



## 18031 - Be+sdO binaries with visual orbits

Cycle: 33, Proposal Category: GO

(Availability Mode: SUPPORTED)

### INVESTIGATORS

<i>Name</i>	<i>Institution</i>
<b>Dr. Douglas Russell Gies (PI) (Contact)</b>	<b>Georgia State University Research Foundation</b>
Dr. Luqian Wang (CoI)	Georgia State University Research Foundation
Robert Klement (CoI)	Astronomical Institute of the Charles University in Prague
Dr. Geraldine J. Peters (CoI)	University of Southern California

### 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) HD-35165 WAVE	STIS/CCD STIS/FUV-MAMA	1	05-Aug-2025 15:00:50.0	yes
02	(1) HD-35165 WAVE	STIS/CCD STIS/FUV-MAMA	1	05-Aug-2025 15:00:51.0	yes
03	(1) HD-35165 WAVE	STIS/CCD STIS/FUV-MAMA	1	05-Aug-2025 15:00:51.0	yes
04	(1) HD-35165 WAVE	STIS/CCD STIS/FUV-MAMA	1	05-Aug-2025 15:00:52.0	yes
05	(2) HD-43544 WAVE	STIS/CCD STIS/FUV-MAMA	1	05-Aug-2025 15:00:52.0	yes
06	(2) HD-43544 WAVE	STIS/CCD STIS/FUV-MAMA	1	05-Aug-2025 15:00:53.0	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>
07	(2) HD-43544 WAVE	STIS/CCD STIS/FUV-MAMA	1	05-Aug-2025 15:00:54.0	yes
08	(3) HD-88661 WAVE	STIS/CCD STIS/FUV-MAMA	1	05-Aug-2025 15:00:54.0	yes
09	(3) HD-88661 WAVE	STIS/CCD STIS/FUV-MAMA	1	05-Aug-2025 15:00:55.0	yes
10	(3) HD-88661 WAVE	STIS/CCD STIS/FUV-MAMA	1	05-Aug-2025 15:00:55.0	yes
11	(4) -ALF-ARA WAVE	STIS/CCD STIS/FUV-MAMA	1	05-Aug-2025 15:00:56.0	yes
12	(4) -ALF-ARA WAVE	STIS/CCD STIS/FUV-MAMA	1	05-Aug-2025 15:00:56.0	yes
13	(4) -ALF-ARA WAVE	STIS/CCD STIS/FUV-MAMA	1	05-Aug-2025 15:00:57.0	yes
14	(5) -B02-CYG WAVE	STIS/CCD STIS/FUV-MAMA	1	05-Aug-2025 15:00:58.0	yes
15	(5) -B02-CYG WAVE	STIS/CCD STIS/FUV-MAMA	1	05-Aug-2025 15:00:58.0	yes
16	(5) -B02-CYG WAVE	STIS/CCD STIS/FUV-MAMA	1	05-Aug-2025 15:00:59.0	yes

16 Total Orbits Used

## ABSTRACT

Binaries are common among massive stars, and close pairs interact over their lifetime to transform the binary systems by exchanging mass and angular momentum. The mass transfer scenario results in a gainer star spun up to near-critical rotational velocity and a donor star stripped of its outer envelope to reveal a hot and faint helium star. FUV spectroscopy remains the only feasible approach to detect directly these helium star companions. The orbital and physical properties of the helium companions are essential to trace the evolutionary state of post-mass transfer binaries. Massive helium stars are the probable progenitors of double neutron stars and black holes in X-ray binaries. Here, we will obtain FUV spectroscopic

observations for five Be+He binary systems recently angularly resolved through near-IR long baseline interferometry with the CHARA Array and VLTI. The visual orbits combined with distances yield the total system masses, but obtaining individual masses requires spectroscopic orbits from radial velocities. Our goals are to confirm the detection of the stripped helium stars in these Be binaries, determine their orbital elements through measurements of the Doppler shifts, find the individual masses, and refine the physical properties of both components from the reconstruction of individual component spectra using Doppler tomography. We aim to compare the fundamental physical parameters of these systems with evolutionary models to estimate their ages and to trace their formation processes through mass transfer.

## **OBSERVING DESCRIPTION**

Here we propose to obtain HST/STIS MAMA, high dispersion UV spectroscopy of a sample of five Be stars that have hot, evolved companions detected through long baseline interferometry. The hot sdO companions have spectra that contribute more to the total flux in the FUV and have a rich line spectrum. The sdO component is detected by calculating the cross-correlation function (CCF) of the observed and model spectra. In most of the systems detected thus far, the lines of the Be star are very broad (due to their rapid rotation) while those of the sdO star's spectrum are narrow, so the components are easily recognized in the CCFs.

The faint companions in the five targets in the program were all detected through interferometry with the CHARA Array and VLTI long baseline interferometers, and visual (astrometric) orbits and periods are known. The first goal here is to identify the sdO components in the FUV and measure their radial velocities. Combining these with Be star velocities from ground-based spectra and with the interferometric orbits yields the component masses. The second goal is to use a Doppler tomography algorithm to extract the sdO spectral component to determine its physical properties.

The subdwarf components in all the targets contribute at least 2% of the total far-UV flux, so our goal is to obtain a noise level of 1% in the final spectra ( $S/N = 100$ ) at a resolving power of  $R=10000$  (comparable to that of IUE) in order to measure deep absorption features in the subdwarf spectra (with  $S/N > 3$  per resolution element in the subdwarf spectrum alone). These goals can be accomplished through observations with HST/STIS using the E140M grating and MAMA detector which covers the far-UV region of interest (1150 - 1700 Angstroms) with a resolving power of  $R=45800$ . This grating produces spectra with sufficient resolution to measure the radial velocity variations of both stars and to record in detail the narrow lines of the subdwarf. We plan to visit each target three times (four times for HD35165) and rebin the spectral dispersion down by a factor of four (for a final  $R=11450$ ). Thus, we need to obtain a signal-to-noise ratio in each spectroscopic observation of  $S/N = 29$ . All the targets are bright in the UV, so we can readily achieve this  $S/N$  ratio in a single orbit per visit.

Two of the targets (HD43544 and HD191610) were previously observed in program HST-GO-15659, but we need additional observations to cover

## Proposal 18031 (STScI Edit Number: 0, Created: Tuesday, August 5, 2025, 2:00:59PM Eastern Standard Time) - Overview

large sections of their orbits that were missed. The observational parameters proposed for these two targets are the same as in the previous successful HST/STIS observations. The other three stars have not been observed by HST before, and their FUV fluxes and exposure times were determined as follows. For HD35165, we used FUV flux measurements from the OAO-2 satellite (Meade 1999, AJ, 118, 1073) to normalize a model flux spectrum based upon Kurucz atmospheres models for a B3 IV classification with negligible reddening. For HD88661 and HD158427, we used IUE flux calibrated spectra that were rebinned to lower spectral resolving power. In each case we used these FUV flux distributions with the STIS spectroscopic ETC to determine the best neutral density filter aperture for safe limits with the MAMA detector and to find the best ACCUM exposure time to complete the science observations in a single orbit. The ACQ and ACQ-PEAK exposure parameters were determined with the STIS target acquisition ETC assuming a flux model for the classification and the Johnson V-magnitude.

We need to make three visits to each target in order to verify the orbital Doppler shifts associated with the subdwarf spectra that should span a range of approximately  $\pm 100$  km/s. We used the known orbital periods to define orbital phase windows for each of the visits. Because these windows generally span a large fraction of the orbit, the APT Visit Planner indicates that all the visits are feasible during Cycle 33. Our total request is for three visits of one orbit each for four targets plus four visits for HD35165 (first ever FUV spectral observations), yielding a total request of 16 orbits.

