16115 - ULLYSES K and M-type T Tauri stars in Orion OBIb Star Forming Region

Cycle: 28, 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) CVSO-104	COS/FUV COS/NUV	3	27-Oct-2020 15:00:26.0	yes
1S	(1) CVSO-104 (6) GAIA-DR2-3217634157788424960 CCDFLAT WAVE	STIS/CCD STIS/NUV-MAMA	1	27-Oct-2020 15:00:28.0	yes
2C	(2) CVSO-109	COS/FUV COS/NUV	2	27-Oct-2020 15:00:29.0	yes
2S	(2) CVSO-109 CCDFLAT WAVE	STIS/CCD STIS/NUV-MAMA	1	27-Oct-2020 15:00:31.0	yes
3C	(3) CVSO-17 (7) GAIA-DR2-3222180878885500288	COS/FUV COS/NUV	3	27-Oct-2020 15:00:32.0	yes
3D	(3) CVSO-17 (7) GAIA-DR2-3222180878885500288	COS/FUV COS/NUV	3	27-Oct-2020 15:00:33.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
3S	(3) CVSO-17 CCDFLAT WAVE	STIS/CCD STIS/NUV-MAMA	1	27-Oct-2020 15:00:34.0	yes
4C	(4) CVSO-176 (8) GAIA-DR2-3219230996564040704	COS/FUV COS/NUV	2	27-Oct-2020 15:00:35.0	yes
4D	(4) CVSO-176 (8) GAIA-DR2-3219230996564040704	COS/FUV COS/NUV	2	27-Oct-2020 15:00:36.0	yes
4S	(4) CVSO-176 CCDFLAT WAVE	STIS/CCD STIS/NUV-MAMA	1	27-Oct-2020 15:00:37.0	yes
5C	(5) CVSO-36 (10) GAIA-DR2-3222268156917169536	COS/FUV COS/NUV	3	27-Oct-2020 15:00:39.0	yes
5S	(5) CVSO-36 CCDFLAT WAVE	STIS/CCD STIS/NUV-MAMA	1	27-Oct-2020 15:00:40.0	yes

23 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 low mass ULLYSES survey stars. Each target will be observed with the COS c1291 + c1611 settings, as well as with STIS G230L, G430L, and G750L. All observations will normally be constrained to occur within 1 day.

Signal-to-noise requirements used to determine the desired exposures times were defined as follows:
COS/G130M/c1291: N V 1239 +- 1 A -- S/N=15/6-pix-resel at the peak of the line
COS/G160M/c1611: C IV 1549 +- 1 A -- S/N=30/6-pix-resel at the peak of the line
STIS/G230L/52X2: Mg II 2800 +-15 A -- S/N=20/2-pix-resel at the peak of the line
STIS/G430L/52X2: continuum average 4000 +-5 A -- S/N=20/2-pix-resel (2 reads)
STIS/G750L/52X2: continuum average 5700 +-5 A -- S/N=20/2-pix-resel (2 reads)

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.

To obtain near simultaneous coverage, all visits to a given target should be grouped within 1 day.

The visits in this proposal are all constrained to occur between 19 November and 17 December 2020 to be simultaneous with planned TESS observations.

We also wish to attempt to obtain simultaneous coverage with telescopes of the LCOGT network. Unfortunately, this network has an approximately 3 hour gap in coverage for the Orion targets due to the lack of an observatory at an appropriate longitude. We will therefore add a period and a phase constraint to these observations to prevent the HST observations from being scheduled during this daily gap. The period when the Orion stars can be observed by this networks starts when they reach ~ airmass of 2 from the Sutherland observatory in South Africa, and ends about 21 hours later due to the start of morning twilight in Siding Springs Australia.

If we take the limits from http://catserver.ing.iac.es/staralt/ for the times we can observe our Orion targets we get roughly
19 Nov: start 20:30 (airmass=2 Sutherland) end: 24h+17h:2m1 (morning twilight Siding Springs) -> window length about 20.84 hr
17 Dec: start 19:21 (evening twilight Sutherland) end 24h+17h:1h5 (morning twilight Siding Springs)-> window length about 21.92 hr

We will approximate the times of allowed coverage by assuming a daily 21.1 hour window with a start time of 21:25 UT on 17 November that slips earlier by 2.5 minutes each day (we allow 5 minutes for the TA which does not require simultaneous coverage). For our Orion targets, the 17 November start time corresponds approximately to HJD = 2459173.3554330356, with a variation of a minute or less between the different targets.
The period of the phase window is then 1 - 2.5/1440 = 0.99826388889 days,
and the allowed phase window for the TA exposure to start then runs from phase 0 to an end phase of 0.852839, 0.786724, or 0.720608, for 1, 2, or 3 orbit visits respectively.

To calculate these phase window lengths, we have assumed that the visits will lay out as shown in APT, but to ease HST scheduling constraints we do not actually force them to be non-interuptible sequences. This may mean that some visits run longer than we have assumed, and some exposures may extend into the period when LCOGT cannot observe them.

At each TESS perigee, there are two LAHO (low-altitude housekeeping operations) contacts. TESS science observations stop 10 minutes before the beginning of the first LAHO and resume 5 minutes before the end of the second LAHO. Times of LAHO contacts are posted on the TESS operations calendar at
https://calendar.google.com/calendar/b/0/r/week?cid=a21va3YydDM0dmpsc2w2Ymw2Z29vdWE2OGNAZ3JvdXAuY2FsZW5kYXIuZ29vZ2xlLmNvbQ approximately 3 months in advance.
We will require that our visits start at least 45minutes prior to the start of any gap in TESS operations.

For TESS sector 32,

LAHO Passes
(1) 19-Nov-2020 08:45-13:45 start - 5m before LAHO end
(2) 02-Dec-2020 10:45-15:45 stop - 10m before LAHO start
(3) 03-Dec-2020 05:45-10:45 start - 5m before LAHO end

(4) 16-Dec-2020 17:45-22:45 stop - 10m before LAHO start

TESS start/stop times
19-Nov-2020:13:40 to 02-Dec-2020:10:35
03-Nov-2020:10:40 to 16-Dec-2020:17:35

Constrain end of HST BETWEENs to be 55m, 2h30m, and 4h5m before TESS end for 1, 2, and 3 orbit visits to allow HST to complete before TESS end

HST-1 orbit: subtract 50 minutes from end times
19-Nov-2020:13:40 to 02-Dec-2020:09:40
03-Nov-2020:10:40 to 16-Dec-2020:16:40
HST-2 orbit: subtract 2h25m from end times
19-Nov-2020:13:40 to 02-Dec-2020:08:05
03-Nov-2020:10:40 to 16-Dec-2020:15:05
HST-3 orbit: subtract 4h from end times
19-Nov-2020:13:40 to 02-Dec-2020:06:30
03-Nov-2020:10:40 to 16-Dec-2020:13:30

M-dwarf flares. Observed U fluxes in T Tauri stars are strongly enhanced by the accretion flow and so cannot be used to directly calculate expected flare sizes based on observed dwarf delta U observations. Instead we use the V magnitude and infer a U mag appropriate for the adopted spectral type and then apply the flare rules. We assume results scale with the bolometric luminosity of the star, and so can be calculated as if it was a dwarf at the effective distance appropriate for the observed V magnitude. For results for the M type CVSO stars see cvso_mstar_flare_results.xls in the box folder. There we input the observed V, together with a B mag that forces selection of the desired spectral type, and otherwise does the calculation as specified in the relevant COS/STIS ISRs.

Visit

Proposal 16115, CVSO-104-COS (1C), implementation Tue Oct 27 19:00:41 GMT 2020

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; BETWEEN 19-NOV-2020:13:40:00 AND 02-DEC-2020:06:30:00; BETWEEN 03-DEC-2020:10:40:00 AND 16-DEC-2020:13:30:00

Comments: vstatus; 1C; CVSO-104; P/COS approved for submission; P/CP 12/08/20 ; internal review complete ; C/DS 16/09/20
vcheck; Enter targ name & Inst. & Resp. Sci.;CVSO-104 ; COS; CP
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; No
vcheck; M-dwarf check complete and added to box folder?; N/A
vcheck; S/N ETC calcs done & documented?; Yes
vcheck; Field images checked & saved?; Yes
vcheck; Selected ACQ strategy?; PSA, MIRRORB, S/N=40
vcheck; Possible ACQ or Sci spoilers?; Companion is far enough away that it should be outside the PSA aperture.
vcheck; Field BOT clear?; yes with explanation ...
GSC2 BOT flags merged GSC2 image of this double star,
but total U mag of system clears it even if an O star were hiding in here - see COS.ta.1460571
vcheck; Visual BOT check for stars not in catalog?; done - GSC2 does not handle binary nature, but we have Gaia colors
vcheck; Orbit packing finalized?; yes ...
obtained 135% of requested c1611 and 104% of c1291
vcheck; Buffer times optimized?; yes
vcheck; Verify visit grouping correct; YES, STIS visit has GROUP 1S,1C WITHIN 1D
vcheck; phase constraint for ground based observations added?; yes
vcheck; BETWEENS for coordinated observations added?; 19-NOV-2020 to 17-DEC-2020
vcheck; Is visit ready for int. review?; Yes
Allocated COS orbits = 3

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	CVSO-104 Alt Name1: HARO-5-64A Alt Name2: J05320638-0111000	RA: 05 32 6.3852 (83.0266050d) Dec: -01 11 0.12 (-1.18337d) Equinox: J2000	Proper Motion RA: 1.65572 mas/yr Proper Motion Dec: -0.68014 mas/yr Parallax: 0.0026719076090000004" Epoch of Position: 2015.5	V=14.9 SpT=K7; A_V=0.00; U=14.93; V=14.22; R=14.11; I=12.83; J=11.8; G=14.4829; Bp=15.2749; Rp=13.4299	Reference Frame: ICRS

Comments: CVSO-104 : Haro 5-64A, J05320638-0111000
Region: Ori OB1b
Simbad: http://simbad.u-strasbg.fr/simbad/sim-id?Ident=Gaia+DR2+3217634157789741952&NbIdent=1&Radius=2&Radius.unit=arcmin&submit=submit+id
Target coordinates are from Gaia DR2.
Spectral type: K7 ; A_V: 0.0 ; Distance (pc): 440
M: 0.77 ; log(dm/dt): -8.12*
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
cvso104_lya2_etc.txt
Calculation performed 2020-07-30T14:20:56, v0.4
---
tstatus; CVSO-104; P/ins approved for submission; S/insready for internal review; P/CP 19/08/20; S/CP 19/08/20
tcheck; APT/SIMBAD target names: ; Haro 5-64A
tcheck; Target info verification status?; Interesting ...
CVSO 104 = Haro 5-64 is a visual(?) binary with two roughly equal magnitude components separated by 2.4".
Gaia colors, proper motions, and parallax suggest that the NW component Haro 5-64a is the desired T Tauri star.
The other star's color and absolute magnitude appear consistent with a background early K or slightly reddened late-G star

Star	offset	PA	parallax	pmRA	pmDec	Gmag	Bpmag	Rpmag	Bp-Rp
Haro 5-64A	-	-	2.6718	1.656	-0.680	14.4829	15.2749	13.4229	1.8520
Haro 5-64B	2.42"	109.6	1.5042	6.196	-5.434	14.5979	15.0502	13.9364	1.1138

Companion Bp-Rp = 1.1138, G=14.5979 pi=1.5042 @664pc vs 374pc (pi=2.6719 mas) for prime target (cluster nominal 440 pc)
Gaia colors would make companion about K2V before dust correction
*M_G = 14.5979-5*alog10(664./10.) = 5.48 for companion, so slightly overluminous (0.4 mags) for an unreddened K2V stars*
Normalize companion to K2 star with V = 14.5979 + 0.254 = 14.852 or G8 with V = 14.5979 + 0.188 = 14.786
Most quoted photometry probably includes both components. Better visual estimate for Haro 5-64A is probably about V=14.9, and B=16.3
tcheck; Coordinates & P.M. verified, epoch checked?; done
tcheck; Adopted SED compared to Observations?; yes UBVRI colors tend to be about 2X bright, but most bands (UBVI) appear to contain both approximately equal components. Comparing to estimated companion shows good agreement with scaled model
Category=STAR
Description=[T TAURI STAR, PRE-MAIN SEQUENCE STAR]
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.1460569)	(1) CVSO-104	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				84 Secs (84 Secs) *[==>]*	*[1]*

Comments: Baseline SED with S/N=40 COS.ta.1460567 requires 84s
BOP check with 4X spectrum COS.ta.1460569, B.P. = 10.621
Special check assuming ~K2 companion at 2.5" is hiding a hot O3 companion with U=14.93: COS.ta.1460571 with B.P. = 41.2 - even that is safe!

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
2	G160M/1611 (COS.sp.1460573)	(1) CVSO-104	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=8310; FP-POS=ALL			940 Secs (4208 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>1164.0 Secs (Split 3)]* *[==>1164.0 Secs (Split 4)]*	*[1]* *[2]*

Comments: 4X BOP calculation: COS.sp.1460573, B.P. = 0.057
Baseline S/N calculation: COS.sp.1460572, B.P. = 0.014
Special check assuming ~K2 companion at 2.5" is hiding a hot O3 companion with U=14.9, COS.sp.1460574, B.P.=0.019

cvso104_lya2_etc.txt; cos,fuv,g160m,c1611,psa,mjd#59305; fp-pos=None, segment=None)
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: K7 ; A_V: 0.0 ; Distance (pc): 440
M: 0.77 ; log(dm/dt): -8.12*
For exptime=1557.2 s, spectral region:
1549.0 +- 1.0 A achieves SNR=30.0 / 6-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 93.0 cts/s/segment
brightest pixel: 0.014 cts/s/pix at 1548.4 A
Calculation performed 2020-07-30T14:20:54, v0.9

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
3	G130M/1291-3 (COS.sp.1460576)	(1) CVSO-104	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=1067; FP-POS=3			1177 Secs (1177 Secs) *[==>]*	*[3]*

Comments: 4X BOP check: COS.sp.1460576: B.P. = 0.15
Baseline S/N calc:COS.sp.1460577
Special check assuming ~K2 companion at 2.5" is hiding a hot O3 companion with U=14.9, COS.sp.1460575, B.P. = 0.123 (lyman alpha)

cvso104_lya2_etc.txt; cos,fuv,g130m,c1291,psa,mjd#59305; fp-pos=None, segment=None)
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: K7 ; A_V: 0.0 ; Distance (pc): 440
M: 0.77 ; log(dm/dt): -8.12*
For exptime=1129.9 s, spectral region:
1239.0 +- 1.0 A achieves SNR=15.0 / 6-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 395.4 cts/s/segment
brightest pixel: 0.037 cts/s/pix at 1214.2 A
Calculation performed 2020-07-30T14:20:56, v0.9

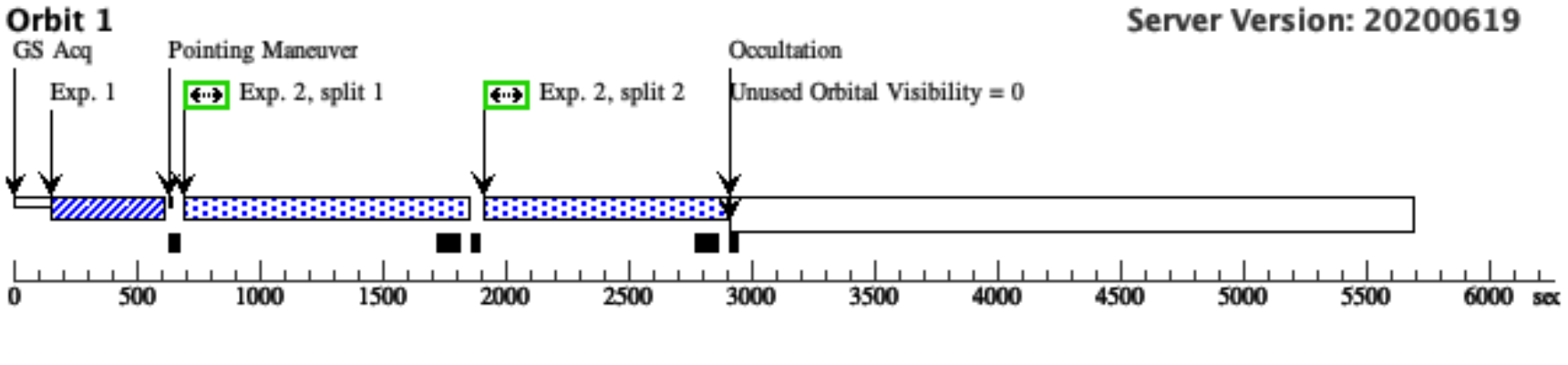
	4	G130M/129 1-4 (COS.sp.1460576)	(1) CVSO-104	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=1067; FP-POS=4	1177 Secs (1177 Secs) *[==>]*

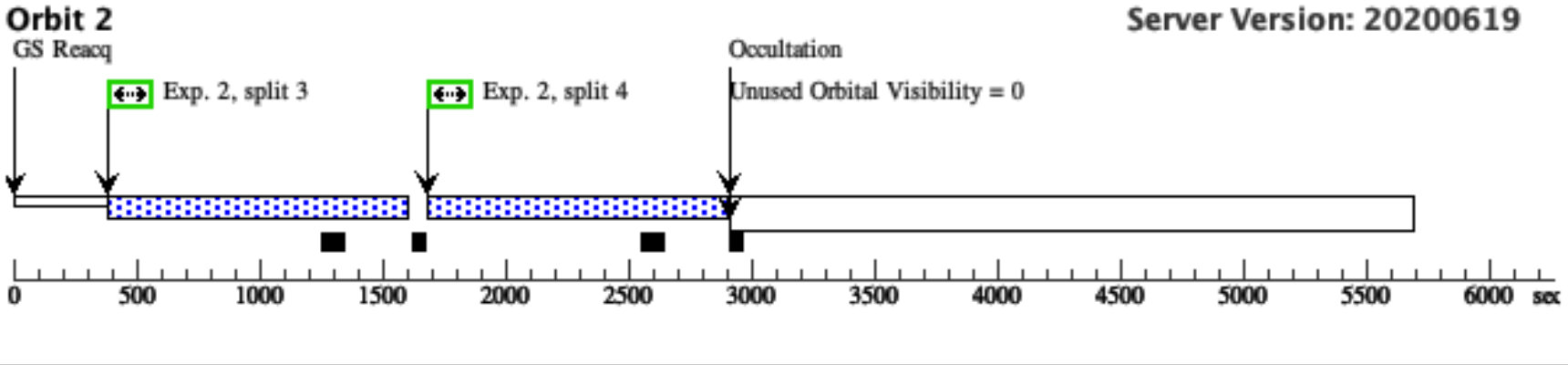
[3]

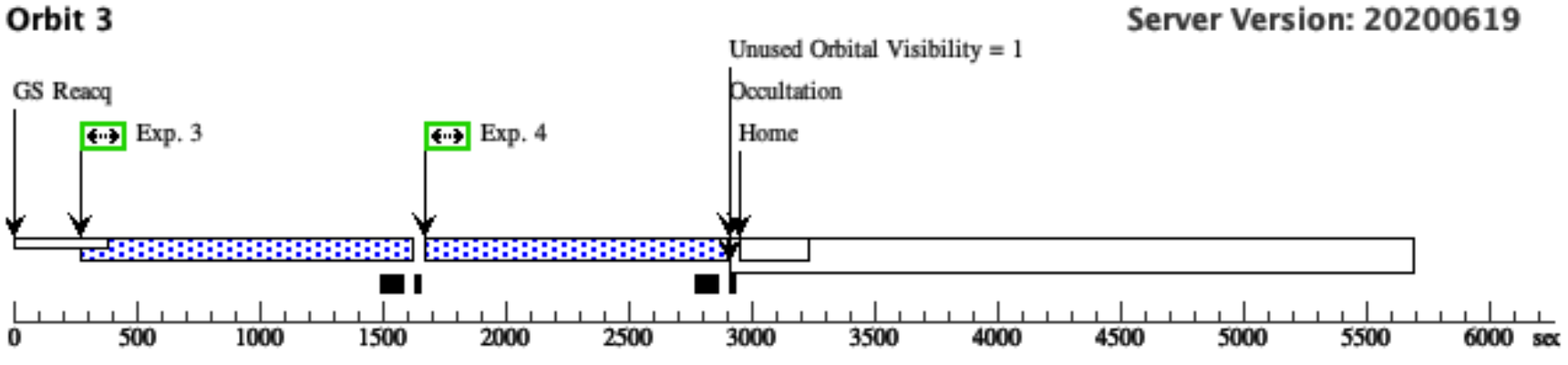
Comments: 4X BOP check: COS.sp.1460576: B.P. = 0.15
Baseline S/N calc: COS.sp.1460577
Special check assuming ~K2 companion at 2.5" is hiding a hot O3 companion with U=14.9, COS.sp.1460575, B.P. = 0.123 (lyman alpha)

cvso104_lya2_etc.txt; cos,fuv,g130m,c1291,psa,mjd#59305; fp-pos=None, segment=None)
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: K7 ; A_V: 0.0 ; Distance (pc): 440
M: 0.77 ; log(dm/dt): -8.12*
For exptime=1129.9 s, spectral region:
1239.0 +- 1.0 A achieves SNR=15.0 / 6-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 395.4 cts/s/segment
brightest pixel: 0.037 cts/s/pix at 1214.2 A
Calculation performed 2020-07-30T14:20:56, v0.9

