# 15293 - Pinpointing the cosmic web between massive galaxy clusters

Cycle: 25, Proposal Category: GO

(UV Initiative)

(Availability Mode: SUPPORTED)


**INVESTIGATORS**

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**VISITS**

| *Visit* | *Targets used in Visit* | *Configurations used in Visit* | *Orbits Used* | *Last Orbit Planner Run* | *OP Current with Visit?* |
|---|---|---|---|---|---|
| 01 | (1) J1456+2750 | COS/FUV<br>COS/NUV | 3 | 02-Aug-2018 17:40:09.0 | yes |
| 02 | (2) J1257+4429 | COS/FUV<br>COS/NUV | 2 | 02-Aug-2018 17:40:10.0 | yes |

| *Visit* | *Targets used in Visit* | *Configurations used in Visit* | *Orbits Used* | *Last Orbit Planner Run* | *OP Current with Visit?* |
|---|---|---|---|---|---|
| 03 | (2) J1257+4429 | COS/FUV<br>COS/NUV | 3 | 02-Aug-2018 17:40:11.0 | yes |
| 04 | (3) J1410+0910 | COS/FUV<br>COS/NUV | 3 | 02-Aug-2018 17:40:12.0 | yes |
| 21 | (3) J1410+0910 | COS/FUV<br>COS/NUV | 2 | 02-Aug-2018 17:40:13.0 | yes |
| 05 | (4) J1419+3739 | COS/FUV<br>COS/NUV | 4 | 02-Aug-2018 17:40:14.0 | yes |
| 06 | (4) J1419+3739 | COS/FUV<br>COS/NUV | 3 | 02-Aug-2018 17:40:15.0 | yes |
| 07 | (5) J1216+1819 | COS/FUV<br>COS/NUV | 4 | 02-Aug-2018 17:40:16.0 | yes |
| 08 | (5) J1216+1819 | COS/FUV<br>COS/NUV | 4 | 02-Aug-2018 17:40:17.0 | yes |
| 09 | (6) J1358+0213 | COS/FUV<br>COS/NUV | 3 | 02-Aug-2018 17:40:18.0 | yes |
| 10 | (6) J1358+0213 | COS/FUV<br>COS/NUV | 3 | 02-Aug-2018 17:40:19.0 | yes |
| 22 | (6) J1358+0213 | COS/FUV<br>COS/NUV | 2 | 02-Aug-2018 17:40:19.0 | yes |
| 11 | (7) J1210+0154 | COS/FUV<br>COS/NUV | 3 | 02-Aug-2018 17:40:20.0 | yes |
| 12 | (7) J1210+0154 | COS/FUV<br>COS/NUV | 3 | 02-Aug-2018 17:40:21.0 | yes |
| 13 | (7) J1210+0154 | COS/FUV<br>COS/NUV | 3 | 02-Aug-2018 17:40:23.0 | yes |
| 14 | (8) J1120+1104 | COS/FUV<br>COS/NUV | 4 | 02-Aug-2018 17:40:24.0 | yes |

| *Visit* | *Targets used in Visit* | *Configurations used in Visit* | *Orbits Used* | *Last Orbit Planner Run* | *OP Current with Visit?* |
|---|---|---|---|---|---|
| 15 | (8) J1120+1104 | COS/FUV<br>COS/NUV | 3 | 02-Aug-2018 17:40:25.0 | yes |
| 65 | (8) J1120+1104 | COS/FUV<br>COS/NUV | 3 | 02-Aug-2018 17:40:26.0 | yes |
| 16 | (8) J1120+1104 | COS/FUV<br>COS/NUV | 3 | 02-Aug-2018 17:40:27.0 | yes |
| 17 | (9) J1637+4254 | COS/FUV<br>COS/NUV | 2 | 02-Aug-2018 17:40:27.0 | yes |
| 18 | (9) J1637+4254 | COS/FUV<br>COS/NUV | 3 | 02-Aug-2018 17:40:28.0 | yes |
| 19 | (9) J1637+4254 | COS/FUV<br>COS/NUV | 3 | 02-Aug-2018 17:40:29.0 | yes |
| 20 | (9) J1637+4254 | COS/FUV<br>COS/NUV | 4 | 02-Aug-2018 17:40:31.0 | yes |

70 Total Orbits Used

**ABSTRACT**

We propose to observe and characterize the intergalactic medium (IGM) in the densest filaments of the cosmic web at 0.1<z<0.5. We use massive galaxy cluster-pairs (M_cl > 1.3 10^14 M_sun) to identify zones where inter-cluster filaments should reside with high probabilities, and cross-matched them with bright UV QSOs for feasible FUV spectroscopy. Here we propose to observe the 9 best QSOs with HST/COS, in order to probe the HI and OVI transitions at the redshifts of 9 independent massive cluster-pairs within <3 Mpc from the inter-cluster axes. We require S/N>12 using the G130M (and G160M for those at z>0.16) to ensure a full characterization of low column density gas (N~10^13.0-13.5 cm^-2) in these intervening structures. This proposal builds upon our previous pilot programs from single targeted QSO sightlines intersecting multiple cluster-pairs (IDs 12958 and 13832, PI Tejos), which have led to promising results (Tejos et al. 2016). In particular, the present experiment will enable the detection of broad and shallow HI lines with OVI (if any), believed to be associated with portions of the warm-hot intergalactic medium (WHIM), as well as test alternative hypothesis regarding the origin of OVI lines. This proposal will double the current sample available in the HST archive, for a total of ~20 high-quality cluster-pairs probed. According to our estimations, this sample will provide a roboust statistical detection of the elusive WHIM signatures, at the 99% confidence level. Even more fundamentally, these data will provide a unique test of structure and galaxy formation by

comparing them with state-of-the-art hydrodynamical simulations.

**OBSERVING DESCRIPTION**

We use galaxy cluster-pairs to identify and target the densest filaments in the "cosmic web". We cross-match these cluster-pairs with QSO positions, with the aim to probe the filamentary structures in absorption along the QSO sightlines (e.g. Tejos et al. 2016).

We used clusters from the redMaPPer catalog (Rykoff et al. 2014). Although the redMaPPer detection algorithm is mainly based on photometry, around 50% of these have spectroscopic redshifts from their Brightest Galaxy Cluster (BCG). We use the BCG spectroscopic redshift as the cluster redshift when available.

The QSOs were chosen from the combination of SDSS DR7 data (Schneider+2010), BOSS data (Paris+2012), and the UVQS survey (Monroe+2016) intersecting the SDSS volume, imposing a magnitude limit of FUV = 18.5 (AB). These comprise a large number of reliably identified QSOs with well known spectroscopic redshifts which are bright enough for FUV spectroscopy in relatively short exposure times each.

We constructed a sample of galaxy cluster-pairs satisfying the following criteria: (i) the redshift of the clusters must be $0.1 < z < 0.5$; (ii) the minimum richness of the clusters must be 15 (which for redMaPPer roughly corresponds to ~ 1.3 x 10^{14} Msun); (iii) the maximum transverse separation between two clusters of a pair must be no larger than 15 Mpc; (iv) the redshift difference between the clusters of a pair has to be no larger than 1500 km/s; and (v) both clusters must have a spectroscopic redshift. These criteria are stricter than those used in Tejos+2016, in order to ensure a high fidelity in probing real filaments and thus minimize potential systematic uncertainties. Finally, for each cluster-pair we assign its redshift to be the average between the two cluster members.

We then cross-matched these cluster-pairs with our bright UV QSO list, imposing the following criteria: (i) the redshift of the QSOs must be larger than the redshift of the cluster-pair probed plus 3000 km/s from the QSOs systemic redshift (to avoid the proximity zone of the QSO); (ii) the QSO sightline must be within 3 Mpc from the inter-cluster axis; and (iii) the QSO sightline must be at a distance larger than 3 Mpc from the closest cluster of a pair, along the inter-cluster axis (to avoid zones close to individual galaxy clusters). For a given QSO, we counted the number of intervening cluster-pairs satisfying our criteria. When multiple cluster-pairs appeared in a given QSO, we grouped those lying within 1000 km/s from one another, and treated each of these final grouped structures as independent, n_ind, taking its redshift to be the average between its grouped cluster-pairs. Finally, for a given QSO with at least 1 independent cluster-pair, we calculated the

number of orbits, n_orb, needed to reach a signal-to-noise of S/N = 12 per resolution element, at the redshift of the known cluster-pairs for HI Lya and OVI, using the COS ETC (v25.1.1). We note that for cluster-pairs at $0.1 < z < 0.16$, only G130M is needed to cover both species, and this fact was taken into account in our calculations. We then sorted the QSO list by n_ind/n_orb, and chose the required 9 most optimal QSOs for this project. We also made sure that none of our top priority QSOs showed strong intervening Mgii absorption that may compromise the quality of the FUV data due to the presence of a Lyman Limit System.

Note: the optimization strategy was done before the COS2025 policies were known to the community.

## Visit

**Proposal 15293, J1456+2750 - G130M - 1291 - 1/1 (01), scheduling** Thu Aug 02 21:40:31 GMT 2018

**Diagnostic Status: Warning**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 1/1 of the J1456+2750 using G130M:*
*- 3 orbits in total*
*- 1 central wavelengths 1291*
*- 2 segments A+B*
*- 2 FP-POS in total (COS2025 policy)*
*- Buffer times set to 2/3 of that given by the ETC*

## Diagnostics

(J1456+2750 - G130M - 1291 - 1/1 (01)) Warning (Form): For the best data quality, it is strongly recommended that the maximum number of allowed FP-POS positions is used when observing at a given COS CENWAVE setting. See full description for details.

(J1456+2750 - G130M - 1291 - 1/1 (01)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

## Fixed Targets

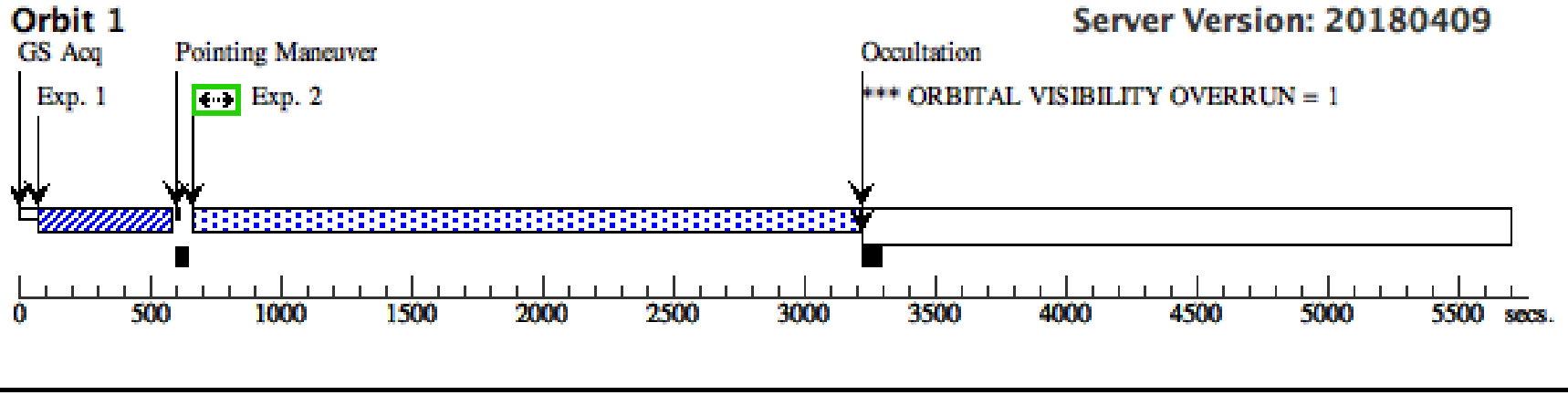
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (1) | J1456+2750 | RA: 14 56 8.6434 (224.0360142d)<br>Dec: +27 50 8.48 (27.83569d)<br>Equinox: J2000 | | V=17.43<br>FUV=17.41 | Reference Frame: ICRS |

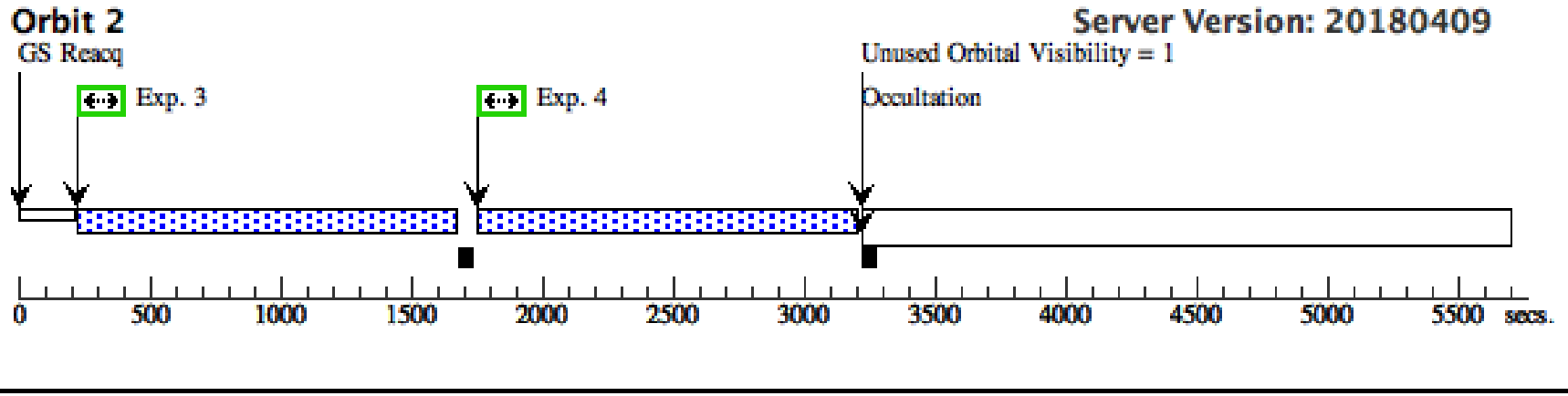
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QSO]*
*Extended=NO*

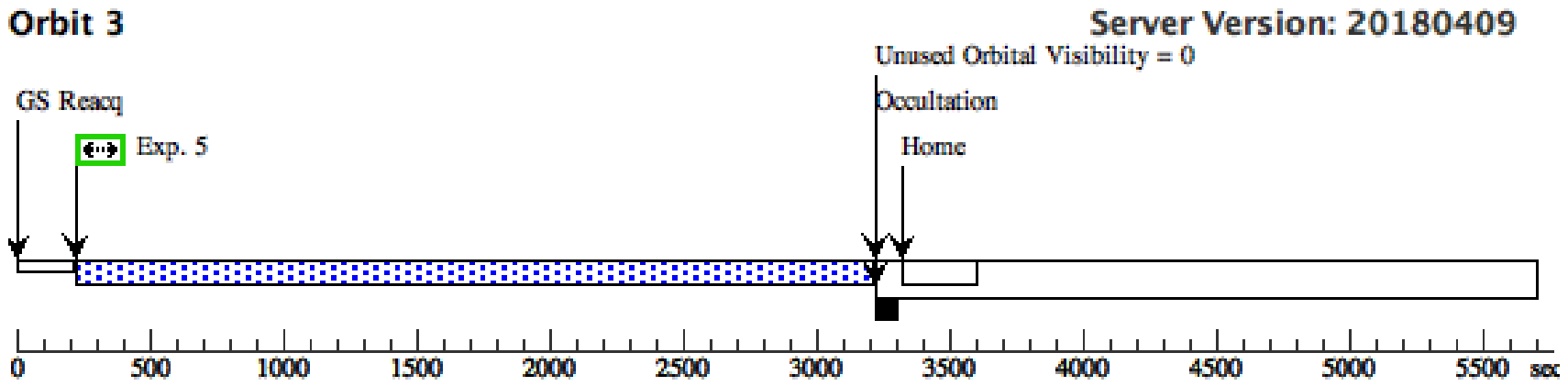
## Exposures

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ACQ (COS.im.1007582) | (1) J1456+2750 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 100 Secs (100 Secs)<br>*[==>]* | ***[1]*** |
| 2 | G130M - 1291 - FP3 - o 1 (COS.sp.1010683) | (1) J1456+2750 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | FP-POS=3; BUFFER-TIME=4000; SEGMENT=BOTH | | | 1000 Secs (2382 Secs)<br>*[==>2382.0 Secs ]* | ***[1]*** |
| 3 | G130M - 1291 - FP3 - o 2 (COS.sp.1010684) | (1) J1456+2750 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | FP-POS=3; BUFFER-TIME=4000; SEGMENT=BOTH | | | 1000 Secs (1402 Secs)<br>*[==>1402.0 Secs ]* | ***[2]*** |
| 4 | G130M - 1291 - FP4 - o 2 (COS.sp.1010684) | (1) J1456+2750 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | FP-POS=4; BUFFER-TIME=4000; SEGMENT=BOTH | | | 1000 Secs (1402 Secs)<br>*[==>1402.0 Secs ]* | ***[2]*** |
| 5 | G130M - 1291 - FP4 - o 3 (COS.sp.1010685) | (1) J1456+2750 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | FP-POS=4; BUFFER-TIME=4000; SEGMENT=BOTH | | | 1000 Secs (2939 Secs)<br>*[==>2939.0 Secs ]* | ***[3]*** |

Orbit Structure



## Visit

**Proposal 15293, J1257+4429 - G130M - 1222 - 1/1 (02), scheduling** Thu Aug 02 21:40:32 GMT 2018

**Diagnostic Status: No Diagnostics**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 1/1 of the J1257+4429 using G130M:*
*- 2 orbits in total*
*- 1 central wavelengths 1222 (COS2025 policy; originally 1223, changed back to 1222 by STScI request)*
*- 2 segments A+B (COS2025 policy)*
*- 4 FP-POS in total*
*- Buffer times set to 2/3 of that given by the ETC*

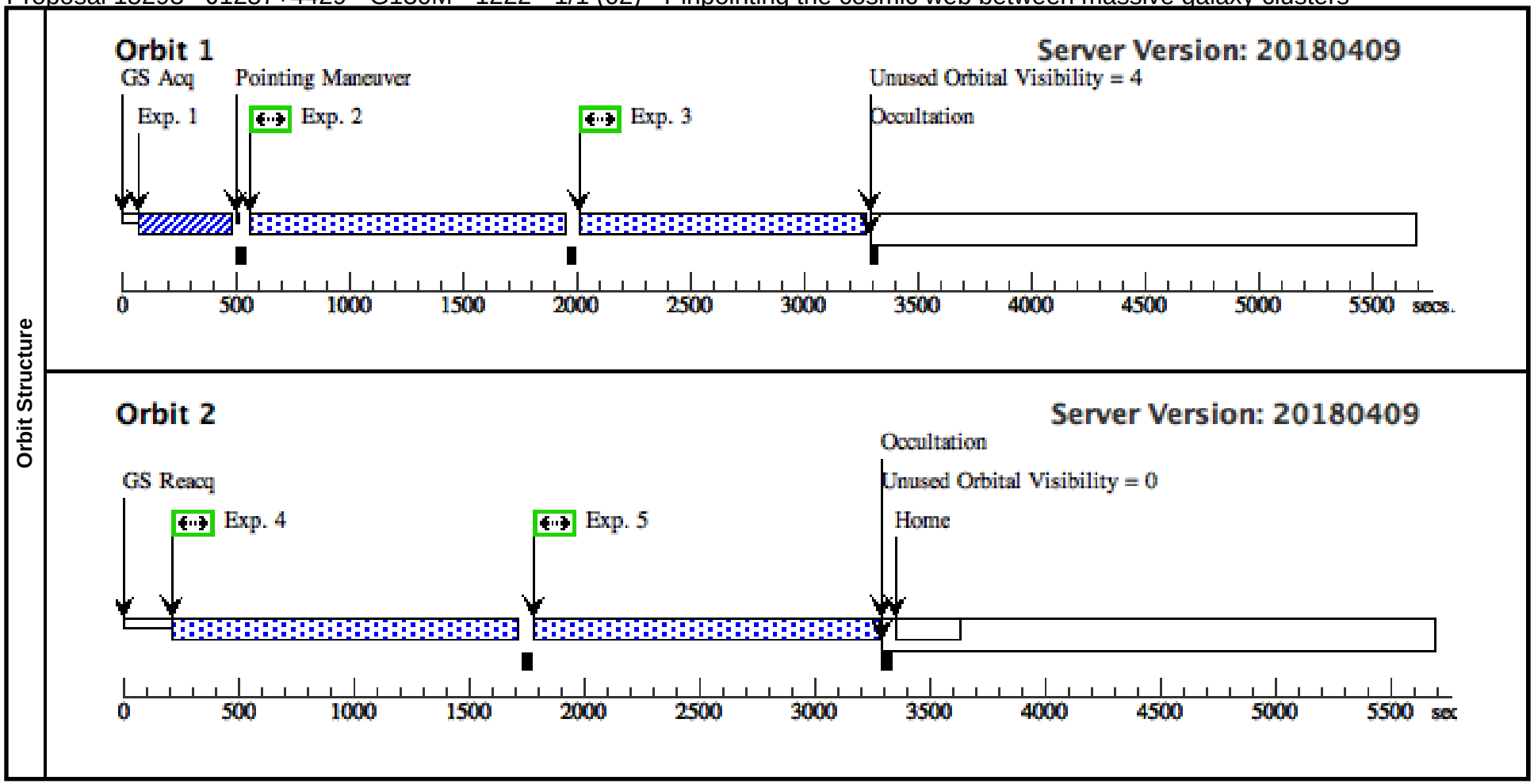
## Fixed Targets

| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (2) | J1257+4429 | RA: 12 57 19.5510 (194.3314625d)<br>Dec: +44 29 35.39 (44.49316d)<br>Equinox: J2000 | | V=16.61<br>FUV=16.90 | Reference Frame: ICRS |

*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QSO]*
*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 (COS.im.1007599) | (2) J1257+4429 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 50 Secs (50 Secs)<br>*[==>]* | *[1]* |
| 2 | G130M - 1222 - FP1 - o 1 (COS.sp.1010689) | (2) J1257+4429 | COS/FUV, TIME-TAG, PSA | G130M 1222 A | FP-POS=1; BUFFER-TIME=6200; SEGMENT=BOTH | | | 1000 Secs (1210 Secs)<br>*[==>1210.0 Secs ]* | *[1]* |
| 3 | G130M - 1222 - FP2 - o 1 (COS.sp.1010689) | (2) J1257+4429 | COS/FUV, TIME-TAG, PSA | G130M 1222 A | FP-POS=2; BUFFER-TIME=6200; SEGMENT=BOTH | | | 1000 Secs (1210 Secs)<br>*[==>1210.0 Secs ]* | *[1]* |
| 4 | G130M - 1222 - FP3 - o 2 (COS.sp.1010689) | (2) J1257+4429 | COS/FUV, TIME-TAG, PSA | G130M 1222 A | FP-POS=3; BUFFER-TIME=6200; SEGMENT=BOTH | | | 1000 Secs (1444 Secs)<br>*[==>1444.0 Secs ]* | *[2]* |
| 5 | G130M - 1222 - FP4 - o 2 (COS.sp.1010689) | (2) J1257+4429 | COS/FUV, TIME-TAG, PSA | G130M 1222 A | FP-POS=4; BUFFER-TIME=6200; SEGMENT=BOTH | | | 1000 Secs (1444 Secs)<br>*[==>1444.0 Secs ]* | *[2]* |


Orbit Structure
Orbit 1
Server Version: 20180409
GS Acq
Pointing Maneuver
Unused Orbital Visibility = 4
Exp. 1
Exp. 2
Exp. 3
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.
Orbit 2
Server Version: 20180409
Occultation
GS Reacq
Unused Orbital Visibility = 0
Exp. 4
Exp. 5
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

## Visit

**Proposal 15293, J1257+4429 - G160M - 1623 - 1/1 (03), scheduling** Thu Aug 02 21:40:32 GMT 2018

**Diagnostic Status: Warning**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 1/1 of the J1257+4429 using G160M:*
*- 3 orbits in total*
*- 1 central wavelengths 1623*
*- 2 segments A+B*
*- 4 FP-POS in total*
*- Buffer times set to 2/3 of that given by the ETC*

## Diagnostics

(J1257+4429 - G160M - 1623 - 1/1 (03)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

