



16237 - A massive protocluster at $z=7$ selected by the South Pole Telescope

Cycle: 28, 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) SPT0311ACSPPOINT	ACS/WFC	2	05-Apr-2022 16:00:19.0	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>
02	(1) SPT0311ACSPOINT	ACS/WFC	2	05-Apr-2022 16:00:20.0	yes
03	(1) SPT0311ACSPOINT	ACS/WFC	2	05-Apr-2022 16:00:20.0	yes
Z3	(1) SPT0311ACSPOINT	ACS/WFC	2	05-Apr-2022 16:00:21.0	yes
04	(1) SPT0311ACSPOINT	ACS/WFC	2	05-Apr-2022 16:00:22.0	yes
05	(1) SPT0311ACSPOINT	WFC3/IR	2	05-Apr-2022 16:00:23.0	yes
06	(1) SPT0311ACSPOINT	WFC3/IR	2	05-Apr-2022 16:00:25.0	yes
07	(1) SPT0311ACSPOINT	WFC3/IR	1	05-Apr-2022 16:00:26.0	yes
08	(1) SPT0311ACSPOINT	WFC3/IR	1	05-Apr-2022 16:00:27.0	yes
09	(1) SPT0311ACSPOINT	WFC3/IR	2	05-Apr-2022 16:00:28.0	yes
10	(1) SPT0311ACSPOINT	WFC3/IR	3	05-Apr-2022 16:00:31.0	yes
11	(1) SPT0311ACSPOINT	WFC3/IR	2	05-Apr-2022 16:00:33.0	yes
12	(1) SPT0311ACSPOINT	WFC3/IR	2	05-Apr-2022 16:00:34.0	yes

25 Total Orbits Used

ABSTRACT

We request deep near-infrared imaging of an SPT-selected protocluster, SPT0311-62 located at $z=6.9$. It possesses a very large $\sim 10^{13}$ Msun halo mass for any structure at $z>4$, immense at $z\sim 7$. Selected via millimeter-wavelength dust emission in the 2500 square degree South Pole Telescope (SPT) survey, it has been resolved by ALMA into 11 gas-rich galaxies, the 6 brightest /most massive confirmed spectrally to lie in an extended protocluster. Sensitive observations of carbon monoxide and ionized carbon with ALMA, allow assessment of the obscured star formation and gas masses of bright cluster members. The goal of this proposal is to obtain F160W, F125W, F814W HST imaging (3 tiled pointings in WFC3, 1 pointing ACS) to measure the stellar properties, galaxy morphologies, and assess the spatial extent of these structures. The proposed HST observations will provide the imaging and photometric information required for a complete picture of the obscured and unobscured stellar components of the ALMA galaxies, and the expected overdensity of LBGs, revealing the complicated structure in the gas-rich galaxies that host rapid star formation and the less luminous galaxies which trace the filaments of an early collapsing structure. The combination of high resolution ALMA datasets with the proposed HST observations will allow a full characterization of the stars, gas, and dust in this cosmologically important protocluster of primordial starburst galaxies, well into the epoch of reionization in the Universe. From an outreach perspective, the high spatial resolution of the HST identifications of protocluster galaxies will complement the ALMA data in publicizing these high impact results.

