18009 - Final Chance to Map the Spatial Distributions of Lyman-Continuum and Lyman-Alpha Emission of Strong Lyman Continuum Emitters

Cycle: 33, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) J0006+2452	ACS/WFC	3	14-Aug-2025 17:00:15.0	yes
02	(2) J0121+0025	ACS/WFC	3	14-Aug-2025 17:00:16.0	yes
03	(3) J0817+3241	ACS/WFC	3	14-Aug-2025 17:00:17.0	yes
04	(4) J0850+1549	ACS/WFC	3	14-Aug-2025 17:00:18.0	yes
05	(5) J0950+0523	ACS/WFC	3	14-Aug-2025 17:00:18.0	yes
06	(6) J1220+0842	ACS/WFC	3	14-Aug-2025 17:00:19.0	yes
07	(7) J1249+1550	ACS/WFC	3	14-Aug-2025 17:00:20.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
08	(8) J1415+2036	ACS/WFC	3	14-Aug-2025 17:00:20.0	yes
09	(9) SUNBURST	ACS/WFC	3	14-Aug-2025 17:00:21.0	yes

27 Total Orbits Used

ABSTRACT

We request high-resolution (~0.1") narrow-band Lyman-alpha (LyA) imaging with HST/ACS ramp filters for a sample of nine strong Lyman continuum Emitters (LCEs, fesc[LyC] > 40% - 80%). A pilot study on the UV-brightest galaxy and strongest leaker known (fesc[LyC] ~ 90%), J1316+2614 at z~3.6, revealed an extended filamentary Lyman-alpha emission around -and a hole on top of- the extremely compact stellar core. We now propose LyA imaging of all other known z ~ 2-3 LCEs with fesc[LyC] > 40%, including seven UV-luminous galaxies and two strongly lensed systems, all with existing high-resolution LyC detections and rest-frame optical nebular emission line maps (JWST/NIRSpec IFU). These observations will enable high-SNR, spatially resolved studies of LyA and LyC emission in and around the stellar cores of faint to extremely UV-luminous leakers (-18 < MUV < -24). In addition, the proposed data will allow us to search for extended filamentary LyA structures- potential gas inflows fueling these powerful starbursts. Combined with existing LyC imaging (HST) and ultra-deep JWST spectroscopic maps (e.g., Halpha, Hbeta, [O III]/[O II], dust maps, etc.), the proposed LyA data will offer the most comprehensive spatial view to date of extreme LyC escape mechanisms, potentially uncovering a new mode of star formation and ionizing photon leakage in the early universe. Acquiring these data is time-sensitive, as ACS/WFC (including ramp filters) may no longer be available in future cycles.

OBSERVING DESCRIPTION

This program uses ACS/WFC ramp-filters to map the Lyman-alpha emission (lambda_rest=1216 ang.) of nine UV-bright Lyman continuum emitters at z~2.3-3.2, two of them being magnified by gravitational lensing. Depending on the redshift of each source, observations use the following narrow-band filters: FR388N (z~2.3), FR423N (z~2.4) , and FR505N (z~3.2). Observations use a dither-line pattern with 6 points for cosmic rays removal. A post-flash between 7e- and 12e- (depending on each source/observation) is requiered to reach the threshold of 30e- to avoid poor charge transfer efficiency.

Visit

Proposal 18009, J0006+2452 (01) Thu Aug 14 21:00:22 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: ACS/WFC

Special Requirements: (none)

Diagnostics

(Exposure 1 (Pattern 1, Exps 1-1 in J0006+2452 (01))) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp filters as central wavelengths & transmission efficiencies vary within the apertures.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=6 Point Spacing=0.75 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.29 Angle Between Sides= Center Pattern=false		(1)