Orbit Structure







Visit

Proposal 16115, CVSO-104-STIS (1S), implementation Tue Oct 27 19:00:41 GMT 2020

Diagnostic Status: No Diagnostics

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

Special Requirements: SCHED 100%; ORIENT 334.95D TO 334.95 D; BETWEEN 19-NOV-2020:13:40:00 AND 02-DEC-2020:09:40:00; BETWEEN 03-DEC-2020:10:40:00 AND 16-DEC-2020:16:40:00; GROUP 1S,1C WITHIN 1D

Comments: vstatus; 1S; CVSO-104; S/STIS approved for submission; S/CP 19/08/20 ; intrev: ready for internal review ; ?/rr DD/MM/YY
vcheck; Enter targ name & Inst. & Resp. Sci.; CVSO 104 ; COS; CP
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; No
vcheck; M-dwarf check complete and added to box folder?; N/A
vcheck; S/N ETC calcs done & documented?; Yes
vcheck; Field images checked & saved?; Yes
vcheck; Selected ACQ strategy?; Target is a double star with ~2.5" spacing. Since target is variable, it won't be clear which star is brighter in any TA filter. SO have selected offset star ~ 8.5" away from target and ~6.4" away from spoiler star. Will acquire with F28X50LP and then do confirmation image at final pointing.
vcheck; Possible ACQ or Sci spoilers?; Possible ACQ spoiler dealt with by using offset star for TA
vcheck; Field BOT clear?; Yes, clear for G230L science spectrum
vcheck; Visual BOT check for stars not in catalog?; GSC2 does not recognize this is a double star. Orient constrained to put both stars in slit. See details of ETC calculations in G230L exposure comments.
vcheck; Orbit packing finalized?; Yes
vcheck; Buffer times optimized?; Yes
vcheck; Verify visit grouping correct; Group 1S, 1C WITHIN 1D
vcheck; phase constraint for ground based observations added?; yes
vcheck; BETWEENS for coordinated observations added?; Yes
vcheck; Is visit ready for int. review?; Yes
Allocated STIS orbits = 1

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	CVSO-104 Alt Name1: HARO-5-64A Alt Name2: J05320638-0111000	RA: 05 32 6.3852 (83.0266050d) Dec: -01 11 0.12 (-1.18337d) Equinox: J2000	Proper Motion RA: 1.65572 mas/yr Proper Motion Dec: -0.68014 mas/yr Parallax: 0.0026719076090000004" Epoch of Position: 2015.5	V=14.9 SpT=K7; A_V=0.00; U=14.93; V=14.22; R=14.11; I=12.83; J=11.8; G=14.4829; Bp=15.2749; Rp=13.4299	Reference Frame: ICRS

Comments: CVSO-104 : Haro 5-64A, J05320638-0111000
Region: Ori OB1b
Simbad: http://simbad.u-strasbg.fr/simbad/sim-id?Ident=Gaia+DR2+3217634157789741952&NbIdent=1&Radius=2&Radius.unit=arcmin&submit=submit+id
Target coordinates are from Gaia DR2.
Spectral type: K7 ; A_V: 0.0 ; Distance (pc): 440
M: 0.77 ; log(dm/dt): -8.12*
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
cvso104_lya2_etc.txt
Calculation performed 2020-07-30T14:20:56, v0.4
---
tstatus; CVSO-104; P/ins approved for submission; S/insready for internal review; P/CP 19/08/20; S/CP 19/08/20
tcheck; APT/SIMBAD target names: ; Haro 5-64A
tcheck; Target info verification status?; Interesting ...
CVSO 104 = Haro 5-64 is a visual(?) binary with two roughly equal magnitude components separated by 2.4".
Gaia colors, proper motions, and parallax suggest that the NW component Haro 5-64a is the desired T Tauri star.
The other star's color and absolute magnitude appear consistent with a background early K or slightly reddened late-G star

Star	offset	PA	parallax	pmRA	pmDec	Gmag	Bpmag	Rpmag	Bp-Rp
Haro 5-64A	-	-	2.6718	1.656	-0.680	14.4829	15.2749	13.4229	1.8520
Haro 5-64B	2.42"	109.6	1.5042	6.196	-5.434	14.5979	15.0502	13.9364	1.1138

Companion Bp-Rp = 1.1138, G=14.5979 pi=1.5042 @664pc vs 374pc (pi=2.6719 mas) for prime target (cluster nominal 440 pc)
Gaia colors would make companion about K2V before dust correction
*M_G = 14.5979-5*alog10(664./10.) = 5.48 for companion, so slightly overluminous (0.4 mags) for an unreddened K2V stars*
Normalize companion to K2 star with V = 14.5979 + 0.254 = 14.852 or G8 with V = 14.5979 + 0.188 = 14.786
Most quoted photometry probably includes both components. Better visual estimate for Haro 5-64A is probably about V=14.9, and B=16.3
tcheck; Coordinates & P.M. verified, epoch checked?; done
tcheck; Adopted SED compared to Observations?; yes UBVRI colors tend to be about 2X bright, but most bands (UBVI) appear to contain both approximately equal components. Comparing to estimated companion shows good agreement with scaled model
Category=STAR
Description=[T TAURI STAR, PRE-MAIN SEQUENCE STAR]
Extended=NO

(6)	GAIA-DR2-3217634157788424960	RA: 05 32 6.7386 (83.0280775d) Dec: -01 11 6.72 (-1.18520d) Equinox: J2000	Proper Motion RA: 9.286 mas/yr Proper Motion Dec: 0.079 mas/yr Parallax: 0.0012088" Epoch of Position: 2015.5	V=18.4 G=17.6797; BP=18.6011; RP=16.669; BP-RP=1.9321; u, sdss=22.337, g, sdss=19.249, r, sdss=17.814; i, sdss=17.088	Reference Frame: ICRS

Comments: STIS offset target acq star for CVSO-104
8.58" away from CVSO-104 at a PA of 140.4 degrees
Anders+2019 assigns Av=2.255, (E(B-V)=0.7274, Teff=5393, logg=4.589, Fe/H=-0.1996
Category=STAR
Description=[UNDESIGNATED]
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.1464534)	(6) GAIA-DR2-3217634157788424960	STIS/CCD, ACQ, F28X50LP	MIRROR				9.7 Secs (9.7 Secs) *[==>]*	**[1]**
	Comments: Anders+2019 assigns Av=2.255, (E(B-V)=0.7274), Teff=5393, logg=4.589, Fe/H=-0.1996 *normalized to Sloane r = 17.814 abmag*								
2	Confirmation image (STIS.im.1460622)	(1) CVSO-104	STIS/CCD, ACCUM, F28X50LP	MIRROR	GAIN=4; SIZEAXIS2=256; CR-SPLIT=NO			0.6 Secs (0.6 Secs) *[==>]*	**[1]**
	Comments: Since we're using an offset acq, here we provide an image to confirm the pointing and detect any bright circumstellar structure								
3	G230L/2376 (STIS.sp.1460627)	(1) CVSO-104	STIS/NUV-MAMA, TIME-TAG, 52X2	G230L 2376 A	WAVECAL=NO; BUFFER-TIME=377			754 Secs (754 Secs) *[==>]*	**[1]**
	Comments: Nominal ETC calc STIS.sp.1460626 gives B.P.=0.892 *4X BOP calc STIS.sp.1460627 gives B.P. = 3.56* *cvso104_lya2_etc.txt; stis,nuvmama,g230l,c2376,52x2,mjd#59305* *Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv* *Spectral type: K7 ; A_V: 0.0 ; Distance (pc): 440* *M*: 0.77 ; log(dm/dt): -8.12* *For exptime=91.7 s, spectral region:* *2800.0 +- 15.0 A achieves SNR=20.0 / 2-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 2542.9 cts/s/segment* *brightest pixel: 0.892 cts/s/pix at 2788.8 A* *Calculation performed 2020-07-30T14:20:56, v0.9*								
4	G230L/2376 WAVECAL	WAVE	STIS/NUV-MAMA, ACCUM, 52X0.1	G230L 2376 A				*[==>]*	**[1]**
5	G430L/4300 WAVECAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A				*[==>]*	**[1]**
6	G430L/4300 (STIS.sp.1460625)	(1) CVSO-104	STIS/CCD, ACCUM, 52X2	G430L 4300 A	WAVECAL=NO; CR-SPLIT=2; GAIN=4			293.8 Secs (293.8 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	**[1]**
	Comments: Nominal calc with CVSO-104_sed.fits requires 147s to reach S/N=20 at 4000 STIS.sp.1460625 *Isolated K7 star primary with V=14.9 - needs 203.7s, so 2x would be 407.4s? STIS.sp.1463835* *Nominal scaling calc gives 146.9s, so 2X = 293.8 - use this since it should meet minimum requiremetns even for above estimates.* *cvso104_lya2_etc.txt; stis,ccd,g430l,c4300,52x2,mjd#59305* *WARNING: operating mode = ACCUM* *Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv* *Spectral type: K7 ; A_V: 0.0 ; Distance (pc): 440* *M*: 0.77 ; log(dm/dt): -8.12* *For exptime=59.4 s, n_reads=2, spectral region:* *4000.0 +- 5.0 A achieves SNR=20.0 / 2-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 39670.7 cts/s/segment* *brightest pixel: 16.586 cts/s/pix at 4871.0 A* *Calculation performed 2020-07-30T14:20:56, v0.9*								

7	G750L/7751 (1) CVSO-104 (STIS.sp.14 60624)	STIS/CCD, ACCUM, 52X2	G750L 7751 A	WAVECAL=NO; CR-SPLIT=2; GAIN=4	40 Secs (40 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***

Comments: with nominal SED, STIS.sp.1460624 gives 17.16s to get S/N=20 at 5700A.
Check K7 star normalized to observed R=14.11, get STIS.sp.1463836 needs 38.8s, so double to 77.6?
Compromise at 40s.

cvso104_lya2_etc.txt; stis,ccd,g750l,c7751,52x2,mjd#59305
WARNING: operating mode = ACCUM
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: K7 ; A_V: 0.0 ; Distance (pc): 440
M: 0.77 ; log(dm/dt): -8.12*
For exptime=7.3 s, n_reads=2, spectral region:
5700.0 +- 5.0 A achieves SNR=20.0 / 2-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 63036.6 cts/s/segment
brightest pixel: 99.065 cts/s/pix at 6563.9 A
Calculation performed 2020-07-30T14:20:56, v0.9

8	G750L/7751 WAVE WAVECAL	STIS/CCD, ACCUM, 52X0.1	G750L 7751 A		*[==>]*	***[1]***
9	G750L/7751 CCDFLAT CCDFLAT 0	STIS/CCD, ACCUM, 52X0.1	G750L 7751 A		*[==>(Copy 1)]* *[==>(Copy 2)]*	***[1]***

Comments: Extra flat with 52x0.1 for offcenter point source

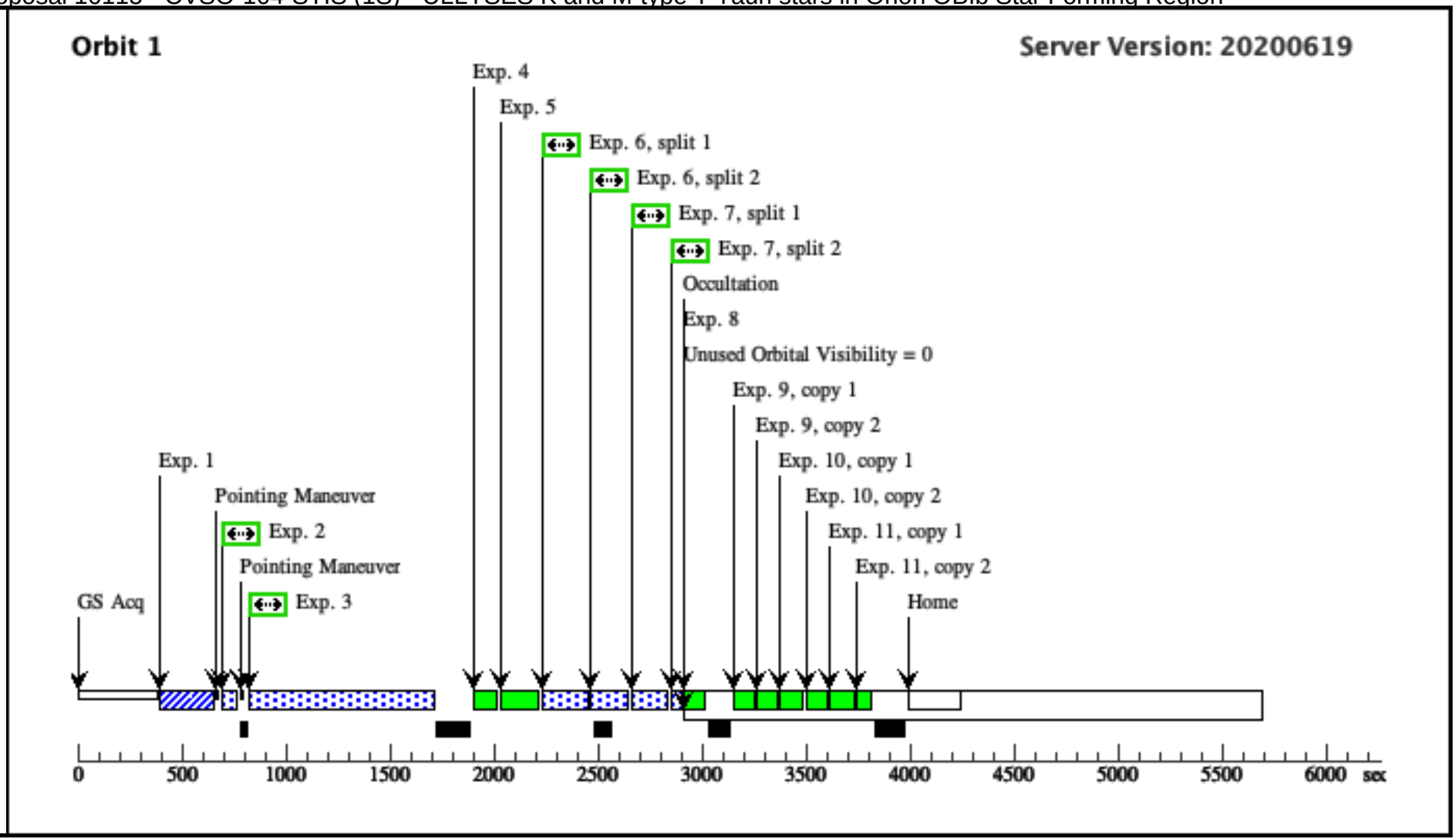
10	G750L/7751 CCDFLAT CCDFLAT 1	STIS/CCD, ACCUM, 0.3X0.09	G750L 7751 A		*[==>(Copy 1)]* *[==>(Copy 2)]*	***[1]***

Comments: cvso104_lya2_etc.txt; stis,ccd,g750l,c7751,52x2,mjd#59305
WARNING: operating mode = ACCUM
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: K7 ; A_V: 0.0 ; Distance (pc): 440
M: 0.77 ; log(dm/dt): -8.12*
For exptime=7.3 s, n_reads=2, spectral region:
5700.0 +- 5.0 A achieves SNR=20.0 / 2-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 63036.6 cts/s/segment
brightest pixel: 99.065 cts/s/pix at 6563.9 A
Calculation performed 2020-07-30T14:20:56, v0.9

11	G750L/7751 CCDFLAT CCDFLAT 2	STIS/CCD, ACCUM, 52X2	G750L 7751 A		*[==>(Copy 1)]* *[==>(Copy 2)]*	***[1]***

Comments: cvso104_lya2_etc.txt; stis,ccd,g750l,c7751,52x2,mjd#59305
WARNING: operating mode = ACCUM
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: K7 ; A_V: 0.0 ; Distance (pc): 440
M: 0.77 ; log(dm/dt): -8.12*
For exptime=7.3 s, n_reads=2, spectral region:
5700.0 +- 5.0 A achieves SNR=20.0 / 2-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 63036.6 cts/s/segment
brightest pixel: 99.065 cts/s/pix at 6563.9 A
Calculation performed 2020-07-30T14:20:56, v0.9

Orbit Structure



Visit

Proposal 16115, CVSO-109-COS (2C), implementation Tue Oct 27 19:00:41 GMT 2020

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; BETWEEN 19-NOV-2020:13:40:00 AND 02-DEC-2020:08:05:00; BETWEEN 03-DEC-2020:10:40:00 AND 16-DEC-2020:15:05:00

Comments: vstatus; 2C; CVSO-109; P/COS approved for submission; P/CP 13/08/20 ; internal review complete ; C/DS 16/09/20
vcheck; Enter targ name & Inst. & Resp. Sci.; CVSO-109 ; COS ; CP
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; The 4x spectrum combined with standard geocoronal lyman alpha is right at the 0.667 cnt/pix/s local limit; however, note that the 4X factor is intended to take into account both source-to-source and time dependant variability. For this star the U band flux is only 1.36x our nominal case, while the observed peak of the C IV 1554 line is only about 1/3rd of the nominal scaling (or about 1/12th the 4X scaled spectrum). So this suggests the 4x spectrum is probably a significant overestimate of the flux to be expected in Lyman alpha. I.e., if we scale our spectrum to the observed C IV peak, the source contribution would be more than 12x below the local limit in lyman alpha!
vcheck; M-dwarf check complete and added to box folder?; Yes see cvso_dust_out.xls for all M dwarf BOT calculations. Peak local for flare is only 0.21 cnts/pixel/s at 1548.2 on segment B of the c1611 observations, well below the allowed flare limit of 2.7. The sources adds at most 0.029 to the peak local rate on segement B and even that is at a different wavelength. All other criteria are easily satifisfied, including use of PSA mirror B for COS TA.
For this source , below allowed limit of 2.7 cnts/pixel/s
vcheck; S/N ETC calcs done & documented?; Yes ...
vcheck; Field images checked & saved?; yes
vcheck; Selected ACQ strategy?; BOP tool indicates that PSA/MIRRORB is safe for this M0 star. See cvs_dust_out.xls for all M type targets ...
vcheck; Possible ACQ or Sci spoilers?; None
vcheck; Field BOT clear?; Only the target is flagged by the BOT in the ACQ exposure. See details in that exposure's comments to clear
vcheck; Visual BOT check for stars not in catalog?; Good
vcheck; Orbit packing finalized?; yes but only get about 70% of requirements in one orbit - add a second COS orbit?
vcheck; Buffer times optimized?; Yes
vcheck; Verify visit grouping correct; Yes, STIS visit has GROUP 2S,2C WITHIN 1 Day
vcheck; phase constraint for ground based observations added?; yes
vcheck; BETWEENS for coordinated observations added?; Yes
vcheck; Is visit ready for int. review?; ------
Allocated COS orbits = 1 - used 2

