17463 - Evolution of the Obscuring Outflow in the Active Galaxy Mrk 817

Cycle: 31, Proposal Category: GO

(UV Initiative)

(Availability Mode: AVAILABLE)

INVESTIGATORS

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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) MRK-817	COS/FUV COS/NUV	1	17-Apr-2024 08:00:22.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
02	(1) MRK-817	COS/FUV COS/NUV	1	17-Apr-2024 08:00:23.0	yes
03	(1) MRK-817	COS/FUV COS/NUV	1	17-Apr-2024 08:00:24.0	yes
04	(1) MRK-817	COS/FUV COS/NUV	1	17-Apr-2024 08:00:25.0	yes
05	(1) MRK-817	COS/FUV COS/NUV	1	17-Apr-2024 08:00:26.0	yes
06	(1) MRK-817 NONE	COS/FUV COS/NUV STIS STIS/CCD STIS/NUV-MAMA	4	17-Apr-2024 08:00:29.0	yes
07	(1) MRK-817	COS/FUV COS/NUV	1	17-Apr-2024 08:00:30.0	yes

10 Total Orbits Used

ABSTRACT

The intensive multi-wavelength campaign to monitor the active galaxy Mrk 817 with HST, Swift, and NICER is now the longest, most intensive probe of an AGN's broad emission line region, the continuum emitted by its accretion disk, and its evolving, powerful X-ray and UV-absorbing outflow. Understanding the structure and kinematics of the gas surrounding supermassive black holes is crucial for understanding accretion, black-hole growth and associated feedback governing host-galaxy evolution. The BLR of Mrk 817 is dominated by virial motions, and its obscuring outflow plays a significant role in regulating the ionizing flux reaching the BLR gas. Continued monitoring of Mrk 817 in X-ray, UV, and optical with Swift (2 years, every other day), NICER (2 years, every other day), and ground-based observatories is still ongoing (private communication). To take advantage of these multi-wavelength programs, we propose to continue observing Mrk 817 with COS, with a cadence of one orbit per month in Cycle 31 through April 2024, the end of the current Swift monitoring program. Our primary science goal is to monitor the continuing evolution of the obscuring outflow, which has been dissipating over the past several months as shown by Swift, NICER, and HST spectra. Observing the moment that the obscurer has dissipated completely and how the BLR reacts to this clearing would be a unique moment in the life of an AGN never seen before.

We also propose a triggered observation to obtain a comprehensive broad-band spectrum of Mrk 817's accretion disk and broad emission-lines from the Lyman limit to 1 micrometer once Swift, NICER, and HST have confirmed that the obscuration has dissipated.

OBSERVING DESCRIPTION

We will observe the Seyfert 1 galaxy Mrk 817 monthly to monitor changes in its various ionized outflows and emission-lines. Our individual observations will be the same as those used in the HST reverberation mapping campaign in 2020-2022 (PID 16196) as described in Homayouni et al. (2023) and the ongoing Cycle 30 program 17105. Since it is near the ecliptic pole, Mrk 817 is continuously visible to HST throughout the year. It has a minimum visibility of 48 m for science exposures, allowing

for the exposure times below after accounting for instrument overheads. Our monthly cadence will sample the far-UV spectrum over the 1070-1750 A wavelength

range with COS at Lifetime Position 4 (LP4). We will use G130M/1222 with four 60 s exposures at all four focal-plane (FP-POS) positions, G160M/1533 with exposures of 175 s and 180 s at FP-POS 1 and 2, and G160M/1577 with two 195 s exposures at FP-POS 3 and 4. To obtain adequate S/N in absorption-line troughs and the emission-line profiles, we require S/N~10 in the continuum per resolution element. For programs 16196 and 17105, the S/N in the continuum at 1180 A ranged from 9 to 15 over the full range of brightness in Mrk 817, which was from 4.4e-14 to 14e-14 erg/sec/cm2/A. Based on the COS Instrument Science Report 2021-02 (Sankrit & Rowlands 2021), COS sensitivity in both gratings is declining by only ~1% per year, so we expect to obtain similar S/N in similar exposure times in Cycle 31. Our planned monthly observations will monitor changes in absorption and emission line strengths over the full cycle of the coordinated Swift, NICER, and ground-based observations which continue through April 2024. Our current program will not do reverberation mapping, but will place the broad line emission and strength of the obscuring outflow in the context provided by the more extensive Swift and NICER monitoring programs.

Data Quality Requirements: Spectral Coverage, Resolution, and Signal-to-Noise Ratios:

For HST/COS, obtaining suitable data (in terms of S/N and spectral resolution) in a single orbit on a bright target is not a challenge. We will use the same instrumental setup as in GO-16196, which used the G130M/1222 setting plus G160M/1533 and G160M/1577 to observe the 1100-1750 A wavelength range in a single orbit covering all the emission and absorption features of interest at once (Ly alpha, NV, Si IV, CIV, and He II in emission; P V, C III*, Ly alpha, N V, Si IV, and C IV in absorption). As described in our proposal, minimzing overheads to fit all required exposures into a single orbit and for compatibility with the observations in GO-16196, we request that all COS observations be done at Lifetime Position 4. To obtain adequate S/N in absorption-line troughs and the emission-line profiles, we require S/N~10 in the continuum per resolution element. For programs 16196 and 17105, the S/N in the continuum at 1180 A ranged from 9 to 15 over the full range of brightness in Mrk 817, which was from

4.4e-14 to 14e-14 erg/sec/cm2/A, with variations on timescales of days to weeks. For this proposal, we base our ETC simulations (v30.2) on the HST spectra from STORM 2, for which the median flux at 1390 A in the FUV is F(1390A) = 7.3e-14 erg/s/cm2/A. Mrk 817 is a bright AGN, so imaging target acquisitions with either MIRRORA or MIRRORB can result in unacceptably high count rates. However, spectroscopic target acquisitions take too long, leaving little time for science. We find that the best safe compromise is an imaging target acquisition using the Bright Object Aperture (BOA) on COS and MIRRORA. To allow for successful acquisition even if the target becomes fainter than usual, we plan our exposure time for the historical minimum flux of 1e-14 erg/s/cm2/A. Mrk 817 was observed safely with COS on during the whole of STORM 2 and program 17105, well below any bright object flux limits. There are no bright objects in the field, and it was safely acquired during all months of the year over the full range of scheduled position angles.

Program Duration: Because it is near the ecliptic pole, Mrk 817 is continuously visible to HST throughout the year. This allows for monthly visits during all twelve months.

Schedulability: There are no ORIENT restrictions for our target and it is continuously accessible throughout the year for 365 days on account of its high ecliptic latitude, aside from possible intervals due to OBAD-shortened orbits. (Once these are known, we should schedule our single-orbit visits to avoid them.) Ideally, our observations should be made approximately 1 month apart, similar to the COS flux calibration programs, with windows of +-1 week around each observation. Successive observations should be at least two weeks apart. We emphasize that evenly spaced intervals are not required, and there can be some leeway in the "at least two weeks apart" requirement.

The continuous visibility allows great freedom in scheduling the campaign. However, we wish to maximise our overlap with the Swift and NICER campaigns, so observations should start immediately at the beginning of Cycle 31 and contnue through April 2024. Guide-star availability may show that only single guide stars are available during some time intervals. This is acceptable, and it had no impact on data quality during GO-16196. Our observations are short enough that roll is not critical, and COS transmission is not strongly dependent on precise centering, so the slight drift associated with single-guide-star guiding does not have a deleterious impact on our data quality. We can't specify the single-guide-star acquisition mode ourselves, so any visits likely to be affected by this issue should be handled by the PC at the appropriate time.