Fixed Targets

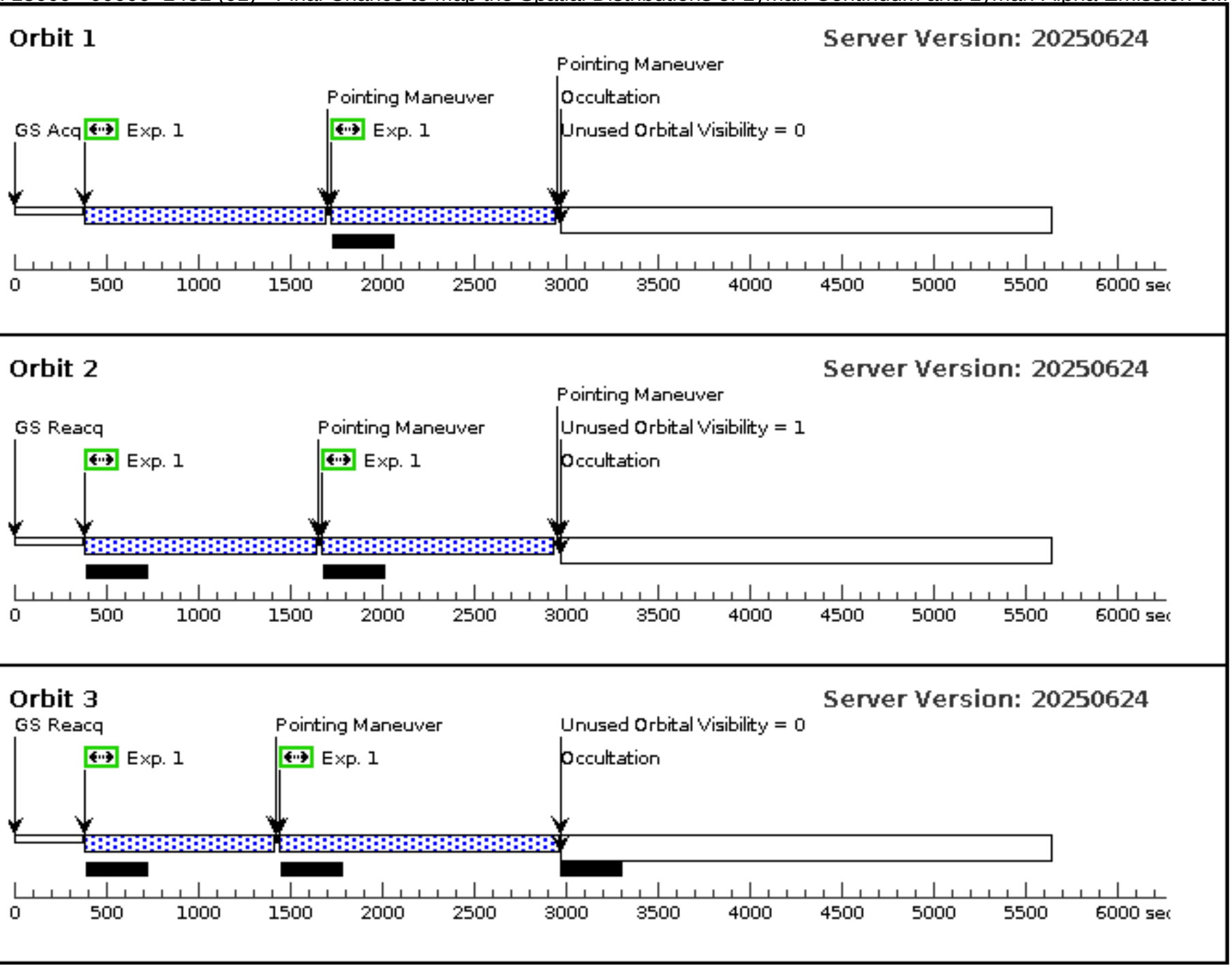
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	J0006+2452	RA: 00 06 44.7300 (1.6863750d) Dec: +24 52 53.19 (24.88144d) Equinox: J2000		V=20.98	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[HIGH REDSHIFT GALAXY, LYMAN ALPHA CLOUD]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) J0006+2452	ACS/WFC, ACCUM, WFC1-IRAMP	FR423N 4111 A	FLASH=10		Pattern 1, Exps 1-1 in J0006+2452 (01) (1)	900 Secs (6756 Secs)	
								[==>1099.0 Secs (Pattern 1)] *[==>1092.0 Secs (Pattern 2)]*	***[1]***
								[==>1136.0 Secs (Pattern 3)] *[==>1136.0 Secs (Pattern 4)]*	***[2]***
								[==>(Pattern 5)] *[==>1393.0 Secs (Pattern 6)]*	***[3]***

Orbit Structure



Visit

Proposal 18009, J0121+0025 (02) Thu Aug 14 21:00:22 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: ACS/WFC

Special Requirements: (none)

Diagnostics

(Exposure 1 (Pattern 1, Exps 1-1 in J0121+0025 (02))) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp filters as central wavelengths & transmission efficiencies vary within the apertures.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=6 Point Spacing=0.75 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.29 Angle Between Sides= Center Pattern=false		(1)

Fixed Targets

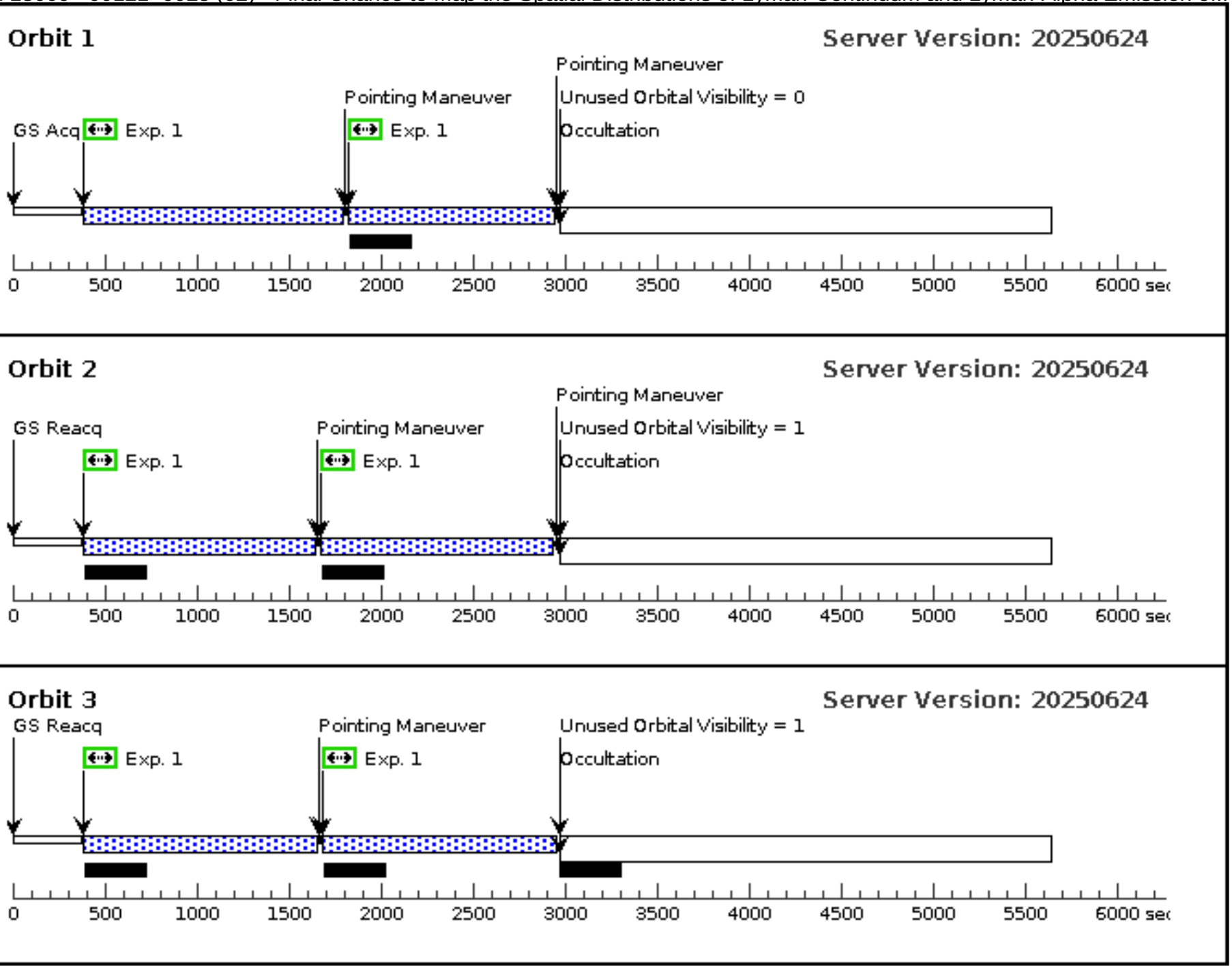
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	J0121+0025	RA: 01 21 56.0900 (20.4837083d) Dec: +00 25 20.30 (.42231d) Equinox: J2000		V=21.60	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[HIGH REDSHIFT GALAXY, LYMAN ALPHA CLOUD]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(2) J0121+0025	ACS/WFC, ACCUM, WFC1-MRAMP	FR505N 5162 A	FLASH=7		Pattern 1, Exps 1-1 in J0121+0025 (02) (1)	900 Secs (6755 Secs)	
								[==>1203.0 Secs (Pattern 1)] *[==>988.0 Secs (Pattern 2)]*	***[1]***
								[==>1136.0 Secs (Pattern 3)] *[==>1136.0 Secs (Pattern 4)]*	***[2]***
								[==>1146.0 Secs (Pattern 5)] *[==>1146.0 Secs (Pattern 6)]*	***[3]***

