



# 17771 - Completing the picture of high-ionization UV emission powered by the most metal-poor massive star populations

Cycle: 32, Proposal Category: GO

(UV Initiative)

(Availability Mode: SUPPORTED)

## INVESTIGATORS

| <i>Name</i>                              | <i>Institution</i>                             |
|------------------------------------------|------------------------------------------------|
| <b>Dr. Peter Senchyna (PI) (Contact)</b> | <b>Carnegie Institution of Washington</b>      |
| Prof. Daniel P. Stark (CoI)              | University of California - Berkeley            |
| Dr. Zuyi Chen (CoI) (ESA Member)         | University of Copenhagen, Niels Bohr Institute |
| Dr. Danielle Berg (CoI)                  | University of Texas at Austin                  |
| Prof. John Chisholm (CoI)                | University of Texas at Austin                  |
| Dr. Stephane Charlot (CoI) (ESA Member)  | CNRS, Institut d'Astrophysique de Paris        |
| Dr. Jacopo Chevallard (CoI) (ESA Member) | CNRS, Institut d'Astrophysique de Paris        |
| Adele Plat (CoI) (ESA Member)            | Ecole Polytechnique Federale de Lausanne       |

## VISITS

| <i>Visit</i> | <i>Targets used in Visit</i> | <i>Configurations used in Visit</i> | <i>Orbits Used</i> | <i>Last Orbit Planner Run</i> | <i>OP Current with Visit?</i> |
|--------------|------------------------------|-------------------------------------|--------------------|-------------------------------|-------------------------------|
| 01           | (1) J013911.93+154241.3      | COS/FUV<br>COS/NUV                  | 3                  | 12-Dec-2025 10:00:14.0        | yes                           |
| 31           | (1) J013911.93+154241.3      | COS/FUV<br>COS/NUV                  | 3                  | 12-Dec-2025 10:00:15.0        | yes                           |
| 02           | (1) J013911.93+154241.3      | COS/FUV<br>COS/NUV                  | 3                  | 12-Dec-2025 10:00:16.0        | yes                           |

| <i>Visit</i> | <i>Targets used in Visit</i> | <i>Configurations used in Visit</i> | <i>Orbits Used</i> | <i>Last Orbit Planner Run</i> | <i>OP Current with Visit?</i> |
|--------------|------------------------------|-------------------------------------|--------------------|-------------------------------|-------------------------------|
| 32           | (1) J013911.93+154241.3      | COS/FUV<br>COS/NUV                  | 3                  | 12-Dec-2025 10:00:17.0        | yes                           |
| 03           | (1) J013911.93+154241.3      | COS/FUV<br>COS/NUV                  | 2                  | 12-Dec-2025 10:00:18.0        | yes                           |
| 04           | (2) J084530.80+013151.2      | COS/FUV<br>COS/NUV                  | 2                  | 12-Dec-2025 10:00:19.0        | yes                           |
| 05           | (2) J084530.80+013151.2      | COS/FUV<br>COS/NUV                  | 2                  | 12-Dec-2025 10:00:19.0        | yes                           |
| 06           | (3) J092136.55+403853.8      | COS/FUV<br>COS/NUV                  | 3                  | 12-Dec-2025 10:00:20.0        | yes                           |
| 07           | (3) J092136.55+403853.8      | COS/FUV<br>COS/NUV                  | 3                  | 12-Dec-2025 10:00:21.0        | yes                           |
| 08           | (3) J092136.55+403853.8      | COS/FUV<br>COS/NUV                  | 2                  | 12-Dec-2025 10:00:22.0        | yes                           |
| 09           | (3) J092136.55+403853.8      | COS/FUV<br>COS/NUV                  | 2                  | 12-Dec-2025 10:00:22.0        | yes                           |

28 Total Orbits Used

## ABSTRACT

With JWST spectroscopic samples expanding at  $z > 6$ , a mysterious class of object is becoming ever more commonplace. Several extremely prominent CIV emitters ( $> 20\text{\AA}$  equivalent width) glimpsed prior with ground-based facilities have been confirmed; and alongside this emission, JWST has revealed peculiar emission in NIV] suggestive of nitrogen enhancements. Even more surprisingly, similar signatures have now been established in other galaxies including the two most luminous systems spectroscopically confirmed at  $z > 10$ . This emission has invoked significant debate and its origins remain unclear; but HST is poised to shed light on this mystery. After over a half-decade long search, HST/COS has finally identified two nearby galaxies that power CIV  $> 20\text{\AA}$ , at the lowest metallicities ( $< 5\%$  solar) and youngest ages ( $< \sim 2$  Myr effective ages). These galaxies represent our best hope of understanding the processes underlying this emission at  $z > 6$ , but only limited conclusions can be drawn from a sample of two. Here we propose to target the brightest remaining sources known at these youngest ages and lowest metallicities, and increase the sample of these best reionization-era analogues to five. By extending observations to targets at similar ages and metallicities but with a range of gas conditions, we will

Proposal 17771 (STScI Edit Number: 0, Created: Friday, December 12, 2025, 10:00:23AM Eastern Standard Time) - Overview

place the firmest possible statistical constraints on the ionizing spectrum and enrichment powered by the youngest extremely metal-poor stellar populations. These observations will complete the baseline critical for interpreting the spectra of the highest-redshift galaxies, and cement this sample as legacy benchmarks for the next generation of stellar population synthesis model development.

## **OBSERVING DESCRIPTION**

This program will acquire FUV spectroscopy designed to constrain high-ionization nebular emission including in C IV and He II for three extremely metal-deficient nearby dwarf galaxies dominated by very young stellar populations. The targets are each covered by SDSS and GALEX imaging which we leverage in planning their observation.

Coordinates and acquisition: Each target is a compact source unresolved in ground-based imaging. The target coordinates are determined from the SDSS photometric outputs and confirmed to agree with the peak of u-band emission for each target in the ICRS-aligned SDSS imaging. Each target is thus acquired with a standard ACQ/IMAGE exposure, with exposure time chosen to deliver  $S/N=25$  for a point source with an NUV AB magnitude equal to the faintest of the u-band fiber and cModel magnitudes (assuming a flat continuum in  $F_{\nu}$ , appropriate for such sources). We confirm that all three have GALEX/NUV magnitudes brighter than this conservative estimate; and to ensure detector safety, we likewise confirm that no warnings are raised for a Mirror A+PSA observation of a point source with the brightest GALEX/NUV magnitude among the three. Based upon previous observations of similar sources, we expect these targets to be more extended than a point source, but with FWHM at NUV wavelengths significantly smaller than  $0.6''$ ; and we expect the requested  $SNR=25$  exposures will deliver images adequate for precise acquisition without expending too large a fraction of the first orbit of each visit on alignment.

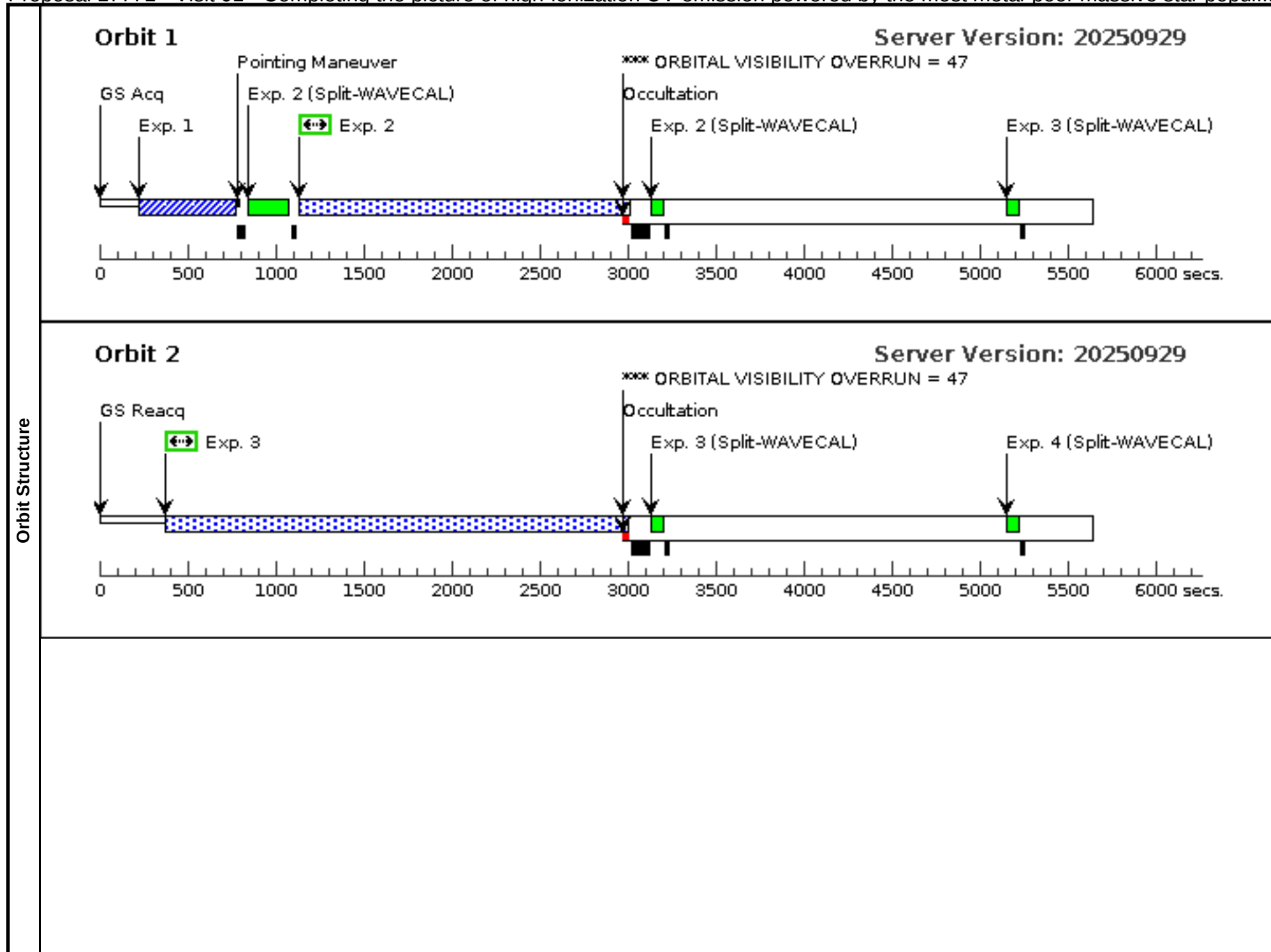
Observing plan: Our primary objective is nebular line measurement; our observations are thus in the low-S/N regime ( $<5$  /resel in the continuum). To maximize the exposure time on-source, we thus devote each orbit to a single spectroscopic exposure, which enables us to relegate most of the buffer dump and expensive SPLIT wavecal overheads to occultation. All FP-POS positions are observed at least once for each object, and we endeavor to spread exposures as equally between the FP-POS settings as possible within this scheme. A full buffer dump is requested for each exposure given the uncertain FUV countrates and the lack of impact on overheads. The warnings about inefficient FP-POS orderings are ignored as the grating shifts in all cases occur during occultation and thus have no impact on science exposure time.

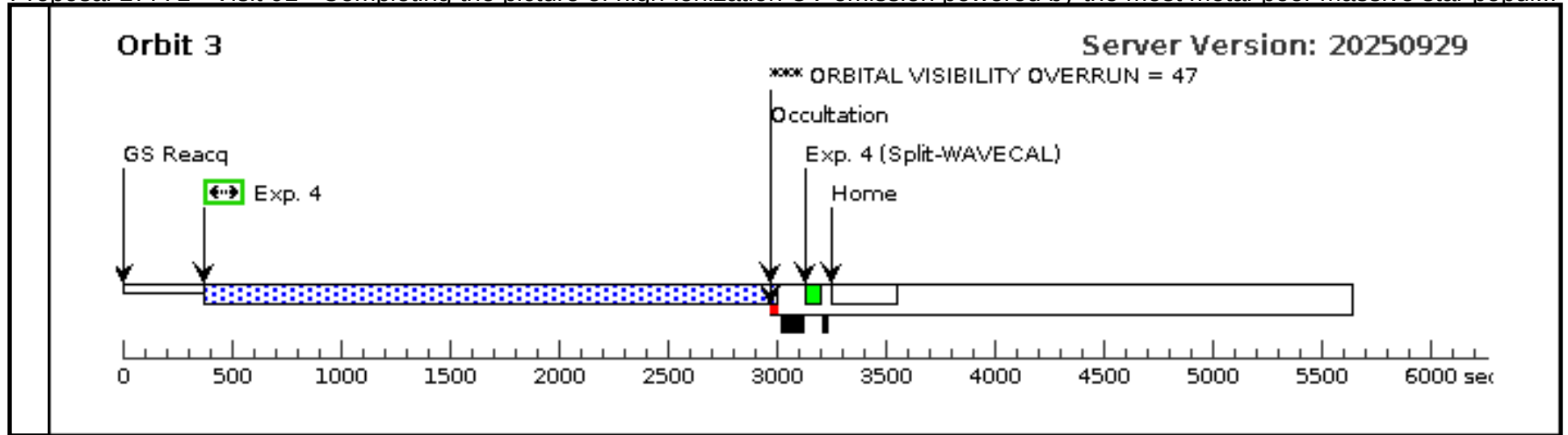
Safety: The targets are all faint and have no UV-bright ( $<20$  AB) nearby ( $<1$  arcmin) neighbors, as confirmed with GALEX imaging catalogs. No health and safety warnings are issued by the BOT or other tools. Testing the ETC with conservative over-estimates of brightness (several magnitudes brighter than the brightest measured GALEX NUV magnitude) suggest no issues with exceeding countrate limits or filling the buffer too early with

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any of the target acquisition exposures or the spectroscopic integrations.