Proposal 18031 - HD35165-v1 (01) - Be+sdO binaries with visual orbits

Tue Aug 05 19:00:59 GMT 2025

<b>Visit</b>	<b>Proposal 18031, HD35165-v1 (01)</b>				
	<b>Diagnostic Status: No Diagnostics</b>				
	Scientific Instruments: STIS/CCD, STIS/FUV-MAMA				
	Special Requirements: Period 86.6 D AND ZERO-PHASE HJD2461041.50				

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD-35165	RA: 05 21 16.8603 (80.3202512d)	Proper Motion RA: -0.103 mas/yr	V=6.09	Reference Frame: ICRS
	Alt Name1: AN-COL	Dec: -34 20 42.17 (-34.34505d)	Proper Motion Dec: 7.591000000000001 mas/yr	F_\lambda(1430A)=2.33e-10 erg/s/cm^2/A	
	Alt Name2: HR-1772	Equinox: J2000	Parallax: 0.002660499999999997"		
			Epoch of Position: 2000		

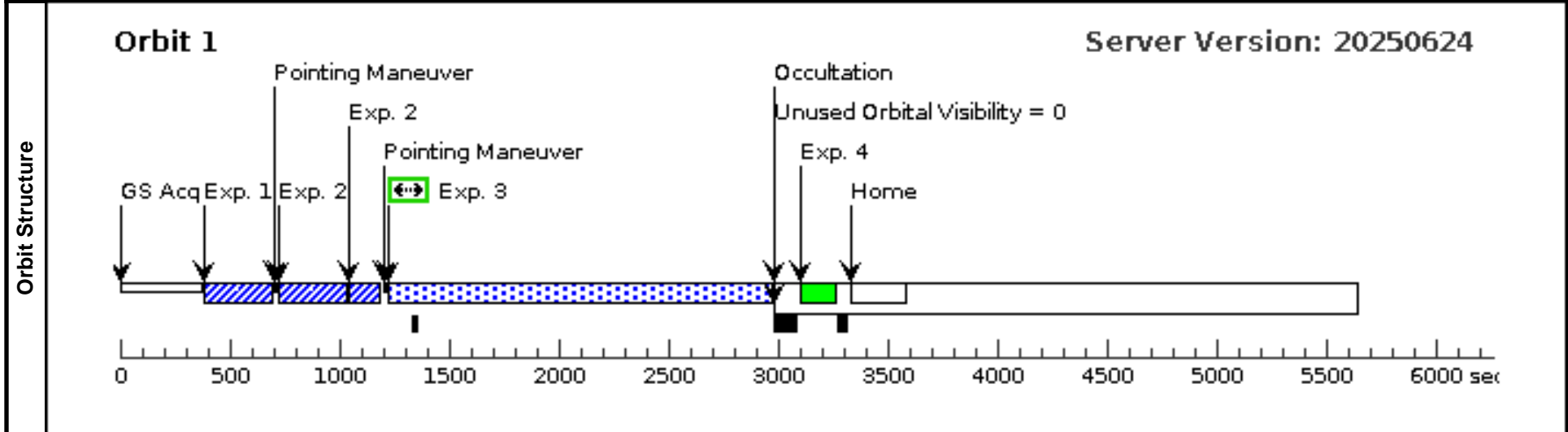
*Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.*

*SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.*

*This star was incorrectly identified as HD36165 in the Phase I proposal.*  
 Category=STAR  
 Description=[B3-B5 V-IV, BE]  
 Extended=NO

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ (STIS.ta.202 3322)	(1) HD-35165	STIS/CCD, ACQ, F25ND5	MIRROR	ACQTYPE=POINT	PHASE 0.00 TO 0.2		6.8 Secs (6.8 Secs) [==>]	[1]
2	ACQ/PEAK (STIS.ta.202 3326)	(1) HD-35165	STIS/CCD, ACQ/PEAK, 0.3X0.05ND	MIRROR				0.5 Secs (0.5 Secs) [==>]	[1]
3	ACCUM (STIS.sp.20 23343)	(1) HD-35165	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A	WAVECAL=NO			1651 Secs (1651 Secs) [==>]	[1]
4	WAVECAL WAVE		STIS/FUV-MAMA, ACCUM, 0.1X0.03	E140M 1425 A				[==>]	[1]

*Comments: In Earth shadow.*



Proposal 18031 - HD35165-v2 (02) - Be+sdO binaries with visual orbits

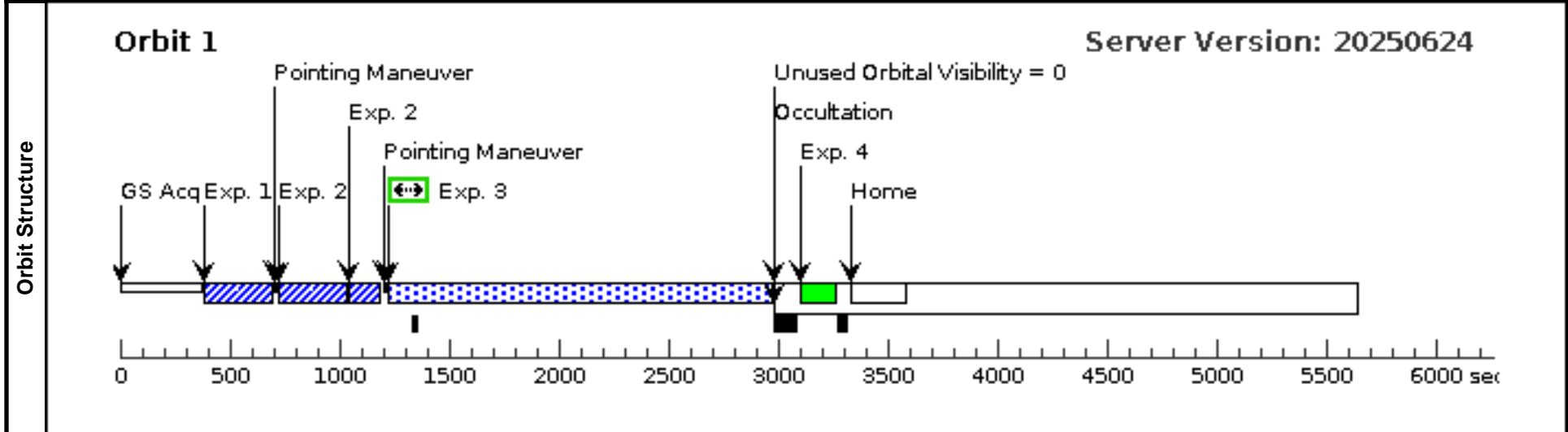
Tue Aug 05 19:00:59 GMT 2025

<b>Visit</b>	<b>Proposal 18031, HD35165-v2 (02)</b>				
	<b>Diagnostic Status: No Diagnostics</b>				
	Scientific Instruments: STIS/CCD, STIS/FUV-MAMA				
	Special Requirements: Period 86.6 D AND ZERO-PHASE HJD2461041.50				

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	HD-35165	RA: 05 21 16.8603 (80.3202512d) Dec: -34 20 42.17 (-34.34505d) Equinox: J2000	Proper Motion RA: -0.103 mas/yr Proper Motion Dec: 7.591000000000001 mas/yr Parallax: 0.002660499999999997" Epoch of Position: 2000	V=6.09 F_\lambda(1430A)=2.33e-10 erg/s/cm^2/A	Reference Frame: ICRS
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>					
<i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i>					
<i>This star was incorrectly identified as HD36165 in the Phase I proposal.</i>					
Category=STAR					
Description=[B3-B5 V-IV, BE]					
Extended=NO					

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ (STIS.ta.202 3322)	(1) HD-35165	STIS/CCD, ACQ, F25ND5	MIRROR	ACQTYPE=POINT	PHASE 0.25 TO 0.4 9		6.8 Secs (6.8 Secs) [==>]	[1]
2	ACQ/PEAK (STIS.ta.202 3326)	(1) HD-35165	STIS/CCD, ACQ/PEAK, 0.3X0.05ND	MIRROR				0.5 Secs (0.5 Secs) [==>]	[1]
3	ACCUM (STIS.sp.20 23343)	(1) HD-35165	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A	WAVECAL=NO			1651 Secs (1651 Secs) [==>]	[1]
4	WAVECAL WAVE		STIS/FUV-MAMA, ACCUM, 0.1X0.03	E140M 1425 A				[==>]	[1]