## Fixed Targets

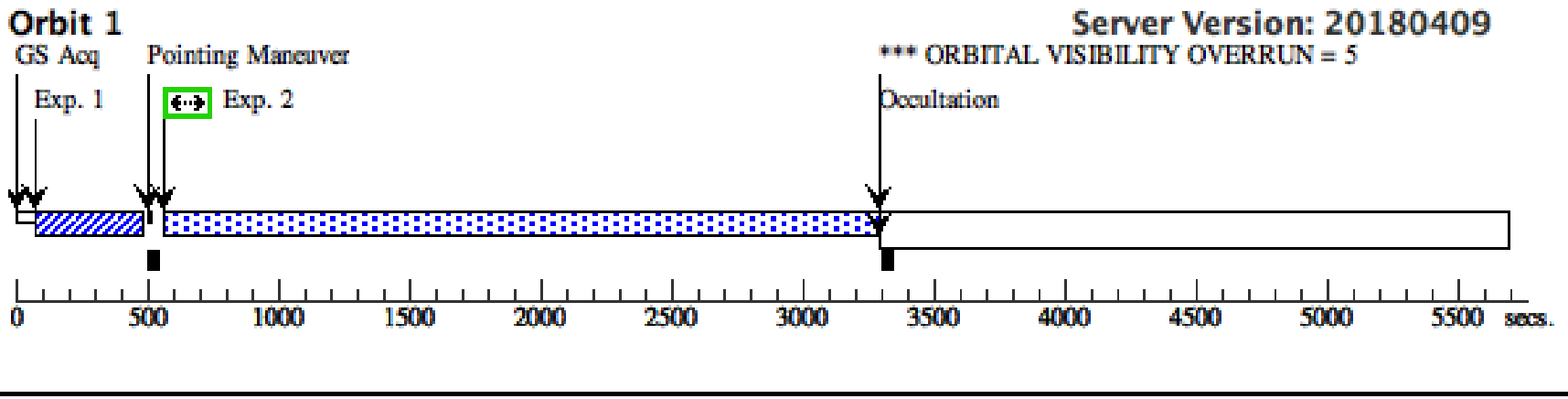
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (2) | J1257+4429 | RA: 12 57 19.5510 (194.3314625d)<br>Dec: +44 29 35.39 (44.49316d)<br>Equinox: J2000 | | V=16.61<br>FUV=16.90 | Reference Frame: ICRS |

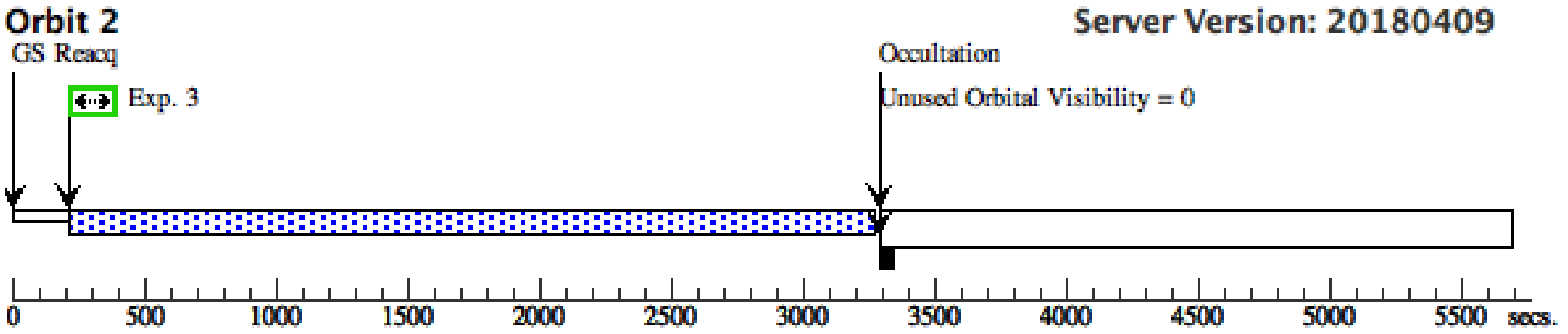
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QSO]*
*Extended=NO*

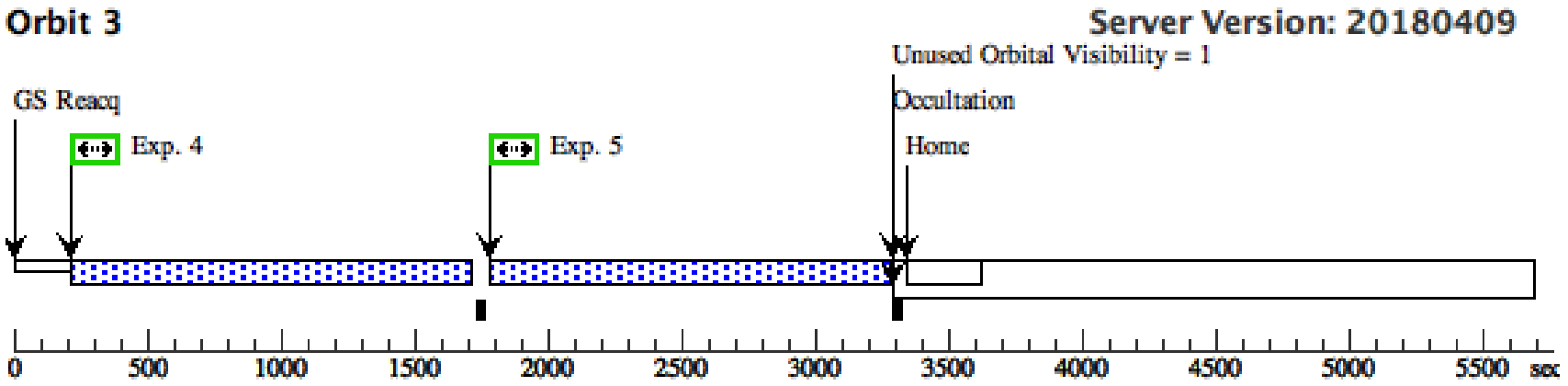
## Exposures

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ACQ (COS.im.1007599) | (2) J1257+4429 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 50 Secs (50 Secs)<br>*[==>]* | ***[1]*** |
| 2 | G160M - 1623 - FP1 - o 1 (COS.sp.1010746) | (2) J1257+4429 | COS/FUV, TIME-TAG, PSA | G160M 1623 A | FP-POS=1; BUFFER-TIME=8200; SEGMENT=BOTH | | | 1000 Secs (2506 Secs)<br>*[==>2506.0 Secs ]* | ***[1]*** |
| 3 | G160M - 1623 - FP2 - o 2 (COS.sp.1010748) | (2) J1257+4429 | COS/FUV, TIME-TAG, PSA | G160M 1623 A | FP-POS=2; BUFFER-TIME=8200; SEGMENT=BOTH | | | 1000 Secs (3012 Secs)<br>*[==>3012.0 Secs ]* | ***[2]*** |
| 4 | G160M - 1623 - FP3 - o 3 (COS.sp.1010749) | (2) J1257+4429 | COS/FUV, TIME-TAG, PSA | G160M 1623 A | FP-POS=3; BUFFER-TIME=8200; SEGMENT=BOTH | | | 1000 Secs (1448 Secs)<br>*[==>1448.0 Secs ]* | ***[3]*** |
| 5 | G160M - 1623 - FP4 - o 3 (COS.sp.1010749) | (2) J1257+4429 | COS/FUV, TIME-TAG, PSA | G160M 1623 A | FP-POS=4; BUFFER-TIME=8200; SEGMENT=BOTH | | | 1000 Secs (1448 Secs)<br>*[==>1448.0 Secs ]* | ***[3]*** |

Orbit Structure



## Visit

**Proposal 15293, J1410+0910 - G130M - 1291 - 1/2 (04), scheduling** Thu Aug 02 21:40:32 GMT 2018

**Diagnostic Status: Warning**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 1/2 of the J1410+0910 using G130M:*
*- 3 orbits in total*
*- 1 central wavelengths 1291*
*- 2 segments A+B*
*- 2 FP-POS in total (COS2025 policy)*
*- Buffer times set to 2/3 of that given by the ETC*

## Diagnostics

(J1410+0910 - G130M - 1291 - 1/2 (04)) Warning (Form): For the best data quality, it is strongly recommended that the maximum number of allowed FP-POS positions is used when observing at a given COS CENWAVE setting. See full description for details.

(J1410+0910 - G130M - 1291 - 1/2 (04)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

## Fixed Targets

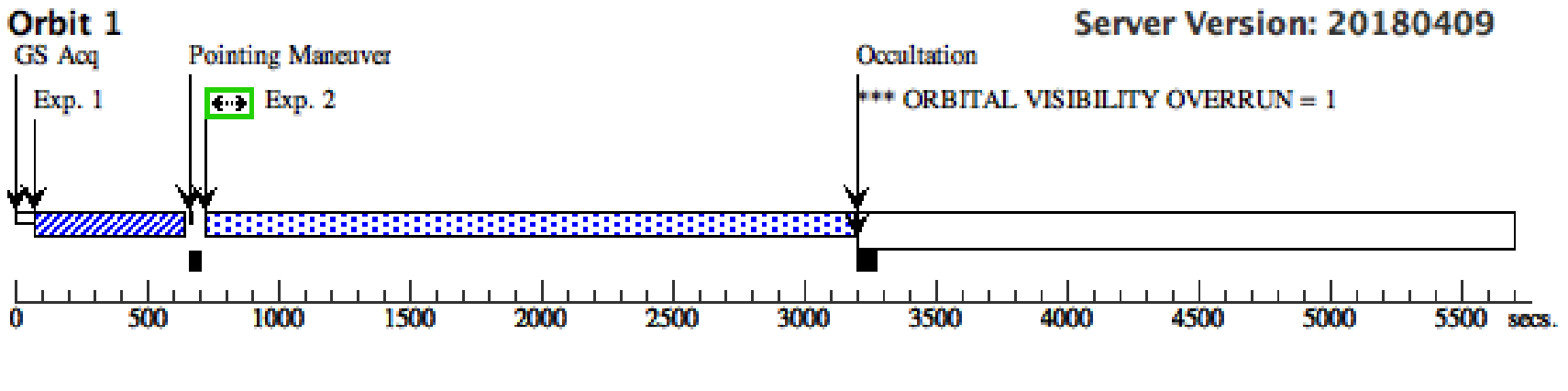
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (3) | J1410+0910 | RA: 14 10 53.4400 (212.7226667d)<br>Dec: +09 10 27.00 (9.17417d)<br>Equinox: J2000 | | V=16.97<br>FUV=17.60 | Reference Frame: ICRS |

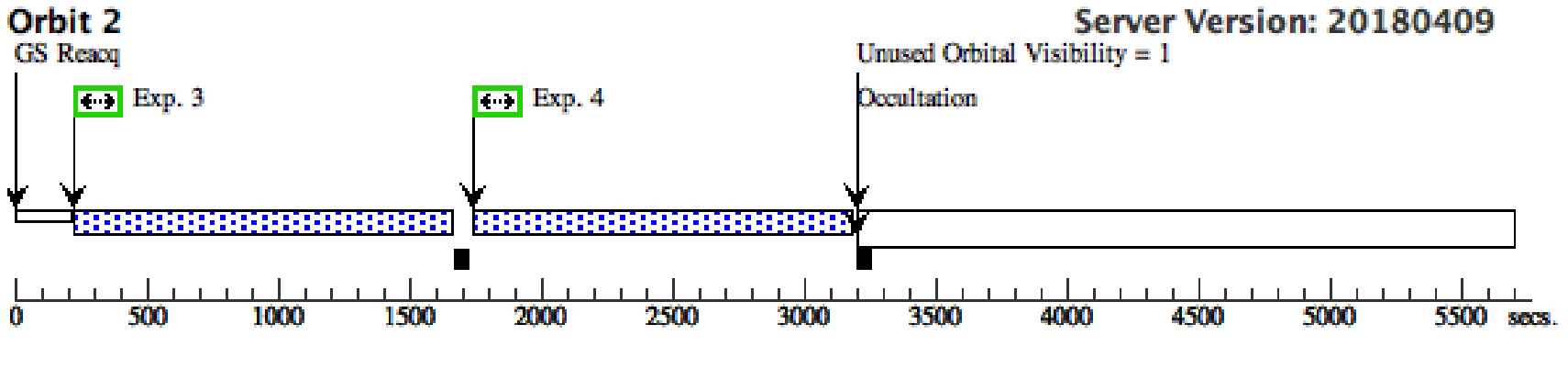
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QSO]*
*Extended=NO*

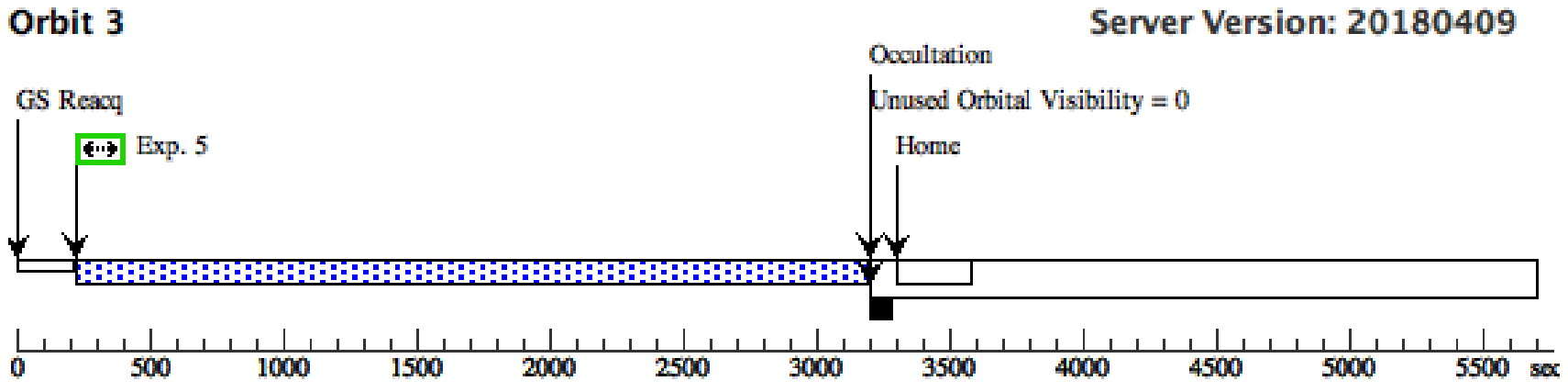
## Exposures

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ACQ (COS.im.10 08325) | (3) J1410+0910 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 130 Secs (130 Secs)<br>*[==>]* | *[1]* |
| 2 | G130M - 12 91- FP3 - o1 (COS.sp.101 0705) | (3) J1410+0910 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=39 00;<br>FP-POS=3;<br>SEGMENT=BOTH | | | 1000 Secs (2302 Secs)<br>*[==>2302.0 Secs ]* | *[1]* |
| 3 | G130M - 12 91- FP3 - o2 (COS.sp.101 0706) | (3) J1410+0910 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=39 00;<br>FP-POS=3;<br>SEGMENT=BOTH | | | 1000 Secs (1392 Secs)<br>*[==>1392.0 Secs ]* | *[2]* |
| 4 | G130M - 12 91- FP4 - o2 (COS.sp.101 0706) | (3) J1410+0910 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=39 00;<br>FP-POS=4;<br>SEGMENT=BOTH | | | 1000 Secs (1392 Secs)<br>*[==>1392.0 Secs ]* | *[2]* |
| 5 | G130M - 12 91- FP4 - o3 (COS.sp.101 0708) | (3) J1410+0910 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=39 00;<br>FP-POS=4;<br>SEGMENT=BOTH | | | 1000 Secs (2919 Secs)<br>*[==>2919.0 Secs ]* | *[3]* |

Orbit Structure



## Visit

**Proposal 15293, J1410+0910 - G130M - 1291 - 2/2 (21), scheduling** Thu Aug 02 21:40:32 GMT 2018

**Diagnostic Status: Warning**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 2/2 of the J1410+0910 using G130M:*
*- 2 orbits in total*
*- 1 central wavelengths 1291*
*- 2 segments A+B*
*- 2 FP-POS in total (COS2025 policy)*
*- Buffer times set to 2/3 of that given by the ETC*

## Diagnostics

(J1410+0910 - G130M - 1291 - 2/2 (21)) Warning (Form): For the best data quality, it is strongly recommended that the maximum number of allowed FP-POS positions is used when observing at a given COS CENWAVE setting. See full description for details.

(J1410+0910 - G130M - 1291 - 2/2 (21)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

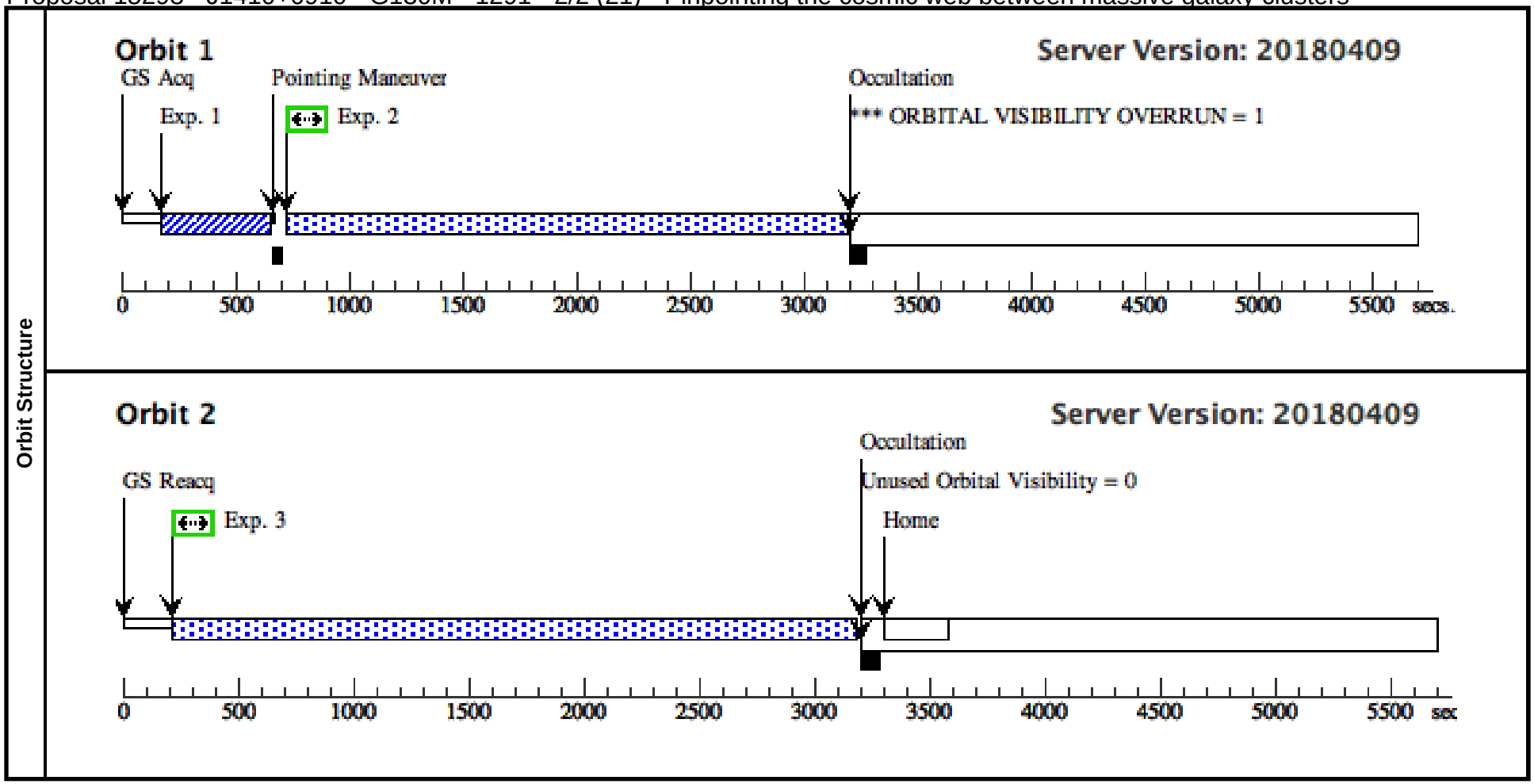
## Fixed Targets

| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (3) | J1410+0910 | RA: 14 10 53.4400 (212.7226667d)<br>Dec: +09 10 27.00 (9.17417d)<br>Equinox: J2000 | | V=16.97<br>FUV=17.60 | Reference Frame: ICRS |

*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QSO]*
*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 (COS.im.10 08325) | (3) J1410+0910 | COS/NUV, ACQ/IMAGE, PSA | MIRRORA | | | | 130 Secs (130 Secs)<br>*[==>]* | <br>***[1]*** |
| 2 | G130M - 12 91- FP3 - o1 (COS.sp.101 0705) | (3) J1410+0910 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=39 00;<br>FP-POS=3;<br>SEGMENT=BOTH | | | 1000 Secs (2302 Secs)<br>*[==>2302.0 Secs ]* | <br>***[1]*** |
| 3 | G130M - 12 91- FP4 - o2 (COS.sp.101 0708) | (3) J1410+0910 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=39 00;<br>FP-POS=4;<br>SEGMENT=BOTH | | | 1000 Secs (2919 Secs)<br>*[==>2919.0 Secs ]* | <br>***[2]*** |


Orbit Structure
Orbit 1
Server Version: 20180409
GS Acq
Exp. 1
Pointing Maneuver
Exp. 2
Occultation
*** ORBITAL VISIBILITY OVERRUN = 1
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.
Orbit 2
Server Version: 20180409
Occultation
GS Reacq
Unused Orbital Visibility = 0
Exp. 3
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

## Visit

**Proposal 15293, J1419+3739 - G130M - 1291 - 1/2 (05), implementation** Thu Aug 02 21:40:32 GMT 2018

**Diagnostic Status: Warning**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 1/2 of the J1419+3739 using G130M:*
*- 4 orbits in total*
*- 1 central wavelengths 1291*
*- 2 segments A+B*
*- 2 FP-POS in total (COS2025 policy)*
*- Buffer times set to 2/3 of that given by the ETC*

## Diagnostics

(J1419+3739 - G130M - 1291 - 1/2 (05)) Warning (Form): For the best data quality, it is strongly recommended that the maximum number of allowed FP-POS positions is used when observing at a given COS CENWAVE setting. See full description for details.

