.5 A
Calculation performed 2021-10-25T01:01:18, v0.9

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All ETC calculations were performed with the model sk66d152_sed_new.fits, a PoWR model scaled to match the observed flux at 1360 A. (PoWR_35000_3.40_m7.00_Z0.50.fits, lmc-ob-i 35-34, Z=0.500 solar, Teff=35000, log_lum=5.91, log_g=3.40, log_mdot=-7.00) (extinction lmcavg=0.080), flux1360 +- 2.0A flux=1.2e-12 Flam)

==

The expected global count rate for SK-66D152 is about 16,700 cts/s on FUVA (and just a few 100s on FUVB). This prediction is fairly robust given the existence of an archival IUE spectrum. While the screening limit for COS is 15,000 cts/s for one segment, the actual limit is 30,000 cts/s for both segments combined. High count rates are only problematic above 21,000 cts/s due to dead time issues. So for this target, we can safely set up the observations with SEGMENT = BOTH. This will avoid the rather long wavelength gap between 1096/FUVB and the STIS spectrum and will maximize the archival value of the spectrum.

The BUFFER-TIME should be 94 seconds, but using values less than 111 seconds causes APT to truncate the exposure at twice the buffer time, so I have set BUFFER-TIME to 111 seconds. The buffer time output in the ETC is 141s, so we still have a 25% margin in target brightness before data starts getting lost. Given that the SED was constrained with an IUE spectrum, this should be conservative enough.

5	G130M/1096/FP-POS-4 (1814977)	(1) SK-66D152	COS/FUV, TIME-TAG, PSA	G130M 1096 A	FP-POS=4; BUFFER-TIME=111	1145 Secs (1145 Secs) [==>]	[2]

Comments: rn(PoWR-OB-new(PoWR_35000_3.40_m7.00_Z0.50.fits, lmc-ob-i 35-34, Z=0.500 solar, Teff=35000, log_lum=5.91, log_g=3.40, log_mdot=-7.00) (extinction lmcavg=0.070), flux1160 +- 2.0A flux=1.6e-12 Flam); cos,fuv,g130m,c1096,psa,mjd#59670; fp-pos=None, segment=None)
From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
Spectral type: O7 Ib(f)
SED = SK-66D152_COS_G130M_c1096_sed.fits
For exptime=1108.4 s, spectral region:
1080.0 +- 0.5 A achieves SNR=20.0/resel
global countrate (brightest segment): 17129.7 cts/s/segment
brightest pixel: 0.344 cts/s/pix at 1216.5 A
Calculation performed 2021-10-25T01:01:18, v0.9

==

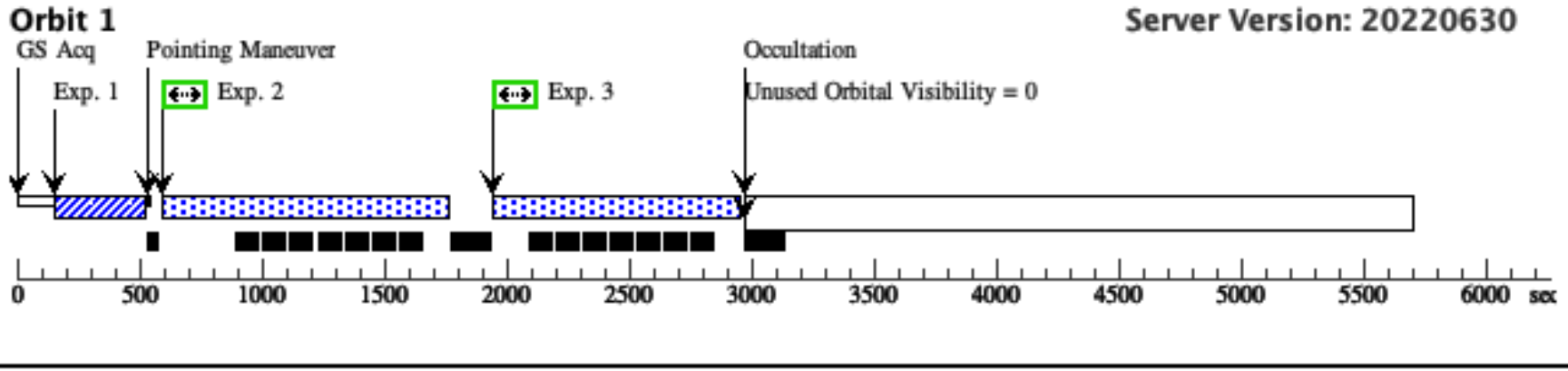
All ETC calculations were performed with the model sk66d152_sed_new.fits, a PoWR model scaled to match the observed flux at 1360 A. (PoWR_35000_3.40_m7.00_Z0.50.fits, lmc-ob-i 35-34, Z=0.500 solar, Teff=35000, log_lum=5.91, log_g=3.40, log_mdot=-7.00) (extinction lmcavg=0.080), flux1360 +- 2.0A flux=1.2e-12 Flam)

