



15988 - Unveiling the Quiescent Accretion State of AGN with Fading Changing-Look Quasars

Cycle: 27, Proposal Category: GO
(Availability Mode: SUPPORTED)

INVESTIGATORS

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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) J0126-0839	WFC3/UVIS	1	19-Dec-2019 12:01:04.0	yes
02	(2) J1011+5442	WFC3/UVIS	1	19-Dec-2019 12:01:05.0	yes
03	(3) J2336+0017	WFC3/UVIS	1	19-Dec-2019 12:01:05.0	yes
04	(4) GSC-02581-02323	WFC3/UVIS	1	19-Dec-2019 12:01:06.0	yes
54	(4) GSC-02581-02323	WFC3/UVIS	1	19-Dec-2019 12:01:07.0	yes

5 Total Orbits Used

ABSTRACT

We propose for joint Chandra X-ray and HST UV imaging of three fading changing-look quasars, which have each faded to Eddington ratios of $\sim 10^{-3.5}$ over the past ~ 10 years. We aim to follow their UV-to-X-ray spectral evolution (through α_{ox}) as they transition into a quiescent accretion state that is expected below Eddington ratios of $< 10^{-4}$. These are the first observations that can directly follow individual AGN to quiescence, and enables a new test of the AGN/X-ray binary analogy.

OBSERVING DESCRIPTION

We will use WFC3 UVIS with the F300X filter to image 4 targets (1 orbit each): 3 changing-look quasars, and 1 PSF star ($V \sim 12$ mag).

The WFC3 total exposure times for our 3 changing-look quasar targets range between 30 to 42 min, which will be broken up into 5 exposures for each target. We can comfortably fit these observations (including all necessary overheads) into 1 HST orbit for each target, since the HST orbital visibility for our targets are in the range of 54 to 58 min. As an example, the orbit for J0126-0839 can be as follows: 6 min for initial target acquisition, 6 min first exposure, 2.6 min for read-out, 0.5 min for dithering, 6 min second exposure, 2.1 min for read-out, 0.5 min for dithering, 6 min third exposure, 2.1 min for read-out, 0.5 min for dithering, 6 min fourth exposure, 2.1 min for read-out, 0.5 min for dithering, 6 min fifth exposure. This totals 46.9 min (30 min total exposure time + 16.9 min total overhead), and the exposures can be prolonged to fill the 54 min visibility of this object in a single orbit. For all of our targets, the individual exposures are sufficiently long that buffer dumps can be performed in parallel.