One-gyro Impacts. In the event of a necessary change to 1-gyro mode for HST, Mrk 817 is still visible year round. Scheduling may be more limited, b ut it is possible in all months. We believe that we can still conduct a successful program in such circumstances since there are still long intervals of regular schedulability.

Requirements for Target of Opportunity triggering and observation: Another goal of our proposal is to see Mrk 817 emerge from its current state where a strong obscuring outflow is still present. When soft X-ray absorption as measured by NICER and Swift has diminished to levels consistent with only foreground Milky Way absorption (hardness ratio < -0.3 for s full month), or if HST/COS spectra show that the UV absorption lines have disappeared, we will trigger a non-disruptive TOO observation that will use four additional orbits to obtain a view of the full UV portion of the spectrum from the Lyman limit in Mrk 817 (940 A observed) to 3200 A. When combined with ground-based spectra, we will cover the full wavelength range in Mrk 817 from the Lyman limit (912 A) to 10,000 A (past the Paschen edge at 8206 A), allowing us to fit the continuum shape to accretion disk models, and search for contribution from diffuse continuum emission associated with Balmer and Paschen recombination spectra. The four HST orbits will consist of four 500 s exposures using all four FP-POS positions with G130M/1096; four 250 s exposures using all four FP-POS positions with G130M/1222; four 200 s exposures using all four FP-POS with G160M/1533; four 200 s exposures using all four FP-POS with G160M/1577; and a 1700 s exposure with STIS NUV-MAMA/G230L. To obtain an accurate measure of the spectral energy distribution of Mrk 817 when the COS, STIS, and ground-based spectra are combined, we request the use of the MSMOFF option for the NUV-MAMA observation in order to obtain the best absolute flux calibration.

This is a long-term ToO that should persist into Cycle 32 if not triggered during Cycle 31.

Proposal 17463 - Visit 01 - Evolution of the Obscuring Outflow in the Active Galaxy Mrk 817

Visit

Proposal 17463, Visit 01, scheduling Wed Apr 17 12:00:31 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; BETWEEN 06-MAY-2024:00:00:00 AND 20-MAY-2024:00:00:00

Diagnostics

(Visit 01) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions when observing at a given COS cenwave.

Fixed Targets

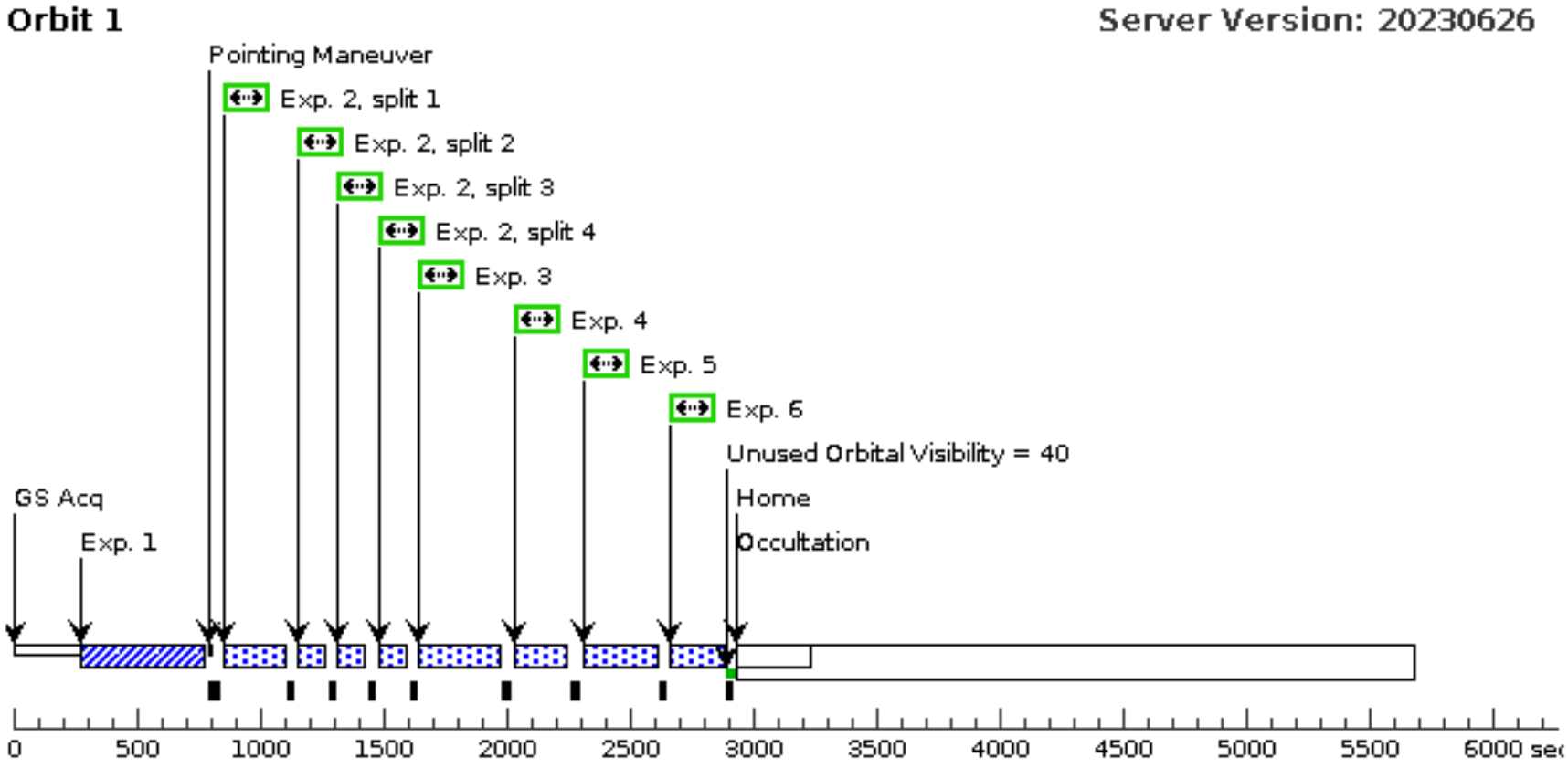
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	MRK-817	RA: 14 36 22.0821 (219.0920087d) Dec: +58 47 39.39 (58.79427d) Equinox: J2000	Proper Motion RA: 2.3160994962315615E-6 sec of time/yr Proper Motion Dec: -3.600002855819184E-5 arcsec/yr Epoch of Position: 2015.5 Redshift: 0.031455	V=13.79+/-0.5 F(1180)=7e-14	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=GALAXY
Description=[ACCRETION DISK, BLR, NUCLEUS, SEYFERT, WIND]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.1809302)	(1) MRK-817	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				140 Secs (140 Secs) *[==>]*	 ***[1]***
Comments: Target Acq assumes an FOS-based QSO spectrum at z=0.031455, E(B-V)=0.02, and F(1390)=1.0e-14, less than half the lowest flux observed in the 2020-2022 reverberation-mapping campaign, PID 16196. ETC run COS.ta.1809303 uses F(1390)=2.e-13, twice the brightet level in 2021, and shows that the observation is safe.									
2	(COS.sp.1809337)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=8200; FP-POS=ALL; LIFETIME-POS=LP4			60. Secs (240 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	 ***[1]***
3	(COS.sp.1809338)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1533 A	BUFFER-TIME=1260.; FP-POS=1; LIFETIME-POS=LP4			160. Secs (160 Secs) *[==>]*	 ***[1]***
4	(COS.sp.1809338)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1533 A	BUFFER-TIME=1260; FP-POS=2; LIFETIME-POS=LP4			160. Secs (160 Secs) *[==>]*	 ***[1]***
5	(COS.sp.1809339)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=1500; FP-POS=3; LIFETIME-POS=LP4			165. Secs (165 Secs) *[==>]*	 ***[1]***
6	(COS.sp.1809339)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=1500; FP-POS=4; LIFETIME-POS=LP4			165. Secs (165 Secs) *[==>]*	 ***[1]***