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	CVSO-109	RA: 05 32 32.6658 (83.1361075d)	Proper Motion RA: 15.34700039 mas/yr	V=13.89	Reference Frame: ICRS
	Alt Name1: V462-ORI	Dec: -01 13 45.98 (-1.22944d)	Proper Motion Dec: -9.260979348 mas/yr	SpT=M0; A_V=0.00; U=14.50; V=13.89; I=12.27 ; J=11.01	
	Alt Name2: J05323265-0113461	Equinox: J2000	Parallax: 0.007943181519"		
			Epoch of Position: 2015.5		

Comments: CVSO-109 : V462 Ori, J05323265-0113461
Region: Ori OB1b
Simbad: https://simbad.u-strasbg.fr/simbad/sim-id?Ident=2MASS+J05323265-0113461&submit=submit+id
Target coordinates are from Gaia DR2.
Spectral type: M0 ; A_V: 0.0 ; Distance (pc): 440
M: 0.56 ; log(dm/dt): -7.6*
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
cvso109_lya2_etc.txt
Calculation performed 2020-07-30T14:20:18, v0.4
---
tstatus; CVSO-109; P/COS approved for submission; S/ins ready for internal review; P/CP 19/08/20; S/CP 19/08/20
tcheck; APT/SIMBAD target names: ; CVSO 109, Haro 5-66
tcheck; Target info verification status?; OK, simbad lists as "Orion type"
tcheck; Coordinates & P.M. verified, epoch checked?; Yes
tcheck; Adopted SED compared to Observations?; Yes ... V low by 2X, U high by 1.36x, and I almost right on. G160M shows observed peak of C IV about 3X below model
Category=STAR
Description=[T TAURI STAR, PRE-MAIN SEQUENCE STAR]
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.1460697)	(2) CVSO-109	COS/NUV, ACQ/IMAGE, PSA	MIRRORB				29 Secs (29 Secs) *[==>]*	*[1]*
	Comments: PSA, MIRRORB, S/N=40, COS.ta.1460696, gives 29s *BOP check COS.ta.1460697, B.P. = 30* *Flare screening calculations gives peak predicted pixel of 14 for PSA, MIRRORB.*								
2	G130M/1291-3 (COS.sp.1461632)	(2) CVSO-109	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=909; FP-POS=3			1019 Secs (1019 Secs) *[==>]*	*[1]*
	Comments: Briceno+2019 assigns Av=0.366, rather than Av=0 we originally used, so add E(B-V)=0.366/3.1 = 0.118 to precomputed nominal spectrum *new 4X BOP result: COS.sp.1461854 with B.P.= 0.205* *New nominal result COS.sp.1461855 needs 411.4s, so adopt 822.8s total* *4X BOP SED: COS.sp.1461632 BOP 0.669 exceeds limit 0f 0.666 in lyman alpha! Did Sean include geocoronal flux?* *Nominal SED: COS.sp.1461631* *c1222 would be safe: COS.sp.1461633* *cvso109_lya2_etc.txt; cos,fuv,g130m,c1291,psa,mjd#59305; fp-pos=None, segment=None)* *Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv* *Spectral type: M0 ; A_V: 0.0 ; Distance (pc): 440* *M*: 0.56 ; log(dm/dt): -7.6* *For exptime=343.4 s, spectral region:* *1239.0 +- 1.0 A achieves SNR=15.0 / 6-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 715.8 cts/s/segment* *brightest pixel: 0.167 cts/s/pix at 1214.2 A* *Calculation performed 2020-07-30T14:20:13, v0.9*								
3	G130M/1291-4 (COS.sp.1461632)	(2) CVSO-109	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=909; FP-POS=4			1019 Secs (1019 Secs) *[==>]*	*[1]*
	Comments: cvso109_lya2_etc.txt; cos,fuv,g130m,c1291,psa,mjd#59305; fp-pos=None, segment=None) *Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv* *Spectral type: M0 ; A_V: 0.0 ; Distance (pc): 440* *M*: 0.56 ; log(dm/dt): -7.6* *For exptime=343.4 s, spectral region:* *1239.0 +- 1.0 A achieves SNR=15.0 / 6-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 715.8 cts/s/segment* *brightest pixel: 0.167 cts/s/pix at 1214.2 A* *Calculation performed 2020-07-30T14:20:13, v0.9*								

	4	G160M/1611 (COS.sp.1461629)	(2) CVSO-109	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=412; FP-POS=ALL	522 Secs (2088 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	***[2]***

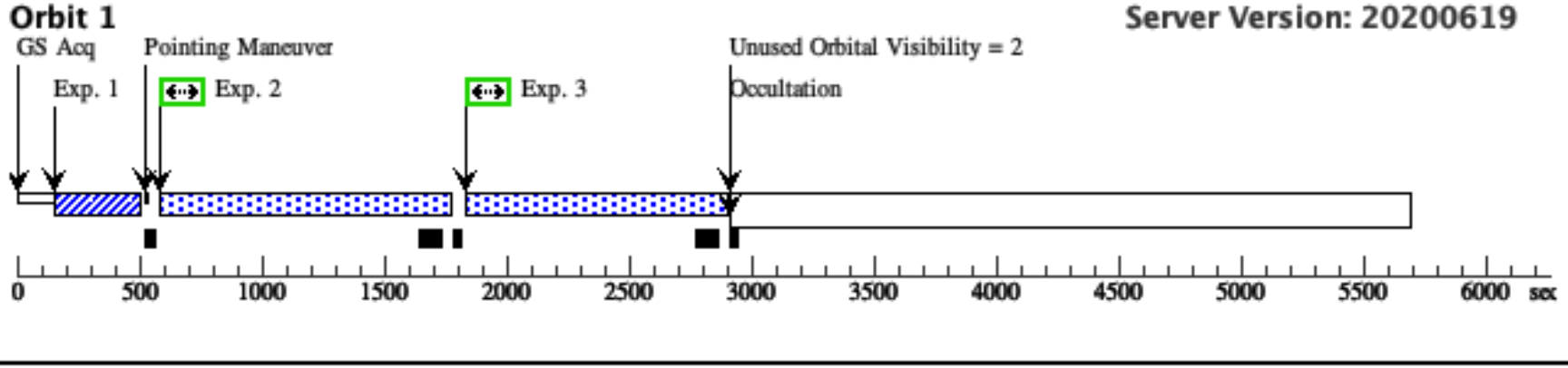
Comments: Briceno+2019 assigns Av=0.366, rather than Av=0 we originally used, so add E(B-V)=0.366/3.1 = 0.118 to precomputed nominal spectrum
New nominal result with dust, COS.sp.1461856, requires 392.6 so adopt 785.2

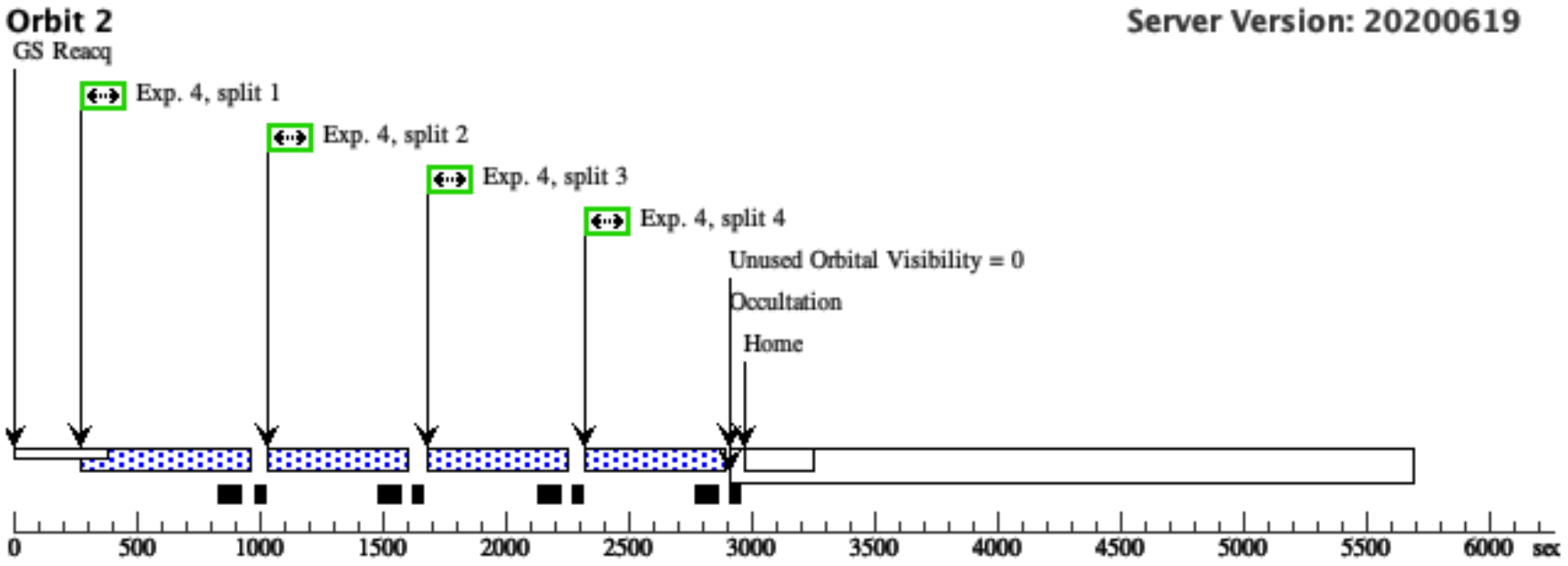
4X BOP spectrum COS.sp.1461629, PB=0.142 cnts/pixel/s at C IV 1548.42
Nominal SED COS.sp.1461630

Add 0.1 of E(B-V), get COS.sp.1461804 needing 1319s

cvso109_lya2_etc.txt; cos,fuv,g160m,c1611,psa,mjd#59305; fp-pos=None, segment=None)
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: M0 ; A_V: 0.0 ; Distance (pc): 440
M: 0.56 ; log(dm/dt): -7.6*
For exptime=626.4 s, spectral region:
1549.0 +- 1.0 A achieves SNR=30.0 / 6-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 130.5 cts/s/segment
brightest pixel: 0.035 cts/s/pix at 1548.4 A
Calculation performed 2020-07-30T14:20:11, v0.9

Orbit Structure





Visit

Proposal 16115, CVSO-109-STIS (2S), implementation Tue Oct 27 19:00:41 GMT 2020

Diagnostic Status: No Diagnostics

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

Special Requirements: SCHED 100%; BETWEEN 19-NOV-2020:13:40 AND 02-DEC-2020:09:40:00; BETWEEN 03-DEC-2020:10:40 AND 16-DEC-2020:16:40:00; GROUP 2S,2C WITHIN 1D

Comments: vstatus; 2S; CVSO-109; S/STIS approved for submission; S/CP 08/20/20 ; intrev: not started ; ?/rr DD/MM/YY
vcheck; Enter targ name & Inst. & Resp. Sci.; CVSO-109 ; STIS ; CP
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; No
vcheck; M-dwarf check complete and added to box folder?; See cvs_dust_out.xls for all M type targets ...
vcheck; S/N ETC calcs done & documented?; Yes
vcheck; Field images checked & saved?; Yes
vcheck; Selected ACQ strategy?; S/N=80 with default spectrum with F28X50LP
vcheck; Possible ACQ or Sci spoilers?; none
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
vcheck; Verify visit grouping correct; Group 2S,2C WITHIN 1D
vcheck; phase constraint for ground based observations added?; yes
vcheck; BETWEENS for coordinated observations added?; yes
vcheck; Is visit ready for int. review?; Yes
Allocated STIS orbits = 1

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	CVSO-109	RA: 05 32 32.6658 (83.1361075d)	Proper Motion RA: 15.34700039 mas/yr	V=13.89	Reference Frame: ICRS
	Alt Name1: V462-ORI	Dec: -01 13 45.98 (-1.22944d)	Proper Motion Dec: -9.260979348 mas/yr	SpT=M0; A_V=0.00; U=14.50; V=13.89; I=12.27 ; J=11.01	
	Alt Name2: J05323265-0113461	Equinox: J2000	Parallax: 0.007943181519"		
			Epoch of Position: 2015.5		

Comments: CVSO-109 : V462 Ori, J05323265-0113461
Region: Ori OB1b
Simbad: https://simbad.u-strasbg.fr/simbad/sim-id?Ident=2MASS+J05323265-0113461&submit=submit+id
Target coordinates are from Gaia DR2.
Spectral type: M0 ; A_V: 0.0 ; Distance (pc): 440
M: 0.56 ; log(dm/dt): -7.6*
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
cvso109_lya2_etc.txt
Calculation performed 2020-07-30T14:20:18, v0.4
---
tstatus; CVSO-109; P/COS approved for submission; S/ins ready for internal review; P/CP 19/08/20; S/CP 19/08/20
tcheck; APT/SIMBAD target names: ; CVSO 109, Haro 5-66
tcheck; Target info verification status?; OK, simbad lists as "Orion type"
tcheck; Coordinates & P.M. verified, epoch checked?; Yes
tcheck; Adopted SED compared to Observations?; Yes ... V low by 2X, U high by 1.36x, and I almost right on. G160M shows observed peak of C IV about 3X below model
Category=STAR
Description=[T TAURI STAR, PRE-MAIN SEQUENCE STAR]
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.1461358)	(2) CVSO-109	STIS/CCD, ACQ, F28X50LP	MIRROR				0.3 Secs (0.3 Secs) *[==>]*	***[1]***
Comments: S/N=80 with default spectrum with F28X50LP requires 0.18s STIS.ta.1461358									
2	G230L/2376 (STIS.sp.1461361)	(2) CVSO-109	STIS/NUV-MAMA, TIME-TAG, 52X2	G230L 2376 A	WAVECAL=NO; BUFFER-TIME=348			1043 Secs (1043 Secs) *[==>]*	***[1]***
Comments: S/N *cvso109_lya2_etc.txt; stis,nuvmama,g230l,c2376,52x2,mjd#59305* *Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv* *Spectral type: M0 ; A_V: 0.0 ; Distance (pc): 440* *M*: 0.56 ; log(dm/dt): -7.6* *For exptime=32.3 s, spectral region:* *2800.0 +- 15.0 A achieves SNR=20.0 / 2-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 2972.9 cts/s/segment* *brightest pixel: 2.509 cts/s/pix at 2788.8 A* *Calculation performed 2020-07-30T14:20:15, v0.9*									
3	G230L/2376 WAVECAL	WAVE	STIS/NUV-MAMA, ACCUM, 52X0.1	G230L 2376 A				*[==>]*	***[1]***
4	G430L/4300 WAVECAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A				*[==>]*	***[1]***
5	G430L/4300 (STIS.sp.1461626)	(2) CVSO-109	STIS/CCD, ACCUM, 52X2	G430L 4300 A	WAVECAL=NO; CR-SPLIT=2; GAIN=4			144.2 Secs (144.2 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
Comments: S/N=20 at 4000A with baseline spectrum requires 72.2s *Renormalize to observed V requires 112.2 s, STIS.sp.1461626, so 2x would be 224.4* *However, alternate calc M0 star normalized to V= 13.89 only needs 78.6s (STIS.sp.1463841), so original scaling is probably good? Adopt 144s* *Check gain=1 with 4x spectrum - get time to saturate a single exposure is 246s, (vs 72.1s actual), so still have 4X margin on the 4X spectrum (STIS.sp.1470349)* *cvso109_lya2_etc.txt; stis,ccd,g430l,c4300,52x2,mjd#59305* *WARNING: operating mode = ACCUM* *Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv* *Spectral type: M0 ; A_V: 0.0 ; Distance (pc): 440* *M*: 0.56 ; log(dm/dt): -7.6* *For exptime=28.8 s, n_reads=2, spectral region:* *4000.0 +- 5.0 A achieves SNR=20.0 / 2-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 50797.3 cts/s/segment* *brightest pixel: 33.548 cts/s/pix at 4871.0 A* *Calculation performed 2020-07-30T14:20:17, v0.9*									

6	G750L/7751 (2) CVSO-109 (STIS.sp.14 61359)	STIS/CCD, ACCUM, 52X2	G750L 7751 A	WAVECAL=NO; CR-SPLIT=2; GAIN=4	31.8 Secs (31.8 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***

Comments: S/N=20 at 5700 requires 8.5s (STIS.sp.1461359) so 2x would be 17s
Alternate calc for M0 star normalized to I=12.27 needs 15.9s, so 2x 2ould be 31.8s (STIS.sp.1463843)
Check with gain=1 and 4x spectrum gives STIS.sp.1470350, with time to saturate=49.2s (about 3x margin with the 4x spectrum)

cvso109_lya2_etc.txt; stis,ccd,g750l,c7751,52x2,mjd#59305
WARNING: operating mode = ACCUM
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: M0 ; A_V: 0.0 ; Distance (pc): 440
M: 0.56 ; log(dm/dt): -7.6*
For exptime=3.6 s, n_reads=2, spectral region:
5700.0 +- 5.0 A achieves SNR=20.0 / 2-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 86970.4 cts/s/segment
brightest pixel: 166.954 cts/s/pix at 6563.9 A
Calculation performed 2020-07-30T14:20:18, v0.9

7	G750L/7751 WAVE WAVECAL	STIS/CCD, ACCUM, 52X0.1	G750L 7751 A		*[==>]*	***[1]***

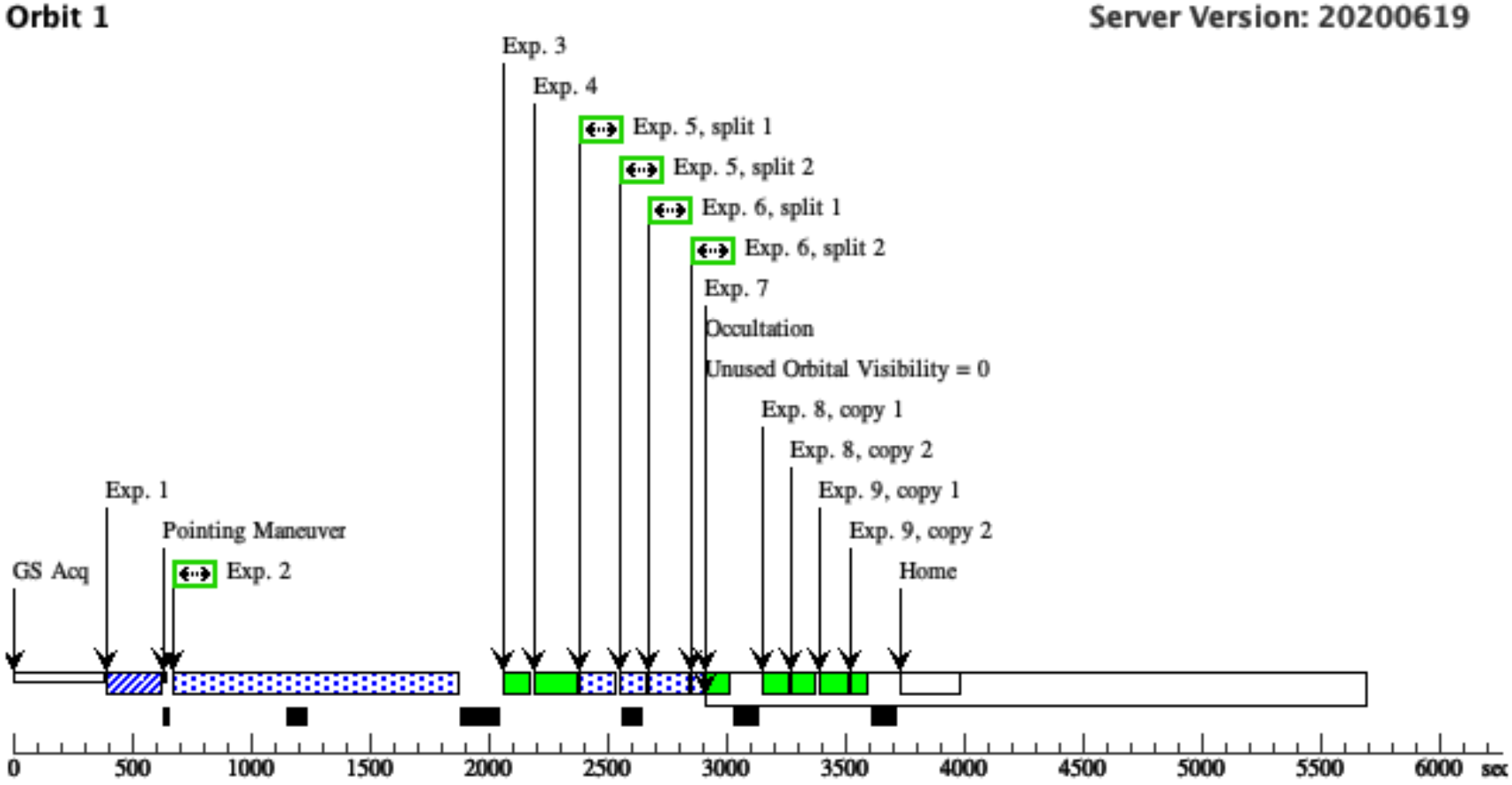
8	G750L/7751 CCDFLAT CCDFLAT 1	STIS/CCD, ACCUM, 0.3X0.09	G750L 7751 A		*[==>(Copy 1)]* *[==>(Copy 2)]*	***[1]***