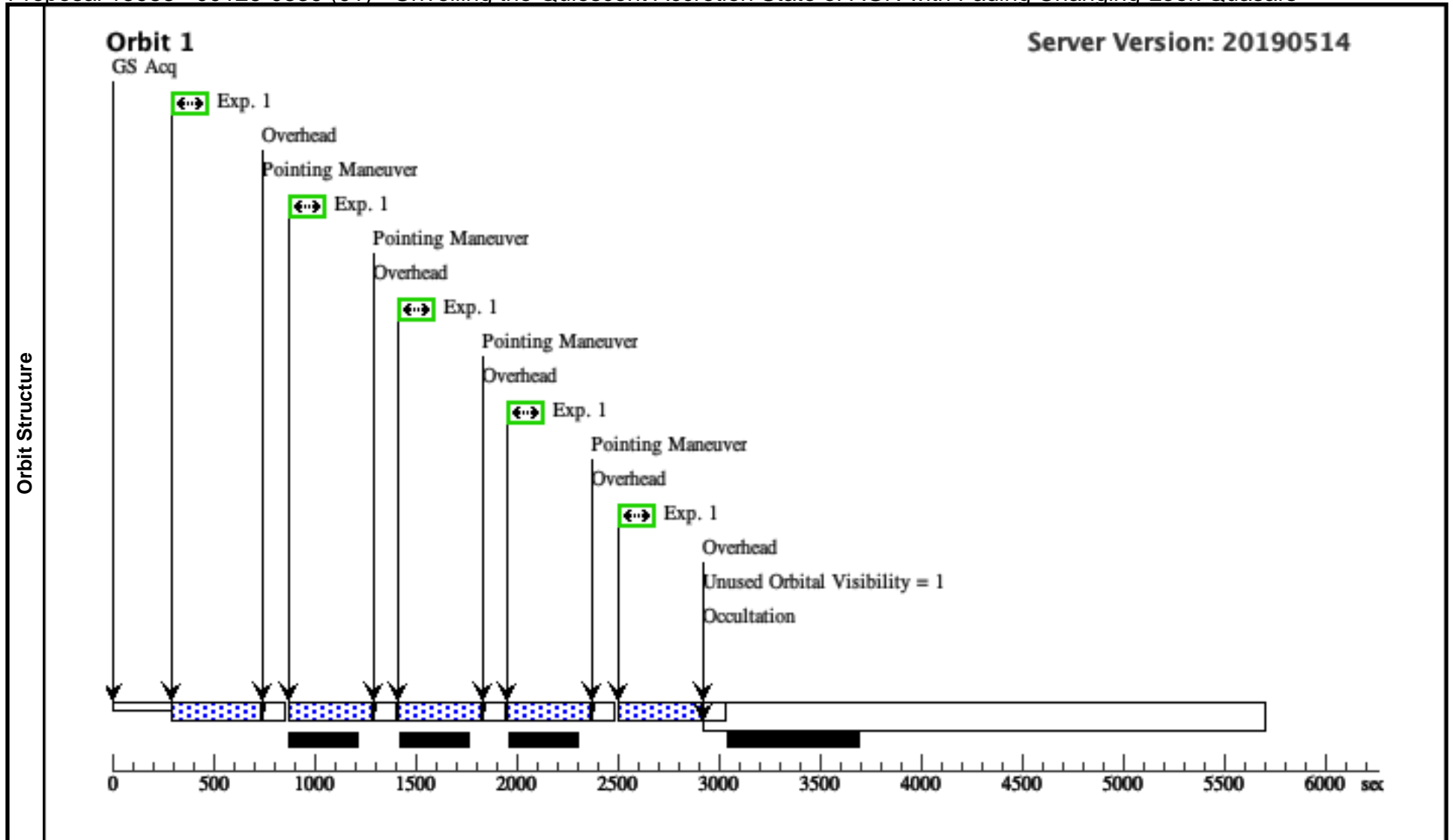
In addition to the 1 HST orbit each for our 3 changing-look quasar targets, we also request a fourth orbit to observe one bright PSF star (P330E/GSC02581-02323) at the same dither positions and through the same filter. These PSF star images are important to aid in spatially decomposing the nuclear AGN point source from the host galaxy.

Please note that the Phase 2 of this program was re-submitted to change the PSFSTAR target to GSC02581-02323, which has previously been observed in the F300X filter and thus our exposure times are safe from saturation.

Proposal 15988 - J0126-0839 (01) - Unveiling the Quiescent Accretion State of AGN with Fading Changing-Look Quasars

