



# 16697 - Establishing the C/O gas-phase abundance scale: a critical need for galaxy evolution studies from $z=0$ into the epoch of reionization

Cycle: 29, Proposal Category: GO

(UV Initiative)

(Availability Mode: AVAILABLE)

## INVESTIGATORS

<i>Name</i>	<i>Institution</i>
<b>Dr. Ryan Sanders (PI) (Contact)</b>	<b>University of California - Davis</b>
Prof. Tucker Jones (CoI)	University of California - Davis
Dr. Danielle Berg (CoI)	University of Texas at Austin
Dr. Fabio Bresolin (CoI)	University of Hawaii
Dr. Peter Senchyna (CoI)	Carnegie Institution of Washington
Prof. Daniel P. Stark (CoI)	University of Arizona

## 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) NGC6822 (10) NGC6822-OFFSET	COS/FUV COS/NUV	2	05-May-2023 16:00:17.0	yes
03	(9) M42 (12) M42-OFFSET	COS/FUV COS/NUV	2	05-May-2023 16:00:18.0	yes
10	(9) M42 (12) M42-OFFSET	COS/FUV COS/NUV	1	05-May-2023 16:00:19.0	yes
13	(9) M42 (12) M42-OFFSET	COS/FUV COS/NUV	1	05-May-2023 16:00:20.0	yes

Proposal 16697 (STScI Edit Number: 5, Created: Friday, May 5, 2023 at 3:00:33 PM Eastern Standard Time) - Overview

<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>
02	(3) N44C (11) N44C-OFFSET	COS/FUV COS/NUV	2	05-May-2023 16:00:21.0	yes
04	(6) N11B (13) N11B-OFFSET	COS/FUV COS/NUV	2	05-May-2023 16:00:22.0	yes
05	(7) N66A (14) N66A-OFFSET	COS/FUV COS/NUV	2	05-May-2023 16:00:24.0	yes
11	(7) N66A (14) N66A-OFFSET	COS/FUV COS/NUV	1	05-May-2023 16:00:25.0	yes
06	(8) N81 (15) N81-OFFSET	COS/FUV COS/NUV	2	05-May-2023 16:00:26.0	yes
12	(8) N81 (15) N81-OFFSET	COS/FUV COS/NUV	2	05-May-2023 16:00:27.0	yes
54	(8) N81 (15) N81-OFFSET	COS/FUV COS/NUV	2	05-May-2023 16:00:29.0	yes
07	(4) IC2111 (16) IC2111-OFFSET	COS/FUV COS/NUV	2	05-May-2023 16:00:30.0	yes
08	(5) NGC1714 (17) NGC1714-OFFSET	COS/FUV COS/NUV	2	05-May-2023 16:00:31.0	yes
09	(2) NGC5408	COS/FUV COS/NUV	2	05-May-2023 16:00:32.0	yes

25 Total Orbits Used

**ABSTRACT**

The C/O abundance ratio is a powerful probe of galaxy evolution, sensitive to gas outflows and star formation histories because carbon and oxygen enrichment occurs on different timescales. C/O has been derived for many low- and high-redshift galaxies using measurements of rest-UV OIII] and CIII] collisionally excited lines (CELs). However, C/O derived from UV CELs may be subject to an unknown and potentially large bias. It is well established that O/H determined from CELs systematically underestimates O/H based on O recombination lines (RLs; the most robust abundance determination) by a factor of  $\sim 2$ , known as the Abundance Discrepancy Factor (ADF). It is currently unknown whether C abundances display a

similar ADF between CEL and RL methods. Consequently, we do not know whether C/O derived from UV CELs matches the true C/O value based on RLs, or is systematically biased. The primary obstacle is a lack of overlap between samples with measurements of ultra-faint optical RLs and UV CELs. We propose to measure UV OIII] and CIII] CELs in 9 HII regions with existing measurements of OII and CII RLs, leveraging the unique capabilities of HST/COS. These observations will crucially allow us to derive C/O and C/H from both CELs and RLs for the same objects, enabling a robust calibration of the C/O abundance scale from UV CELs and an understanding of the ADF of C. Securing UV spectroscopy with COS is the only feasible way to validate UV-based C/O, of critical importance to understanding rest-UV line measurements in local dwarf galaxies, galaxies at cosmic noon, and sources in the epoch of reionization with JWST in the near-future.

## **OBSERVING DESCRIPTION**

### **Goal:**

We will obtain COS NUV (G185M) and FUV (G160M) spectroscopy of 1 Galactic and 8 nearby extragalactic HII regions in order to measure the OIII]1661,1666 and CIII]1907,1909 emission lines. We will use the ratio of these UV lines to derive the C/O gas-phase abundance ratio, a powerful probe of galaxy formation and evolution, and compare this value to C/O derived from recombination lines in these HII regions using ultradeep optical spectroscopy at the same paintings. This comparison will allow us to validate C/O based on UV emission lines against robust C/O measures from recombination lines. The resulting calibration will have applications to existing UV HST spectra of low-redshift dwarf galaxies and future measurements from JWST of sources at very high redshifts. We will also explore the Abundance Discrepancy Factor of C with a much larger and more robust sample than has been available to date and compare it to ADF(O), improving the absolute gas-phase abundance scale.

### **Targets:**

The targets of this program are selected from a parent sample of ~30 nearby HII regions with significant detections of both OII and CII recombination lines in ultradeep ground-based optical spectra. Using detailed physical properties (temperature, density, abundance pattern, reddening) measured from the optical spectra, we have estimated the observed line fluxes of OIII]1661,1666 and CIII]1907,1909 in the 2.5" diameter COS PSA. The 9 targets in this program are those for which the predicted fluxes are expected to yield significant (>10 sigma) detections of the integrated line flux with 1 orbit each in G160M and G185M.

### **Target Acquisition:**

All but one of our targets (NGC5408, see below) feature extended (~10" to 1 degree) nebular emission that is significantly larger than the size of the COS aperture (2.5" diameter). Given that the large and uniform nebular emission fills the COS aperture, for these 8 extended targets we follow the

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acquisition method successfully applied to extended HII regions in M101 by CoI Danielle Berg in HST-GO-15126 (PI: Berg). We will use a pointing offset from a nearby star that is sufficiently bright in the NUV. For 7 of the 8 extended targets, the NUV flux of the offset star is derived from Galex/NUV photometry combined with UV HST imaging when available. The 8th target (M42) lacks Galex coverage, but we have derived the flux of the offset star in HST WFPC2/F336W imaging and combined this value with the spectral type of the offset star to estimate the NUV flux. Based on the NUV fluxes of these offset stars, we use the PSA and MIRRORB for the ACQ IMAGE for the offset stars of all extended targets except for one (IC2111). IC2111 features an offset star that is bright in the NUV and has no other nearby bright NUV sources for which we use the BOA and MIRRORB. Exposure times were selected to provide  $S/N=40$  for the offset stars using the COS ETC. The ICRS frame coordinates of the offset stars are taken from Gaia EDR3 and validated against HST imaging when available. We used the Gaia archive to verify that all offset stars have negligible proper motions ( $<2$  mas/yr).

For 6 of the extended sources we determined the offset between the star and science target position of the COS PSA in the emission nebula using HST imaging. For the remaining 2 extended sources (IC2111 and NGC1714), we determined the offset from 2MASS imaging, having verified that the relative astrometry in these images is robust by comparing the measured offsets of star pairs in the 2MASS imaging to the offsets between these star pairs in Gaia EDR3 (differences were  $\leq 0.1''$ ). All offsets are smaller than 1 arcmin, ensuring that guide stars will not be lost during the pointing offset according to guidance provided by the Contact Scientist. Our measured offsets are verified to be robust at the  $0.1''$  level, however, we note that the large extent of uniform nebular emission in these targets does not require such precise pointing within the nebula. Our science goals require that the COS PSA overlaps the position of the ground-based optical spectra from 2-3" wide slits, such that  $\sim 1''$  precision is acceptable for the science target pointings.

The remaining target NGC5408 is compact enough to acquire using a direct ACQ IMAGE of the science target. NGC5408 lacks Galex coverage. We have determined the brightness of the target region in HST F336W imaging, which contains a point source in the center, and estimated the NUV brightness of the point source. We employ PSA and MIRRORB for the target acquisition NUV imaging of NGC5408.

### Science Exposures:

We have been awarded 18 orbits for these observations. We will observe 9 targets with 2 orbits each: 1 orbit of acquisition and NUV G185M spectroscopy followed by 1 orbit of FUV G160M spectroscopy. 2 orbits for each science target are grouped into a single visit. The requirement of 1 orbit per grating is motivated by the predicted OIII] and CIII] reddened line fluxes of our targets and the limiting line fluxes reported by Senchyna+2017 from HST-GO-14168 using the same COS science setup. We place the G185M observations covering CIII]1907,1909 in the first orbit with the target acquisition because CIII] is predicted to be significantly brighter than OIII] for all of our targets. Because of the low redshifts

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off all 9 targets ( $\leq 500$  km/s), we can use the same grating setups to provide coverage of OIII] and CIII] in all targets: G160M with 1600 AA central wavelength and G185M with 1913 AA central wavelength. Following the setup for previous successful HST/COS programs led by CoIs Stark and Berg, the science spectra will be taken with the PSA and TIME-TAG mode with the FLASH=YES setting and FP-POS=ALL.

While the spectral resolution of the extracted spectra will be lowered because our targets are extended such that the emission fills the COS PSA, the resolution will be sufficient for measuring integrated line fluxes needed for the science case. We will follow reduction and analysis techniques developed by CoI Danielle Berg in past HST/COS programs when observing extended sources (e.g., HST-GO-15126).

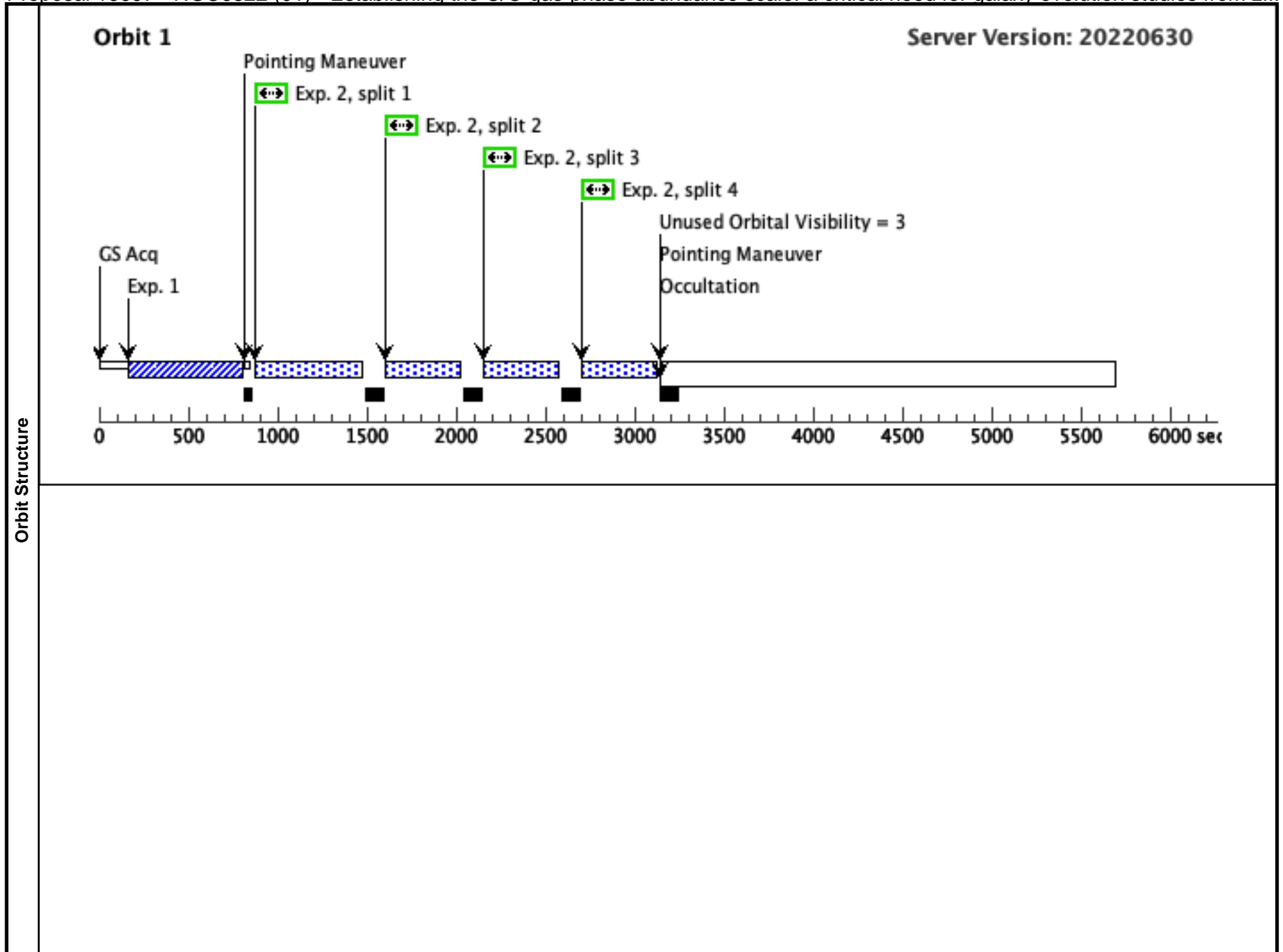
Safety/Bright Object Protection:

