# 14641 - Short Orbital Period Recurrent Novae as Supernovae Type Ia Progenitors

Cycle: 24, 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) NOVA-NOR-1920 | COS/FUV | 3 | 11-Sep-2017 15:00:15.0 | yes |
| 1B | (2) TARGET01-SAFE-TARGET | COS/FUV | 3 | 11-Sep-2017 15:00:16.0 | yes |
| 02 | (3) NOVA-AQL-1917 | COS/FUV | 3 | 11-Sep-2017 15:00:18.0 | yes |
| 2A | (3) NOVA-AQL-1917 | S/C | 1 | 11-Sep-2017 15:00:19.0 | yes |
| 2B | (4) TARGET02-SAFE-TARGET | COS/FUV | 3 | 11-Sep-2017 15:00:20.0 | yes |
| 1A | (1) NOVA-NOR-1920 | S/C | 1 | 11-Sep-2017 15:00:20.0 | yes |

14 Total Orbits Used

**ABSTRACT**

We propose to obtain the first ever far ultraviolet spectra of two critically important recurrent novae, IM Normae and CI Aquilae with HST COS. IM Normae and CI Aquilae, together with T Pyxidis, form a subclass of recurrent novae with short orbital periods (<1day), similar outburst characteristics in the optical, slow declines and complete diversity in optical quiescence. All are thought to contain massive white dwarfs accreting at a high rate. These two factors, as well as double white dwarf mergers, are central to identifying the dominant pathway(s) to the explosions of Type Ia supernovae. These are "standard candles of cosmology", which led to the discovery of the accelerating expansion of the universe in the presence of dark energy. We will (1) compare their FUV spectra to our earlier HST COS and STIS spectra of T Pyx, (2) determine their accretion rates by fitting their FUV continua and line spectra with state-of-the-art accretion disk models with vertical structure and NLTE hot white dwarf photospheres, (3) check for the detection of the underlying WD photosphere, (4) examine the N/C abundance ratio, (5) look for signs of magnetic accretion (truncated disks, very strong He II emission) and (6) look for FUV evidence of wind outflow in the form of P Cygni line structure and blue-shifted absorption features. We suspect CI Aql is evolving into a persistent supersoft x-ray source, and ultimately will explode as a SN Ia.

**OBSERVING DESCRIPTION**

We will use COS in the FUV Spectroscopic Configuration with the G140L grating centered at 1105A
for each of our two targets, CI Aql and IM Nor, each for a duration of 3 consecutive orbits, totalling 6 orbits.

With a visual magnitude of 16.7 and 18.3, we expect CI Aql and IM Nor to have flux below 1.e-14 ergs/s/cm2/A and possibly as low as 1.e-16 ergs/s/cm2/A , since both targets are strongly reddened, possibly as much as E(B-V)=0.8.
Assuming a flux of 5.e-16 ergs/s/cm2/A for our two targets, we can achiebe a S/N of 10 with only 3 orbits per target.

IM Nor has a visibility of 58min (3480s) per orbit.
CI Aql has a visibility of 54min (3240s) per orbit.

Overheads for a one-orbit visit consist of a guide star aquisition (6min first orbit, 4min subsequent orbits),
a target acquisition (6min), switch to the G140L grating (3min), detector setup (1min) and readout (8min
for 4 FP-POS positions).

With the targets visibility as given above, this leaves
130min (7800s) on-target exposure time for a 3-orbit visit for IM Nor
142min (8520s) on-target exposure time for a 3-orbit visit for CI Aql

Using the ETC for COS G140L (1105) this gives a
S/N of 11.9 (COS.sp.693599) for IM Nor at 1310A
S/N of 12.4 for CI Aql at 1310A

Non of the stars in our target list exceeds the Bright Object Limit (BOL) in quiescence.
However, these targets are variables, and we will therefore implement a ground-based
monitoring campaign for them, that will be carry out by members of the AAVSO (Stellar Kafka)
and by the Center for Backyard Astronomy.

## Visit

**Proposal 14641, Visit 01, completed** Mon Sep 11 19:00:21 GMT 2017

**Diagnostic Status: Warning**

Scientific Instruments: COS/FUV

Special Requirements: ORIENT 277.06D TO 287.06 D

*Comments: This should be scheduled in evening-local time. Flags need to be cleared during the work day.*

## Diagnostics

(Visit 01) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS

(Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

## Fixed Targets

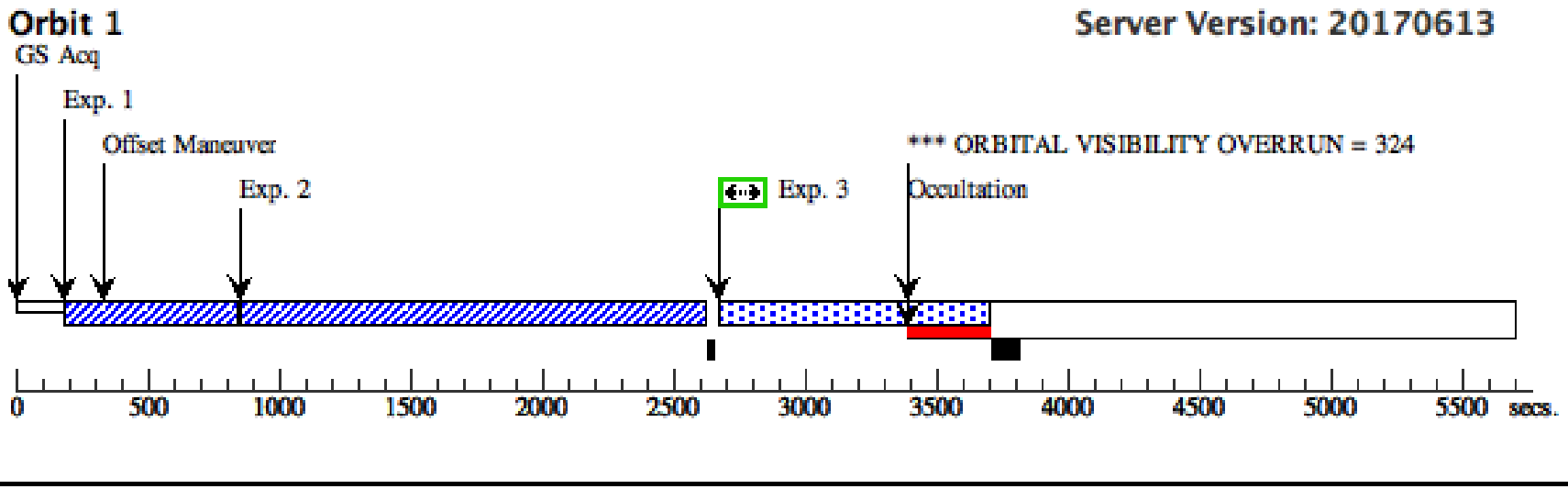
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (1) | NOVA-NOR-1920 | RA: 15 39 26.4650 (234.8602708d)<br>Dec: -52 19 17.99 (-52.32166d)<br>Equinox: J2000 | | V=18.3 | Reference Frame: ICRS |