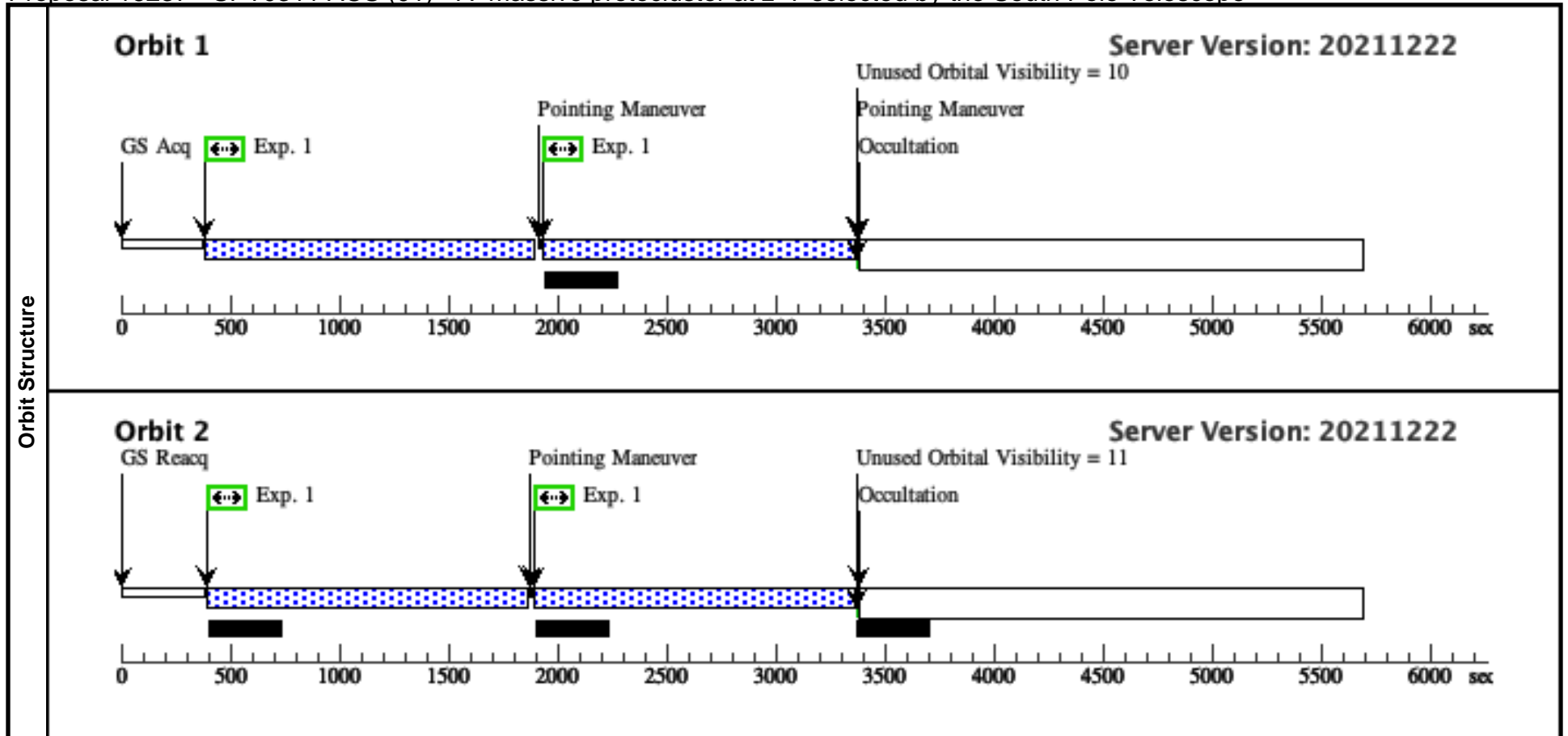
OBSERVING DESCRIPTION

ACS and WFC3

Proposal 16237 - SPT0311 ACS (01) - A massive protocluster at z=7 selected by the South Pole Telescope