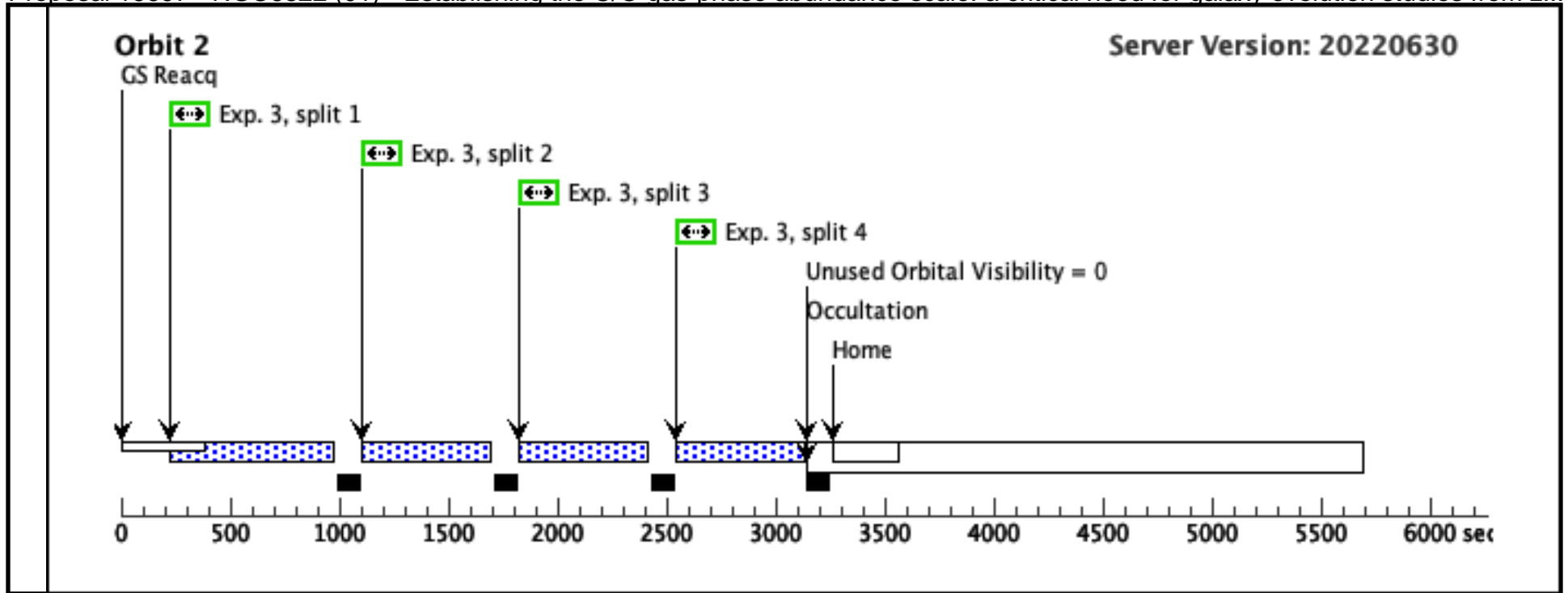
None of the targets have unsafe sources within a 43" diameter region according to the Bright Object Tool in the APT. However, two targets (M42 and NGC5408) lack Galex coverage. Several of the remaining targets that have Galex coverage were not observed as a part of the Galex All-Sky Survey used in the APT but were instead observed by Galex in the deeper Nearby Galaxy Survey or surveys of the SMC and LMC. Accordingly, we have performed bright object safety checks in 43" diameter regions around the offset stars and science targets, combining Galex NUV and HST imaging when available. We have further leveraged UBVI photometric star catalogs in the LMC. Both targets without Galex coverage have HST F336W imaging ( $\sim$ U band). We have used these data and the COS ETC to verify there are no sources violating bright object protection limits for both the offset star NUV acquisition imaging and science NUV and FUV spectroscopy.

Proposal 16697 - NGC6822 (01) - Establishing the C/O gas-phase abundance scale: a critical need for galaxy evolution studies from z...

Fri May 05 20:00:33 GMT 2023

<b>Visit</b>	<b>Proposal 16697, NGC6822 (01), completed</b> <b>Diagnostic Status: Error</b> Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none)																																												
	<b>Diagnosics</b> (NGC6822/G160M (01.003)) Error (Form): Illegal selection: G160M. (NGC6822/G160M (01.003)) Error (Form): Illegal selection: PSA. (NGC6822/G160M (01.003)) Error (Form): LIFETIME-POS is a required field. (NGC6822/G160M (01.003)) Error (Form): LIFETIME-POS is required with G160M when not in Supported mode. (NGC6822/G160M (01.003)) Error (Form): This attribute cannot have this value due to other choices: Aperture=PSA. FLASH=NO is the only permitted value for G160M PSA exposures (implied LIFETIME-POS LP6). (NGC6822/G160M (01.003)) Error (Form): This attribute cannot have this value due to other choices: Optional_Parameter=FLASH=YES. FLASH=NO is the only permitted value for G160M PSA exposures (implied LIFETIME-POS LP6). (NGC6822/G160M (01.003)) Error (Form): This attribute cannot have this value due to other choices: Spectral_Element=G160M. FLASH=NO is the only permitted value for G160M PSA exposures (implied LIFETIME-POS LP6). (NGC6822/G160M (01.003)) Error (Form): YES is not a valid selection (NGC6822/G160M (01.003)) Error (Form): YES is not a valid selection (NGC6822/G160M (01.003)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.																																												
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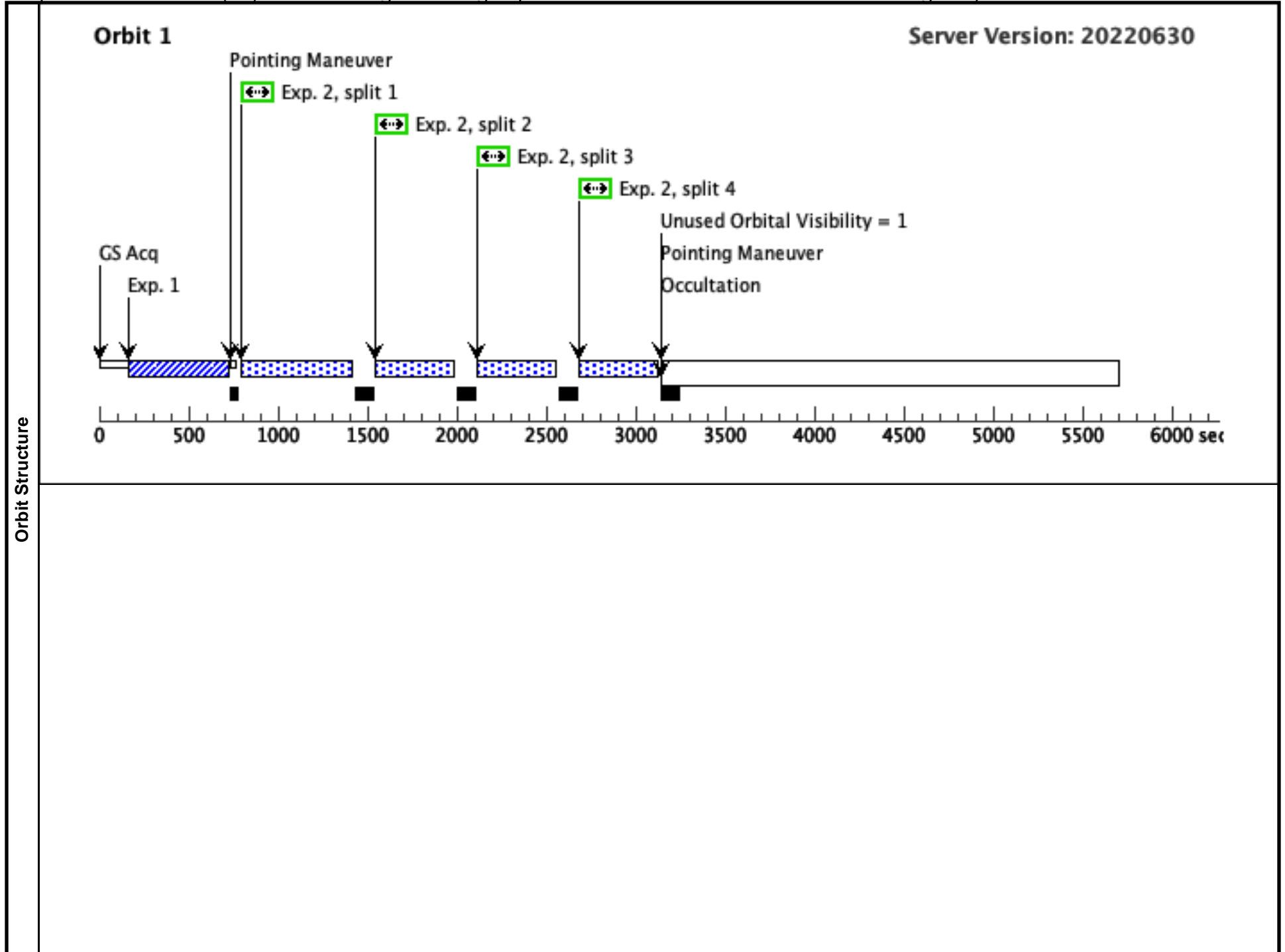


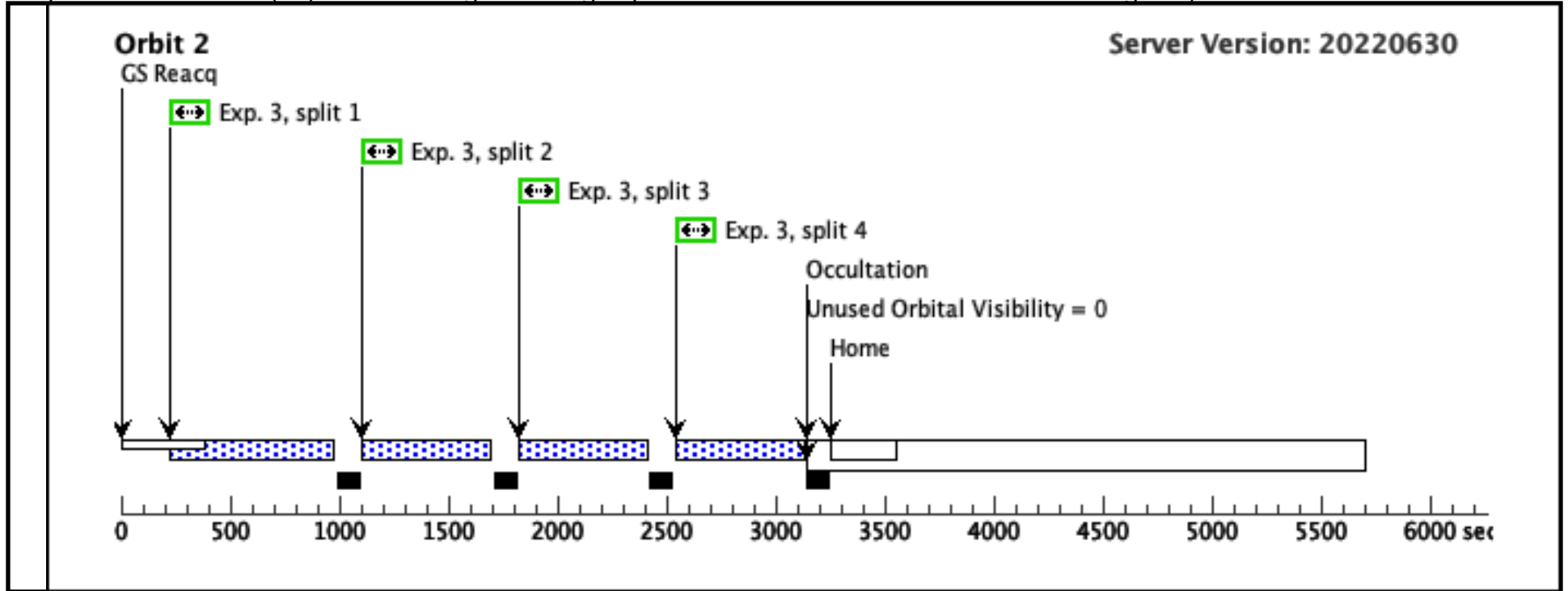


Proposal 16697 - M42 (03) - Establishing the C/O gas-phase abundance scale: a critical need for galaxy evolution studies from z=0 int...