(J1419+3739 - G130M - 1291 - 1/2 (05)) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS

(J1419+3739 - G130M - 1291 - 1/2 (05)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

## Fixed Targets

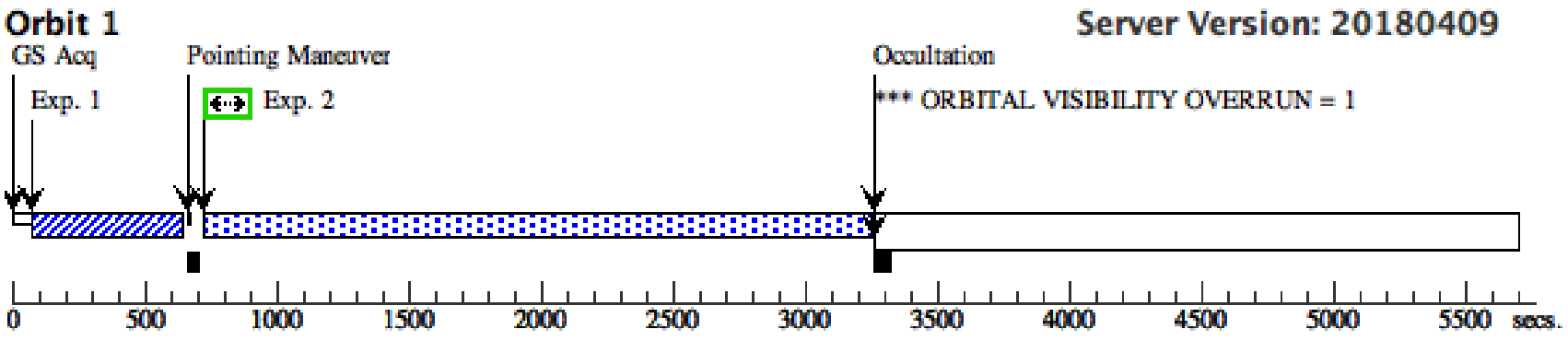
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (4) | J1419+3739 | RA: 14 19 56.7106 (214.9862942d)<br>Dec: +37 39 12.77 (37.65355d)<br>Equinox: J2000 | | V=17.31<br>FUV=17.85 | Reference Frame: ICRS |

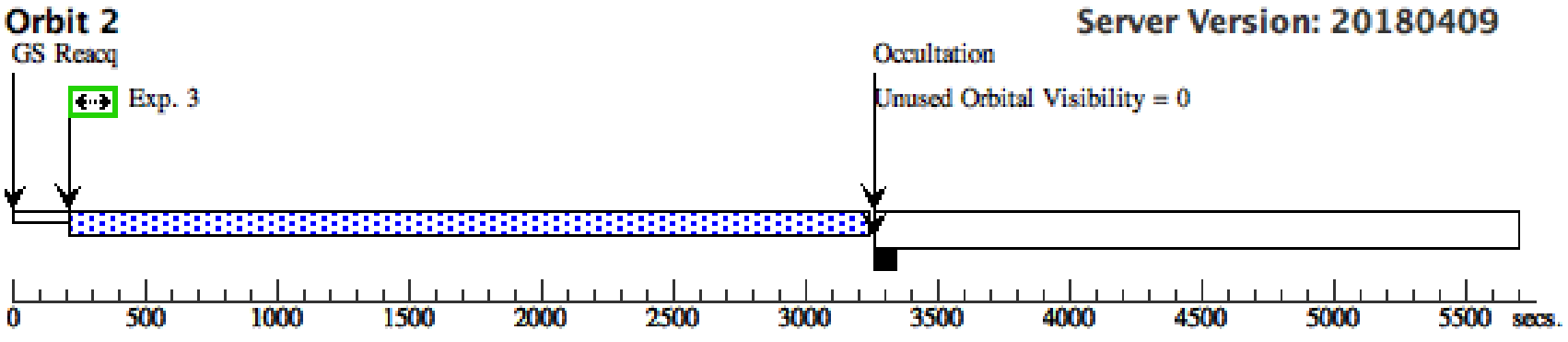
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QSO]*
*Extended=NO*

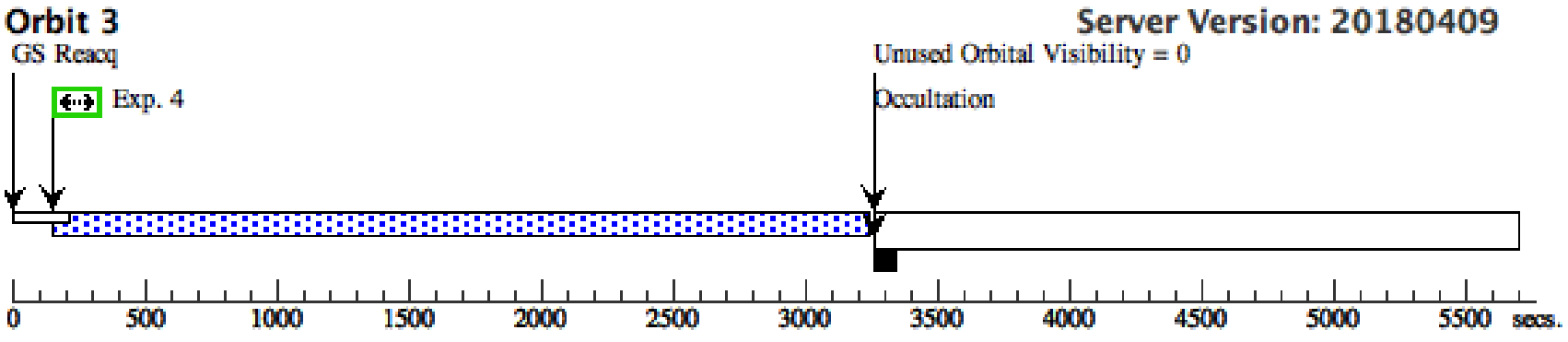
## Exposures

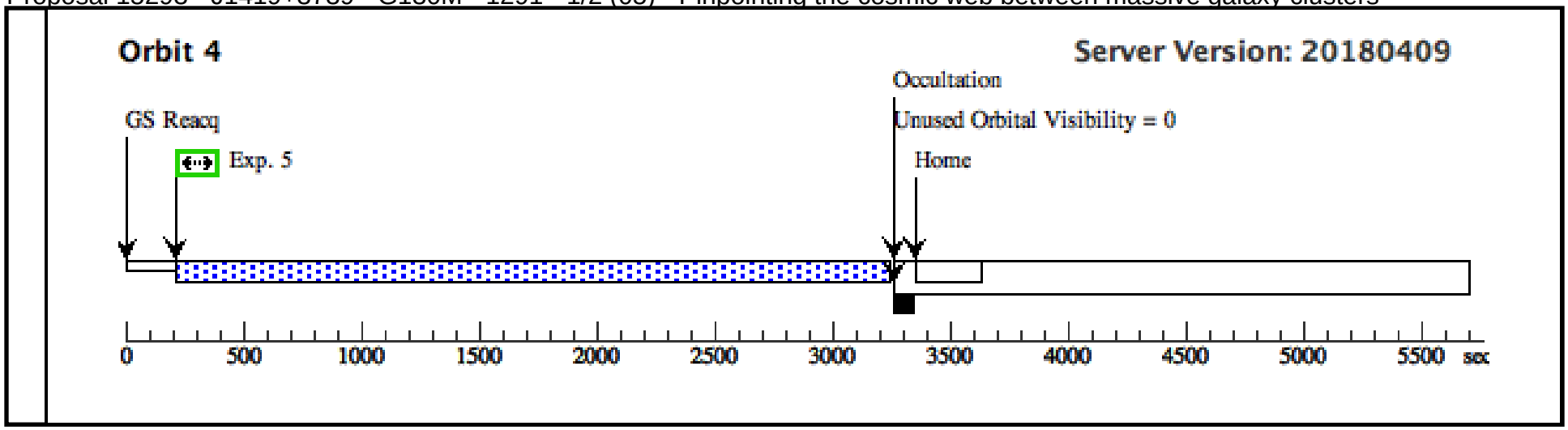
| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ACQ (COS.im.10 08329) | (4) J1419+3739 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 130 Secs (130 Secs)<br>*[==>]* | *[1]* |
| 2 | G130M - 12 91- FP3 - o1 (COS.sp.101 0714) | (4) J1419+3739 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=43 00;<br>FP-POS=3;<br>SEGMENT=BOTH | | | 1000 Secs (2357 Secs)<br>*[==>2357.0 Secs ]* | *[1]* |
| 3 | G130M - 12 91- FP4 - o2 (COS.sp.101 0712) | (4) J1419+3739 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=43 00;<br>FP-POS=4;<br>SEGMENT=BOTH | | | 1000 Secs (2974 Secs)<br>*[==>2974.0 Secs ]* | *[2]* |
| 4 | G130M - 12 91- FP3 - o3 (COS.sp.101 0712) | (4) J1419+3739 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=43 00;<br>FP-POS=3;<br>SEGMENT=BOTH | | | 1000 Secs (2974 Secs)<br>*[==>2974.0 Secs ]* | *[3]* |
| 5 | G130M - 12 91- FP4 - o4 (COS.sp.101 0712) | (4) J1419+3739 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=43 00;<br>FP-POS=4;<br>SEGMENT=BOTH | | | 1000 Secs (2974 Secs)<br>*[==>2974.0 Secs ]* | *[4]* |

Orbit Structure




Orbit 4
Server Version: 20180409
Occultation
GS Reacq
Unused Orbital Visibility = 0
Exp. 5
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

## Visit

**Proposal 15293, J1419+3739 - G130M - 1291 - 2/2 (06), implementation** Thu Aug 02 21:40:32 GMT 2018

**Diagnostic Status: Warning**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 2/2 of the J1419+3739 using G130M:*
*- 3 orbits in total*
*- 1 central wavelengths 1291*
*- 2 segments A+B*
*- 2 FP-POS in total (COS2025 policy)*
*- Buffer times set to 2/3 of that given by the ETC*

## Diagnostics

(J1419+3739 - G130M - 1291 - 2/2 (06)) Warning (Form): For the best data quality, it is strongly recommended that the maximum number of allowed FP-POS positions is used when observing at a given COS CENWAVE setting. See full description for details.

(J1419+3739 - G130M - 1291 - 2/2 (06)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

## Fixed Targets

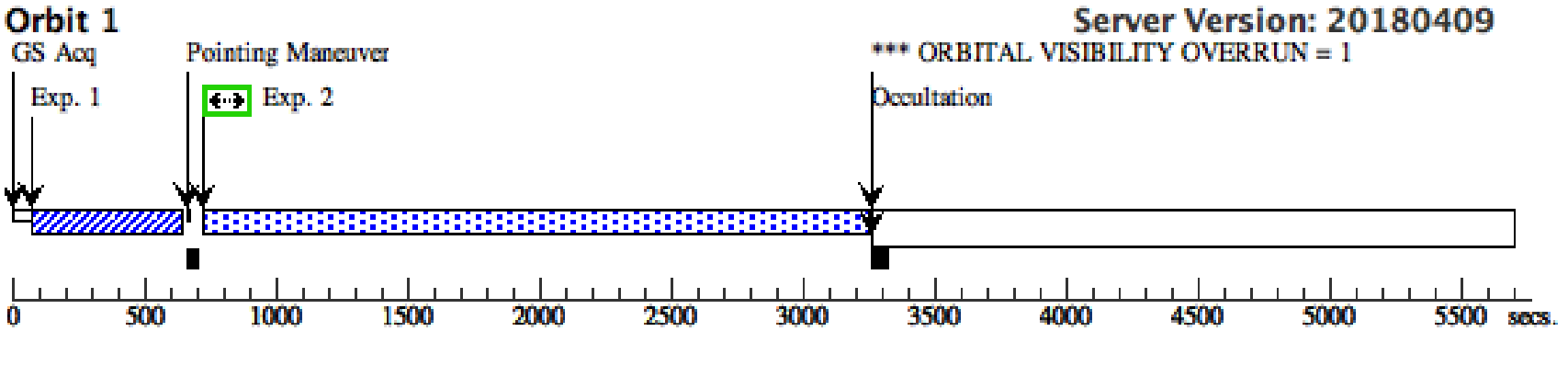
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (4) | J1419+3739 | RA: 14 19 56.7106 (214.9862942d)<br>Dec: +37 39 12.77 (37.65355d)<br>Equinox: J2000 | | V=17.31<br>FUV=17.85 | Reference Frame: ICRS |

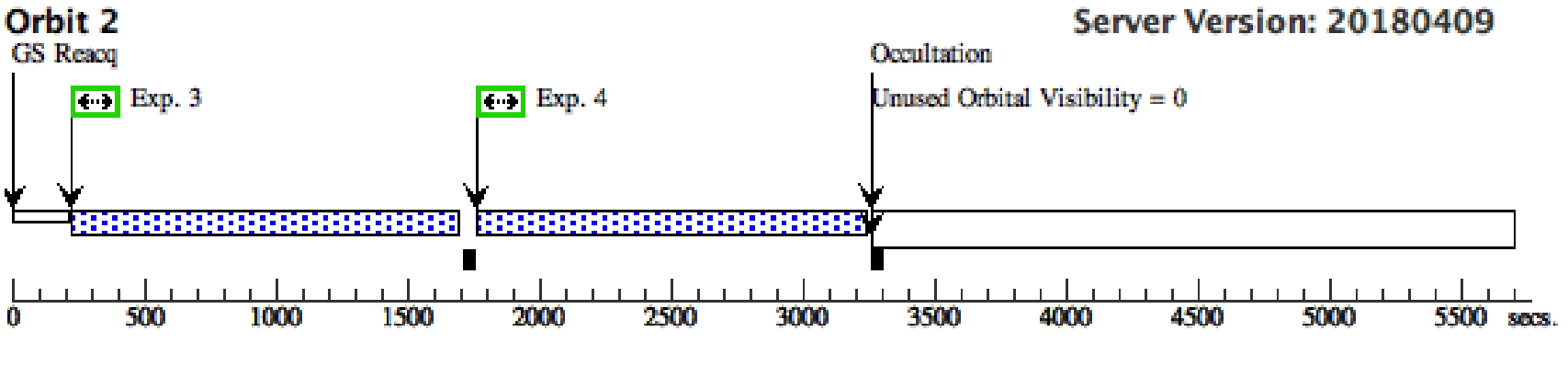
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QSO]*
*Extended=NO*

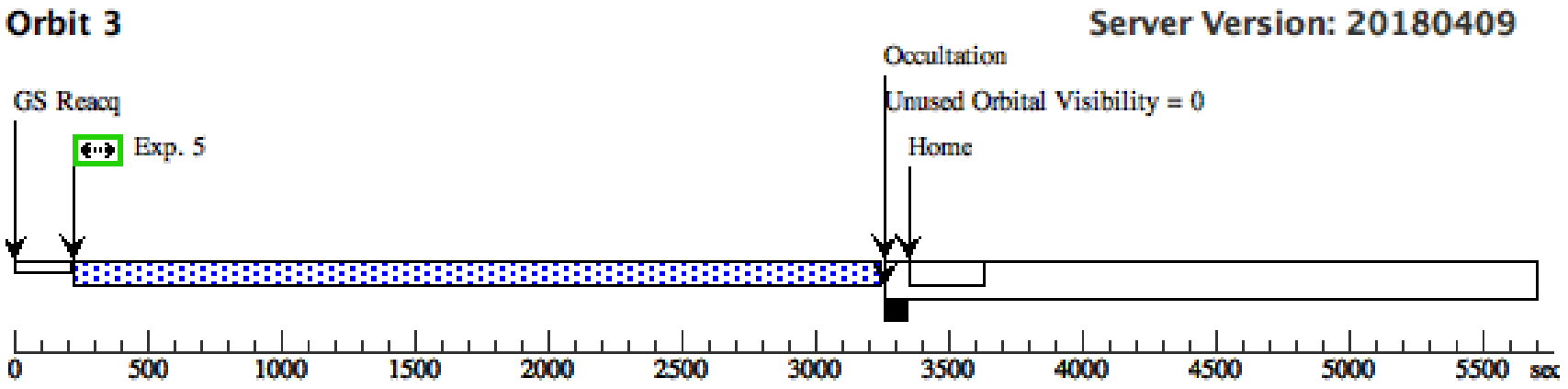
## Exposures

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ACQ (COS.im.10 08329) | (4) J1419+3739 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 130 Secs (130 Secs)<br>*[==>]* | *[1]* |
| 2 | G130M - 12 91- FP3 - o1 (COS.sp.101 0714) | (4) J1419+3739 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=43 00;<br>FP-POS=3;<br>SEGMENT=BOTH | | | 1000 Secs (2357 Secs)<br>*[==>2357.0 Secs ]* | *[1]* |
| 3 | G130M - 12 91- FP3 - o2 (COS.sp.101 0715) | (4) J1419+3739 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=43 00;<br>FP-POS=3;<br>SEGMENT=BOTH | | | 1000 Secs (1425 Secs)<br>*[==>1425.0 Secs ]* | *[2]* |
| 4 | G130M - 12 91- FP4 - o2 (COS.sp.101 0715) | (4) J1419+3739 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=43 00;<br>FP-POS=4;<br>SEGMENT=BOTH | | | 1000 Secs (1425 Secs)<br>*[==>1425.0 Secs ]* | *[2]* |
| 5 | G130M - 12 91- FP4 - o3 (COS.sp.101 0712) | (4) J1419+3739 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=43 00;<br>FP-POS=4;<br>SEGMENT=BOTH | | | 1000 Secs (2974 Secs)<br>*[==>2974.0 Secs ]* | *[3]* |

Orbit Structure



## Visit

**Proposal 15293, J1216+1819 - G130M - 1291 - 1/2 (07), implementation** Thu Aug 02 21:40:32 GMT 2018

**Diagnostic Status: Warning**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 1/2 of the J1216+1819 using G130M:*
*- 4 orbits in total*
*- 1 central wavelengths 1291*
*- 2 segments A+B*
*- 2 FP-POS in total (COS2025 policy)*
*- Buffer times set to 2/3 of that given by the ETC*

## Diagnostics

(J1216+1819 - G130M - 1291 - 1/2 (07)) Warning (Form): For the best data quality, it is strongly recommended that the maximum number of allowed FP-POS positions is used when observing at a given COS CENWAVE setting. See full description for details.

(J1216+1819 - G130M - 1291 - 1/2 (07)) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS

(J1216+1819 - G130M - 1291 - 1/2 (07)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

## Fixed Targets

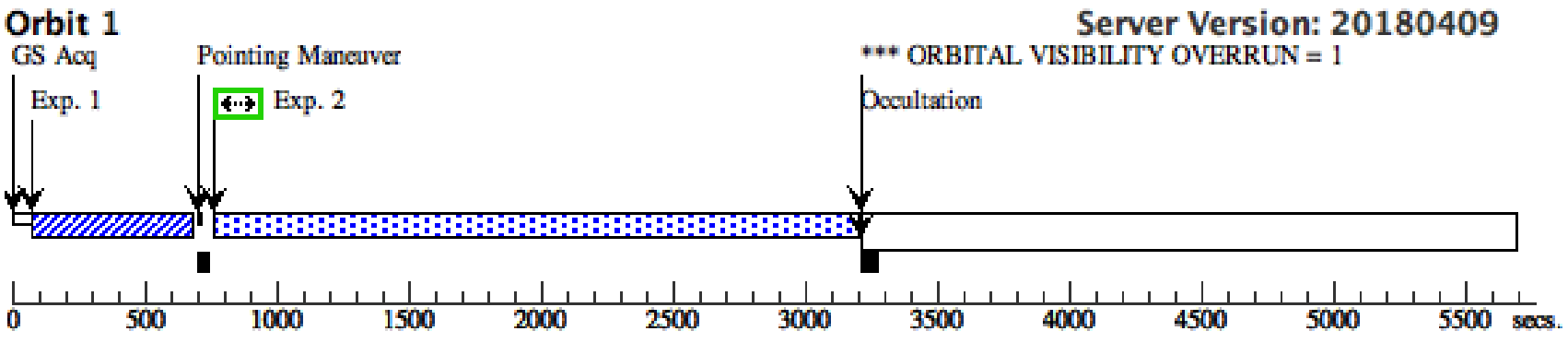
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (5) | J1216+1819 | RA: 12 16 33.5650 (184.1398542d)<br>Dec: +18 19 7.17 (18.31866d)<br>Equinox: J2000 | | V=17.84<br>FUV=18.07 | Reference Frame: ICRS |

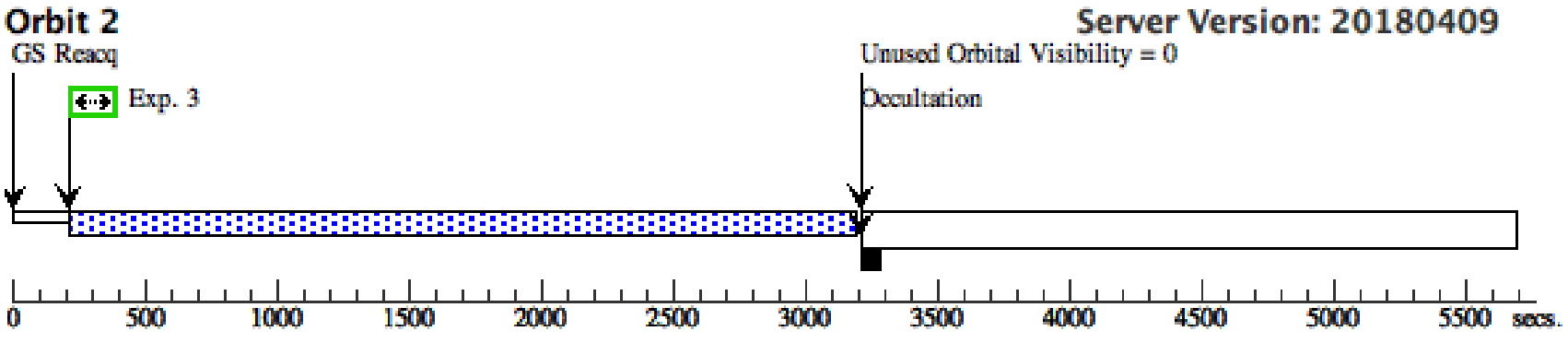
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QSO]*
*Extended=NO*

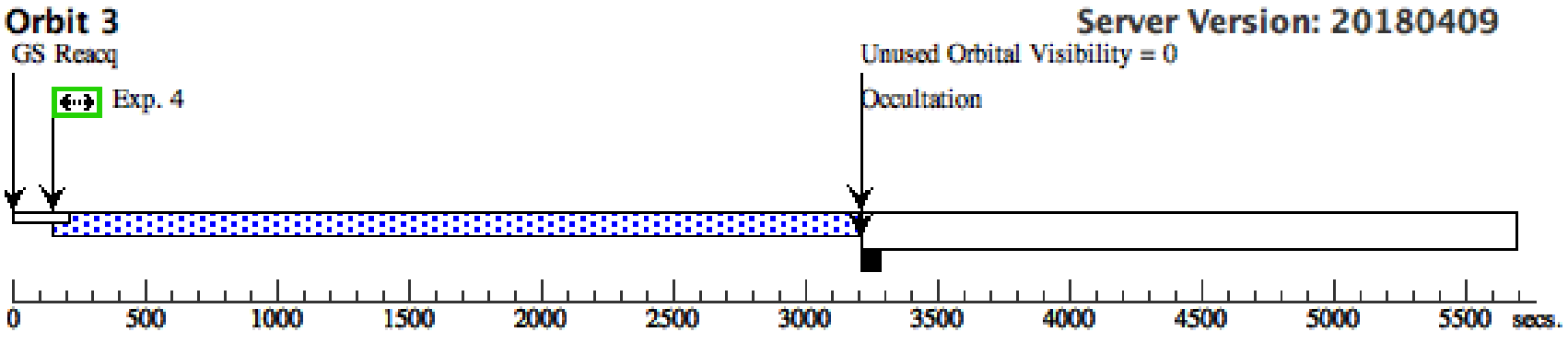
## Exposures

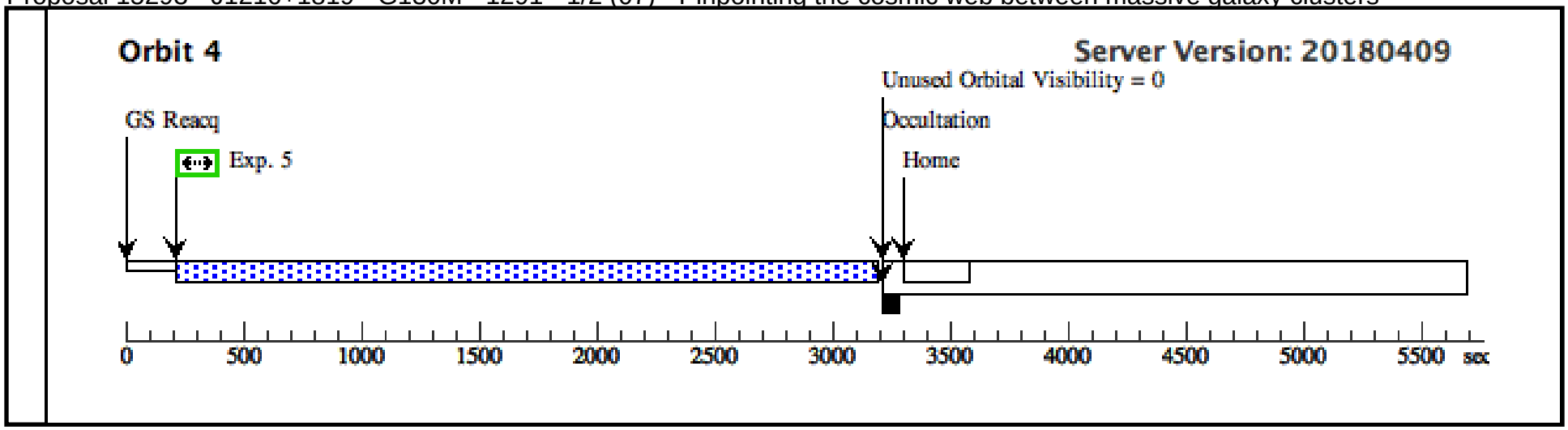
| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ACQ (COS.im.10 08334) | (5) J1216+1819 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 150 Secs (150 Secs)<br>*[==>]* | ***[1]*** |
| 2 | G130M - 12 91- FP3 - o1 (COS.sp.101 0718) | (5) J1216+1819 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=46 00;<br>FP-POS=3;<br>SEGMENT=BOTH | | | 1000 Secs (2273 Secs)<br>*[==>2273.0 Secs ]* | ***[1]*** |
| 3 | G130M - 12 91- FP4 - o2 (COS.sp.101 0719) | (5) J1216+1819 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=46 00;<br>FP-POS=4;<br>SEGMENT=BOTH | | | 1000 Secs (2930 Secs)<br>*[==>2930.0 Secs ]* | ***[2]*** |
| 4 | G130M - 12 91- FP3 - o3 (COS.sp.101 0719) | (5) J1216+1819 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=46 00;<br>FP-POS=3;<br>SEGMENT=BOTH | | | 1000 Secs (2930 Secs)<br>*[==>2930.0 Secs ]* | ***[3]*** |
| 5 | G130M - 12 91- FP4 - o4 (COS.sp.101 0719) | (5) J1216+1819 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=46 00;<br>FP-POS=4;<br>SEGMENT=BOTH | | | 1000 Secs (2930 Secs)<br>*[==>2930.0 Secs ]* | ***[4]*** |

Orbit Structure




Orbit 4
Server Version: 20180409
Unused Orbital Visibility = 0
GS Reacq
Occultation
Exp. 5
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

## Visit

**Proposal 15293, J1216+1819 - G130M - 1291 - 2/2 (08), implementation** Thu Aug 02 21:40:32 GMT 2018

**Diagnostic Status: Warning**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 2/2 of the J1216+1819 using G130M:*
*- 4 orbits in total*
*- 1 central wavelengths 1291*
*- 2 segments A+B*
*- 2 FP-POS in total (COS2025 policy)*
*- Buffer times set to 2/3 of that given by the ETC*

## Diagnostics

(J1216+1819 - G130M - 1291 - 2/2 (08)) Warning (Form): For the best data quality, it is strongly recommended that the maximum number of allowed FP-POS positions is used when observing at a given COS CENWAVE setting. See full description for details.