Comments: cvso109_lya2_etc.txt; stis,ccd,g750l,c7751,52x2,mjd#59305
WARNING: operating mode = ACCUM
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: M0 ; A_V: 0.0 ; Distance (pc): 440
M: 0.56 ; log(dm/dt): -7.6*
For exptime=3.6 s, n_reads=2, spectral region:
5700.0 +- 5.0 A achieves SNR=20.0 / 2-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 86970.4 cts/s/segment
brightest pixel: 166.954 cts/s/pix at 6563.9 A
Calculation performed 2020-07-30T14:20:18, v0.9

9	G750L/7751 CCDFLAT CCDFLAT 2	STIS/CCD, ACCUM, 52X2	G750L 7751 A		*[==>(Copy 1)]* *[==>(Copy 2)]*	***[1]***

Comments: cvso109_lya2_etc.txt; stis,ccd,g750l,c7751,52x2,mjd#59305
WARNING: operating mode = ACCUM
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: M0 ; A_V: 0.0 ; Distance (pc): 440
M: 0.56 ; log(dm/dt): -7.6*
For exptime=3.6 s, n_reads=2, spectral region:
5700.0 +- 5.0 A achieves SNR=20.0 / 2-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 86970.4 cts/s/segment
brightest pixel: 166.954 cts/s/pix at 6563.9 A
Calculation performed 2020-07-30T14:20:18, v0.9

Orbit Structure



Visit

Proposal 16115, CVSO-17-COS (3C), implementation Tue Oct 27 19:00:41 GMT 2020

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; BETWEEN 19-NOV-2020:13:40:00 AND 02-DEC-2020:06:30:00; BETWEEN 03-DEC-2020:10:40:00 AND 16-DEC-2020:13:30:00

Comments: vstatus; 3C; CVSO-17; P/COS approved for submission; P/CP 17/08/20 ; internal review complete ; C/DS 16/09/20
vcheck; Enter targ name & Inst. & Resp. Sci.; CVSO-17 ; COS; CP
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; No
vcheck; M-dwarf check complete and added to box folder?; spreadsheet used See cvso_mstar_flare_results.xls for all M type targets ...
spreadsheet flare calculations produce peak local rate 2.36 at 1548.2, B.P. from source on seg B is only 0.029 and at a different wavelength. Rate is below allowed limit of 2.7 cnts/pixel/s
vcheck; S/N ETC calcs done & documented?; Yes
vcheck; Field images checked & saved?; yes
vcheck; Selected ACQ strategy?; Offset TA from field main-sequence K star using PSA,MIRRORA
vcheck; Possible ACQ or Sci spoilers?; None
vcheck; Field BOT clear?; yes with explaination... BOT flags TA star as an O star due to brightness in V despite red color, but more reliable Gaia colors and Gaia distance confirm this is a K dwarf see Anders+2019 and comments on exposure
vcheck; Visual BOT check for stars not in catalog?; OK
vcheck; Orbit packing finalized?; Yes ... Do 1 c1291 FP-pos and 2 c1611 FP-POS in each of two 3-orbit visits
obtain 90.8% of requested c1611 expo time, 145%of c1291 expo time
vcheck; Buffer times optimized?; Yes
vcheck; Verify visit grouping correct; STIS visit has GROUP 3S,3C,3D WITHIN 1D
vcheck; phase constraint for ground based observations added?; yes
vcheck; BETWEENS for coordinated observations added?; Yes
vcheck; Is visit ready for int. review?; ------
Allocated COS orbits = 6

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	CVSO-17 Alt Name1: J05230470+0137148	RA: 05 23 4.6999 (80.7695829d) Dec: +01 37 14.93 (1.62081d) Equinox: J2000	Proper Motion RA: -0.331291145 mas/yr Proper Motion Dec: 0.804722866 mas/yr Parallax: 0.002146994864" Epoch of Position: 2015.5	V=16.16 SpT=M3; A_V=0.0; V=16.16; G=15.1862; I= 13.91; J=12.5; B=18.22; B=17.147	Reference Frame: ICRS

Comments: CVSO-17 : J05230470+0137148
Region: Ori OB1a
Simbad: https://simbad.u-strasbg.fr/simbad/sim-id?Ident=2MASS+J05230470+0137148&submit=submit+id
Target coordinates are from Gaia DR2.
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330
M: 0.33 ; log(dm/dt): -9.22*
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
cvso17_lya2_etc.txt
Calculation performed 2020-07-30T14:21:58, v0.4
---
tstatus; CVSO-17;P/COS approved for submission; S/ins ready for internal review; P/CP 19/08/20; S/CP 19/08/20
tcheck; APT/SIMBAD target names: ; CVSO 17;
tcheck; Target info verification status?; OK
tcheck; Coordinates & P.M. verified, epoch checked?; Yes
tcheck; Adopted SED compared to Observations?; yes, observed B & V about a factor of 5 lower than model. No u band data available. Assume accretion model is good, but overestimates stellar continuum and use stellar model fit to optical for G430L/G750L exposure times.
Category=STAR
Description=[T TAURI STAR, PRE-MAIN SEQUENCE STAR]
Extended=NO

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(7)	GAIA-DR2-3222180878885500288	RA: 05 23 2.7281 (80.7613671d) Dec: +01 37 1.49 (1.61708d) Equinox: J2000	Proper Motion RA: -0.341 mas/yr Proper Motion Dec: 7.063 mas/yr Parallax: 0.0015689" Epoch of Position: 2015.5	V=15.8 G=15.3732; Bp-Rp=1.4919, B=16.793, B-V=1.099	Reference Frame: ICRS

Comments: COS target offset acquisition star for CVSO 17
No U measurements available ...
PANSTARRs griz = 16.1993, 15.3087, 14.8930, 14.7176
Gaia Teff=4479K
Anders+2019 50th percentile values: AV=1.10, teff=5151, logg=4.60, [Fe/H]=-0.39
Category=EXT-STAR
Description=[K V-IV]
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 - offset (COS.ta.1464096)	(7) GAIA-DR2-3222180878885500288	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				164 Secs (164 Secs) *[==>]*	***[1]***

Comments: Use offset target GAIA-DR2-3222180878885500288
Gaia color, magnitude, and parallax consistent with a lightly reddened main-sequence mid-K star at ~630 pc
V=15.994, G=15.3732; Bp-Rp=1.4919, B=16.793, B-V=1.099
This target is cool enough that count rate is dominated by red leak, so minor uertainties in Teff or E(B-V) do not significantly change the result when normalzied to observed B mag.
Expect about u' = 18.46 abmag or Johnson U = 17.64 Vegamag if our adopted SED is correct.

BOT flags as unsafe as it is promoted to an O star, but if we assume this is really a reddened O star with E(B-V)= 1.3, and B=16.793, then B.P = 8.7 cnts/pix/sec (COS.ta.1461247)
Gaia colors are much more reliable than GSC2, and detailed multiband analysis by Anders+2019 supports that this is actually a cool star.
Using Anders+2019 50th percentile values: AV=1.10, teff=5151, logg=4.60, [Fe/H]=-0.39; K2 star with E(B-V)=0.355 gives S/N=40 in 164s for K0 COS.ta.1464096

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
2	G130M/1291-3 (COS.sp.1461264)	(3) CVSO-17	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=1775; FP-POS=3			1885 Secs (1885 Secs) *[==>]*	***[1]***

Comments: 4X BOP calculation: COS.sp.1461264, B.P dominated by geo-coronal lyman alpha
S/N calc with nominal spectrum: COS.sp.1461265

cvso17_lya2_etc.txt; cos,fuv,g130m,c1291,psa,mjd#59305; fp-pos=None, segment=None)
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330
M: 0.33 ; log(dm/dt): -9.22*
For exptime=1297.9 s, spectral region:
1239.0 +- 1.0 A achieves SNR=15.0 / 6-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 391.3 cts/s/segment
brightest pixel: 0.036 cts/s/pix at 1304.8 A
Calculation performed 2020-07-30T14:21:58, v0.9

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
3	G160M/1611-1 (COS.sp.1461229)	(3) CVSO-17	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=2350; FP-POS=1			2460 Secs (2460 Secs) *[==>]*	***[2]***

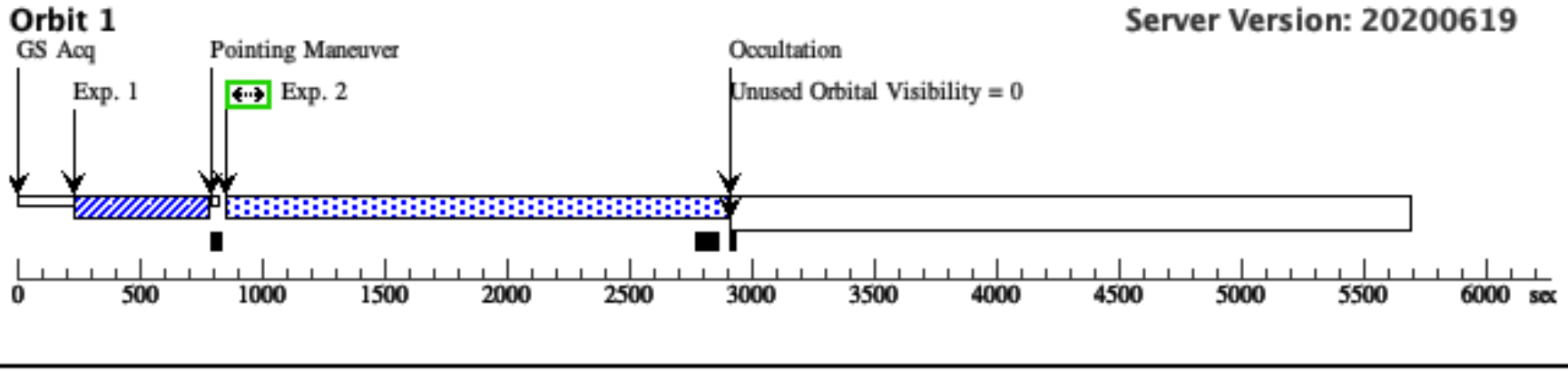
Comments: 4X BOP ETC COS.sp.1461229 B.P. = 0.029
S/N calculation COS.sp.1461231
Get 90.8% of requested exposure

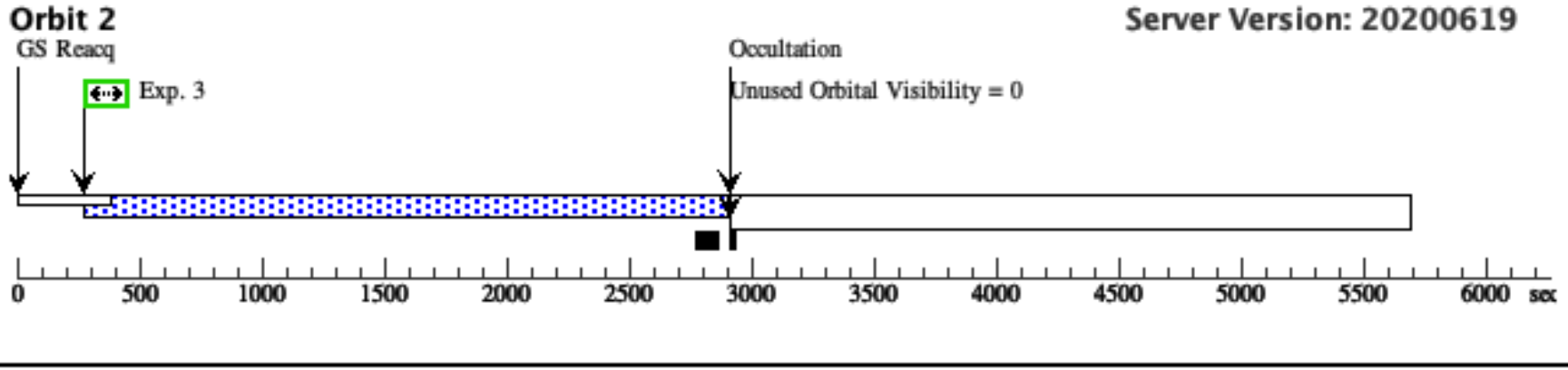
cvso17_lya2_etc.txt; cos,fuv,g160m,c1611,psa,mjd#59305; fp-pos=None, segment=None)
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330
M: 0.33 ; log(dm/dt): -9.22*
For exptime=5417.5 s, spectral region:
1549.0 +- 1.0 A achieves SNR=30.0 / 6-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 93.8 cts/s/segment
brightest pixel: 0.007 cts/s/pix at 1446.2 A
Calculation performed 2020-07-30T14:21:55, v0.9

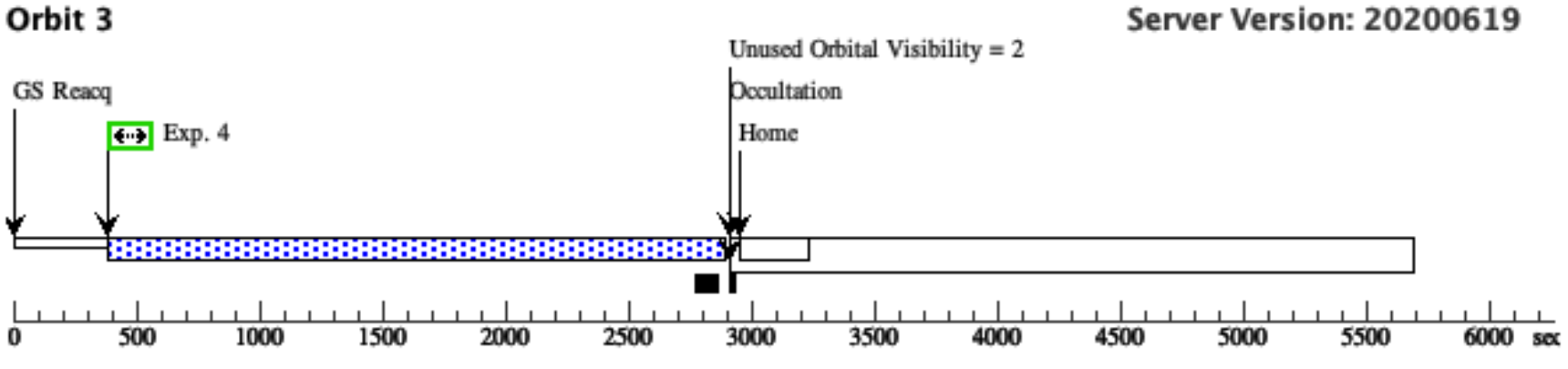
	4	G160M/1611-3 (COS.sp.1461229)	(3) CVSO-17	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=2350; FP-POS=3	2460 Secs (2460 Secs) *[==>]*
							[3]

Comments: cvso17_lya2_etc.txt; cos,fuv,g160m,c1611,psa,mjd#59305; fp-pos=None, segment=None)
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330
M: 0.33 ; log(dm/dt): -9.22*
For exptime=5417.5 s, spectral region:
1549.0 +- 1.0 A achieves SNR=30.0 / 6-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 93.8 cts/s/segment
brightest pixel: 0.007 cts/s/pix at 1446.2 A
Calculation performed 2020-07-30T14:21:55, v0.9

Orbit Structure







Visit

Proposal 16115, CVSO-17-COS (3D), implementation Tue Oct 27 19:00:41 GMT 2020

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; BETWEEN 19-NOV-2020:13:40:00 AND 02-DEC-2020:06:30:00; BETWEEN 03-DEC-2020:10:40:00 AND 16-DEC-2020:13:30:00

Comments: vstatus; 3C; CVSO-17; P/COS approved for submission; P/CP 17/08/20Y ; internal review complete ; C/DS 16/09/20
vcheck; Enter targ name & Inst. & Resp. Sci.; CVSO-17 ; COS; CP
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; No
vcheck; M-dwarf check complete and added to box folder?; Yes. See cvso_mstar_flare_results.xls for all M type targets.
vcheck; S/N ETC calcs done & documented?; Yes
vcheck; Field images checked & saved?; yes
vcheck; Selected ACQ strategy?; Offset TA from field main-sequence K star using PSA,MIRRORA
vcheck; Possible ACQ or Sci spoilers?; None
vcheck; Field BOT clear?; yes with explaination... BOT flags TA star as an O star due to brightness in V despite red color, but more reliable Gaia colors and Gaia distance confirm this is a K dwarf see Anders+2019 and comments on exposure
vcheck; Visual BOT check for stars not in catalog?; OK
vcheck; Orbit packing finalized?; Yes ... Do 1 c1291 FP-pos and 2 c1611 FP-POS in each of two 3-orbit visits
obtain 90.8% of requested c1611 expo time, 165%of c1291 expo time
vcheck; Buffer times optimized?; Yes
vcheck; Verify visit grouping correct; STIS visit has GROUP 3S,3C,3D WITHIN 1D
vcheck; phase constraint for ground based observations added?; yes
vcheck; BETWEENS for coordinated observations added?; Yes
vcheck; Is visit ready for int. review?; ------
Allocated COS orbits = 6

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	CVSO-17 Alt Name1: J05230470+0137148	RA: 05 23 4.6999 (80.7695829d) Dec: +01 37 14.93 (1.62081d) Equinox: J2000	Proper Motion RA: -0.331291145 mas/yr Proper Motion Dec: 0.804722866 mas/yr Parallax: 0.002146994864" Epoch of Position: 2015.5	V=16.16 SpT=M3; A_V=0.0; V=16.16; G=15.1862; I= 13.91; J=12.5; B=18.22; B=17.147	Reference Frame: ICRS

Comments: CVSO-17 : J05230470+0137148
Region: Ori OB1a
Simbad: https://simbad.u-strasbg.fr/simbad/sim-id?Ident=2MASS+J05230470+0137148&submit=submit+id
Target coordinates are from Gaia DR2.
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330
M: 0.33 ; log(dm/dt): -9.22*
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
cvso17_lya2_etc.txt
Calculation performed 2020-07-30T14:21:58, v0.4
---
tstatus; CVSO-17;P/COS approved for submission; S/ins ready for internal review; P/CP 19/08/20; S/CP 19/08/20
tcheck; APT/SIMBAD target names: ; CVSO 17;
tcheck; Target info verification status?; OK
tcheck; Coordinates & P.M. verified, epoch checked?; Yes
tcheck; Adopted SED compared to Observations?; yes, observed B & V about a factor of 5 lower than model. No u band data available. Assume accretion model is good, but overestimates stellar continuum and use stellar model fit to optical for G430L/G750L exposure times.
Category=STAR
Description=[T TAURI STAR, PRE-MAIN SEQUENCE STAR]
Extended=NO