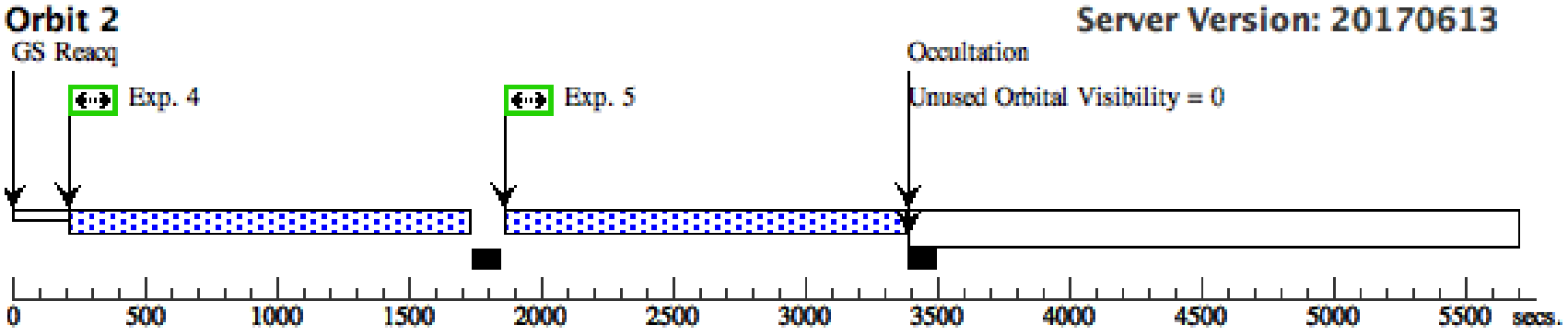
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Extended=NO*

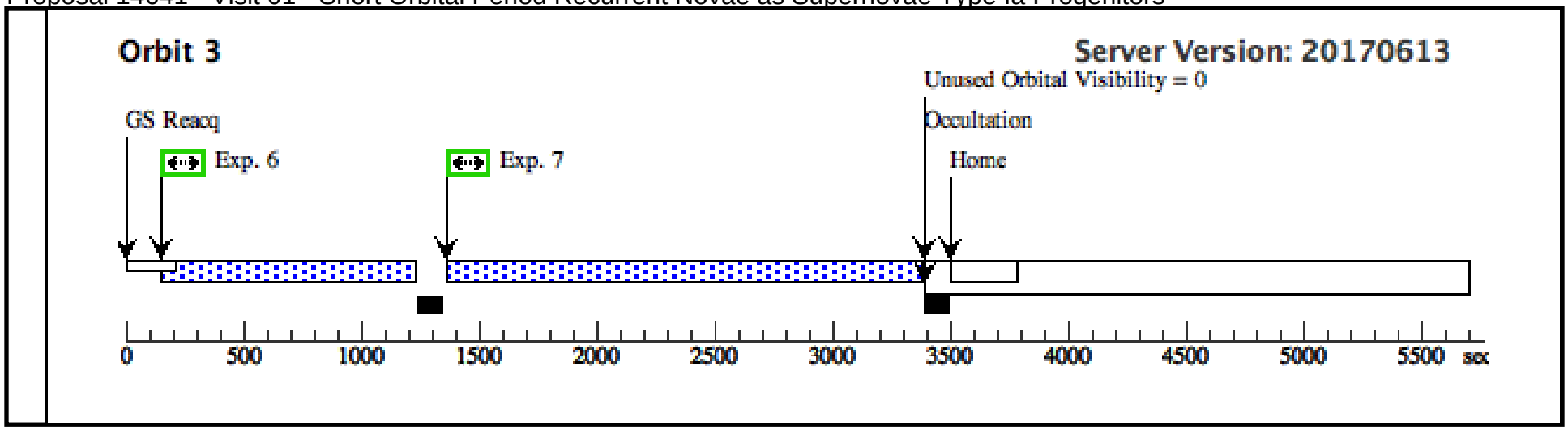
## Exposures

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | (COS.sa.826517) | (1) NOVA-NOR-1920 | COS/FUV, ACQ/PEAKXD, PSA | G140L 1105 A | | USE OFFSET V01SAF | | 127 Secs (127 Secs)<br>*[==>]* | *[1]* |
| 2 | (COS.sa.826518) | (1) NOVA-NOR-1920 | COS/FUV, ACQ/PEAKD, PSA | G140L 1105 A | NUM-POS=5; STEP-SIZE=0.9 | USE OFFSET V01SAF | | 325 Secs (325 Secs)<br>*[==>]* | *[1]* |
| 3 | (COS.sp.826520) | (1) NOVA-NOR-1920 | COS/FUV, TIME-TAG, PSA | G140L 1105 A | FP-POS=1; BUFFER-TIME=930 | USE OFFSET V01SAF | | 907 Secs (907 Secs)<br>*[==>]* | *[1]* |
| 4 | (COS.sp.826520) | (1) NOVA-NOR-1920 | COS/FUV, TIME-TAG, PSA | G140L 1105 A | FP-POS=2; BUFFER-TIME=1475 | USE OFFSET V01SAF | | 1475 Secs (1463 Secs)<br>*[==>1463.0 Secs ]* | *[2]* |
| 5 | (COS.sp.826520) | (1) NOVA-NOR-1920 | COS/FUV, TIME-TAG, PSA | G140L 1105 A | FP-POS=3; BUFFER-TIME=1475 | USE OFFSET V01SAF | | 1475 Secs (1463 Secs)<br>*[==>1463.0 Secs ]* | *[2]* |
| 6 | (COS.sp.826520) | (1) NOVA-NOR-1920 | COS/FUV, TIME-TAG, PSA | G140L 1105 A | FP-POS=1; BUFFER-TIME=1000 | USE OFFSET V01SAF | | 1000 Secs (963 Secs)<br>*[==>963.0 Secs ]* | *[3]* |
| 7 | (COS.sp.826520) | (1) NOVA-NOR-1920 | COS/FUV, TIME-TAG, PSA | G140L 1105 A | FP-POS=4; BUFFER-TIME=2000 | USE OFFSET V01SAF | | 2000 Secs (1963 Secs)<br>*[==>1963.0 Secs ]* | *[3]* |