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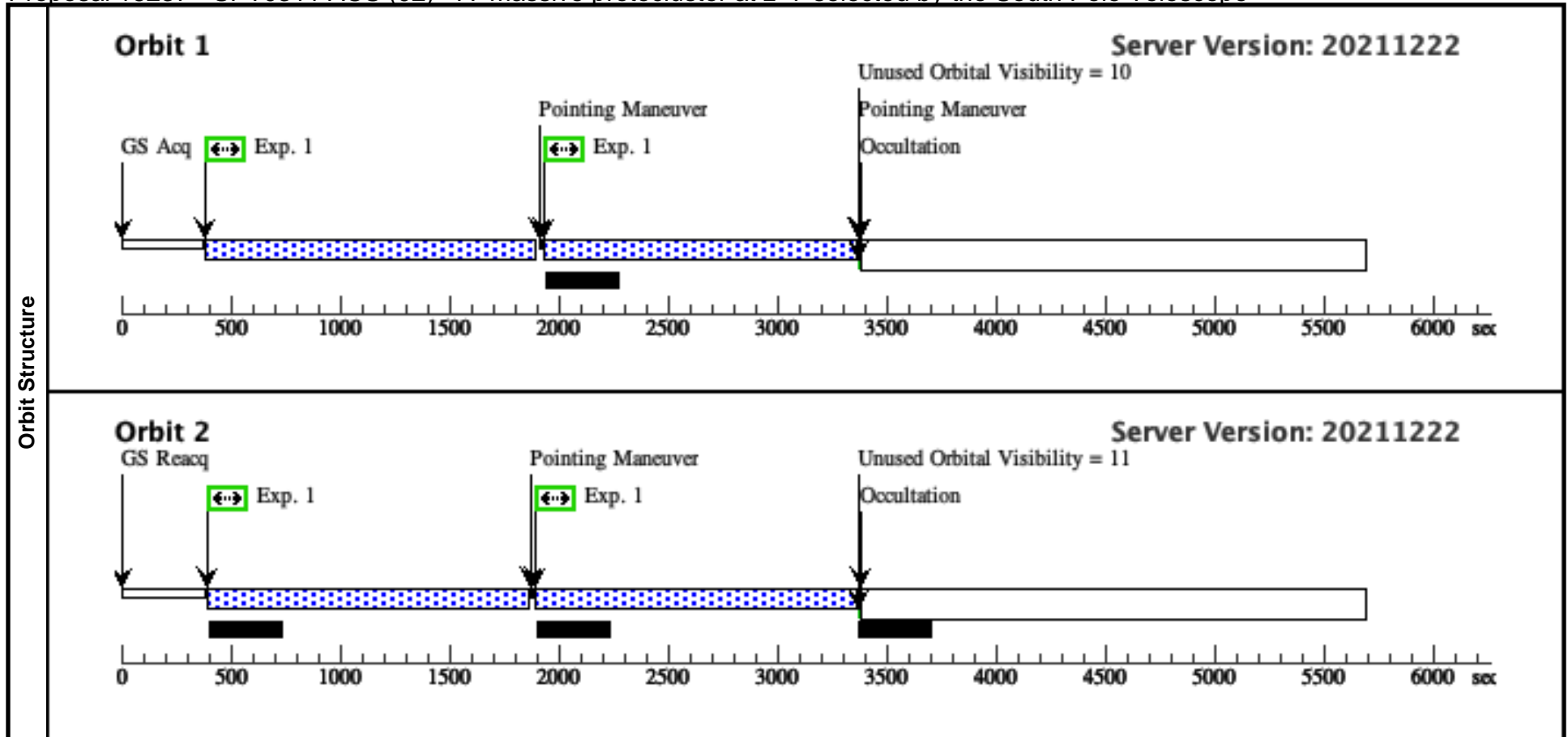
Visit	Proposal 16237, SPT0311 ACS (01), completed Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: (none) <i>Comments: 5300s of ACS Pointing of SPT0311 with dithering</i>										
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
(1)		Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.262 Line Spacing=0.192		Coordinate Frame=POS-TARG Pattern Orientation=18.39 Angle Between Sides=68.14 Center Pattern=false					(1)		
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(1)	SPT0311ACSPPOINT	RA: 03 11 26.1000 (47.8587500d) Dec: -58 24 12.40 (-58.40344d) Equinox: J2000		Proper Motion RA: 0 Proper Motion Dec: 0 Redshift: 6.9		V=27+/-1	Reference Frame: ICRS			
<i>Comments: Category=CLUSTER OF GALAXIES Description=[NUCLEUS] Extended=YES</i>											
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	SPT0311 ACS	(1)SPT0311ACSPOINT	ACS/WFC, ACCUM, WFC	F814W		POS TARG -5,5	Pattern 1, Exps 1-1 in SPT0311 ACS (01) (1)	25800 Secs (5308 Secs)		
									[==>1309.0 Secs (Pattern 1)]		[1]
									[==>1309.0 Secs (Pattern 2)]		
								[==>1345.0 Secs (Pattern 3)]			
								[==>1345.0 Secs (Pattern 4)]		[2]	
<i>Comments: 11000s of ACS Pointing of SPT0311 with dithering</i>											