*Comments: In Earth shadow.*



Proposal 18031 - HD35165-v3 (03) - Be+sdO binaries with visual orbits

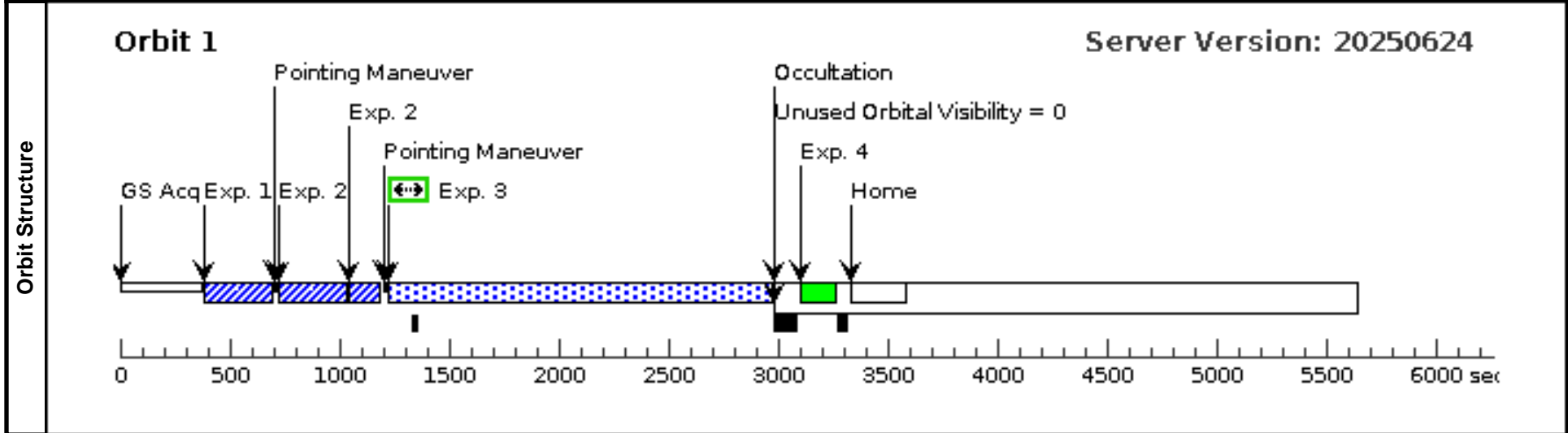
Tue Aug 05 19:00:59 GMT 2025

<b>Visit</b>	<b>Proposal 18031, HD35165-v3 (03)</b>				
	<b>Diagnostic Status: No Diagnostics</b>				
	Scientific Instruments: STIS/CCD, STIS/FUV-MAMA				
	Special Requirements: Period 86.6 D AND ZERO-PHASE HJD2461041.50				

<b>Fixed Targets</b>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	HD-35165	RA: 05 21 16.8603 (80.3202512d)	Proper Motion RA: -0.103 mas/yr	V=6.09	Reference Frame: ICRS
		Alt Name1: AN-COL	Dec: -34 20 42.17 (-34.34505d)	Proper Motion Dec: 7.591000000000001 mas/yr	F_\lambda(1430A)=2.33e-10 erg/s/cm^2/A	
		Alt Name2: HR-1772	Equinox: J2000	Parallax: 0.002660499999999997"		
				Epoch of Position: 2000		
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>						
<i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i>						
<i>This star was incorrectly identified as HD36165 in the Phase I proposal.</i>						
Category=STAR						
Description=[B3-B5 V-IV, BE]						
Extended=NO						

<b>Exposures</b>	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	ACQ (STIS.ta.202 3322)	(1) HD-35165	STIS/CCD, ACQ, F25ND5	MIRROR	ACQTYPE=POINT	PHASE 0.50 TO 0.74		6.8 Secs (6.8 Secs)	
									[==>]	[1]
	2	ACQ/PEAK (STIS.ta.202 3326)	(1) HD-35165	STIS/CCD, ACQ/PEAK, 0.3X0.05ND	MIRROR				0.5 Secs (0.5 Secs)	
									[==>]	[1]
	3	ACCUM (STIS.sp.20 23343)	(1) HD-35165	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A	WAVECAL=NO			1651 Secs (1651 Secs)	
									[==>]	[1]
	4	WAVECAL WAVE		STIS/FUV-MAMA, ACCUM, 0.1X0.03	E140M 1425 A				[==>]	[1]

*Comments: In Earth shadow.*



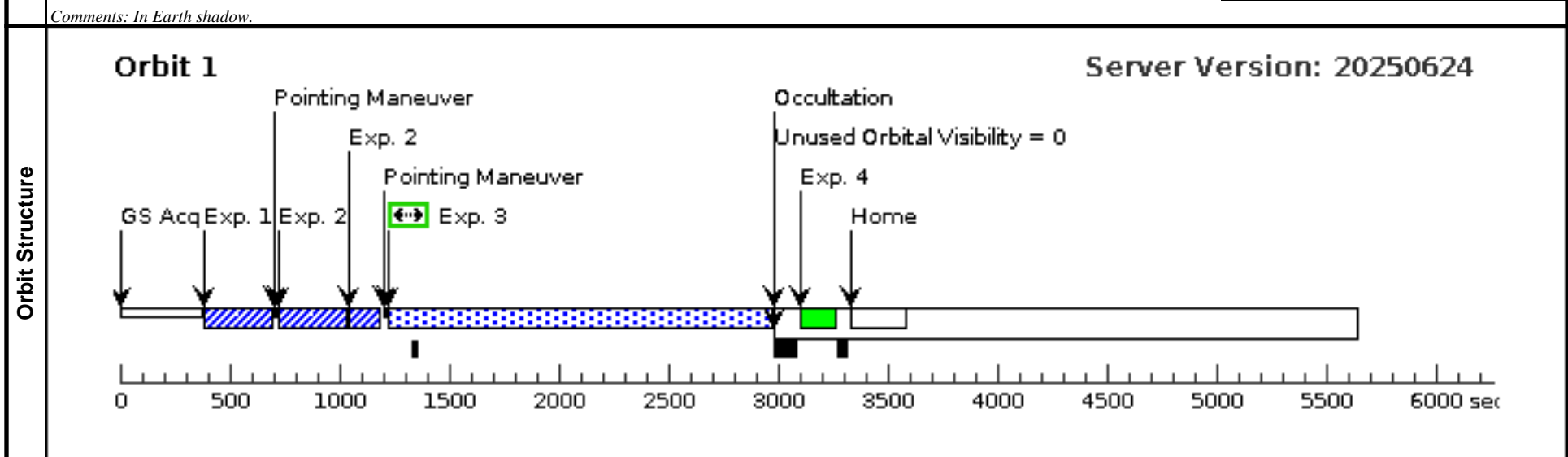
Proposal 18031 - HD35165-v4 (04) - Be+sdO binaries with visual orbits

Tue Aug 05 19:00:59 GMT 2025

<b>Visit</b>	<b>Proposal 18031, HD35165-v4 (04)</b>				
	<b>Diagnostic Status: No Diagnostics</b>				
	Scientific Instruments: STIS/CCD, STIS/FUV-MAMA				
	Special Requirements: Period 86.6 D AND ZERO-PHASE HJD2461041.50				

<b>Fixed Targets</b>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	HD-35165	RA: 05 21 16.8603 (80.3202512d)	Proper Motion RA: -0.103 mas/yr	V=6.09	Reference Frame: ICRS
		Alt Name1: AN-COL	Dec: -34 20 42.17 (-34.34505d)	Proper Motion Dec: 7.591000000000001 mas/yr	F_\lambda(1430A)=2.33e-10 erg/s/cm^2/A	
		Alt Name2: HR-1772	Equinox: J2000	Parallax: 0.002660499999999997"		
				Epoch of Position: 2000		
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>					
	<i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i>					
	<i>This star was incorrectly identified as HD36165 in the Phase I proposal.</i>					
	Category=STAR					
	Description=[B3-B5 V-IV, BE]					
	Extended=NO					