# Proposal 17771 - Visit 01 - Completing the picture of high-ionization UV emission powered by the most metal-poor massive star popul...

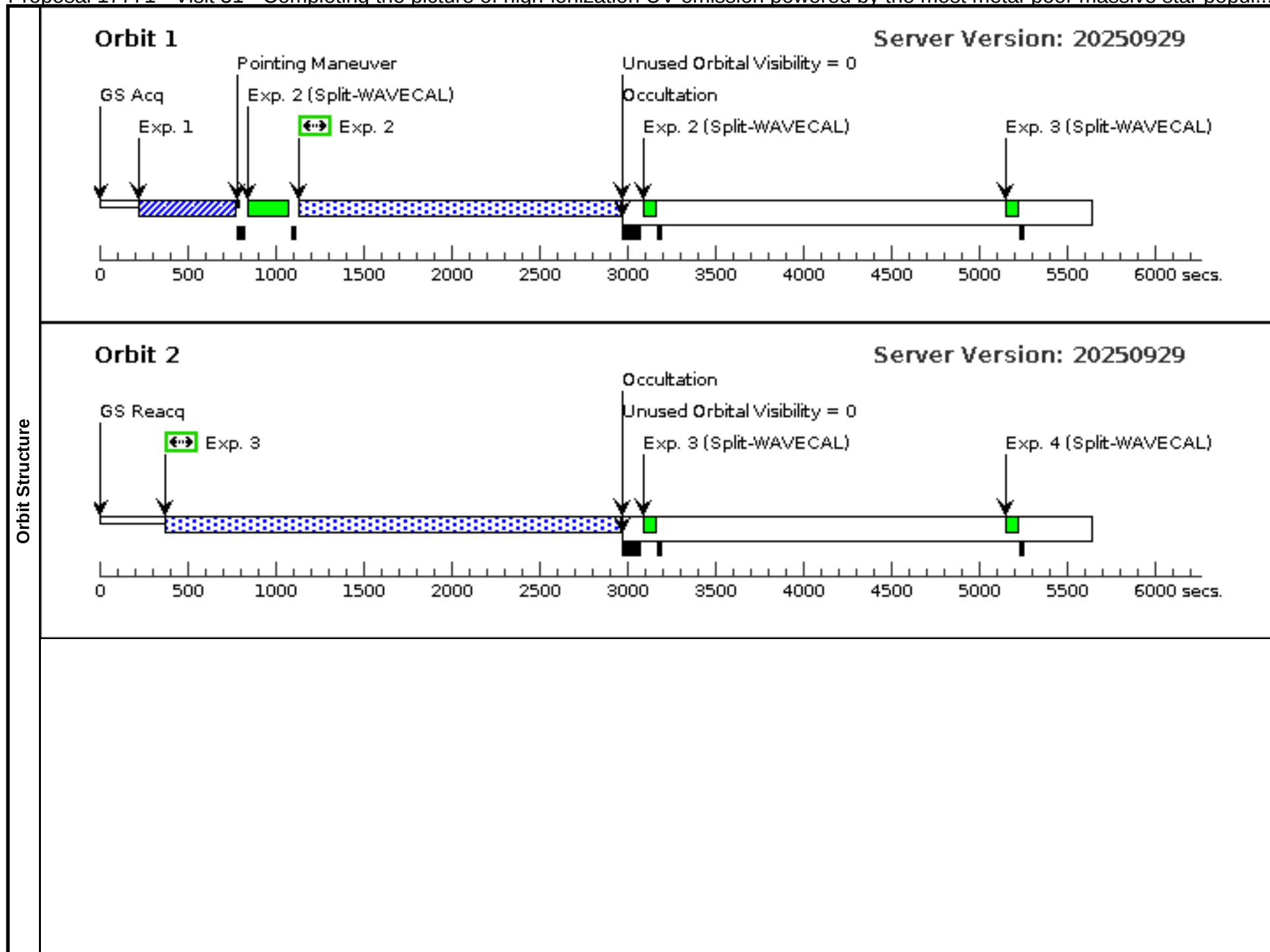
|                                                                                                                       |                                                                                                                                                                                                                                          |                   |                          |                         |                 |                                |               |        |                                 |  |                              |  |
|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------|-------------------------|-----------------|--------------------------------|---------------|--------|---------------------------------|--|------------------------------|--|
| Visit                                                                                                                 | Proposal 17771, Visit 01, failed                                                                                                                                                                                                         |                   |                          |                         |                 |                                |               |        |                                 |  | Fri Dec 12 15:00:23 GMT 2025 |  |
|                                                                                                                       | Diagnostic Status: Warning                                                                                                                                                                                                               |                   |                          |                         |                 |                                |               |        |                                 |  |                              |  |
|                                                                                                                       | Scientific Instruments: COS/FUV, COS/NUV                                                                                                                                                                                                 |                   |                          |                         |                 |                                |               |        |                                 |  |                              |  |
|                                                                                                                       | Special Requirements: (none)                                                                                                                                                                                                             |                   |                          |                         |                 |                                |               |        |                                 |  |                              |  |
| Diagnostics                                                                                                           | (Visit 01) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions at a given COS cenwave (or 2 positions for certain exception cases). See extended explanation in the diagnostic browser. |                   |                          |                         |                 |                                |               |        |                                 |  |                              |  |
|                                                                                                                       | (Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                                                                                                                                                                           |                   |                          |                         |                 |                                |               |        |                                 |  |                              |  |
|                                                                                                                       | (Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                                                                                                                                                                           |                   |                          |                         |                 |                                |               |        |                                 |  |                              |  |
|                                                                                                                       | (Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                                                                                                                                                                           |                   |                          |                         |                 |                                |               |        |                                 |  |                              |  |
| Fixed Targets                                                                                                         | #                      Name                      Target Coordinates                      Targ. Coord. Corrections                      Fluxes                      Miscellaneous                                                         |                   |                          |                         |                 |                                |               |        |                                 |  |                              |  |
|                                                                                                                       | (1)                      J013911.93+154241.3                      RA: 01 39 11.9300 (24.7997083d)                      Redshift: 0.028                      V=22.1                      Reference Frame: ICRS                            |                   |                          |                         |                 |                                |               |        |                                 |  |                              |  |
|                                                                                                                       | Dec: +15 42 41.32 (15.71148d)                                                                                                                                                                                                            |                   |                          |                         |                 |                                |               |        |                                 |  |                              |  |
|                                                                                                                       | Equinox: J2000                                                                                                                                                                                                                           |                   |                          |                         |                 |                                |               |        |                                 |  |                              |  |
| Comments:<br>Category=GALAXY<br>Description=[DWARF COMPACT, EMISSION LINE NEBULA, STAR FORMING REGION]<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.ta.193 2629) | (1) J013911.93+154 241.3 | COS/NUV, ACQ/IMAGE, PSA | MIRRORA         |                                |               |        | 168 Secs (168 Secs)             |  |                              |  |
|                                                                                                                       |                                                                                                                                                                                                                                          |                   |                          |                         |                 |                                |               |        | [==>]                           |  | [1]                          |  |
|                                                                                                                       | 2                                                                                                                                                                                                                                        | (COS.sp.193 2945) | (1) J013911.93+154 241.3 | COS/FUV, TIME-TAG, PSA  | G160M<br>1623 A | BUFFER-TIME=18 27;<br>FP-POS=1 |               |        | 1827 Secs (1827 Secs)           |  |                              |  |
|                                                                                                                       |                                                                                                                                                                                                                                          |                   |                          |                         |                 |                                |               |        | [==>]                           |  | [1]                          |  |
|                                                                                                                       | 3                                                                                                                                                                                                                                        | (COS.sp.193 2945) | (1) J013911.93+154 241.3 | COS/FUV, TIME-TAG, PSA  | G160M<br>1623 A | BUFFER-TIME=25 83;<br>FP-POS=2 |               |        | 2583 Secs (2583 Secs)           |  |                              |  |
|                                                                                                                       |                                                                                                                                                                                                                                          |                   |                          |                         |                 |                                |               |        | [==>]                           |  | [2]                          |  |
|                                                                                                                       | 4                                                                                                                                                                                                                                        | (COS.sp.193 2945) | (1) J013911.93+154 241.3 | COS/FUV, TIME-TAG, PSA  | G160M<br>1623 A | BUFFER-TIME=25 83;<br>FP-POS=3 |               |        | 2583 Secs (2583 Secs)           |  |                              |  |
|                                                                                                                       |                                                                                                                                                                                                                                          |                   |                          |                         |                 |                                |               |        | [==>]                           |  | [3]                          |  |

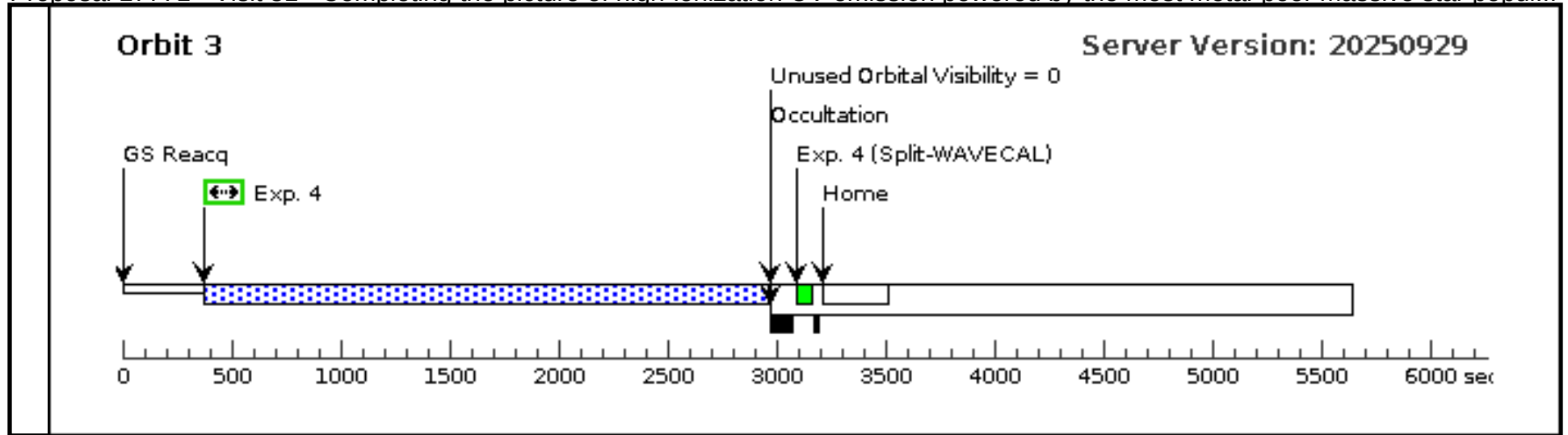




# Proposal 17771 - Visit 31 - Completing the picture of high-ionization UV emission powered by the most metal-poor massive star popul...