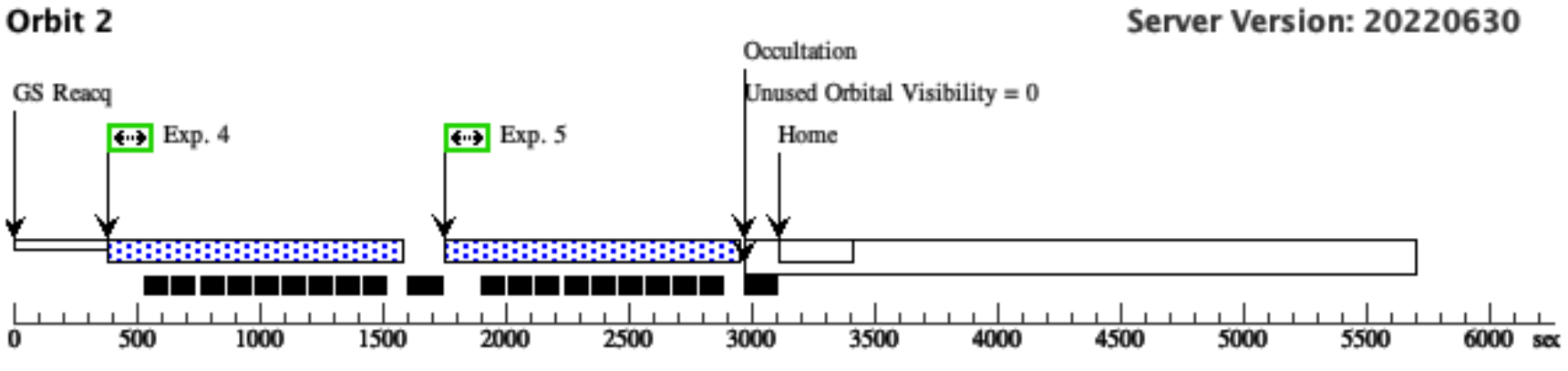
==

The expected global count rate for SK-66D152 is about 16,700 cts/s on FUVA (and just a few 100s on FUVB). This prediction is fairly robust given the existence of an archival IUE spectrum. While the screening limit for COS is 15,000 cts/s for one segment, the actual limit is 30,000 cts/s for both segments combined. High count rates are only problematic above 21,000 cts/s due to dead time issues. So for this target, we can safely set up the observations with SEGMENT = BOTH. This will avoid the rather long wavelength gap between 1096/FUVB and the STIS spectrum and will maximize the archival value of the spectrum.

The BUFFER-TIME should be 94 seconds, but using values less than 111 seconds causes APT to truncate the exposure at twice the buffer time, so I have set BUFFER-TIME to 111 seconds. The buffer time output in the ETC is 141s, so we still have a 25% margin in target brightness before data starts getting lost. Given that the SED was constrained with an IUE spectrum, this should be conservative enough.

Orbit Structure





Visit

Proposal 16825, SK-66D152-STIS (1S) Mon Aug 29 16:01:42 GMT 2022

Diagnostic Status: No Diagnostics

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

Special Requirements: SCHED 100%

Comments: vstatus; 1S; SK-66D152; S/STIS approved for submission; S/DW 30/12/21 ; intrev: complete ; P/JRD 26/08/22
vcheck; Enter targ name & Inst. & Resp. Sci.; SK-66D152 ; STIS ; DW
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 -- F28x50LP at 1 sec yields S/N~203 for Kurucz O7V, V=12.5, E(B-V)=0.1
vcheck; Possible ACQ or Sci spoilers?; no -- target appears single and isolated in DSS, 2MASS -- no significant other stars within 25" in Gaia EDR3 (all have G>17.4)
vcheck; Field BOT clear?; yes
vcheck; Visual BOT check for stars not in catalog?; yes -- only 2 other stars (G~20.1,20.7) within 5" in Gaia EDR3
vcheck; Orbit packing finalized?; yes
vcheck; Buffer times optimized?; yes -- to ~minimum of time estimated from IUE, SED
vcheck; Verify visit grouping correct; n/a
vcheck; Is visit ready for int. review?; yes
Allocated STIS orbits = 2