(J1216+1819 - G130M - 1291 - 2/2 (08)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

## Fixed Targets

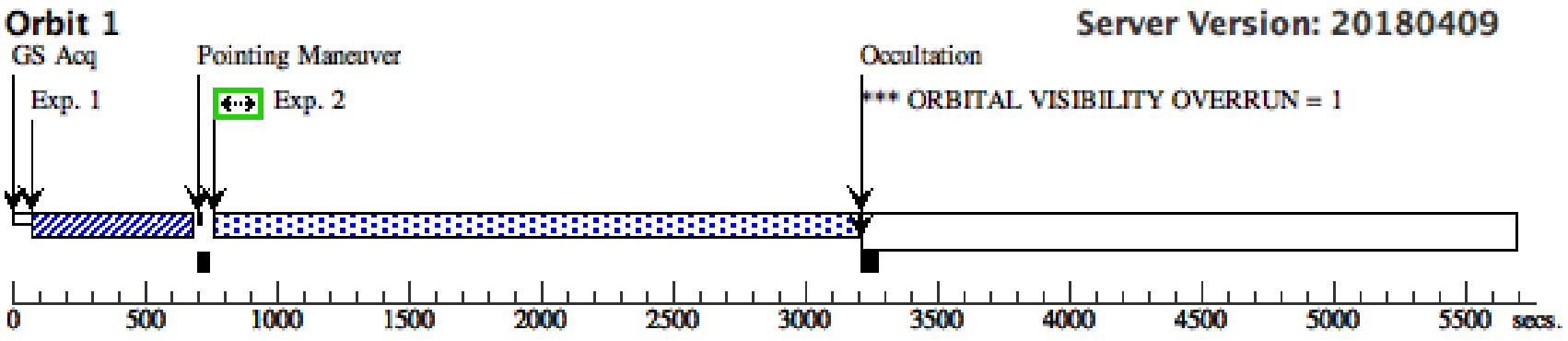
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (5) | J1216+1819 | RA: 12 16 33.5650 (184.1398542d)<br>Dec: +18 19 7.17 (18.31866d)<br>Equinox: J2000 | | V=17.84<br>FUV=18.07 | Reference Frame: ICRS |

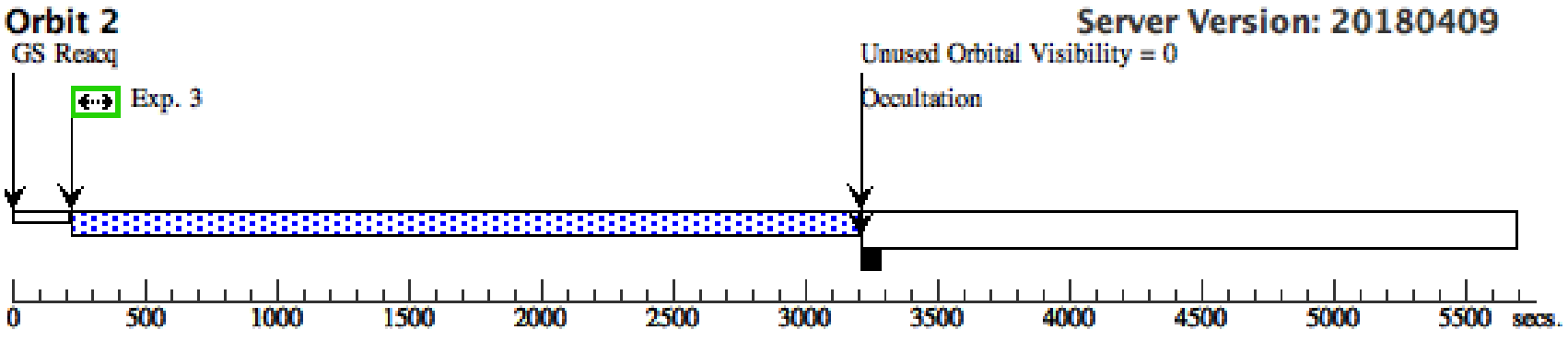
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QSO]*
*Extended=NO*

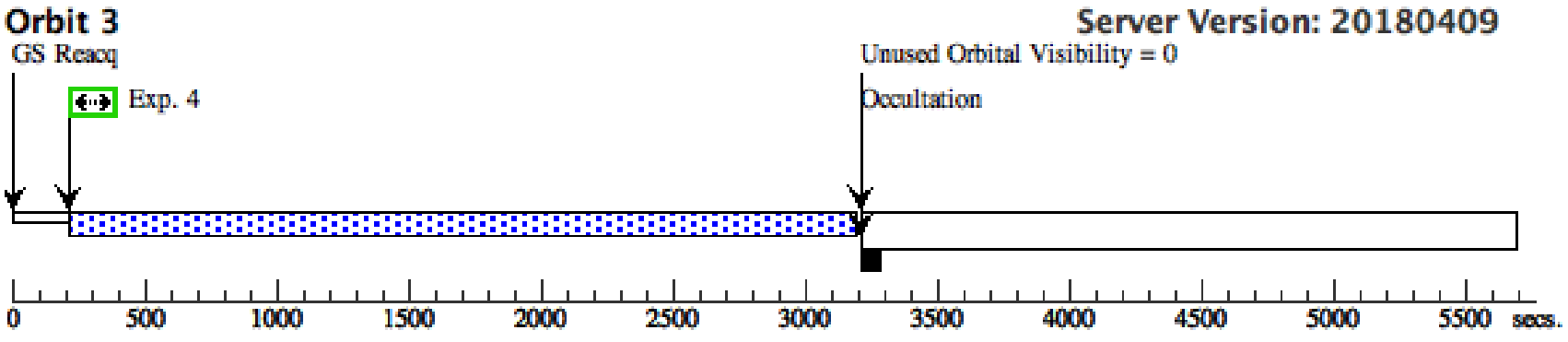
## Exposures

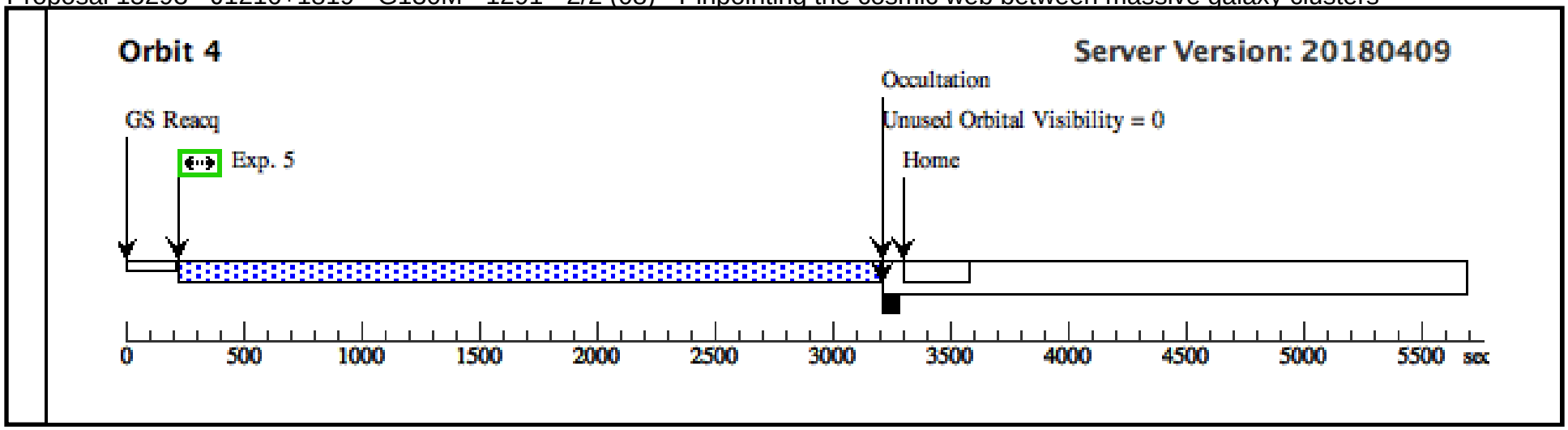
| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ACQ (COS.im.10 08334) | (5) J1216+1819 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 150 Secs (150 Secs)<br>*[==>]* | ***[1]*** |
| 2 | G130M - 12 91- FP3 - o1 (COS.sp.101 0718) | (5) J1216+1819 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=46 00;<br>FP-POS=3;<br>SEGMENT=BOTH | | | 1000 Secs (2273 Secs)<br>*[==>2273.0 Secs ]* | ***[1]*** |
| 3 | G130M - 12 91- FP3 - o2 (COS.sp.101 0719) | (5) J1216+1819 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=46 00;<br>FP-POS=3;<br>SEGMENT=BOTH | | | 1000 Secs (2930 Secs)<br>*[==>2930.0 Secs ]* | ***[2]*** |
| 4 | G130M - 12 91- FP4 - o3 (COS.sp.101 0719) | (5) J1216+1819 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=46 00;<br>FP-POS=4;<br>SEGMENT=BOTH | | | 1000 Secs (2930 Secs)<br>*[==>2930.0 Secs ]* | ***[3]*** |
| 5 | G130M - 12 91- FP4 - o4 (COS.sp.101 0719) | (5) J1216+1819 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | BUFFER-TIME=46 00;<br>FP-POS=4;<br>SEGMENT=BOTH | | | 1000 Secs (2930 Secs)<br>*[==>2930.0 Secs ]* | ***[4]*** |

Orbit Structure




Orbit 4
Server Version: 20180409
Occultation
GS Reacq
Unused Orbital Visibility = 0
Exp. 5
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

## Visit

**Proposal 15293, J1358+0213 - G130M - 1291 - 1/1 (09), scheduled** Thu Aug 02 21:40:32 GMT 2018

**Diagnostic Status: Warning**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 1/1 of the J1358+0213 using G130M:*
*- 3 orbits in total*
*- 1 central wavelengths 1291*
*- 2 segments A+B*
*- 2 FP-POS in total (COS2025 policy)*
*- Buffer times set to 2/3 of that given by the ETC*

## Diagnostics

(J1358+0213 - G130M - 1291 - 1/1 (09)) Warning (Form): For the best data quality, it is strongly recommended that the maximum number of allowed FP-POS positions is used when observing at a given COS CENWAVE setting. See full description for details.

(J1358+0213 - G130M - 1291 - 1/1 (09)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

## Fixed Targets

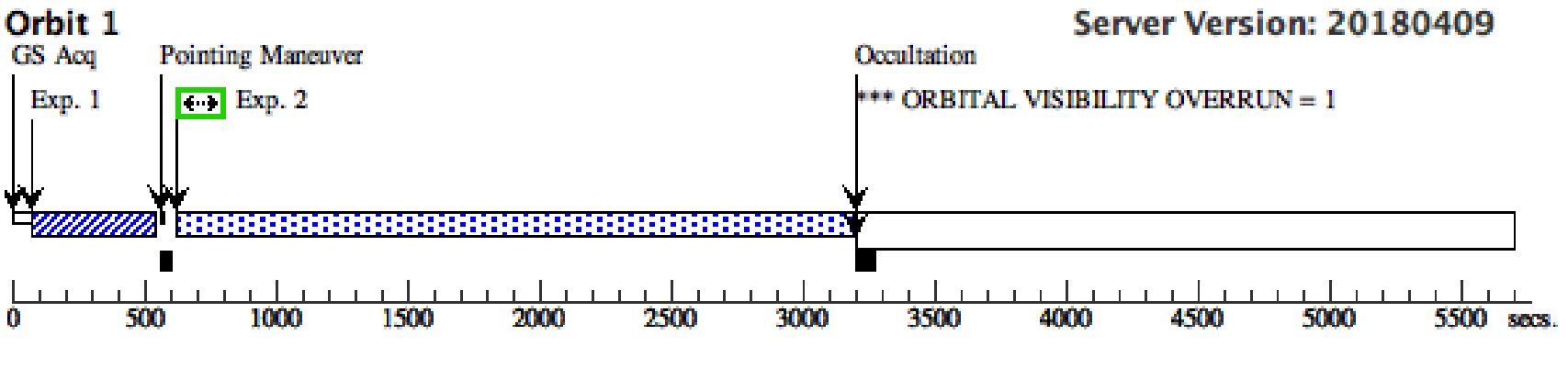
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (6) | J1358+0213 | RA: 13 58 23.9890 (209.5999542d)<br>Dec: +02 13 43.82 (2.22884d)<br>Equinox: J2000 | | V=15.88<br>FUV=17.53 | Reference Frame: ICRS |

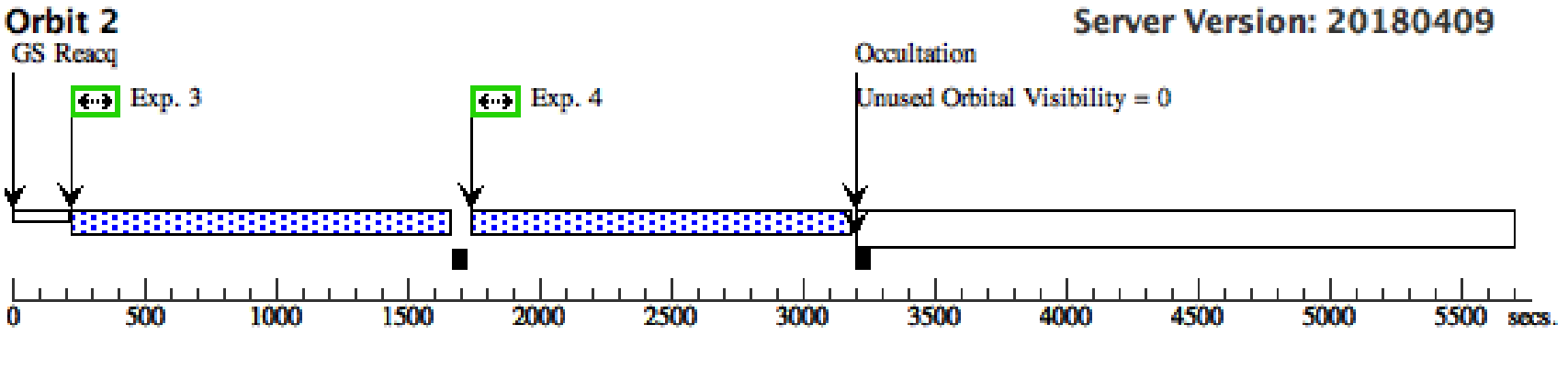
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QSO]*
*Extended=NO*

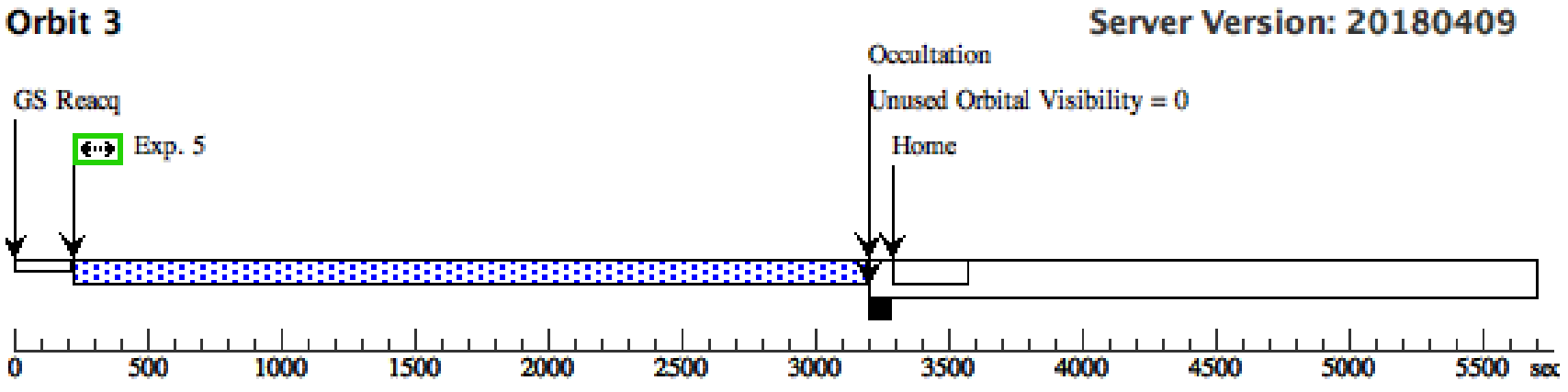
## Exposures

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ACQ (COS.im.1008341) | (6) J1358+0213 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 80 Secs (80 Secs)<br>*[==>]* | *[1]* |
| 2 | G130M - 1291 - FP3 - o 1 (COS.sp.1010720) | (6) J1358+0213 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | FP-POS=3; BUFFER-TIME=3900; SEGMENT=BOTH | | | 1000 Secs (2399 Secs)<br>*[==>2399.0 Secs ]* | *[1]* |
| 3 | G130M - 1291 - FP3 - o 2 (COS.sp.1010721) | (6) J1358+0213 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | FP-POS=3; BUFFER-TIME=3900; SEGMENT=BOTH | | | 1000 Secs (1391 Secs)<br>*[==>1391.0 Secs ]* | *[2]* |
| 4 | G130M - 1291 - FP4 - o 2 (COS.sp.1010721) | (6) J1358+0213 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | FP-POS=4; BUFFER-TIME=3900; SEGMENT=BOTH | | | 1000 Secs (1391 Secs)<br>*[==>1391.0 Secs ]* | *[2]* |
| 5 | G130M - 1291 - FP4 - o 3 (COS.sp.1010722) | (6) J1358+0213 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | FP-POS=4; BUFFER-TIME=3900; SEGMENT=BOTH | | | 1000 Secs (2916 Secs)<br>*[==>2916.0 Secs ]* | *[3]* |

Orbit Structure



## Visit

**Proposal 15293, J1358+0213 - G160M - 1577 - 1/2 (10), scheduling** Thu Aug 02 21:40:32 GMT 2018

**Diagnostic Status: No Diagnostics**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 1/2 of the J1358+0213 using G160M:*
*- 3 orbits in total*
*- 1 central wavelengths 1577*
*- 2 segments A+B*
*- 4 FP-POS in total*
*- Buffer times set to 2/3 of that given by the ETC*

## Fixed Targets

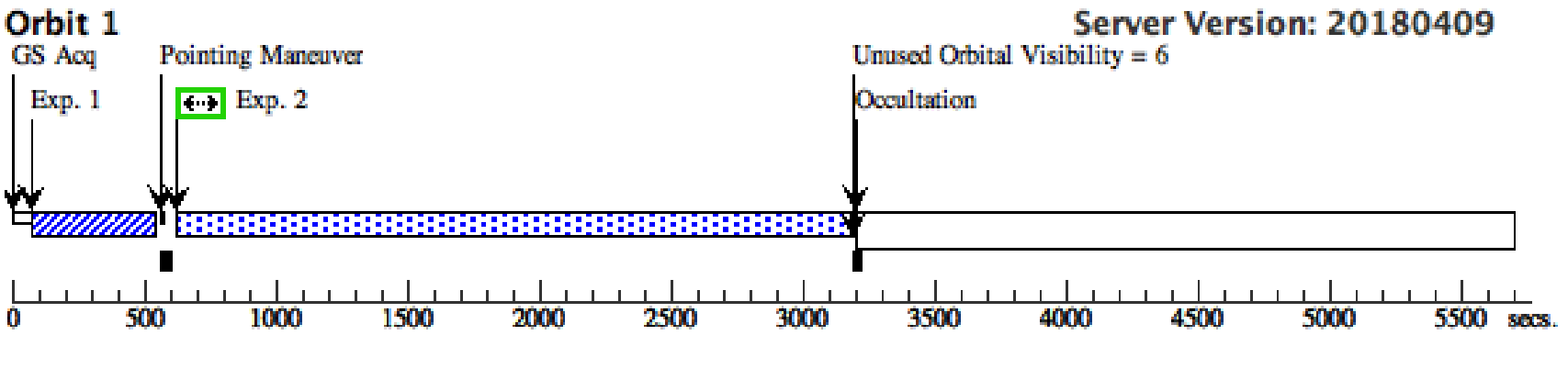
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (6) | J1358+0213 | RA: 13 58 23.9890 (209.5999542d)<br>Dec: +02 13 43.82 (2.22884d)<br>Equinox: J2000 | | V=15.88<br>FUV=17.53 | Reference Frame: ICRS |

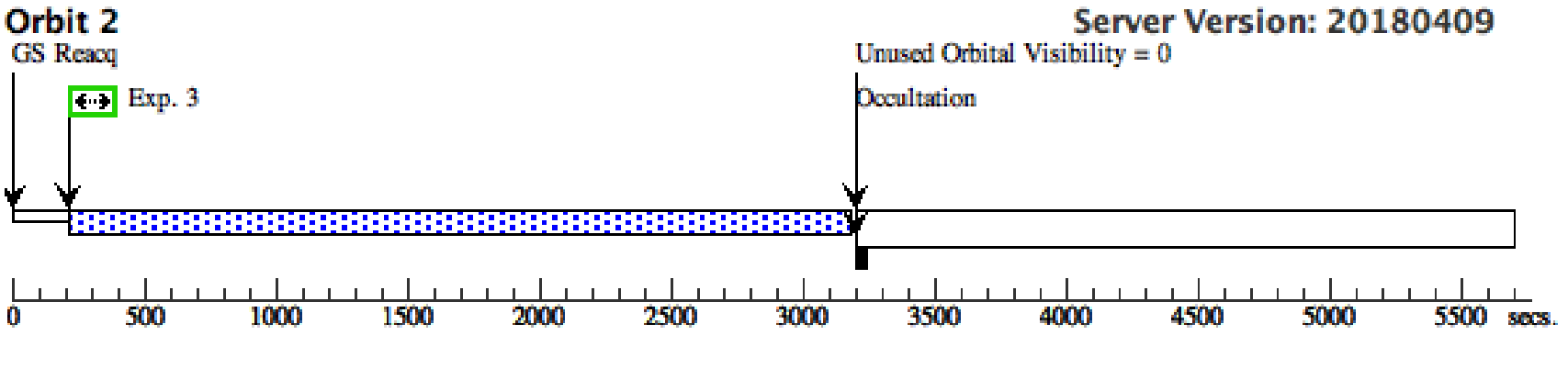
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QSO]*
*Extended=NO*

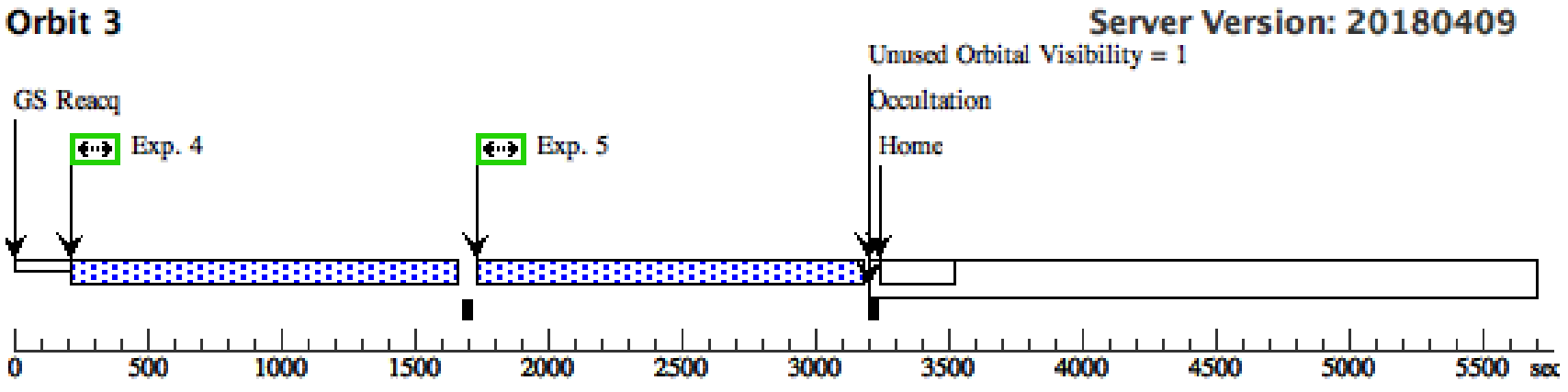
## Exposures

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ACQ (COS.im.1008341) | (6) J1358+0213 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 80 Secs (80 Secs)<br>*[==>]* | ***[1]*** |
| 2 | G160M - 1577 - FP1 - o 1 (COS.sp.1010767) | (6) J1358+0213 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=1;<br>BUFFER-TIME=10616;<br>SEGMENT=BOTH | | | 1000 Secs (2351 Secs)<br>*[==>2351.0 Secs ]* | ***[1]*** |
| 3 | G160M - 1577 - FP2 - o 2 (COS.sp.1010768) | (6) J1358+0213 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=2;<br>BUFFER-TIME=10616;<br>SEGMENT=BOTH | | | 1000 Secs (2916 Secs)<br>*[==>2916.0 Secs ]* | ***[2]*** |
| 4 | G160M - 1577 - FP3 - o 3 (COS.sp.1010769) | (6) J1358+0213 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=3;<br>BUFFER-TIME=10616;<br>SEGMENT=BOTH | | | 1000 Secs (1400 Secs)<br>*[==>1400.0 Secs ]* | ***[3]*** |
| 5 | G160M - 1577 - FP4 - o 3 (COS.sp.1010769) | (6) J1358+0213 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=4;<br>BUFFER-TIME=10616;<br>SEGMENT=BOTH | | | 1000 Secs (1400 Secs)<br>*[==>1400.0 Secs ]* | ***[3]*** |