Orbit Structure



Proposal 17463 - Visit 02 - Evolution of the Obscuring Outflow in the Active Galaxy Mrk 817

Visit

Proposal 17463, Visit 02, completed

Wed Apr 17 12:00:31 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; BETWEEN 08-JAN-2024:00:00:00 AND 22-JAN-2024:00:00:00

Diagnostics

(Visit 02) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions when observing at a given COS cenwave.

Fixed Targets

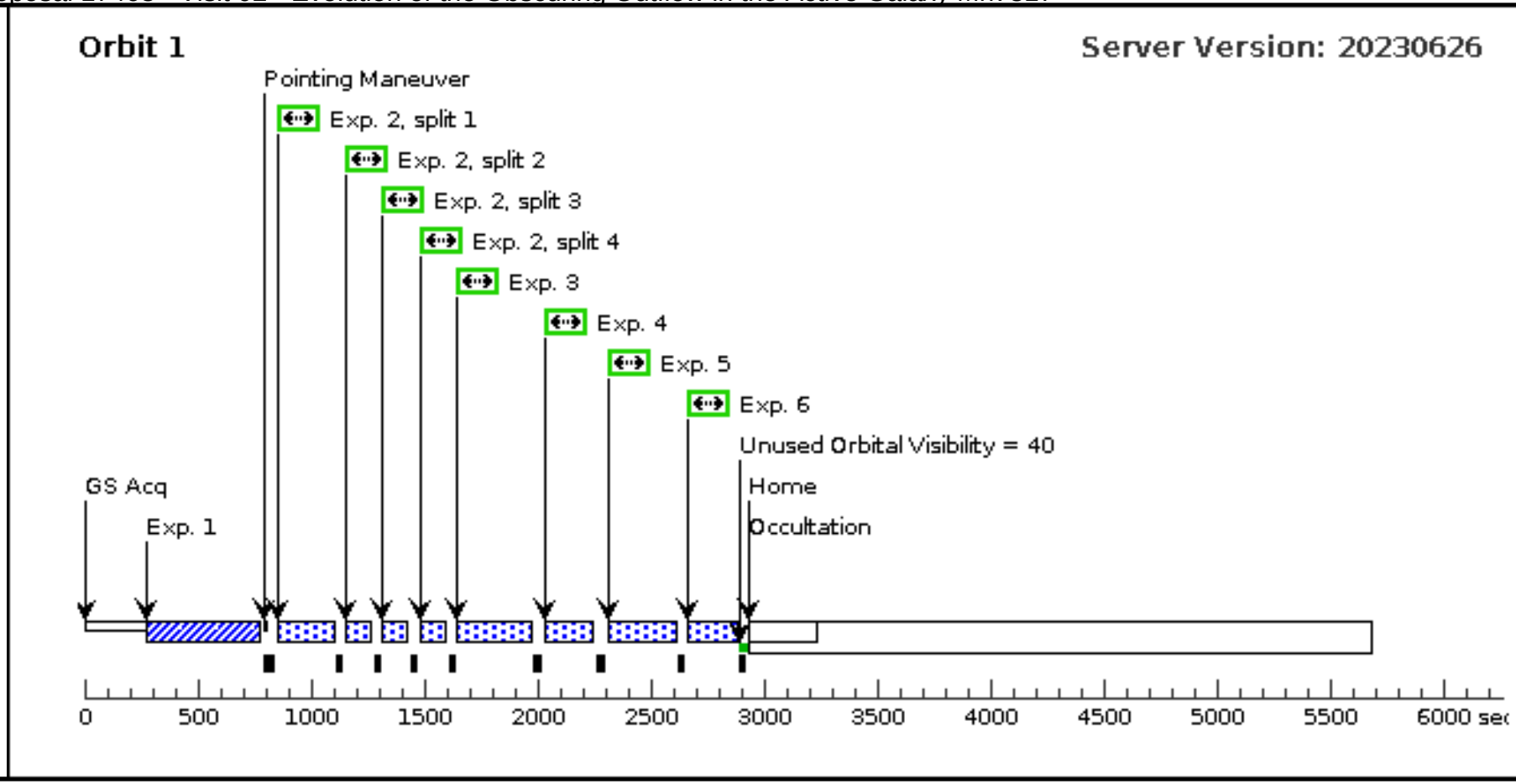
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	MRK-817	RA: 14 36 22.0821 (219.0920087d) Dec: +58 47 39.39 (58.79427d) Equinox: J2000	Proper Motion RA: 2.3160994962315615E-6 sec of time/yr Proper Motion Dec: -3.600002855819184E-5 arcsec/yr Epoch of Position: 2015.5 Redshift: 0.031455	V=13.79+/-0.5 F(1180)=7e-14	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=GALAXY
Description=[ACCRETION DISK, BLR, NUCLEUS, SEYFERT, WIND]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.1809302)	(1) MRK-817	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				140 Secs (140 Secs) *[==>]*	 ***[1]***
Comments: Target Acq assumes an FOS-based QSO spectrum at z=0.031455, E(B-V)=0.02, and F(1390)=1.0e-14, less than half the lowest flux observed in the 2020-2022 reverberation-mapping campaign, PID 16196. ETC run COS.ta.1809303 uses F(1390)=2.e-13, twice the brightet level in 2021, and shows that the observation is safe.									
2	(COS.sp.1809337)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=8200; FP-POS=ALL; LIFETIME-POS=LP4			60. Secs (240 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	 ***[1]***
3	(COS.sp.1809338)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1533 A	BUFFER-TIME=1260.; FP-POS=1; LIFETIME-POS=LP4			160. Secs (160 Secs) *[==>]*	 ***[1]***
4	(COS.sp.1809338)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1533 A	BUFFER-TIME=1260; FP-POS=2; LIFETIME-POS=LP4			160. Secs (160 Secs) *[==>]*	 ***[1]***
5	(COS.sp.1809339)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=1500; FP-POS=3; LIFETIME-POS=LP4			165. Secs (165 Secs) *[==>]*	 ***[1]***
6	(COS.sp.1809339)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=1500; FP-POS=4; LIFETIME-POS=LP4			165. Secs (165 Secs) *[==>]*	 ***[1]***

Orbit Structure



Proposal 17463 - Visit 03 - Evolution of the Obscuring Outflow in the Active Galaxy Mrk 817

Visit

Proposal 17463, Visit 03, completed Wed Apr 17 12:00:31 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; BETWEEN 05-FEB-2024:00:00:00 AND 19-FEB-2024:00:00:00

Diagnostics

(Visit 03) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions when observing at a given COS cenwave.