Orbit Structure



Visit

Proposal 18009, J0817+3241 (03) Thu Aug 14 21:00:22 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: ACS/WFC

Special Requirements: (none)

Diagnostics

(Exposure 1 (Pattern 1, Exps 1-1 in J0817+3241 (03))) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp filters as central wavelengths & transmission efficiencies vary within the apertures.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=6 Point Spacing=0.75 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.29 Angle Between Sides= Center Pattern=false		(1)

Fixed Targets

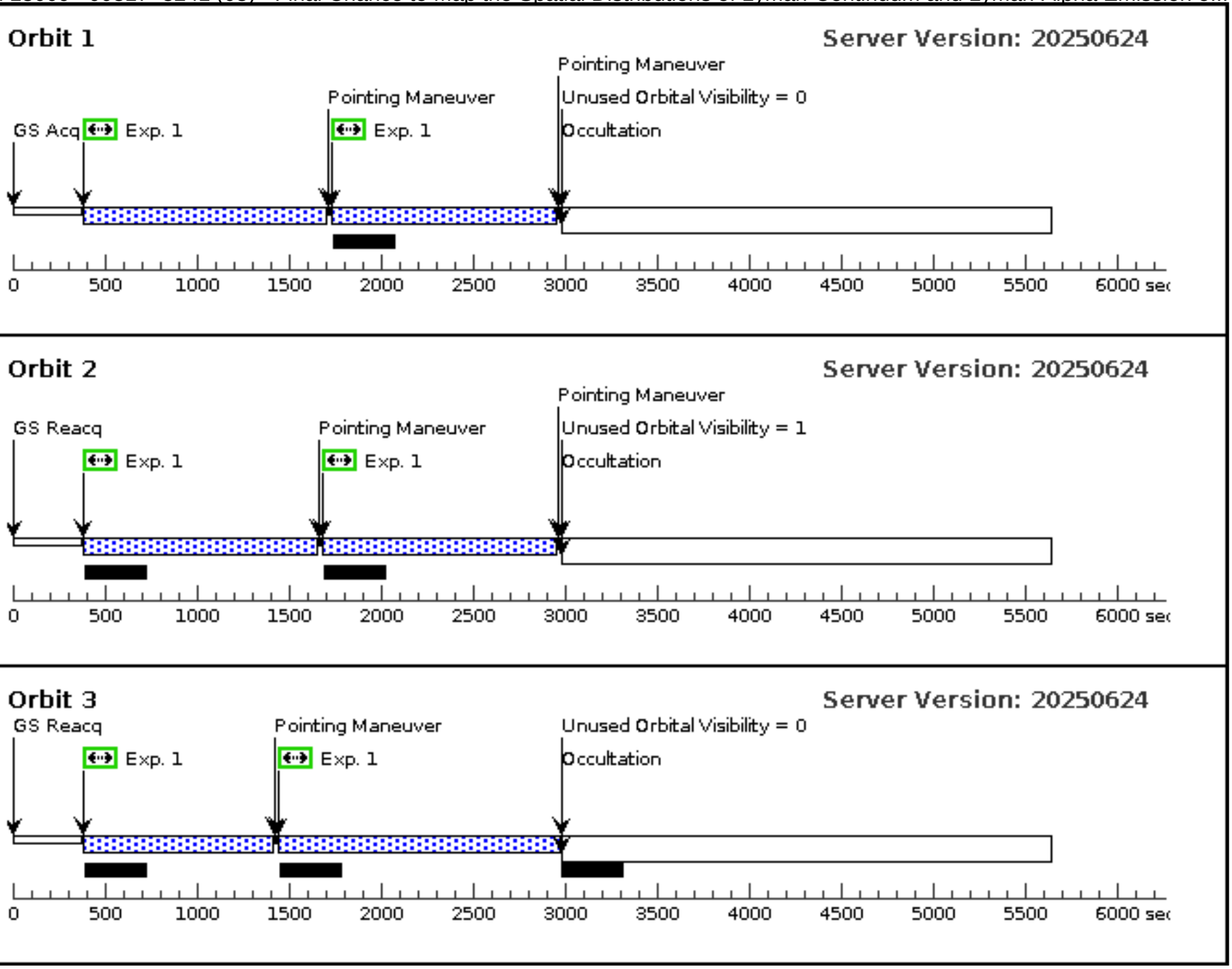
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	J0817+3241	RA: 08 17 38.7700 (124.4115417d) Dec: +32 41 8.10 (32.68558d) Equinox: J2000		V=21.95	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[HIGH REDSHIFT GALAXY, LYMAN ALPHA CLOUD]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(3) J0817+3241	ACS/WFC, ACCUM, WFC1-IRAMP	FR423N 4054 A	FLASH=10		Pattern 1, Exps 1-1 in J0817+3241 (03) (1)	900 Secs (6780 Secs)	
								[==>1105.0 Secs (Pattern 1)] *[==>1094.0 Secs (Pattern 2)]*	***[1]***
								[==>1140.0 Secs (Pattern 3)] *[==>1140.0 Secs (Pattern 4)]*	***[2]***
								[==>(Pattern 5)] *[==>1401.0 Secs (Pattern 6)]*	***[3]***