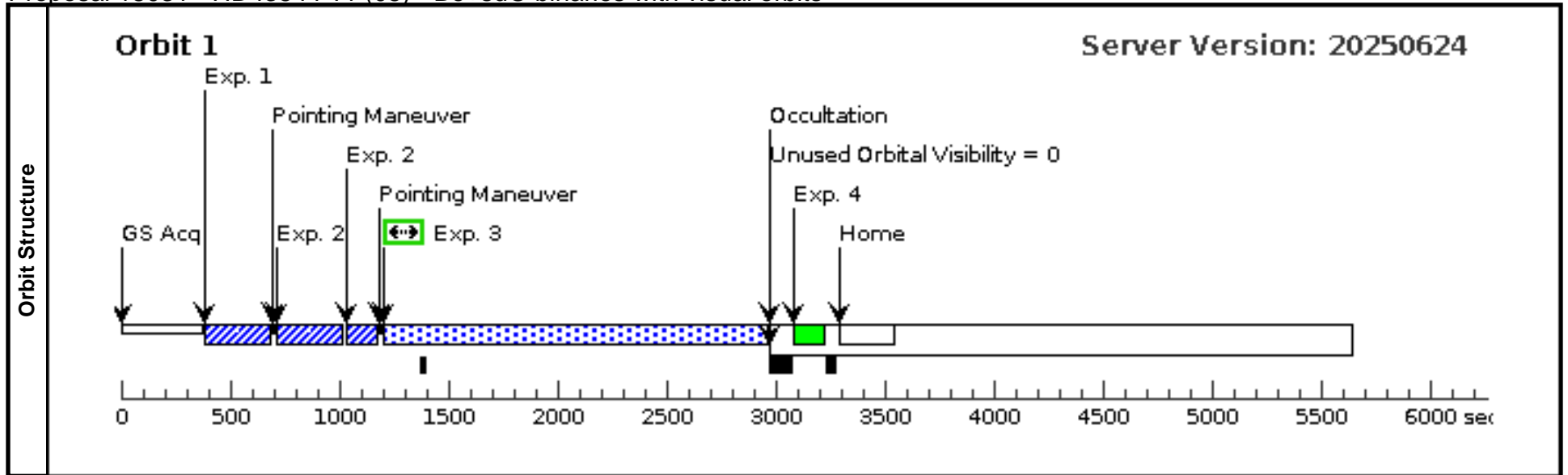
<b>Exposures</b>	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	ACQ (STIS.ta.202 3322)	(1) HD-35165	STIS/CCD, ACQ, F25ND5	MIRROR	ACQTYPE=POINT	PHASE 0.75 TO 0.9 9		6.8 Secs (6.8 Secs) [==>]	[1]
	2	ACQ/PEAK (STIS.ta.202 3326)	(1) HD-35165	STIS/CCD, ACQ/PEAK, 0.3X0.05ND	MIRROR				0.5 Secs (0.5 Secs) [==>]	[1]
	3	ACCUM (STIS.sp.20 23343)	(1) HD-35165	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A	WAVECAL=NO			1651 Secs (1651 Secs) [==>]	[1]
	4	WAVECAL WAVE		STIS/FUV-MAMA, ACCUM, 0.1X0.03	E140M 1425 A				[==>]	[1]
	<i>Comments: In Earth shadow.</i>									



Proposal 18031 - HD43544-v1 (05) - Be+sdO binaries with visual orbits

Tue Aug 05 19:00:59 GMT 2025

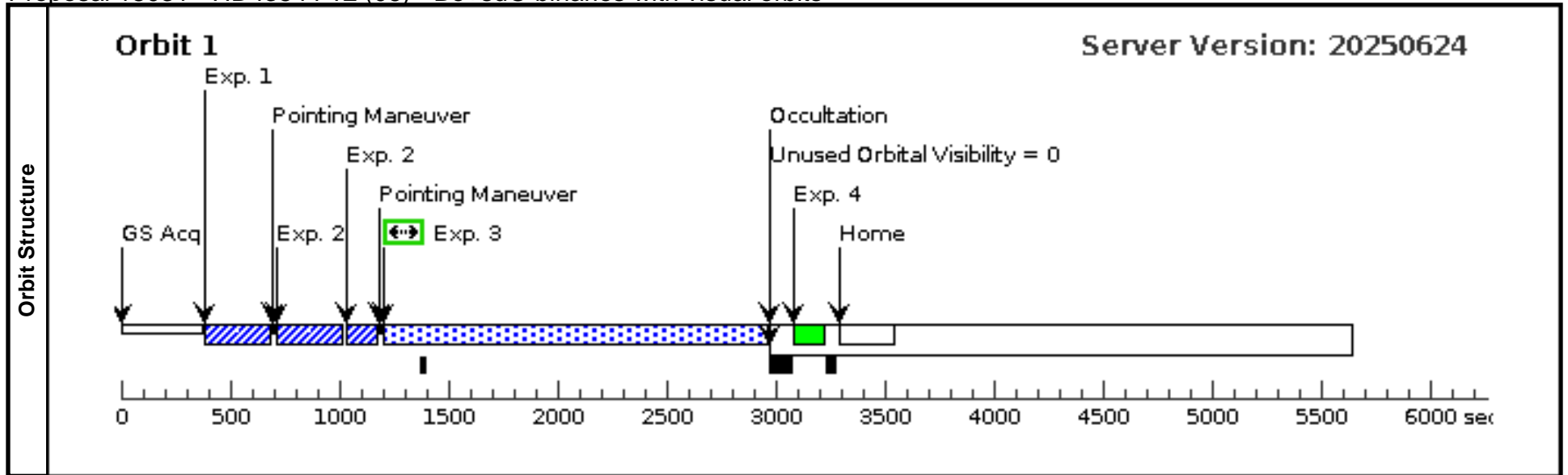
<b>Visit</b>	<b>Proposal 18031, HD43544-v1 (05)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: Period 119.22 D AND ZERO-PHASE HJD2458263.02 <i>Comments: Also observed in program HST-GO-15659. Additional phase coverage required.</i>																																																											
	<b>Fixed Targets</b>	<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>(2)</td> <td>HD-43544</td> <td>RA: 06 16 7.6914 (94.0320475d) Dec: -16 37 4.82 (-16.61801d) Equinox: J2000</td> <td>Proper Motion RA: -8.343 mas/yr Proper Motion Dec: 0.832 mas/yr Parallax: 0.0032307" Epoch of Position: 2000</td> <td>V=5.91</td> <td>Reference Frame: ICRS</td> </tr> </tbody> </table>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(2)	HD-43544	RA: 06 16 7.6914 (94.0320475d) Dec: -16 37 4.82 (-16.61801d) Equinox: J2000	Proper Motion RA: -8.343 mas/yr Proper Motion Dec: 0.832 mas/yr Parallax: 0.0032307" Epoch of Position: 2000	V=5.91	Reference Frame: ICRS	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>  SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.  This star was previously observed in these HST/STIS sequences: odxs05010 odxs54010 odxs56010 Category=STAR Description=[B3-B5 V-IV, BE] Extended=NO																																													
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	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit																																																		
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4	WAVECAL WAVE		STIS/FUV-MAMA, ACCUM, 0.1X0.03	E140M 1425 A				[==>]	[1]																																																			



Proposal 18031 - HD43544-v2 (06) - Be+sdO binaries with visual orbits

Tue Aug 05 19:00:59 GMT 2025

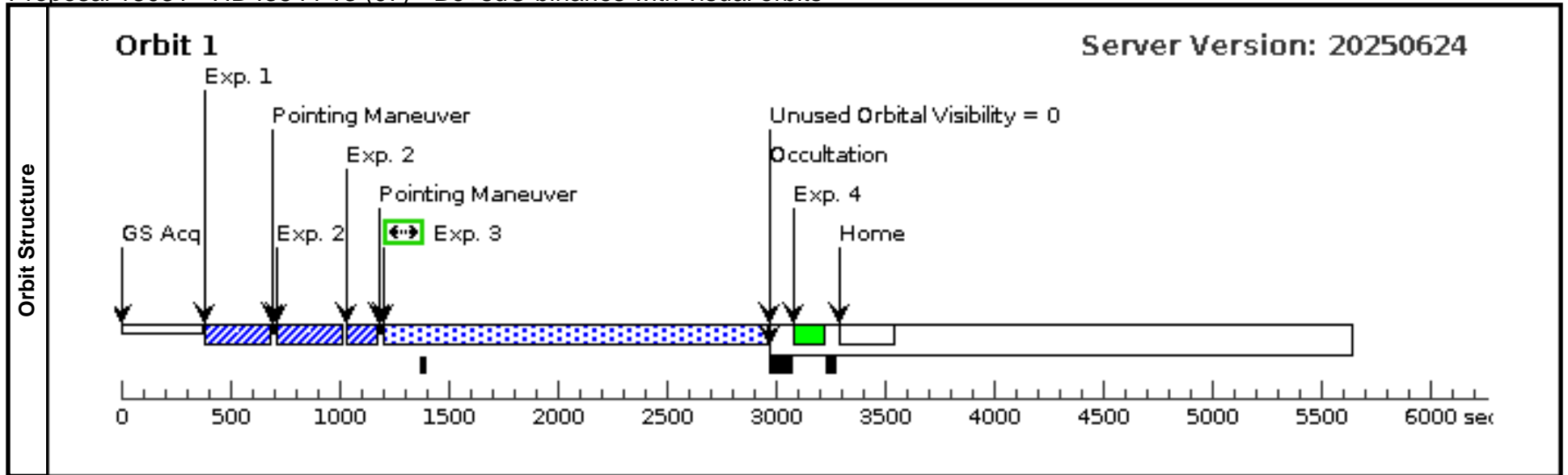
Visit	<b>Proposal 18031, HD43544-v2 (06)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: Period 119.22 D AND ZERO-PHASE HJD2458263.02 <i>Comments: Also observed in program HST-GO-15659. Additional phase coverage required.</i>																					
	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>(2)</td> <td>HD-43544</td> <td>RA: 06 16 7.6914 (94.0320475d) Dec: -16 37 4.82 (-16.61801d) Equinox: J2000</td> <td>Proper Motion RA: -8.343 mas/yr Proper Motion Dec: 0.832 mas/yr Parallax: 0.0032307" Epoch of Position: 2000</td> <td>V=5.91</td> <td>Reference Frame: ICRS</td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i></p> <p><i>This star was previously observed in these HST/STIS sequences:</i>                      odxs05010                      odxs54010                      odxs56010                      Category=STAR                      Description=[B3-B5 V-IV, BE]                      Extended=NO</p>										#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous	(2)	HD-43544	RA: 06 16 7.6914 (94.0320475d) Dec: -16 37 4.82 (-16.61801d) Equinox: J2000	Proper Motion RA: -8.343 mas/yr Proper Motion Dec: 0.832 mas/yr Parallax: 0.0032307" Epoch of Position: 2000	V=5.91
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Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit												
	1	ACQ (STIS.ta.130 1349)	(2) HD-43544	STIS/CCD, ACQ, F25ND5	MIRROR	ACQTYPE=POINT	PHASE 0.40 TO 0.6 0		4.3 Secs (4.3 Secs) [==>]	[1]												
	2	ACQ/PEAK (STIS.ta.130 1352)	(2) HD-43544	STIS/CCD, ACQ/PEAK, 0.3X0.05ND	MIRROR				0.2 Secs (0.2 Secs) [==>]	[1]												
	3	ACCUM (STIS.sp.13 01360)	(2) HD-43544	STIS/FUV-MAMA, ACCUM, 31X0.05NDC	E140M 1425 A	WAVECAL=NO			1596 Secs (1596 Secs) [==>]	[1]												
	4	WAVECAL WAVE		STIS/FUV-MAMA, ACCUM, 0.1X0.03	E140M 1425 A				[==>]	[1]												
<i>Comments: In Earth shadow.</i>																						