Fri May 05 20:00:33 GMT 2023

Visit	<p><b>Proposal 16697, M42 (03), failed</b></p> <p><b>Diagnostic Status: Error</b></p> <p>Scientific Instruments: COS/FUV, COS/NUV</p> <p>Special Requirements: (none)</p>																																																	
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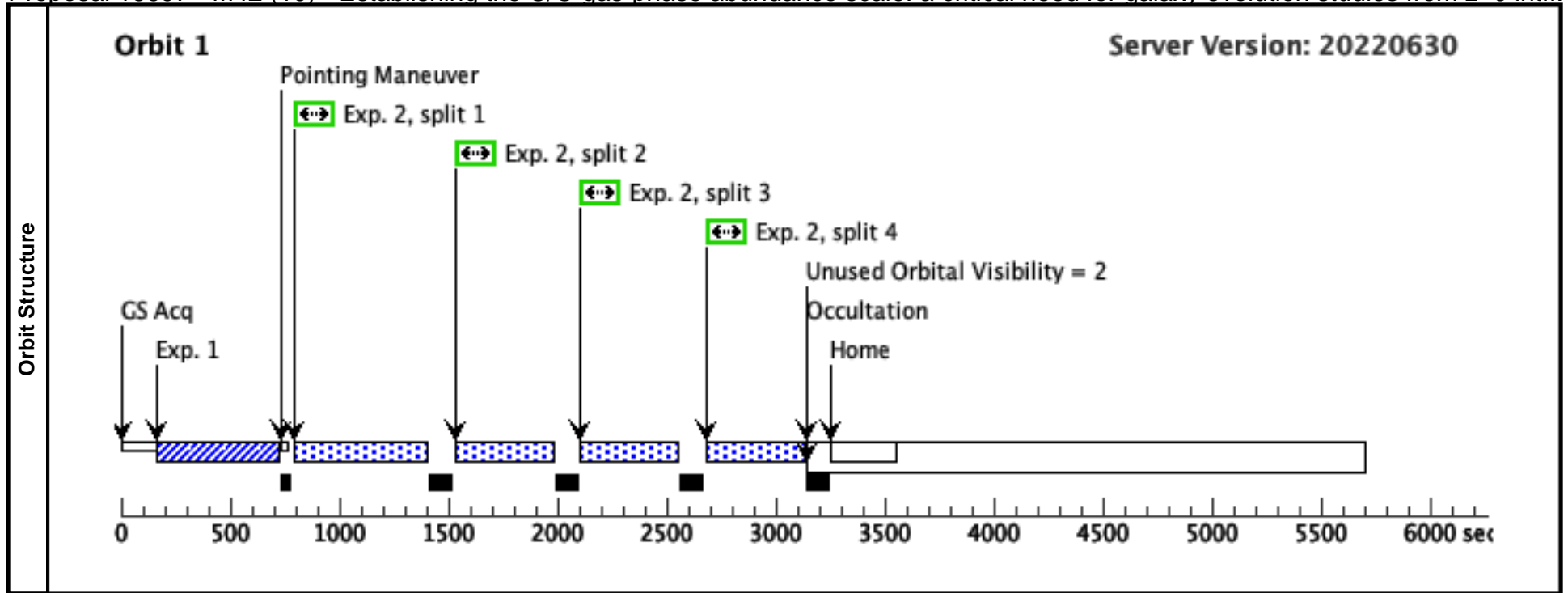




Proposal 16697 - M42 (10) - Establishing the C/O gas-phase abundance scale: a critical need for galaxy evolution studies from z=0 int...

Fri May 05 20:00:33 GMT 2023

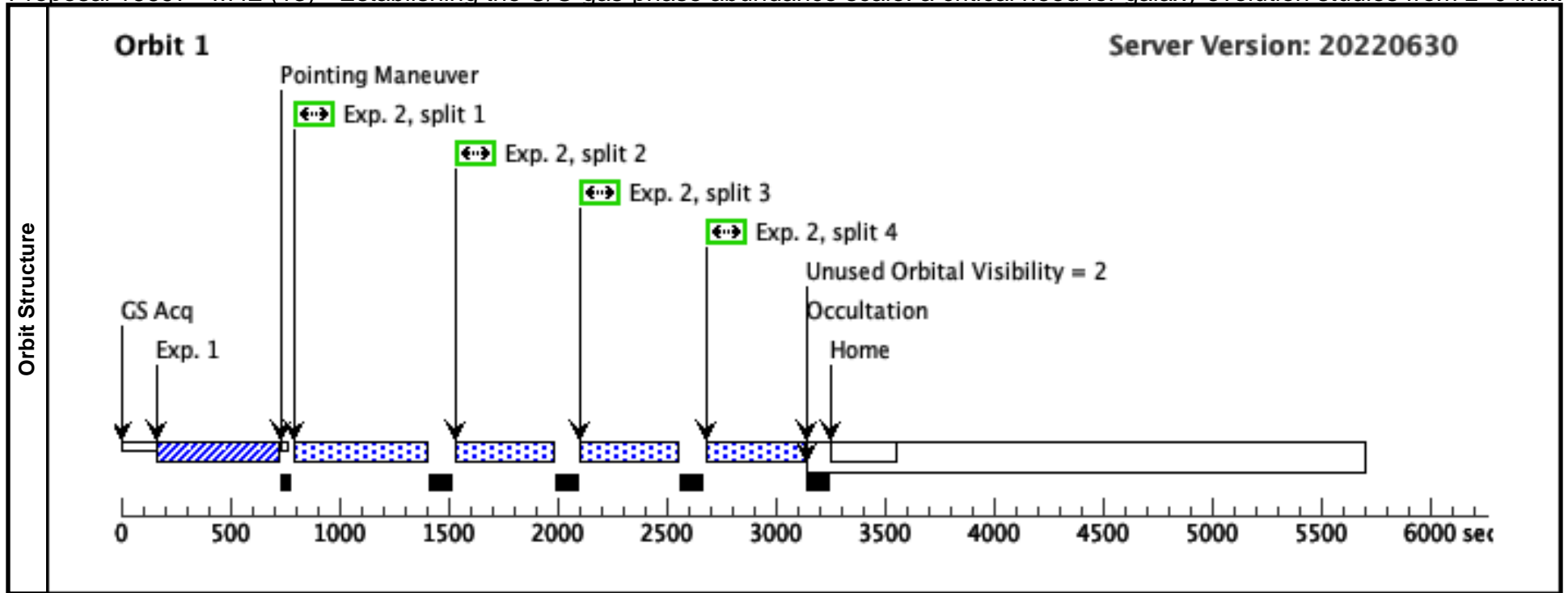
Visit	<p><b>Proposal 16697, M42 (10), failed</b></p> <p><b>Diagnostic Status: Error</b></p> <p>Scientific Instruments: COS/FUV, COS/NUV</p> <p>Special Requirements: (none)</p>																																																																																						
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Proposal 16697 - M42 (13) - Establishing the C/O gas-phase abundance scale: a critical need for galaxy evolution studies from z=0 int...

Fri May 05 20:00:33 GMT 2023

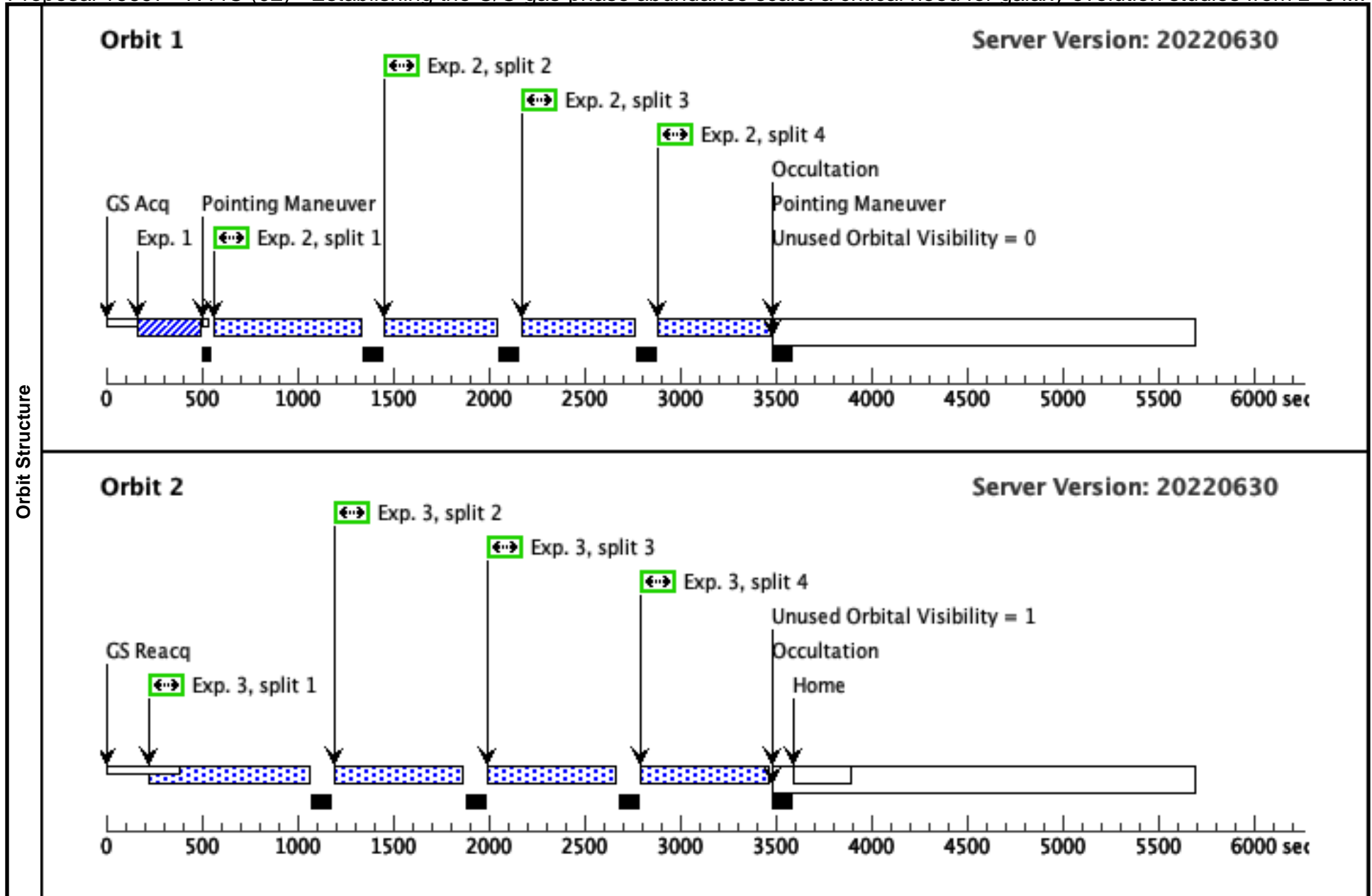
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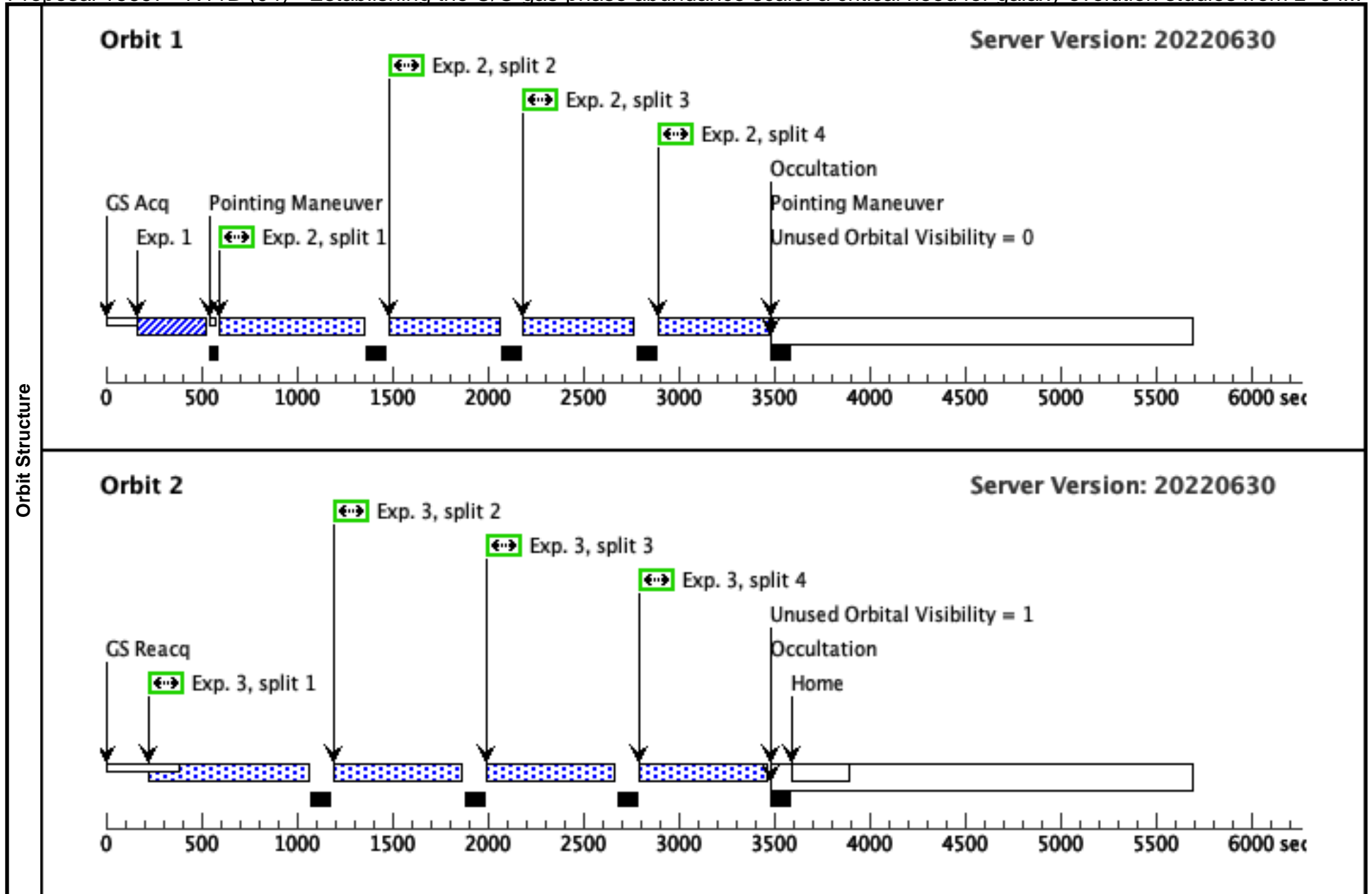
Proposal 16697 - N44C (02) - Establishing the C/O gas-phase abundance scale: a critical need for galaxy evolution studies from z=0 i...