Fixed Targets

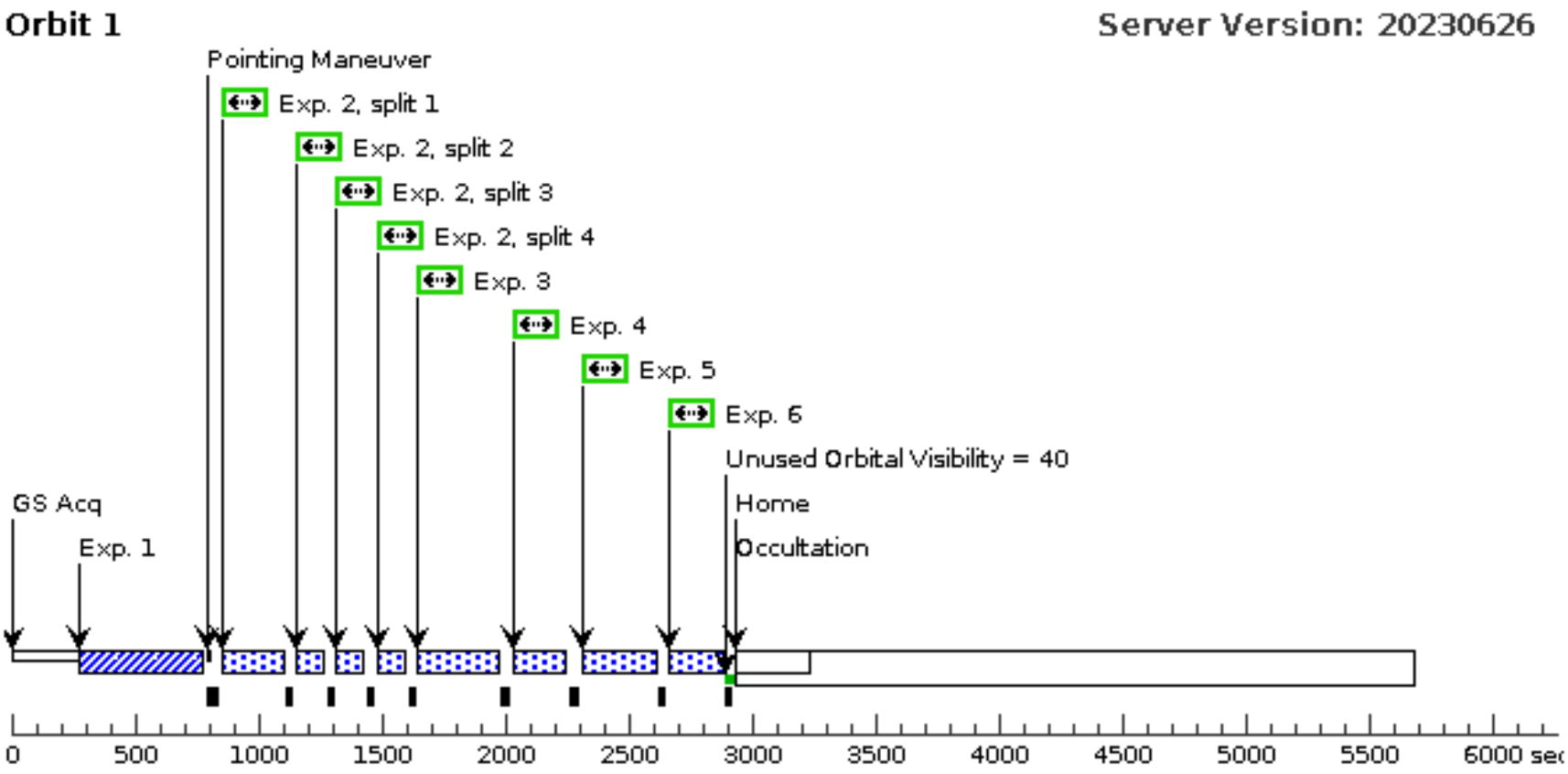
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	MRK-817	RA: 14 36 22.0821 (219.0920087d) Dec: +58 47 39.39 (58.79427d) Equinox: J2000	Proper Motion RA: 2.3160994962315615E-6 sec of time/yr Proper Motion Dec: -3.600002855819184E-5 arcsec/yr Epoch of Position: 2015.5 Redshift: 0.031455	V=13.79+/-0.5 F(1180)=7e-14	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=GALAXY
Description=[ACCRETION DISK, BLR, NUCLEUS, SEYFERT, WIND]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.1809302)	(1) MRK-817	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				140 Secs (140 Secs) *[==>]*	 ***[1]***
Comments: Target Acq assumes an FOS-based QSO spectrum at z=0.031455, E(B-V)=0.02, and F(1390)=1.0e-14, less than half the lowest flux observed in the 2020-2022 reverberation-mapping campaign, PID 16196. ETC run COS.ta.1809303 uses F(1390)=2.e-13, twice the brightet level in 2021, and shows that the observation is safe.									
2	(COS.sp.1809337)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=8200; FP-POS=ALL; LIFETIME-POS=LP4			60. Secs (240 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	 ***[1]***
3	(COS.sp.1809338)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1533 A	BUFFER-TIME=1260.; FP-POS=1; LIFETIME-POS=LP4			160. Secs (160 Secs) *[==>]*	 ***[1]***
4	(COS.sp.1809338)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1533 A	BUFFER-TIME=1260; FP-POS=2; LIFETIME-POS=LP4			160. Secs (160 Secs) *[==>]*	 ***[1]***
5	(COS.sp.1809339)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=1500; FP-POS=3; LIFETIME-POS=LP4			165. Secs (165 Secs) *[==>]*	 ***[1]***
6	(COS.sp.1809339)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=1500; FP-POS=4; LIFETIME-POS=LP4			165. Secs (165 Secs) *[==>]*	 ***[1]***

Orbit Structure



Proposal 17463 - Visit 04 - Evolution of the Obscuring Outflow in the Active Galaxy Mrk 817

Visit

Proposal 17463, Visit 04, completed Wed Apr 17 12:00:31 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; BETWEEN 05-MAR-2024:00:00:00 AND 19-MAR-2024:00:00:00

Diagnostics

(Visit 04) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions when observing at a given COS cenwave.