Proposal 18031 - HD43544-v3 (07) - Be+sdO binaries with visual orbits

Tue Aug 05 19:00:59 GMT 2025

Visit	<b>Proposal 18031, HD43544-v3 (07)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: Period 119.22 D AND ZERO-PHASE HJD2458263.02 <i>Comments: Also observed in program HST-GO-15659. Additional phase coverage required.</i>																																																											
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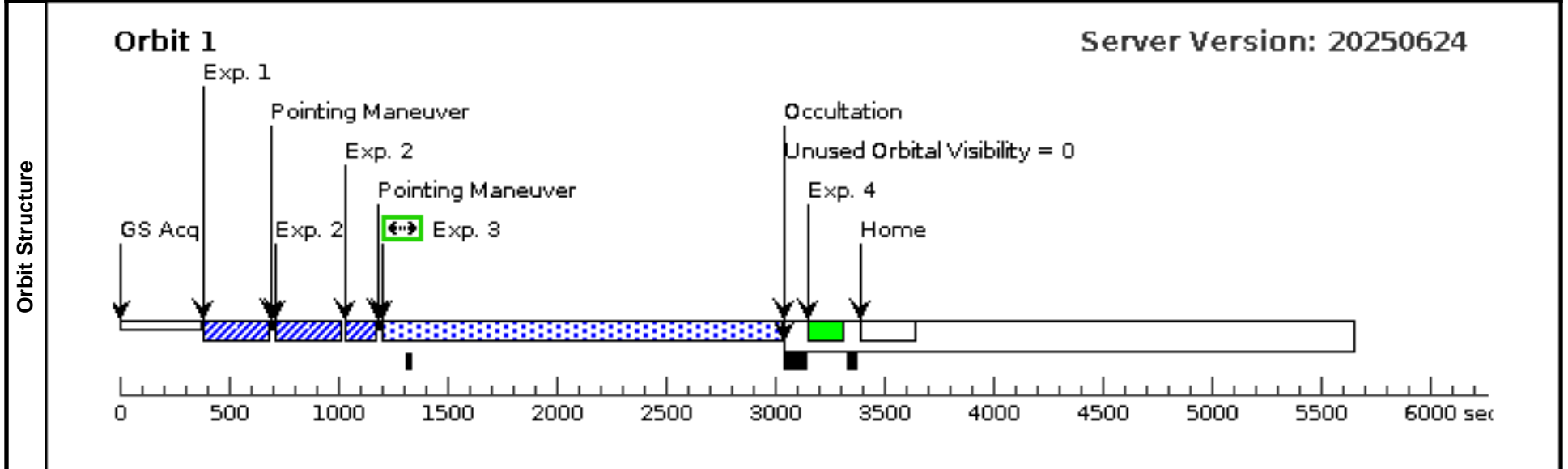


<b>Visit</b>	<b>Proposal 18031, HD88661-v1 (08)</b>				
	<b>Diagnostic Status: No Diagnostics</b>				
	Scientific Instruments: STIS/CCD, STIS/FUV-MAMA				
	Special Requirements: Period 177.9 D AND ZERO-PHASE HJD2461041.50				

<b>Fixed Targets</b>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(3)	HD-88661	RA: 10 11 46.4596 (152.9435817d) Dec: -58 03 37.96 (-58.06054d) Equinox: J2000	Proper Motion RA: -11.218 mas/yr Proper Motion Dec: 6.59 mas/yr Parallax: 0.001816000000000001" Epoch of Position: 2000	V=5.75	Reference Frame: ICRS
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>					
	<i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i> Category=STAR Description=[B0-B2 V-IV, BE] Extended=NO					

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ (STIS.ta.202 3366)	(3) HD-88661	STIS/CCD, ACQ, F25ND5	MIRROR	ACQTYPE=POINT	PHASE 0.00 TO 0.3 2		3.9 Secs (3.9 Secs) [==>]	[1]
2	ACQ/PEAK (STIS.ta.202 3370)	(3) HD-88661	STIS/CCD, ACQ/PEAK, 0.3X0.05ND	MIRROR				0.20 Secs (0.2 Secs) [==>]	[1]
3	ACCUM (STIS.sp.20 23356)	(3) HD-88661	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A	WAVECAL=NO			1728 Secs (1728 Secs) [==>]	[1]
4	WAVECAL WAVE		STIS/FUV-MAMA, ACCUM, 0.1X0.03	E140M 1425 A				[==>]	[1]

*Comments: In Earth shadow.*



Proposal 18031 - HD88661-v2 (09) - Be+sdO binaries with visual orbits

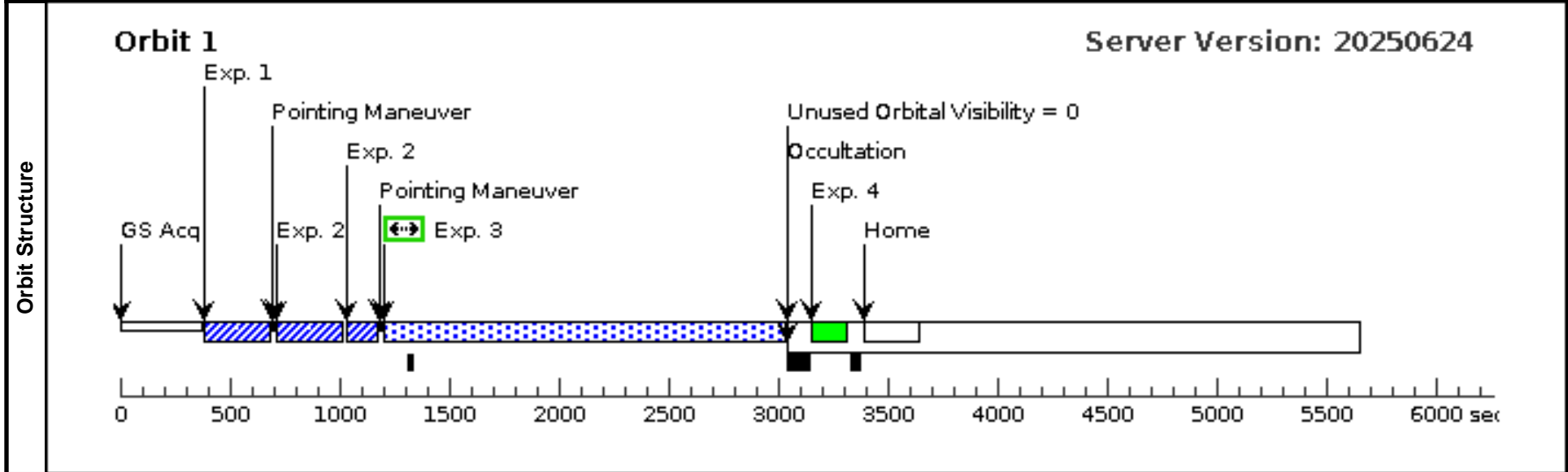
Tue Aug 05 19:00:59 GMT 2025

<b>Visit</b>	<b>Proposal 18031, HD88661-v2 (09)</b>				
	<b>Diagnostic Status: No Diagnostics</b>				
	Scientific Instruments: STIS/CCD, STIS/FUV-MAMA				
	Special Requirements: Period 177.9 D AND ZERO-PHASE HJD2461041.50				