Fri May 05 20:00:33 GMT 2023

Visit	<b>Proposal 16697, N44C (02), completed</b> <b>Diagnostic Status: Error</b> Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none)																																																	
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(11)	N44C-OFFSET	RA: 05 22 19.1929 (80.5799704d) Dec: -67 58 9.42 (-67.96928d) Equinox: J2000		V=16.04 NUV = 16.0; U = 14.93; B = 15. 85; g=16.00	Reference Frame: ICRS																																													
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Exposures	<table border="1"> <thead> <tr> <th>#</th> <th>Label (ETC Run)</th> <th>Target</th> <th>Config,Mode,Aperture</th> <th>Spectral Els.</th> <th>Opt. Params.</th> <th>Special Reqs.</th> <th>Groups</th> <th>Exp. Time (Total)/[Actual Dur.]</th> <th>Orbit</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N44C-ACQ (1526281)</td> <td>(11) N44C-OFFSET</td> <td>COS/NUV, ACQ/IMAGE, PSA</td> <td>MIRRORB</td> <td></td> <td></td> <td>Same Guide Stars in N44C (02)</td> <td>19 Secs (19 Secs) [==&gt;]</td> <td>[1]</td> </tr> <tr> <td>2</td> <td>N44C/G185 M (1528208)</td> <td>(3) N44C</td> <td>COS/NUV, TIME-TAG, PSA</td> <td>G185M 1913 A</td> <td>FLASH=YES; FP-POS=ALL; BUFFER-TIME=58 0</td> <td></td> <td>Same Guide Stars in N44C (02)</td> <td>450 Secs (2284 Secs) [==&gt;571.0 Secs (Split 1)] [==&gt;571.0 Secs (Split 2)] [==&gt;571.0 Secs (Split 3)] [==&gt;571.0 Secs (Split 4)]</td> <td>[1]</td> </tr> <tr> <td>3</td> <td>N44C/G160 M (1528210)</td> <td>(3) N44C</td> <td>COS/FUV, TIME-TAG, PSA</td> <td>G160M 1600 A</td> <td>FP-POS=ALL; FLASH=YES; BUFFER-TIME=63 0</td> <td></td> <td>Same Guide Stars in N44C (02)</td> <td>400 Secs (2484 Secs) [==&gt;621.0 Secs (Split 1)] [==&gt;621.0 Secs (Split 2)] [==&gt;621.0 Secs (Split 3)] [==&gt;621.0 Secs (Split 4)]</td> <td>[2]</td> </tr> </tbody> </table>										#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	1	N44C-ACQ (1526281)	(11) N44C-OFFSET	COS/NUV, ACQ/IMAGE, PSA	MIRRORB			Same Guide Stars in N44C (02)	19 Secs (19 Secs) [==>]	[1]	2	N44C/G185 M (1528208)	(3) N44C	COS/NUV, TIME-TAG, PSA	G185M 1913 A	FLASH=YES; FP-POS=ALL; BUFFER-TIME=58 0		Same Guide Stars in N44C (02)	450 Secs (2284 Secs) [==>571.0 Secs (Split 1)] [==>571.0 Secs (Split 2)] [==>571.0 Secs (Split 3)] [==>571.0 Secs (Split 4)]	[1]	3	N44C/G160 M (1528210)	(3) N44C	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=ALL; FLASH=YES; BUFFER-TIME=63 0		Same Guide Stars in N44C (02)	400 Secs (2484 Secs) [==>621.0 Secs (Split 1)] [==>621.0 Secs (Split 2)] [==>621.0 Secs (Split 3)] [==>621.0 Secs (Split 4)]	[2]
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit																																									
1	N44C-ACQ (1526281)	(11) N44C-OFFSET	COS/NUV, ACQ/IMAGE, PSA	MIRRORB			Same Guide Stars in N44C (02)	19 Secs (19 Secs) [==>]	[1]																																									
2	N44C/G185 M (1528208)	(3) N44C	COS/NUV, TIME-TAG, PSA	G185M 1913 A	FLASH=YES; FP-POS=ALL; BUFFER-TIME=58 0		Same Guide Stars in N44C (02)	450 Secs (2284 Secs) [==>571.0 Secs (Split 1)] [==>571.0 Secs (Split 2)] [==>571.0 Secs (Split 3)] [==>571.0 Secs (Split 4)]	[1]																																									
3	N44C/G160 M (1528210)	(3) N44C	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=ALL; FLASH=YES; BUFFER-TIME=63 0		Same Guide Stars in N44C (02)	400 Secs (2484 Secs) [==>621.0 Secs (Split 1)] [==>621.0 Secs (Split 2)] [==>621.0 Secs (Split 3)] [==>621.0 Secs (Split 4)]	[2]																																									



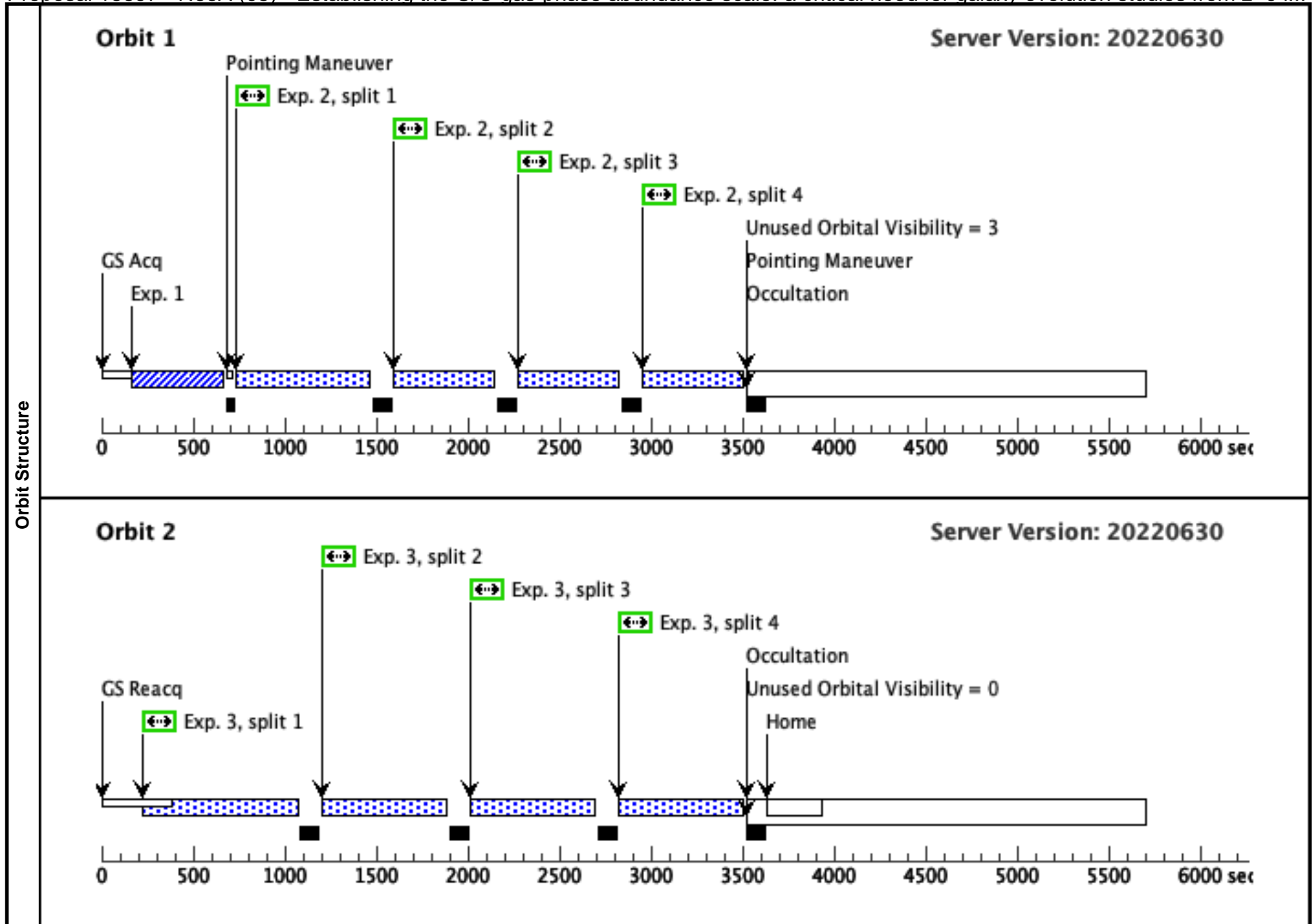
<b>Visit</b>	<b>Proposal 16697, N11B (04), completed</b> <b>Diagnostic Status: Error</b> Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none)											
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<b>Fixed Targets</b>		<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>					
		(6)	N11B	Offset from N11B-OFFSET RA Offset: -1.0224 Secs Dec Offset: -47.2538 Arcsec		V=15.5 NUV = 19.9 AB mag/arcsec^2	Offset Position (N11B)					
		<i>Comments:</i> Category=EXT-MEDIUM Description=[HII REGION] Extended=YES										
<b>Fixed Targets</b>		(13)	N11B-OFFSET	RA: 04 56 47.9417 (74.1997571d) Dec: -66 23 49.54 (-66.39709d) Equinox: J2000		V=16.19 NUV = 16.7 AB mag; B = 16.07 ; g = 16.12	Reference Frame: ICRS					
		<i>Comments:</i> Category=EXT-MEDIUM Description=[HII REGION] Extended=NO										
<b>Exposures</b>		<b>#</b>	<b>Label (ETC Run)</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time (Total)/[Actual Dur.]</b>	<b>Orbit</b>	
		1	N11B-ACQ (1527544)	(13) N11B-OFFSET	COS/NUV, ACQ/IMAGE, PSA	MIRRORB			Same Guide Stars in N11B (04)	37 Secs (37 Secs) [==>]	[1]	
		2	N11B/G185 M (1528264)	(6) N11B	COS/NUV, TIME-TAG, PSA	G185M 1913 A	FLASH=YES; FP-POS=ALL; BUFFER-TIME=57 0		Same Guide Stars in N11B (04)	450 Secs (2248 Secs) [==>562.0 Secs (Split 1)] [==>562.0 Secs (Split 2)] [==>562.0 Secs (Split 3)] [==>562.0 Secs (Split 4)]	[1]	
	3	N11B/G160 M (1528263)	(6) N11B	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=ALL; FLASH=YES; BUFFER-TIME=63 0		Same Guide Stars in N11B (04)	400 Secs (2484 Secs) [==>621.0 Secs (Split 1)] [==>621.0 Secs (Split 2)] [==>621.0 Secs (Split 3)] [==>621.0 Secs (Split 4)]	[2]		



Proposal 16697 - N66A (05) - Establishing the C/O gas-phase abundance scale: a critical need for galaxy evolution studies from z=0 i...