Fixed Targets

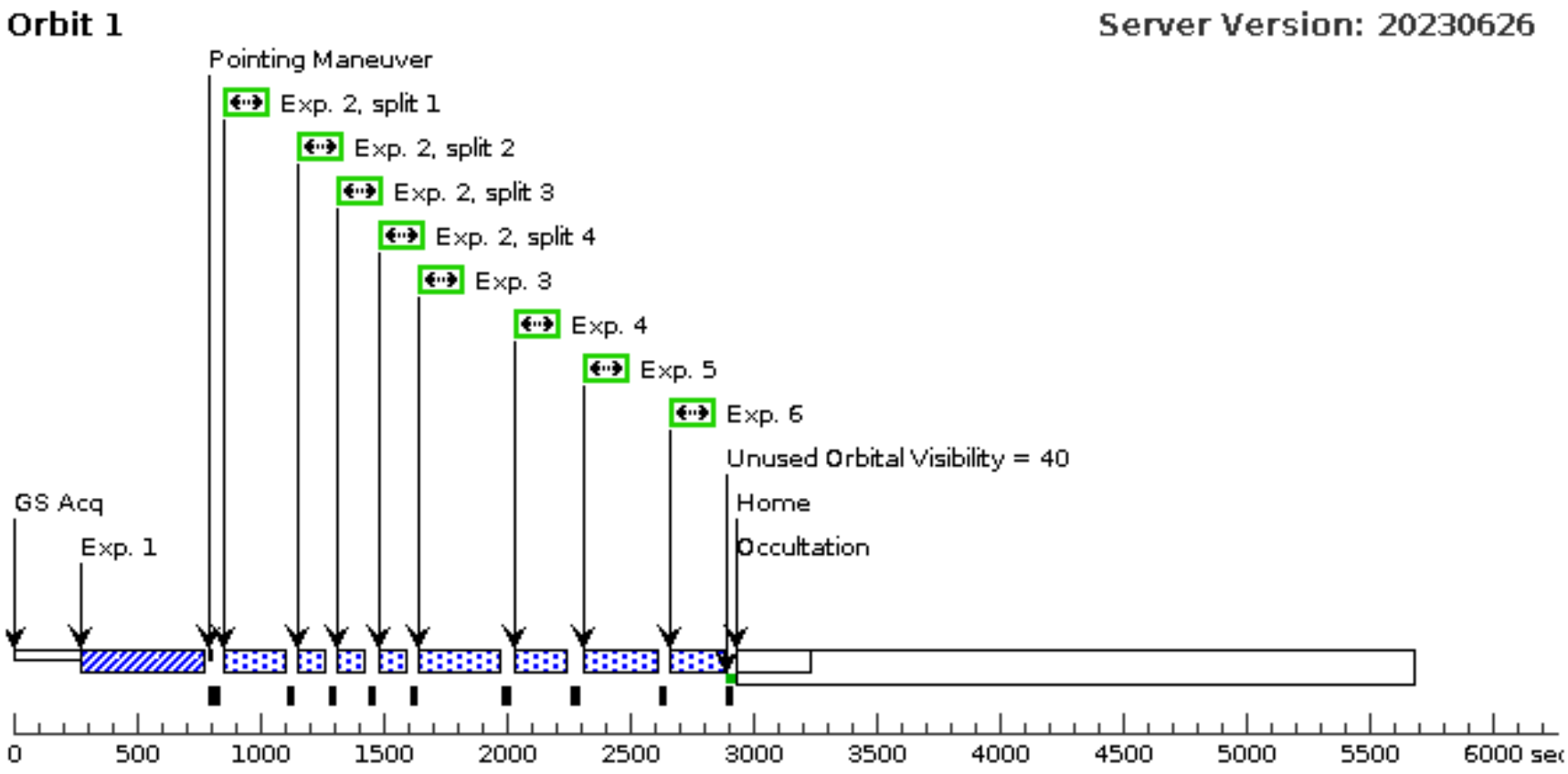
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	MRK-817	RA: 14 36 22.0821 (219.0920087d) Dec: +58 47 39.39 (58.79427d) Equinox: J2000	Proper Motion RA: 2.3160994962315615E-6 sec of time/yr Proper Motion Dec: -3.600002855819184E-5 arcsec/yr Epoch of Position: 2015.5 Redshift: 0.031455	V=13.79+/-0.5 F(1180)=7e-14	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=GALAXY
Description=[ACCRETION DISK, BLR, NUCLEUS, SEYFERT, WIND]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.1809302)	(1) MRK-817	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				140 Secs (140 Secs) *[==>]*	 ***[1]***
Comments: Target Acq assumes an FOS-based QSO spectrum at z=0.031455, E(B-V)=0.02, and F(1390)=1.0e-14, less than half the lowest flux observed in the 2020-2022 reverberation-mapping campaign, PID 16196. ETC run COS.ta.1809303 uses F(1390)=2.e-13, twice the brightet level in 2021, and shows that the observation is safe.									
2	(COS.sp.1809337)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=8200; FP-POS=ALL; LIFETIME-POS=LP4			60. Secs (240 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	 ***[1]***
3	(COS.sp.1809338)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1533 A	BUFFER-TIME=1260.; FP-POS=1; LIFETIME-POS=LP4			160. Secs (160 Secs) *[==>]*	 ***[1]***
4	(COS.sp.1809338)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1533 A	BUFFER-TIME=1260; FP-POS=2; LIFETIME-POS=LP4			160. Secs (160 Secs) *[==>]*	 ***[1]***
5	(COS.sp.1809339)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=1500; FP-POS=3; LIFETIME-POS=LP4			165. Secs (165 Secs) *[==>]*	 ***[1]***
6	(COS.sp.1809339)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=1500; FP-POS=4; LIFETIME-POS=LP4			165. Secs (165 Secs) *[==>]*	 ***[1]***

Orbit Structure



Proposal 17463 - Visit 05 - Evolution of the Obscuring Outflow in the Active Galaxy Mrk 817

Visit

Proposal 17463, Visit 05, failed

Wed Apr 17 12:00:31 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; BETWEEN 01-APR-2024:00:00:00 AND 30-APR-2024:00:00:00

Diagnostics

(Visit 05) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions when observing at a given COS cenwave.