<b>Fixed Targets</b>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(3)	HD-88661	RA: 10 11 46.4596 (152.9435817d) Dec: -58 03 37.96 (-58.06054d) Equinox: J2000	Proper Motion RA: -11.218 mas/yr Proper Motion Dec: 6.59 mas/yr Parallax: 0.001816000000000001" Epoch of Position: 2000	V=5.75	Reference Frame: ICRS
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>					
	<i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i> Category=STAR Description=[B0-B2 V-IV, BE] Extended=NO					

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ (STIS.ta.202 3366)	(3) HD-88661	STIS/CCD, ACQ, F25ND5	MIRROR	ACQTYPE=POINT	PHASE 0.33 TO 0.6 5		3.9 Secs (3.9 Secs) [==>]	[1]
2	ACQ/PEAK (STIS.ta.202 3370)	(3) HD-88661	STIS/CCD, ACQ/PEAK, 0.3X0.05ND	MIRROR				0.2 Secs (0.2 Secs) [==>]	[1]
3	ACCUM (STIS.sp.20 23356)	(3) HD-88661	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A	WAVECAL=NO			1728 Secs (1728 Secs) [==>]	[1]
4	WAVECAL WAVE		STIS/FUV-MAMA, ACCUM, 0.1X0.03	E140M 1425 A				[==>]	[1]

*Comments: In Earth shadow.*

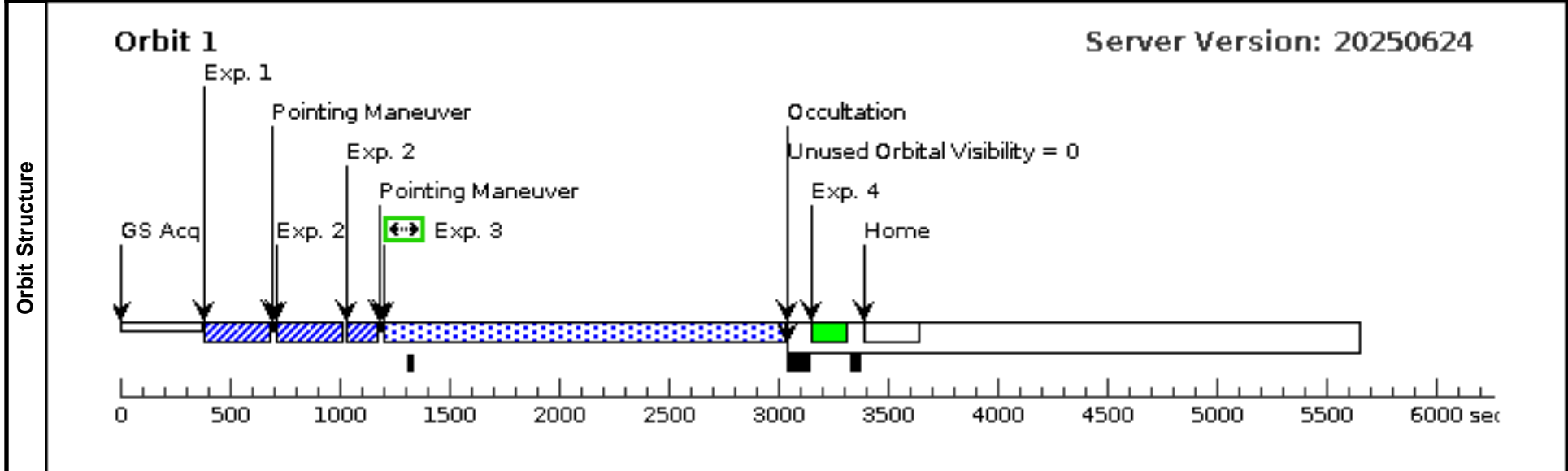


<b>Visit</b>	<b>Proposal 18031, HD88661-v3 (10)</b>				
	<b>Diagnostic Status: No Diagnostics</b>				
	Scientific Instruments: STIS/CCD, STIS/FUV-MAMA				
	Special Requirements: Period 177.9 D AND ZERO-PHASE HJD2461041.50				

<b>Fixed Targets</b>	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(3)	HD-88661	RA: 10 11 46.4596 (152.9435817d) Dec: -58 03 37.96 (-58.06054d) Equinox: J2000	Proper Motion RA: -11.218 mas/yr Proper Motion Dec: 6.59 mas/yr Parallax: 0.001816000000000001" Epoch of Position: 2000	V=5.75	Reference Frame: ICRS
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>					
	<i>SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.</i> Category=STAR Description=[B0-B2 V-IV, BE] Extended=NO					

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ (STIS.ta.202 3366)	(3) HD-88661	STIS/CCD, ACQ, F25ND5	MIRROR	ACQTYPE=POINT	PHASE 0.66 TO 0.9 9		3.9 Secs (3.9 Secs) [==>]	[1]
2	ACQ/PEAK (STIS.ta.202 3370)	(3) HD-88661	STIS/CCD, ACQ/PEAK, 0.3X0.05ND	MIRROR				0.20 Secs (0.2 Secs) [==>]	[1]
3	ACCUM (STIS.sp.20 23356)	(3) HD-88661	STIS/FUV-MAMA, ACCUM, 0.2X0.05ND	E140M 1425 A	WAVECAL=NO			1728 Secs (1728 Secs) [==>]	[1]
4	WAVECAL WAVE		STIS/FUV-MAMA, ACCUM, 0.1X0.03	E140M 1425 A				[==>]	[1]