Fri May 05 20:00:33 GMT 2023

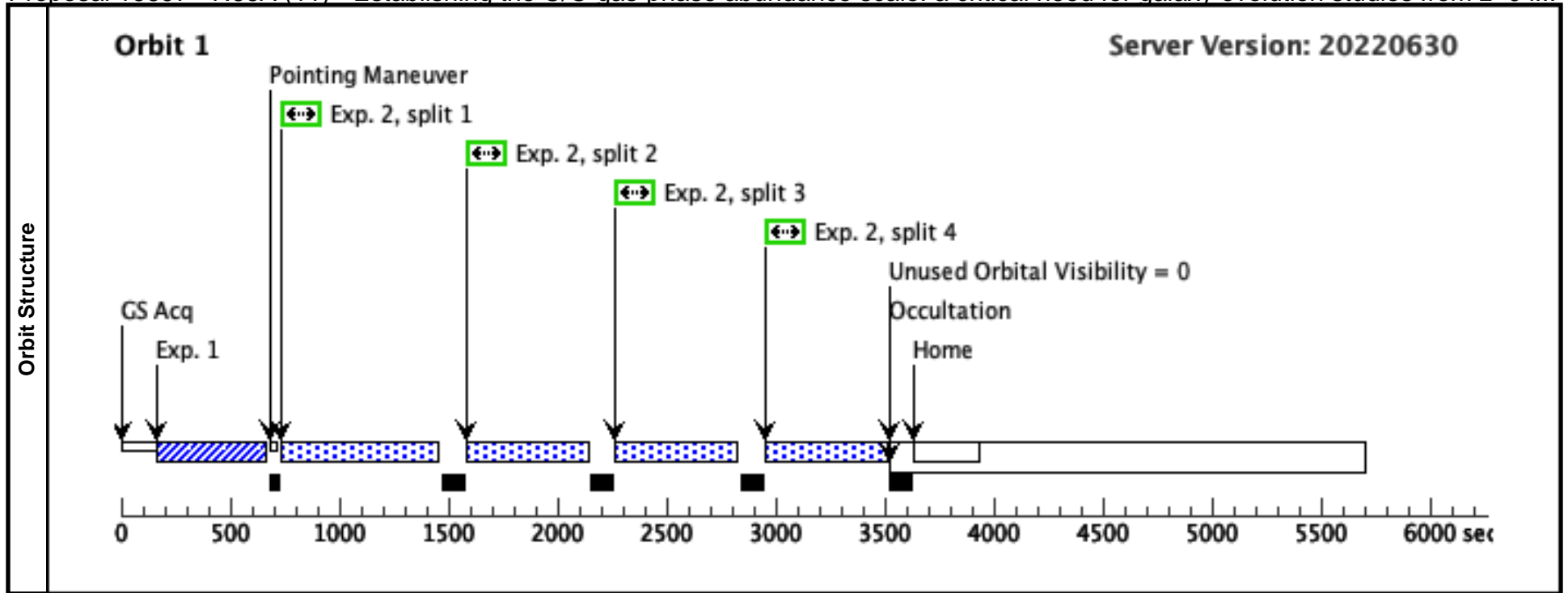
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(N66A/G160M (05.003)) Error (Form): This attribute cannot have this value due to other choices: Optional_Parameter=FLASH=YES. FLASH=NO is the only permitted value for G160M PSA exposures (implied LIFETIME-POS LP6).										
(N66A/G160M (05.003)) Error (Form): This attribute cannot have this value due to other choices: Spectral_Element=G160M. FLASH=NO is the only permitted value for G160M PSA exposures (implied LIFETIME-POS LP6).										
(N66A/G160M (05.003)) Error (Form): YES is not a valid selection										
(N66A/G160M (05.003)) Error (Form): YES is not a valid selection										
(N66A/G160M (05.003)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.										
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>				
	(7)	N66A	Offset from N66A-OFFSET RA Offset: -7.66565 Secs Dec Offset: -23.9907 Arcsec		V=15.1 NUV = 21.8 AB mag/arcsec^2	Offset Position (N66A)				
<i>Comments:</i> Category=EXT-MEDIUM Description=[HII REGION] Extended=YES										
(14)	N66A-OFFSET	RA: 00 59 22.1926 (14.8424692d) Dec: -72 10 37.23 (-72.17701d) Equinox: J2000		V=17.72 WFC3/F225W=17.8 AB mag; G alex/NUV = 18.1 AB mag; B=1 7.5; g=17.6	Reference Frame: ICRS					
<i>Comments:</i> Category=EXT-MEDIUM Description=[HII REGION] Extended=NO										
<b>Exposures</b>	<b>#</b>	<b>Label (ETC Run)</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time (Total)/[Actual Dur.]</b>	<b>Orbit</b>
	1	N66A-ACQ (1527767)	(14) N66A-OFFSET	COS/NUV, ACQ/IMAGE, PSA	MIRRORB			Same Guide Stars in N66A (05)	107 Secs (107 Secs) [==>]	[1]
	2	N66A/G185 M (1528265)	(7) N66A	COS/NUV, TIME-TAG, PSA	G185M 1913 A	FLASH=YES; FP-POS=ALL; BUFFER-TIME=540		Same Guide Stars in N66A (05)	450 Secs (2144 Secs) [==>536.0 Secs (Split 1)] [==>536.0 Secs (Split 2)] [==>536.0 Secs (Split 3)] [==>536.0 Secs (Split 4)]	[1]
	3	N66A/G160 M (1528266)	(7) N66A	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=ALL; FLASH=YES; BUFFER-TIME=640		Same Guide Stars in N66A (05)	400 Secs (2524 Secs) [==>631.0 Secs (Split 1)] [==>631.0 Secs (Split 2)] [==>631.0 Secs (Split 3)] [==>631.0 Secs (Split 4)]	[2]



Proposal 16697 - N66A (11) - Establishing the C/O gas-phase abundance scale: a critical need for galaxy evolution studies from z=0 i...

Fri May 05 20:00:33 GMT 2023

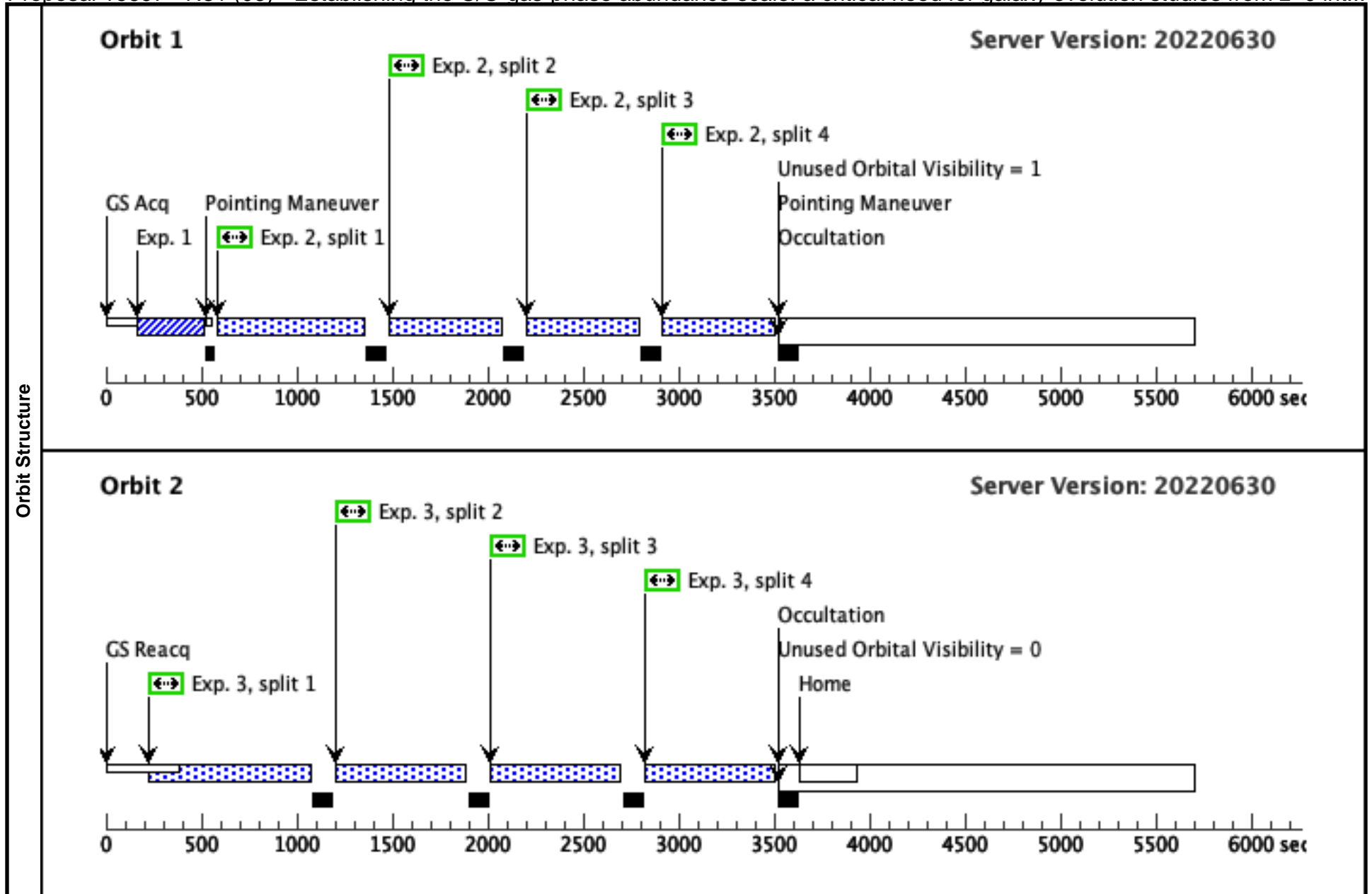
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	<b>Diagnostics</b>	(N66A/G160M (11.002)) Error (Form): Illegal selection: G160M. (N66A/G160M (11.002)) Error (Form): Illegal selection: PSA. (N66A/G160M (11.002)) Error (Form): LIFETIME-POS is a required field. (N66A/G160M (11.002)) Error (Form): LIFETIME-POS is required with G160M when not in Supported mode. (N66A/G160M (11.002)) Error (Form): This attribute cannot have this value due to other choices: Aperture=PSA. FLASH=NO is the only permitted value for G160M PSA exposures (implied LIFETIME-POS LP6). (N66A/G160M (11.002)) Error (Form): This attribute cannot have this value due to other choices: Optional_Parameter=FLASH=YES. FLASH=NO is the only permitted value for G160M PSA exposures (implied LIFETIME-POS LP6). (N66A/G160M (11.002)) Error (Form): This attribute cannot have this value due to other choices: Spectral_Element=G160M. FLASH=NO is the only permitted value for G160M PSA exposures (implied LIFETIME-POS LP6). (N66A/G160M (11.002)) Error (Form): YES is not a valid selection (N66A/G160M (11.002)) Error (Form): YES is not a valid selection (N66A/G160M (11.002)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.										
<b>Fixed Targets</b>		<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>					
		(7)	N66A	Offset from N66A-OFFSET RA Offset: -7.66565 Secs Dec Offset: -23.9907 Arcsec		V=15.1 NUV = 21.8 AB mag/arcsec^2	Offset Position (N66A)					
		<i>Comments:</i> Category=EXT-MEDIUM Description=[HII REGION] Extended=YES										
<b>Fixed Targets</b>		(14)	N66A-OFFSET	RA: 00 59 22.1926 (14.8424692d) Dec: -72 10 37.23 (-72.17701d) Equinox: J2000		V=17.72 WFC3/F225W=17.8 AB mag; G alex/NUV = 18.1 AB mag; B=1 7.5; g=17.6	Reference Frame: ICRS					
		<i>Comments:</i> Category=EXT-MEDIUM Description=[HII REGION] Extended=NO										
<b>Exposures</b>		<b>#</b>	<b>Label (ETC Run)</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time (Total)/[Actual Dur.]</b>	<b>Orbit</b>	
		1	N66A-ACQ (1527767)	(14) N66A-OFFSET	COS/NUV, ACQ/IMAGE, PSA	MIRRORB			Same Guide Stars in N66A (11)	107 Secs (107 Secs) [==>]	[1]	
		2	N66A/G160M (1528266)	(7) N66A	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=ALL; FLASH=YES; BUFFER-TIME=510		Same Guide Stars in N66A (11)	504 Secs (2016 Secs) [==>(Split 1)] [==>(Split 2)] [==>(Split 3)] [==>(Split 4)]	[1]	



Proposal 16697 - N81 (06) - Establishing the C/O gas-phase abundance scale: a critical need for galaxy evolution studies from z=0 int...