Orbit Structure



## Visit

**Proposal 15293, J1358+0213 - G160M - 1577 - 2/2 (22), scheduled** Thu Aug 02 21:40:32 GMT 2018

**Diagnostic Status: No Diagnostics**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 2/2 of the J1358+0213 using G160M:*
*- 2 orbits in total*
*- 1 central wavelengths 1577*
*- 2 segments A+B*
*- 4 FP-POS in total*
*- Buffer times set to 2/3 of that given by the ETC*

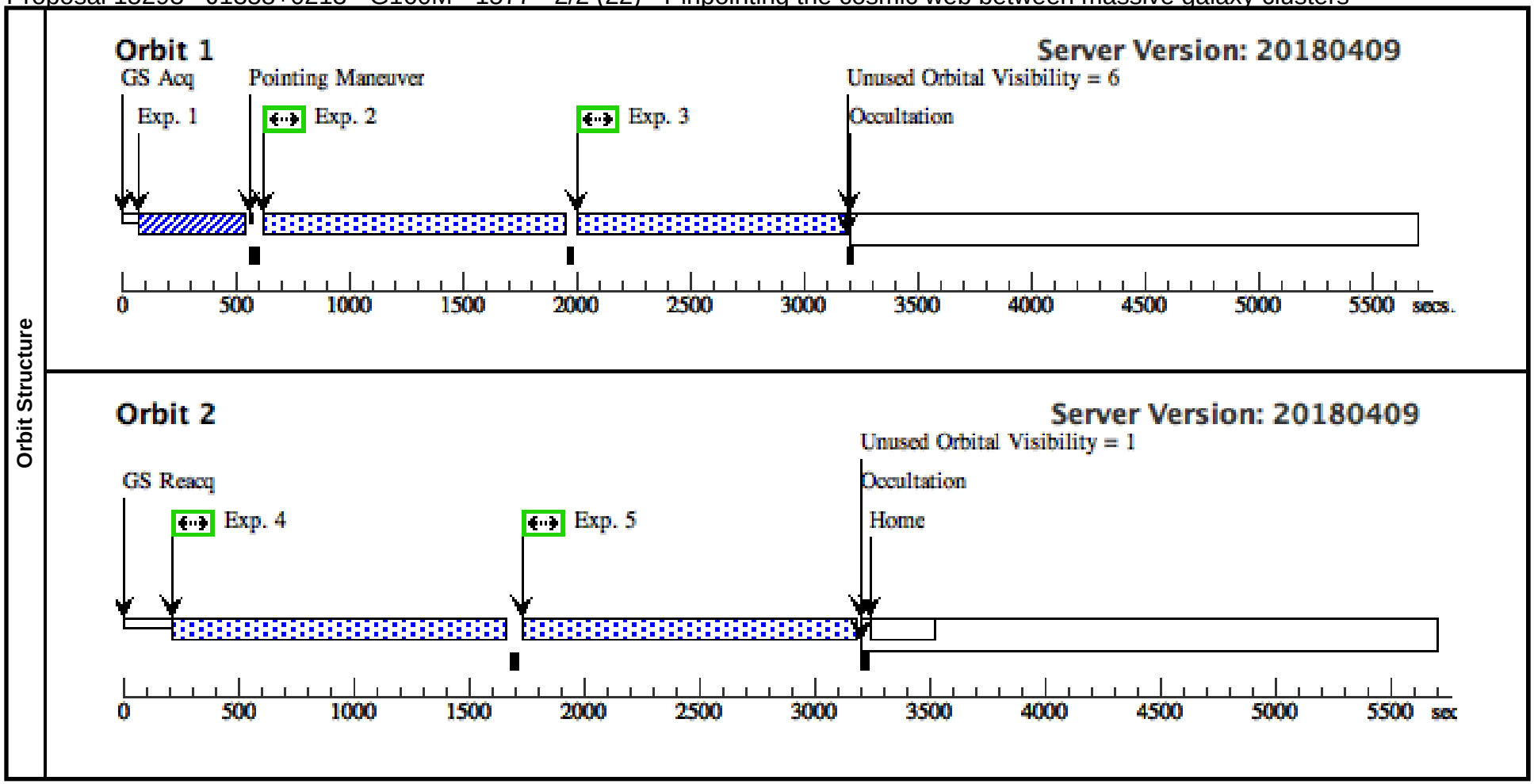
## Fixed Targets

| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (6) | J1358+0213 | RA: 13 58 23.9890 (209.5999542d)<br>Dec: +02 13 43.82 (2.22884d)<br>Equinox: J2000 | | V=15.88<br>FUV=17.53 | Reference Frame: ICRS |

*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QSO]*
*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 (COS.im.1008341) | (6) J1358+0213 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 80 Secs (80 Secs)<br>*[==>]* | *[1]* |
| 2 | G160M - 1577 - FP1 - o 1 (COS.sp.1010770) | (6) J1358+0213 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=1;<br>BUFFER-TIME=10616;<br>SEGMENT=BOTH | | | 1000 Secs (1123 Secs)<br>*[==>1123.0 Secs ]* | *[1]* |
| 3 | G160M - 1577 - FP2 - o 1 (COS.sp.1010770) | (6) J1358+0213 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=2;<br>BUFFER-TIME=10616;<br>SEGMENT=BOTH | | | 1000 Secs (1123 Secs)<br>*[==>1123.0 Secs ]* | *[1]* |
| 4 | G160M - 1577 - FP3 - o 2 (COS.sp.1010769) | (6) J1358+0213 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=3;<br>BUFFER-TIME=10616;<br>SEGMENT=BOTH | | | 1000 Secs (1400 Secs)<br>*[==>1400.0 Secs ]* | *[2]* |
| 5 | G160M - 1577 - FP4 - o 2 (COS.sp.1010769) | (6) J1358+0213 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=4;<br>BUFFER-TIME=10616;<br>SEGMENT=BOTH | | | 1000 Secs (1400 Secs)<br>*[==>1400.0 Secs ]* | *[2]* |


Orbit Structure
Orbit 1
Server Version: 20180409
GS Acq
Pointing Maneuver
Unused Orbital Visibility = 6
Exp. 1
Exp. 2
Exp. 3
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.
Orbit 2
Server Version: 20180409
Unused Orbital Visibility = 1
GS Reacq
Occultation
Exp. 4
Exp. 5
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

## Visit

**Proposal 15293, J1210+0154 - G130M - 1291 - 1/1 (11), implementation** Thu Aug 02 21:40:32 GMT 2018

**Diagnostic Status: Warning**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 1/1 of the J1210+0154 using G130M:*
*- 3 orbits in total*
*- 1 central wavelengths 1291*
*- 2 segments A+B*
*- 2 FP-POS in total (COS2025 policy)*
*- Buffer times set to 2/3 of that given by the ETC*

## Diagnostics

(J1210+0154 - G130M - 1291 - 1/1 (11)) Warning (Form): For the best data quality, it is strongly recommended that the maximum number of allowed FP-POS positions is used when observing at a given COS CENWAVE setting. See full description for details.

(J1210+0154 - G130M - 1291 - 1/1 (11)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

## Fixed Targets

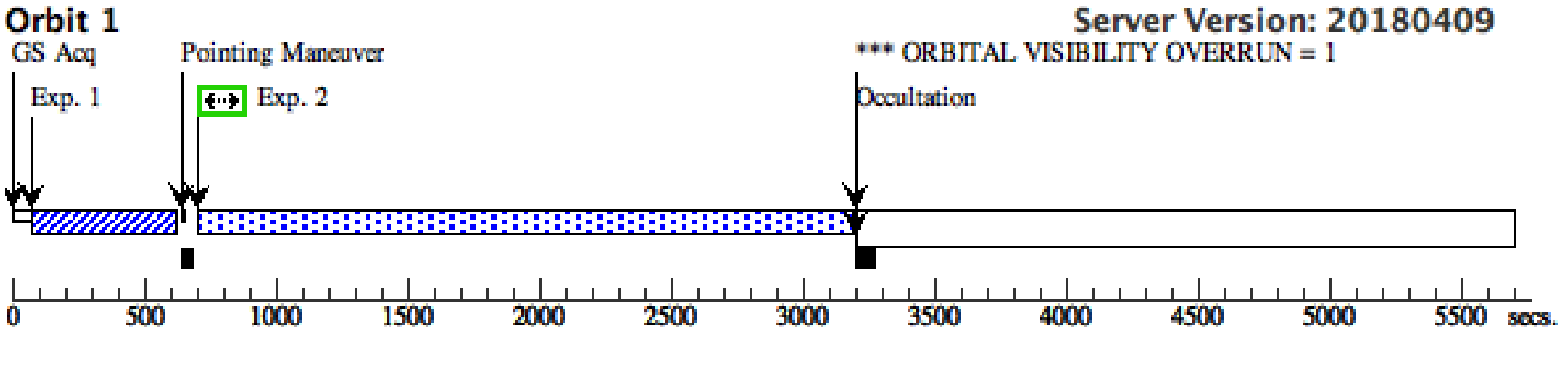
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (7) | J1210+0154 | RA: 12 10 18.3433 (182.5764304d)<br>Dec: +01 54 5.89 (1.90164d)<br>Equinox: J2000 | | V=17.39<br>FUV=17.51 | Reference Frame: ICRS |

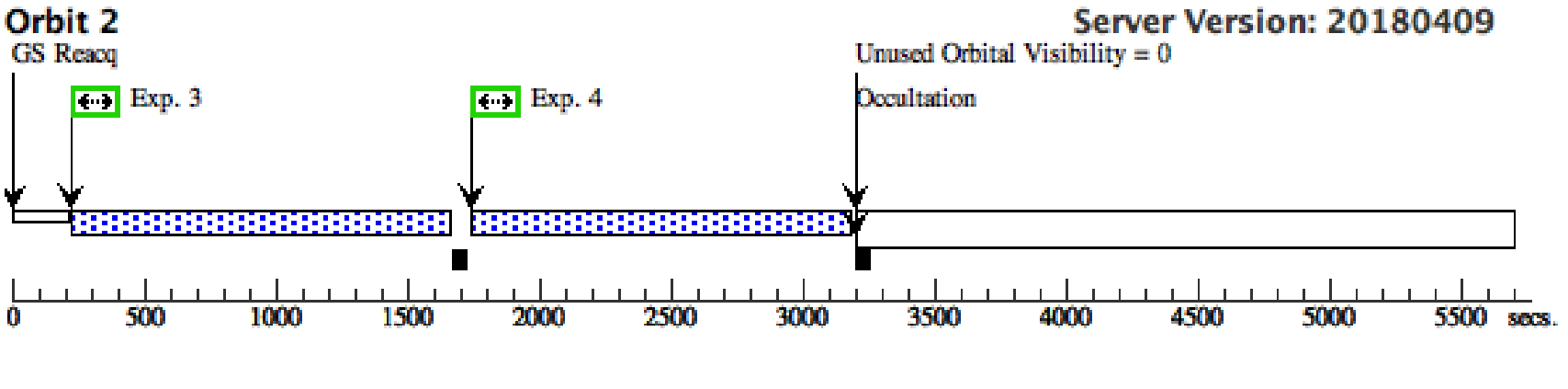
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QSO]*
*Extended=NO*

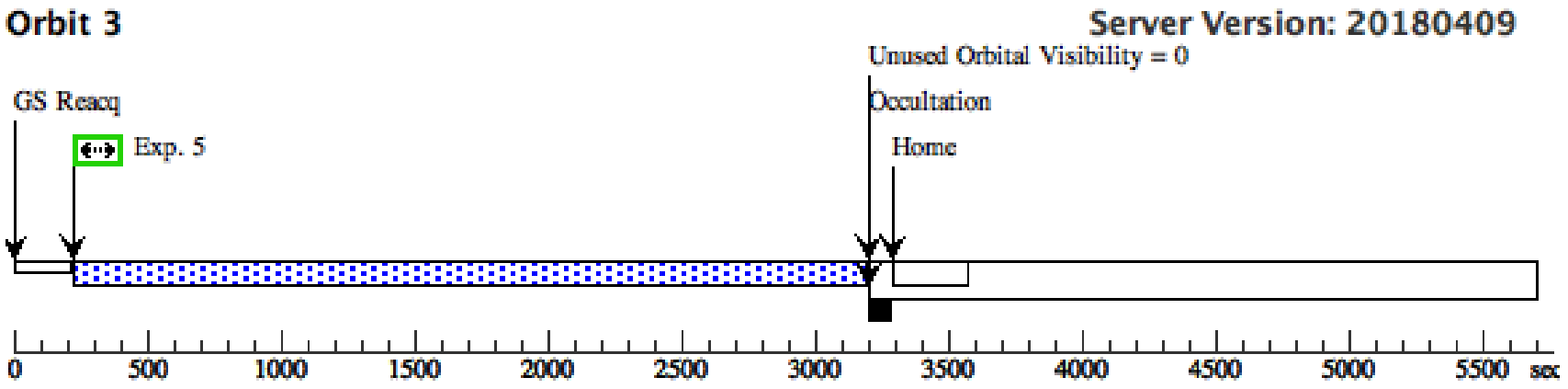
## Exposures

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ACQ (COS.im.10 08350) | (7) J1210+0154 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 120 Secs (120 Secs)<br>*[==>]* | *[1]* |
| 2 | G130M - 12 91 - FP3 - o 1 (COS.sp.101 0727) | (7) J1210+0154 | COS/FUV, TIME-TAG, PSA | G130M<br>1291 A | FP-POS=3;<br>BUFFER-TIME=40 50;<br>SEGMENT=BOTH | | | 1000 Secs (2319 Secs)<br>*[==>2319.0 Secs ]* | *[1]* |
| 3 | G130M - 12 91 - FP3 - o 2 (COS.sp.101 0728) | (7) J1210+0154 | COS/FUV, TIME-TAG, PSA | G130M<br>1291 A | FP-POS=3;<br>BUFFER-TIME=40 50;<br>SEGMENT=BOTH | | | 1000 Secs (1391 Secs)<br>*[==>1391.0 Secs ]* | *[2]* |
| 4 | G130M - 12 91 - FP4 - o 2 (COS.sp.101 0728) | (7) J1210+0154 | COS/FUV, TIME-TAG, PSA | G130M<br>1291 A | FP-POS=4;<br>BUFFER-TIME=40 50;<br>SEGMENT=BOTH | | | 1000 Secs (1391 Secs)<br>*[==>1391.0 Secs ]* | *[2]* |
| 5 | G130M - 12 91 - FP4 - o 3 (COS.sp.101 0729) | (7) J1210+0154 | COS/FUV, TIME-TAG, PSA | G130M<br>1291 A | FP-POS=4;<br>BUFFER-TIME=40 50;<br>SEGMENT=BOTH | | | 1000 Secs (2916 Secs)<br>*[==>2916.0 Secs ]* | *[3]* |

Orbit Structure



## Visit

**Proposal 15293, J1210+0154 - G160M - 1577 - 1/2 (12), implementation** Thu Aug 02 21:40:32 GMT 2018

**Diagnostic Status: No Diagnostics**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 1/2 of the J1210+0154 using G160M:*
*- 3 orbits in total*
*- 1 central wavelengths 1577*
*- 2 segments A+B*
*- 4 FP-POS in total*
*- Buffer times set to 2/3 of that given by the ETC*

## Fixed Targets

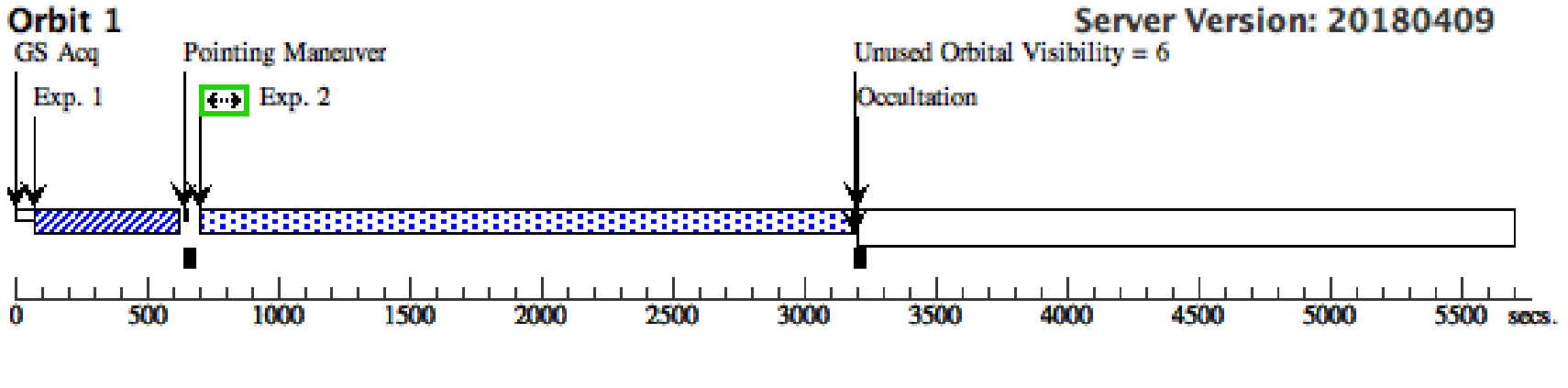
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (7) | J1210+0154 | RA: 12 10 18.3433 (182.5764304d)<br>Dec: +01 54 5.89 (1.90164d)<br>Equinox: J2000 | | V=17.39<br>FUV=17.51 | Reference Frame: ICRS |

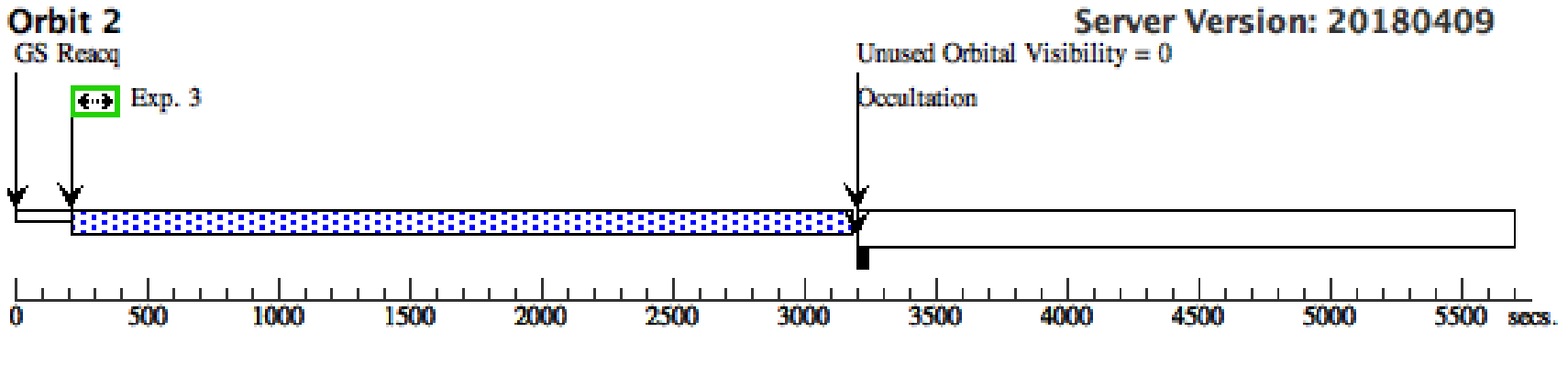
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QSO]*
*Extended=NO*

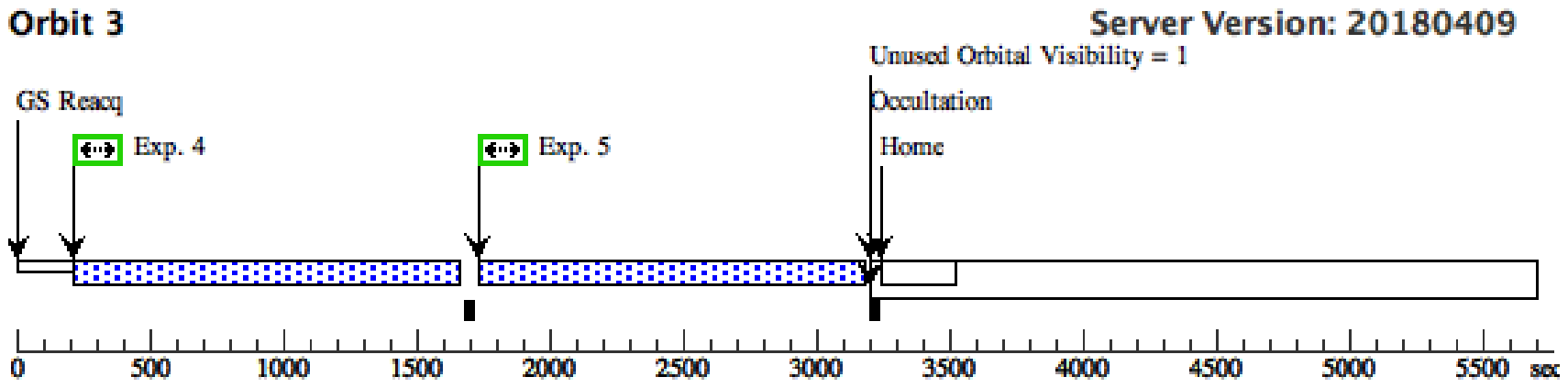
## Exposures

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ACQ (COS.im.1008350) | (7) J1210+0154 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 120 Secs (120 Secs)<br>*[==>]* | ***[1]*** |
| 2 | G160M - 1577 - FP1 - o 1 (COS.sp.1010771) | (7) J1210+0154 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=1;<br>BUFFER-TIME=10200;<br>SEGMENT=BOTH | | | 1000 Secs (2271 Secs)<br>*[==>2271.0 Secs ]* | ***[1]*** |
| 3 | G160M - 1577 - FP2 - o 2 (COS.sp.1010772) | (7) J1210+0154 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=2;<br>BUFFER-TIME=10200;<br>SEGMENT=BOTH | | | 1000 Secs (2916 Secs)<br>*[==>2916.0 Secs ]* | ***[2]*** |
| 4 | G160M - 1577 - FP3 - o 3 (COS.sp.1010773) | (7) J1210+0154 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=3;<br>BUFFER-TIME=10200;<br>SEGMENT=BOTH | | | 1000 Secs (1400 Secs)<br>*[==>1400.0 Secs ]* | ***[3]*** |
| 5 | G160M - 1577 - FP4 - o 3 (COS.sp.1010773) | (7) J1210+0154 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=4;<br>BUFFER-TIME=10200;<br>SEGMENT=BOTH | | | 1000 Secs (1400 Secs)<br>*[==>1400.0 Secs ]* | ***[3]*** |

Orbit Structure



## Visit

**Proposal 15293, J1210+0154 - G160M - 1577 - 2/2 (13), implementation** Thu Aug 02 21:40:32 GMT 2018

**Diagnostic Status: No Diagnostics**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 2/2 of the J1210+0154 using G160M:*
*- 3 orbits in total*
*- 1 central wavelengths 1577*
*- 2 segments A+B*
*- 4 FP-POS in total*
*- Buffer times set to 2/3 of that given by the ETC*