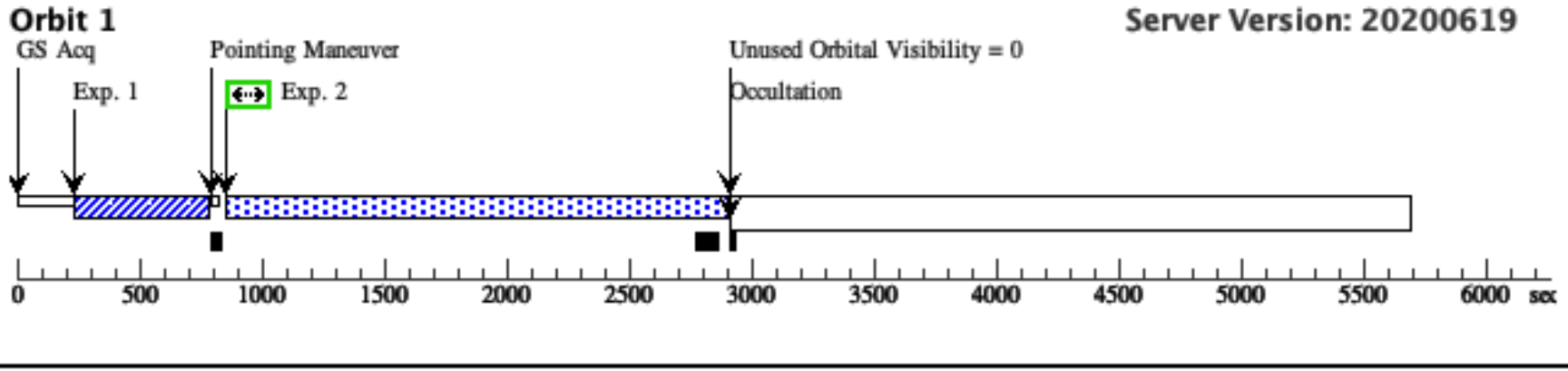
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(7)	GAIA-DR2-3222180878885500288	RA: 05 23 2.7281 (80.7613671d) Dec: +01 37 1.49 (1.61708d) Equinox: J2000	Proper Motion RA: -0.341 mas/yr Proper Motion Dec: 7.063 mas/yr Parallax: 0.0015689" Epoch of Position: 2015.5	V=15.8 G=15.3732; Bp-Rp=1.4919, B=16.793, B-V=1.099	Reference Frame: ICRS

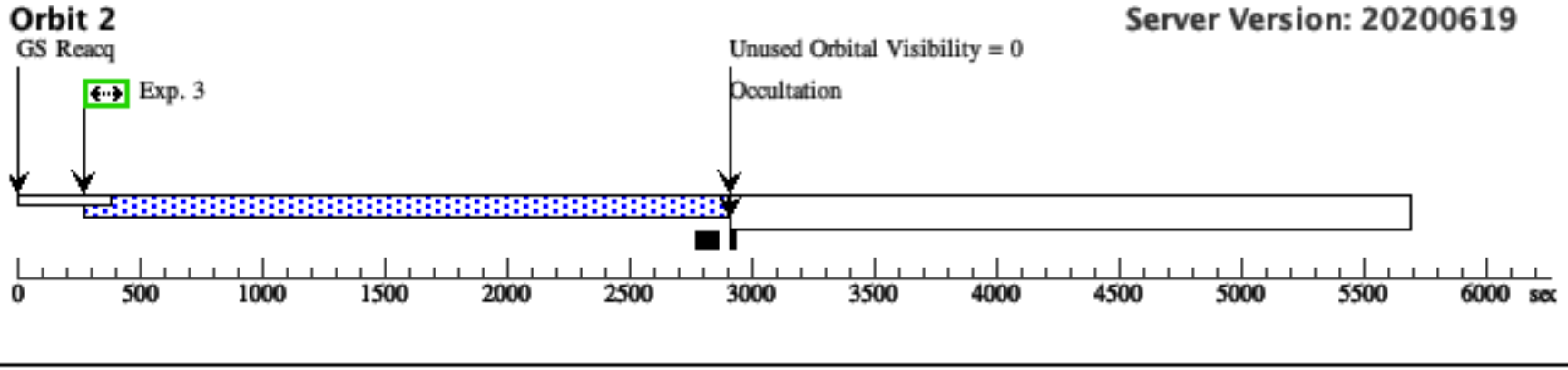
Comments: COS target offset acquisition star for CVSO 17
No U measurements available ...
PANSTARRs griz = 16.1993, 15.3087, 14.8930, 14.7176
Gaia Teff=4479K
Anders+2019 50th percentile values: AV=1.10, teff=5151, logg=4.60, [Fe/H]=-0.39
Category=EXT-STAR
Description=[K V-IV]
Extended=NO

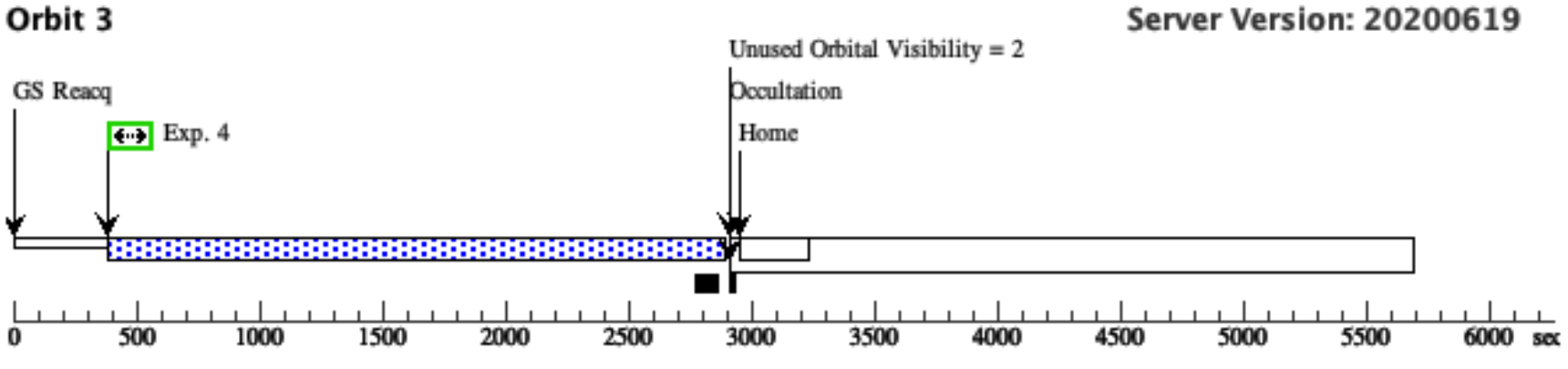
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ/Image - offset (COS.ta.1461250)	(7) GAIA-DR2-3222180878885500288	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				164 Secs (164 Secs) *[==>]*	***[1]***
	Comments: Use offset target GAIA-DR2-3222180878885500288 *Gaia color, magnitude, and parallax consistent with a lightly reddened main-sequence mid-K star at ~630 pc* *V=15.994, =15.3732; Bp-Rp=1.4919, B=16.793, B-V=1.099* *This target is cool enough that count rate is dominated by red leak, so minor uertainties in Teff or E(B-V) do not significantly change the result when normalzied to observed B mag.* *Faint calc - add E(B-V) = 0.436 from Gaia estimate COS.ta.1461257 (K5) nees 78s* *BOT flags as unsafe as it is promoted to an O star, but if we assume this is a reddened O star with E(B-V)= 1.3, and B=16.793, then B.P = 8.7 cnts/pix/sec (COS.ta.1461247)* *Gaia colors are much more reliable than GSC2*								
2	G130M/1291-4 (COS.sp.1461264)	(3) CVSO-17	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=1775; FP-POS=4			1885 Secs (1885 Secs) *[==>]*	***[1]***
	Comments: 4X BOP calculation: COS.sp.1461264, B.P dominated by geo-coronal lyman alpha *S/N calc with nominal spectrum: COS.sp.1461265* *cvso17_lya2_etc.txt; cos,fuv,g130m,c1291,psa,mjd#59305; fp-pos=None, segment=None)* *Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv* *Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330* *M*: 0.33 ; log(dm/dt): -9.22* *For exptime=1297.9 s, spectral region:* *1239.0 +- 1.0 A achieves SNR=15.0 / 6-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 391.3 cts/s/segment* *brightest pixel: 0.036 cts/s/pix at 1304.8 A* *Calculation performed 2020-07-30T14:21:58, v0.9*								
3	G160M/1611-2 (COS.sp.1461229)	(3) CVSO-17	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=2350; FP-POS=2			2460 Secs (2460 Secs) *[==>]*	***[2]***
	Comments: 4X BOP ETC COS.sp.1461229 B.P. = 0.029 *S/N calculation COS.sp.1461231* *Get 90.8% of requested exposure* *cvso17_lya2_etc.txt; cos,fuv,g160m,c1611,psa,mjd#59305; fp-pos=None, segment=None)* *Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv* *Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330* *M*: 0.33 ; log(dm/dt): -9.22* *For exptime=5417.5 s, spectral region:* *1549.0 +- 1.0 A achieves SNR=30.0 / 6-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 93.8 cts/s/segment* *brightest pixel: 0.007 cts/s/pix at 1446.2 A* *Calculation performed 2020-07-30T14:21:55, v0.9*								
4	G160M/1611-4 (COS.sp.1461229)	(3) CVSO-17	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=2350; FP-POS=4			2460 Secs (2460 Secs) *[==>]*	***[3]***
	Comments: cvso17_lya2_etc.txt; cos,fuv,g160m,c1611,psa,mjd#59305; fp-pos=None, segment=None) *Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv* *Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330* *M*: 0.33 ; log(dm/dt): -9.22* *For exptime=5417.5 s, spectral region:* *1549.0 +- 1.0 A achieves SNR=30.0 / 6-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 93.8 cts/s/segment* *brightest pixel: 0.007 cts/s/pix at 1446.2 A* *Calculation performed 2020-07-30T14:21:55, v0.9*								

Orbit Structure







Visit

Proposal 16115, CVSO-17-STIS (3S), implementation Tue Oct 27 19:00:42 GMT 2020

Diagnostic Status: No Diagnostics

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

Special Requirements: SCHED 100%; BETWEEN 19-NOV-2020:13:40:00 AND 02-DEC-2020:09:40:00; BETWEEN 03-DEC-2020:10:40:00 AND 16-DEC-2020:16:40:00; GROUP 3S,3C,3D WITHIN 1D

Comments: vstatus; 3S; CVSO-17; S/STIS approved for submission; S/CP 18/08/20 ; intrev: not started ; ?/rr DD/MM/YY
vcheck; Enter targ name & Inst. & Resp. Sci.; CVSO-17 ; STIS ; CP
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; No
vcheck; M-dwarf check complete and added to box folder?; Yes. See cvso_mstar_flare_results.xls for all M type targets.
vcheck; S/N ETC calcs done & documented?; Yes
vcheck; Field images checked & saved?; Yes
vcheck; Selected ACQ strategy?; F28X50LP, S/N=80
vcheck; Possible ACQ or Sci spoilers?; None
vcheck; Field BOT clear?; clear for G230L
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; STIS visit has GROUP 3S,3C,3D WITHIN 1D
vcheck; phase constraint for ground based observations added?; yes
vcheck; BETWEENS for coordinated observations added?; Yes
vcheck; Is visit ready for int. review?; Yes
Allocated STIS orbits = 1

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	CVSO-17 Alt Name1: J05230470+0137148	RA: 05 23 4.6999 (80.7695829d) Dec: +01 37 14.93 (1.62081d) Equinox: J2000	Proper Motion RA: -0.331291145 mas/yr Proper Motion Dec: 0.804722866 mas/yr Parallax: 0.002146994864" Epoch of Position: 2015.5	V=16.16 SpT=M3; A_V=0.0; V=16.16; G=15.1862; I= 13.91; J=12.5; B=18.22; B=17.147	Reference Frame: ICRS

Comments: CVSO-17 : J05230470+0137148
Region: Ori OB1a
Simbad: https://simbad.u-strasbg.fr/simbad/sim-id?Ident=2MASS+J05230470+0137148&submit=submit+id
Target coordinates are from Gaia DR2.
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330
M: 0.33 ; log(dm/dt): -9.22*
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
cvso17_lya2_etc.txt
Calculation performed 2020-07-30T14:21:58, v0.4
---
tstatus; CVSO-17;P/COS approved for submission; S/ins ready for internal review; P/CP 19/08/20; S/CP 19/08/20
tcheck; APT/SIMBAD target names: ; CVSO 17;
tcheck; Target info verification status?; OK
tcheck; Coordinates & P.M. verified, epoch checked?; Yes
tcheck; Adopted SED compared to Observations?; yes, observed B & V about a factor of 5 lower than model. No u band data available. Assume accretion model is good, but overestimates stellar continuum and use stellar model fit to optical for G430L/G750L exposure times.
Category=STAR
Description=[T TAURI STAR, PRE-MAIN SEQUENCE STAR]
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.1461268)	(3) CVSO-17	STIS/CCD, ACQ, F28X50LP	MIRROR				0.9 Secs (0.9 Secs) *[==>]*	***[1]***
Comments: F28X50LP, CVSO-17_sed.fits, normalized to I=13.91, S/N=80									
2	G230L/2376 (STIS.sp.1461276)	(3) CVSO-17	STIS/NUV-MAMA, TIME-TAG, 52X2	G230L 2376 A	WAVECAL=NO; BUFFER-TIME=324			647 Secs (647 Secs) *[==>]*	***[1]***
Comments: Nominal SED requires 138.8s to reach S/N=30 at peak of Mg II, so double = 277.6, STIS.sp.1461275 *4X for BOP SED gives STIS.sp.1461276 with B.P. = 2.368 cnts/pixel/s* *cvso17_lya2_etc.txt; stis,nuvmama,g230l,c2376,52x2,mjd#59305* *Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv* *Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330* *M*: 0.33 ; log(dm/dt): -9.22* *For exptime=138.8 s, spectral region:* *2800.0 +- 15.0 A achieves SNR=20.0 / 2-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 2380.9 cts/s/segment* *brightest pixel: 0.594 cts/s/pix at 2796.8 A* *Calculation performed 2020-07-30T14:21:58, v0.9*									
3	G230L/2376 WAVECAL	WAVE	STIS/NUV-MAMA, ACCUM, 52X0.1	G230L 2376 A				*[==>]*	***[1]***
4	G430L/4300 WAVECAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A				*[==>]*	***[1]***
5	G430L/4300 (STIS.sp.1463857)	(3) CVSO-17	STIS/CCD, ACCUM, 52X2	G430L 4300 A	WAVECAL=NO; CR-SPLIT=2; GAIN=4			445 Secs (445 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
Comments: Nominal SED S/N=20@4000 angstroms gives STIS.sp.1461277 requiring 171.83, so double wound need 343.6 *Instead use 3500K, Log g=3.53, norm to V=16.16, need 445 for 1X (STIS.sp.1463857)* *But observed V is only 0.15x times model, so we should really be spending 2x1000s. But we also want room to increase G230L, so will stick to this number* *cvso17_lya2_etc.txt; stis,ccd,g430l,c4300,52x2,mjd#59305* *WARNING: operating mode = ACCUM* *Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv* *Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330* *M*: 0.33 ; log(dm/dt): -9.22* *For exptime=75.6 s, n_reads=2, spectral region:* *4000.0 +- 5.0 A achieves SNR=20.0 / 2-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 37175.9 cts/s/segment* *brightest pixel: 13.869 cts/s/pix at 4560.5 A* *Calculation performed 2020-07-30T14:21:58, v0.9*									

6	G750L/7751 (3) CVSO-17 (STIS.sp.14 63859)	STIS/CCD, ACCUM, 52X2	G750L 7751 A	WAVECAL=NO; CR-SPLIT=2; GAIN=4	125 Secs (125 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***

Comments: cvso-17_sed.fits normalized to Cousins I= 13.91, STIS.sp.1461271 needs 44.2s, 2X gives 88.4s
STIS.sp.1463858 Mstar normalized to V= 16.16 needs 116s
STIS.sp.1463859 normalized to Ic=13.91 needs 123s -> adop 125s
cvso17_lya2_etc.txt; stis,ccd,g750l,c7751,52x2,mjd#59305
WARNING: operating mode = ACCUM
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330
M: 0.33 ; log(dm/dt): -9.22*
For exptime=8.5 s, n_reads=2, spectral region:
5700.0 +- 5.0 A achieves SNR=20.0 / 2-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 59042.5 cts/s/segment
brightest pixel: 87.615 cts/s/pix at 6563.9 A
Calculation performed 2020-07-30T14:21:58, v0.9

7	G750L/7751 WAVE WAVECAL	STIS/CCD, ACCUM, 52X0.1	G750L 7751 A		*[==>]*	***[1]***

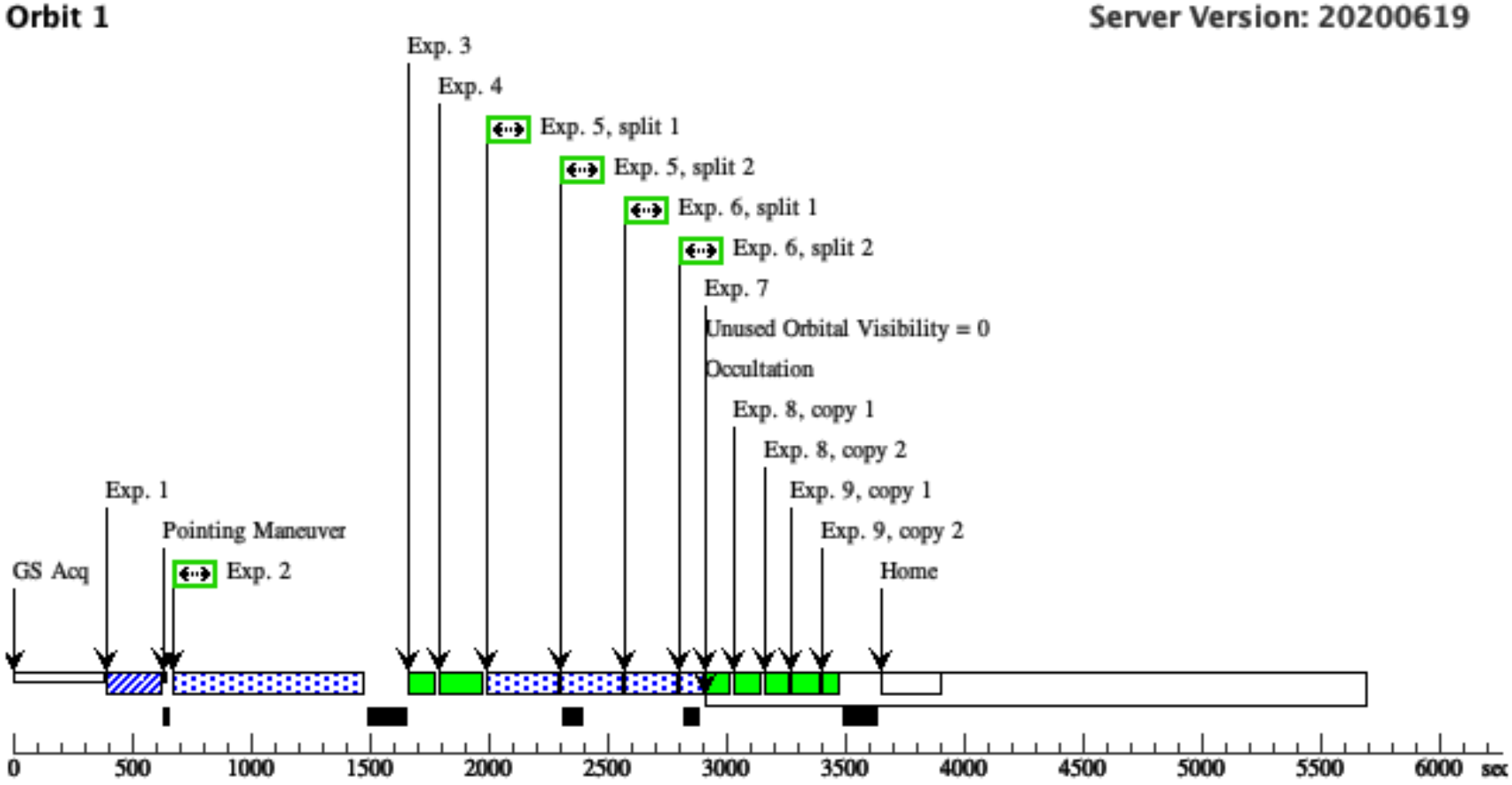
8	G750L/7751 CCDFLAT CCDFLAT 1	STIS/CCD, ACCUM, 0.3X0.09	G750L 7751 A		*[==>(Copy 1)]* *[==>(Copy 2)]*	***[1]***