Thu Dec 19 17:01:07 GMT 2019

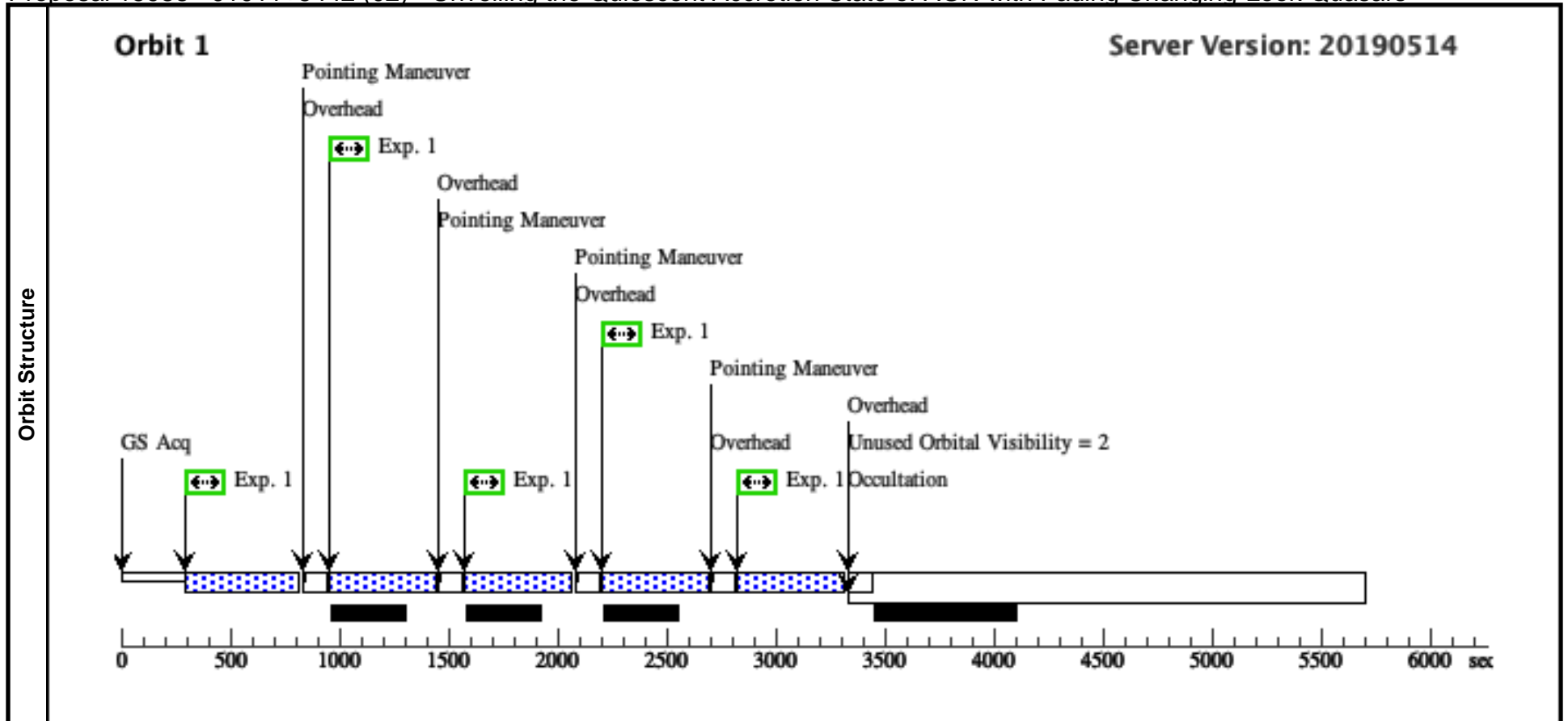
Visit	Proposal 15988, J0126-0839 (01), scheduling Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: PCS MODE FINE; SCHED 100% <i>Comments: 1 orbit for quasar J0126-0939, using Pattern1</i>										
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
(1)		Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=5 Point Spacing=0.145 Line Spacing=		Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false					(1)		
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(1)	J0126-0839	RA: 01 26 48.0890 (21.7003708d) Dec: -08 39 48.06 (-8.66335d) Equinox: J2000		Epoch of Position: 2015.5		V=18.81	Reference Frame: ICRS			
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=GALAXY Description=[OUASAR, SEYFERT]											
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	J01260-0839_exposures (WFC3UVIS.im.1380102)	(1) J0126-0839	WFC3/UVIS, ACCUM, UVIS2-C1K1C-CTE	F300X	FLASH=12		Pattern 1, Exps 1-1 in J0126-0839 (01) (1)	360 Secs (2040 Secs) [==>408.0 Secs (Pattern 1)] [==>408.0 Secs (Pattern 2)] [==>408.0 Secs (Pattern 3)] [==>408.0 Secs (Pattern 4)] [==>408.0 Secs (Pattern 5)]		[1]
<i>Comments: We place the targets on the optimum center of WFC3 UVIS detector chip 2 since it is more UV-sensitive.</i>											



Proposal 15988 - J1011+5442 (02) - Unveiling the Quiescent Accretion State of AGN with Fading Changing-Look Quasars