Orbit Structure




Orbit 3
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Unused Orbital Visibility = 0
GS Reacq
Exp. 6
Exp. 7
Occultation
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

## Visit

**Proposal 14641, SCIENCETARGET-BOP-ONLY (1B), withdrawn** Mon Sep 11 19:00:21 GMT 2017

**Diagnostic Status: Warning**

Scientific Instruments: COS/FUV

Special Requirements: ORIENT 277.06D TO 287.06 D

*Comments: This visit is for BOP checking the safe target only and should not execute onboard HST.*

## Diagnostics

(SCIENCETARGET-BOP-ONLY (1B)) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS

(SCIENCETARGET-BOP-ONLY (1B)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

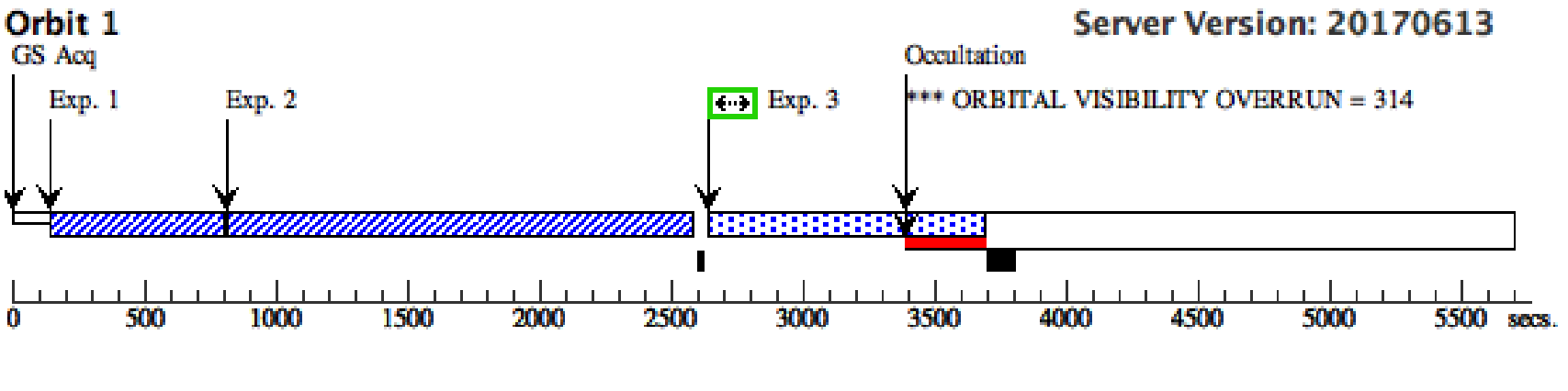
## Fixed Targets

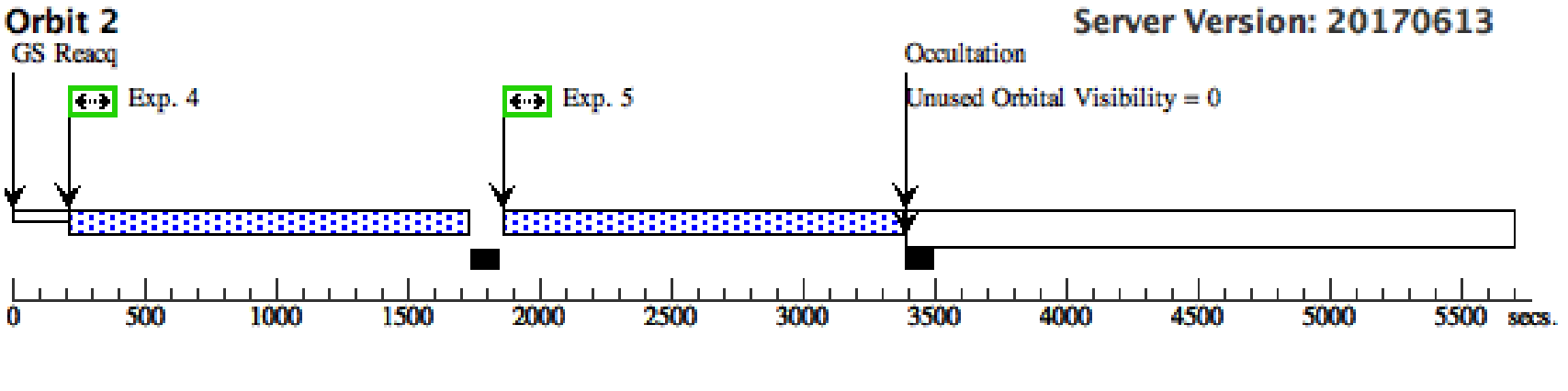
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (1) | NOVA-NOR-1920 | RA: 15 39 26.4650 (234.8602708d)<br>Dec: -52 19 17.99 (-52.32166d)<br>Equinox: J2000 | | V=18.3 | Reference Frame: ICRS |
| | | *Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Extended=NO* | | | |
| (2) | TARGET01-SAFE-TARGET | Offset from NOVA-NOR-1920<br>RA Offset: -0.98 Secs<br>Dec Offset: -3.597 Arcsec | | V=18.3 | Offset Position (TARGET01-SAFE-TARGET) |
| | | *Comments: This target is a blank piece of sky which is the bright object safe pointing and is 9.697 arcseconds away at PA 248.2 degrees from NOVA-NOR-1920. Extended=NO* | | | |