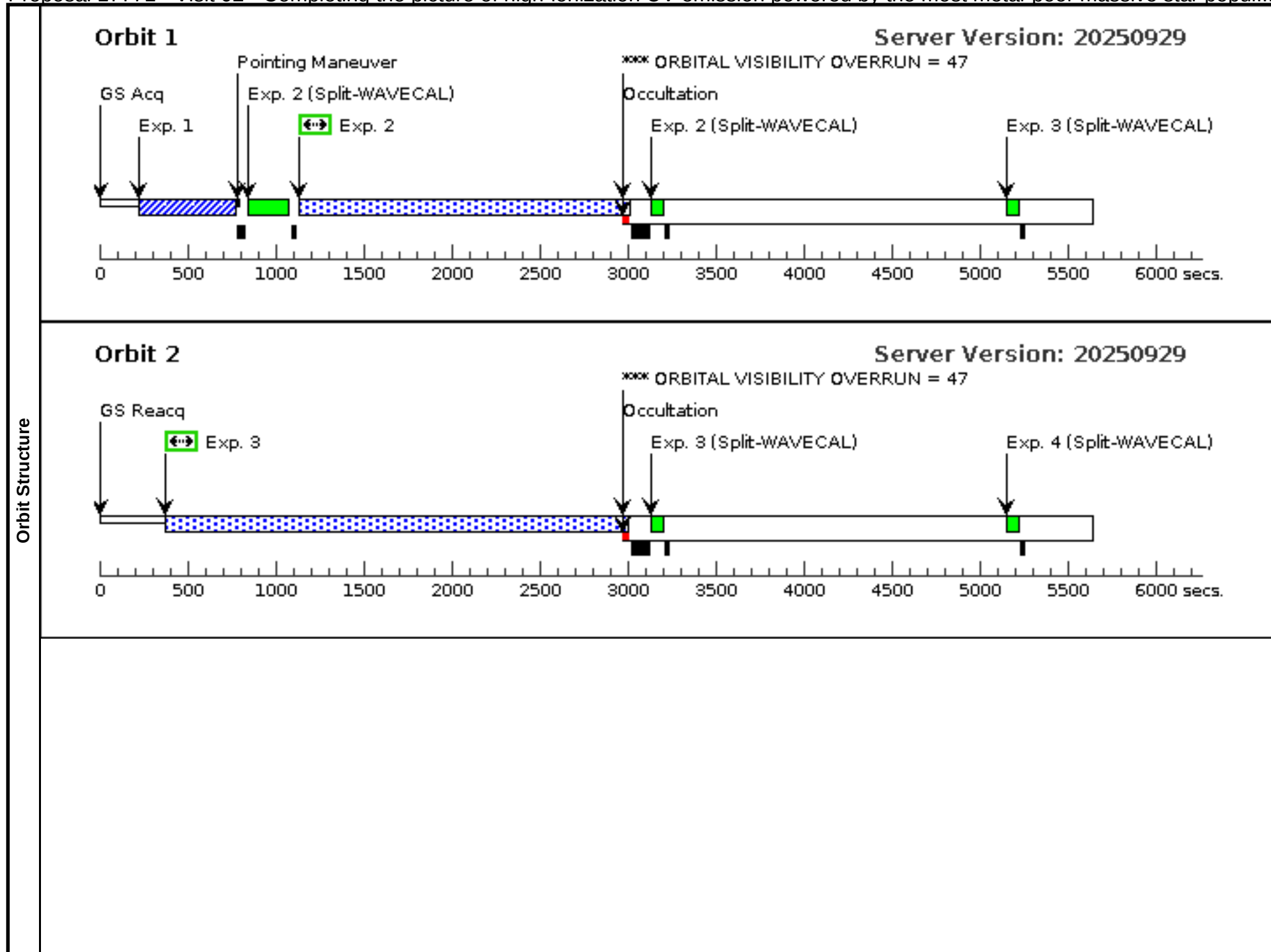
|               |                                                                                                                                                                                                                                          |                     |                                                                                    |                         |  |                          |                                |               |        |                                 |                              |       |  |  |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------------------------------------------------------------------------|-------------------------|--|--------------------------|--------------------------------|---------------|--------|---------------------------------|------------------------------|-------|--|--|
| Visit         | Proposal 17771, Visit 31                                                                                                                                                                                                                 |                     |                                                                                    |                         |  |                          |                                |               |        |                                 | Fri Dec 12 15:00:23 GMT 2025 |       |  |  |
|               | Diagnostic Status: Warning                                                                                                                                                                                                               |                     |                                                                                    |                         |  |                          |                                |               |        |                                 |                              |       |  |  |
|               | Scientific Instruments: COS/FUV, COS/NUV                                                                                                                                                                                                 |                     |                                                                                    |                         |  |                          |                                |               |        |                                 |                              |       |  |  |
|               | Special Requirements: (none)                                                                                                                                                                                                             |                     |                                                                                    |                         |  |                          |                                |               |        |                                 |                              |       |  |  |
| Diagnos       | (Visit 31) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions at a given COS cenwave (or 2 positions for certain exception cases). See extended explanation in the diagnostic browser. |                     |                                                                                    |                         |  |                          |                                |               |        |                                 |                              |       |  |  |
| Fixed Targets | #                                                                                                                                                                                                                                        | Name                | Target Coordinates                                                                 |                         |  | Targ. Coord. Corrections |                                |               | Fluxes |                                 | Miscellaneous                |       |  |  |
|               | (1)                                                                                                                                                                                                                                      | J013911.93+154241.3 | RA: 01 39 11.9300 (24.7997083d)<br>Dec: +15 42 41.32 (15.71148d)<br>Equinox: J2000 |                         |  | Redshift: 0.028          |                                |               | V=22.1 |                                 | Reference Frame: ICRS        |       |  |  |
|               | Comments:<br>Category=GALAXY<br>Description=[DWARF COMPACT, EMISSION LINE NEBULA, STAR FORMING REGION]<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.ta.193 2629)   | (1) J013911.93+154 241.3                                                           | COS/NUV, ACQ/IMAGE, PSA |  | MIRRORA                  |                                |               |        | 168 Secs (168 Secs)             |                              |       |  |  |
|               |                                                                                                                                                                                                                                          |                     |                                                                                    |                         |  |                          |                                |               |        | [==>]                           |                              | [1]   |  |  |
|               | 2                                                                                                                                                                                                                                        | (COS.sp.193 2945)   | (1) J013911.93+154 241.3                                                           | COS/FUV, TIME-TAG, PSA  |  | G160M<br>1623 A          | BUFFER-TIME=17 80;<br>FP-POS=1 |               |        | 1827 Secs (1780 Secs)           |                              |       |  |  |
|               |                                                                                                                                                                                                                                          |                     |                                                                                    |                         |  |                          |                                |               |        | [==>1780.0 Secs ]               |                              | [1]   |  |  |
|               | 3                                                                                                                                                                                                                                        | (COS.sp.193 2945)   | (1) J013911.93+154 241.3                                                           | COS/FUV, TIME-TAG, PSA  |  | G160M<br>1623 A          | BUFFER-TIME=25 36;<br>FP-POS=2 |               |        | 2583 Secs (2536 Secs)           |                              |       |  |  |
|               |                                                                                                                                                                                                                                          |                     |                                                                                    |                         |  |                          |                                |               |        | [==>2536.0 Secs ]               |                              | [2]   |  |  |
|               | 4                                                                                                                                                                                                                                        | (COS.sp.193 2945)   | (1) J013911.93+154 241.3                                                           | COS/FUV, TIME-TAG, PSA  |  | G160M<br>1623 A          | BUFFER-TIME=25 36;<br>FP-POS=3 |               |        | 2583 Secs (2536 Secs)           |                              |       |  |  |
|               |                                                                                                                                                                                                                                          |                     |                                                                                    |                         |  |                          |                                |               |        | [==>2536.0 Secs ]               |                              | [3]   |  |  |

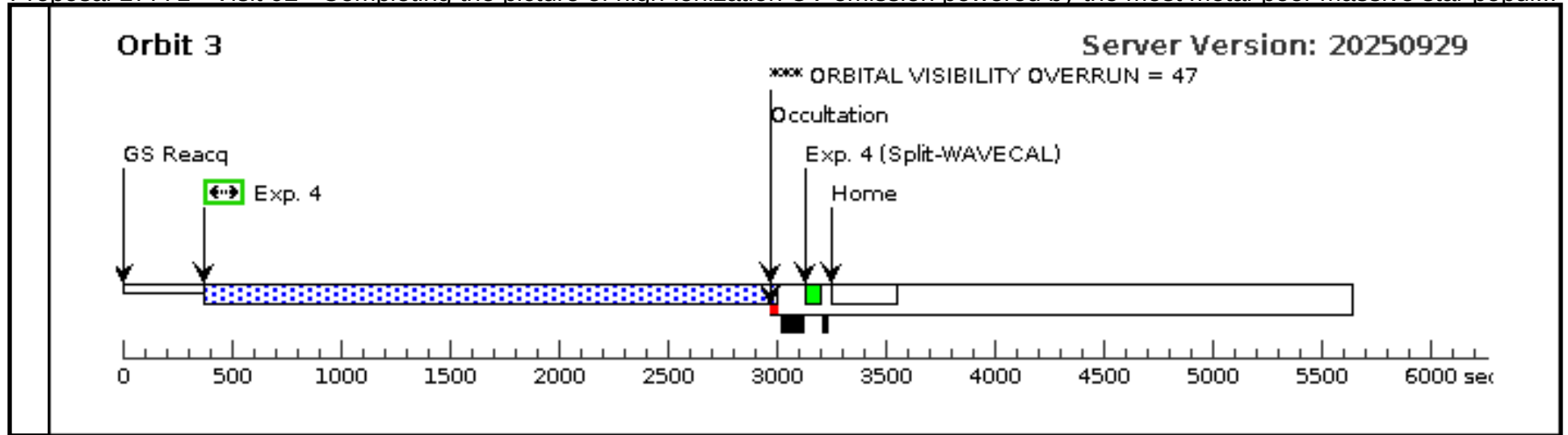




# Proposal 17771 - Visit 02 - Completing the picture of high-ionization UV emission powered by the most metal-poor massive star popul...

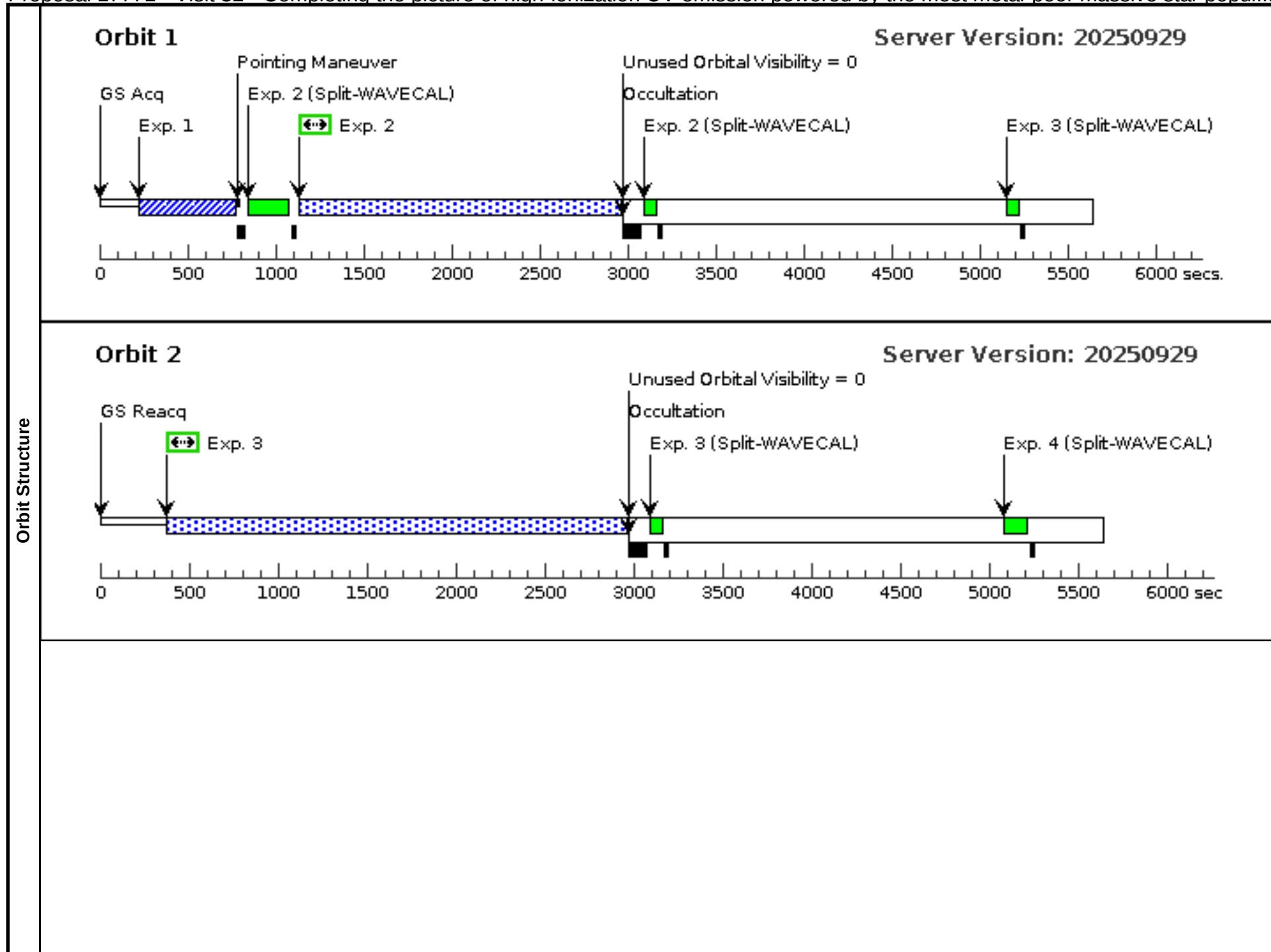
| Visit         | Proposal 17771, Visit 02, failed                                                                                                                                                                                                                                                                                                                                    |                     |                                                                                    |                          |                 |                                |               |        |                                 |  | Fri Dec 12 15:00:23 GMT 2025 |  |   |      |                    |                          |        |               |     |                     |                                                                                    |                 |        |                       |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------------------------------------------------------------------------|--------------------------|-----------------|--------------------------------|---------------|--------|---------------------------------|--|------------------------------|--|---|------|--------------------|--------------------------|--------|---------------|-----|---------------------|------------------------------------------------------------------------------------|-----------------|--------|-----------------------|
|               | Diagnostic Status: Warning                                                                                                                                                                                                                                                                                                                                          |                     |                                                                                    |                          |                 |                                |               |        |                                 |  |                              |  |   |      |                    |                          |        |               |     |                     |                                                                                    |                 |        |                       |
|               | Scientific Instruments: COS/FUV, COS/NUV                                                                                                                                                                                                                                                                                                                            |                     |                                                                                    |                          |                 |                                |               |        |                                 |  |                              |  |   |      |                    |                          |        |               |     |                     |                                                                                    |                 |        |                       |
|               | Special Requirements: (none)                                                                                                                                                                                                                                                                                                                                        |                     |                                                                                    |                          |                 |                                |               |        |                                 |  |                              |  |   |      |                    |                          |        |               |     |                     |                                                                                    |                 |        |                       |
| Diagnostics   | (Visit 02) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions at a given COS cenwave (or 2 positions for certain exception cases). See extended explanation in the diagnostic browser.                                                                                                                            |                     |                                                                                    |                          |                 |                                |               |        |                                 |  |                              |  |   |      |                    |                          |        |               |     |                     |                                                                                    |                 |        |                       |
|               | (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 | <table><tr><th>#</th><th>Name</th><th>Target Coordinates</th><th>Targ. Coord. Corrections</th><th>Fluxes</th><th>Miscellaneous</th></tr><tr><td>(1)</td><td>J013911.93+154241.3</td><td>RA: 01 39 11.9300 (24.7997083d)<br/>Dec: +15 42 41.32 (15.71148d)<br/>Equinox: J2000</td><td>Redshift: 0.028</td><td>V=22.1</td><td>Reference Frame: ICRS</td></tr></table> |                     |                                                                                    |                          |                 |                                |               |        |                                 |  |                              |  | # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous | (1) | J013911.93+154241.3 | RA: 01 39 11.9300 (24.7997083d)<br>Dec: +15 42 41.32 (15.71148d)<br>Equinox: J2000 | Redshift: 0.028 | V=22.1 | Reference Frame: ICRS |
|               | #                                                                                                                                                                                                                                                                                                                                                                   | Name                | Target Coordinates                                                                 | Targ. Coord. Corrections | Fluxes          | Miscellaneous                  |               |        |                                 |  |                              |  |   |      |                    |                          |        |               |     |                     |                                                                                    |                 |        |                       |
|               | (1)                                                                                                                                                                                                                                                                                                                                                                 | J013911.93+154241.3 | RA: 01 39 11.9300 (24.7997083d)<br>Dec: +15 42 41.32 (15.71148d)<br>Equinox: J2000 | Redshift: 0.028          | V=22.1          | Reference Frame: ICRS          |               |        |                                 |  |                              |  |   |      |                    |                          |        |               |     |                     |                                                                                    |                 |        |                       |
|               | Comments:<br>Category=GALAXY<br>Description=[DWARF COMPACT, EMISSION LINE NEBULA, STAR FORMING REGION]<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.ta.193 2629)   | (1) J013911.93+154 241.3                                                           | COS/NUV, ACQ/IMAGE, PSA  | MIRRORA         |                                |               |        | 168 Secs (168 Secs)             |  |                              |  |   |      |                    |                          |        |               |     |                     |                                                                                    |                 |        |                       |
|               |                                                                                                                                                                                                                                                                                                                                                                     |                     |                                                                                    |                          |                 |                                |               |        | [==>]                           |  | [1]                          |  |   |      |                    |                          |        |               |     |                     |                                                                                    |                 |        |                       |
|               | 2                                                                                                                                                                                                                                                                                                                                                                   | (COS.sp.193 2945)   | (1) J013911.93+154 241.3                                                           | COS/FUV, TIME-TAG, PSA   | G160M<br>1623 A | BUFFER-TIME=18 27;<br>FP-POS=2 |               |        | 1827 Secs (1827 Secs)           |  |                              |  |   |      |                    |                          |        |               |     |                     |                                                                                    |                 |        |                       |
|               |                                                                                                                                                                                                                                                                                                                                                                     |                     |                                                                                    |                          |                 |                                |               |        | [==>]                           |  | [1]                          |  |   |      |                    |                          |        |               |     |                     |                                                                                    |                 |        |                       |
|               | 3                                                                                                                                                                                                                                                                                                                                                                   | (COS.sp.193 2945)   | (1) J013911.93+154 241.3                                                           | COS/FUV, TIME-TAG, PSA   | G160M<br>1623 A | BUFFER-TIME=25 83;<br>FP-POS=3 |               |        | 2583 Secs (2583 Secs)           |  |                              |  |   |      |                    |                          |        |               |     |                     |                                                                                    |                 |        |                       |
|               |                                                                                                                                                                                                                                                                                                                                                                     |                     |                                                                                    |                          |                 |                                |               |        | [==>]                           |  | [2]                          |  |   |      |                    |                          |        |               |     |                     |                                                                                    |                 |        |                       |
|               | 4                                                                                                                                                                                                                                                                                                                                                                   | (COS.sp.193 2945)   | (1) J013911.93+154 241.3                                                           | COS/FUV, TIME-TAG, PSA   | G160M<br>1623 A | BUFFER-TIME=25 83;<br>FP-POS=4 |               |        | 2583 Secs (2583 Secs)           |  |                              |  |   |      |                    |                          |        |               |     |                     |                                                                                    |                 |        |                       |
|               |                                                                                                                                                                                                                                                                                                                                                                     |                     |                                                                                    |                          |                 |                                |               |        | [==>]                           |  | [3]                          |  |   |      |                    |                          |        |               |     |                     |                                                                                    |                 |        |                       |