Fixed Targets

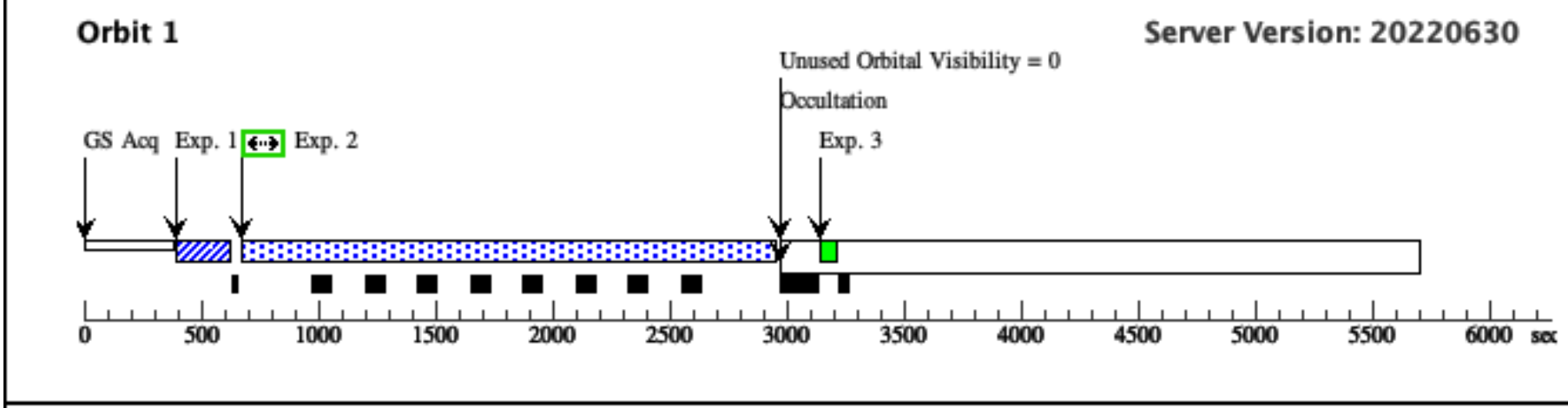
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	SK-66D152	RA: 05 34 18.7262 (83.5780258d)	Proper Motion RA: 0 mas/yr	V=12.58	Reference Frame: ICRS
	Alt Name1: SK-66-152	Dec: -66 08 42.25 (-66.14507d)	Proper Motion Dec: 0 mas/yr	SpT=O7 Ib(f); E(B-V)=0.07; U=11.33; B=12.38; V=12.58; F1160=1.590e-12; F1360=1.250e-12; F1700=7.440e-13; F2200=4.510e-13	
	Alt Name2: HD271366	Equinox: J2000	Parallax: 0"		
			Epoch of Position: 2016		