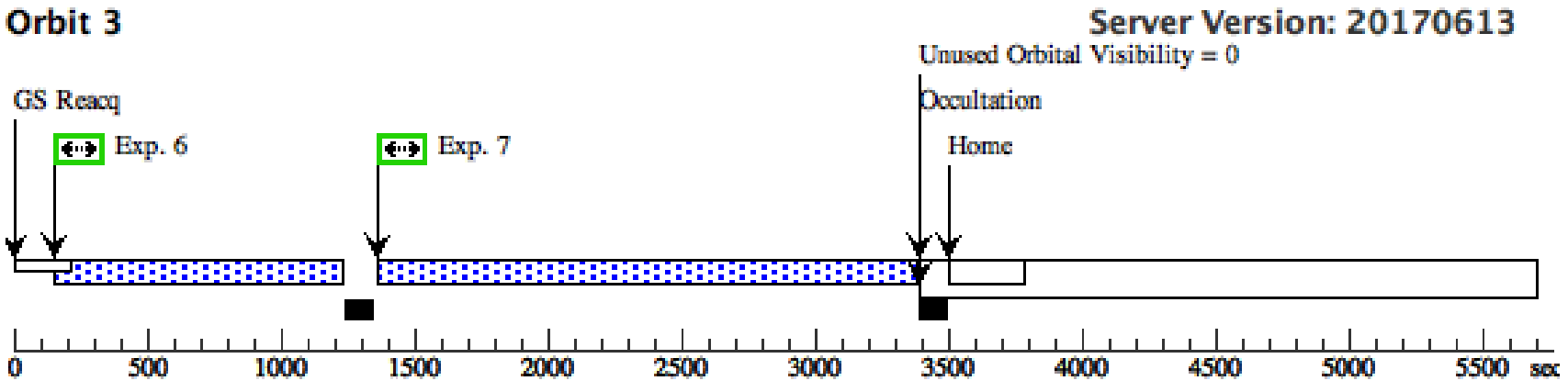
## Exposures

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | (COS.sa.826517) | (2) TARGET01-SAFE-TARGET | COS/FUV, ACQ/PEAKXD, PSA | G140L 1105 A | | | | 127 Secs (127 Secs)<br>*[==>]* | ***[1]*** |
| 2 | (COS.sa.826518) | (2) TARGET01-SAFE-TARGET | COS/FUV, ACQ/PEAKD, PSA | G140L 1105 A | NUM-POS=5; STEP-SIZE=0.9 | | | 325 Secs (325 Secs)<br>*[==>]* | ***[1]*** |
| 3 | (COS.sp.826520) | (2) TARGET01-SAFE-TARGET | COS/FUV, TIME-TAG, PSA | G140L 1105 A | FP-POS=1; BUFFER-TIME=930 | | | 930 Secs (930 Secs)<br>*[==>]* | ***[1]*** |
| 4 | (COS.sp.826520) | (2) TARGET01-SAFE-TARGET | COS/FUV, TIME-TAG, PSA | G140L 1105 A | FP-POS=2; BUFFER-TIME=1475 | | | 1475 Secs (1463 Secs)<br>*[==>1463.0 Secs ]* | ***[2]*** |
| 5 | (COS.sp.826520) | (2) TARGET01-SAFE-TARGET | COS/FUV, TIME-TAG, PSA | G140L 1105 A | FP-POS=3; BUFFER-TIME=1475 | | | 1475 Secs (1463 Secs)<br>*[==>1463.0 Secs ]* | ***[2]*** |
| 6 | (COS.sp.826520) | (2) TARGET01-SAFE-TARGET | COS/FUV, TIME-TAG, PSA | G140L 1105 A | FP-POS=1; BUFFER-TIME=1000 | | | 1000 Secs (963 Secs)<br>*[==>963.0 Secs ]* | ***[3]*** |
| 7 | (COS.sp.826520) | (2) TARGET01-SAFE-TARGET | COS/FUV, TIME-TAG, PSA | G140L 1105 A | FP-POS=4; BUFFER-TIME=2000 | | | 2000 Secs (1963 Secs)<br>*[==>1963.0 Secs ]* | ***[3]*** |

Orbit Structure



# Proposal 14641 - Visit 02 - Short Orbital Period Recurrent Novae as Supernovae Type Ia Progenitors

**Visit**

**Proposal 14641, Visit 02, implementation** Mon Sep 11 19:00:22 GMT 2017

**Diagnostic Status: Error**

Scientific Instruments: COS/FUV

Special Requirements: ORIENT 69D TO 78 D; AFTER 2A BY 3 D TO 5 D

*Comments: This should be scheduled in evening-local time. Flags need to be cleared during the day.*

**Diagnostics**

(Exposure 1 (Visit 02)) Error (Form): Illegal selection: G140L.

(Exposure 1 (Visit 02)) Error (Form): LP3 is not a valid selection

(Exposure 1 (Visit 02)) Error (Form): LP3 is not a valid selection

(Exposure 1 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Config=COS/FUV.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 1 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Optional_Parameter=LIFETIME-POS=LP3.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 1 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Spectral_Element=G140L.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 2 (Visit 02)) Error (Form): Illegal selection: G140L.

(Exposure 2 (Visit 02)) Error (Form): LP3 is not a valid selection

(Exposure 2 (Visit 02)) Error (Form): LP3 is not a valid selection

(Exposure 2 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Config=COS/FUV.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 2 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Optional_Parameter=LIFETIME-POS=LP3.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 2 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Spectral_Element=G140L.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 3 (Visit 02)) Error (Form): Illegal selection: G140L.

(Exposure 3 (Visit 02)) Error (Form): LP3 is not a valid selection

(Exposure 3 (Visit 02)) Error (Form): LP3 is not a valid selection

(Exposure 3 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Config=COS/FUV.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 3 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Optional_Parameter=LIFETIME-POS=LP3.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 3 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Spectral_Element=G140L.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 4 (Visit 02)) Error (Form): Illegal selection: G140L.

(Exposure 4 (Visit 02)) Error (Form): LP3 is not a valid selection

(Exposure 4 (Visit 02)) Error (Form): LP3 is not a valid selection

(Exposure 4 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Config=COS/FUV.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 4 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Optional_Parameter=LIFETIME-POS=LP3.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 4 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Spectral_Element=G140L.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 5 (Visit 02)) Error (Form): Illegal selection: G140L.

(Exposure 5 (Visit 02)) Error (Form): LP3 is not a valid selection

(Exposure 5 (Visit 02)) Error (Form): LP3 is not a valid selection

(Exposure 5 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Config=COS/FUV.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 5 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Optional_Parameter=LIFETIME-POS=LP3.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 5 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Spectral_Element=G140L.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 6 (Visit 02)) Error (Form): Illegal selection: G140L.