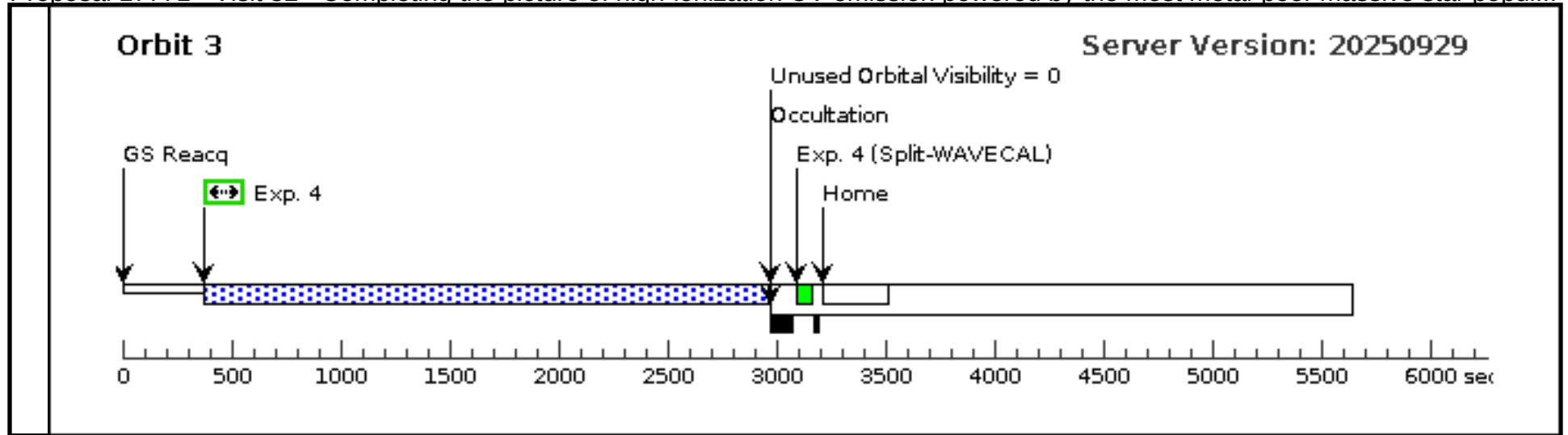




Proposal 17771 - Visit 32 - Completing the picture of high-ionization UV emission powered by the most metal-poor massive star popul...

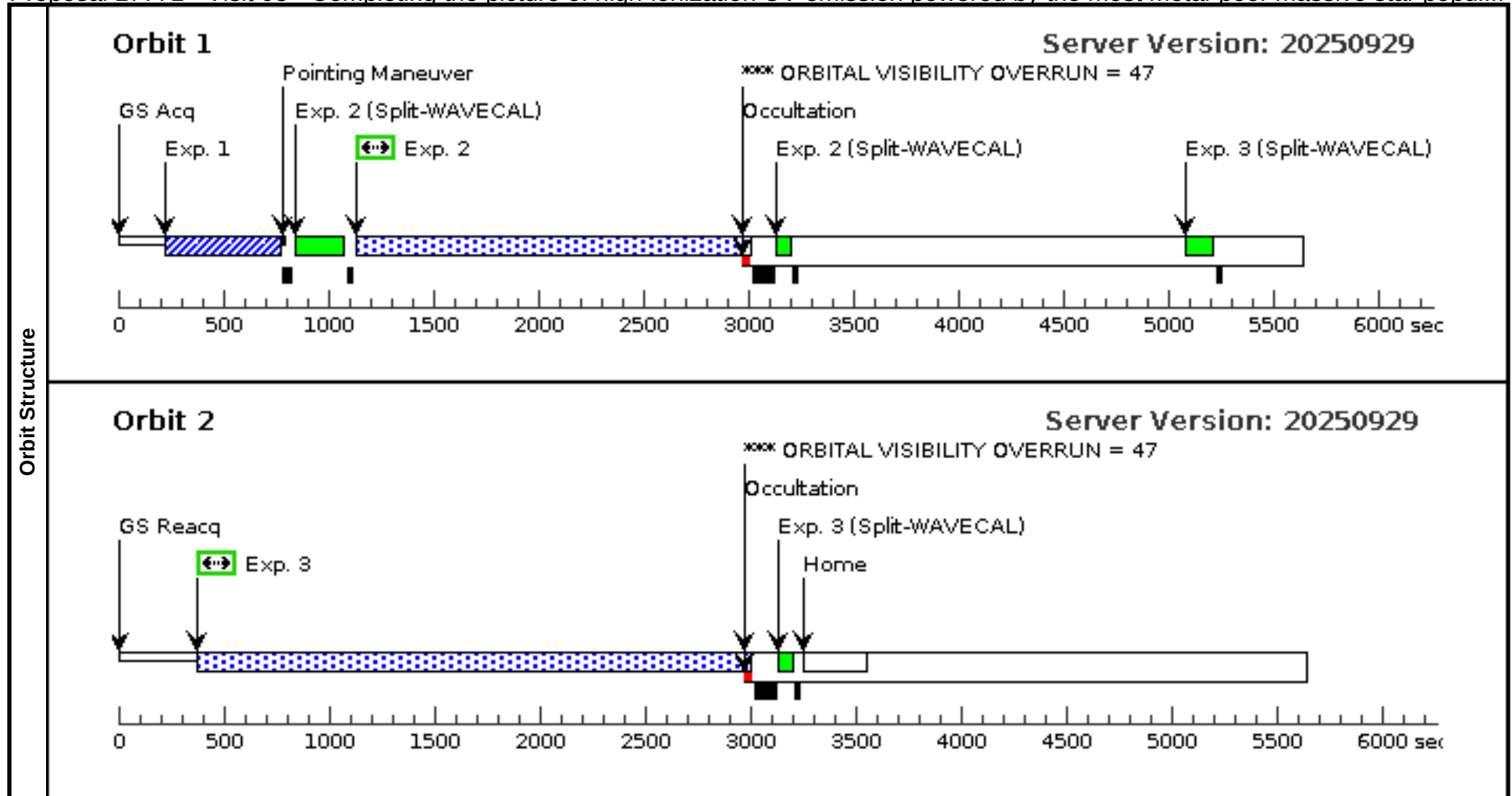
|                                                                                                                       |                                                                                                                                                                                                                                          |                     |                                                                                    |                         |  |                          |                                   |               |        |                                 |                              |       |  |
|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------------------------------------------------------------------------|-------------------------|--|--------------------------|-----------------------------------|---------------|--------|---------------------------------|------------------------------|-------|--|
| Visit                                                                                                                 | Proposal 17771, Visit 32                                                                                                                                                                                                                 |                     |                                                                                    |                         |  |                          |                                   |               |        |                                 | Fri Dec 12 15:00:23 GMT 2025 |       |  |
|                                                                                                                       | Diagnostic Status: Warning                                                                                                                                                                                                               |                     |                                                                                    |                         |  |                          |                                   |               |        |                                 |                              |       |  |
|                                                                                                                       | Scientific Instruments: COS/FUV, COS/NUV                                                                                                                                                                                                 |                     |                                                                                    |                         |  |                          |                                   |               |        |                                 |                              |       |  |
|                                                                                                                       | Special Requirements: (none)                                                                                                                                                                                                             |                     |                                                                                    |                         |  |                          |                                   |               |        |                                 |                              |       |  |
| Diagnostics                                                                                                           | (Visit 32) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions at a given COS cenwave (or 2 positions for certain exception cases). See extended explanation in the diagnostic browser. |                     |                                                                                    |                         |  |                          |                                   |               |        |                                 |                              |       |  |
|                                                                                                                       | (Visit 32) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS                                                                                                                                                             |                     |                                                                                    |                         |  |                          |                                   |               |        |                                 |                              |       |  |
| Fixed Targets                                                                                                         | #                                                                                                                                                                                                                                        | Name                | Target Coordinates                                                                 |                         |  | Targ. Coord. Corrections |                                   | Fluxes        |        | Miscellaneous                   |                              |       |  |
|                                                                                                                       | (1)                                                                                                                                                                                                                                      | J013911.93+154241.3 | RA: 01 39 11.9300 (24.7997083d)<br>Dec: +15 42 41.32 (15.71148d)<br>Equinox: J2000 |                         |  | Redshift: 0.028          |                                   | V=22.1        |        | Reference Frame: ICRS           |                              |       |  |
| Comments:<br>Category=GALAXY<br>Description=[DWARF COMPACT, EMISSION LINE NEBULA, STAR FORMING REGION]<br>Extended=NO |                                                                                                                                                                                                                                          |                     |                                                                                    |                         |  |                          |                                   |               |        |                                 |                              |       |  |
| Exposures                                                                                                             | #                                                                                                                                                                                                                                        | Label<br>(ETC Run)  | Target                                                                             | Config,Mode,Aperture    |  | Spectral Els.            | Opt. Params.                      | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] |                              | Orbit |  |
|                                                                                                                       | 1                                                                                                                                                                                                                                        | (COS.ta.193 2629)   | (1) J013911.93+154 241.3                                                           | COS/NUV, ACQ/IMAGE, PSA |  | MIRRORA                  |                                   |               |        | 168 Secs (168 Secs)             |                              |       |  |
|                                                                                                                       |                                                                                                                                                                                                                                          |                     |                                                                                    |                         |  |                          |                                   |               |        | [==>]                           |                              | [1]   |  |
|                                                                                                                       | 2                                                                                                                                                                                                                                        | (COS.sp.193 2945)   | (1) J013911.93+154 241.3                                                           | COS/FUV, TIME-TAG, PSA  |  | G160M<br>1623 A          | BUFFER-TIME=17<br>80;<br>FP-POS=3 |               |        | 1827 Secs (1780 Secs)           |                              |       |  |
|                                                                                                                       |                                                                                                                                                                                                                                          |                     |                                                                                    |                         |  |                          |                                   |               |        | [==>1780.0 Secs ]               |                              | [1]   |  |
|                                                                                                                       | 3                                                                                                                                                                                                                                        | (COS.sp.193 2945)   | (1) J013911.93+154 241.3                                                           | COS/FUV, TIME-TAG, PSA  |  | G160M<br>1623 A          | BUFFER-TIME=25<br>36;<br>FP-POS=4 |               |        | 2583 Secs (2536 Secs)           |                              |       |  |
|                                                                                                                       |                                                                                                                                                                                                                                          |                     |                                                                                    |                         |  |                          |                                   |               |        | [==>2536.0 Secs ]               |                              | [2]   |  |
|                                                                                                                       | 4                                                                                                                                                                                                                                        | (COS.sp.193 2945)   | (1) J013911.93+154 241.3                                                           | COS/FUV, TIME-TAG, PSA  |  | G160M<br>1623 A          | BUFFER-TIME=25<br>36;<br>FP-POS=2 |               |        | 2583 Secs (2536 Secs)           |                              |       |  |
|                                                                                                                       |                                                                                                                                                                                                                                          |                     |                                                                                    |                         |  |                          |                                   |               |        | [==>2536.0 Secs ]               |                              | [3]   |  |