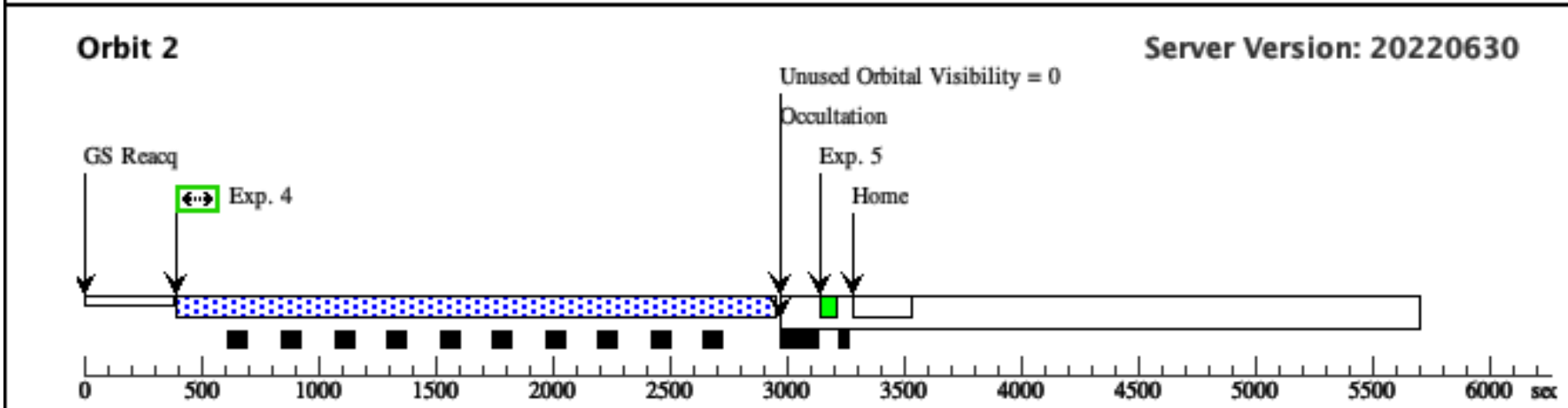
Comments: SK-66D152 : SK -66 152
Previous name : Sk -66 152
Input file: ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
SpT = O7 Ib(f)
COS/G130M/c1096 : rn(PoWR-OB-new(PoWR_35000_3.40_m7.00_Z0.50.fits, lmc-ob-i 35-34, Z=0.500 solar, Teff=35000, log_lum=5.91, log_g=3.40, log_mdot=-7.00) (extinction lmcavg=0.070), flux1160 +- 2.0A flux=1.6e-12 Flam)
Coordinate pedigree: Gaia DR2
Calculation performed 2021-10-25T01:01:12, v0.9
---
tstatus; SK-66D152; P/COS approved for submission; S/STIS complete; P/WVD 20/07/22; S/JRD 26/08/22
tcheck; APT/SIMBAD target names: ; HD 271366, 2MASS J05341873-6608422
tcheck; Target info verification status?; OK
tcheck; Coordinates & P.M. verified, epoch checked?; Yes. Used coordinates from Gaia DR3
tcheck; Adopted SED compared to Observations?; Model reasonably approximates FUV SED.
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	ACQ (1681624)	(1) SK-66D152	STIS/CCD, ACQ, F28X50LP	MIRROR				1.0 Secs (1 Secs) *[==>]*	***[1]***
Comments: S/N ~ 203 in 1 sec; saturation in 7.1 sec, for Kurucz O7 V with V=12.5, E(B-V)=0.1									
2	E140M/1425 (1681625)	(1) SK-66D152	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	WAVECAL=NO; BUFFER-TIME=225.0			2192 Secs (2192 Secs) *[==>]*	***[1]***
Comments: rn(PoWR-OB-new(PoWR_35000_3.40_m7.00_Z0.50.fits, lmc-ob-i 35-34, Z=0.500 solar, Teff=35000, log_lum=5.91, log_g=3.40, log_mdot=-7.00) (extinction lmcavg=0.070), flux1360 +- 2.0A flux=1.2e-12 Flam); stis,fuvmama,e140m,c1425,0.2x0.2,mjd#59670 *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O7 Ib(f)* *SED = SK-66D152_STIS_E140M_c1425_sed.fits* *For exptime=3148.4 s, spectral region:* *1200.0 +- 0.5 A achieves SNR=20.0/resel* *global countrate (brightest segment): 7183.0 cts/s/segment* *brightest pixel: 0.081 cts/s/pix at 1344.5 A* *Calculation performed 2021-10-25T01:01:20, v0.9* *for IUE spectrum, 3150s, S/N~18 at 1200A, ~35 at 1250A; brightest pix 0.083 cts/s; entire detector 6.3k cts/s; buffer time 316*0.8=253 sec* *for new sed, 3150s, S/N~20 at 1200A, ~35 at 1250A; brightest pix 0.080 cts/s; entire detector 7.2k cts/s; buffer time 279*0.8=224 sec* *adopt buffer time = 225 sec* *can do 2192 sec in 1 orbit -- would yield S/N~15-16 at 1200A* *can do 2192+2548=4740 sec in 2 orbits -- would yield S/N~22-25 at 1200A*									
3	E140M/1425 WAVECAL	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				*[==>]*	***[1]***
4	E140M/1425 (1681625)	(1) SK-66D152	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	WAVECAL=NO; BUFFER-TIME=225.0			2548 Secs (2548 Secs) *[==>]*	***[2]***
Comments: rn(PoWR-OB-new(PoWR_35000_3.40_m7.00_Z0.50.fits, lmc-ob-i 35-34, Z=0.500 solar, Teff=35000, log_lum=5.91, log_g=3.40, log_mdot=-7.00) (extinction lmcavg=0.070), flux1360 +- 2.0A flux=1.2e-12 Flam); stis,fuvmama,e140m,c1425,0.2x0.2,mjd#59670 *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O7 Ib(f)* *SED = SK-66D152_STIS_E140M_c1425_sed.fits* *For exptime=3148.4 s, spectral region:* *1200.0 +- 0.5 A achieves SNR=20.0/resel* *global countrate (brightest segment): 7183.0 cts/s/segment* *brightest pixel: 0.081 cts/s/pix at 1344.5 A* *Calculation performed 2021-10-25T01:01:20, v0.9* *for IUE spectrum, 3150s, S/N~18 at 1200A, ~35 at 1250A; brightest pix 0.083 cts/s; entire detector 6.3k cts/s; buffer time 316*0.8=253 sec* *for new sed, 3150s, S/N~20 at 1200A, ~35 at 1250A; brightest pix 0.080 cts/s; entire detector 7.2k cts/s; buffer time 279*0.8=224 sec* *adopt buffer time = 225 sec* *can do 2192 sec in 1 orbit -- would yield S/N~15-16 at 1200A* *can do 2192+2548=4740 sec in 2 orbits -- would yield S/N~22-25 at 1200A*									
5	E140M/1425 WAVECAL	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				*[==>]*	***[2]***