Comments: cvso17_lya2_etc.txt; stis,ccd,g750l,c7751,52x2,mjd#59305
WARNING: operating mode = ACCUM
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330
M: 0.33 ; log(dm/dt): -9.22*
For exptime=8.5 s, n_reads=2, spectral region:
5700.0 +- 5.0 A achieves SNR=20.0 / 2-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 59042.5 cts/s/segment
brightest pixel: 87.615 cts/s/pix at 6563.9 A
Calculation performed 2020-07-30T14:21:58, v0.9

9	G750L/7751 CCDFLAT CCDFLAT 2	STIS/CCD, ACCUM, 52X2	G750L 7751 A		*[==>(Copy 1)]* *[==>(Copy 2)]*	***[1]***

Comments: cvso17_lya2_etc.txt; stis,ccd,g750l,c7751,52x2,mjd#59305
WARNING: operating mode = ACCUM
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330
M: 0.33 ; log(dm/dt): -9.22*
For exptime=8.5 s, n_reads=2, spectral region:
5700.0 +- 5.0 A achieves SNR=20.0 / 2-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 59042.5 cts/s/segment
brightest pixel: 87.615 cts/s/pix at 6563.9 A
Calculation performed 2020-07-30T14:21:58, v0.9

Orbit Structure



Visit

Proposal 16115, CVSO-176-COS (4C), implementation Tue Oct 27 19:00:42 GMT 2020

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; BETWEEN 19-NOV-2020:13:40:00 AND 02-DEC-2020:08:05:00; BETWEEN 03-DEC-2020:10:40:00 AND 16-DEC-2020:15:05:00

Comments: vstatus; 4C; CVSO-176; P/COS approved for submission; P/CP 18/08/20 ; internal review complete ; C/DS 16/09/20
vcheck; Enter targ name & Inst. & Resp. Sci.; cvso-176 ; COS ; CP
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; No
vcheck; M-dwarf check complete and added to box folder?; yes, see cvso_mstar_flare_results.xls for all M star targets.
Note that we adopt the impoved photometry from Briceno+2019 which has a longer baseline, improved calibration, and better consistency between bands than did earlier data that appears in SIMBAD. This new data results in a slightly fainter V mag and slightly redder color. The color is consistent with either a slightly reddeded M3 star or an unredded M4 star, so we run these two cases in addition to the conservative case of an unreddened M3 star normalized to the new observed V magnitude.
spreadsheet flare calculations produce peak local rate 2.44 at 1548.2, B.P. from source on seg B in c1611 is only 0.037 cnts/pix/s at 1548.4 angstroms, below allowed limit of 2.7 cnts/pixel/s
vcheck; S/N ETC calcs done & documented?; Yes
vcheck; Field images checked & saved?; Yes
vcheck; Selected ACQ strategy?; PSA/MIRRORB at S/N=40 (2X normal)
vcheck; Possible ACQ or Sci spoilers?; none
vcheck; Field BOT clear?; Yes with explanation - BOT flags offset star as unsafe for PSA MIRRORA, but examination of detailed photometry shows that a star with these Gaia parameters will be safe even if it is a reddened O star. See details in exposure comments
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; GROUP 4S, 4C, 4D WITHIN 1D added to STIS VISIT 4S
vcheck; phase constraint for ground based observations added?;yes
vcheck; BETWEENS for coordinated observations added?; Yes
vcheck; Is visit ready for int. review?; ------
Allocated COS orbits = 4

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	CVSO-176 Alt Name1: V609-ORI Alt Name2: J05402414-0031213	RA: 05 40 24.1547 (85.1006446d) Dec: -00 31 21.41 (-.52261d) Equinox: J2000	Proper Motion RA: 3.115496471 mas/yr Proper Motion Dec: -0.7934879440000001 mas/yr Parallax: 0.003334314609" Epoch of Position: 2015.5	V=16.091 SpT=M3; A_V=0.00; u, sdss=17.23; U=16.51; B=16.8; V=16.091; R=15.184; I=13.278; J=11.709	Reference Frame: ICRS

Comments: Briceno+2019, provides improved and longer baseline photometry finds slightly fainter VRI magnitudes than are listed in SIMBAD.
V=16.091, R=15.184, I=13.278 vs V=15.48, I=13.04 quoted in SIMBAD
This may better reflect underlying star than did previous measurements which may have been affected by accretion flux.

CVSO-176 : V609 Ori, J05402414-0031213
Region: Ori OB1b
Simbad: https://simbad.u-strasbg.fr/simbad/sim-id?Ident=2MASS+J05402414-0031213&submit=submit+id
Target coordinates are from Gaia DR2.
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 440
M: 0.35 ; log(dm/dt): -8.37*
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
cvso176_lya2_etc.txt
Calculation performed 2020-07-30T14:21:42, v0.4
---
tstatus; CVSO-176; P/COS approved for submission; S/ins ready for internal review; P/CP 19/08/20; S/CP 19/08/20
tcheck; APT/SIMBAD target names: ; CVSO 176; Haro 5-91
tcheck; Target info verification status?; Yes, Simbad calls this "variable star of Orion Type"
tcheck; Coordinates & P.M. verified, epoch checked?; done
tcheck; Adopted SED compared to Observations?; Not too bad, although observed V only ~36% of adopted SED - U/u ~65% of adopted SED
Category=STAR
Description=[T TAURI STAR, PRE-MAIN SEQUENCE STAR]
Extended=NO

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(8)	GAIA-DR2-3219230996564040704	RA: 05 40 22.3216 (85.0930067d) Dec: -00 30 20.28 (-.50563d) Equinox: J2000	Proper Motion RA: 0.581 mas/yr Proper Motion Dec: 4.663 mas/yr Parallax: 0.0006329" Epoch of Position: 2015.5	V=15.97 u, sdss=17.74; g, sdss=16.32; r, sdss=15.7; i, sdss=15.4, G=15.7188, Bp=16.1746, Rp=15.0883, Bp-Rp=1.0862	Reference Frame: ICRS

Comments: Offset COS acquisition target for CVSO-176
Color matches that of an early K star, parallax puts it at ~ 1580pc, gaia estimates Teff=4994.30
Anders+2019 makes it hotter, but a bit extincted 50th percentile values: Av=0.901, teff=6144.78, logg=4.31, Fe/H=-0.23 - adopting this predicts u,sdss=17.783, very close to observed 17.74!
Category=STAR
Description=[G V-IV]
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.1461420)	(8) GAIA-DR2-3219230996564040704	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				120 Secs (120 Secs) *[==>]*	***[1]***

Comments: Use offset star with Gaia color of an early K star
BOT promotes to an O star, but Gaia colors confirm that is red.
B.P = 1.853 cnts/pixel/s
Anders+2019 50th percentile values: Av=0.901, teff=6144.78, logg=4.31, Fe/H=-0.023 - see COS.ta.1464066 which gives S/N=40 in 29s, B.P.=2.825

Should still be safe even if this is really a reddened O star, as BP-RP =1.0862 corresponds to B-V = 0.775, so E(B-V) would be 1.068 with Vmag=15.990. In this case, COS.ta.1464535 would predict B.P.=15.4.

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
2	G130M/1291-3 (COS.sp.1461395)	(4) CVSO-176	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=1863; FP-POS=3			1973 Secs (1973 Secs) *[==>]*	***[1]***

Comments: 4X spectrum COS.sp.1461392, B.P. dominated by geo-coronal lyman alpha
nominal spectrum COS.sp.1461393

cvso176_lya2_etc.txt; cos,fuv,g130m,c1291,psa,mjd#59305; fp-pos=None, segment=None)
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 440
M: 0.35 ; log(dm/dt): -8.37*
For exptime=2005.1 s, spectral region:
1239.0 +- 1.0 A achieves SNR=15.0 / 6-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 344.6 cts/s/segment
brightest pixel: 0.018 cts/s/pix at 1214.2 A
Calculation performed 2020-07-30T14:21:42, v0.9

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
3	G160M/161 1-1 (COS.sp.1461400)	(4) CVSO-176	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=1066; FP-POS=1			1176 Secs (1176 Secs) *[==>]*	***[2]***

Comments: baseline SED COS.sp.1461397
4X BOP SED: COS.sp.1461400, B.P. = 0.037 cnts/pixel/s

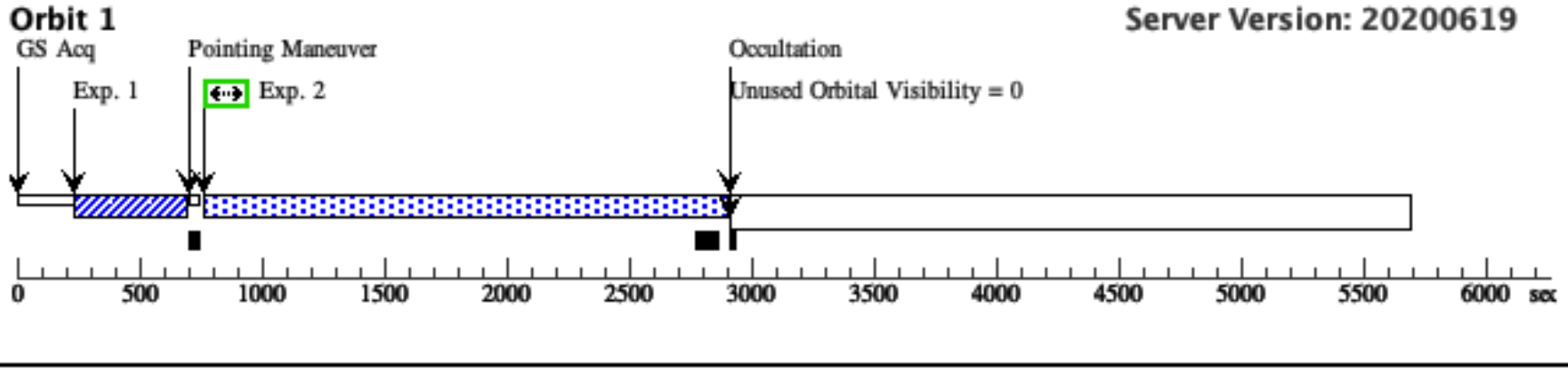
cvso176_lya2_etc.txt; cos,fuv,g160m,c1611,psa,mjd#59305; fp-pos=None, segment=None)
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 440
M: 0.35 ; log(dm/dt): -8.37*
For exptime=2412.6 s, spectral region:
1549.0 +- 1.0 A achieves SNR=30.0 / 6-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 85.2 cts/s/segment
brightest pixel: 0.009 cts/s/pix at 1548.4 A
Calculation performed 2020-07-30T14:21:40, v0.9

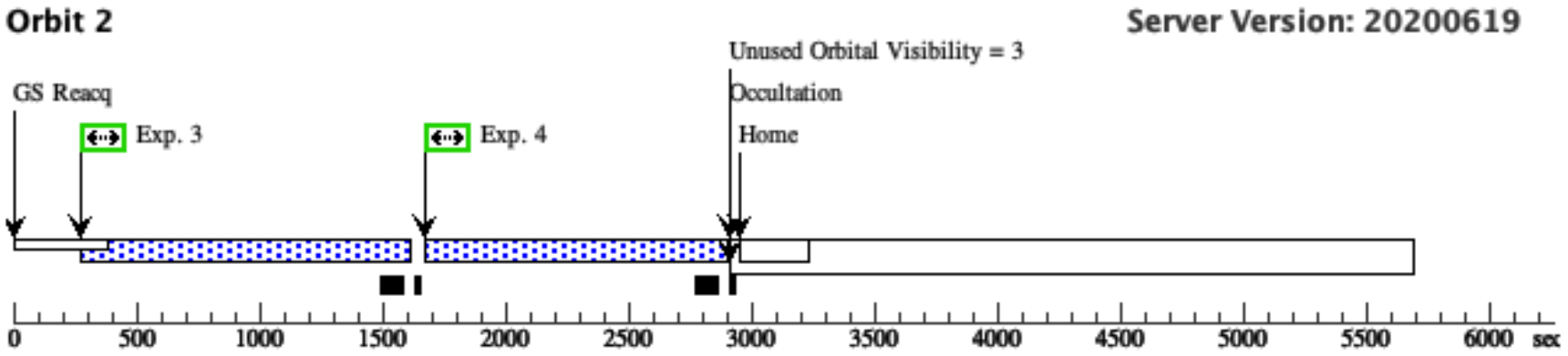
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
4	G160M/161 1-3 (COS.sp.1461400)	(4) CVSO-176	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=1066; FP-POS=3			1176 Secs (1176 Secs) *[==>]*	***[2]***

Comments: baseline SED COS.sp.1461397
4X BOP SED: COS.sp.1461400, B.P. = 0.037 cnts/pixel/s

cvso176_lya2_etc.txt; cos,fuv,g160m,c1611,psa,mjd#59305; fp-pos=None, segment=None)
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 440
M: 0.35 ; log(dm/dt): -8.37*
For exptime=2412.6 s, spectral region:
1549.0 +- 1.0 A achieves SNR=30.0 / 6-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 85.2 cts/s/segment
brightest pixel: 0.009 cts/s/pix at 1548.4 A
Calculation performed 2020-07-30T14:21:40, v0.9

Orbit Structure





Visit

Proposal 16115, CVSO-176-COS (4D), implementation Tue Oct 27 19:00:42 GMT 2020

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; BETWEEN 19-NOV-2020:13:40:00 AND 02-DEC-2020:08:05:00; BETWEEN 03-DEC-2020:10:40:00 AND 16-DEC-2020:15:05:00

Comments: vstatus; 4C; CVSO-176; P/COS approved for submission; P/CP 18/08/20 ; internal review complete ; C/DS 16/09/20
vcheck; Enter targ name & Inst. & Resp. Sci.; cvso-176 ; COS ; CP
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; No
vcheck; M-dwarf check complete and added to box folder?; Yes. See cvso_mstar_flare_results.xls for all M type targets.
vcheck; S/N ETC calcs done & documented?; Yes
vcheck; Field images checked & saved?; Yes
vcheck; Selected ACQ strategy?; PSA/MIRRORB at S/N=40 (2X normal)
vcheck; Possible ACQ or Sci spoilers?; none
vcheck; Field BOT clear?; Yes with explanation - BOT flags offset star as unsafe for PSA MIRRORA, but examination of detailed photometry shows that a star with these Gaia parameters will be safe even if it is a reddened O star. See details in exposure comments
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; GROUP 4S, 4C, 4D WITHIN 1D added to STIS VISIT 4S
vcheck; phase constraint for ground based observations added?; yes
vcheck; BETWEENS for coordinated observations added?; Yes
vcheck; Is visit ready for int. review?; ------
Allocated COS orbits = 4

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	CVSO-176 Alt Name1: V609-ORI Alt Name2: J05402414-0031213	RA: 05 40 24.1547 (85.1006446d) Dec: -00 31 21.41 (-.52261d) Equinox: J2000	Proper Motion RA: 3.115496471 mas/yr Proper Motion Dec: -0.7934879440000001 mas/yr Parallax: 0.003334314609" Epoch of Position: 2015.5	V=16.091 SpT=M3; A_V=0.00; u, sdss=17.23; U=16.51; B=16.8; V=16.091; R=15.184; I=13.278; J=11.709	Reference Frame: ICRS

Comments: Briceno+2019, provides improved and longer baseline photometry finds slightly fainter VRI magnitudes than are listed in SIMBAD.
V=16.091, R=15.184, I=13.278 vs V=15.48, I=13.04 quoted in SIMBAD
This may better reflect underlying star than did previous measurements which may have been affected by accretion flux.

CVSO-176 : V609 Ori, J05402414-0031213
Region: Ori OB1b
Simbad: https://simbad.u-strasbg.fr/simbad/sim-id?Ident=2MASS+J05402414-0031213&submit=submit+id
Target coordinates are from Gaia DR2.
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 440
M: 0.35 ; log(dm/dt): -8.37*
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
cvso176_lya2_etc.txt
Calculation performed 2020-07-30T14:21:42, v0.4
---
tstatus; CVSO-176; P/COS approved for submission; S/ins ready for internal review; P/CP 19/08/20; S/CP 19/08/20
tcheck; APT/SIMBAD target names: ; CVSO 176; Haro 5-91
tcheck; Target info verification status?; Yes, Simbad calls this "variable star of Orion Type"
tcheck; Coordinates & P.M. verified, epoch checked?; done
tcheck; Adopted SED compared to Observations?; Not too bad, although observed V only ~36% of adopted SED - U/u ~65% of adopted SED
Category=STAR
Description=[T TAURI STAR, PRE-MAIN SEQUENCE STAR]
Extended=NO

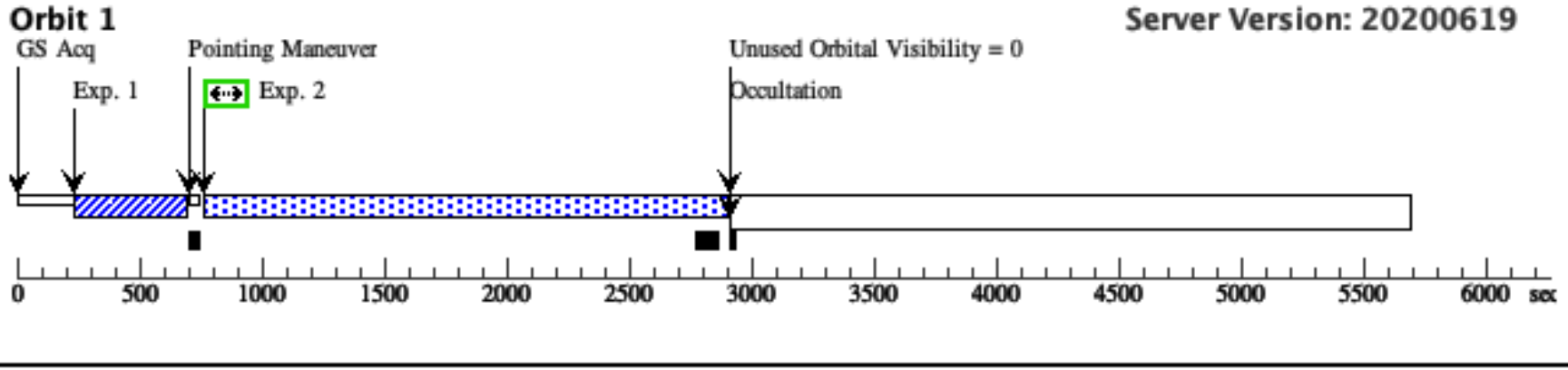
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(8)	GAIA-DR2-3219230996564040704	RA: 05 40 22.3216 (85.0930067d) Dec: -00 30 20.28 (-.50563d) Equinox: J2000	Proper Motion RA: 0.581 mas/yr Proper Motion Dec: 4.663 mas/yr Parallax: 0.0006329" Epoch of Position: 2015.5	V=15.97 u, sdss=17.74; g, sdss=16.32; r, sdss=15.7; i, sdss=15.4, G=15.7188, Bp=16.1746, Rp=15.0883, Bp-Rp=1.0862	Reference Frame: ICRS