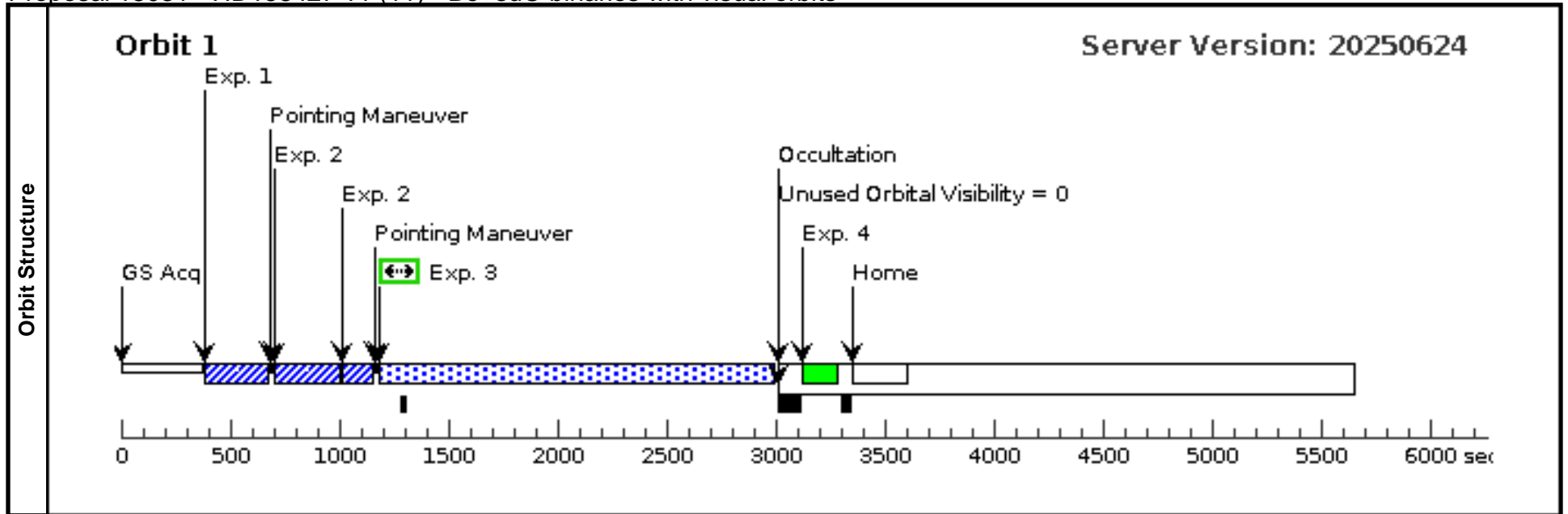
*Comments: In Earth shadow.*



Proposal 18031 - HD158427-v1 (11) - Be+sdO binaries with visual orbits

Tue Aug 05 19:01:00 GMT 2025

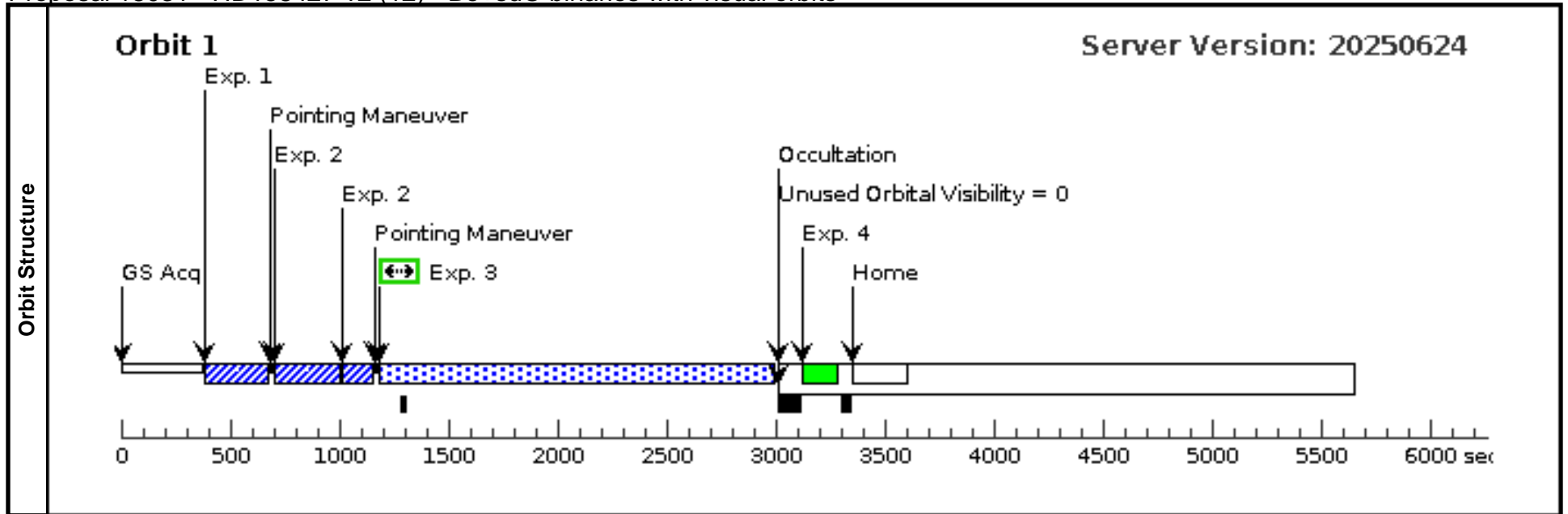
Visit	<b>Proposal 18031, HD158427-v1 (11)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: Period 83.466 D AND ZERO-PHASE HJD2461041.50									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
		(4)	-ALF-ARA Alt Name1: HD-158427	RA: 17 31 50.4915 (262.9603812d) Dec: -49 52 34.12 (-49.87614d) Equinox: J2000	Proper Motion RA: -33.27 mas/yr Proper Motion Dec: -67.21999995988881 mas/yr Parallax: 0.01219999999999999" Epoch of Position: 2000	V=2.95	Reference Frame: ICRS			
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM. Category=STAR Description=[B0-B2 V-IV, BE] Extended=NO									
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	ACQ (STIS.ta.202 3419)	(4) -ALF-ARA	STIS/CCD, ACQ, F25ND5	MIRROR	ACQTYPE=POINT	PHASE 0.00 TO 0.3 2		0.3 Secs (0.3 Secs) [==>]	[1]
	2	ACQ/PEAK (STIS.ta.202 3437)	(4) -ALF-ARA	STIS/CCD, ACQ/PEAK, 0.3X0.05ND	MIRROR				0.10 Secs (0.1 Secs) [==>]	[1]
	3	ACCUM (STIS.sp.20 23442)	(4) -ALF-ARA	STIS/FUV-MAMA, ACCUM, 0.3X0.05ND	E140M 1425 A	WAVECAL=NO			1723 Secs (1723 Secs) [==>]	[1]
	4	WAVECAL WAVE		STIS/FUV-MAMA, ACCUM, 0.1X0.03	E140M 1425 A				[==>]	[1]
	<i>Comments: In Earth shadow.</i>									



Proposal 18031 - HD158427-v2 (12) - Be+sdO binaries with visual orbits

Tue Aug 05 19:01:00 GMT 2025

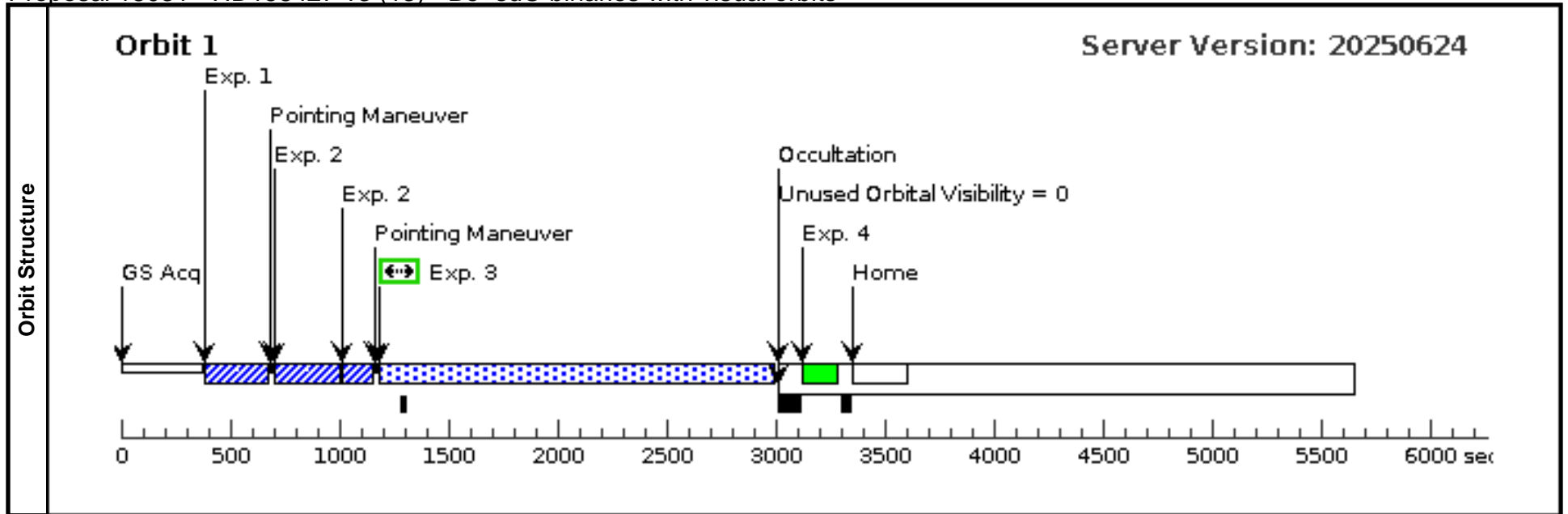
Visit	<b>Proposal 18031, HD158427-v2 (12)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: Period 83.466 D AND ZERO-PHASE HJD2461041.50									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
		(4)	-ALF-ARA Alt Name1: HD-158427	RA: 17 31 50.4915 (262.9603812d) Dec: -49 52 34.12 (-49.87614d) Equinox: J2000	Proper Motion RA: -33.27 mas/yr Proper Motion Dec: -67.21999995988881 mas/yr Parallax: 0.01219999999999999" Epoch of Position: 2000	V=2.95	Reference Frame: ICRS			
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>  SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM. Category=STAR Description=[B0-B2 V-IV, BE] Extended=NO									
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	ACQ (STIS.ta.202 3419)	(4) -ALF-ARA	STIS/CCD, ACQ, F25ND5	MIRROR	ACQTYPE=POINT	PHASE 0.33 TO 0.6 5		0.3 Secs (0.3 Secs) [==>]	[1]
	2	ACQ/PEAK (STIS.ta.202 3437)	(4) -ALF-ARA	STIS/CCD, ACQ/PEAK, 0.3X0.05ND	MIRROR				0.10 Secs (0.1 Secs) [==>]	[1]
	3	ACCUM (STIS.sp.20 23442)	(4) -ALF-ARA	STIS/FUV-MAMA, ACCUM, 0.3X0.05ND	E140M 1425 A	WAVECAL=NO			1723 Secs (1723 Secs) [==>]	[1]
	4	WAVECAL WAVE		STIS/FUV-MAMA, ACCUM, 0.1X0.03	E140M 1425 A				[==>]	[1]
	<i>Comments: In Earth shadow.</i>									