Orbit Structure



Visit

Proposal 18009, J0850+1549 (04) Thu Aug 14 21:00:22 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: ACS/WFC

Special Requirements: (none)

Diagnostics

(Exposure 1 (Pattern 1, Exps 1-1 in J0850+1549 (04))) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp filters as central wavelengths & transmission efficiencies vary within the apertures.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=6 Point Spacing=0.75 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.29 Angle Between Sides= Center Pattern=false		(1)

Fixed Targets

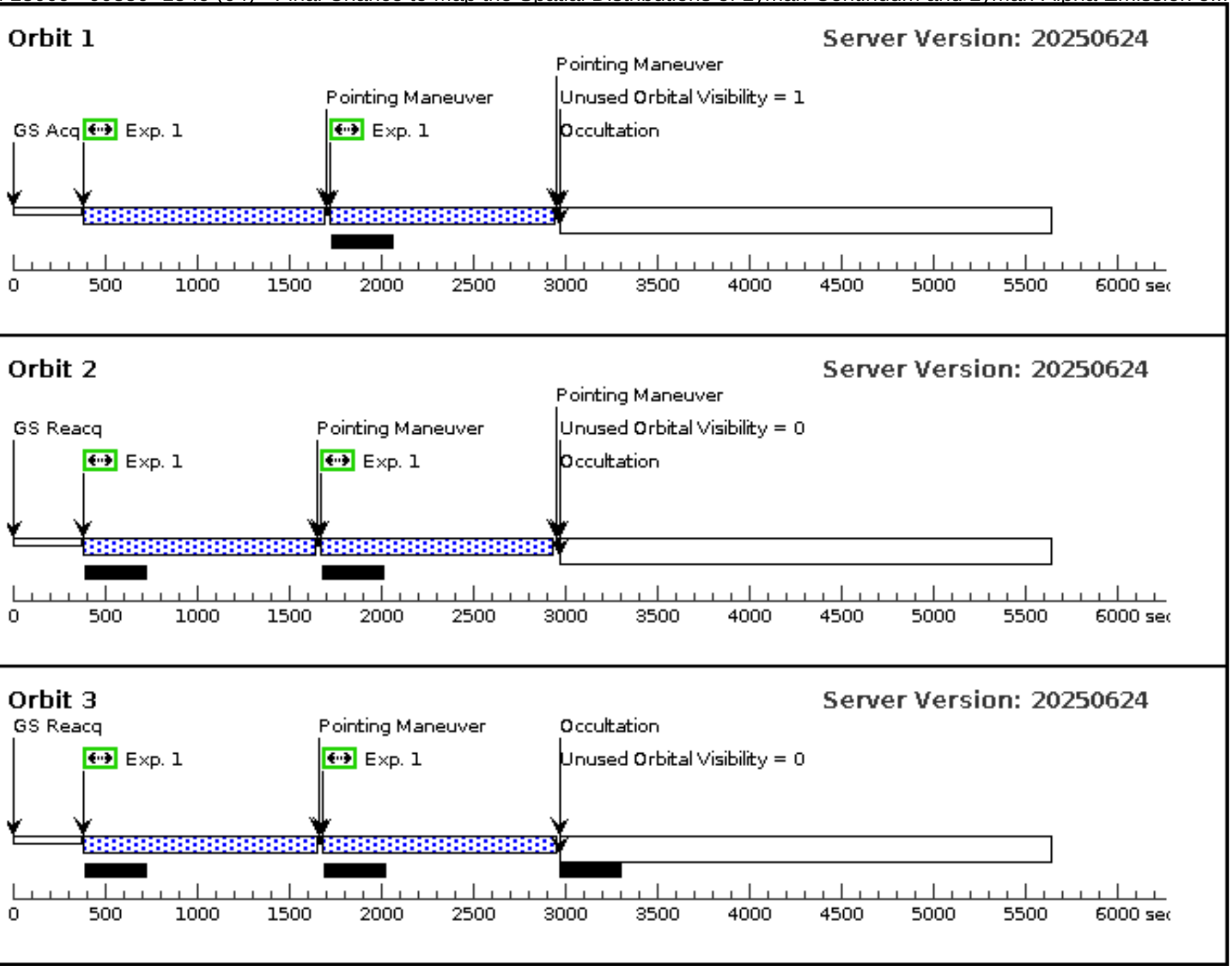
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	J0850+1549	RA: 08 50 38.8600 (132.6619167d) Dec: +15 49 17.88 (15.82163d) Equinox: J2000		V=21.43	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[HIGH REDSHIFT GALAXY, LYMAN ALPHA CLOUD]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(4) J0850+1549	ACS/WFC, ACCUM, WFC1-IRAMP	FR423N 4162 A	FLASH=10		Pattern 1, Exps 1-1 in J0850+1549 (04) (1)	900 Secs (6747 Secs)	
								[==>1096.0 Secs (Pattern 1)] *[==>1091.0 Secs (Pattern 2)]*	***[1]***
								[==>1135.0 Secs (Pattern 3)] *[==>1135.0 Secs (Pattern 4)]*	***[2]***
								[==>1145.0 Secs (Pattern 5)] *[==>1145.0 Secs (Pattern 6)]*	***[3]***