Proposal 16237 - SPT0311 ACS (02) - A massive protocluster at z=7 selected by the South Pole Telescope

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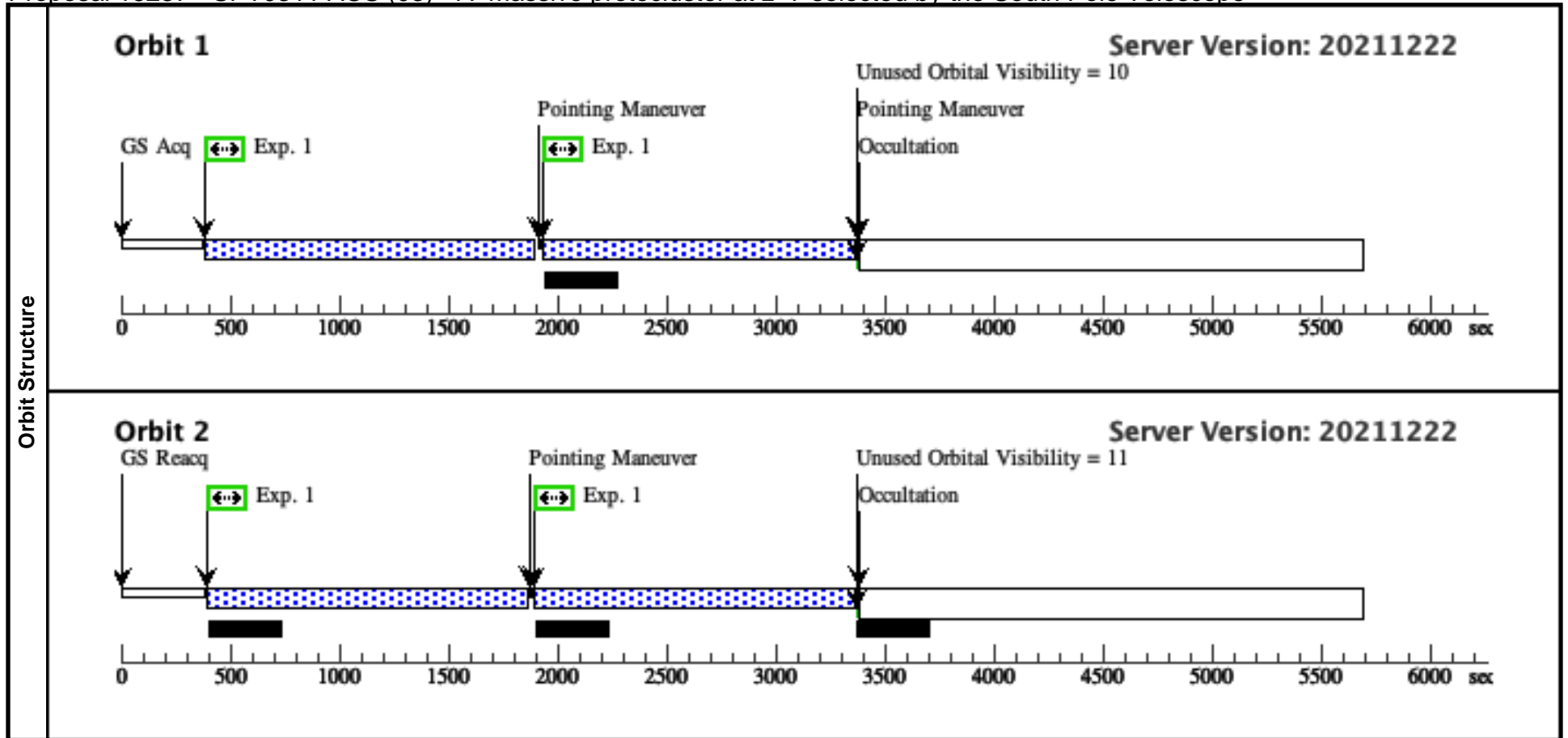
Visit	Proposal 16237, SPT0311 ACS (02), completed Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: (none) <i>Comments: 5300s of ACS Pointing of SPT0311 with dithering</i>										
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
(1)		Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.262 Line Spacing=0.192	Coordinate Frame=POS-TARG Pattern Orientation=18.39 Angle Between Sides=68.14 Center Pattern=false						(1)		
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(1)	SPT0311ACSPPOINT	RA: 03 11 26.1000 (47.8587500d) Dec: -58 24 12.40 (-58.40344d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0 Redshift: 6.9		V=27+/-1	Reference Frame: ICRS				
	<i>Comments: Category=CLUSTER OF GALAXIES Description=[NUCLEUS] Extended=YES</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	SPT0311 ACS	(1)SPT0311ACSPOINT	ACS/WFC, ACCUM, WFC	F814W		POS TARG -5,-5	Pattern 1, Exps 1-1 in SPT0311 ACS (02) (1)	25800 Secs (5308 Secs)		
									[==>1309.0 Secs (Pattern 1)]		[1]
									[==>1309.0 Secs (Pattern 2)]		
								[==>1345.0 Secs (Pattern 3)]			
								[==>1345.0 Secs (Pattern 4)]		[2]	
	<i>Comments: 11000s of ACS Pointing of SPT0311 with dithering</i>										