(Exposure 6 (Visit 02)) Error (Form): LP3 is not a valid selection

(Exposure 6 (Visit 02)) Error (Form): LP3 is not a valid selection

(Exposure 6 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Config=COS/FUV.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 6 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Optional_Parameter=LIFETIME-POS=LP3.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 6 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Spectral_Element=G140L.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 7 (Visit 02)) Error (Form): Illegal selection: G140L.

(Exposure 7 (Visit 02)) Error (Form): LP3 is not a valid selection

(Exposure 7 (Visit 02)) Error (Form): LP3 is not a valid selection

(Exposure 7 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Config=COS/FUV.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 7 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Optional_Parameter=LIFETIME-POS=LP3.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 7 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Spectral_Element=G140L.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Visit 02) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS

(Visit 02) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Visit 02) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

(Visit 02) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

**Fixed Targets**

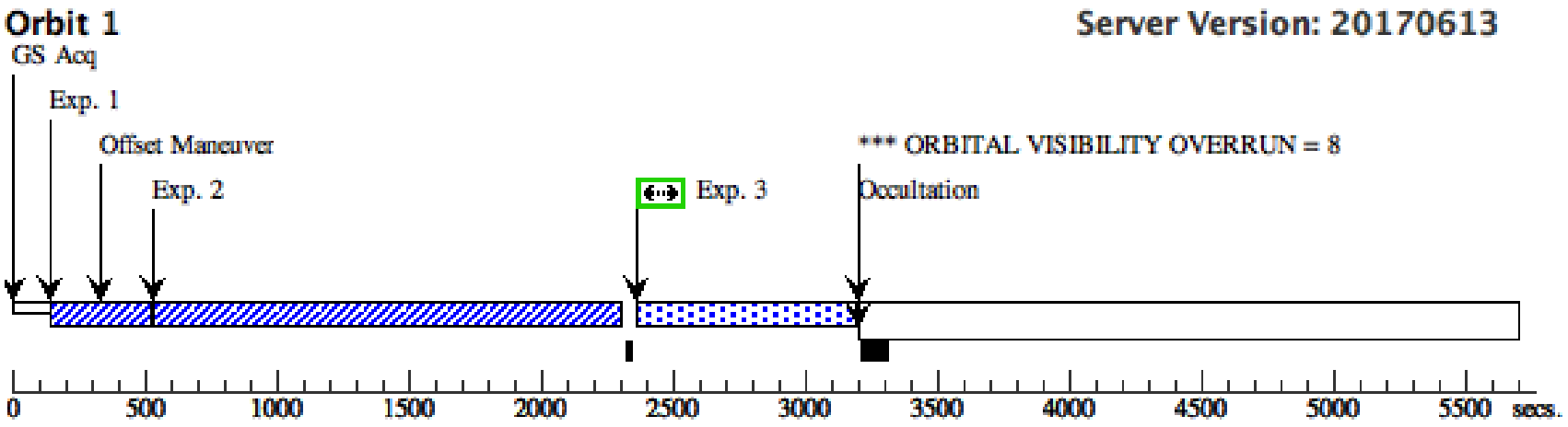
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (3) | NOVA-AQL-1917 | RA: 18 52 3.5700 (283.0148750d)<br>Dec: -01 28 39.40 (-1.47761d)<br>Equinox: J2000 | | V=16.7 | Reference Frame: ICRS |

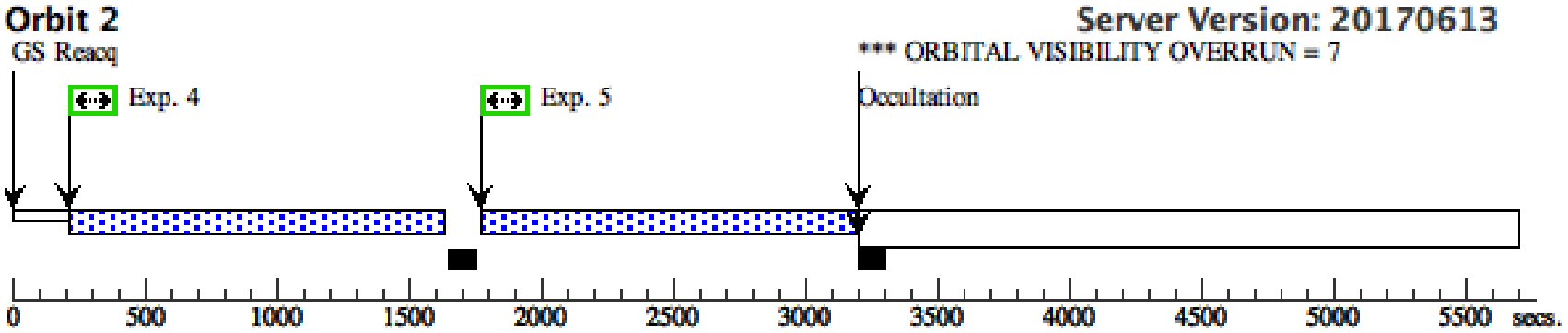
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Extended=NO*