Orbit Structure



Visit

Proposal 18009, J0950+0523 (05) Thu Aug 14 21:00:22 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: ACS/WFC

Special Requirements: (none)

Diagnostics

(Exposure 1 (Pattern 1, Exps 1-1 in J0950+0523 (05))) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp filters as central wavelengths & transmission efficiencies vary within the apertures.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=6 Point Spacing=0.75 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.29 Angle Between Sides= Center Pattern=false		(1)

Fixed Targets

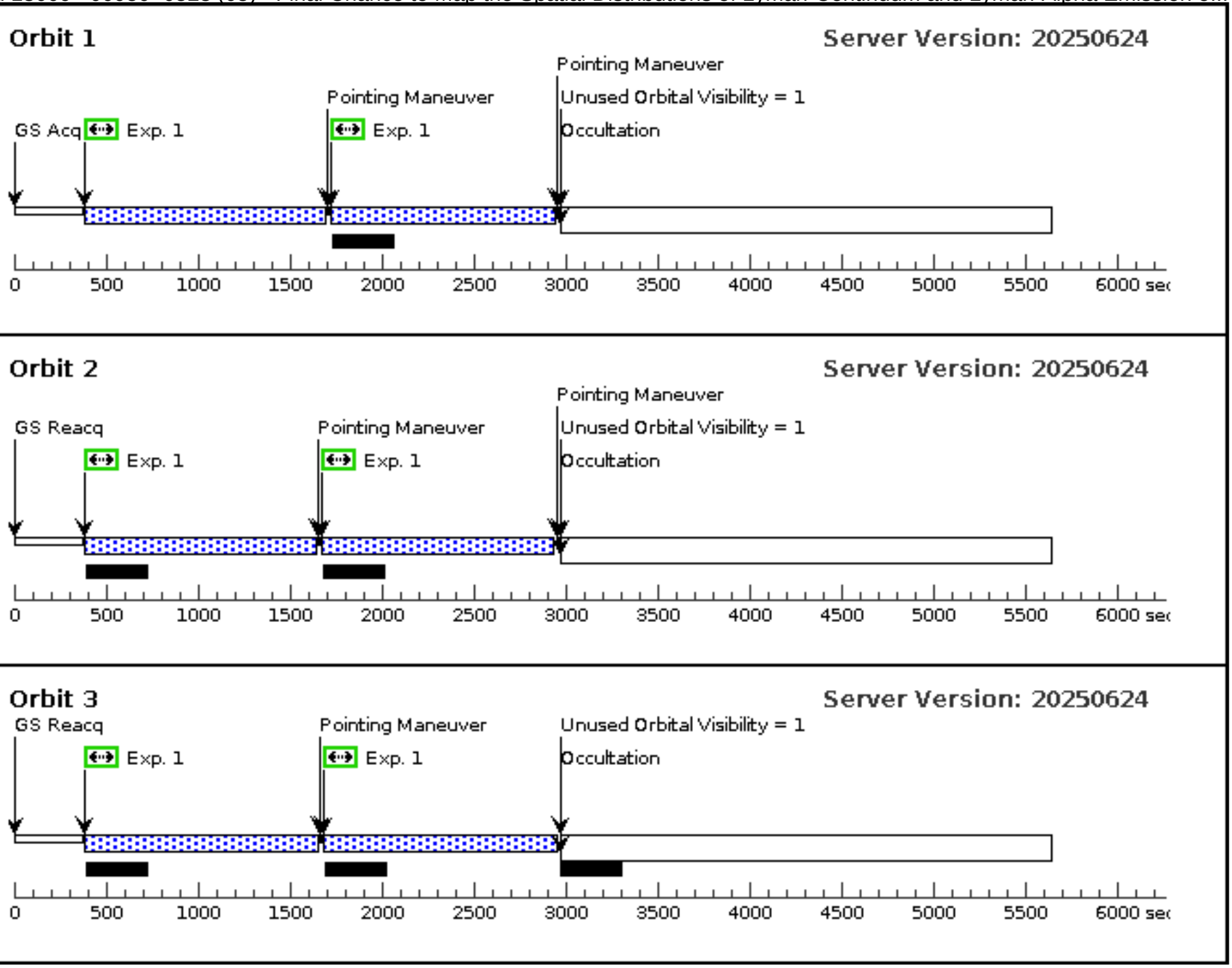
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	J0950+0523	RA: 09 50 28.8200 (147.6200833d) Dec: +05 23 43.80 (5.39550d) Equinox: J2000		V=21.51	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[HIGH REDSHIFT GALAXY, LYMAN ALPHA CLOUD]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(5) J0950+0523	ACS/WFC, ACCUM, WFC1-IRAMP	FR423N 4200 A	FLASH=10		Pattern 1, Exps 1-1 in J0950+0523 (05) (1)	900 Secs (6748 Secs) *[==>1097.0 Secs (Pattern 1)]* *[==>1091.0 Secs (Pattern 2)]* *[==>1135.0 Secs (Pattern 3)]* *[==>1135.0 Secs (Pattern 4)]* *[==>1145.0 Secs (Pattern 5)]* *[==>1145.0 Secs (Pattern 6)]*	***[1]*** ***[2]*** ***[3]***