Proposal 16237 - SPT0311 ACS (03) - A massive protocluster at z=7 selected by the South Pole Telescope

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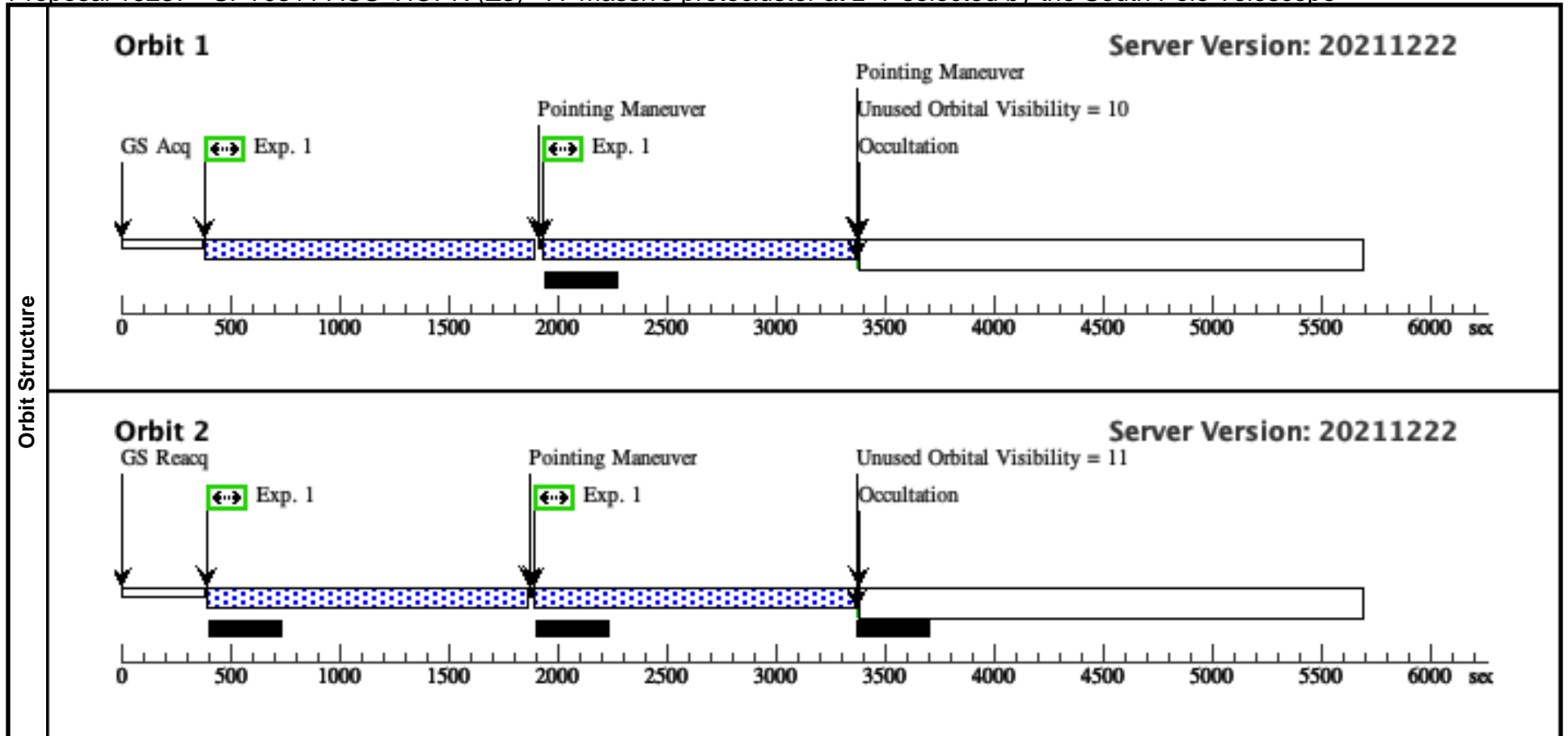
Visit	Proposal 16237, SPT0311 ACS (03), failed Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: (none) <i>Comments: 5300s of ACS Pointing of SPT0311 with dithering</i>										
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
(1)		Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.262 Line Spacing=0.192	Coordinate Frame=POS-TARG Pattern Orientation=18.39 Angle Between Sides=68.14 Center Pattern=false						(1)		
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(1)	SPT0311ACSPPOINT	RA: 03 11 26.1000 (47.8587500d) Dec: -58 24 12.40 (-58.40344d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0 Redshift: 6.9		V=27+/-1	Reference Frame: ICRS				
	<i>Comments: Category=CLUSTER OF GALAXIES Description=[NUCLEUS] Extended=YES</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	SPT0311 ACS	(1)SPT0311ACSPOINT	ACS/WFC, ACCUM, WFC	F814W		POS TARG 5,5	Pattern 1, Exps 1-1 in SPT0311 ACS (03) (1)	25800 Secs (5308 Secs)		
									[==>1309.0 Secs (Pattern 1)]		[1]
									[==>1309.0 Secs (Pattern 2)]		
								[==>1345.0 Secs (Pattern 3)]			
								[==>1345.0 Secs (Pattern 4)]		[2]	
	<i>Comments: 11000s of ACS Pointing of SPT0311 with dithering</i>										



Proposal 16237 - SPT0311 ACS_HOPR (Z3) - A massive protocluster at z=7 selected by the South Pole Telescope