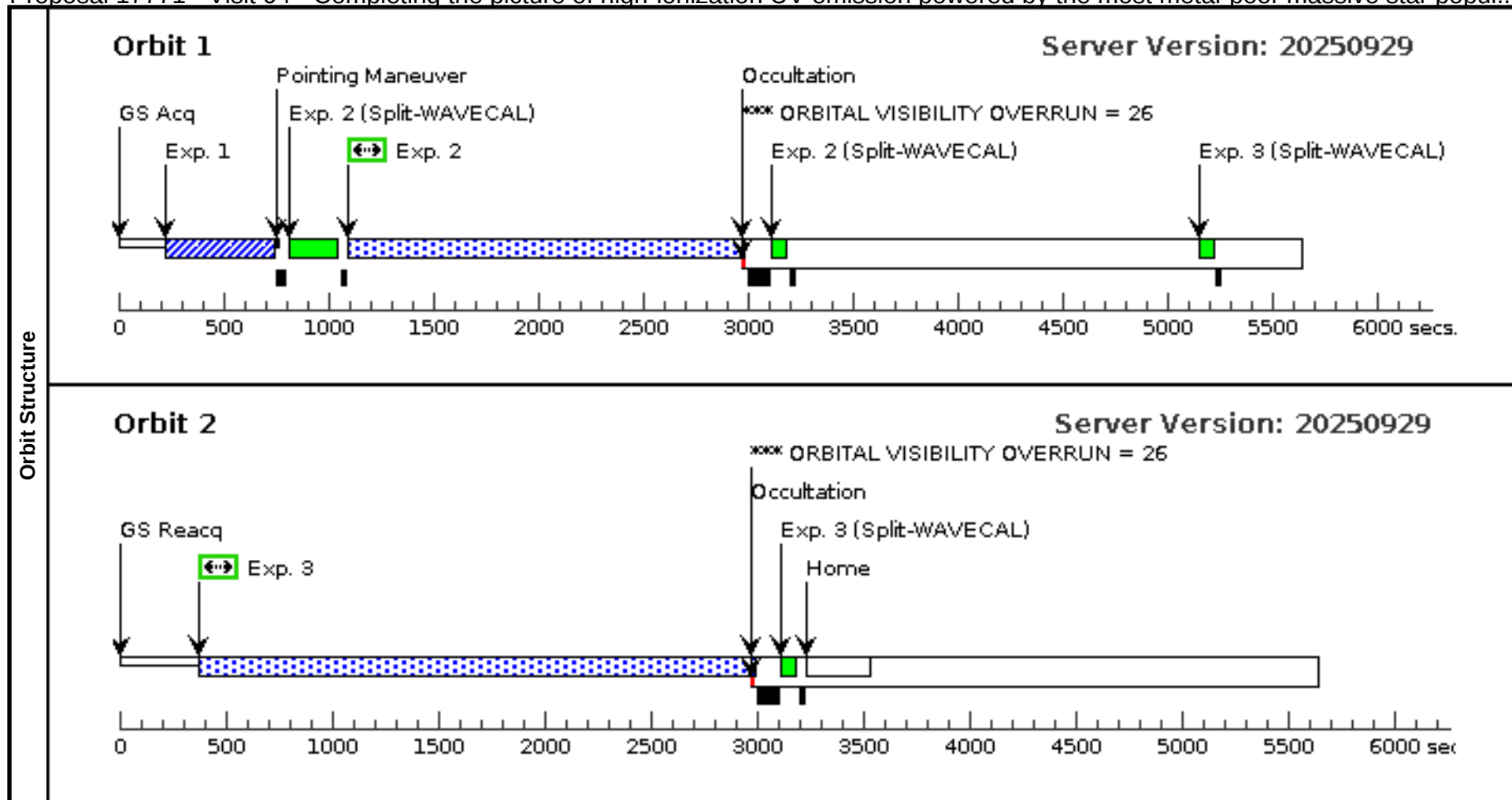
# Proposal 17771 - Visit 03 - Completing the picture of high-ionization UV emission powered by the most metal-poor massive star popul...

|                                                                                                                       |                                                                                                                                                                                                                                          |                   |                          |                         |                 |                       |               |        |                                 |  |                              |  |
|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------|-------------------------|-----------------|-----------------------|---------------|--------|---------------------------------|--|------------------------------|--|
| Visit                                                                                                                 | Proposal 17771, Visit 03, failed                                                                                                                                                                                                         |                   |                          |                         |                 |                       |               |        |                                 |  | Fri Dec 12 15:00:23 GMT 2025 |  |
|                                                                                                                       | Diagnostic Status: Warning                                                                                                                                                                                                               |                   |                          |                         |                 |                       |               |        |                                 |  |                              |  |
|                                                                                                                       | Scientific Instruments: COS/FUV, COS/NUV                                                                                                                                                                                                 |                   |                          |                         |                 |                       |               |        |                                 |  |                              |  |
|                                                                                                                       | Special Requirements: (none)                                                                                                                                                                                                             |                   |                          |                         |                 |                       |               |        |                                 |  |                              |  |
| Diagnostics                                                                                                           | (Visit 03) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions at a given COS cenwave (or 2 positions for certain exception cases). See extended explanation in the diagnostic browser. |                   |                          |                         |                 |                       |               |        |                                 |  |                              |  |
|                                                                                                                       | (Visit 03) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS                                                                                                                                                             |                   |                          |                         |                 |                       |               |        |                                 |  |                              |  |
|                                                                                                                       | (Visit 03) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                                                                                                                                                                           |                   |                          |                         |                 |                       |               |        |                                 |  |                              |  |
|                                                                                                                       | (Visit 03) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                                                                                                                                                                           |                   |                          |                         |                 |                       |               |        |                                 |  |                              |  |
| Fixed Targets                                                                                                         | #                      Name                      Target Coordinates                      Targ. Coord. Corrections                      Fluxes                      Miscellaneous                                                         |                   |                          |                         |                 |                       |               |        |                                 |  |                              |  |
|                                                                                                                       | (1)                      J013911.93+154241.3                      RA: 01 39 11.9300 (24.7997083d)                      Redshift: 0.028                      V=22.1                      Reference Frame: ICRS                            |                   |                          |                         |                 |                       |               |        |                                 |  |                              |  |
|                                                                                                                       | Dec: +15 42 41.32 (15.71148d)                                                                                                                                                                                                            |                   |                          |                         |                 |                       |               |        |                                 |  |                              |  |
|                                                                                                                       | Equinox: J2000                                                                                                                                                                                                                           |                   |                          |                         |                 |                       |               |        |                                 |  |                              |  |
| Comments:<br>Category=GALAXY<br>Description=[DWARF COMPACT, EMISSION LINE NEBULA, STAR FORMING REGION]<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.ta.193 2629) | (1) J013911.93+154 241.3 | COS/NUV, ACQ/IMAGE, PSA | MIRRORA         |                       |               |        | 168 Secs (168 Secs)             |  |                              |  |
|                                                                                                                       |                                                                                                                                                                                                                                          |                   |                          |                         |                 |                       |               |        | [==>]                           |  | [1]                          |  |
|                                                                                                                       | 2                                                                                                                                                                                                                                        | (COS.sp.193 2945) | (1) J013911.93+154 241.3 | COS/FUV, TIME-TAG, PSA  | G160M<br>1623 A | BUFFER-TIME=18<br>27; |               |        | 1827 Secs (1827 Secs)           |  |                              |  |
|                                                                                                                       |                                                                                                                                                                                                                                          |                   |                          |                         |                 | FP-POS=4              |               |        | [==>]                           |  | [1]                          |  |
|                                                                                                                       | 3                                                                                                                                                                                                                                        | (COS.sp.193 2945) | (1) J013911.93+154 241.3 | COS/FUV, TIME-TAG, PSA  | G160M<br>1623 A | BUFFER-TIME=25<br>83; |               |        | 2583 Secs (2583 Secs)           |  |                              |  |
|                                                                                                                       |                                                                                                                                                                                                                                          |                   |                          |                         |                 | FP-POS=1              |               |        | [==>]                           |  | [2]                          |  |



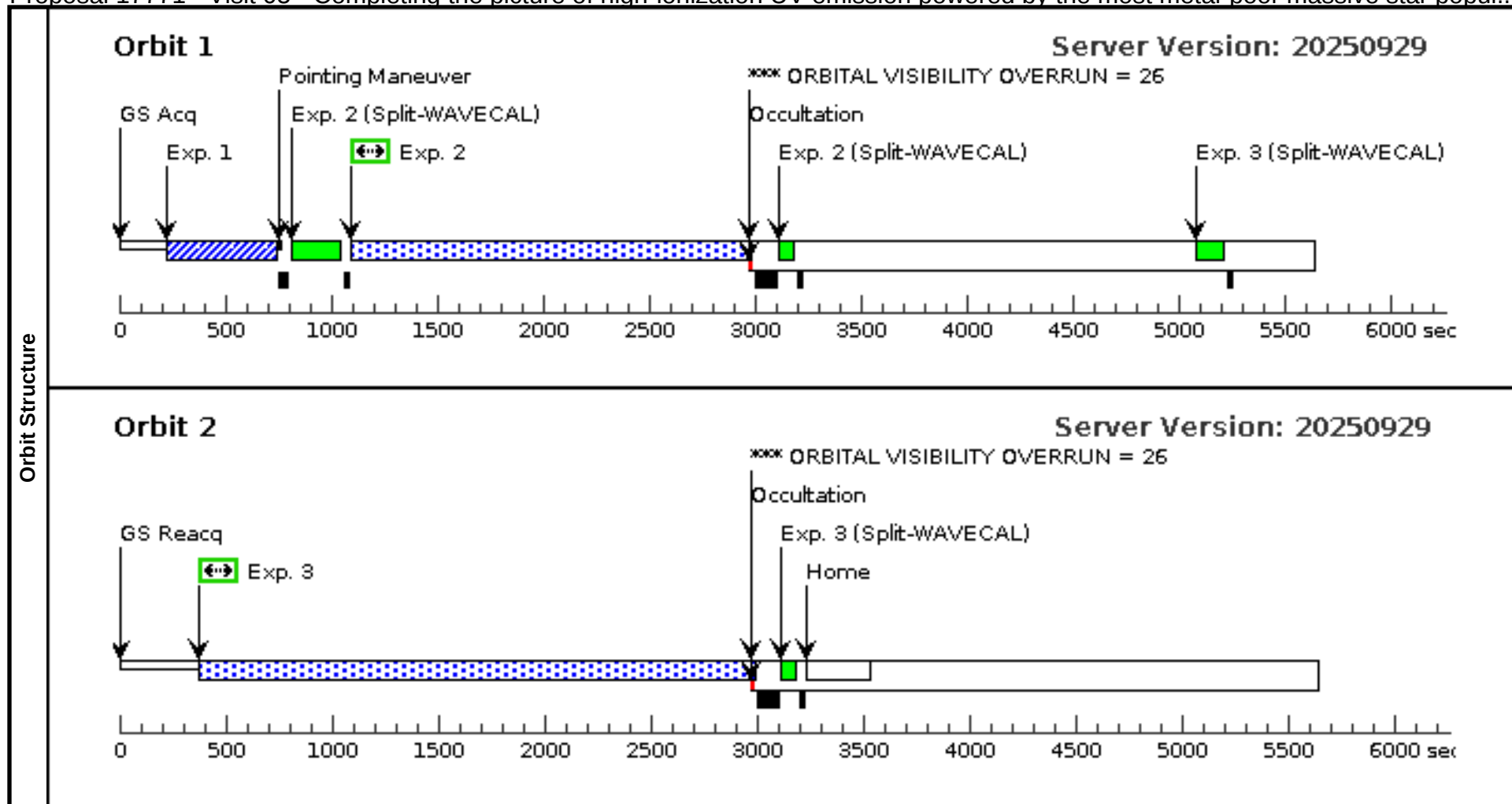
# Proposal 17771 - Visit 04 - Completing the picture of high-ionization UV emission powered by the most metal-poor massive star popul...