Orbit Structure



Visit

Proposal 18009, J1220+0842 (06) Thu Aug 14 21:00:22 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: ACS/WFC

Special Requirements: (none)

Diagnostics

(Exposure 1 (Pattern 1, Exps 1-1 in J1220+0842 (06))) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp filters as central wavelengths & transmission efficiencies vary within the apertures.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=6 Point Spacing=0.75 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.29 Angle Between Sides= Center Pattern=false		(1)

Fixed Targets

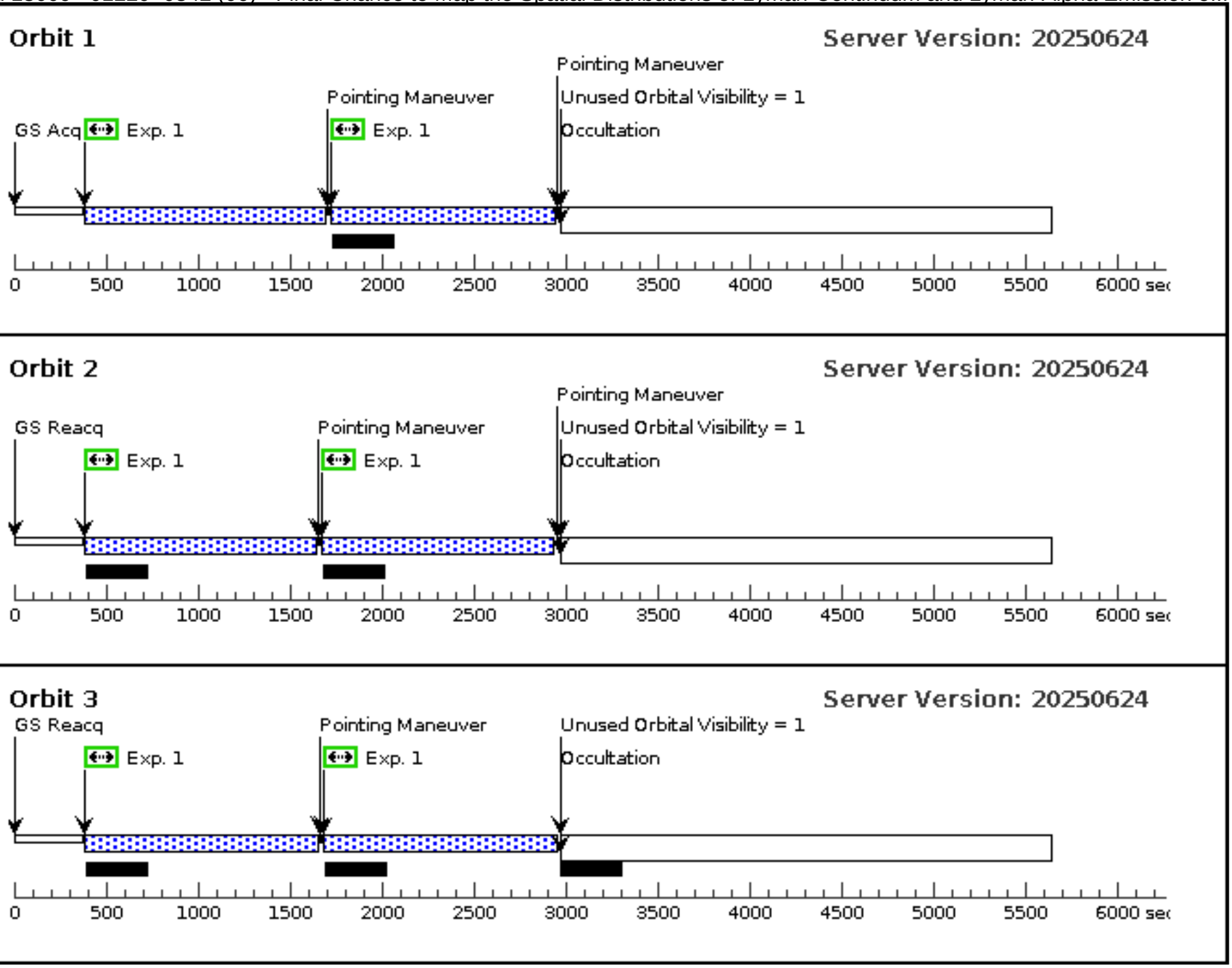
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(6)	J1220+0842	RA: 12 20 40.7200 (185.1696667d) Dec: +08 42 38.14 (8.71059d) Equinox: J2000		V=20.86	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[HIGH REDSHIFT GALAXY, LYMAN ALPHA CLOUD]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(6) J1220+0842	ACS/WFC, ACCUM, WFC1-IRAMP	FR423N 4221 A	FLASH=10		Pattern 1, Exps 1-1 in J1220+0842 (06) (1)	900 Secs (6748 Secs)	
								[==>1097.0 Secs (Pattern 1)] *[==>1091.0 Secs (Pattern 2)]*	***[1]***
								[==>1135.0 Secs (Pattern 3)] *[==>1135.0 Secs (Pattern 4)]*	***[2]***
								[==>1145.0 Secs (Pattern 5)] *[==>1145.0 Secs (Pattern 6)]*	***[3]***

Orbit Structure



Visit

Proposal 18009, J1249+1550 (07) Thu Aug 14 21:00:22 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: ACS/WFC

Special Requirements: (none)