## Fixed Targets

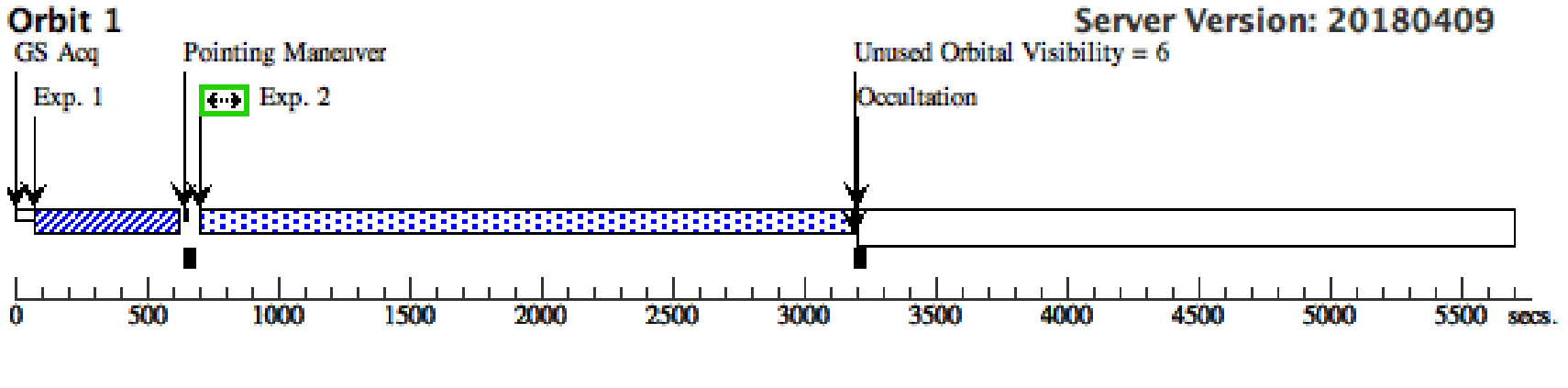
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (7) | J1210+0154 | RA: 12 10 18.3433 (182.5764304d)<br>Dec: +01 54 5.89 (1.90164d)<br>Equinox: J2000 | | V=17.39<br>FUV=17.51 | Reference Frame: ICRS |

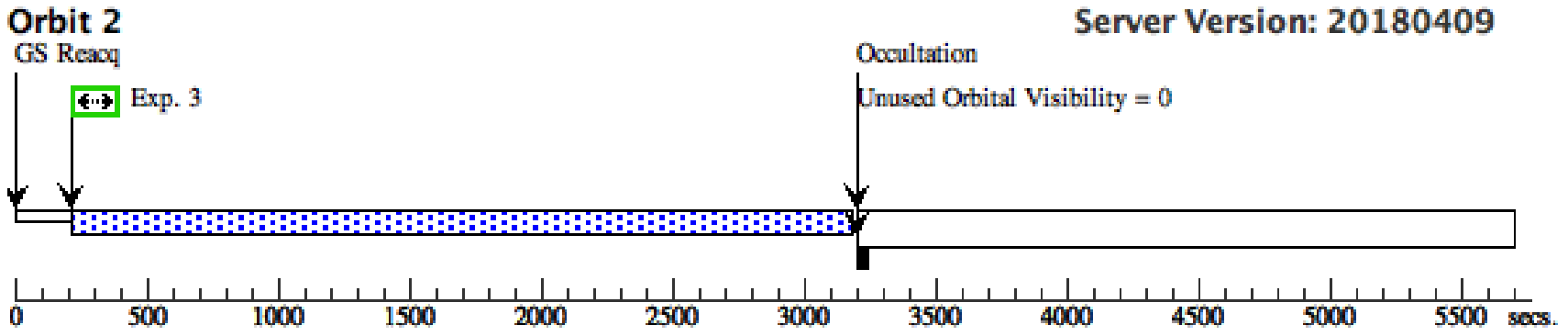
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QSO]*
*Extended=NO*

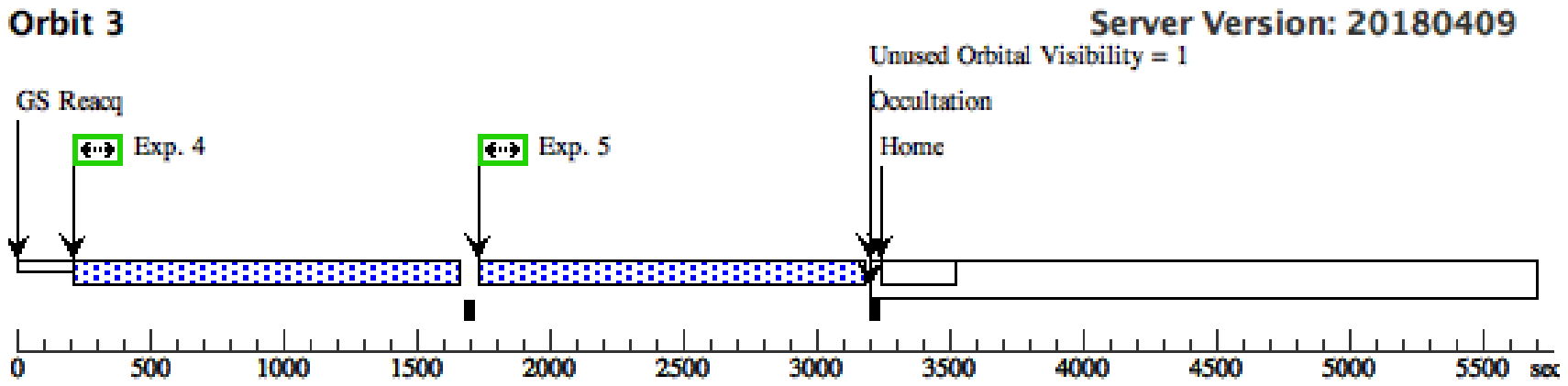
## Exposures

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ACQ (COS.im.10 08350) | (7) J1210+0154 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 120 Secs (120 Secs)<br>*[==>]* | ***[1]*** |
| 2 | G160M - 15 77 - FP1 - o 1 (COS.sp.101 0771) | (7) J1210+0154 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=1;<br>BUFFER-TIME=10 200;<br>SEGMENT=BOTH | | | 1000 Secs (2271 Secs)<br>*[==>2271.0 Secs ]* | ***[1]*** |
| 3 | G160M - 15 77 - FP2 - o 2 (COS.sp.101 0772) | (7) J1210+0154 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=2;<br>BUFFER-TIME=10 200;<br>SEGMENT=BOTH | | | 1000 Secs (2916 Secs)<br>*[==>2916.0 Secs ]* | ***[2]*** |
| 4 | G160M - 15 77 - FP3 - o 3 (COS.sp.101 0773) | (7) J1210+0154 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=3;<br>BUFFER-TIME=10 200;<br>SEGMENT=BOTH | | | 1000 Secs (1400 Secs)<br>*[==>1400.0 Secs ]* | ***[3]*** |
| 5 | G160M - 15 77 - FP4 - o 3 (COS.sp.101 0773) | (7) J1210+0154 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=4;<br>BUFFER-TIME=10 200;<br>SEGMENT=BOTH | | | 1000 Secs (1400 Secs)<br>*[==>1400.0 Secs ]* | ***[3]*** |

Orbit Structure



## Visit

**Proposal 15293, J1120+1104 - G130M - 1222 - 1/1 (14), completed** Thu Aug 02 21:40:32 GMT 2018

**Diagnostic Status: No Diagnostics**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 1/1 of the J1120+1104 using G130M:*
*- 4 orbits in total*
*- 1 central wavelengths 1222 (COS2025 policy; originally 1223, changed back to 1222 by STScI request)*
*- 2 segments A+B (COS2025 policy)*
*- 4 FP-POS in total*
*- Buffer times set to 2/3 of that given by the ETC*

## Fixed Targets

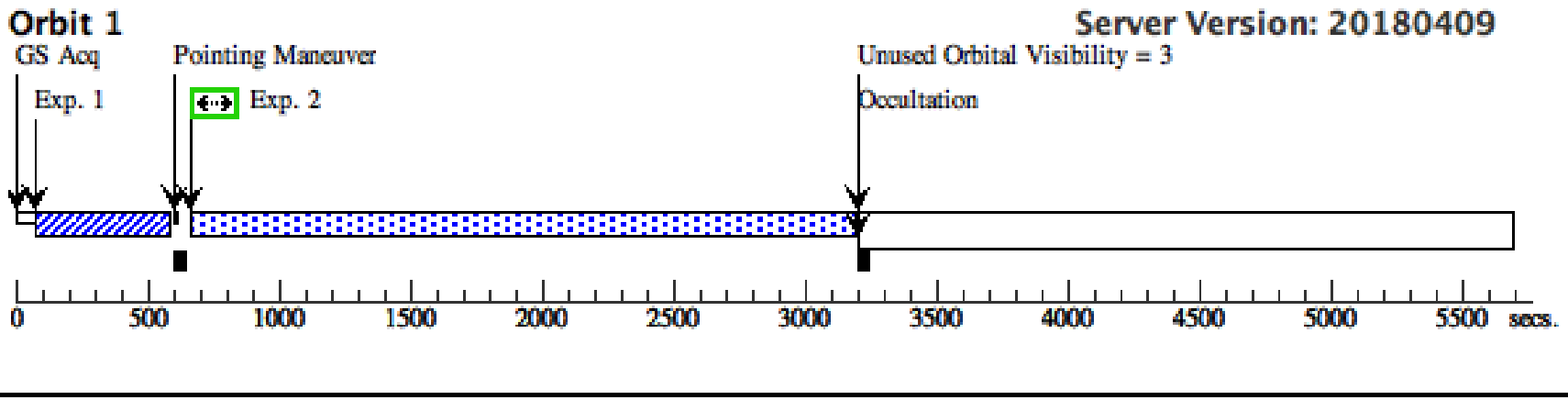
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (8) | J1120+1104 | RA: 11 20 21.3723 (170.0890513d)<br>Dec: +11 04 34.71 (11.07631d)<br>Equinox: J2000 | | V=16.91<br>FUV=17.81 | Reference Frame: ICRS |

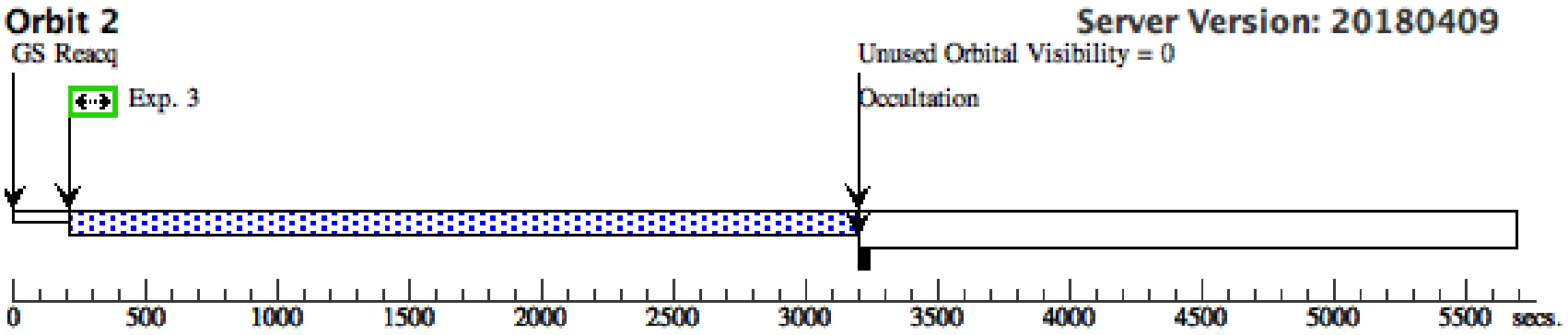
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QUASAR]*
*Extended=NO*

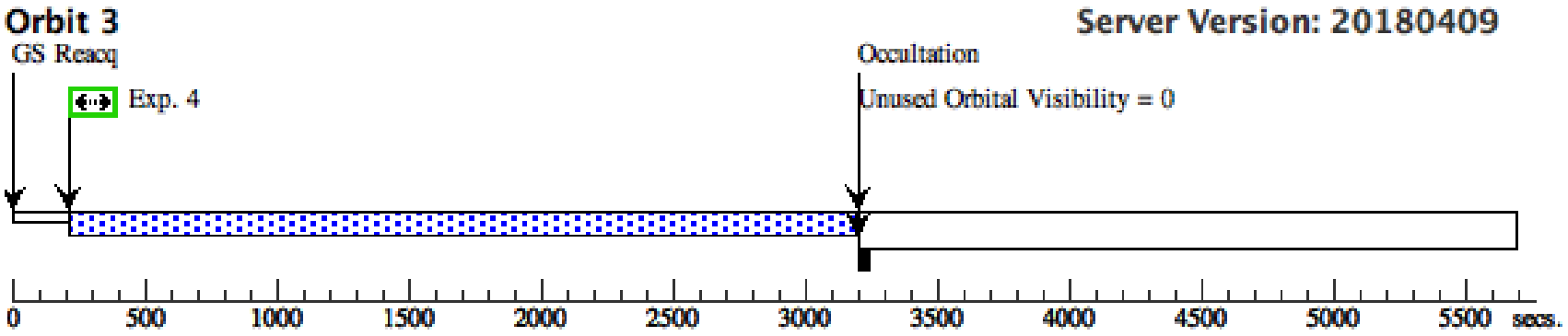
## Exposures

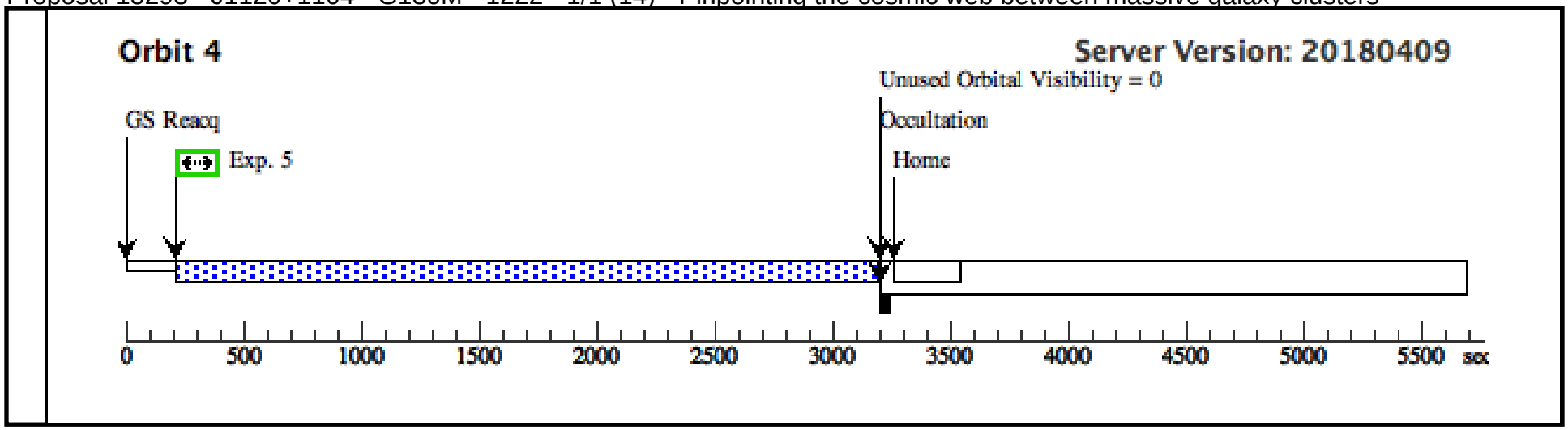
| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ACQ (COS.im.1008732) | (8) J1120+1104 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 100 Secs (100 Secs)<br>*[==>]* | ***[1]*** |
| 2 | G130M - 1222 - FP1 - o 1 (COS.sp.1010735) | (8) J1120+1104 | COS/FUV, TIME-TAG, PSA | G130M<br>1222 A | FP-POS=1;<br>BUFFER-TIME=9900;<br>SEGMENT=BOTH | | | 1000 Secs (2347 Secs)<br>*[==>2347.0 Secs ]* | ***[1]*** |
| 3 | G130M - 1222 - FP2 - o 2 (COS.sp.1010734) | (8) J1120+1104 | COS/FUV, TIME-TAG, PSA | G130M<br>1222 A | FP-POS=2;<br>BUFFER-TIME=9900;<br>SEGMENT=BOTH | | | 1000 Secs (2923 Secs)<br>*[==>2923.0 Secs ]* | ***[2]*** |
| 4 | G130M - 1222 - FP3 - o 3 (COS.sp.1010734) | (8) J1120+1104 | COS/FUV, TIME-TAG, PSA | G130M<br>1222 A | FP-POS=3;<br>BUFFER-TIME=9900;<br>SEGMENT=BOTH | | | 1000 Secs (2923 Secs)<br>*[==>2923.0 Secs ]* | ***[3]*** |
| 5 | G130M - 1222 - FP4 - o 4 (COS.sp.1010734) | (8) J1120+1104 | COS/FUV, TIME-TAG, PSA | G130M<br>1222 A | FP-POS=4;<br>BUFFER-TIME=9900;<br>SEGMENT=BOTH | | | 1000 Secs (2923 Secs)<br>*[==>2923.0 Secs ]* | ***[4]*** |

Orbit Structure




Orbit 4
Server Version: 20180409
Unused Orbital Visibility = 0
GS Reacq
Occultation
Exp. 5
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

## Visit

**Proposal 15293, J1120+1104 - G160M - 1577 - 1/2 (15), failed** Thu Aug 02 21:40:32 GMT 2018

**Diagnostic Status: No Diagnostics**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 1/2 of the J1120+1104 using G160M:*
*- 3 orbits in total*
*- 1 central wavelengths 1577*
*- 2 segments A+B*
*- 4 FP-POS in total*
*- Buffer times set to 2/3 of that given by the ETC*

## Fixed Targets

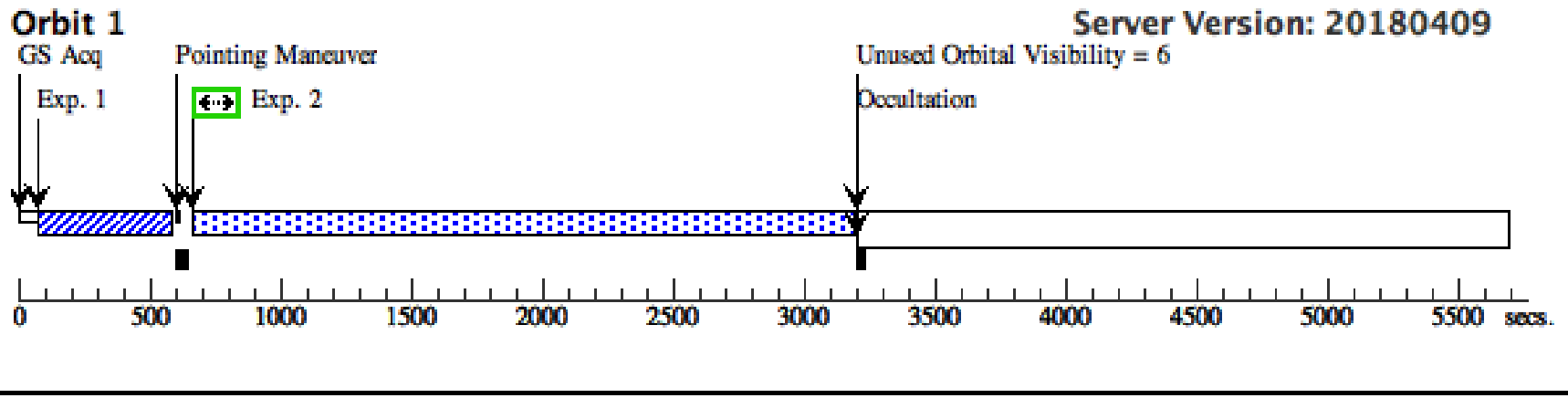
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (8) | J1120+1104 | RA: 11 20 21.3723 (170.0890513d)<br>Dec: +11 04 34.71 (11.07631d)<br>Equinox: J2000 | | V=16.91<br>FUV=17.81 | Reference Frame: ICRS |

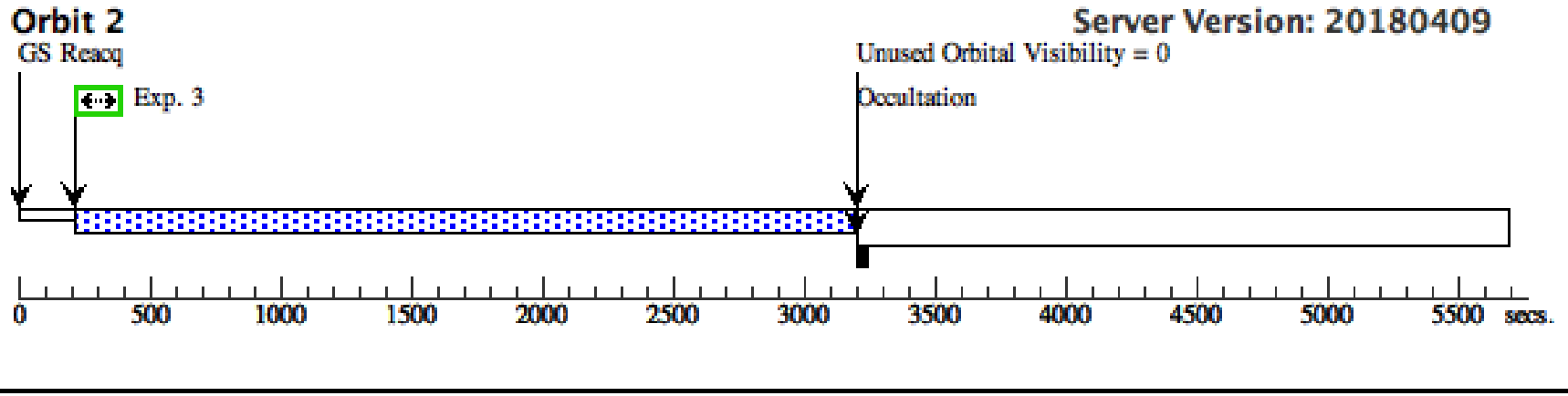
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QUASAR]*
*Extended=NO*

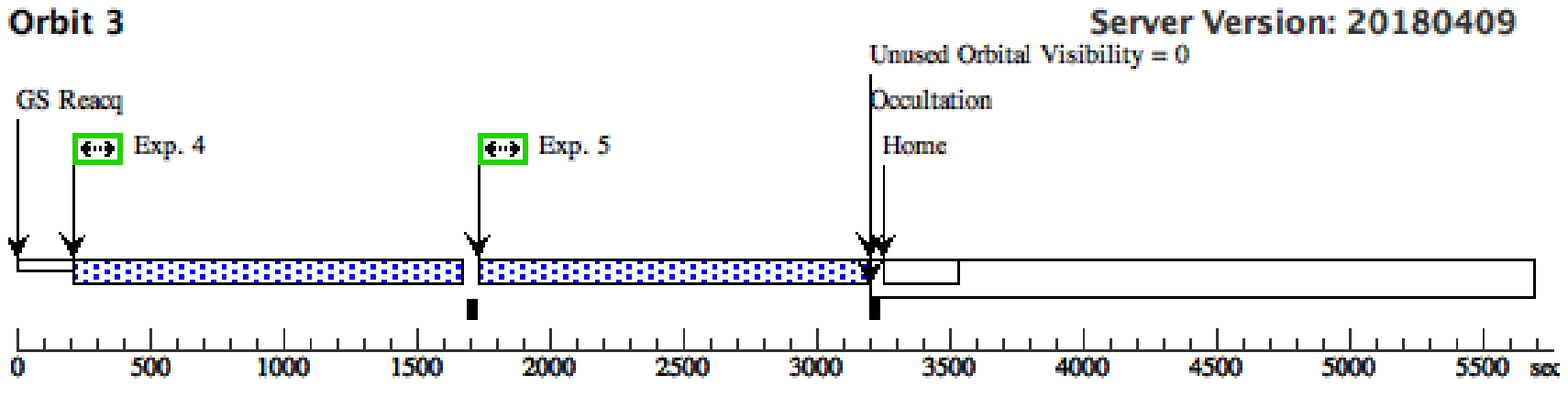
## Exposures

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ACQ (COS.im.1008732) | (8) J1120+1104 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 100 Secs (100 Secs)<br>*[==>]* | ***[1]*** |
| 2 | G160M - 1577 - FP1 - o 1 (COS.sp.1010775) | (8) J1120+1104 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=1;<br>BUFFER-TIME=12400;<br>SEGMENT=BOTH | | | 1000 Secs (2318 Secs)<br>*[==>2318.0 Secs ]* | ***[1]*** |
| 3 | G160M - 1577 - FP2 - o 2 (COS.sp.1010776) | (8) J1120+1104 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=2;<br>BUFFER-TIME=12400;<br>SEGMENT=BOTH | | | 1000 Secs (2923 Secs)<br>*[==>2923.0 Secs ]* | ***[2]*** |
| 4 | G160M - 1577 - FP3 - o 3 (COS.sp.1010777) | (8) J1120+1104 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=3;<br>BUFFER-TIME=12400;<br>SEGMENT=BOTH | | | 1000 Secs (1404 Secs)<br>*[==>1404.0 Secs ]* | ***[3]*** |
| 5 | G160M - 1577 - FP4 - o 3 (COS.sp.1010777) | (8) J1120+1104 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=4;<br>BUFFER-TIME=12400;<br>SEGMENT=BOTH | | | 1000 Secs (1404 Secs)<br>*[==>1404.0 Secs ]* | ***[3]*** |