Thu Dec 19 17:01:07 GMT 2019

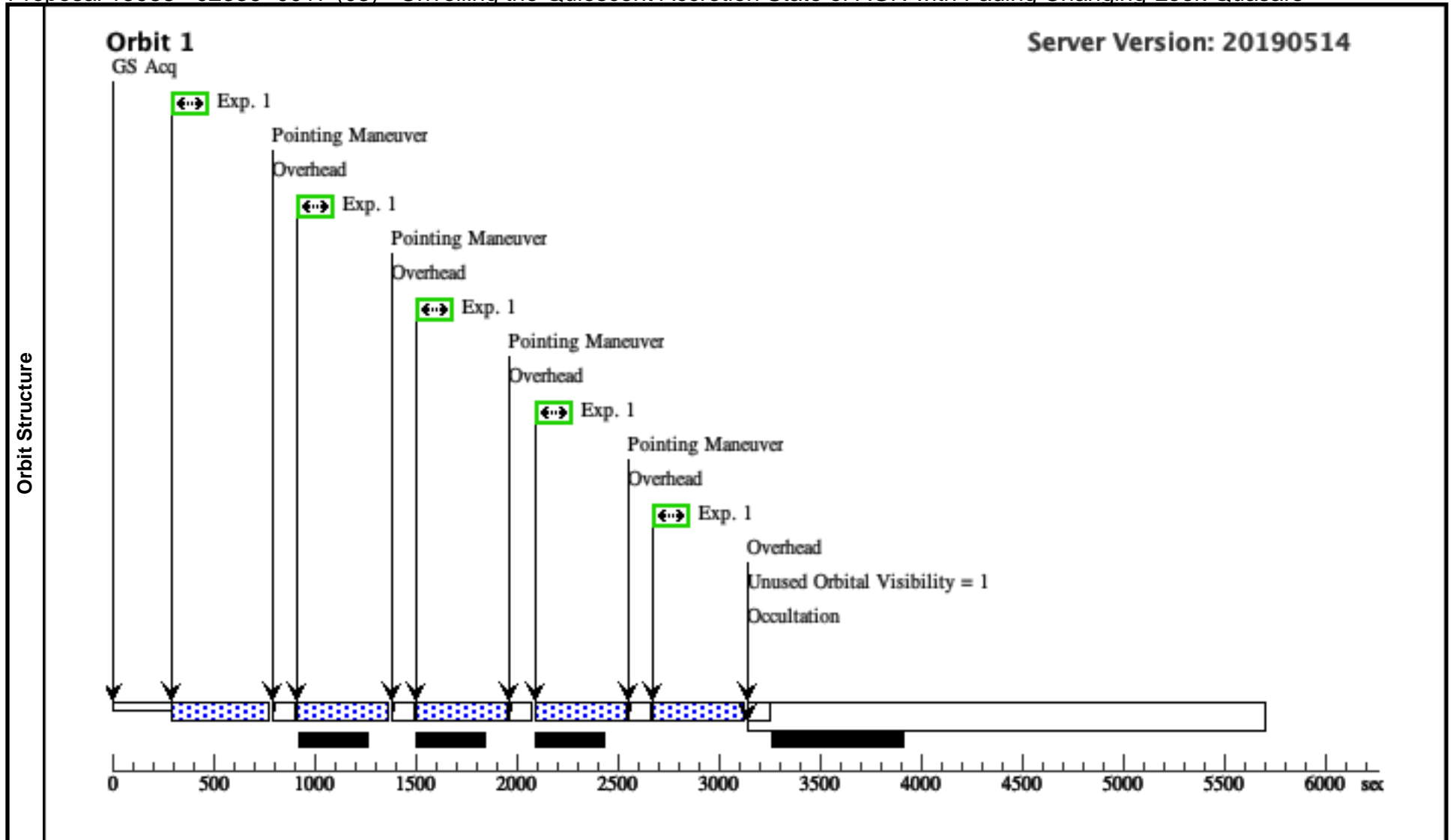
Visit	Proposal 15988, J1011+5442 (02), scheduling Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: (none) <i>Comments: 1 orbit for quasar J1011+5442, using Pattern1</i>										
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
(1)		Pattern Type=WFC3-UVIS-DITHER- LINE Purpose=DITHER Number Of Points=5 Point Spacing=0.145 Line Spacing=				Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false			(1)		
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(2)	J1011+5442	RA: 10 11 52.9806 (152.9707525d) Dec: +54 42 6.40 (54.70178d) Equinox: J2000		Epoch of Position: 2015.5		V=18.31	Reference Frame: ICRS			
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=GALAXY Description=[OUASAR, SEYFERT]											
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	J1011+5442_exposures (WFC3UVI S.im.1380115)	(2) J1011+5442	WFC3/UVIS, ACCUM, UVIS2-C1K1C-CTE	F300X	FLASH=12		Pattern 1, Exps 1-1 in J1011+5442 (02) (1)	420 Secs (2450 Secs) [==>490.0 Secs (Pattern 1)] [==>490.0 Secs (Pattern 2)] [==>490.0 Secs (Pattern 3)] [==>490.0 Secs (Pattern 4)] [==>490.0 Secs (Pattern 5)]		[1]
<i>Comments: We place the targets on the optimum center of WFC3 UVIS detector chip 2 since it is more UV-sensitive.</i>											