Orbit Structure





Visit

Proposal 16825, SK-69D83-COS (2C) Mon Aug 29 16:01:43 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%

Comments: vstatus; 2C; SK-69D83; P/COS approved for submission; P/WVD 20/07/22 ; intrev: complete ; P/JRD 26/08/22
vcheck; Enter targ name & Inst. & Resp. Sci.; SK-69D83 'SK -69 83' ; COS ; Dixon
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?; ACQ/Image (16.4 sec) with MIRRORB and BOA
vcheck; Possible ACQ or Sci spoilers?; No
vcheck; Field BOT clear?; Yes
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
vcheck; Is visit ready for int. review?; Yes
Allocated COS orbits = 1

Diagnostics

(SK-69D83-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.

(G130M/1096/FP-POS-1 (2C.003)) Warning (Form): An FUV exposure with Wavelength 1055 or 1096 has been specified with SEGMENT=B.

(G130M/1096/FP-POS-2 (2C.004)) Warning (Form): An FUV exposure with Wavelength 1055 or 1096 has been specified with SEGMENT=B.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	SK-69D83	RA: 05 14 29.6447 (78.6235196d)	Proper Motion RA: 0 mas/yr	V=11.61	Reference Frame: ICRS
	Alt Name1: SK-69-83	Dec: -69 29 43.60 (-69.49544d)	Proper Motion Dec: 0 mas/yr	SpT=O7.5 Iaf; E(B-V)=0.13; U=10.45; B=11.47; V=11.61; F1160=3.000e-12; F1360=2.480e-12; F1700=1.620e-12; F2200=9.020e-13	
	Alt Name2: HD269244	Equinox: J2000	Parallax: 0"		
			Epoch of Position: 2016		