Fixed Targets

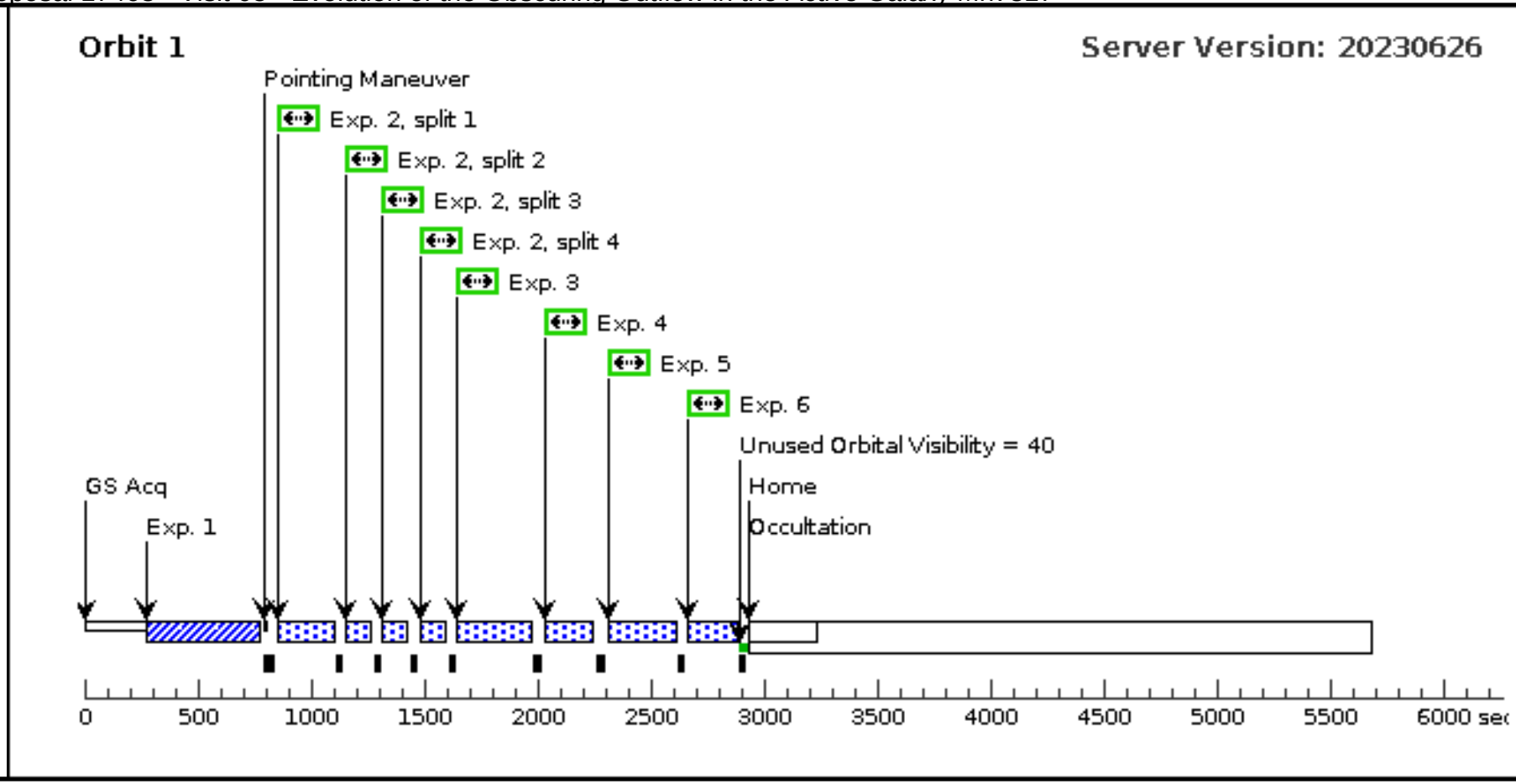
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	MRK-817	RA: 14 36 22.0821 (219.0920087d) Dec: +58 47 39.39 (58.79427d) Equinox: J2000	Proper Motion RA: 2.3160994962315615E-6 sec of time/yr Proper Motion Dec: -3.600002855819184E-5 arcsec/yr Epoch of Position: 2015.5 Redshift: 0.031455	V=13.79+/-0.5 F(1180)=7e-14	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=GALAXY
Description=[ACCRETION DISK, BLR, NUCLEUS, SEYFERT, WIND]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.1809302)	(1) MRK-817	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				140 Secs (140 Secs) *[==>]*	 ***[1]***
Comments: Target Acq assumes an FOS-based QSO spectrum at z=0.031455, E(B-V)=0.02, and F(1390)=1.0e-14, less than half the lowest flux observed in the 2020-2022 reverberation-mapping campaign, PID 16196. ETC run COS.ta.1809303 uses F(1390)=2.e-13, twice the brightet level in 2021, and shows that the observation is safe.									
2	(COS.sp.1809337)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=8200; FP-POS=ALL; LIFETIME-POS=LP4			60. Secs (240 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	 ***[1]***
3	(COS.sp.1809338)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1533 A	BUFFER-TIME=1260.; FP-POS=1; LIFETIME-POS=LP4			160. Secs (160 Secs) *[==>]*	 ***[1]***
4	(COS.sp.1809338)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1533 A	BUFFER-TIME=1260; FP-POS=2; LIFETIME-POS=LP4			160. Secs (160 Secs) *[==>]*	 ***[1]***
5	(COS.sp.1809339)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=1500; FP-POS=3; LIFETIME-POS=LP4			165. Secs (165 Secs) *[==>]*	 ***[1]***
6	(COS.sp.1809339)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=1500; FP-POS=4; LIFETIME-POS=LP4			165. Secs (165 Secs) *[==>]*	 ***[1]***

Orbit Structure



Proposal 17463 - Visit 06 - Evolution of the Obscuring Outflow in the Active Galaxy Mrk 817

Visit

Proposal 17463, Visit 06, implementation Wed Apr 17 12:00:31 GMT 2024

Diagnostic Status: No Diagnostics

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

Special Requirements: SCHED 100%; TOO RESPONSE TIME 21.0D

Comments: This visit is for a target of opportunity observation to be triggered when the obscuring outflow in Mrk 817 has dissapated as indicated by Swift and NICER hardness ratios indicative of only Milky Way foreground absorption (HR < -0.3 for 1 month), or absence of broad UV absorption in the HST/COS spectrum. The minmum time after triggering is 21 days so as to be non-disruptive. This is a long-term ToO that should persist into Cycle 32 if not triggered during Cycle 30.

Fixed Targets

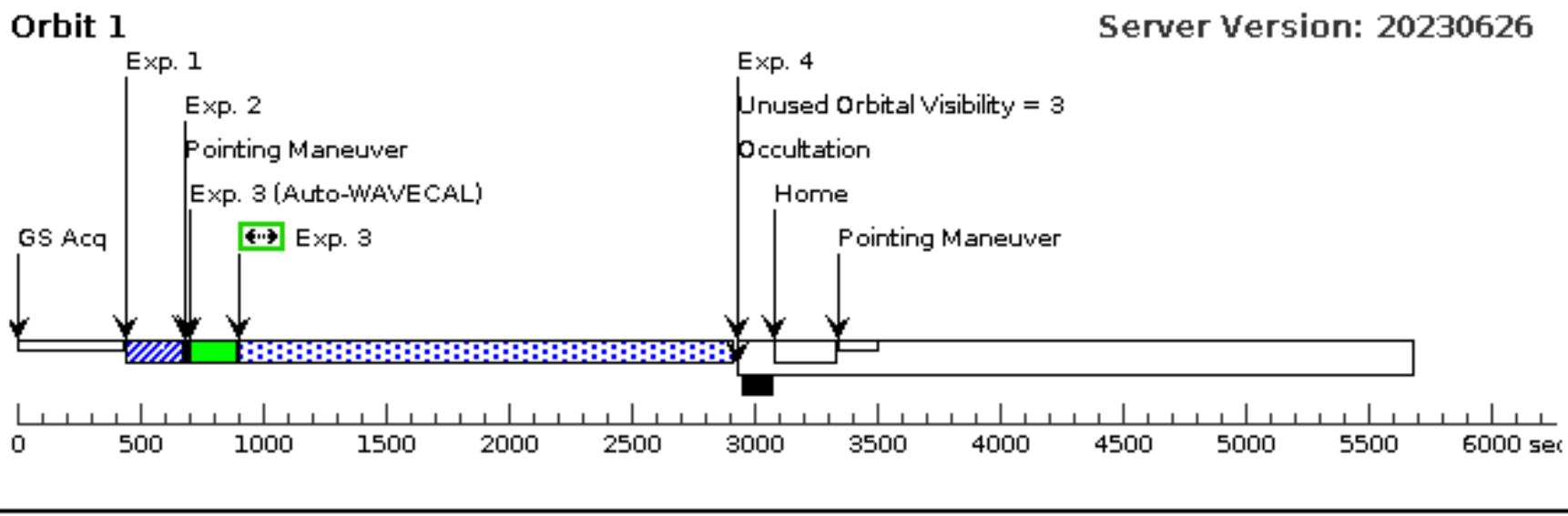
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	MRK-817	RA: 14 36 22.0821 (219.0920087d) Dec: +58 47 39.39 (58.79427d) Equinox: J2000	Proper Motion RA: 2.3160994962315615E-6 sec of time/yr Proper Motion Dec: -3.600002855819184E-5 arcsec/yr Epoch of Position: 2015.5 Redshift: 0.031455	V=13.79+/-0.5 F(1180)=7e-14	Reference Frame: ICRS