|               |                                                                                                                                                                                                                                          |                     |                          |                                                                                    |  |                          |                                |               |        |                                 |                              |       |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------------|------------------------------------------------------------------------------------|--|--------------------------|--------------------------------|---------------|--------|---------------------------------|------------------------------|-------|
| Visit         | Proposal 17771, Visit 04, completed                                                                                                                                                                                                      |                     |                          |                                                                                    |  |                          |                                |               |        |                                 | Fri Dec 12 15:00:23 GMT 2025 |       |
|               | Diagnostic Status: Warning                                                                                                                                                                                                               |                     |                          |                                                                                    |  |                          |                                |               |        |                                 |                              |       |
|               | Scientific Instruments: COS/FUV, COS/NUV                                                                                                                                                                                                 |                     |                          |                                                                                    |  |                          |                                |               |        |                                 |                              |       |
|               | Special Requirements: (none)                                                                                                                                                                                                             |                     |                          |                                                                                    |  |                          |                                |               |        |                                 |                              |       |
| Diagnostics   | (Visit 04) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions at a given COS cenwave (or 2 positions for certain exception cases). See extended explanation in the diagnostic browser. |                     |                          |                                                                                    |  |                          |                                |               |        |                                 |                              |       |
|               | (Visit 04) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                                                                                                                                                                           |                     |                          |                                                                                    |  |                          |                                |               |        |                                 |                              |       |
|               | (Visit 04) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                                                                                                                                                                           |                     |                          |                                                                                    |  |                          |                                |               |        |                                 |                              |       |
|               |                                                                                                                                                                                                                                          |                     |                          |                                                                                    |  |                          |                                |               |        |                                 |                              |       |
| Fixed Targets | #                                                                                                                                                                                                                                        | Name                |                          | Target Coordinates                                                                 |  | Targ. Coord. Corrections |                                | Fluxes        |        | Miscellaneous                   |                              |       |
|               | (2)                                                                                                                                                                                                                                      | J084530.80+013151.2 |                          | RA: 08 45 30.8000 (131.3783333d)<br>Dec: +01 31 51.22 (1.53089d)<br>Equinox: J2000 |  | Redshift: 0.013          |                                | V=21.1        |        | Reference Frame: ICRS           |                              |       |
|               | Comments:<br>Category=GALAXY<br>Description=[DWARF COMPACT, EMISSION LINE NEBULA, STAR FORMING REGION]<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.ta.193 2630)   | (2) J084530.80+013 151.2 | COS/NUV, ACQ/IMAGE, PSA                                                            |  | MIRRORA                  |                                |               |        | 153 Secs (153 Secs)             |                              |       |
|               |                                                                                                                                                                                                                                          |                     |                          |                                                                                    |  |                          |                                |               |        | [==>]                           |                              | [1]   |
|               | 2                                                                                                                                                                                                                                        | (COS.sp.193 2950)   | (2) J084530.80+013 151.2 | COS/FUV, TIME-TAG, PSA                                                             |  | G160M<br>1611 A          | BUFFER-TIME=18 42;<br>FP-POS=1 |               |        | 1842 Secs (1842 Secs)           |                              |       |
|               |                                                                                                                                                                                                                                          |                     |                          |                                                                                    |  |                          |                                |               |        | [==>]                           |                              | [1]   |
|               | 3                                                                                                                                                                                                                                        | (COS.sp.193 2950)   | (2) J084530.80+013 151.2 | COS/FUV, TIME-TAG, PSA                                                             |  | G160M<br>1611 A          | BUFFER-TIME=25 65;<br>FP-POS=2 |               |        | 2565 Secs (2565 Secs)           |                              |       |
|               |                                                                                                                                                                                                                                          |                     |                          |                                                                                    |  |                          |                                |               |        | [==>]                           |                              | [2]   |



# Proposal 17771 - Visit 05 - Completing the picture of high-ionization UV emission powered by the most metal-poor massive star popul...

|                                                                                                                       |                                                                                                                                                                                                                                          |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------|-------------------------|---------------|--------------------|---------------|--------|---------------------------------|--|------------------------------|--|
| Visit                                                                                                                 | Proposal 17771, Visit 05, completed                                                                                                                                                                                                      |                   |                          |                         |               |                    |               |        |                                 |  | Fri Dec 12 15:00:23 GMT 2025 |  |
|                                                                                                                       | Diagnostic Status: Warning                                                                                                                                                                                                               |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
|                                                                                                                       | Scientific Instruments: COS/FUV, COS/NUV                                                                                                                                                                                                 |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
|                                                                                                                       | Special Requirements: (none)                                                                                                                                                                                                             |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
| Diagnostics                                                                                                           | (Visit 05) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions at a given COS cenwave (or 2 positions for certain exception cases). See extended explanation in the diagnostic browser. |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
|                                                                                                                       | (Visit 05) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS                                                                                                                                                             |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
|                                                                                                                       | (Visit 05) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                                                                                                                                                                           |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
|                                                                                                                       | (Visit 05) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                                                                                                                                                                           |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
| Fixed Targets                                                                                                         | #                      Name                      Target Coordinates                      Targ. Coord. Corrections                      Fluxes                      Miscellaneous                                                         |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
|                                                                                                                       | (2)                      J084530.80+013151.2                      RA: 08 45 30.8000 (131.3783333d)                      Redshift: 0.013                      V=21.1                      Reference Frame: ICRS                           |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
|                                                                                                                       | Dec: +01 31 51.22 (1.53089d)                                                                                                                                                                                                             |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
|                                                                                                                       | Equinox: J2000                                                                                                                                                                                                                           |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
| Comments:<br>Category=GALAXY<br>Description=[DWARF COMPACT, EMISSION LINE NEBULA, STAR FORMING REGION]<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.ta.193 2630) | (2) J084530.80+013 151.2 | COS/NUV, ACQ/IMAGE, PSA | MIRRORA       |                    |               |        | 153 Secs (153 Secs)             |  |                              |  |
|                                                                                                                       |                                                                                                                                                                                                                                          |                   |                          |                         |               |                    |               |        | [==>]                           |  | [1]                          |  |
|                                                                                                                       | 2                                                                                                                                                                                                                                        | (COS.sp.193 2950) | (2) J084530.80+013 151.2 | COS/FUV, TIME-TAG, PSA  | G160M 1611 A  | BUFFER-TIME=18 42; |               |        | 1842 Secs (1842 Secs)           |  |                              |  |
|                                                                                                                       |                                                                                                                                                                                                                                          |                   |                          |                         |               | FP-POS=4           |               |        | [==>]                           |  | [1]                          |  |
|                                                                                                                       | 3                                                                                                                                                                                                                                        | (COS.sp.193 2950) | (2) J084530.80+013 151.2 | COS/FUV, TIME-TAG, PSA  | G160M 1611 A  | BUFFER-TIME=25 65; |               |        | 2565 Secs (2565 Secs)           |  |                              |  |
|                                                                                                                       |                                                                                                                                                                                                                                          |                   |                          |                         |               | FP-POS=3           |               |        | [==>]                           |  | [2]                          |  |

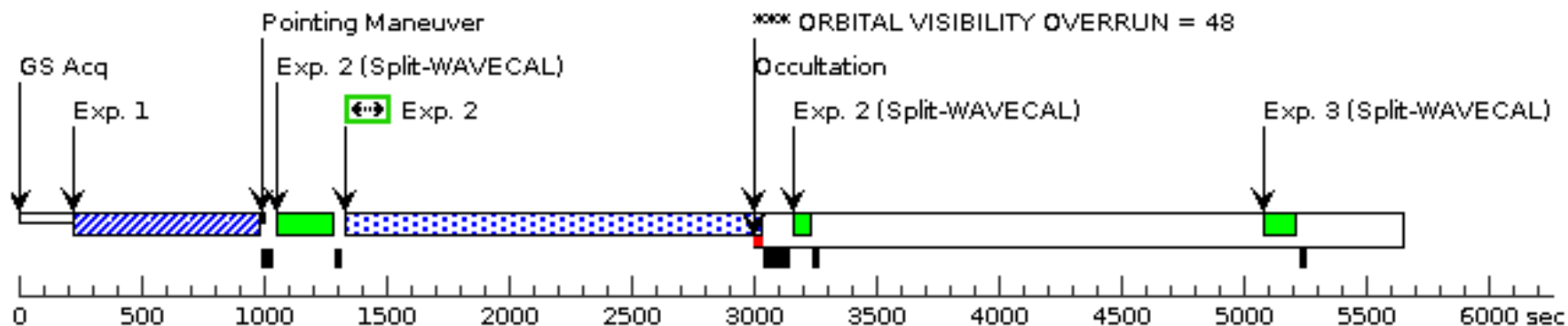


Proposal 17771 - Visit 06 - Completing the picture of high-ionization UV emission powered by the most metal-poor massive star popul...

|               |                                                                                                                                                                                                                                          |                     |                                                                                     |                         |  |                          |                                |               |        |                                 |                              |       |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------------------------------------------------------------------|-------------------------|--|--------------------------|--------------------------------|---------------|--------|---------------------------------|------------------------------|-------|
| Visit         | Proposal 17771, Visit 06, completed                                                                                                                                                                                                      |                     |                                                                                     |                         |  |                          |                                |               |        |                                 | Fri Dec 12 15:00:23 GMT 2025 |       |
|               | Diagnostic Status: Warning                                                                                                                                                                                                               |                     |                                                                                     |                         |  |                          |                                |               |        |                                 |                              |       |
|               | Scientific Instruments: COS/FUV, COS/NUV                                                                                                                                                                                                 |                     |                                                                                     |                         |  |                          |                                |               |        |                                 |                              |       |
|               | Special Requirements: (none)                                                                                                                                                                                                             |                     |                                                                                     |                         |  |                          |                                |               |        |                                 |                              |       |
| Diagnostics   | (Visit 06) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions at a given COS cenwave (or 2 positions for certain exception cases). See extended explanation in the diagnostic browser. |                     |                                                                                     |                         |  |                          |                                |               |        |                                 |                              |       |
|               | (Visit 06) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS                                                                                                                                                             |                     |                                                                                     |                         |  |                          |                                |               |        |                                 |                              |       |
|               | (Visit 06) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                                                                                                                                                                           |                     |                                                                                     |                         |  |                          |                                |               |        |                                 |                              |       |
|               | (Visit 06) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                                                                                                                                                                           |                     |                                                                                     |                         |  |                          |                                |               |        |                                 |                              |       |
|               | (Visit 06) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                                                                                                                                                                           |                     |                                                                                     |                         |  |                          |                                |               |        |                                 |                              |       |
| Fixed Targets | #                                                                                                                                                                                                                                        | Name                | Target Coordinates                                                                  |                         |  | Targ. Coord. Corrections |                                | Fluxes        |        | Miscellaneous                   |                              |       |
|               | (3)                                                                                                                                                                                                                                      | J092136.55+403853.8 | RA: 09 21 36.5500 (140.4022917d)<br>Dec: +40 38 53.84 (40.64829d)<br>Equinox: J2000 |                         |  | Redshift: 0.071          |                                | V=21.9        |        | Reference Frame: ICRS           |                              |       |
|               | Comments:<br>Category=GALAXY<br>Description=[DWARF COMPACT, EMISSION LINE NEBULA, STAR FORMING REGION]<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.ta.193 2631)   | (3) J092136.55+403 853.8                                                            | COS/NUV, ACQ/IMAGE, PSA |  | MIRRORA                  |                                |               |        | 271 Secs (271 Secs)             |                              |       |
|               |                                                                                                                                                                                                                                          |                     |                                                                                     |                         |  |                          |                                |               |        | [==>]                           |                              | [1]   |
|               | 2                                                                                                                                                                                                                                        | (COS.sp.193 2955)   | (3) J092136.55+403 853.8                                                            | COS/FUV, TIME-TAG, PSA  |  | G160M 1623 A             | BUFFER-TIME=16 47;<br>FP-POS=3 |               |        | 1647 Secs (1647 Secs)           |                              |       |
|               |                                                                                                                                                                                                                                          |                     |                                                                                     |                         |  |                          |                                |               |        | [==>]                           |                              | [1]   |
|               | 3                                                                                                                                                                                                                                        | (COS.sp.193 2955)   | (3) J092136.55+403 853.8                                                            | COS/FUV, TIME-TAG, PSA  |  | G160M 1623 A             | BUFFER-TIME=26 09;<br>FP-POS=1 |               |        | 2609 Secs (2609 Secs)           |                              |       |
|               |                                                                                                                                                                                                                                          |                     |                                                                                     |                         |  |                          |                                |               |        | [==>]                           |                              | [2]   |
|               | 4                                                                                                                                                                                                                                        | (COS.sp.193 2955)   | (3) J092136.55+403 853.8                                                            | COS/FUV, TIME-TAG, PSA  |  | G160M 1623 A             | BUFFER-TIME=26 09;<br>FP-POS=2 |               |        | 2609 Secs (2609 Secs)           |                              |       |
|               |                                                                                                                                                                                                                                          |                     |                                                                                     |                         |  |                          |                                |               |        | [==>]                           |                              | [3]   |