Comments: SK-69D83 : SK -69 83
Previous name : Sk -69 83
Input file: ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
SpT = O7.5 Iaf
COS/G130M/c1096 : rn(PoWR-OB-new(PoWR_34000_3.40_m7.00_Z0.50.fits, lmc-ob-i 34-34, Z=0.500 solar, Teff=34000, log_lum=5.79, log_g=3.40, log_mdot=-7.00) (extinction lmcavg=0.130), flux1160 +- 2.0A flux=3e-12 Flam)
Coordinate pedigree: Gaia DR2
Calculation performed 2021-10-25T01:01:03, v0.9
---
tstatus; SK-69D83; P/COS approved for submission; S/STIS approved for submission; P/WVD 20/07/22; S/DW 26/08/22
tcheck; APT/SIMBAD target names: ; HD 269244, 2MASS J05142961-6929435
tcheck; Target info verification status?; OK
tcheck; Coordinates & P.M. verified, epoch checked?; Yes. Used coordinates from Gaia DR3.
tcheck; Adopted SED compared to Observations?; Model reasonably approximates FUV SED.
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	ACQ/Image (COS.ta.1814250)	(2) SK-69D83	COS/NUV, ACQ/IMAGE, BOA	MIRRORB				16.4 Secs (16.4 Secs) *[==>]*	 ***[1]***

Comments: There are three (relatively) bright stars in the COS macro aperture:

Name	*Offset (arcsec)*	*PA (deg)*	*Gmag (mag)*	*BP-RP (mag)*
Gaia DR2 4658210826493270272	*4.92*	*105.9*	*16.49*	*1.34*
Gaia DR2 4658209344703955712	*8.13*	*151.2*	*15.62*	*1.81*
Gaia DR2 4658210826548174080	*13.33*	*109.2*	*16.85*	*1.23*

Their red colors indicate that these stars have temperatures less than 5000 K. Tables 10.2 and 10.4 of the COS IHB indicate that solar-type stars with V > 1.8 are safe for spectroscopic exposures with G130M, and th ose with V > 13.0 are safe for imaging exposures with PSA+MIRRORA. Thus, these stars pose no threat to the health and safety of the COS detectors.

All ETC calculations were performed with the model sk69d83_sed_new.fits, a PoWR model scaled to match the observed flux at 1360 A. (PoWR_34000_3.40_m7.00_Z0.50.fits, lmc-ob-i 34-34, Z=0.500 solar, Teff=34 000, log_lum=5.79, log_g=3.40, log_mdot=-7.00) (extinction lmcavg=0.120), flux1360 +- 2.0A flux=2.5e-12 Flam)

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
2	G130M/1096/FP-POS-1/WAVECAL	WAVE	COS/FUV, TIME-TAG, WCA	G130M 1096 A	FP-POS=1			*[==>]*	***[1]***
3	G130M/1096/FP-POS-1 (COS.sp.1814920)	(2) SK-69D83	COS/FUV, TIME-TAG, PSA	G130M 1096 A	BUFFER-TIME=3878; FP-POS=1; SEGMENT=B; FLASH=NO			795 Secs (795 Secs) *[==>]*	 ***[1]***

Comments: rn(PoWR-OB-new(PoWR_34000_3.40_m7.00_Z0.50.fits, lmc-ob-i 34-34, Z=0.500 solar, Teff=34000, log_lum=5.79, log_g=3.40, log_mdot=-7.00) (extinction lmcavg=0.130), flux1160 +- 2.0A flux=3e-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: O7.5 Iaf
SED = SK-69D83_COS_G130M_c1096_sed.fits
For exptime=641.0 s, spectral region:
1080.0 +- 0.5 A achieves SNR=20.0/resel
global countrate (brightest segment): 32880.3 cts/s/segment
brightest pixel: 0.692 cts/s/pix at 1227.0 A
Calculation performed 2021-10-25T01:01:09, v0.9

==

All ETC calculations were performed with the model sk69d83_sed_new.fits, a PoWR model scaled to match the observed flux at 1360 A. (PoWR_34000_3.40_m7.00_Z0.50.fits, lmc-ob-i 34-34, Z=0.500 solar, Teff=34 000, log_lum=5.79, log_g=3.40, log_mdot=-7.00) (extinction lmcavg=0.120), flux1360 +- 2.0A flux=2.5e-12 Flam)

==

Bright target requires SEGMENT=B. Following instructions in COS/STIS STAN of June 2013, we use two FP-POS positions in a single orbit. The second WAVECAL exposure is scheduled during occultation.