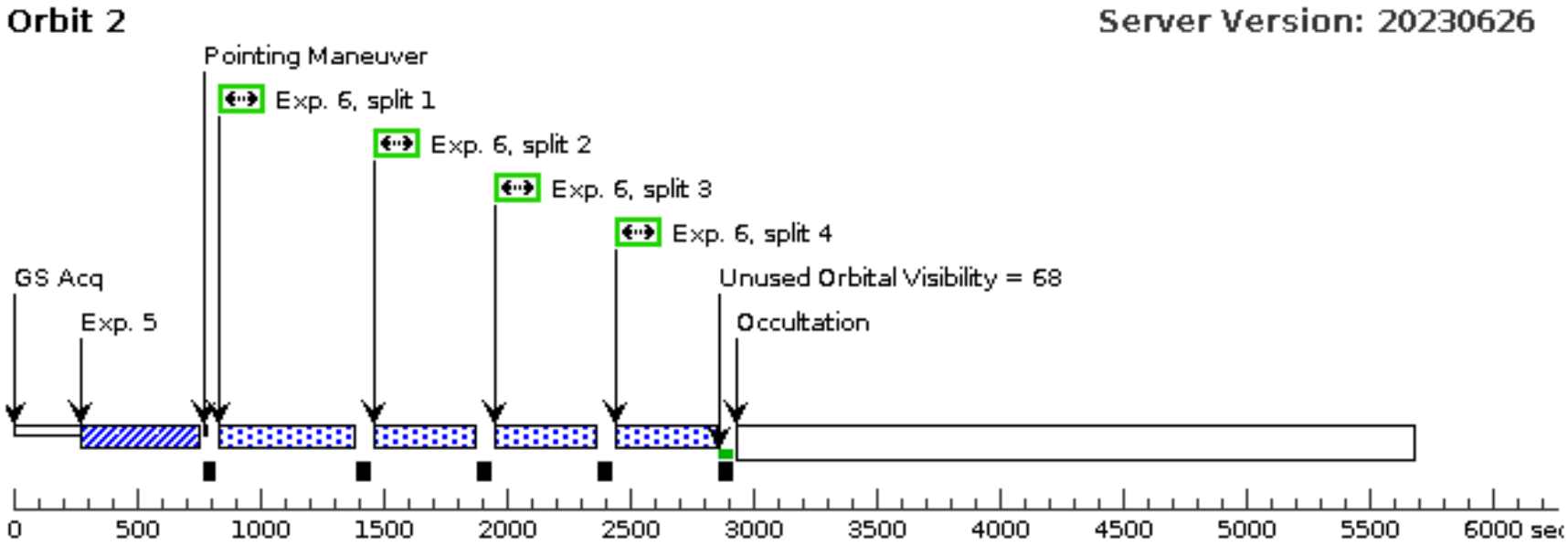
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=GALAXY
Description=[ACCRETION DISK, BLR, NUCLEUS, SEYFERT, WIND]
Extended=NO

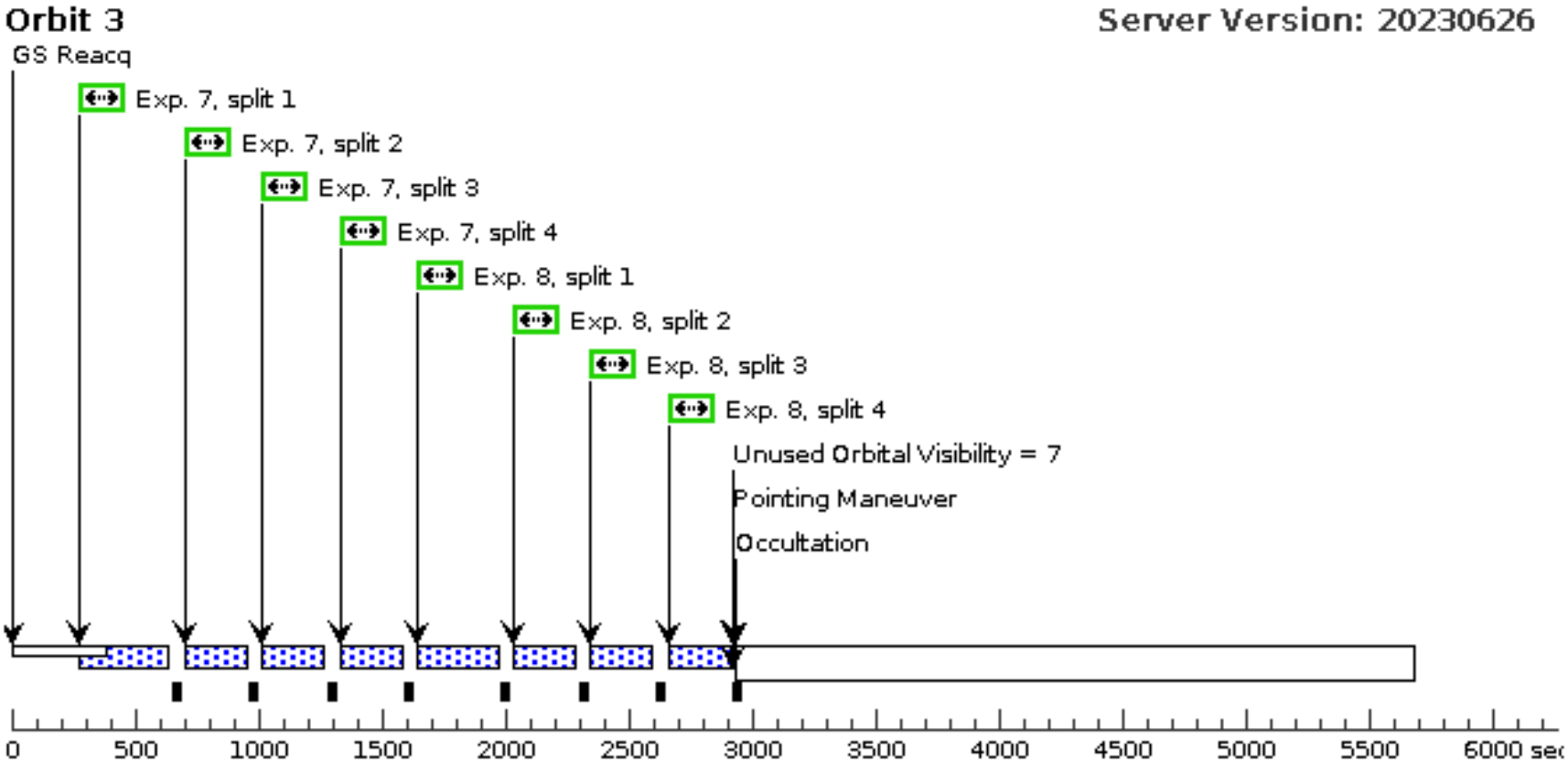
Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.1809341)	(1) MRK-817	STIS/CCD, ACQ, F28X50LP	MIRROR				1 Secs (1 Secs) *[==>]*	 ***[1]***
2	MSOFF ZERO	NONE	STIS, MSMOFF		SETOFFSET=ZERO; GRATING1=ALL			*[==>]*	***[1]***
3	(STIS.sp.1809342)	(1) MRK-817	STIS/NUV-MAMA, ACCUM, 52X0.2	G230L 2376 A				1995 Secs (1995 Secs) *[==>]*	 ***[1]***
4	MSOFF RESTORE	NONE	STIS, MSMOFF		SETOFFSET=RESTORE; GRATING1=ALL			*[==>]*	***[1]***
5	(COS.ta.1809302)	(1) MRK-817	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				130 Secs (130 Secs) *[==>]*	 ***[2]***
Comments: Target Acq assumes an FOS-based QSO spectrum at z=0.0314555, E(B-V=0.02, and F(1390)=1.0e-14, less than half the lowest flux observed in the 2020-2022 reverberation-mapping campaign, PID 16196. ETC run COS.ta.1809303 uses F(1390)=2.e-13, twice the brightet level in 2021, and shows that the observation is safe.									
6	(COS.sp.1809337)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=820; FP-POS=ALL; LIFETIME-POS=LP4			357. Secs (1428 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	 ***[2]***
7	(COS.sp.1809338)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1533 A	BUFFER-TIME=1260.; FP-POS=ALL; LIFETIME-POS=LP4			198. Secs (792 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	 ***[3]***
8	(COS.sp.1809339)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=1500; FP-POS=ALL; LIFETIME-POS=LP4			198. Secs (792 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	 ***[3]***
9	(COS.sp.1809340)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G130M 1096 A	BUFFER-TIME=1500; FP-POS=ALL; LIFETIME-POS=LP2			518. Secs (2072 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	 ***[4]***