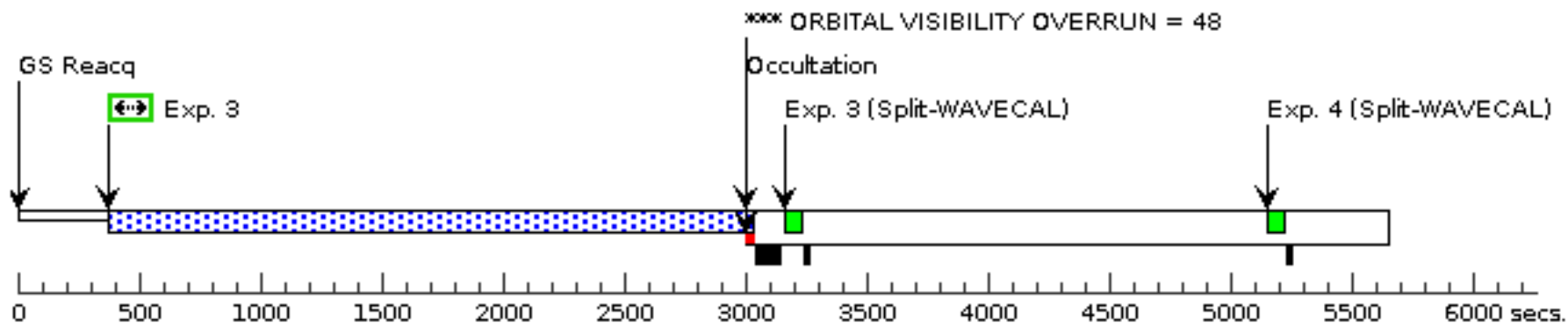
### Orbit 1

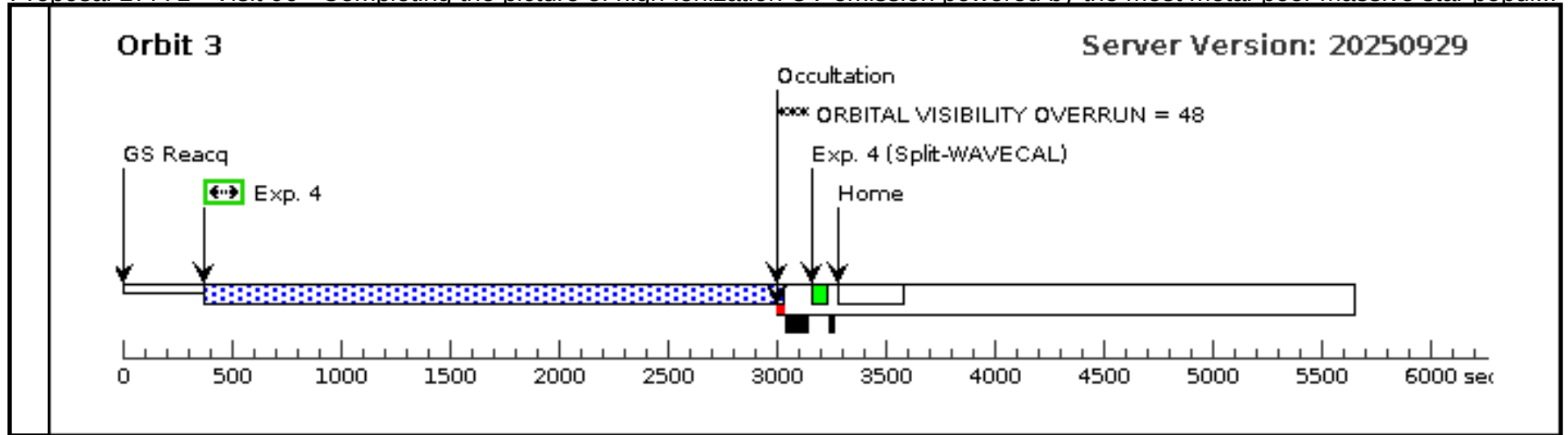
Server Version: 20250929



### Orbit 2

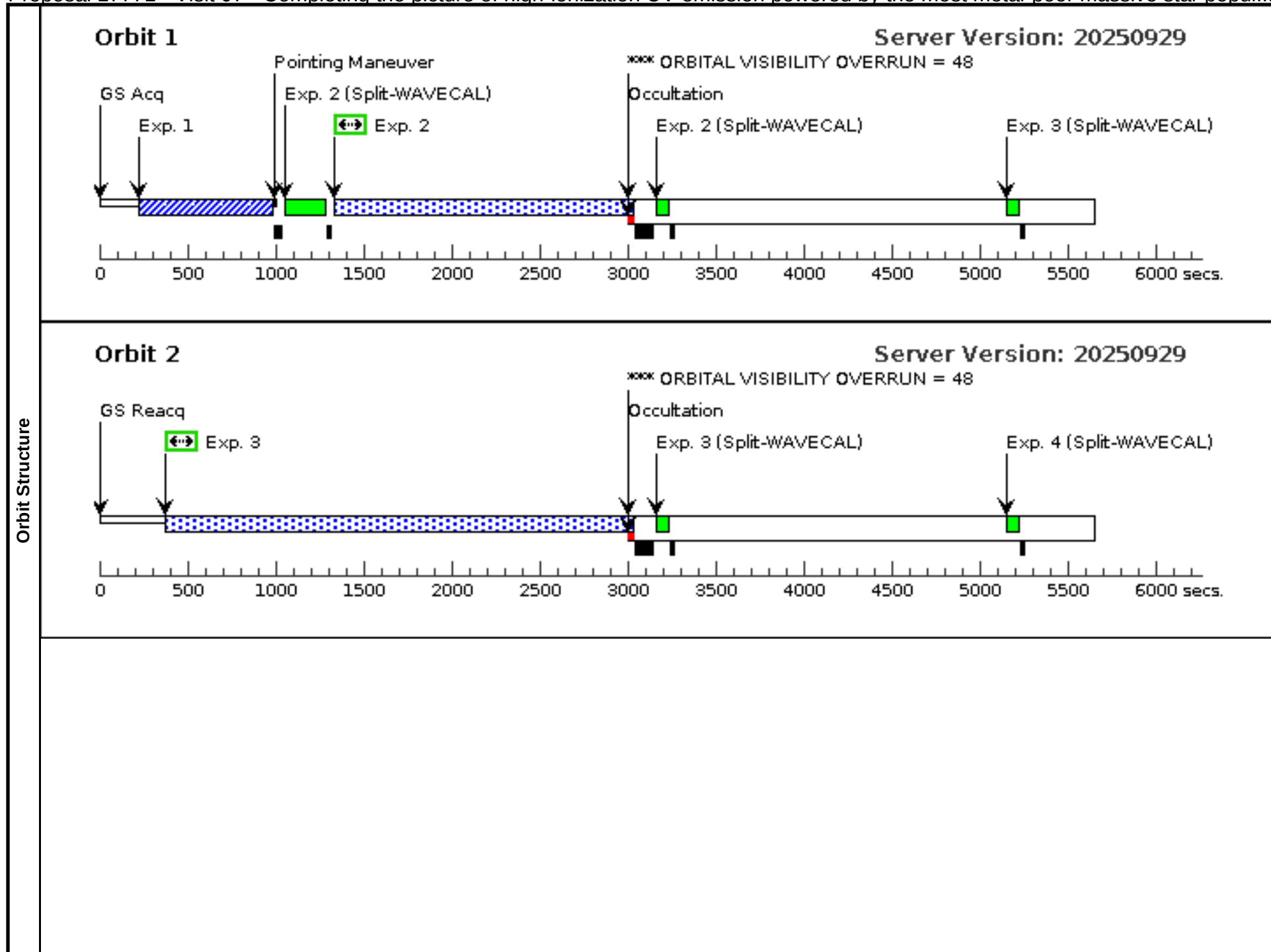
Server Version: 20250929

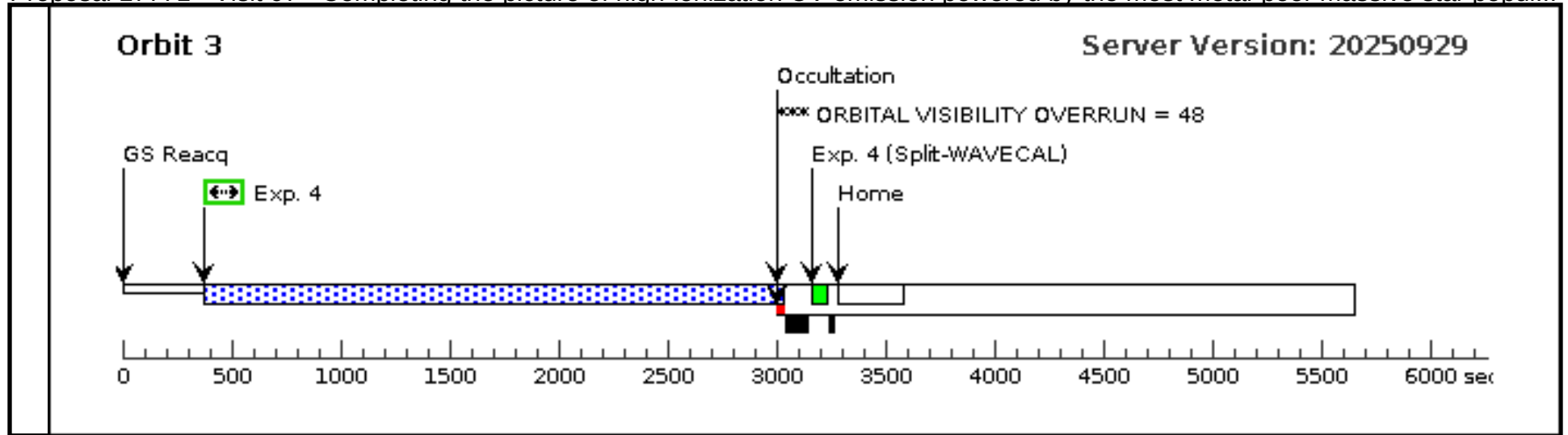




Proposal 17771 - Visit 07 - Completing the picture of high-ionization UV emission powered by the most metal-poor massive star popul...