4	G130M/1096/FP-POS-2 (COS.sp.1814920)	(2) SK-69D83	COS/FUV, TIME-TAG, PSA	G130M 1096 A	BUFFER-TIME=3878; FP-POS=2; SEGMENT=B; FLASH=NO	795 Secs (795 Secs) [==>]	[1]

Comments: rn(PoWR-OB-new(PoWR_34000_3.40_m7.00_Z0.50.fits, lmc-ob-i 34-34, Z=0.500 solar, Teff=34000, log_lum=5.79, log_g=3.40, log_mdot=-7.00) (extinction lmcavg=0.130), flux1160 +- 2.0A flux=3e-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: O7.5 Iaf
SED = SK-69D83_COS_G130M_c1096_sed.fits
For exptime=641.0 s, spectral region:
1080.0 +- 0.5 A achieves SNR=20.0/resel
global countrate (brightest segment): 32880.3 cts/s/segment
brightest pixel: 0.692 cts/s/pix at 1227.0 A
Calculation performed 2021-10-25T01:01:09, v0.9

==

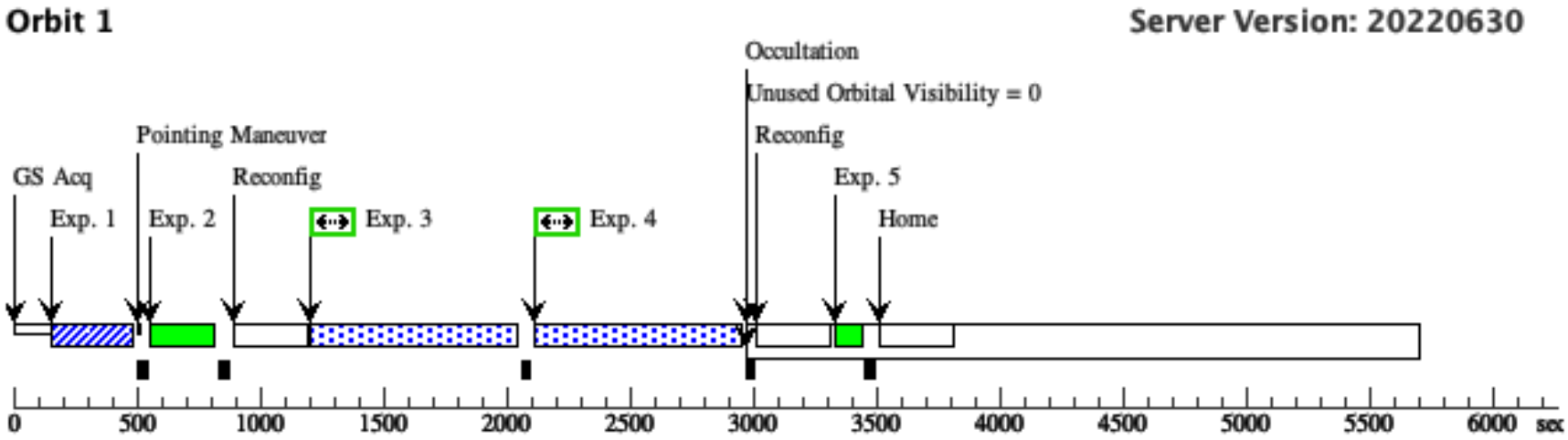
All ETC calculations were performed with the model sk69d83_sed_new.fits, a PoWR model scaled to match the observed flux at 1360 A. (PoWR_34000_3.40_m7.00_Z0.50.fits, lmc-ob-i 34-34, Z=0.500 solar, Teff=34000, log_lum=5.79, log_g=3.40, log_mdot=-7.00) (extinction lmcavg=0.120), flux1360 +- 2.0A flux=2.5e-12 Flam)

==

Bright target requires SEGMENT=B. Following instructions in COS/STIS STAN of June 2013, we use two FP-POS positions in a single orbit. The second WAVECAL exposure is scheduled during occultation.

5	G130M/1096/FP-POS-2/WAVECAL	WAVE	COS/FUV, TIME-TAG, WCA	G130M 1096 A	FP-POS=2	[==>]	[1]

Orbit Structure



Visit

Proposal 16825, SK-69D83-STIS (2S) Mon Aug 29 16:01:43 GMT 2022

Diagnostic Status: No Diagnostics

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

Special Requirements: SCHED 100%

Comments: vstatus; 2S; SK-69D83; S/STIS approved for submission; S/DW 31/12/21 ; intrev: complete ; P/JRD 26/08/22
vcheck; Enter targ name & Inst. & Resp. Sci.; SK-69D83 ; STIS ; DW
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 -- F28x50LP, 0.5 sec yields S/N~218, saturation in 3.1 sec
vcheck; Possible ACQ or Sci spoilers?; no
vcheck; Field BOT clear?; yes
vcheck; Visual BOT check for stars not in catalog?; yes -- red star with G~16.5 4.9" E, red star with G~15.6 8.1" SSE, no other significant sources within 10" in Gaia EDR3
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 STIS orbits = 1