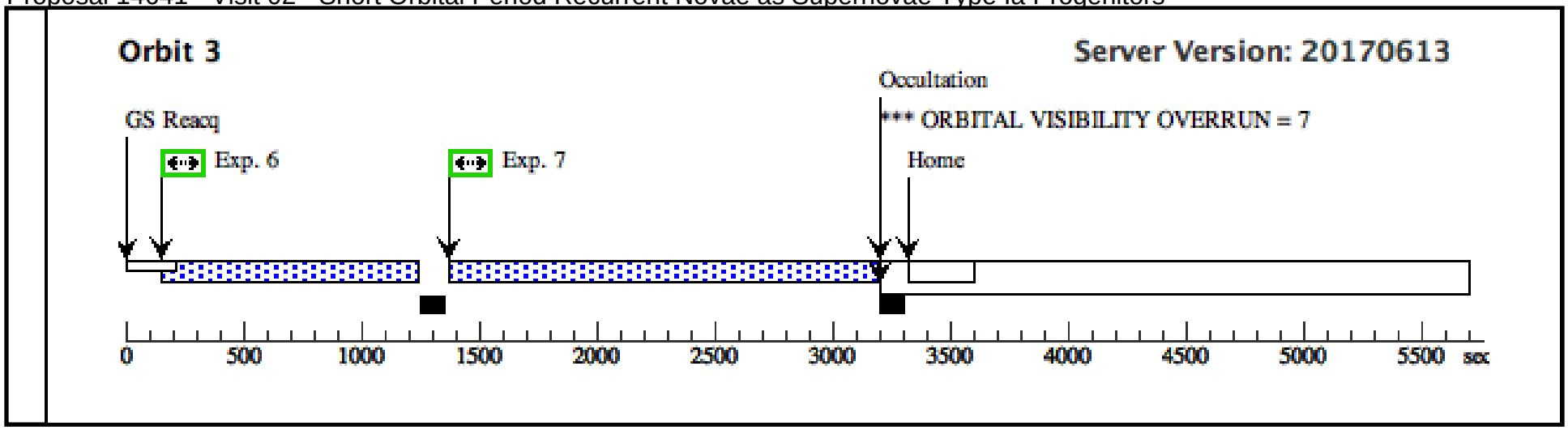
**Exposures**

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | (COS.sa.826517) | (3) NOVA-AQL-1917 | COS/FUV, ACQ/PEAKXD, PSA | G140L 1105 A | NUM-POS=1; LIFETIME-POS=LP3 | USE OFFSET V2AS AF | | 127 Secs (127 Secs)<br>*[==>]* | *[1]* |
| 2 | (COS.sa.826518) | (3) NOVA-AQL-1917 | COS/FUV, ACQ/PEAKD, PSA | G140L 1105 A | NUM-POS=5; STEP-SIZE=0.9; LIFETIME-POS=LP3 | USE OFFSET V2AS AF | | 325 Secs (325 Secs)<br>*[==>]* | *[1]* |
| 3 | (COS.sp.826520) | (3) NOVA-AQL-1917 | COS/FUV, TIME-TAG, PSA | G140L 1105 A | FP-POS=1; BUFFER-TIME=750; LIFETIME-POS=LP3 | USE OFFSET V2AS AF | | 750 Secs (714 Secs)<br>*[==>714.0 Secs ]* | *[1]* |
| 4 | (COS.sp.826520) | (3) NOVA-AQL-1917 | COS/FUV, TIME-TAG, PSA | G140L 1105 A | FP-POS=2; BUFFER-TIME=1385; LIFETIME-POS=LP3 | USE OFFSET V2AS AF | | 1385 Secs (1371 Secs)<br>*[==>1371.0 Secs ]* | *[2]* |
| 5 | (COS.sp.826520) | (3) NOVA-AQL-1917 | COS/FUV, TIME-TAG, PSA | G140L 1105 A | FP-POS=3; BUFFER-TIME=1385; LIFETIME-POS=LP3 | USE OFFSET V2AS AF | | 1385 Secs (1371 Secs)<br>*[==>1371.0 Secs ]* | *[2]* |
| 6 | (COS.sp.826520) | (3) NOVA-AQL-1917 | COS/FUV, TIME-TAG, PSA | G140L 1105 A | FP-POS=1; BUFFER-TIME=1000; LIFETIME-POS=LP3 | USE OFFSET V2AS AF | | 1000 Secs (971 Secs)<br>*[==>971.0 Secs ]* | *[3]* |
| 7 | (COS.sp.826520) | (3) NOVA-AQL-1917 | COS/FUV, TIME-TAG, PSA | G140L 1105 A | FP-POS=4; BUFFER-TIME=1800; LIFETIME-POS=LP3 | USE OFFSET V2AS AF | | 1800 Secs (1771 Secs)<br>*[==>1771.0 Secs ]* | *[3]* |

Orbit Structure




Orbit 3
Server Version: 20170613
Occultation
*** ORBITAL VISIBILITY OVERRUN = 7
GS Reacq
Exp. 6
Exp. 7
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

## Visit

**Proposal 14641, Visit 2A, implementation** Mon Sep 11 19:00:22 GMT 2017

**Diagnostic Status: No Diagnostics**

Scientific Instruments: S/C

Special Requirements: ORIENT 69D TO 78 D

*Comments: This visit allocates and set up the safe position offset slot for visit 02 which will use that slot.*

## Fixed Targets

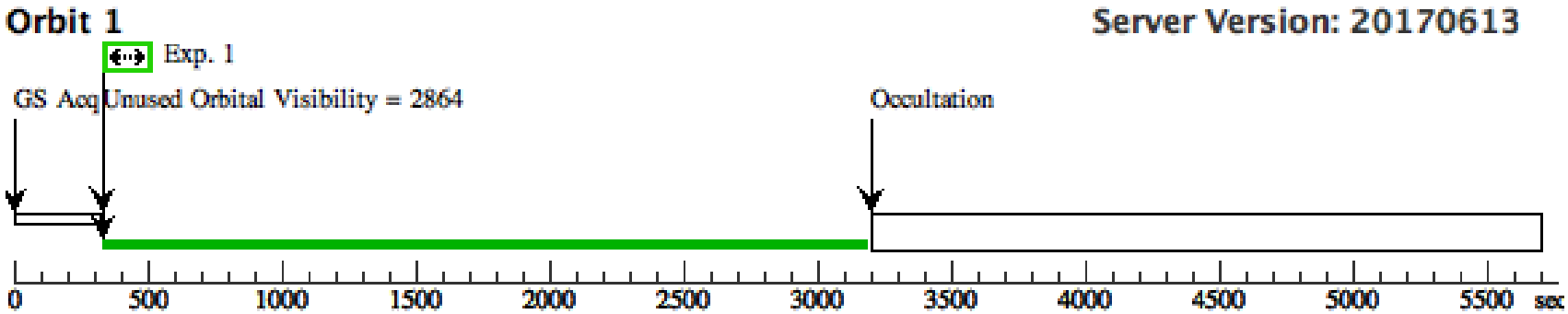
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (3) | NOVA-AQL-1917 | RA: 18 52 3.5700 (283.0148750d)<br>Dec: -01 28 39.40 (-1.47761d)<br>Equinox: J2000 | | V=16.7 | Reference Frame: ICRS |

*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Extended=NO*

## Exposures

| # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | (3) NOVA-AQL-1917 | S/C, DATA, V1 | | | POS TARG 230.9137,-239.2749;<br>SAVE OFFSET V2 ASAF;<br>SPEC COM INSTR ECSLOTSET;<br>QESIPARM ANGLE 75.8;<br>QESIPARM DIST 9.687 | | 5 Secs (5 Secs)<br>*[==>]* | ***[1]*** |

## Orbit Structure



| Visit | |
|---|---|
| | **Proposal 14641, SCIENCETARGET-BOP-ONLY (2B), implementation** Mon Sep 11 19:00:22 GMT 2017 |
| | **Diagnostic Status: Error** |
| | Scientific Instruments: COS/FUV |
| | Special Requirements: ORIENT 69D TO 78 D |
| | *Comments: This visit is for BOP checking the safe target only and should not execute onboard HST.* |

**Diagnostics**

(Exposure 1 (SCIENCETARGET-BOP-ONLY (2B))) Error (Form): Illegal selection: G140L.