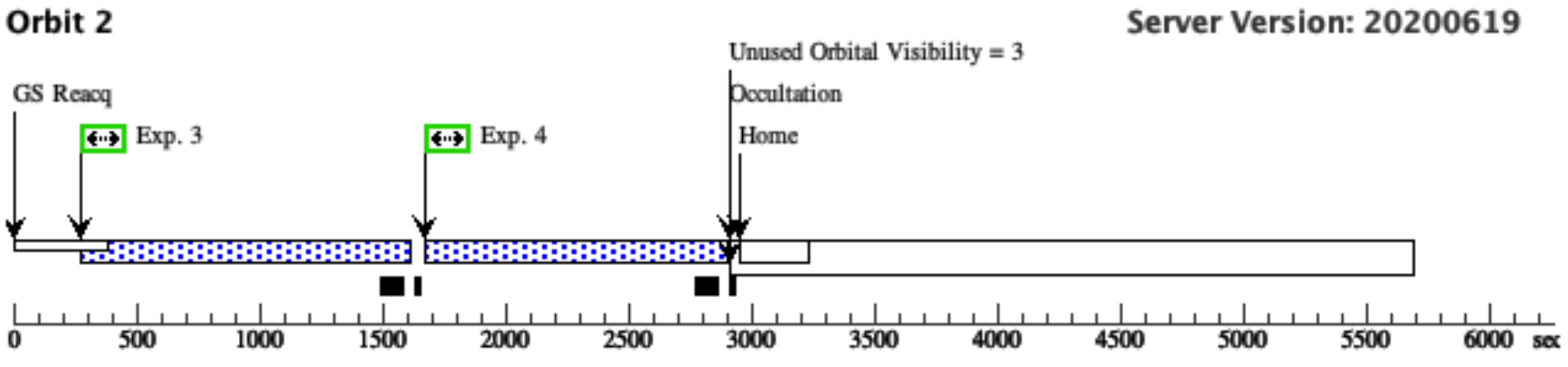
Comments: Offset COS acquisition target for CVSO-176
Color matches that of an early K star, parallax puts it at ~ 1580pc, gaia estimates Teff=4994.30
Anders+2019 makes it hotter, but a bit extincted 50th percentile values: Av=0.901, teff=6144.78, logg=4.31, Fe/H=-0.23 - adopting this predicts u,sdss=17.783, very close to observed 17.74!
Category=STAR
Description=[G V-IV]
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.1461420)	(8) GAIA-DR2-3219230996564040704	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				120 Secs (120 Secs) *[==>]*	***[1]***
	Comments: Use offset star with Gaia color of an early K star *BOT promotes to an O star, but Gaia colors show that it is really red.* *B.P = 1.853 cnts/pixel/s*								
2	G130M/1291-4 (COS.sp.1461395)	(4) CVSO-176	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=1863; FP-POS=4			1973 Secs (1973 Secs) *[==>]*	***[1]***
	Comments: 4X spectrum COS.sp.1461392, B.P. dominated by geo-coronal lyman alpha *nominal spectrum COS.sp.1461393* *cvso176_lya2_etc.txt; cos,fuv,g130m,c1291,psa,mjd#59305; fp-pos=None, segment=None)* *Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv* *Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 440* *M*: 0.35 ; log(dm/dt): -8.37* *For exptime=2005.1 s, spectral region:* *1239.0 +- 1.0 A achieves SNR=15.0 / 6-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 344.6 cts/s/segment* *brightest pixel: 0.018 cts/s/pix at 1214.2 A* *Calculation performed 2020-07-30T14:21:42, v0.9*								
3	G160M/1611-2 (COS.sp.1461400)	(4) CVSO-176	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=1066; FP-POS=2			1176 Secs (1176 Secs) *[==>]*	***[2]***
	Comments: baseline SED COS.sp.1461397 *4X BOP SED: COS.sp.1461400, B.P. = 0.037 cnts/pixel/s* *cvso176_lya2_etc.txt; cos,fuv,g160m,c1611,psa,mjd#59305; fp-pos=None, segment=None)* *Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv* *Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 440* *M*: 0.35 ; log(dm/dt): -8.37* *For exptime=2412.6 s, spectral region:* *1549.0 +- 1.0 A achieves SNR=30.0 / 6-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 85.2 cts/s/segment* *brightest pixel: 0.009 cts/s/pix at 1548.4 A* *Calculation performed 2020-07-30T14:21:40, v0.9*								
4	G160M/1611-4 (COS.sp.1461400)	(4) CVSO-176	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=1066; FP-POS=4			1176 Secs (1176 Secs) *[==>]*	***[2]***
	Comments: baseline SED COS.sp.1461397 *4X BOP SED: COS.sp.1461400, B.P. = 0.037 cnts/pixel/s* *cvso176_lya2_etc.txt; cos,fuv,g160m,c1611,psa,mjd#59305; fp-pos=None, segment=None)* *Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv* *Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 440* *M*: 0.35 ; log(dm/dt): -8.37* *For exptime=2412.6 s, spectral region:* *1549.0 +- 1.0 A achieves SNR=30.0 / 6-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 85.2 cts/s/segment* *brightest pixel: 0.009 cts/s/pix at 1548.4 A* *Calculation performed 2020-07-30T14:21:40, v0.9*								

Orbit Structure





Visit

Proposal 16115, CVSO-176-STIS (4S), implementation Tue Oct 27 19:00:42 GMT 2020

Diagnostic Status: No Diagnostics

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

Special Requirements: SCHED 100%; BETWEEN 19-NOV-2020:13:40:00 AND 02-DEC-2020:09:40:00; BETWEEN 03-DEC-2020:10:40:00 AND 16-DEC-2020:16:40:00; GROUP 4S,4C,4D WITHIN 1D

Comments: vstatus; 4S; CVSO-176; S/STIS approved for submission; S/CP 19/08/20 ; intrev: not started ; ?/rr DD/MM/YY
vcheck; Enter targ name & Inst. & Resp. Sci.; CVSO-176 ; STIS ;
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; No
vcheck; M-dwarf check complete and added to box folder?; Yes. See cvso_mstar_flare_results.xls for all M type targets.
vcheck; S/N ETC calcs done & documented?; Yes
vcheck; Field images checked & saved?; Yes
vcheck; Selected ACQ strategy?; F28X50LP, S/N=80
vcheck; Possible ACQ or Sci spoilers?; None
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
vcheck; Verify visit grouping correct; GROUP 4S,4C,4D WITHIN 1D
vcheck; phase constraint for ground based observations added? yes
vcheck; BETWEENS for coordinated observations added?; Done
vcheck; Is visit ready for int. review?; Yes
Allocated STIS orbits = 1

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	CVSO-176 Alt Name1: V609-ORI Alt Name2: J05402414-0031213	RA: 05 40 24.1547 (85.1006446d) Dec: -00 31 21.41 (-.52261d) Equinox: J2000	Proper Motion RA: 3.115496471 mas/yr Proper Motion Dec: -0.7934879440000001 mas/yr Parallax: 0.003334314609" Epoch of Position: 2015.5	V=16.091 SpT=M3; A_V=0.00; u, sdss=17.23; U=16.51; B=16.8; V=16.091; R=15.184; I=13.278; J=11.709	Reference Frame: ICRS

Comments: Briceno+2019, provides improved and longer baseline photometry finds slightly fainter VRI magnitudes than are listed in SIMBAD.
V=16.091, R=15.184, I=13.278 vs V=15.48, I=13.04 quoted in SIMBAD
This may better reflect underlying star than did previous measurements which may have been affected by accretion flux.

CVSO-176 : V609 Ori, J05402414-0031213
Region: Ori OB1b
Simbad: https://simbad.u-strasbg.fr/simbad/sim-id?Ident=2MASS+J05402414-0031213&submit=submit+id
Target coordinates are from Gaia DR2.
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 440
M: 0.35 ; log(dm/dt): -8.37*
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
cvso176_lya2_etc.txt
Calculation performed 2020-07-30T14:21:42, v0.4
---
tstatus; CVSO-176; P/COS approved for submission; S/ins ready for internal review; P/CP 19/08/20; S/CP 19/08/20
tcheck; APT/SIMBAD target names: ; CVSO 176; Haro 5-91
tcheck; Target info verification status?; Yes, Simbad calls this "variable star of Orion Type"
tcheck; Coordinates & P.M. verified, epoch checked?; done
tcheck; Adopted SED compared to Observations?; Not too bad, although observed V only ~36% of adopted SED - U/u ~65% of adopted SED
Category=STAR
Description=[T TAURI STAR, PRE-MAIN SEQUENCE STAR]
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.1461422)	(4) CVSO-176	STIS/CCD, ACQ, F28X50LP	MIRROR				0.4 Secs (0.4 Secs) *[==>]*	***[1]***

Comments: F28X50LP at S/N=80 for default SED. Observed I band flux in good agreement

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
2	G230L/2376 (STIS.sp.1461426)	(4) CVSO-176	STIS/NUV-MAMA, TIME-TAG, 52X2	G230L 2376 A	WAVECAL=NO; BUFFER-TIME=369			737 Secs (737 Secs) *[==>]*	***[1]***

Comments: S/N calc with baseline spectrum: STIS.sp.1461425
4X BOP spectrum:

cvso176_lya2_etc.txt; stis,nuvmama,g230l,c2376,52x2,mjd#59305
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 440
M: 0.35 ; log(dm/dt): -8.37*
For exptime=144.6 s, spectral region:
2800.0 +- 15.0 A achieves SNR=20.0 / 2-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 2452.2 cts/s/segment
brightest pixel: 0.570 cts/s/pix at 2790.4 A
Calculation performed 2020-07-30T14:21:42, v0.9

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
3	G230L/2376 WAVECAL	WAVE	STIS/NUV-MAMA, ACCUM, 52X0.1	G230L 2376 A				*[==>]*	***[1]***
4	G430L/4300 WAVECAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A				*[==>]*	***[1]***
5	G430L/4300 (STIS.sp.1461424)	(4) CVSO-176	STIS/CCD, ACCUM, 52X2	G430L 4300 A	WAVECAL=NO; CR-SPLIT=2; GAIN=4			414 Secs (414 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***

Comments: pessemistic M2.5V (Teff=3500; Av=0.657) spectrum V=16.091 with dust needs 707s STIS.sp.1463866
unreddend M2.5V V=16.091 needs 416s STIS.sp.1463867 for 1X (S/N=20 at 4000)
Scaled accretion spectrum nees 207s, so 2X gives 414s which is close to 1X for stellar spectrum, so adopt this

cvso176_lya2_etc.txt; stis,ccd,g430l,c4300,52x2,mjd#59305
WARNING: operating mode = ACCUM
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 440
M: 0.35 ; log(dm/dt): -8.37*
For exptime=84.5 s, n_reads=2, spectral region:
4000.0 +- 5.0 A achieves SNR=20.0 / 2-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 36557.1 cts/s/segment
brightest pixel: 11.824 cts/s/pix at 4871.0 A
Calculation performed 2020-07-30T14:21:42, v0.9

6	G750L/7751 (4) CVSO-176 (STIS.sp.14 61423)	STIS/CCD, ACCUM, 52X2	G750L 7751 A	WAVECAL=NO; CR-SPLIT=2; GAIN=4	68.6 Secs (68.6 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***

Comments: default SED needs 24.1 s to reach S/N=20 at 5700 STIS.sp.1461423 so adopt 2x to allow for variability
M2.5 star normalized to Ic=13.278 needs 68.5s (STIS.sp.1463869)

cvso176_lya2_etc.txt; stis,ccd,g750l,c7751,52x2,mjd#59305
WARNING: operating mode = ACCUM
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 440
M: 0.35 ; log(dm/dt): -8.37*
For exptime=10.2 s, n_reads=2, spectral region:
5700.0 +- 5.0 A achieves SNR=20.0 / 2-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 55391.9 cts/s/segment
brightest pixel: 77.084 cts/s/pix at 6563.9 A
Calculation performed 2020-07-30T14:21:42, v0.9

7	G750L/7751 WAVE WAVECAL	STIS/CCD, ACCUM, 52X0.1	G750L 7751 A		*[==>]*	***[1]***

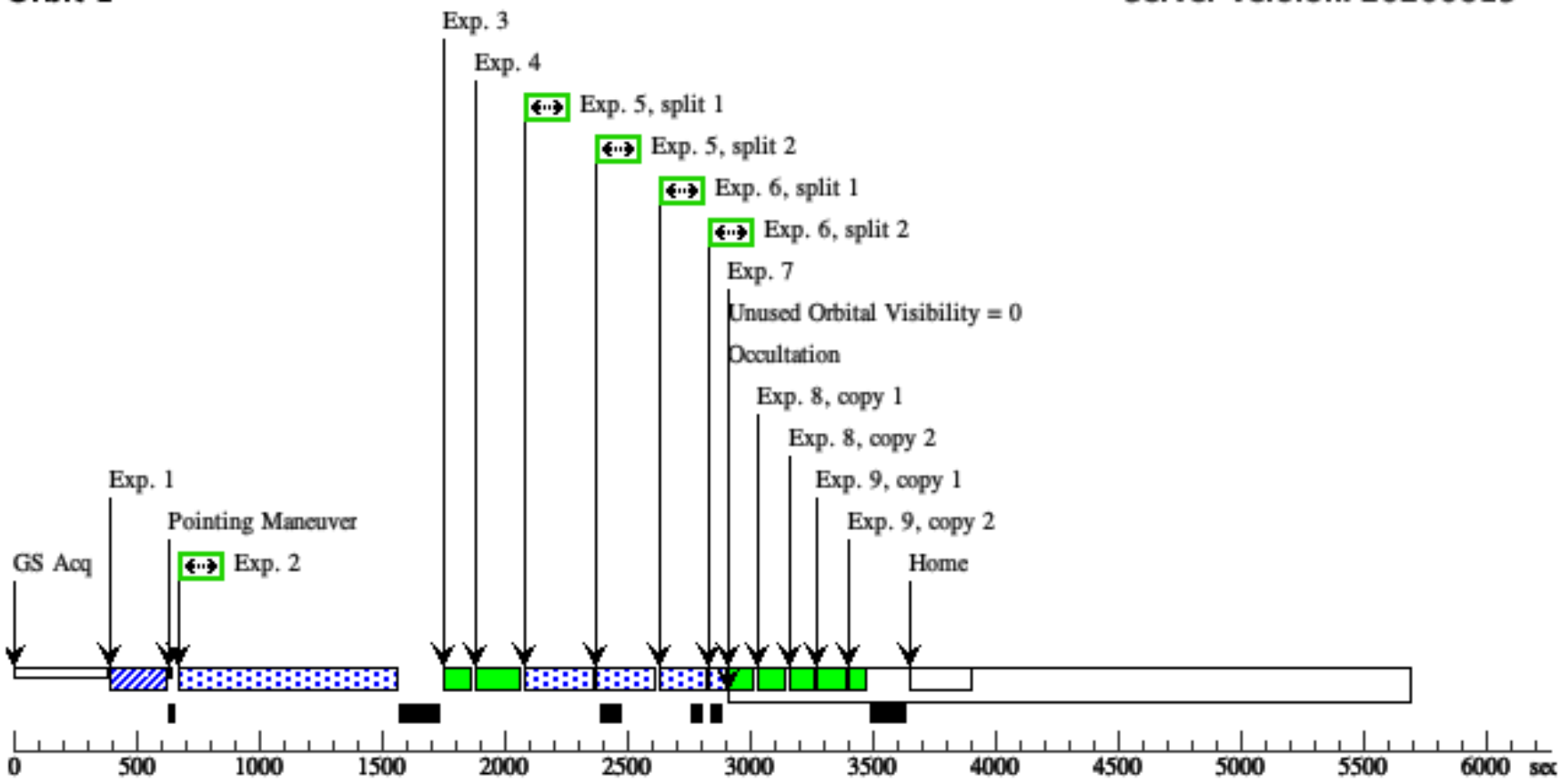
8	G750L/7751 CCDFLAT CCDFLAT 1	STIS/CCD, ACCUM, 0.3X0.09	G750L 7751 A		*[==>(Copy 1)]* *[==>(Copy 2)]*	***[1]***

Comments: cvso176_lya2_etc.txt; stis,ccd,g750l,c7751,52x2,mjd#59305
WARNING: operating mode = ACCUM
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 440
M: 0.35 ; log(dm/dt): -8.37*
For exptime=10.2 s, n_reads=2, spectral region:
5700.0 +- 5.0 A achieves SNR=20.0 / 2-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 55391.9 cts/s/segment
brightest pixel: 77.084 cts/s/pix at 6563.9 A
Calculation performed 2020-07-30T14:21:42, v0.9

9	G750L/7751 CCDFLAT CCDFLAT 2	STIS/CCD, ACCUM, 52X2	G750L 7751 A		*[==>(Copy 1)]* *[==>(Copy 2)]*	***[1]***

Comments: cvso176_lya2_etc.txt; stis,ccd,g750l,c7751,52x2,mjd#59305
WARNING: operating mode = ACCUM
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 440
M: 0.35 ; log(dm/dt): -8.37*
For exptime=10.2 s, n_reads=2, spectral region:
5700.0 +- 5.0 A achieves SNR=20.0 / 2-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 55391.9 cts/s/segment
brightest pixel: 77.084 cts/s/pix at 6563.9 A
Calculation performed 2020-07-30T14:21:42, v0.9

Orbit Structure



Visit

Proposal 16115, CVSO-36-COS (5C), implementation Tue Oct 27 19:00:42 GMT 2020

Diagnostic Status: No Diagnostics

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; BETWEEN 19-NOV-2020:13:40:00 AND 02-DEC-2020:06:30:00; BETWEEN 03-DEC-2020:10:40:00 AND 16-DEC-2020:13:30:00

Comments: vstatus; 5C; CVSO-36; P/COS approved for submission; P/CP 19/08/20 ; internal review complete ; C/DS 16/09/20
vcheck; Enter targ name & Inst. & Resp. Sci.; CVSO-36 ; COS ; CP
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; No
vcheck; M-dwarf check complete and added to box folder?; yes, see cvso_mstar_flare_results.xls for all M type targets ...
spreadsheet flare calculations produce peak local rate 2.52 at 1548.2, B.P. from source on seg B in c1611 is only 0.58 cnts/pix/s at 1548.42 angstroms, below allowed limit of 2.7 cnts/pixel/s
vcheck; S/N ETC calcs done & documented?; Yes
vcheck; Field images checked & saved?; Yes
vcheck; Selected ACQ strategy?; Offset TA with PSA/MIRRORA on Gaia star about 1.5' from target.
vcheck; Possible ACQ or Sci spoilers?; None - fainter 3.3" companion should be outside PSA aperture
vcheck; Field BOT clear?; Yes with explanation ...
ACQ target is flagged by BOT because it is promoted to an unreddened O star, but have good photometry which shows that it is really a main-sequence G star, and it can easily be shown that a reddened O star with the Gaia BP-RP color of this target would easily be safe to observe
vcheck; Visual BOT check for stars not in catalog?; 3.3" companion is fainter and redder than target
vcheck; Orbit packing finalized?; Yes ...
Obtained 121% of requested c1611 and 100% of c1291
vcheck; Buffer times optimized?; Yes
vcheck; Verify visit grouping correct; Group 5S, 5C WITHIN 1 DAY
vcheck; phase constraint for ground based observations added?; yes
vcheck; BETWEENS for coordinated observations added?; Yes
vcheck; Is visit ready for int. review?; ------
Allocated COS orbits = 3

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	CVSO-36 Alt Name1: J05255035+0149370	RA: 05 25 50.3701 (81.4598754d) Dec: +01 49 37.05 (1.82696d) Equinox: J2000	Proper Motion RA: 1.384848061 mas/yr Proper Motion Dec: -0.531554107 mas/yr Parallax: 0.0029246546010000003" Epoch of Position: 2015.5	V=16.07 SpT=M3; A_V=0.00; V=16.1; I=13.04; J=12.4	Reference Frame: ICRS

Comments: CVSO-36 : J05255035+0149370
Region: Ori OB1a
Simbad: https://simbad.u-strasbg.fr/simbad/sim-id?Ident=2MASS+J05255035+0149370&submit=submit+id
Target coordinates are from Gaia DR2.
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330
M: 0.34 ; log(dm/dt): -8.44*
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
cvso36_lya2_etc.txt
Calculation performed 2020-07-30T14:21:07, v0.4
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tstatus; CVSO-36; P/COS approved for submission; S/ins ready for internal review; P/CP 19/08/20; S/CP 19/08/20
tcheck; APT/SIMBAD target names: ; [HCB2007] OB1a 121 or Gaia DR2 3222180814461726976
tcheck; Target info verification status?; OK ...
Fainter red companion Gaia-DR2-3222268122555927936 at distance of 3.309" at PA=289.2, G=17.9093, BP=1.965, RP=16.64, similar parallax and PM, so may be physically assocated?
tcheck; Coordinates & P.M. verified, epoch checked?; yes
tcheck; Adopted SED compared to Observations?; Observed optical colors are 3-6x fainter than scaled model. Assume that scaled model predicts the accretion flux correctly, but not the photospere. Get good agreement in VRI if we normalize an ~ M3 star to observed V color, so use this to estimate G430L/G750L exposure times rather than scaled spectrum
Category=STAR
Description=[T TAURI STAR, PRE-MAIN SEQUENCE STAR]
Extended=NO

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(10)	GAIA-DR2-3222268156917169536	RA: 05 25 44.4297 (81.4351238d) Dec: +01 49 33.70 (1.82603d) Equinox: J2000	Proper Motion RA: 1.944 mas/yr Proper Motion Dec: 1.593 mas/yr Parallax: 0.0004031" Epoch of Position: 2015.5	V=16.05 B=16.74; G=15.889; BP=16.2333; RP=15.3941; g'=16.2376; r'=15.8833; i'=15.7349; z'=15.6990	Reference Frame: ICRS

Comments: Offset star for CVSO-36; 1.4851" away from target, but appears to have photometrically well constrained SED.
Anders+2019 estimates Av=0.292; Teff=6097; logg=4.268; Fe/H=-0.20 from Gaia data + other photometry
Should re-check if we can find a U band flux for this one.
Category=STAR
Description=[G V-IV]
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.1464516)	(10) GAIA-DR2-3222268156917169536	COS/NUV, ACQ/IMAGE, PSA	MIRRORA				58 Secs (58 Secs) *[==>]*	 ***[1]***

Comments: Alternate ACQ Star
Offset star for CVSO-36
Anders+2019 estimates Av=0.292; Teff=6097; logg=4.268; Fe/H=-0.20 based on Gaia data + other available photometry
Estimate S/N=40 in 58s (would be useful if we had a u mag to check).
Expect about u' = 17.58 abmag or Johnson U = 16.75 Vegamag if our adopted SED is correct.