Proposal 15988 - J2336+0017 (03) - Unveiling the Quiescent Accretion State of AGN with Fading Changing-Look Quasars

Thu Dec 19 17:01:08 GMT 2019

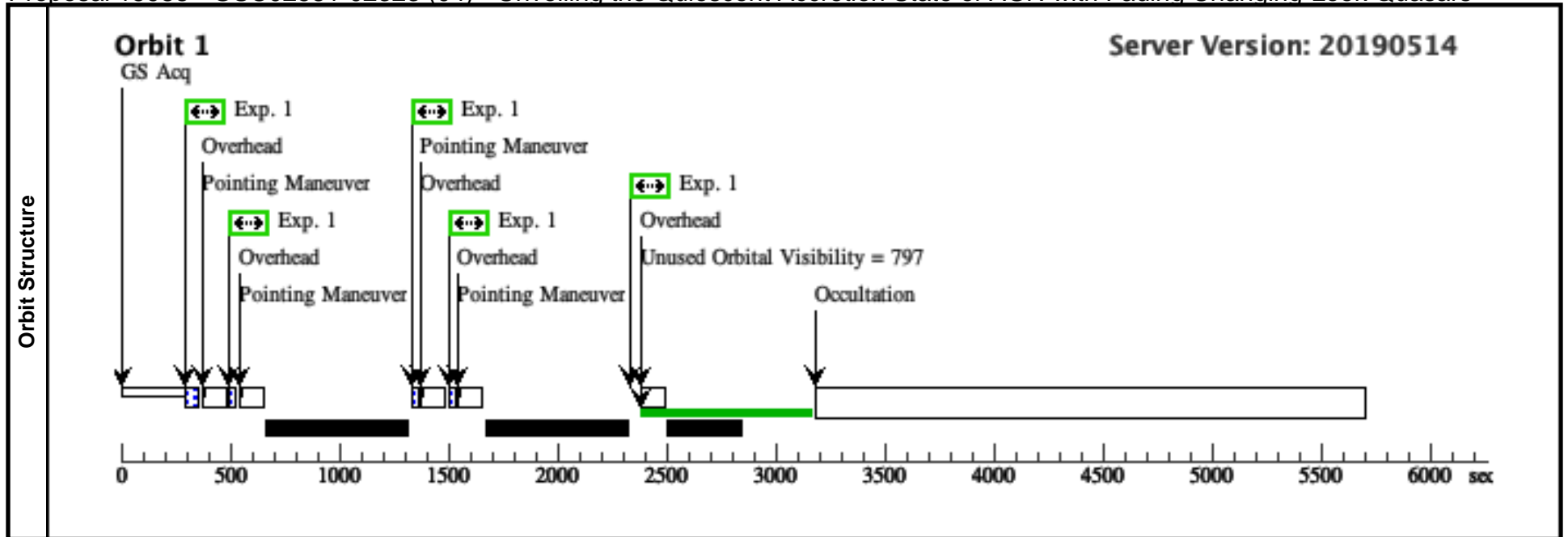
Visit	Proposal 15988, J2336+0017 (03), completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: (none) <i>Comments: 1 orbit for quasar J2336+0017, using Pattern1</i>										
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
(1)		Pattern Type=WFC3-UVIS-DITHER- LINE Purpose=DITHER Number Of Points=5 Point Spacing=0.145 Line Spacing=				Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false			(1)		
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(3)	J2336+0017	RA: 23 36 2.9869 (354.0124454d) Dec: +00 17 28.77 (.29133d) Equinox: J2000		Epoch of Position: 2015.5		V=19.66	Reference Frame: ICRS			
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=GALAXY Description=[OUASAR, SEYFERT]											
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	J2336+0017_exposures (WFC3UVI S.im.138011 6)	(3) J2336+0017	WFC3/UVIS, ACCUM, UVIS2-C1K1C-CTE	F300X	FLASH=12		Pattern 1, Exps 1-1 in J2336+0017 (03) (1)	360 Secs (2260 Secs) [==>452.0 Secs (Pattern 1)] [==>452.0 Secs (Pattern 2)] [==>452.0 Secs (Pattern 3)] [==>452.0 Secs (Pattern 4)] [==>452.0 Secs (Pattern 5)]		[1]
<i>Comments: We place the targets on the optimum center of WFC3 UVIS detector chip 2 since it is more UV-sensistive.</i>											