(Exposure 1 (SCIENCETARGET-BOP-ONLY (2B))) Error (Form): LP3 is not a valid selection

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(Exposure 1 (SCIENCETARGET-BOP-ONLY (2B))) Error (Form): This attribute cannot have this value due to other choices: Config=COS/FUV.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 1 (SCIENCETARGET-BOP-ONLY (2B))) Error (Form): This attribute cannot have this value due to other choices: Optional_Parameter=LIFETIME-POS=LP3.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 1 (SCIENCETARGET-BOP-ONLY (2B))) Error (Form): This attribute cannot have this value due to other choices: Spectral_Element=G140L.
Only lifetime position LP4 may be specified for G140L or G160M exposures.

(Exposure 2 (SCIENCETARGET-BOP-ONLY (2B))) Error (Form): Illegal selection: G140L.

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(Exposure 3 (SCIENCETARGET-BOP-ONLY (2B))) Error (Form): Illegal selection: G140L.

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(Exposure 4 (SCIENCETARGET-BOP-ONLY (2B))) Error (Form): Illegal selection: G140L.

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(Exposure 5 (SCIENCETARGET-BOP-ONLY (2B))) Error (Form): Illegal selection: G140L.

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(SCIENCETARGET-BOP-ONLY (2B)) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS

(SCIENCETARGET-BOP-ONLY (2B)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

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(SCIENCETARGET-BOP-ONLY (2B)) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

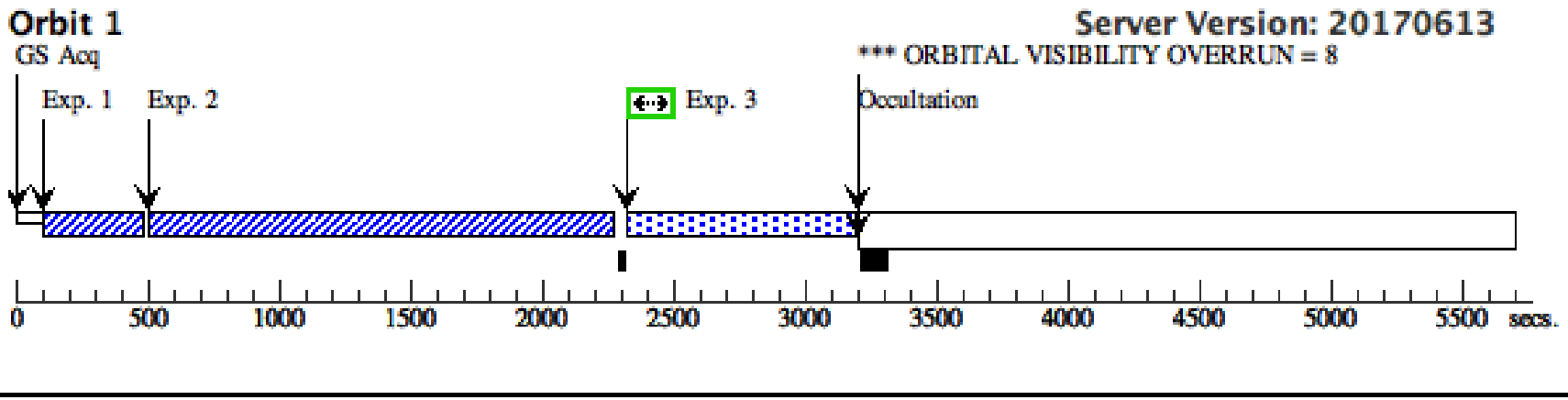
**Fixed Targets**

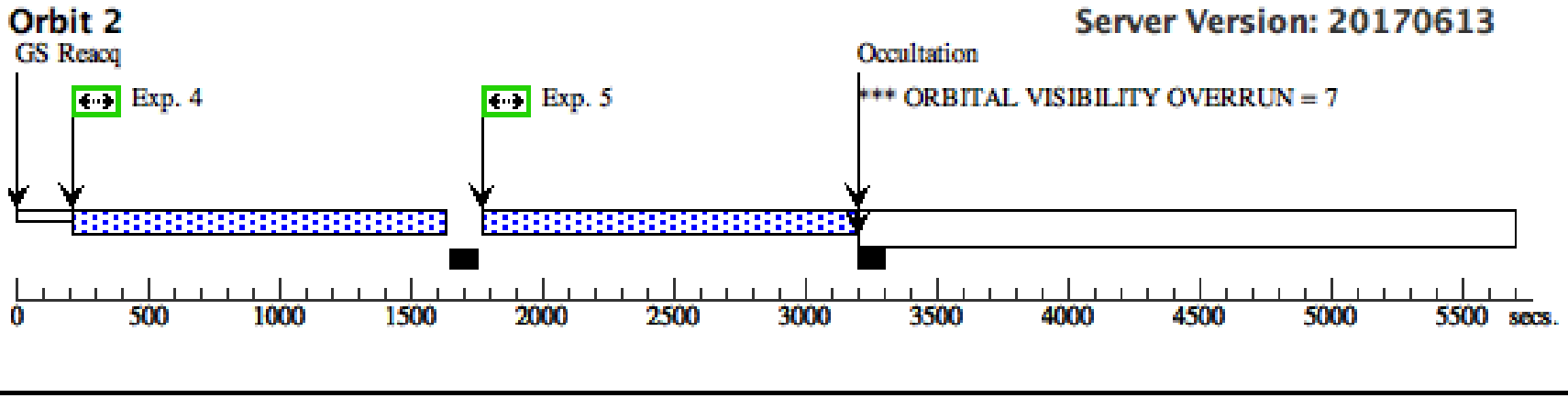
| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (3) | NOVA-AQL-1917 | RA: 18 52 3.5700 (283.0148750d)<br>Dec: -01 28 39.40 (-1.47761d)<br>Equinox: J2000 | | V=16.7 | Reference Frame: ICRS |
| *Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*<br>*Extended=NO* | | | | | |
| (4) | TARGET02-SAFE-TARGET | Offset from NOVA-AQL-1917<br>RA Offset: 0.62 Secs<br>Dec Offset: 2.384 Arcsec | | V=16.7 | Offset Position (TARGET02-SAFE-TARGET) |
| *Comments: This target is a blank piece of sky which is the bright object safe pointing and is 9.687 arcsec away at PA 75.8 deg from NOVA-AQL-1917.*<br>*Extended=NO* | | | | | |