Orbit Structure



## Visit

**Proposal 15293, J1120+1104 - G160M - 1577 - 1/2 - REPEAT (65)** Thu Aug 02 21:40:32 GMT 2018

**Diagnostic Status: No Diagnostics**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 1/2 of the J1120+1104 using G160M:*
*- 3 orbits in total*
*- 1 central wavelengths 1577*
*- 2 segments A+B*
*- 4 FP-POS in total*
*- Buffer times set to 2/3 of that given by the ETC*

## Fixed Targets

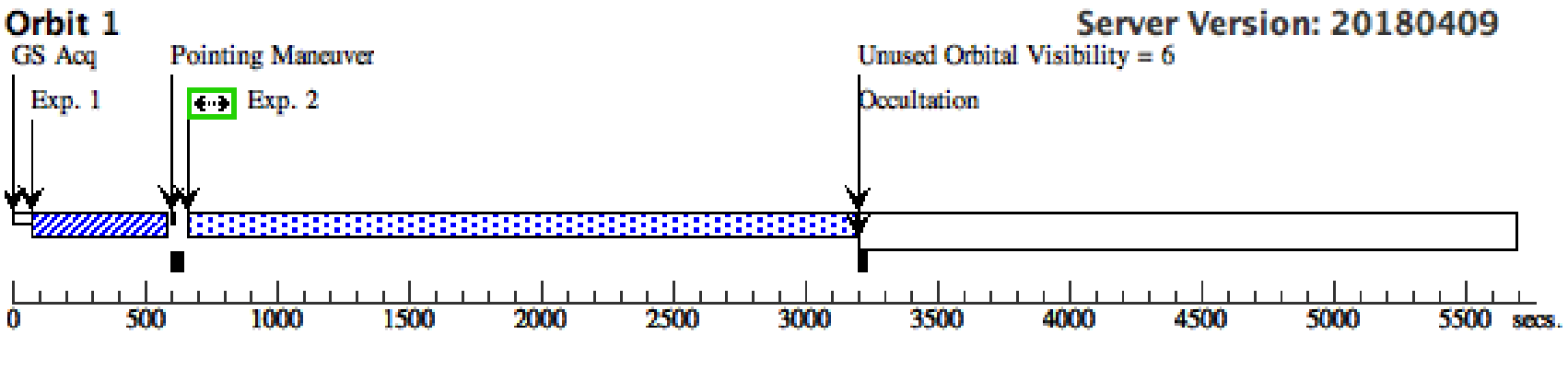
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (8) | J1120+1104 | RA: 11 20 21.3723 (170.0890513d)<br>Dec: +11 04 34.71 (11.07631d)<br>Equinox: J2000 | | V=16.91<br>FUV=17.81 | Reference Frame: ICRS |

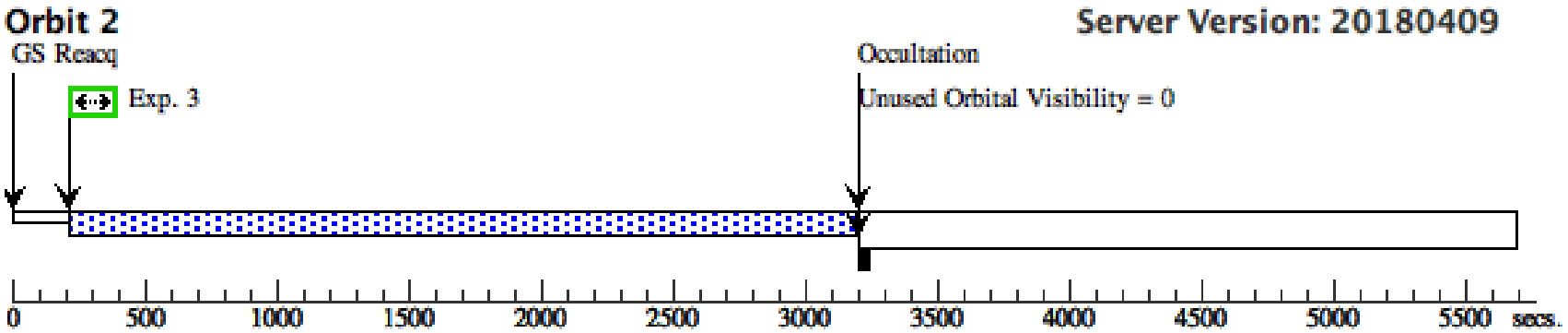
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QUASAR]*
*Extended=NO*

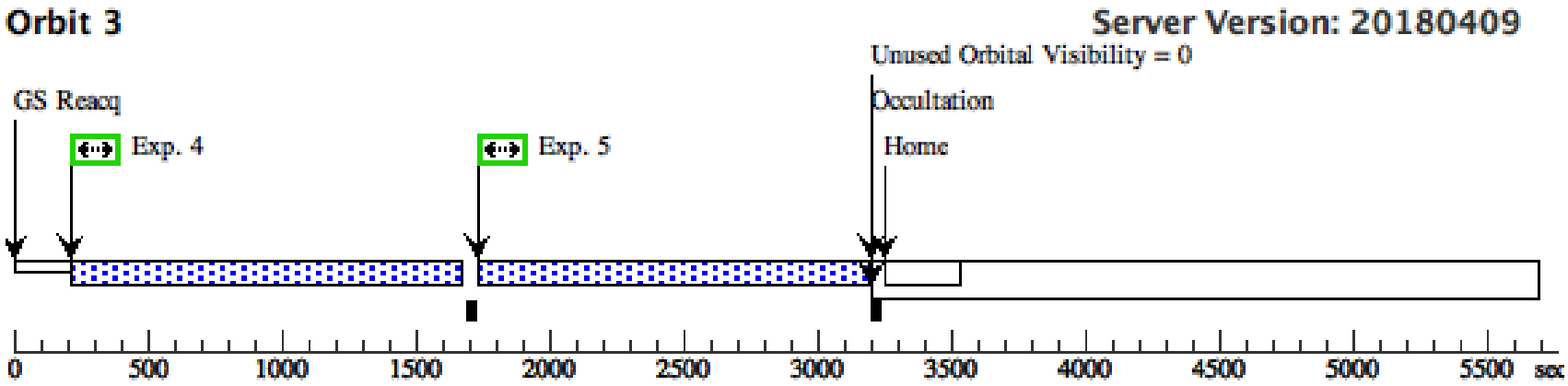
## Exposures

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ACQ (COS.im.1008732) | (8) J1120+1104 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 100 Secs (100 Secs)<br>*[==>]* | ***[1]*** |
| 2 | G160M - 1577 - FP1 - o 1 (COS.sp.1010775) | (8) J1120+1104 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=1;<br>BUFFER-TIME=12400;<br>SEGMENT=BOTH | | | 1000 Secs (2318 Secs)<br>*[==>2318.0 Secs ]* | ***[1]*** |
| 3 | G160M - 1577 - FP2 - o 2 (COS.sp.1010776) | (8) J1120+1104 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=2;<br>BUFFER-TIME=12400;<br>SEGMENT=BOTH | | | 1000 Secs (2923 Secs)<br>*[==>2923.0 Secs ]* | ***[2]*** |
| 4 | G160M - 1577 - FP3 - o 3 (COS.sp.1010777) | (8) J1120+1104 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=3;<br>BUFFER-TIME=12400;<br>SEGMENT=BOTH | | | 1000 Secs (1404 Secs)<br>*[==>1404.0 Secs ]* | ***[3]*** |
| 5 | G160M - 1577 - FP4 - o 3 (COS.sp.1010777) | (8) J1120+1104 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=4;<br>BUFFER-TIME=12400;<br>SEGMENT=BOTH | | | 1000 Secs (1404 Secs)<br>*[==>1404.0 Secs ]* | ***[3]*** |

Orbit Structure



## Visit

**Proposal 15293, J1120+1104 - G160M - 1577 - 2/2 (16), completed** Thu Aug 02 21:40:33 GMT 2018

**Diagnostic Status: No Diagnostics**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 2/2 of the J1120+1104 using G160M:*
*- 3 orbits in total*
*- 1 central wavelengths 1577*
*- 2 segments A+B*
*- 4 FP-POS in total*
*- Buffer times set to 2/3 of that given by the ETC*

## Fixed Targets

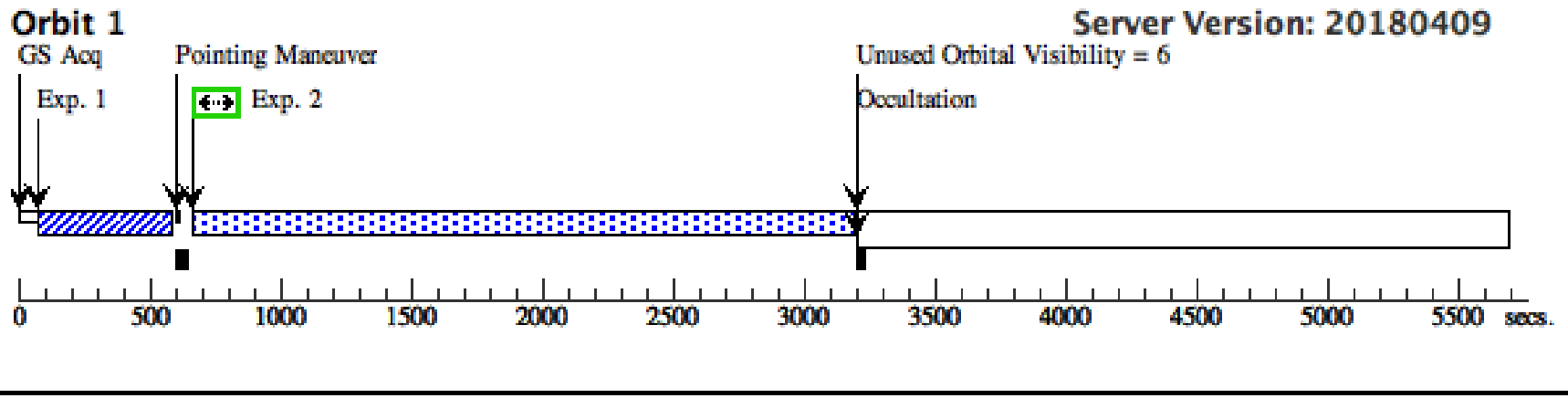
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (8) | J1120+1104 | RA: 11 20 21.3723 (170.0890513d)<br>Dec: +11 04 34.71 (11.07631d)<br>Equinox: J2000 | | V=16.91<br>FUV=17.81 | Reference Frame: ICRS |

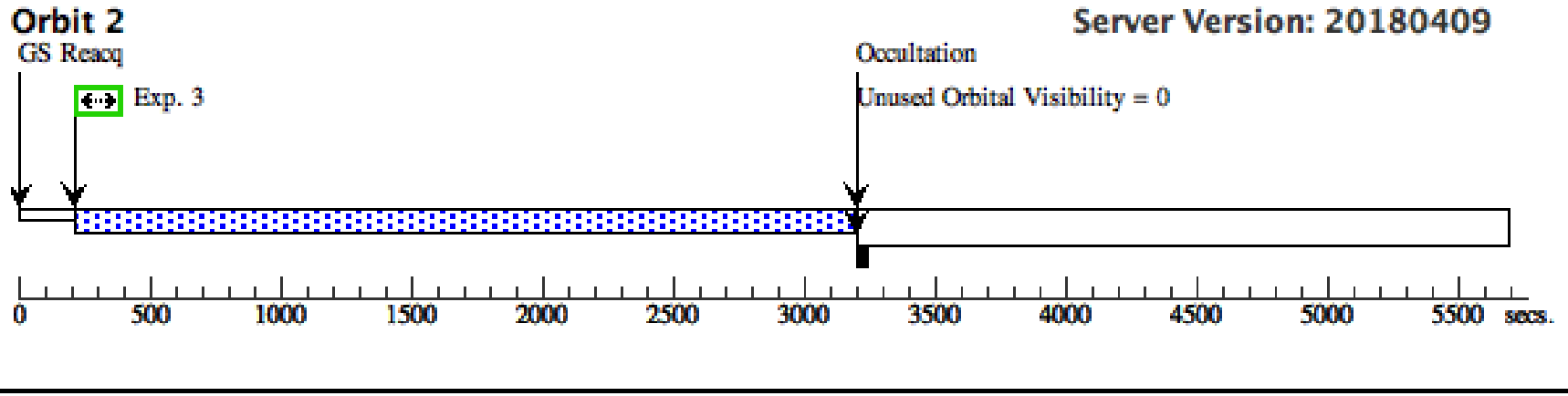
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QUASAR]*
*Extended=NO*

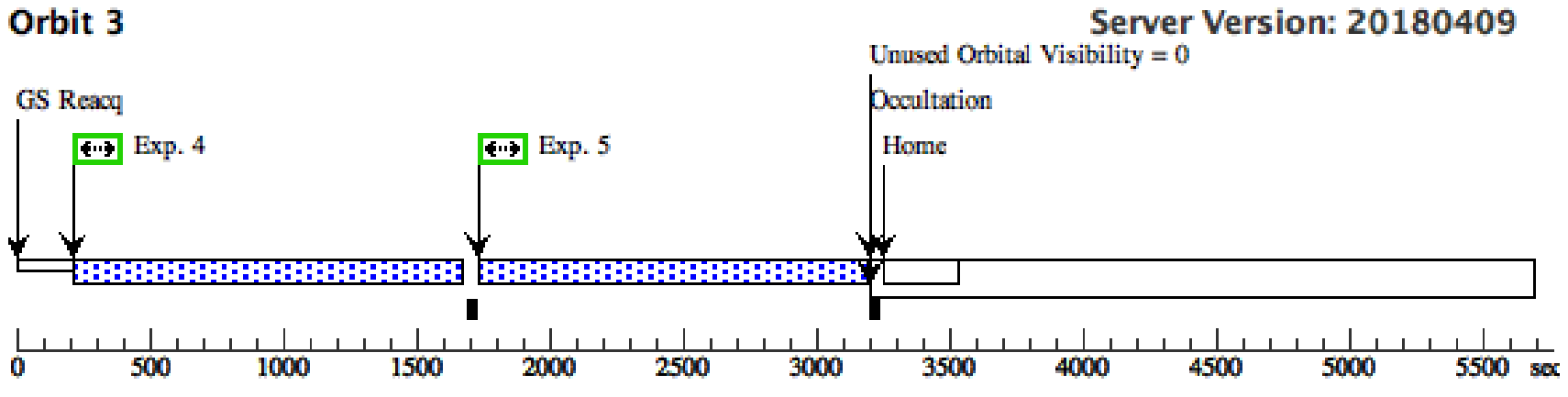
## Exposures

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ACQ (COS.im.1008732) | (8) J1120+1104 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 100 Secs (100 Secs)<br>*[==>]* | ***[1]*** |
| 2 | G160M - 1577 - FP1 - o 1 (COS.sp.1010775) | (8) J1120+1104 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=1;<br>BUFFER-TIME=12400;<br>SEGMENT=BOTH | | | 1000 Secs (2318 Secs)<br>*[==>2318.0 Secs ]* | ***[1]*** |
| 3 | G160M - 1577 - FP2 - o 2 (COS.sp.1010776) | (8) J1120+1104 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=2;<br>BUFFER-TIME=12400;<br>SEGMENT=BOTH | | | 1000 Secs (2923 Secs)<br>*[==>2923.0 Secs ]* | ***[2]*** |
| 4 | G160M - 1577 - FP3 - o 3 (COS.sp.1010777) | (8) J1120+1104 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=3;<br>BUFFER-TIME=12400;<br>SEGMENT=BOTH | | | 1000 Secs (1404 Secs)<br>*[==>1404.0 Secs ]* | ***[3]*** |
| 5 | G160M - 1577 - FP4 - o 3 (COS.sp.1010777) | (8) J1120+1104 | COS/FUV, TIME-TAG, PSA | G160M<br>1577 A | FP-POS=4;<br>BUFFER-TIME=12400;<br>SEGMENT=BOTH | | | 1000 Secs (1404 Secs)<br>*[==>1404.0 Secs ]* | ***[3]*** |

Orbit Structure



## Visit

**Proposal 15293, J1637+4254 - G130M - 1291 - 1/2 (17), scheduling** Thu Aug 02 21:40:33 GMT 2018

**Diagnostic Status: Warning**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 1/2 of the J1637+4254 using G130M:*
*- 2 orbits in total*
*- 1 central wavelengths 1291*
*- 2 segments A+B*
*- 2 FP-POS in total (COS2025 policy)*
*- Buffer times set to 2/3 of that given by the ETC*

## Diagnostics

(J1637+4254 - G130M - 1291 - 1/2 (17)) Warning (Form): For the best data quality, it is strongly recommended that the maximum number of allowed FP-POS positions is used when observing at a given COS CENWAVE setting. See full description for details.

(J1637+4254 - G130M - 1291 - 1/2 (17)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

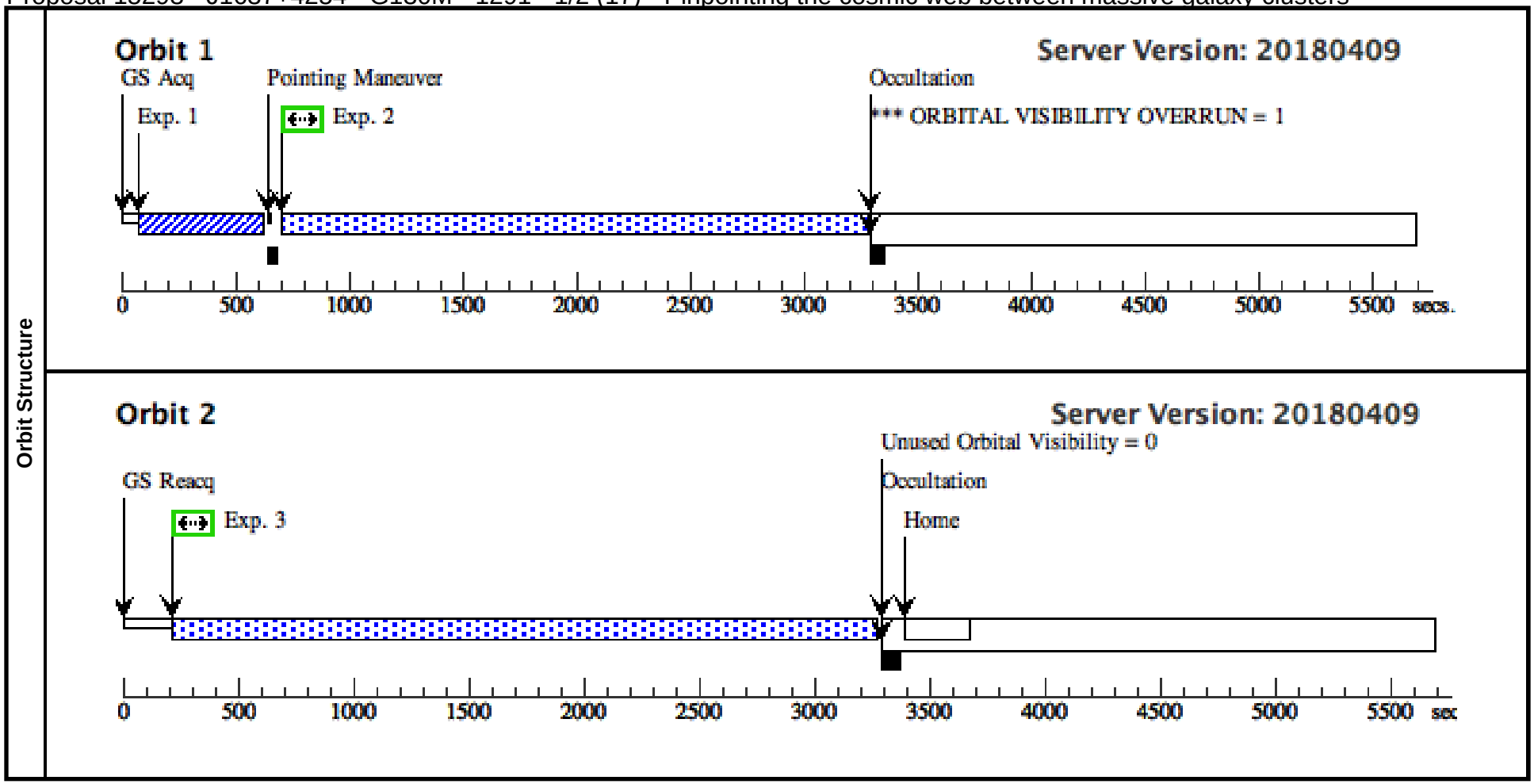
## Fixed Targets

| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (9) | J1637+4254 | RA: 16 37 46.5476 (249.4439483d)<br>Dec: +42 54 49.72 (42.91381d)<br>Equinox: J2000 | | V=17.34<br>FUV=17.96 | Reference Frame: ICRS |

*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QSO]*
*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 (COS.im.1008747) | (9) J1637+4254 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 120 Secs (120 Secs)<br>*[==>]* | ***[1]*** |
| 2 | G130M - 1291 - FP3 - o 1 (COS.sp.1010736) | (9) J1637+4254 | COS/FUV, TIME-TAG, PSA | G130M<br>1291 A | FP-POS=3;<br>BUFFER-TIME=4400;<br>SEGMENT=BOTH | | | 1000 Secs (2415 Secs)<br>*[==>2415.0 Secs ]* | ***[1]*** |
| 3 | G130M - 1291 - FP4 - o 2 (COS.sp.1010737) | (9) J1637+4254 | COS/FUV, TIME-TAG, PSA | G130M<br>1291 A | FP-POS=4;<br>BUFFER-TIME=4400;<br>SEGMENT=BOTH | | | 1000 Secs (3012 Secs)<br>*[==>3012.0 Secs ]* | ***[2]*** |


Orbit Structure
Orbit 1
Server Version: 20180409
GS Acq
Pointing Maneuver
Occultation
Exp. 1
Exp. 2
*** ORBITAL VISIBILITY OVERRUN = 1
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.
Orbit 2
Server Version: 20180409
Unused Orbital Visibility = 0
GS Reacq
Occultation
Exp. 3
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

## Visit

**Proposal 15293, J1637+4254 - G130M - 1291 - 2/2 (18), scheduling** Thu Aug 02 21:40:33 GMT 2018

**Diagnostic Status: Warning**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 2/2 of the J1637+4254 using G130M:*
*- 3 orbits in total*
*- 1 central wavelengths 1291*
*- 2 segments A+B*
*- 2 FP-POS in total (COS2025 policy)*
*- Buffer times set to 2/3 of that given by the ETC*

## Diagnostics

(J1637+4254 - G130M - 1291 - 2/2 (18)) Warning (Form): For the best data quality, it is strongly recommended that the maximum number of allowed FP-POS positions is used when observing at a given COS CENWAVE setting. See full description for details.