Fri May 05 20:00:33 GMT 2023

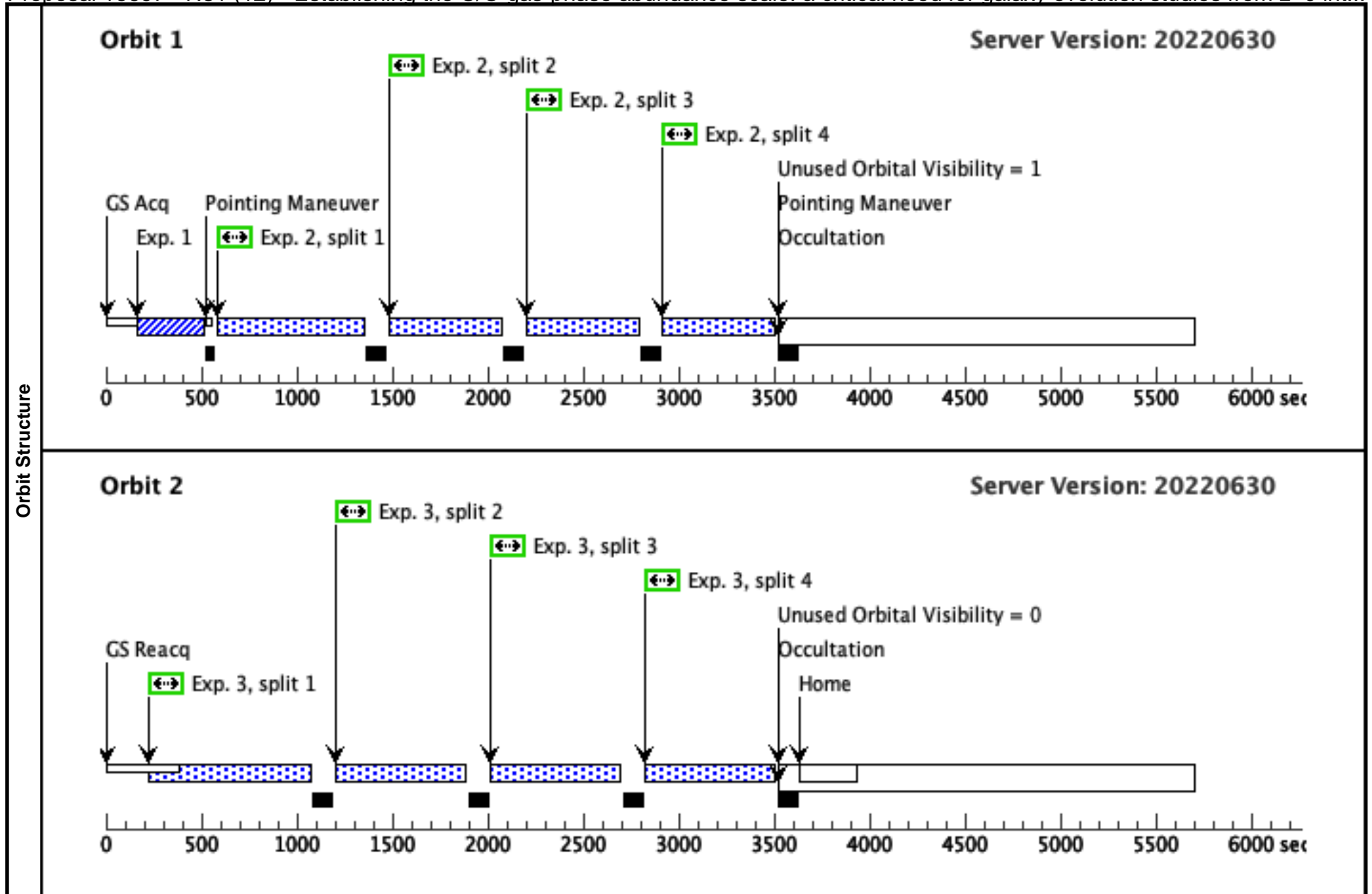
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Fixed Targets		#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(8)	N81	Offset from N81-OFFSET RA Offset: -6.20688 Secs Dec Offset: 19.103 Arcsec		V=14.8 NUV = 20.3 AB mag/arcsec^2	Offset Position (N81)				
<i>Comments:</i> Category=EXT-MEDIUM Description=[HII REGION] Extended=YES										
(15)	N81-OFFSET	RA: 01 09 19.3052 (17.3304383d) Dec: -73 11 54.71 (-73.19853d) Equinox: J2000		V=16.5 NUV = 16.5 AB mag; B = 16.6; R = 16.8; g = 16.46	Reference Frame: ICRS					
<i>Comments:</i> Category=EXT-MEDIUM Description=[HII REGION] Extended=NO										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	N81-ACQ (1527774)	(15) N81-OFFSET	COS/NUV, ACQ/IMAGE, PSA	MIRRORB			Same Guide Stars in N81 (06)	30 Secs (30 Secs) [==>]	[1]
2	N81/G185M (1528268)	(8) N81	COS/NUV, TIME-TAG, PSA	G185M 1913 A	FLASH=YES; FP-POS=ALL; BUFFER-TIME=58 0		Same Guide Stars in N81 (06)	450 Secs (2300 Secs) [==>575.0 Secs (Split 1)] [==>575.0 Secs (Split 2)] [==>575.0 Secs (Split 3)] [==>575.0 Secs (Split 4)]	[1]	
3	N81/G160M (1528267)	(8) N81	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=ALL; FLASH=YES; BUFFER-TIME=64 0		Same Guide Stars in N81 (06)	400 Secs (2524 Secs) [==>631.0 Secs (Split 1)] [==>631.0 Secs (Split 2)] [==>631.0 Secs (Split 3)] [==>631.0 Secs (Split 4)]	[2]	



Proposal 16697 - N81 (12) - Establishing the C/O gas-phase abundance scale: a critical need for galaxy evolution studies from z=0 int...

Fri May 05 20:00:33 GMT 2023

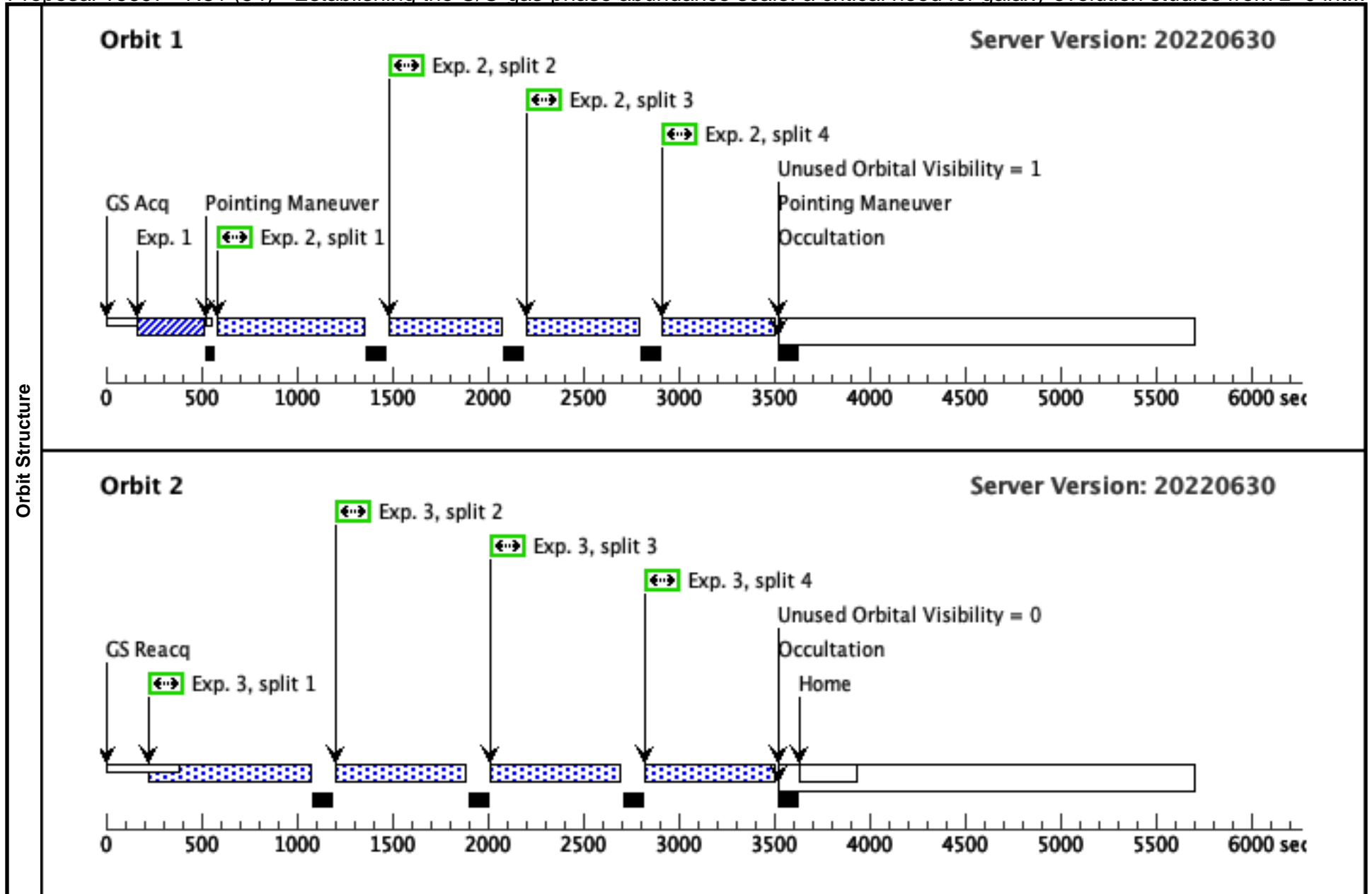
Visit	<b>Proposal 16697, N81 (12), failed</b> <b>Diagnostic Status: Error</b> Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none)																																																	
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Fixed Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> <tbody> <tr> <td>(8)</td> <td>N81</td> <td>Offset from N81-OFFSET RA Offset: -6.20688 Secs Dec Offset: 19.103 Arcsec</td> <td></td> <td>V=14.8 NUV = 20.3 AB mag/arcsec^2</td> <td>Offset Position (N81)</td> </tr> <tr> <td colspan="6"><i>Comments:</i> Category=EXT-MEDIUM Description=[HII REGION] Extended=YES</td> </tr> <tr> <td>(15)</td> <td>N81-OFFSET</td> <td>RA: 01 09 19.3052 (17.3304383d) Dec: -73 11 54.71 (-73.19853d) Equinox: J2000</td> <td></td> <td>V=16.5 NUV = 16.5 AB mag; B = 16.6; R = 16.8; g = 16.46</td> <td>Reference Frame: ICRS</td> </tr> <tr> <td colspan="6"><i>Comments:</i> Category=EXT-MEDIUM Description=[HII REGION] Extended=NO</td> </tr> </tbody> </table>										#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(8)	N81	Offset from N81-OFFSET RA Offset: -6.20688 Secs Dec Offset: 19.103 Arcsec		V=14.8 NUV = 20.3 AB mag/arcsec^2	Offset Position (N81)	<i>Comments:</i> Category=EXT-MEDIUM Description=[HII REGION] Extended=YES						(15)	N81-OFFSET	RA: 01 09 19.3052 (17.3304383d) Dec: -73 11 54.71 (-73.19853d) Equinox: J2000		V=16.5 NUV = 16.5 AB mag; B = 16.6; R = 16.8; g = 16.46	Reference Frame: ICRS	<i>Comments:</i> Category=EXT-MEDIUM Description=[HII REGION] Extended=NO															
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous																																													
(8)	N81	Offset from N81-OFFSET RA Offset: -6.20688 Secs Dec Offset: 19.103 Arcsec		V=14.8 NUV = 20.3 AB mag/arcsec^2	Offset Position (N81)																																													
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(15)	N81-OFFSET	RA: 01 09 19.3052 (17.3304383d) Dec: -73 11 54.71 (-73.19853d) Equinox: J2000		V=16.5 NUV = 16.5 AB mag; B = 16.6; R = 16.8; g = 16.46	Reference Frame: ICRS																																													
<i>Comments:</i> Category=EXT-MEDIUM Description=[HII REGION] Extended=NO																																																		
Exposures	<table border="1"> <thead> <tr> <th>#</th> <th>Label (ETC Run)</th> <th>Target</th> <th>Config,Mode,Aperture</th> <th>Spectral Els.</th> <th>Opt. Params.</th> <th>Special Reqs.</th> <th>Groups</th> <th>Exp. Time (Total)/[Actual Dur.]</th> <th>Orbit</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>N81-ACQ (1527774)</td> <td>(15) N81-OFFSET</td> <td>COS/NUV, ACQ/IMAGE, PSA</td> <td>MIRRORB</td> <td></td> <td></td> <td>Same Guide Stars in N81 (12)</td> <td>30 Secs (30 Secs) [==&gt;]</td> <td>[1]</td> </tr> <tr> <td>2</td> <td>N81/G185M (1528268)</td> <td>(8) N81</td> <td>COS/NUV, TIME-TAG, PSA</td> <td>G185M 1913 A</td> <td>FLASH=YES; FP-POS=ALL; BUFFER-TIME=58 0</td> <td></td> <td>Same Guide Stars in N81 (12)</td> <td>450 Secs (2300 Secs) [==&gt;575.0 Secs (Split 1)] [==&gt;575.0 Secs (Split 2)] [==&gt;575.0 Secs (Split 3)] [==&gt;575.0 Secs (Split 4)]</td> <td>[1]</td> </tr> <tr> <td>3</td> <td>N81/G160M (1528267)</td> <td>(8) N81</td> <td>COS/FUV, TIME-TAG, PSA</td> <td>G160M 1600 A</td> <td>FP-POS=ALL; FLASH=YES; BUFFER-TIME=64 0</td> <td></td> <td>Same Guide Stars in N81 (12)</td> <td>400 Secs (2524 Secs) [==&gt;631.0 Secs (Split 1)] [==&gt;631.0 Secs (Split 2)] [==&gt;631.0 Secs (Split 3)] [==&gt;631.0 Secs (Split 4)]</td> <td>[2]</td> </tr> </tbody> </table>										#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	1	N81-ACQ (1527774)	(15) N81-OFFSET	COS/NUV, ACQ/IMAGE, PSA	MIRRORB			Same Guide Stars in N81 (12)	30 Secs (30 Secs) [==>]	[1]	2	N81/G185M (1528268)	(8) N81	COS/NUV, TIME-TAG, PSA	G185M 1913 A	FLASH=YES; FP-POS=ALL; BUFFER-TIME=58 0		Same Guide Stars in N81 (12)	450 Secs (2300 Secs) [==>575.0 Secs (Split 1)] [==>575.0 Secs (Split 2)] [==>575.0 Secs (Split 3)] [==>575.0 Secs (Split 4)]	[1]	3	N81/G160M (1528267)	(8) N81	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=ALL; FLASH=YES; BUFFER-TIME=64 0		Same Guide Stars in N81 (12)	400 Secs (2524 Secs) [==>631.0 Secs (Split 1)] [==>631.0 Secs (Split 2)] [==>631.0 Secs (Split 3)] [==>631.0 Secs (Split 4)]	[2]
#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit																																									
1	N81-ACQ (1527774)	(15) N81-OFFSET	COS/NUV, ACQ/IMAGE, PSA	MIRRORB			Same Guide Stars in N81 (12)	30 Secs (30 Secs) [==>]	[1]																																									
2	N81/G185M (1528268)	(8) N81	COS/NUV, TIME-TAG, PSA	G185M 1913 A	FLASH=YES; FP-POS=ALL; BUFFER-TIME=58 0		Same Guide Stars in N81 (12)	450 Secs (2300 Secs) [==>575.0 Secs (Split 1)] [==>575.0 Secs (Split 2)] [==>575.0 Secs (Split 3)] [==>575.0 Secs (Split 4)]	[1]																																									
3	N81/G160M (1528267)	(8) N81	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=ALL; FLASH=YES; BUFFER-TIME=64 0		Same Guide Stars in N81 (12)	400 Secs (2524 Secs) [==>631.0 Secs (Split 1)] [==>631.0 Secs (Split 2)] [==>631.0 Secs (Split 3)] [==>631.0 Secs (Split 4)]	[2]																																									