Proposal 18031 - HD158427-v3 (13) - Be+sdO binaries with visual orbits

Tue Aug 05 19:01:00 GMT 2025

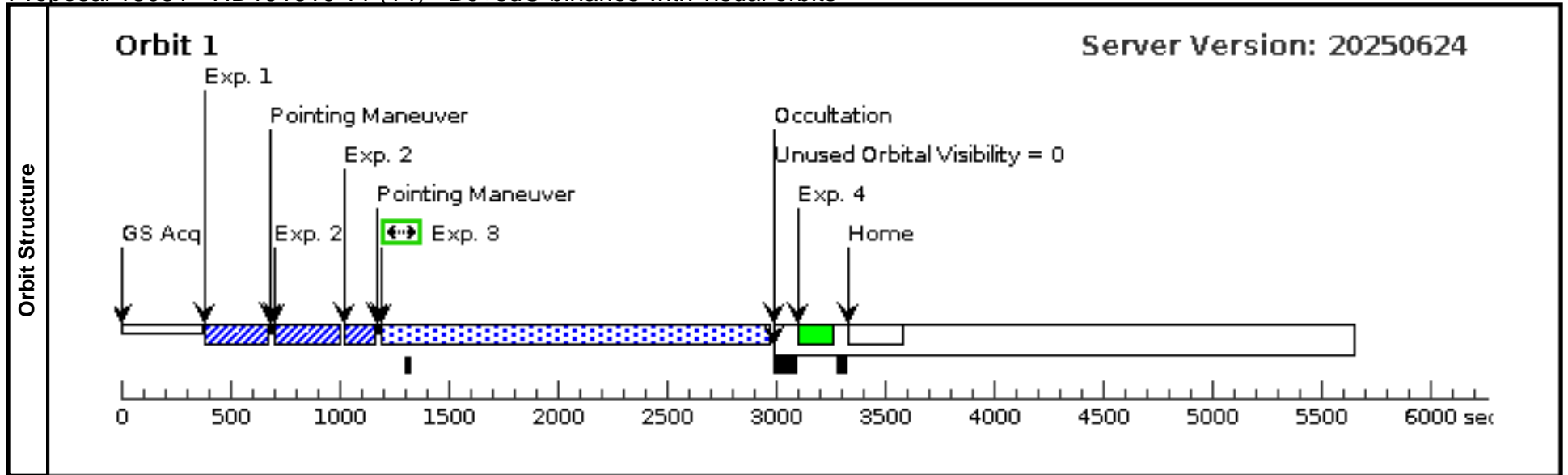
Visit	<b>Proposal 18031, HD158427-v3 (13)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: Period 83.466 D AND ZERO-PHASE HJD2461041.50									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
		(4)	-ALF-ARA Alt Name1: HD-158427	RA: 17 31 50.4915 (262.9603812d) Dec: -49 52 34.12 (-49.87614d) Equinox: J2000	Proper Motion RA: -33.27 mas/yr Proper Motion Dec: -67.21999995988881 mas/yr Parallax: 0.01219999999999999" Epoch of Position: 2000	V=2.95	Reference Frame: ICRS			
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM. Category=STAR Description=[B0-B2 V-IV, BE] Extended=NO									
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	ACQ (STIS.ta.202 3419)	(4) -ALF-ARA	STIS/CCD, ACQ, F25ND5	MIRROR	ACQTYPE=POINT	PHASE 0.66 TO 0.9 9		0.3 Secs (0.3 Secs) [==>]	[1]
	2	ACQ/PEAK (STIS.ta.202 3437)	(4) -ALF-ARA	STIS/CCD, ACQ/PEAK, 0.3X0.05ND	MIRROR				0.10 Secs (0.1 Secs) [==>]	[1]
	3	ACCUM (STIS.sp.20 23442)	(4) -ALF-ARA	STIS/FUV-MAMA, ACCUM, 0.3X0.05ND	E140M 1425 A	WAVECAL=NO			1723 Secs (1723 Secs) [==>]	[1]
	4	WAVECAL WAVE		STIS/FUV-MAMA, ACCUM, 0.1X0.03	E140M 1425 A				[==>]	[1]
	<i>Comments: In Earth shadow.</i>									



Proposal 18031 - HD191610-v1 (14) - Be+sdO binaries with visual orbits

Tue Aug 05 19:01:00 GMT 2025

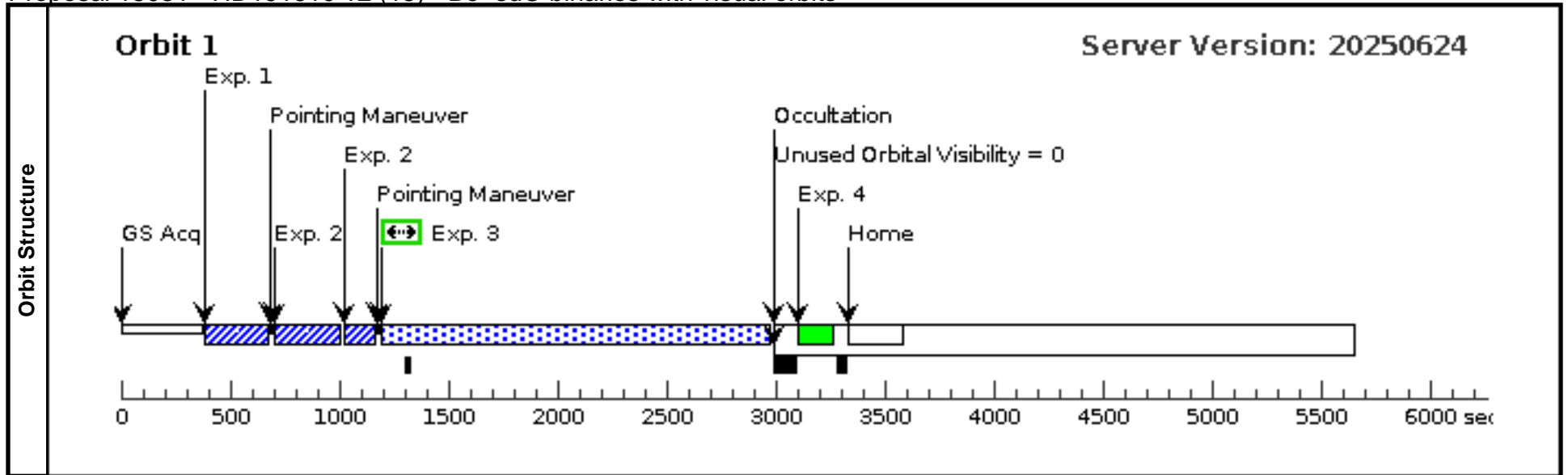
Visit	<b>Proposal 18031, HD191610-v1 (14)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: Period 359.26 D AND ZERO-PHASE HJD2459524.8 <i>Comments: Also observed in program HST-GO-15659. Additional phase coverage required.</i>																																																											
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Proposal 18031 - HD191610-v2 (15) - Be+sdO binaries with visual orbits

Tue Aug 05 19:01:00 GMT 2025

Visit	<b>Proposal 18031, HD191610-v2 (15)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: Period 359.26 D AND ZERO-PHASE HJD2459524.8 <i>Comments: Also observed in program HST-GO-15659. Additional phase coverage required.</i>																																																											
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Proposal 18031 - HD191610-v3 (16) - Be+sdO binaries with visual orbits

Tue Aug 05 19:01:00 GMT 2025

<b>Visit</b>	<b>Proposal 18031, HD191610-v3 (16)</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: Period 359.26 D AND ZERO-PHASE HJD2459524.8 <i>Comments: Also observed in program HST-GO-15659. Additional phase coverage required.</i>																																																											
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