Diagnostics

(Exposure 1 (Pattern 1, Exps 1-1 in J1249+1550 (07))) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp filters as central wavelengths & transmission efficiencies vary within the apertures.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=6 Point Spacing=0.75 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.29 Angle Between Sides= Center Pattern=false		(1)

Fixed Targets

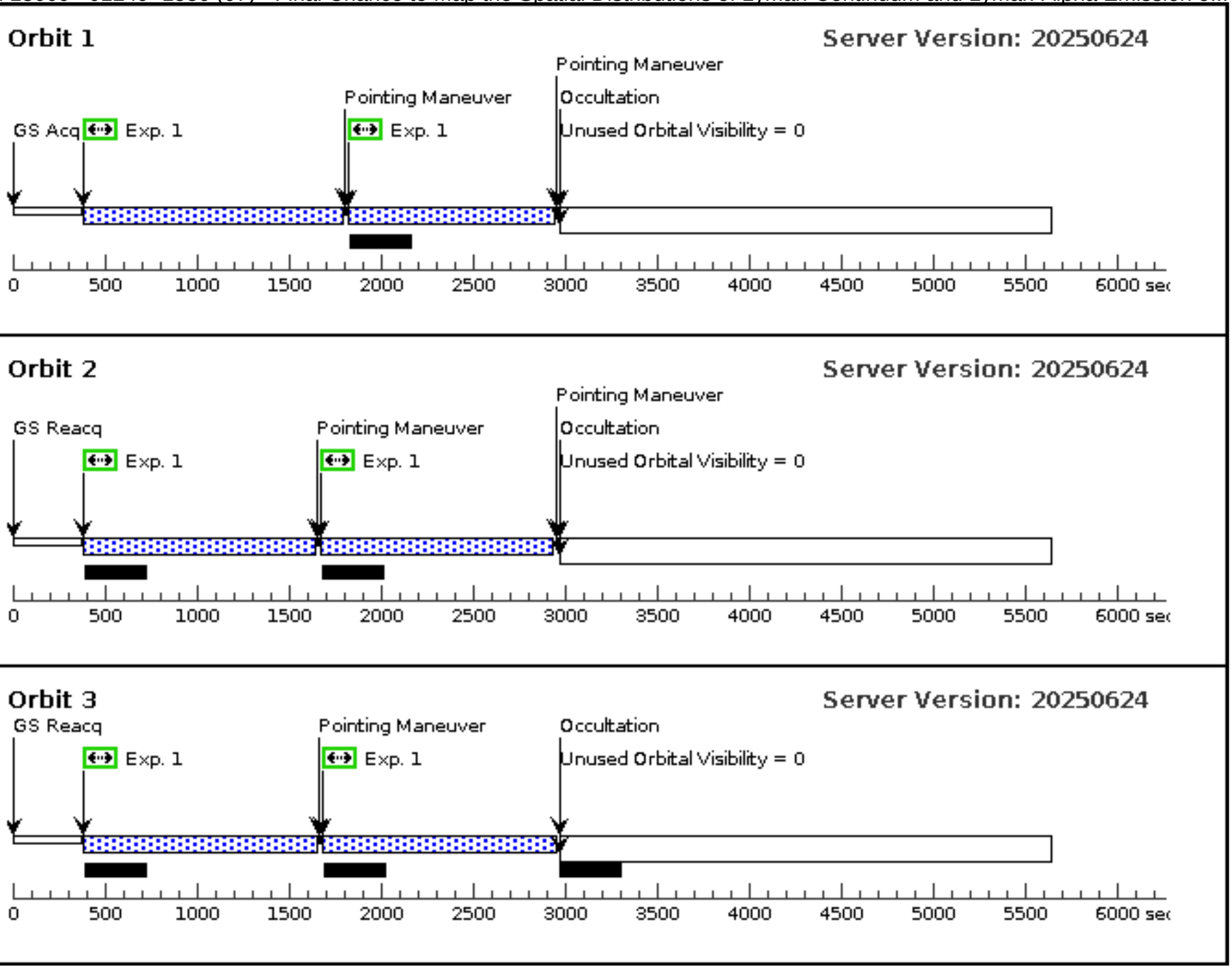
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(7)	J1249+1550	RA: 12 49 40.7600 (192.4198333d) Dec: +15 50 54.47 (15.84846d) Equinox: J2000		V=21.67	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[HIGH REDSHIFT GALAXY, LYMAN ALPHA CLOUD]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(7) J1249+1550	ACS/WFC, ACCUM, WFC1-MRAMP	FR388N 4004 A	FLASH=11		Pattern 1, Exps 1-1 in J1249+1550 (07) (1)	900 Secs (6748 Secs)	
								[==>1201.0 Secs (Pattern 1)] *[==>987.0 Secs (Pattern 2)]*	***[1]***
								[==>1135.0 Secs (Pattern 3)] *[==>1135.0 Secs (Pattern 4)]*	***[2]***
								[==>1145.0 Secs (Pattern 5)] *[==>1145.0 Secs (Pattern 6)]*	***[3]***

Orbit Structure



Visit

Proposal 18009, J1415+2036 (08) Thu Aug 14 21:00:22 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: ACS/WFC

Special Requirements: (none)

Diagnostics

(Exposure 1 (Pattern 1, Exps 1-1 in J1415+2036 (08))) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp filters as central wavelengths & transmission efficiencies vary within the apertures.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=6 Point Spacing=0.75 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.29 Angle Between Sides= Center Pattern=false		(1)