(J1637+4254 - G130M - 1291 - 2/2 (18)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

## Fixed Targets

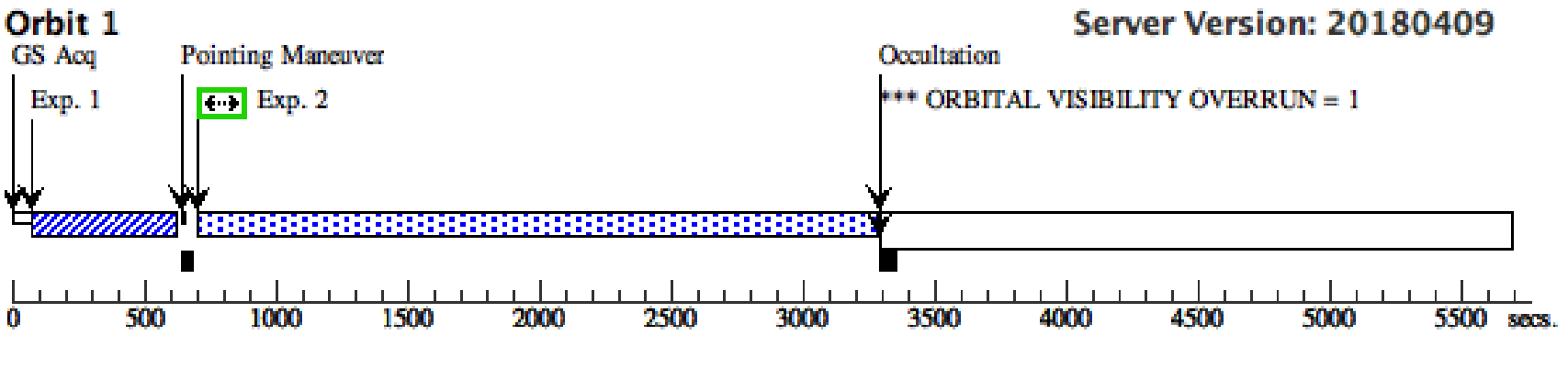
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (9) | J1637+4254 | RA: 16 37 46.5476 (249.4439483d)<br>Dec: +42 54 49.72 (42.91381d)<br>Equinox: J2000 | | V=17.34<br>FUV=17.96 | Reference Frame: ICRS |

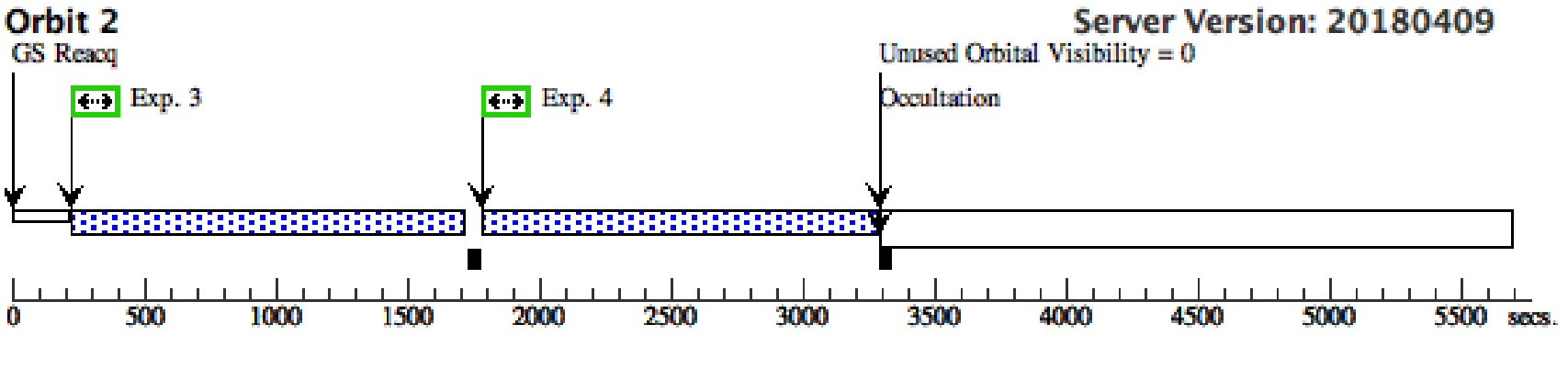
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QSO]*
*Extended=NO*

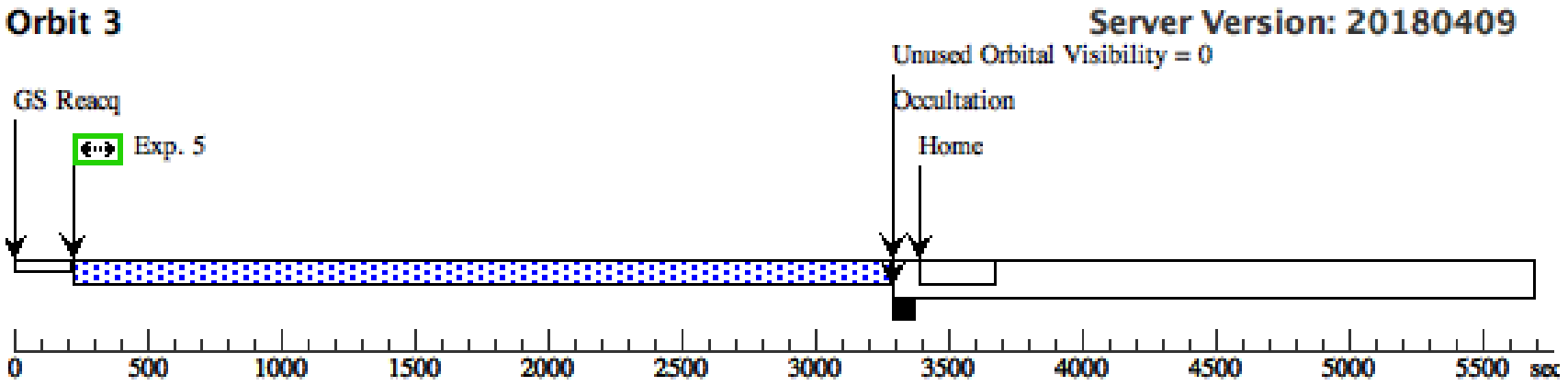
## Exposures

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ACQ (COS.im.1008747) | (9) J1637+4254 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 120 Secs (120 Secs)<br>*[==>]* | *[1]* |
| 2 | G130M - 1291 - FP3 - o 1 (COS.sp.1010736) | (9) J1637+4254 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | FP-POS=3; BUFFER-TIME=4400; SEGMENT=BOTH | | | 1000 Secs (2415 Secs)<br>*[==>2415.0 Secs ]* | *[1]* |
| 3 | G130M - 1291 - FP3 - o 2 (COS.sp.1010738) | (9) J1637+4254 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | FP-POS=3; BUFFER-TIME=4400; SEGMENT=BOTH | | | 1000 Secs (1444 Secs)<br>*[==>1444.0 Secs ]* | *[2]* |
| 4 | G130M - 1291 - FP4 - o 2 (COS.sp.1010738) | (9) J1637+4254 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | FP-POS=4; BUFFER-TIME=4400; SEGMENT=BOTH | | | 1000 Secs (1444 Secs)<br>*[==>1444.0 Secs ]* | *[2]* |
| 5 | G130M - 1291 - FP4 - o 3 (COS.sp.1010737) | (9) J1637+4254 | COS/FUV, TIME-TAG, PSA | G130M 1291 A | FP-POS=4; BUFFER-TIME=4400; SEGMENT=BOTH | | | 1000 Secs (3012 Secs)<br>*[==>3012.0 Secs ]* | *[3]* |

Orbit Structure



## Visit

**Proposal 15293, J1637+4254 - G160M - 1611 - 1/2 (19), scheduling** Thu Aug 02 21:40:33 GMT 2018

**Diagnostic Status: Warning**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 1/2 of the J1637+4254 using G160M:*
*- 3 orbits in total*
*- 1 central wavelengths 1611*
*- 2 segments A+B*
*- 4 FP-POS in total*
*- Buffer times set to 2/3 of that given by the ETC*

## Diagnostics

(J1637+4254 - G160M - 1611 - 1/2 (19)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

## Fixed Targets

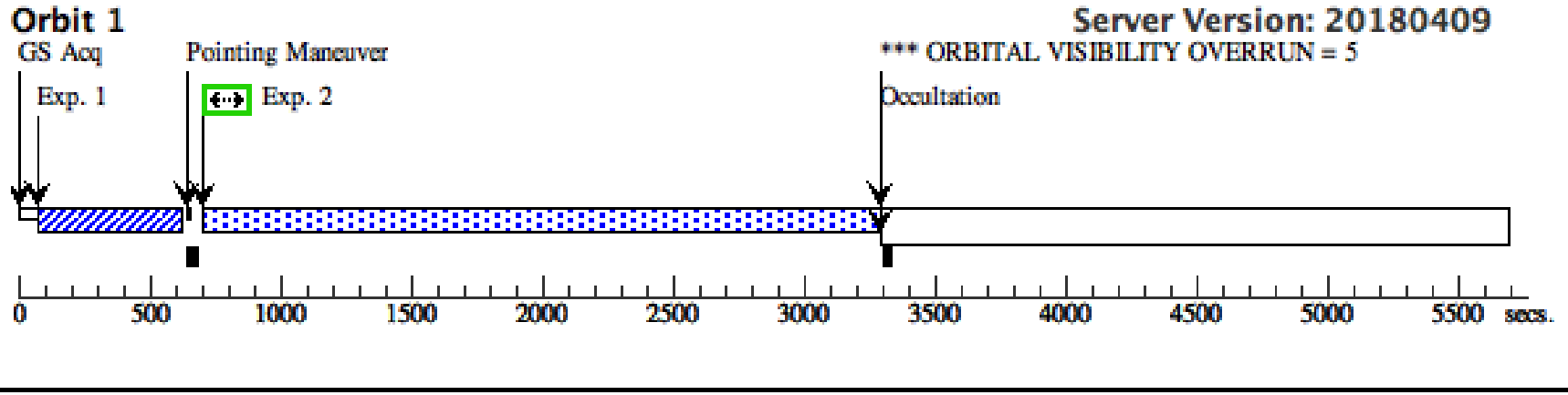
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (9) | J1637+4254 | RA: 16 37 46.5476 (249.4439483d)<br>Dec: +42 54 49.72 (42.91381d)<br>Equinox: J2000 | | V=17.34<br>FUV=17.96 | Reference Frame: ICRS |

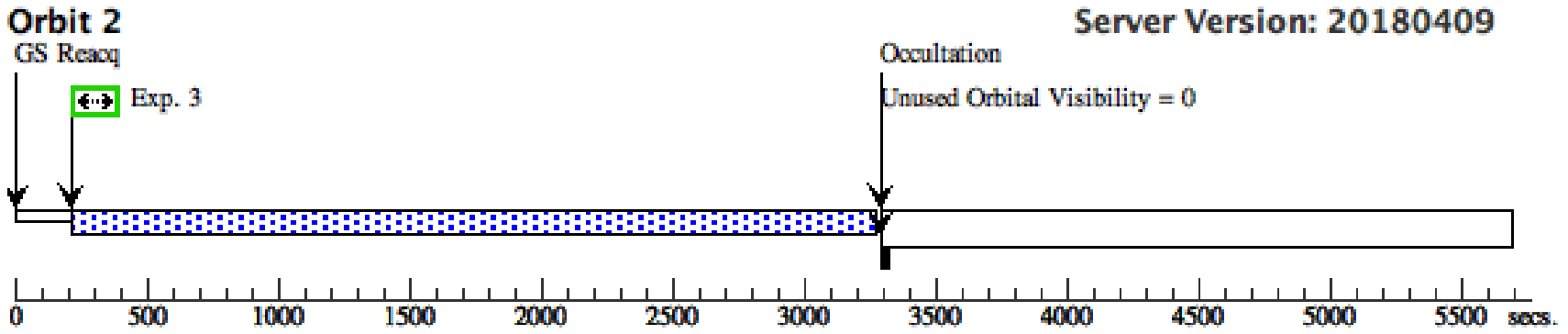
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QSO]*
*Extended=NO*

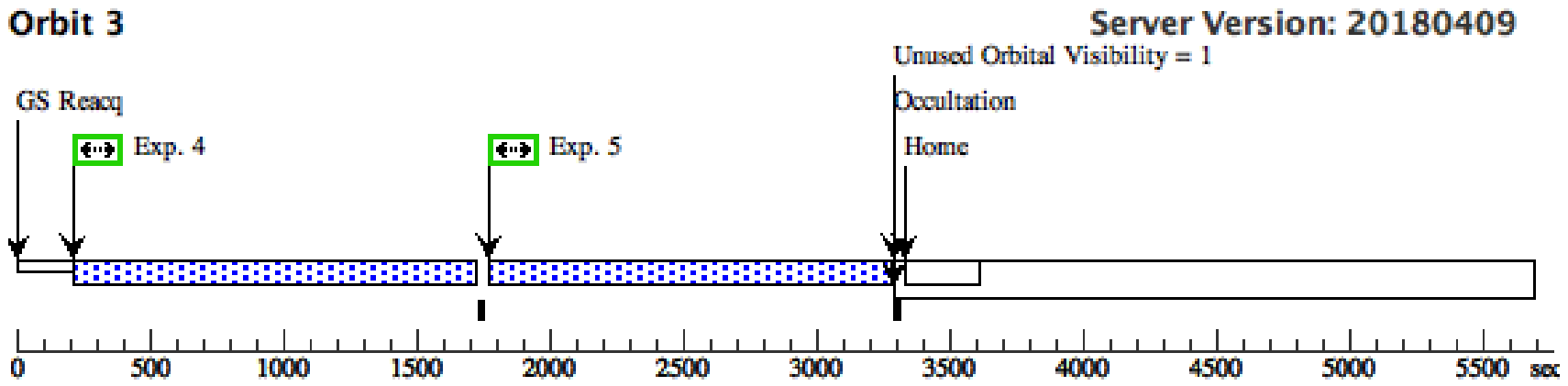
## Exposures

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ACQ (COS.im.1008747) | (9) J1637+4254 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 120 Secs (120 Secs)<br>*[==>]* | ***[1]*** |
| 2 | G160M - 1611 - FP1 - o 1 (COS.sp.1010782) | (9) J1637+4254 | COS/FUV, TIME-TAG, PSA | G160M 1611 A | FP-POS=1; BUFFER-TIME=14200; SEGMENT=BOTH | | | 1000 Secs (2369 Secs)<br>*[==>2369.0 Secs ]* | ***[1]*** |
| 3 | G160M - 1611 - FP2 - o 2 (COS.sp.1010783) | (9) J1637+4254 | COS/FUV, TIME-TAG, PSA | G160M 1611 A | FP-POS=2; BUFFER-TIME=14200; SEGMENT=BOTH | | | 1000 Secs (3012 Secs)<br>*[==>3012.0 Secs ]* | ***[2]*** |
| 4 | G160M - 1611 - FP3 - o 3 (COS.sp.1010781) | (9) J1637+4254 | COS/FUV, TIME-TAG, PSA | G160M 1611 A | FP-POS=3; BUFFER-TIME=14200; SEGMENT=BOTH | | | 1000 Secs (1453 Secs)<br>*[==>1453.0 Secs ]* | ***[3]*** |
| 5 | G160M - 1611 - FP4 - o 3 (COS.sp.1010781) | (9) J1637+4254 | COS/FUV, TIME-TAG, PSA | G160M 1611 A | FP-POS=4; BUFFER-TIME=14200; SEGMENT=BOTH | | | 1000 Secs (1453 Secs)<br>*[==>1453.0 Secs ]* | ***[3]*** |

Orbit Structure



## Visit

**Proposal 15293, J1637+4254 - G160M - 1611 - 2/2 (20), scheduling** Thu Aug 02 21:40:33 GMT 2018

**Diagnostic Status: Warning**

Scientific Instruments: COS/FUV, COS/NUV

Special Requirements: (none)

*Comments: This visit corresponds to the visit 2/2 of the J1637+4254 using G160M:*
*- 4 orbits in total*
*- 1 central wavelengths 1611*
*- 2 segments A+B*
*- 4 FP-POS in total*
*- Buffer times set to 2/3 of that given by the ETC*

## Diagnostics

(J1637+4254 - G160M - 1611 - 2/2 (20)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

## Fixed Targets

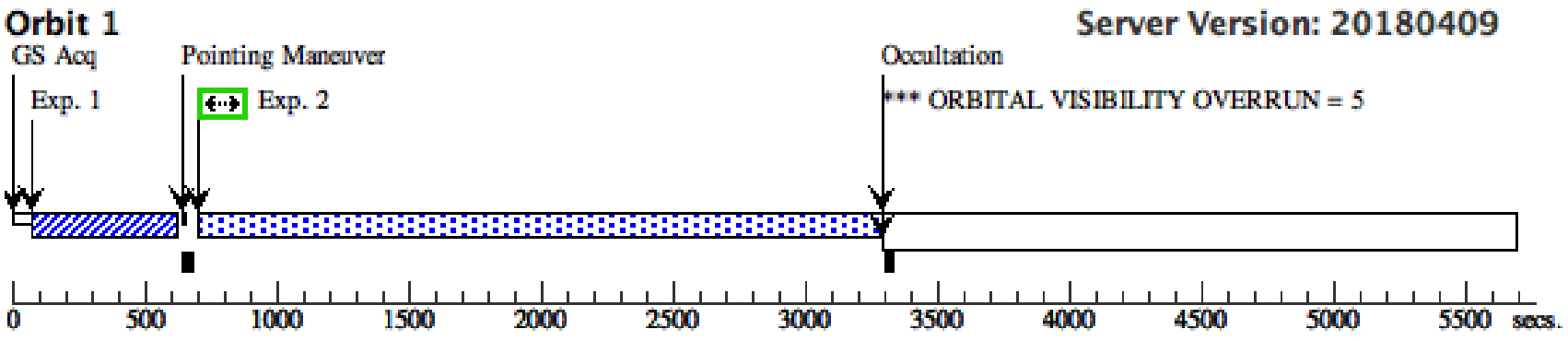
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (9) | J1637+4254 | RA: 16 37 46.5476 (249.4439483d)<br>Dec: +42 54 49.72 (42.91381d)<br>Equinox: J2000 | | V=17.34<br>FUV=17.96 | Reference Frame: ICRS |

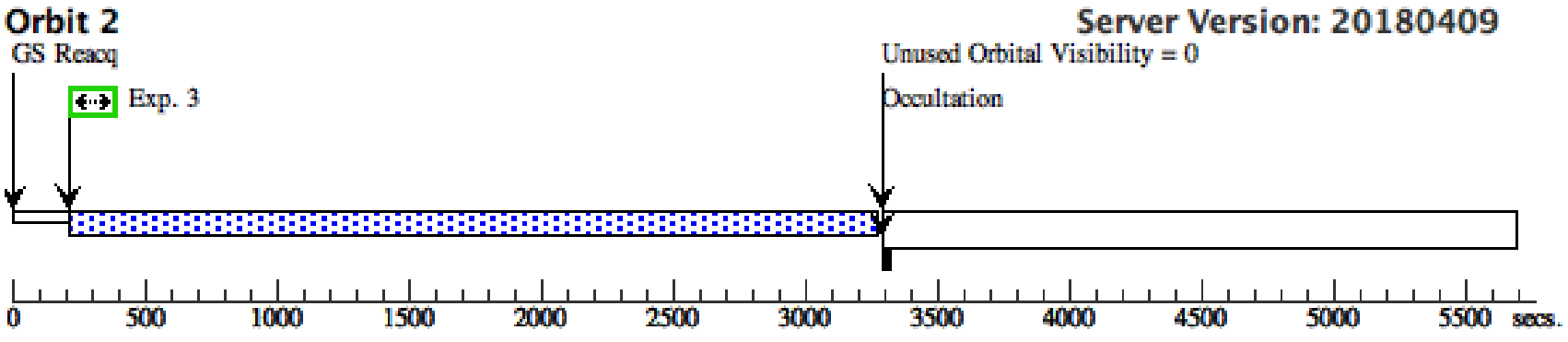
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Category=GALAXY*
*Description=[QSO]*
*Extended=NO*

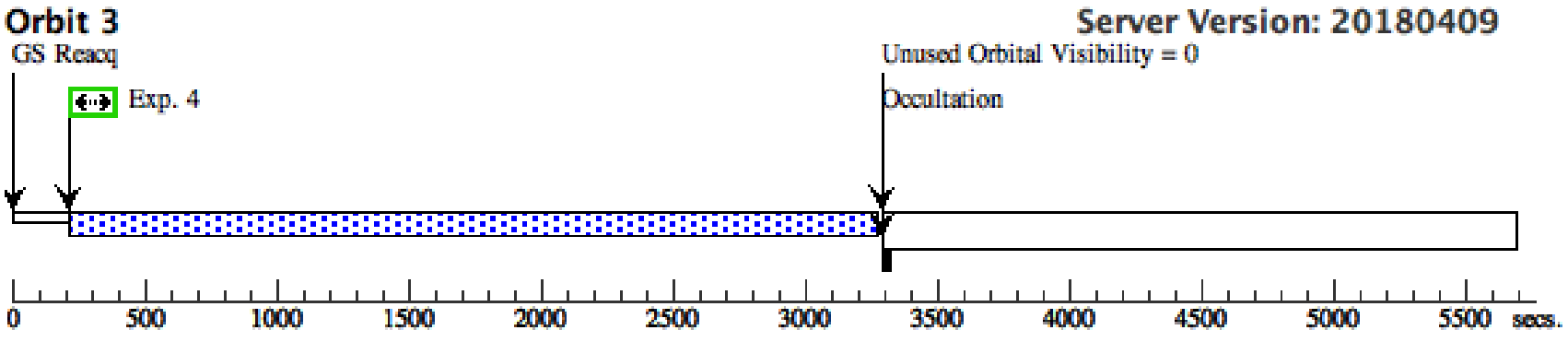
## Exposures

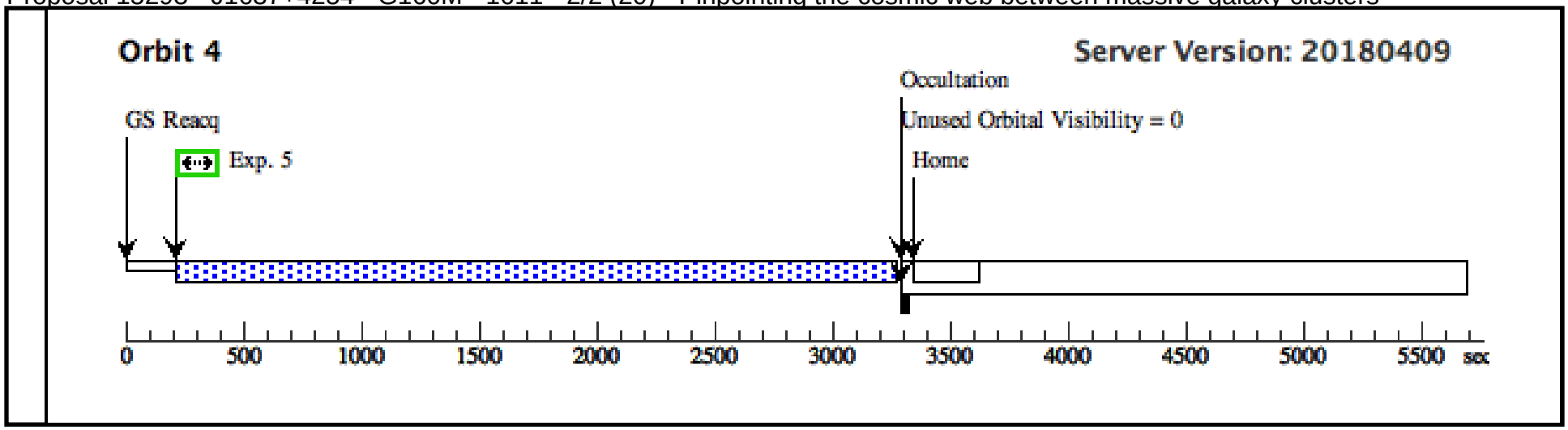
| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ACQ (COS.im.1008747) | (9) J1637+4254 | COS/NUV, ACQ/IMAGE, PSA | MIRRORB | | | | 120 Secs (120 Secs)<br>*[==>]* | ***[1]*** |
| 2 | G160M - 1611 - FP1 - o 1 (COS.sp.1010782) | (9) J1637+4254 | COS/FUV, TIME-TAG, PSA | G160M 1611 A | FP-POS=1; BUFFER-TIME=14200; SEGMENT=BOTH | | | 1000 Secs (2369 Secs)<br>*[==>2369.0 Secs ]* | ***[1]*** |
| 3 | G160M - 1611 - FP2 - o 2 (COS.sp.1010783) | (9) J1637+4254 | COS/FUV, TIME-TAG, PSA | G160M 1611 A | FP-POS=2; BUFFER-TIME=14200; SEGMENT=BOTH | | | 1000 Secs (3012 Secs)<br>*[==>3012.0 Secs ]* | ***[2]*** |
| 4 | G160M - 1611 - FP3 - o 3 (COS.sp.1010783) | (9) J1637+4254 | COS/FUV, TIME-TAG, PSA | G160M 1611 A | FP-POS=3; BUFFER-TIME=14200; SEGMENT=BOTH | | | 1000 Secs (3012 Secs)<br>*[==>3012.0 Secs ]* | ***[3]*** |
| 5 | G160M - 1611 - FP4 - o 4 (COS.sp.1010783) | (9) J1637+4254 | COS/FUV, TIME-TAG, PSA | G160M 1611 A | FP-POS=4; BUFFER-TIME=14200; SEGMENT=BOTH | | | 1000 Secs (3012 Secs)<br>*[==>3012.0 Secs ]* | ***[4]*** |

Orbit Structure

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