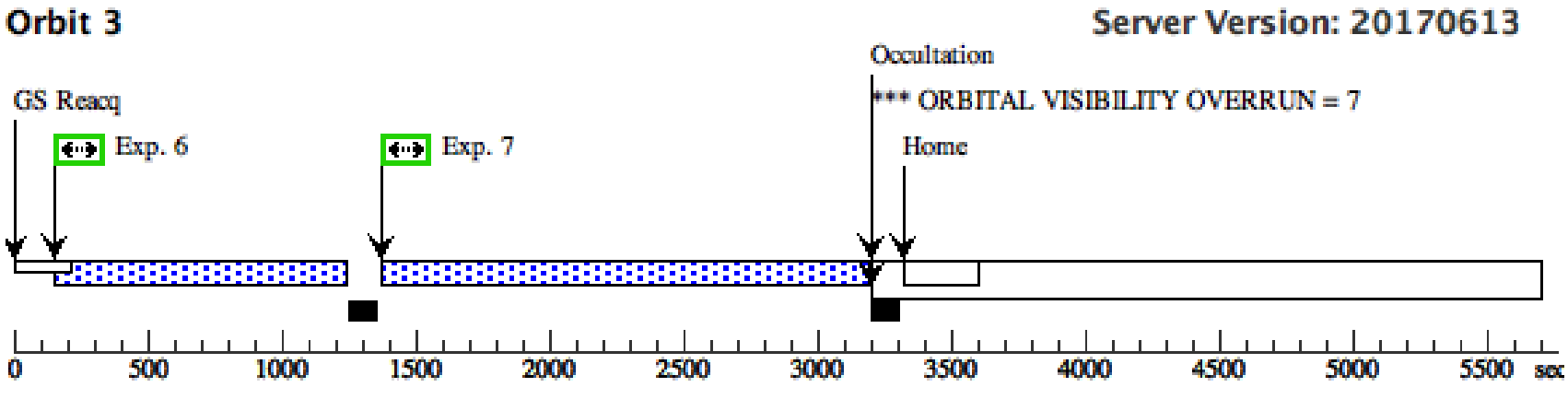
**Exposures**

| # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | (COS.sa.826517) | (4) TARGET02-SAFE-TARGET | COS/FUV, ACQ/PEAKXD, PSA | G140L 1105 A | NUM-POS=1; LIFETIME-POS=LP3 | | | 127 Secs (127 Secs) *[==>]* | *[1]* |
| 2 | (COS.sa.826518) | (4) TARGET02-SAFE-TARGET | COS/FUV, ACQ/PEAKD, PSA | G140L 1105 A | NUM-POS=5; STEP-SIZE=0.9; LIFETIME-POS=LP3 | | | 325 Secs (325 Secs) *[==>]* | *[1]* |
| 3 | (COS.sp.826520) | (4) TARGET02-SAFE-TARGET | COS/FUV, TIME-TAG, PSA | G140L 1105 A | FP-POS=1; BUFFER-TIME=750; LIFETIME-POS=LP3 | | | 750 Secs (747 Secs) *[==>747.0 Secs ]* | *[1]* |
| 4 | (COS.sp.826520) | (4) TARGET02-SAFE-TARGET | COS/FUV, TIME-TAG, PSA | G140L 1105 A | FP-POS=2; BUFFER-TIME=1385; LIFETIME-POS=LP3 | | | 1385 Secs (1371 Secs) *[==>1371.0 Secs ]* | *[2]* |
| 5 | (COS.sp.826520) | (4) TARGET02-SAFE-TARGET | COS/FUV, TIME-TAG, PSA | G140L 1105 A | FP-POS=3; BUFFER-TIME=1385; LIFETIME-POS=LP3 | | | 1385 Secs (1371 Secs) *[==>1371.0 Secs ]* | *[2]* |
| 6 | (COS.sp.826520) | (4) TARGET02-SAFE-TARGET | COS/FUV, TIME-TAG, PSA | G140L 1105 A | FP-POS=1; BUFFER-TIME=1000; LIFETIME-POS=LP3 | | | 1000 Secs (971 Secs) *[==>971.0 Secs ]* | *[3]* |
| 7 | (COS.sp.826520) | (4) TARGET02-SAFE-TARGET | COS/FUV, TIME-TAG, PSA | G140L 1105 A | FP-POS=4; BUFFER-TIME=1800; LIFETIME-POS=LP3 | | | 1800 Secs (1771 Secs) *[==>1771.0 Secs ]* | *[3]* |

Orbit Structure



## Visit

**Proposal 14641, Visit 1A, completed** Mon Sep 11 19:00:22 GMT 2017

**Diagnostic Status: No Diagnostics**

Scientific Instruments: S/C

Special Requirements: ORIENT 277.06D TO 287.06 D

## Fixed Targets

| # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous |
|---|---|---|---|---|---|
| (1) | NOVA-NOR-1920 | RA: 15 39 26.4650 (234.8602708d)<br>Dec: -52 19 17.99 (-52.32166d)<br>Equinox: J2000 | | V=18.3 | Reference Frame: ICRS |

*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*
*Extended=NO*

## Exposures

| # | Label | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | (1) NOVA-NOR-1920 | S/C, DATA, V1 | | | POS TARG 230.9137,-239.2749;<br>SAVE OFFSET V01 SAF;<br>SPEC COM INSTR ECSLOTSET;<br>QESIPARM ANGLE 248.2;<br>QESIPARM DIST 9.697 | | 5 Secs (5 Secs)<br>*[==>]* | *[1]* |

## Orbit Structure