Proposal 15988 - GSC02581-02323 (04) - Unveiling the Quiescent Accretion State of AGN with Fading Changing-Look Quasars

Thu Dec 19 17:01:08 GMT 2019

Visit	Proposal 15988, GSC02581-02323 (04), failed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: (none) <i>Comments: 1 orbit for PSF star GSC02581-02323, using pattern 1</i>										
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
(1)		Pattern Type=WFC3-UVIS-DITHER- LINE Purpose=DITHER Number Of Points=5 Point Spacing=0.145 Line Spacing=		Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false					(1)		
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(4)	GSC-02581-02323	RA: 16 31 33.8018 (247.8908408d) Dec: +30 08 45.80 (30.14606d) Equinox: J2000		Proper Motion RA: -6.931498941627819E-4 sec of time/yr Proper Motion Dec: -0.03876800003581593 arcsec/yr Epoch of Position: 2015.5		V=12.917	Reference Frame: SIMBAD			
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=STAR Description=[G III-I] Extended=NO											
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	GSC02581-02323_exposures (WFC3UVIS.im.1384171)	(4) GSC-02581-02323 3	WFC3/UVIS, ACCUM, UVIS2-C1K1C-CTE	F300X	FLASH=12		Pattern 1, Exps 1-1 in GSC02581-02323 (04) (1)	30 Secs (150 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)] [==>(Pattern 5)]		[1]



Proposal 15988 - GSC02581-02323 (54) - Unveiling the Quiescent Accretion State of AGN with Fading Changing-Look Quasars

Thu Dec 19 17:01:08 GMT 2019

Visit	Proposal 15988, GSC02581-02323 (54) Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: (none) <i>Comments: Re-visit of Visit 04, which failed.</i>									
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures
(1)		Pattern Type=WFC3-UVIS-DITHER- LINE Purpose=DITHER Number Of Points=5 Point Spacing=0.145 Line Spacing=				Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false			(1)	
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes	Miscellaneous		
	(4)	GSC-02581-02323	RA: 16 31 33.8018 (247.8908408d) Dec: +30 08 45.80 (30.14606d) Equinox: J2000		Proper Motion RA: -6.931498941627819E-4 sec of time/yr Proper Motion Dec: -0.03876800003581593 arcsec/yr Epoch of Position: 2015.5		V=12.917	Reference Frame: SIMBAD		
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=STAR Description=[G III-I] Extended=NO										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	GSC02581-02323_exposures (WFC3UVIS.im.1384171)	(4) GSC-02581-02323 3	WFC3/UVIS, ACCUM, UVIS2-C1K1C-CTE	F300X	FLASH=12		Pattern 1, Exps 1-1 in GSC02581-02323 (54) (1)	30 Secs (150 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)] [=>(Pattern 5)]	[1]