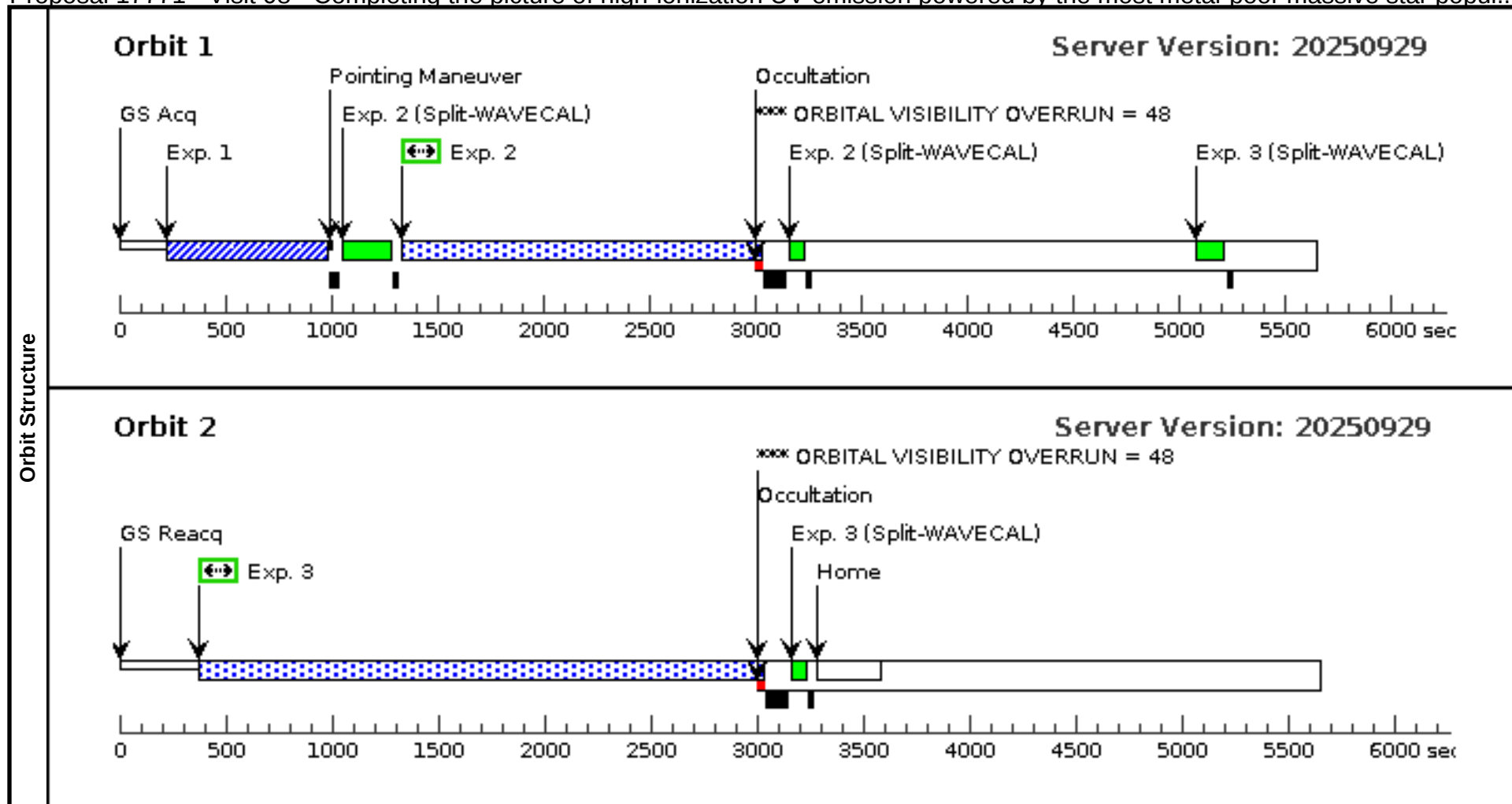
|               |                                                                                                                                                                                                                                          |                     |                                                                                     |                         |  |                          |                                |               |        |                                 |                              |       |  |  |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------------------------------------------------------------------|-------------------------|--|--------------------------|--------------------------------|---------------|--------|---------------------------------|------------------------------|-------|--|--|
| Visit         | Proposal 17771, Visit 07, completed                                                                                                                                                                                                      |                     |                                                                                     |                         |  |                          |                                |               |        |                                 | Fri Dec 12 15:00:23 GMT 2025 |       |  |  |
|               | Diagnostic Status: Warning                                                                                                                                                                                                               |                     |                                                                                     |                         |  |                          |                                |               |        |                                 |                              |       |  |  |
|               | Scientific Instruments: COS/FUV, COS/NUV                                                                                                                                                                                                 |                     |                                                                                     |                         |  |                          |                                |               |        |                                 |                              |       |  |  |
|               | Special Requirements: (none)                                                                                                                                                                                                             |                     |                                                                                     |                         |  |                          |                                |               |        |                                 |                              |       |  |  |
| Diagnostics   | (Visit 07) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions at a given COS cenwave (or 2 positions for certain exception cases). See extended explanation in the diagnostic browser. |                     |                                                                                     |                         |  |                          |                                |               |        |                                 |                              |       |  |  |
|               | (Visit 07) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                                                                                                                                                                           |                     |                                                                                     |                         |  |                          |                                |               |        |                                 |                              |       |  |  |
|               | (Visit 07) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                                                                                                                                                                           |                     |                                                                                     |                         |  |                          |                                |               |        |                                 |                              |       |  |  |
|               | (Visit 07) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                                                                                                                                                                           |                     |                                                                                     |                         |  |                          |                                |               |        |                                 |                              |       |  |  |
| Fixed Targets | #                                                                                                                                                                                                                                        | Name                | Target Coordinates                                                                  |                         |  | Targ. Coord. Corrections |                                |               | Fluxes |                                 | Miscellaneous                |       |  |  |
|               | (3)                                                                                                                                                                                                                                      | J092136.55+403853.8 | RA: 09 21 36.5500 (140.4022917d)<br>Dec: +40 38 53.84 (40.64829d)<br>Equinox: J2000 |                         |  | Redshift: 0.071          |                                |               | V=21.9 |                                 | Reference Frame: ICRS        |       |  |  |
|               | Comments:<br>Category=GALAXY<br>Description=[DWARF COMPACT, EMISSION LINE NEBULA, STAR FORMING REGION]<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.ta.193 2631)   | (3) J092136.55+403 853.8                                                            | COS/NUV, ACQ/IMAGE, PSA |  | MIRRORA                  |                                |               |        | 271 Secs (271 Secs)             |                              |       |  |  |
|               |                                                                                                                                                                                                                                          |                     |                                                                                     |                         |  |                          |                                |               |        | [==>]                           |                              | [1]   |  |  |
|               | 2                                                                                                                                                                                                                                        | (COS.sp.193 2955)   | (3) J092136.55+403 853.8                                                            | COS/FUV, TIME-TAG, PSA  |  | G160M<br>1623 A          | BUFFER-TIME=16 47;<br>FP-POS=2 |               |        | 1647 Secs (1647 Secs)           |                              |       |  |  |
|               |                                                                                                                                                                                                                                          |                     |                                                                                     |                         |  |                          |                                |               |        | [==>]                           |                              | [1]   |  |  |
|               | 3                                                                                                                                                                                                                                        | (COS.sp.193 2955)   | (3) J092136.55+403 853.8                                                            | COS/FUV, TIME-TAG, PSA  |  | G160M<br>1623 A          | BUFFER-TIME=26 09;<br>FP-POS=3 |               |        | 2609 Secs (2609 Secs)           |                              |       |  |  |
|               |                                                                                                                                                                                                                                          |                     |                                                                                     |                         |  |                          |                                |               |        | [==>]                           |                              | [2]   |  |  |
|               | 4                                                                                                                                                                                                                                        | (COS.sp.193 2955)   | (3) J092136.55+403 853.8                                                            | COS/FUV, TIME-TAG, PSA  |  | G160M<br>1623 A          | BUFFER-TIME=26 09;<br>FP-POS=4 |               |        | 2609 Secs (2609 Secs)           |                              |       |  |  |
|               |                                                                                                                                                                                                                                          |                     |                                                                                     |                         |  |                          |                                |               |        | [==>]                           |                              | [3]   |  |  |





# Proposal 17771 - Visit 08 - Completing the picture of high-ionization UV emission powered by the most metal-poor massive star popul...

|                                                                                                                       |                                                                                                                                                                                                                                          |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------|-------------------------|---------------|--------------------|---------------|--------|---------------------------------|--|------------------------------|--|
| Visit                                                                                                                 | Proposal 17771, Visit 08, completed                                                                                                                                                                                                      |                   |                          |                         |               |                    |               |        |                                 |  | Fri Dec 12 15:00:23 GMT 2025 |  |
|                                                                                                                       | Diagnostic Status: Warning                                                                                                                                                                                                               |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
|                                                                                                                       | Scientific Instruments: COS/FUV, COS/NUV                                                                                                                                                                                                 |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
|                                                                                                                       | Special Requirements: (none)                                                                                                                                                                                                             |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
| Diagnostics                                                                                                           | (Visit 08) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions at a given COS cenwave (or 2 positions for certain exception cases). See extended explanation in the diagnostic browser. |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
|                                                                                                                       | (Visit 08) Warning (Orbit Planner): INEFFICIENT ORDERING OF FP-POS POSITIONS                                                                                                                                                             |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
|                                                                                                                       | (Visit 08) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                                                                                                                                                                           |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
|                                                                                                                       | (Visit 08) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                                                                                                                                                                           |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
| Fixed Targets                                                                                                         | #                      Name                      Target Coordinates                      Targ. Coord. Corrections                      Fluxes                      Miscellaneous                                                         |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
|                                                                                                                       | (3)                      J092136.55+403853.8                      RA: 09 21 36.5500 (140.4022917d)                      Redshift: 0.071                      V=21.9                      Reference Frame: ICRS                           |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
|                                                                                                                       | Dec: +40 38 53.84 (40.64829d)                                                                                                                                                                                                            |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
|                                                                                                                       | Equinox: J2000                                                                                                                                                                                                                           |                   |                          |                         |               |                    |               |        |                                 |  |                              |  |
| Comments:<br>Category=GALAXY<br>Description=[DWARF COMPACT, EMISSION LINE NEBULA, STAR FORMING REGION]<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.ta.193 2631) | (3) J092136.55+403 853.8 | COS/NUV, ACQ/IMAGE, PSA | MIRRORA       |                    |               |        | 271 Secs (271 Secs)             |  |                              |  |
|                                                                                                                       |                                                                                                                                                                                                                                          |                   |                          |                         |               |                    |               |        | [==>]                           |  | [1]                          |  |
|                                                                                                                       | 2                                                                                                                                                                                                                                        | (COS.sp.193 2955) | (3) J092136.55+403 853.8 | COS/FUV, TIME-TAG, PSA  | G160M 1623 A  | BUFFER-TIME=16 47; |               |        | 1647 Secs (1647 Secs)           |  |                              |  |
|                                                                                                                       |                                                                                                                                                                                                                                          |                   |                          |                         |               | FP-POS=3           |               |        | [==>]                           |  | [1]                          |  |
|                                                                                                                       | 3                                                                                                                                                                                                                                        | (COS.sp.193 2955) | (3) J092136.55+403 853.8 | COS/FUV, TIME-TAG, PSA  | G160M 1623 A  | BUFFER-TIME=26 09; |               |        | 2609 Secs (2609 Secs)           |  |                              |  |
|                                                                                                                       |                                                                                                                                                                                                                                          |                   |                          |                         |               | FP-POS=1           |               |        | [==>]                           |  | [2]                          |  |



# Proposal 17771 - Visit 09 - Completing the picture of high-ionization UV emission powered by the most metal-poor massive star popul...

|               |                                                                                                                                                                                                                                          |                     |                          |                                                                                     |  |                          |                    |               |        |                                 |                              |       |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------------|-------------------------------------------------------------------------------------|--|--------------------------|--------------------|---------------|--------|---------------------------------|------------------------------|-------|
| Visit         | Proposal 17771, Visit 09, completed                                                                                                                                                                                                      |                     |                          |                                                                                     |  |                          |                    |               |        |                                 | Fri Dec 12 15:00:23 GMT 2025 |       |
|               | Diagnostic Status: Warning                                                                                                                                                                                                               |                     |                          |                                                                                     |  |                          |                    |               |        |                                 |                              |       |
|               | Scientific Instruments: COS/FUV, COS/NUV                                                                                                                                                                                                 |                     |                          |                                                                                     |  |                          |                    |               |        |                                 |                              |       |
|               | Special Requirements: (none)                                                                                                                                                                                                             |                     |                          |                                                                                     |  |                          |                    |               |        |                                 |                              |       |
| Diagnostics   | (Visit 09) Warning (Form): For the best data quality, it is generally required to use all four FP-POS positions at a given COS cenwave (or 2 positions for certain exception cases). See extended explanation in the diagnostic browser. |                     |                          |                                                                                     |  |                          |                    |               |        |                                 |                              |       |
|               | (Visit 09) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                                                                                                                                                                           |                     |                          |                                                                                     |  |                          |                    |               |        |                                 |                              |       |
|               | (Visit 09) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN                                                                                                                                                                           |                     |                          |                                                                                     |  |                          |                    |               |        |                                 |                              |       |
|               |                                                                                                                                                                                                                                          |                     |                          |                                                                                     |  |                          |                    |               |        |                                 |                              |       |
| Fixed Targets | #                                                                                                                                                                                                                                        | Name                |                          | Target Coordinates                                                                  |  | Targ. Coord. Corrections |                    | Fluxes        |        | Miscellaneous                   |                              |       |
|               | (3)                                                                                                                                                                                                                                      | J092136.55+403853.8 |                          | RA: 09 21 36.5500 (140.4022917d)<br>Dec: +40 38 53.84 (40.64829d)<br>Equinox: J2000 |  | Redshift: 0.071          |                    | V=21.9        |        | Reference Frame: ICRS           |                              |       |
|               | Comments:<br>Category=GALAXY<br>Description=[DWARF COMPACT, EMISSION LINE NEBULA, STAR FORMING REGION]<br>Extended=NO                                                                                                                    |                     |                          |                                                                                     |  |                          |                    |               |        |                                 |                              |       |
|               |                                                                                                                                                                                                                                          |                     |                          |                                                                                     |  |                          |                    |               |        |                                 |                              |       |
| Exposures     | #                                                                                                                                                                                                                                        | Label<br>(ETC Run)  | Target                   | Config,Mode,Aperture                                                                |  | Spectral Els.            | Opt. Params.       | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] |                              | Orbit |
|               | 1                                                                                                                                                                                                                                        | (COS.ta.193 2631)   | (3) J092136.55+403 853.8 | COS/NUV, ACQ/IMAGE, PSA                                                             |  | MIRRORA                  |                    |               |        | 271 Secs (271 Secs)             |                              |       |
|               |                                                                                                                                                                                                                                          |                     |                          |                                                                                     |  |                          |                    |               |        | [==>]                           |                              | [1]   |
|               | 2                                                                                                                                                                                                                                        | (COS.sp.193 2955)   | (3) J092136.55+403 853.8 | COS/FUV, TIME-TAG, PSA                                                              |  | G160M<br>1623 A          | BUFFER-TIME=16 47; |               |        | 1647 Secs (1647 Secs)           |                              |       |
|               |                                                                                                                                                                                                                                          |                     |                          |                                                                                     |  |                          | FP-POS=2           |               |        | [==>]                           |                              | [1]   |
|               | 3                                                                                                                                                                                                                                        | (COS.sp.193 2955)   | (3) J092136.55+403 853.8 | COS/FUV, TIME-TAG, PSA                                                              |  | G160M<br>1623 A          | BUFFER-TIME=26 09; |               |        | 2609 Secs (2609 Secs)           |                              |       |
|               |                                                                                                                                                                                                                                          |                     |                          |                                                                                     |  |                          | FP-POS=4           |               |        | [==>]                           |                              | [2]   |
|               |                                                                                                                                                                                                                                          |                     |                          |                                                                                     |  |                          |                    |               |        |                                 |                              |       |
|               |                                                                                                                                                                                                                                          |                     |                          |                                                                                     |  |                          |                    |               |        |                                 |                              |       |
|               |                                                                                                                                                                                                                                          |                     |                          |                                                                                     |  |                          |                    |               |        |                                 |                              |       |