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	SK-69D83	RA: 05 14 29.6447 (78.6235196d)	Proper Motion RA: 0 mas/yr	V=11.61	Reference Frame: ICRS
	Alt Name1: SK-69-83	Dec: -69 29 43.60 (-69.49544d)	Proper Motion Dec: 0 mas/yr	SpT=O7.5 Iaf; E(B-V)=0.13; U=10.45; B=11.47; V=11.61; F1160=3.000e-12; F1360=2.480e-12; F1700=1.620e-12; F2200=9.020e-13	
	Alt Name2: HD269244	Equinox: J2000	Parallax: 0"		
			Epoch of Position: 2016		

Comments: SK-69D83 : SK -69 83
Previous name : Sk -69 83
Input file: ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv
SpT = O7.5 Iaf
COS/G130M/c1096 : rn(PoWR-OB-new(PoWR_34000_3.40_m7.00_Z0.50.fits, lmc-ob-i 34-34, Z=0.500 solar, Teff=34000, log_lum=5.79, log_g=3.40, log_mdot=-7.00) (extinction lmcavg=0.130), flux1160 +- 2.0A flux=3e-12 Flam)
Coordinate pedigree: Gaia DR2
Calculation performed 2021-10-25T01:01:03, v0.9
---
tstatus; SK-69D83; P/COS approved for submission; S/STIS approved for submission; P/WVD 20/07/22; S/DW 26/08/22
tcheck; APT/SIMBAD target names: ; HD 269244, 2MASS J05142961-6929435
tcheck; Target info verification status?; OK
tcheck; Coordinates & P.M. verified, epoch checked?; Yes. Used coordinates from Gaia DR3.
tcheck; Adopted SED compared to Observations?; Model reasonably approximates FUV SED.
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	ACQ (1681658)	(2) SK-69D83	STIS/CCD, ACQ, F28X50LP	MIRROR				0.5 Secs (0.5 Secs) *[==>]*	*[1]*
Comments: F28x50LP, 0.5 sec yields S/N~218 for Kurucz O7 V, V=11.6, E(B-V)=0.14									
2	E140M/1425 (1681660)	(2) SK-69D83	STIS/FUV-MAMA, TIME-TAG, 0.2X0.2	E140M 1425 A	WAVECAL=NO; BUFFER-TIME=1200			2194 Secs (2194 Secs) *[==>]*	*[1]*
Comments: rn(PoWR-OB-new(PoWR_34000_3.40_m7.00_Z0.50.fits, lmc-ob-i 34-34, Z=0.500 solar, Teff=34000, log_lum=5.79, log_g=3.40, log_mdot=-7.00) (extinction lmcavg=0.130), flux1360 +- 2.0A flux=2.5e-12 Flam); stis,fuvmama,e140m,c1425,0.2x0.2,mjd#59670 *From file ULLYSES_Cycle29_MassiveStar_ProgramInput_v5.csv* *Spectral type: O7.5 Iaf* *SED = SK-69D83_STIS_E140M_c1425_sed.fits* *For exptime=1916.3 s, spectral region:* *1200.0 +- 0.5 A achieves SNR=20.0/resel* *global countrate (brightest segment): 13709.2 cts/s/segment* *brightest pixel: 0.156 cts/s/pix at 1344.5 A* *Calculation performed 2021-10-25T01:01:11, v0.9* *for IUE, 2194 sec yields brightest pix 0.174 cts/s (1408A), entire detector 11.8k cts/s, buffer time 169*0.8=135 s, S/N~21 at 1200A, ~40 at 1250A (1681660)* *for sed, 2194 sec yields brightest pix 0.156 cts/s (1345A), entire detector 13.7k cts/s, buffer time 146*0.8=117 s, S/N~26 at 1200A, ~40 at 1250A (1681667)*									
3	E140M/1425 WAVECAL	WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				*[==>]*	*[1]*

Orbit Structure