Orbit Structure



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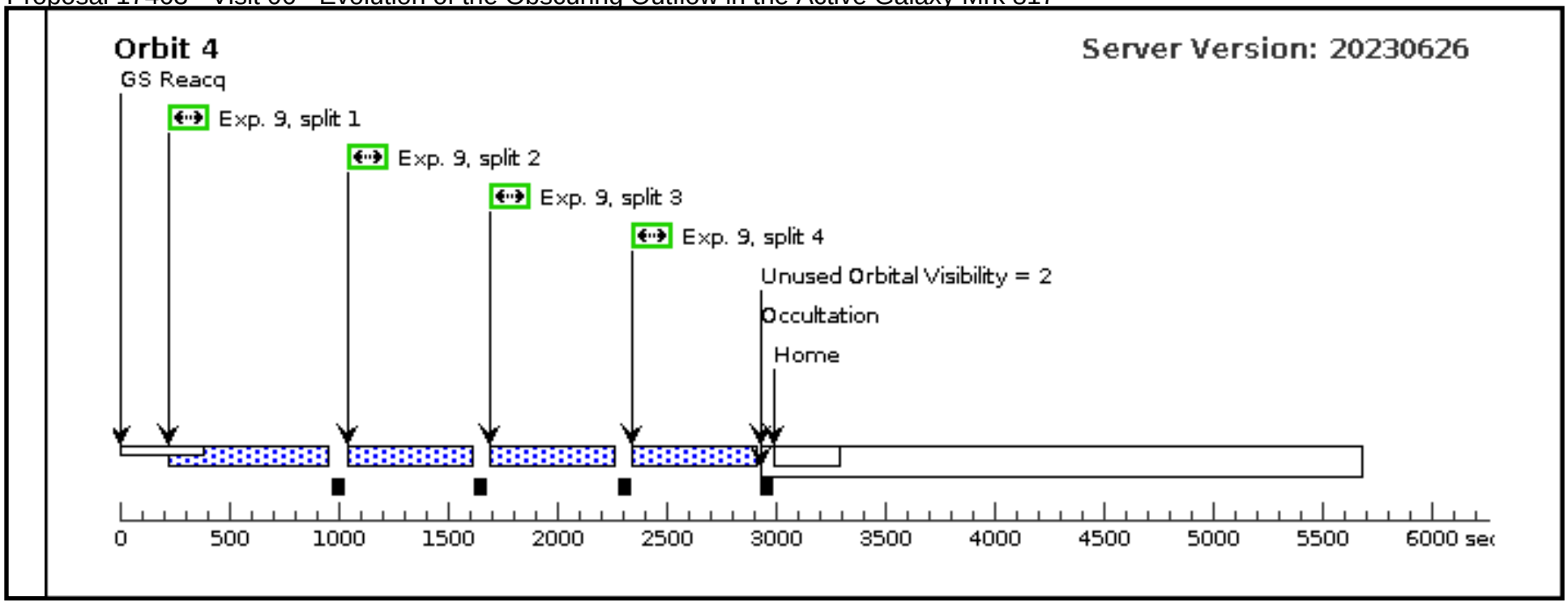
Server Version: 20230626
GS Reacq
Exp. 7, split 1
Exp. 7, split 2
Exp. 7, split 3
Exp. 7, split 4
Exp. 8, split 1
Exp. 8, split 2
Exp. 8, split 3
Exp. 8, split 4
Unused Orbital Visibility = 7
Pointing Maneuver
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec


Orbit 4
Server Version: 20230626
GS Reacq
Exp. 9, split 1
Exp. 9, split 2
Exp. 9, split 3
Exp. 9, split 4
Unused Orbital Visibility = 2
Occultation
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000 sec

Proposal 17463 - Visit 07 - Evolution of the Obscuring Outflow in the Active Galaxy Mrk 817

Visit

Proposal 17463, Visit 07

Wed Apr 17 12:00:31 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: SCHED 100%; BETWEEN 01-JUN-2024:00:00:00 AND 30-JUN-2024:00:00:00

Comments: HOPR repeat of visit 5

Diagnostics

(Visit 07) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions when observing at a given COS cenwave.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	MRK-817	RA: 14 36 22.0821 (219.0920087d) Dec: +58 47 39.39 (58.79427d) Equinox: J2000	Proper Motion RA: 2.3160994962315615E-6 sec of time/yr Proper Motion Dec: -3.600002855819184E-5 arcsec/yr Epoch of Position: 2015.5 Redshift: 0.031455	V=13.79+/-0.5 F(1180)=7e-14	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=GALAXY
Description=[ACCRETION DISK, BLR, NUCLEUS, SEYFERT, WIND]
Extended=NO

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(COS.ta.1809302)	(1) MRK-817	COS/NUV, ACQ/IMAGE, BOA	MIRRORA				140 Secs (140 Secs) *[==>]*	 ***[1]***
Comments: Target Acq assumes an FOS-based QSO spectrum at z=0.031455, E(B-V)=0.02, and F(1390)=1.0e-14, less than half the lowest flux observed in the 2020-2022 reverberation-mapping campaign, PID 16196. ETC run COS.ta.1809303 uses F(1390)=2.e-13, twice the brightet level in 2021, and shows that the observation is safe.									
2	(COS.sp.1809337)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G130M 1222 A	BUFFER-TIME=8200; FP-POS=ALL; LIFETIME-POS=LP4			60. Secs (240 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]* *[==>(Split 4)]*	 ***[1]***
3	(COS.sp.1809338)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1533 A	BUFFER-TIME=1260.; FP-POS=1; LIFETIME-POS=LP4			160. Secs (160 Secs) *[==>]*	 ***[1]***
4	(COS.sp.1809338)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1533 A	BUFFER-TIME=1260; FP-POS=2; LIFETIME-POS=LP4			160. Secs (160 Secs) *[==>]*	 ***[1]***
5	(COS.sp.1809339)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=1500; FP-POS=3; LIFETIME-POS=LP4			165. Secs (165 Secs) *[==>]*	 ***[1]***
6	(COS.sp.1809339)	(1) MRK-817	COS/FUV, TIME-TAG, PSA	G160M 1577 A	BUFFER-TIME=1500; FP-POS=4; LIFETIME-POS=LP4			165. Secs (165 Secs) *[==>]*	 ***[1]***

Orbit Structure