Would be easily safe if even it is really a reddened O star of the same BP-RP color.
BP-RP of 0.8392 translates to about B-V = 0.60 or for an O3 star E(B-V)=0.892 with observed V about 16.05. COS.ta.1464518 shows a peak local rate of only 26 cnts/pixel/s, so safe.

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
2	G160M/1611 (COS.sp.1461604)	(5) CVSO-36	COS/FUV, TIME-TAG, PSA	G160M 1611 A	BUFFER-TIME=790; FP-POS=ALL			900 Secs (3722 Secs) *[==>961.0 Secs (Split 1)]* *[==>961.0 Secs (Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	 ***[1]*** ***[2]***

Comments: 4X calc for BOP: COS.sp.1461604, PB=0.058
nominal calc for S/N COS.sp.1461603

cvso36_lya2_etc.txt; cos,fuv,g160m,c1611,psa,mjd#59305; fp-pos=None, segment=None)
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330
M: 0.34 ; log(dm/dt): -8.44*
For exptime=1533.3 s, spectral region:
1549.0 +- 1.0 A achieves SNR=30.0 / 6-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 91.9 cts/s/segment
brightest pixel: 0.014 cts/s/pix at 1548.4 A
Calculation performed 2020-07-30T14:21:04, v0.9

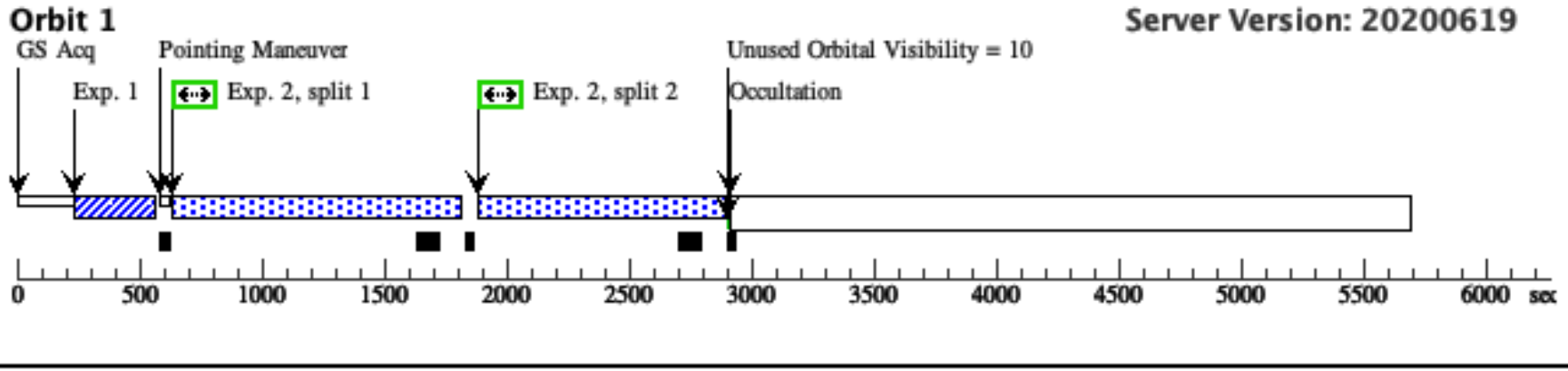
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
3	G130M/1291-3 (COS.sp.1461601)	(5) CVSO-36	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=908; FP-POS=3			310 Secs (310 Secs) *[==>]*	 ***[2]***

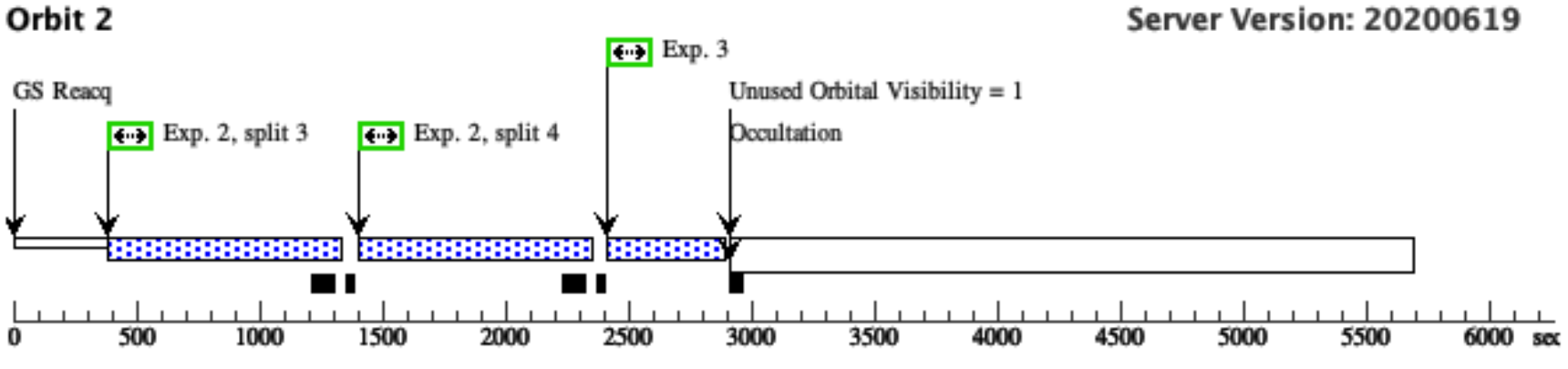
Comments: 4X calcuation for BOP COS.sp.1461601
Nominal calculation for S/N COS.sp.1461602

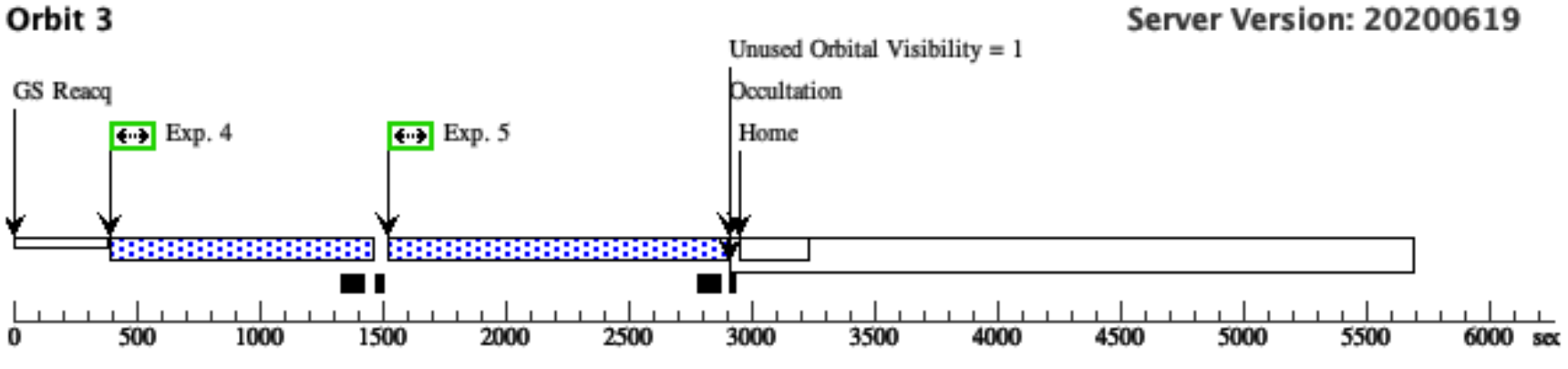
cvso36_lya2_etc.txt; cos,fuv,g130m,c1291,psa,mjd#59305; fp-pos=None, segment=None)
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330
M: 0.34 ; log(dm/dt): -8.44*
For exptime=1322.1 s, spectral region:
1239.0 +- 1.0 A achieves SNR=15.0 / 6-pix-resel
A factor of 2.0 has been applied to the exptime in each exposure.
global countrate (brightest segment): 370.4 cts/s/segment
brightest pixel: 0.026 cts/s/pix at 1214.2 A
Calculation performed 2020-07-30T14:21:06, v0.9

	4	G130M/1291 1-3 (COS.sp.1466 1601)	(5) CVSO-36	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=908; FP-POS=3	1018 Secs (1018 Secs)	
							[==>]	***[3]***
		Comments: cvso36_lya2_etc.txt; cos,fuv,g130m,c1291,psa,mjd#59305; fp-pos=None, segment=None) *Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv* *Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330* *M*: 0.34 ; log(dm/dt): -8.44* *For exptime=1322.1 s, spectral region:* *1239.0 +- 1.0 A achieves SNR=15.0 / 6-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 370.4 cts/s/segment* *brightest pixel: 0.026 cts/s/pix at 1214.2 A* *Calculation performed 2020-07-30T14:21:06, v0.9*							
	5	G130M/1291 1-4 (COS.sp.1466 1601)	(5) CVSO-36	COS/FUV, TIME-TAG, PSA	G130M 1291 A	BUFFER-TIME=1228; FP-POS=4	1328 Secs (1328 Secs)	
							[==>]	***[3]***
		Comments: cvso36_lya2_etc.txt; cos,fuv,g130m,c1291,psa,mjd#59305; fp-pos=None, segment=None) *Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv* *Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330* *M*: 0.34 ; log(dm/dt): -8.44* *For exptime=1322.1 s, spectral region:* *1239.0 +- 1.0 A achieves SNR=15.0 / 6-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 370.4 cts/s/segment* *brightest pixel: 0.026 cts/s/pix at 1214.2 A* *Calculation performed 2020-07-30T14:21:06, v0.9*							

Orbit Structure







Visit

Proposal 16115, CVSO-36-STIS (5S), implementation Tue Oct 27 19:00:42 GMT 2020

Diagnostic Status: No Diagnostics

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

Special Requirements: SCHED 100%; ORIENT 334.45D TO 334.45 D; BETWEEN 19-NOV-2020:13:40:00 AND 02-DEC-2020:09:40:00; BETWEEN 03-DEC-2020:10:40:00 AND 16-DEC-2020:16:40:00; GROUP 5S,5C WITHIN 1D

Comments: vstatus; 5S; CVSO-36; S/STIS approved for submission; S/CP 19/08/20 ; intrev: not started ; ?/rr DD/MM/YY
vcheck; Enter targ name & Inst. & Resp. Sci.; CVSO-36 ; STIS ; CP
vcheck; ETC numbers entered in APT?; Yes
vcheck; Any screening violations?; No
vcheck; M-dwarf check complete and added to box folder?; yes, see cvso_mstar_flare_results.xls for all M type targets ...
vcheck; S/N ETC calcs done & documented?; Yes
vcheck; Field images checked & saved?; Yes
vcheck; Selected ACQ strategy?; F28X50LP, S/N=80
vcheck; Possible ACQ or Sci spoilers?; None - close companion is displaced 3" along slit
vcheck; Field BOT clear?; G230L clear - unknowns with CCD
vcheck; Visual BOT check for stars not in catalog?; Good, close companion not in GSC2 is fainter and redder than target
vcheck; Orbit packing finalized?; Yes
vcheck; Buffer times optimized?;Yes
vcheck; Verify visit grouping correct; Group 5S,5C WITHIN 1D
vcheck; phase constraint for ground based observations added?; yes
vcheck; BETWEENS for coordinated observations added?;Done
vcheck; Is visit ready for int. review?; Yes
Allocated STIS orbits = 1

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	CVSO-36	RA: 05 25 50.3701 (81.4598754d)	Proper Motion RA: 1.384848061 mas/yr	V=16.07	Reference Frame: ICRS
	Alt Name1: J05255035+0149370	Dec: +01 49 37.05 (1.82696d)	Proper Motion Dec: -0.531554107 mas/yr	SpT=M3; A_V=0.00; V=16.1; I =13.04; J=12.4	
		Equinox: J2000	Parallax: 0.0029246546010000003"		
			Epoch of Position: 2015.5		

Comments: CVSO-36 : J05255035+0149370
Region: Ori OB1a
Simbad: https://simbad.u-strasbg.fr/simbad/sim-id?Ident=2MASS+J05255035+0149370&submit=submit+id
Target coordinates are from Gaia DR2.
Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330
M: 0.34 ; log(dm/dt): -8.44*
Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv
cvso36_lya2_etc.txt
Calculation performed 2020-07-30T14:21:07, v0.4
---
tstatus; CVSO-36; P/COS approved for submission; S/ins ready for internal review; P/CP 19/08/20; S/CP 19/08/20
tcheck; APT/SIMBAD target names: ; [HCB2007] OB1a 121 or Gaia DR2 3222180814461726976
tcheck; Target info verification status?; OK ...
Fainter red companion Gaia-DR2-3222268122555927936 at distance of 3.309" at PA=289.2, G=17.9093, BP=1.965, RP=16.64, similar parallax and PM, so may be physically assocated?
tcheck; Coordinates & P.M. verified, epoch checked?; yes
tcheck; Adopted SED compared to Observations?; Observed optical colors are 3-6x fainter than scaled model. Assume that scaled model predicts the accretion flux correctly, but not the photospere. Get good agreement in VRI if we normalize an ~ M3 star to observed V color, so use this to estimate G430L/G750L exposure times rather than scaled spectrum
Category=STAR
Description=[T TAURI STAR, PRE-MAIN SEQUENCE STAR]
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.1461610)	(5) CVSO-36	STIS/CCD, ACQ, F28X50LP	MIRROR				0.8 Secs (0.8 Secs) *[==>]*	***[1]***
Comments: Normalize default SED to observed I=13.278 and calculate time for S/N=80									
2	G230L/2376 (STIS.sp.1461617)	(5) CVSO-36	STIS/NUV-MAMA, TIME-TAG, 52X2	G230L 2376 A	WAVECAL=NO; BUFFER-TIME=361			721 Secs (721 Secs) *[==>]*	***[1]***
Comments: cvso36_lya2_etc.txt; stis,nuvmama,g230l,c2376,52x2,mjd#59305 *Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv* *Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330* *M*: 0.34 ; log(dm/dt): -8.44* *For exptime=91.1 s, spectral region:* *2800.0 +- 15.0 A achieves SNR=20.0 / 2-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 2526.0 cts/s/segment* *brightest pixel: 0.898 cts/s/pix at 2790.4 A* *Calculation performed 2020-07-30T14:21:07, v0.9*									
3	G230L/2376 WAVECAL	WAVE	STIS/NUV-MAMA, ACCUM, 52X0.1	G230L 2376 A				*[==>]*	***[1]***
4	G430L/4300 WAVECAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A				*[==>]*	***[1]***
5	G430L/4300 (STIS.sp.1461614)	(5) CVSO-36	STIS/CCD, ACCUM, 52X2	G430L 4300 A	WAVECAL=NO; CR-SPLIT=2; GAIN=4			401.2 Secs (401.2 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
Comments: Normalize default SED below to V=16.06 to estimate 888s exposure for S/N=20 at 4000. STIS.sp.1461612 *nominal scaled SED STIS.sp.1461614 gives 127.3s or 2X = 254.6* *M2.5 star normalized to V=16.05 gives 401.2s STIS.sp.1463871* *cvso36_lya2_etc.txt; stis,ccd,g430l,c4300,52x2,mjd#59305* *WARNING: operating mode = ACCUM* *Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv* *Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330* *M*: 0.34 ; log(dm/dt): -8.44* *For exptime=51.3 s, n_reads=2, spectral region:* *4000.0 +- 5.0 A achieves SNR=20.0 / 2-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 41293.4 cts/s/segment* *brightest pixel: 19.101 cts/s/pix at 4871.0 A* *Calculation performed 2020-07-30T14:21:07, v0.9*									
6	G750L/7751 (STIS.sp.146387)	(5) CVSO-36	STIS/CCD, ACCUM, 52X2	G750L 7751 A	WAVECAL=NO; CR-SPLIT=2; GAIN=4			94.6 Secs (94.6 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
Comments: Normalize default SED below to I=13.272 to estimate 31.1s exposure for S/N=20 at 5700A, STIS.sp.146387. Double this for final adopted time. *M2.5 star normalized to Rc = 14.988 needs 94.6 s (STIS.sp.1463872)* *cvso36_lya2_etc.txt; stis,ccd,g750l,c7751,52x2,mjd#59305* *WARNING: operating mode = ACCUM* *Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv* *Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330* *M*: 0.34 ; log(dm/dt): -8.44* *For exptime=6.3 s, n_reads=2, spectral region:* *5700.0 +- 5.0 A achieves SNR=20.0 / 2-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 72468.2 cts/s/segment* *brightest pixel: 127.718 cts/s/pix at 6563.9 A* *Calculation performed 2020-07-30T14:21:07, v0.9*									

	7	G750L/7751 WAVE WAVECAL	STIS/CCD, ACCUM, 52X0.1	G750L 7751 A	*[==>]*	***[1]***
	8	G750L/7751 CCDFLAT CCDFLAT 1	STIS/CCD, ACCUM, 0.3X0.09	G750L 7751 A	*[==>(Copy 1)]* *[==>(Copy 2)]*	***[1]***
		Comments: cvso36_lya2_etc.txt; stis,ccd,g750l,c7751,52x2,mjd#59305 *WARNING: operating mode = ACCUM* *Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv* *Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330* *M*: 0.34 ; log(dm/dt): -8.44* *For exptime=6.3 s, n_reads=2, spectral region:* *5700.0 +- 5.0 A achieves SNR=20.0 / 2-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 72468.2 cts/s/segment* *brightest pixel: 127.718 cts/s/pix at 6563.9 A* *Calculation performed 2020-07-30T14:21:07, v0.9*				
	9	G750L/7751 CCDFLAT CCDFLAT 2	STIS/CCD, ACCUM, 52X2	G750L 7751 A	*[==>(Copy 1)]* *[==>(Copy 2)]*	***[1]***
		Comments: cvso36_lya2_etc.txt; stis,ccd,g750l,c7751,52x2,mjd#59305 *WARNING: operating mode = ACCUM* *Input file: combined_todo_survey_tess_sort_v2_Gaia_J_CP_edit.csv* *Spectral type: M3 ; A_V: 0.0 ; Distance (pc): 330* *M*: 0.34 ; log(dm/dt): -8.44* *For exptime=6.3 s, n_reads=2, spectral region:* *5700.0 +- 5.0 A achieves SNR=20.0 / 2-pix-resel* *A factor of 2.0 has been applied to the exptime in each exposure.* *global countrate (brightest segment): 72468.2 cts/s/segment* *brightest pixel: 127.718 cts/s/pix at 6563.9 A* *Calculation performed 2020-07-30T14:21:07, v0.9*				

Orbit Structure