Proposal 16697 - N81 (54) - Establishing the C/O gas-phase abundance scale: a critical need for galaxy evolution studies from z=0 int...

Fri May 05 20:00:34 GMT 2023

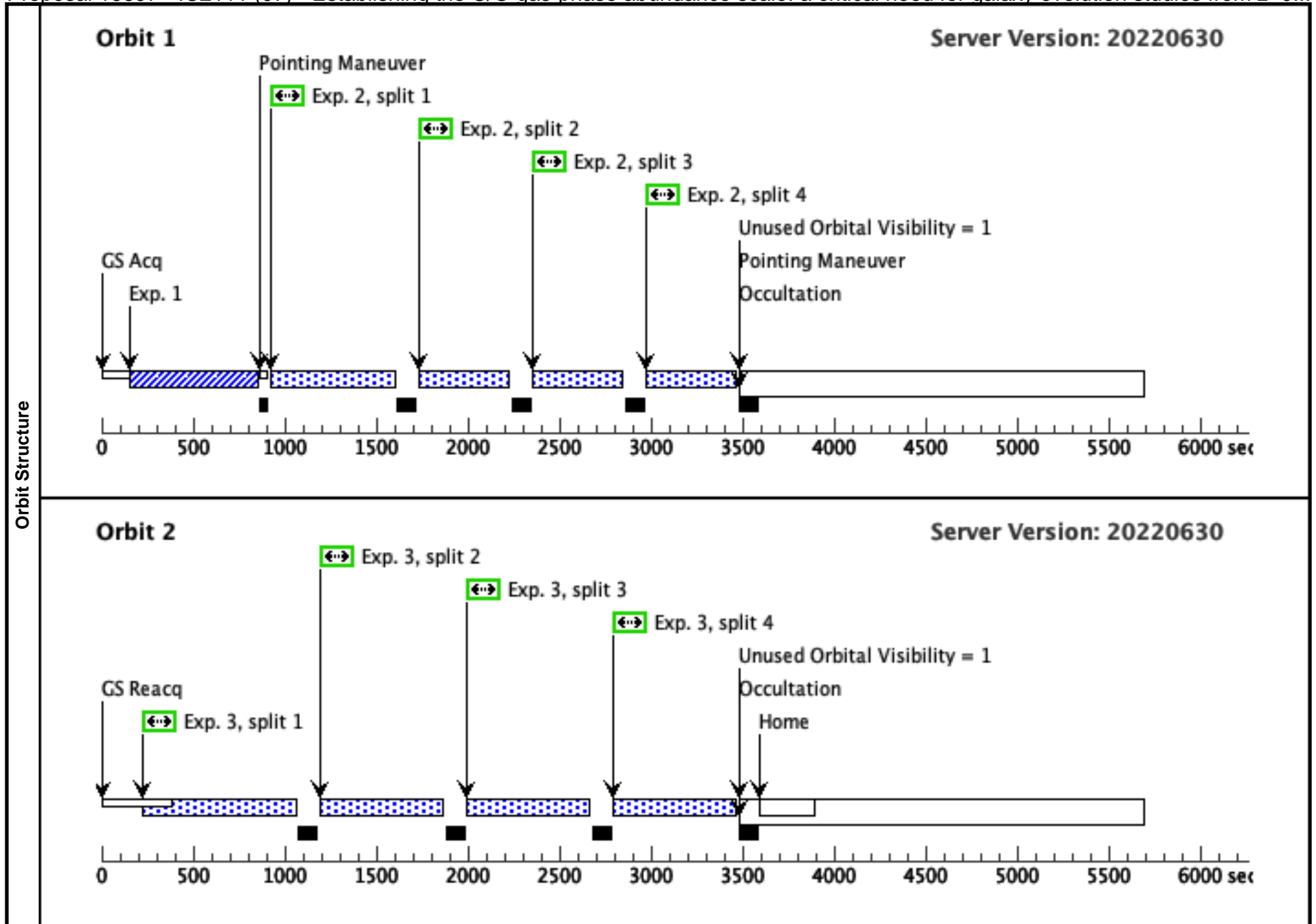
<b>Visit</b>	<b>Proposal 16697, N81 (54)</b> <b>Diagnostic Status: Warning</b> Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none)									
	<b>Diagnostics</b>	(N81/G160M (54.003)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.								
<b>Fixed Targets</b>		<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>			
	(8)	N81	Offset from N81-OFFSET RA Offset: -6.20688 Secs Dec Offset: 19.103 Arcsec		V=14.8 NUV = 20.3 AB mag/arcsec <sup>2</sup>	Offset Position (N81)				
<i>Comments: Category=EXT-MEDIUM Description=[HII REGION] Extended=YES</i>										
(15)	N81-OFFSET	RA: 01 09 19.3052 (17.3304383d) Dec: -73 11 54.71 (-73.19853d) Equinox: J2000		V=16.5 NUV = 16.5 AB mag; B = 16.6; R = 16.8; g = 16.46	Reference Frame: ICRS					
<i>Comments: Category=EXT-MEDIUM Description=[HII REGION] Extended=NO</i>										
<b>Exposures</b>	<b>#</b>	<b>Label (ETC Run)</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time (Total)/[Actual Dur.]</b>	<b>Orbit</b>
	1	N81-ACQ (1527774)	(15) N81-OFFSET	COS/NUV, ACQ/IMAGE, PSA	MIRRORB			Same Guide Stars in N81 (54)	30 Secs (30 Secs) [==>]	[1]
	2	N81/G185M (1528268)	(8) N81	COS/NUV, TIME-TAG, PSA	G185M 1913 A	FLASH=YES; FP-POS=ALL; BUFFER-TIME=58 0		Same Guide Stars in N81 (54)	450 Secs (2300 Secs) [==>575.0 Secs (Split 1)] [==>575.0 Secs (Split 2)] [==>575.0 Secs (Split 3)] [==>575.0 Secs (Split 4)]	[1]
	3	N81/G160M (1528267)	(8) N81	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=ALL; BUFFER-TIME=64 0; LIFETIME-POS=L P4; FLASH=YES		Same Guide Stars in N81 (54)	400 Secs (2524 Secs) [==>631.0 Secs (Split 1)] [==>631.0 Secs (Split 2)] [==>631.0 Secs (Split 3)] [==>631.0 Secs (Split 4)]	[2]



Proposal 16697 - IC2111 (07) - Establishing the C/O gas-phase abundance scale: a critical need for galaxy evolution studies from z=0...