Fixed Targets

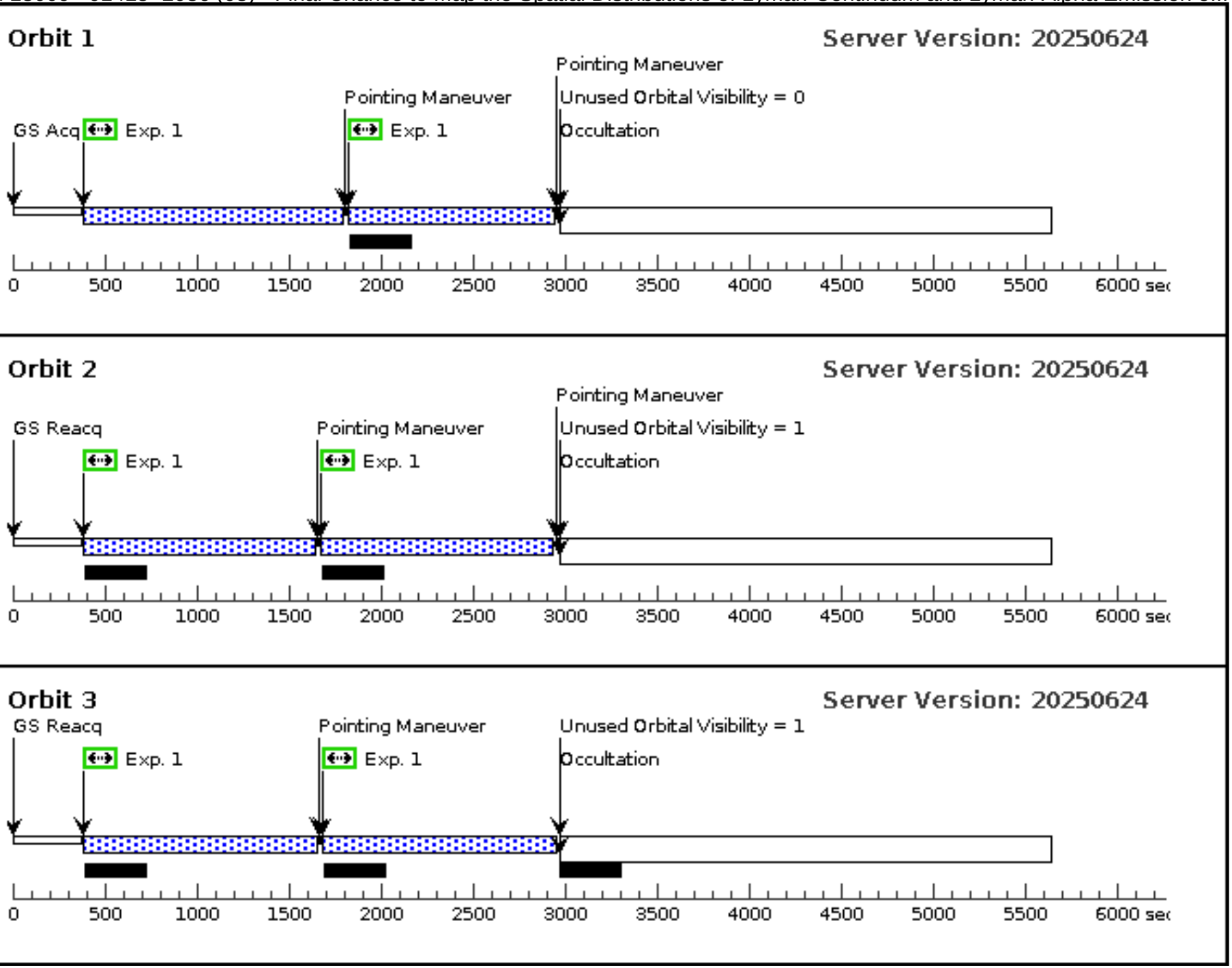
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(8)	J1415+2036	RA: 14 15 41.3900 (213.9224583d) Dec: +20 36 56.36 (20.61566d) Equinox: J2000		V=21.51	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[HIGH REDSHIFT GALAXY, LYMAN ALPHA CLOUD]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(8) J1415+2036	ACS/WFC, ACCUM, WFC1-MRAMP	FR388N 3943 A	FLASH=12		Pattern 1, Exps 1-1 in J1415+2036 (08) (1)	900 Secs (6755 Secs)	
								[==>1203.0 Secs (Pattern 1)] *[==>988.0 Secs (Pattern 2)]*	***[1]***
								[==>1136.0 Secs (Pattern 3)] *[==>1136.0 Secs (Pattern 4)]*	***[2]***
								[==>1146.0 Secs (Pattern 5)] *[==>1146.0 Secs (Pattern 6)]*	***[3]***

Orbit Structure



Visit

Proposal 18009, Sunburst (09) Thu Aug 14 21:00:22 GMT 2025

Diagnostic Status: Warning

Scientific Instruments: ACS/WFC

Special Requirements: (none)

Diagnostics

(Exposure 1 (Pattern 1, Exps 1-1 in Sunburst (09))) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp filters as central wavelengths & transmission efficiencies vary within the apertures.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=6 Point Spacing=0.75 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.29 Angle Between Sides= Center Pattern=false		(1)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(9)	SUNBURST	RA: 15 50 3.1600 (237.5131667d) Dec: -78 11 2.67 (-78.18408d) Equinox: J2000		V=20	Reference Frame: ICRS

Comments:
Category=GALAXY
Description=[HIGH REDSHIFT GALAXY, LYMAN ALPHA CLOUD]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(9) SUNBURST	ACS/WFC, ACCUM, WFC1-IRAMP	FR423N 4098 A	FLASH=9		Pattern 1, Exps 1-1 in Sunburst (09) (1)	900 Secs (7275 Secs)	
								[==>1228.0 Secs (Pattern 1)] *[==>1135.0 Secs (Pattern 2)]*	***[1]***
								[==>1223.0 Secs (Pattern 3)] *[==>1223.0 Secs (Pattern 4)]*	***[2]***
								[==>1233.0 Secs (Pattern 5)] *[==>1233.0 Secs (Pattern 6)]*	***[3]***

Orbit Structure