Fri May 05 20:00:34 GMT 2023

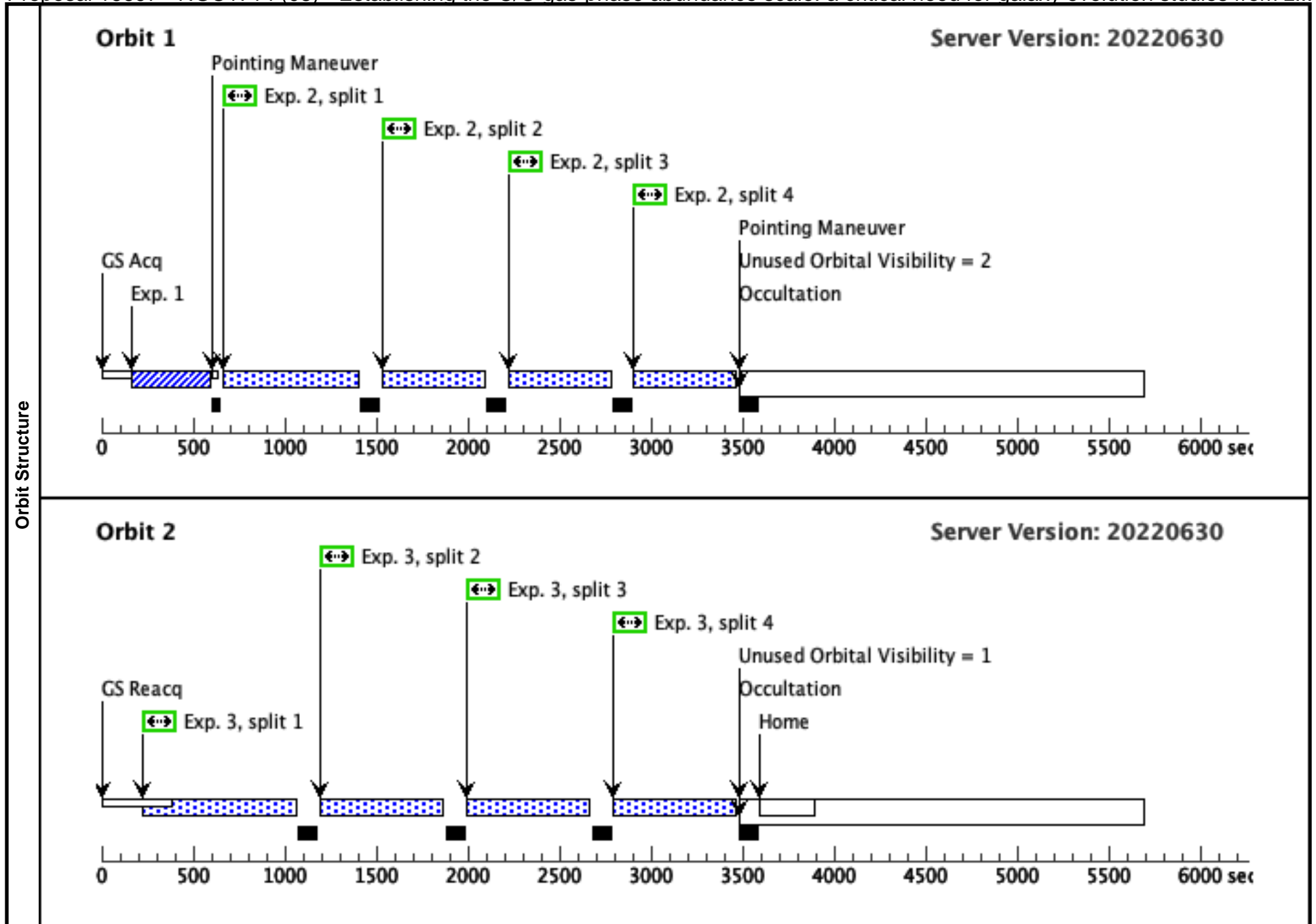
<b>Visit</b>	<b>Proposal 16697, IC2111 (07), completed</b> <b>Diagnostic Status: Error</b> Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none)									
	<b>Diagnosics</b> (IC2111/G160M (07.003)) Error (Form): Illegal selection: G160M. (IC2111/G160M (07.003)) Error (Form): Illegal selection: PSA. (IC2111/G160M (07.003)) Error (Form): LIFETIME-POS is a required field. (IC2111/G160M (07.003)) Error (Form): LIFETIME-POS is required with G160M when not in Supported mode. (IC2111/G160M (07.003)) Error (Form): This attribute cannot have this value due to other choices: Aperture=PSA. FLASH=NO is the only permitted value for G160M PSA exposures (implied LIFETIME-POS LP6). (IC2111/G160M (07.003)) Error (Form): This attribute cannot have this value due to other choices: Optional_Parameter=FLASH=YES. FLASH=NO is the only permitted value for G160M PSA exposures (implied LIFETIME-POS LP6). (IC2111/G160M (07.003)) Error (Form): This attribute cannot have this value due to other choices: Spectral_Element=G160M. FLASH=NO is the only permitted value for G160M PSA exposures (implied LIFETIME-POS LP6). (IC2111/G160M (07.003)) Error (Form): YES is not a valid selection (IC2111/G160M (07.003)) Error (Form): YES is not a valid selection (IC2111/G160M (07.003)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.									
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>				
	(4)	IC2111	Offset from IC2111-OFFSET RA Offset: 2.01264 Secs Dec Offset: -57.1939 Arcsec		V=15.1 NUV = 19.7 AB mag/arcsec^2	Offset Position (IC2111)				
	<i>Comments:</i> Category=EXT-MEDIUM Description=[HII REGION] Extended=YES									
	(16)	IC2111-OFFSET	RA: 04 51 50.6762 (72.9611508d) Dec: -69 22 34.81 (-69.37634d) Equinox: J2000		V=13.35 NUV = 14.3 AB mag; U = 12.3; B = 13.4; g = 13.3	Reference Frame: ICRS				
<i>Comments:</i> Category=EXT-MEDIUM Description=[HII REGION] Extended=NO										
<b>Exposures</b>	<b>#</b>	<b>Label (ETC Run)</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time (Total)/[Actual Dur.]</b>	<b>Orbit</b>
	1	IC2111-AC Q (1527106)	(16) IC2111-OFFSET	COS/NUV, ACQ/IMAGE, BOA	MIRRORB			Same Guide Stars in IC2111 (07)	200 Secs (200 Secs) [==>]	[1]
	2	IC2111/G18 5M (1528252)	(4) IC2111	COS/NUV, TIME-TAG, PSA	G185M 1913 A	FLASH=YES; FP-POS=ALL; BUFFER-TIME=48 5		Same Guide Stars in IC2111 (07)	450 Secs (1912 Secs) [==>478.0 Secs (Split 1)] [==>478.0 Secs (Split 2)] [==>478.0 Secs (Split 3)] [==>478.0 Secs (Split 4)]	[1]
	3	IC2111/G16 0M (1528217)	(4) IC2111	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=ALL; FLASH=YES; BUFFER-TIME=63 0		Same Guide Stars in IC2111 (07)	400 Secs (2484 Secs) [==>621.0 Secs (Split 1)] [==>621.0 Secs (Split 2)] [==>621.0 Secs (Split 3)] [==>621.0 Secs (Split 4)]	[2]



Proposal 16697 - NGC1714 (08) - Establishing the C/O gas-phase abundance scale: a critical need for galaxy evolution studies from z...

Fri May 05 20:00:34 GMT 2023

<b>Visit</b>	<b>Proposal 16697, NGC1714 (08), completed</b> <b>Diagnostic Status: Error</b> Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none)									
	<b>Diagnosics</b> (NGC1714/G160M (08.003)) Error (Form): Illegal selection: G160M. (NGC1714/G160M (08.003)) Error (Form): Illegal selection: PSA. (NGC1714/G160M (08.003)) Error (Form): LIFETIME-POS is a required field. (NGC1714/G160M (08.003)) Error (Form): LIFETIME-POS is required with G160M when not in Supported mode. (NGC1714/G160M (08.003)) Error (Form): This attribute cannot have this value due to other choices: Aperture=PSA. FLASH=NO is the only permitted value for G160M PSA exposures (implied LIFETIME-POS LP6). (NGC1714/G160M (08.003)) Error (Form): This attribute cannot have this value due to other choices: Optional_Parameter=FLASH=YES. FLASH=NO is the only permitted value for G160M PSA exposures (implied LIFETIME-POS LP6). (NGC1714/G160M (08.003)) Error (Form): This attribute cannot have this value due to other choices: Spectral_Element=G160M. FLASH=NO is the only permitted value for G160M PSA exposures (implied LIFETIME-POS LP6). (NGC1714/G160M (08.003)) Error (Form): YES is not a valid selection (NGC1714/G160M (08.003)) Error (Form): YES is not a valid selection (NGC1714/G160M (08.003)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.									
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>	<b>Miscellaneous</b>				
	(5)	NGC1714	Offset from NGC1714-OFFSET RA Offset: -6.06173 Secs Dec Offset: -12.4418 Arcsec		V=15.3 NUV = 19.0 AB mag/arcsec^2	Offset Position (NGC1714)				
	<i>Comments:</i> Category=EXT-MEDIUM Description=[HII REGION] Extended=YES									
	(17)	NGC1714-OFFSET	RA: 04 52 14.8366 (73.0618192d) Dec: -66 55 10.81 (-66.91967d) Equinox: J2000		V=16.9 NUV = 17.4 AB mag; U = 16.3; B = 17.0; g=17.0	Reference Frame: ICRS				
<i>Comments:</i> Category=EXT-MEDIUM Description=[HII REGION] Extended=NO										
<b>Exposures</b>	<b>#</b>	<b>Label (ETC Run)</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time (Total)/[Actual Dur.]</b>	<b>Orbit</b>
	1	NGC1714-A CQ (1527312)	(17) NGC1714-OFFSET	COS/NUV, ACQ/IMAGE, PSA	MIRRORB			Same Guide Stars in NGC1714 (08)	70 Secs (70 Secs) [==>]	[1]
	2	NGC1714/G 185M (1528258)	(5) NGC1714	COS/NUV, TIME-TAG, PSA	G185M 1913 A	FLASH=YES; FP-POS=ALL; BUFFER-TIME=55 0		Same Guide Stars in NGC1714 (08)	450 Secs (2180 Secs) [==>545.0 Secs (Split 1)] [==>545.0 Secs (Split 2)] [==>545.0 Secs (Split 3)] [==>545.0 Secs (Split 4)]	[1]
	3	NGC1714/G 160M (1528260)	(5) NGC1714	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=ALL; FLASH=YES; BUFFER-TIME=63 0		Same Guide Stars in NGC1714 (08)	400 Secs (2484 Secs) [==>621.0 Secs (Split 1)] [==>621.0 Secs (Split 2)] [==>621.0 Secs (Split 3)] [==>621.0 Secs (Split 4)]	[2]



Proposal 16697 - NGC5408 (09) - Establishing the C/O gas-phase abundance scale: a critical need for galaxy evolution studies from z...

Fri May 05 20:00:34 GMT 2023

Visit	<b>Proposal 16697, NGC5408 (09), completed</b> <b>Diagnostic Status: Error</b> Scientific Instruments: COS/FUV, COS/NUV Special Requirements: (none)									
	Diagnostics	(NGC5408/G160M (09.003)) Error (Form): Illegal selection: G160M. (NGC5408/G160M (09.003)) Error (Form): Illegal selection: PSA. (NGC5408/G160M (09.003)) Error (Form): LIFETIME-POS is a required field. (NGC5408/G160M (09.003)) Error (Form): LIFETIME-POS is required with G160M when not in Supported mode. (NGC5408/G160M (09.003)) Error (Form): This attribute cannot have this value due to other choices: Aperture=PSA. FLASH=NO is the only permitted value for G160M PSA exposures (implied LIFETIME-POS LP6). (NGC5408/G160M (09.003)) Error (Form): This attribute cannot have this value due to other choices: Optional_Parameter=FLASH=YES. FLASH=NO is the only permitted value for G160M PSA exposures (implied LIFETIME-POS LP6). (NGC5408/G160M (09.003)) Error (Form): This attribute cannot have this value due to other choices: Spectral_Element=G160M. FLASH=NO is the only permitted value for G160M PSA exposures (implied LIFETIME-POS LP6). (NGC5408/G160M (09.003)) Error (Form): YES is not a valid selection (NGC5408/G160M (09.003)) Error (Form): YES is not a valid selection (NGC5408/G160M (09.003)) Warning (Form): COS FUV PSA science exposures with extended targets have special calibration limitations. See "Errors and Warnings" for more details.								
Fixed Targets		#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(2)	NGC5408	RA: 14 03 18.3117 (210.8262988d) Dec: -41 22 50.99 (-41.38083d) Equinox: J2000		V=15.0 F336W = 18.7 mag/arcsec <sup>2</sup>	Reference Frame: ICRS				
<i>Comments: Contains F336W = 18.9 AB mag point source for ACQ IMAGE</i> <i>Category=EXT-MEDIUM</i> <i>Description=[HII REGION]</i> <i>Extended=YES</i>										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	NGC5408-A CQ (1527801)	(2) NGC5408	COS/NUV, ACQ/IMAGE, PSA	MIRRORB			Same Guide Stars in NGC5408 (09)	200 Secs (200 Secs) [==>]	[1]
	2	NGC5408/G 185M (1528198)	(2) NGC5408	COS/NUV, TIME-TAG, PSA	G185M 1913 A	FLASH=YES; FP-POS=ALL; BUFFER-TIME=42 5		Same Guide Stars in NGC5408 (09)	400 Secs (1672 Secs) [==>418.0 Secs (Split 1)] [==>418.0 Secs (Split 2)] [==>418.0 Secs (Split 3)] [==>418.0 Secs (Split 4)]	[1]
	3	NGC5408/G 160M (1528196)	(2) NGC5408	COS/FUV, TIME-TAG, PSA	G160M 1600 A	FP-POS=ALL; FLASH=YES; BUFFER-TIME=56 5		Same Guide Stars in NGC5408 (09)	400 Secs (2236 Secs) [==>559.0 Secs (Split 1)] [==>559.0 Secs (Split 2)] [==>559.0 Secs (Split 3)] [==>559.0 Secs (Split 4)]	[2]