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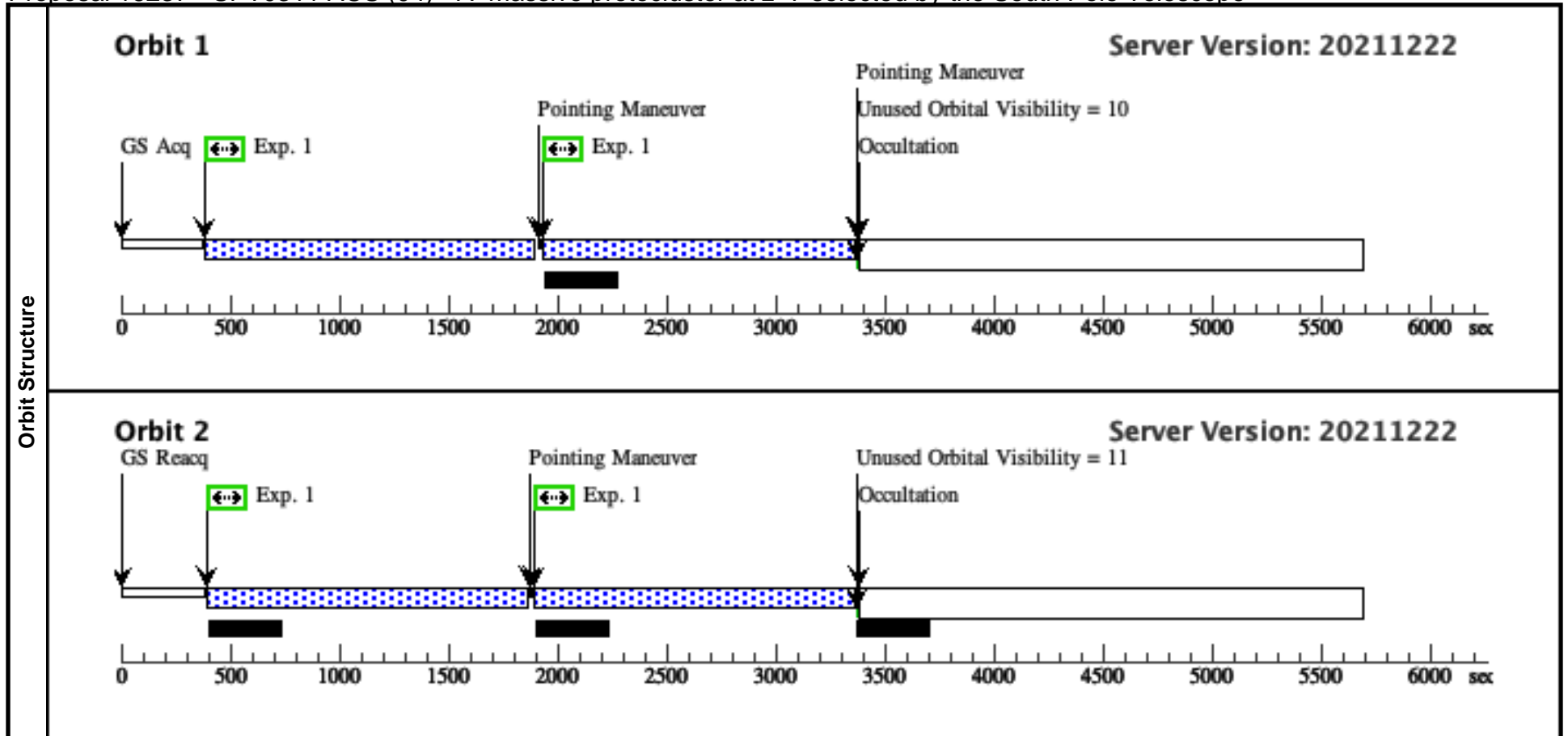
Visit	Proposal 16237, SPT0311 ACS_HOPR (Z3) Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: (none) <i>Comments: 5300s of ACS Pointing of SPT0311 with ditherig</i>										
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
(1)		Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.262 Line Spacing=0.192		Coordinate Frame=POS-TARG Pattern Orientation=18.39 Angle Between Sides=68.14 Center Pattern=false					(1)		
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(1)	SPT0311ACSPPOINT	RA: 03 11 26.1000 (47.8587500d) Dec: -58 24 12.40 (-58.40344d) Equinox: J2000		Proper Motion RA: 0 Proper Motion Dec: 0 Redshift: 6.9		V=27+/-1	Reference Frame: ICRS			
<i>Comments: Category=CLUSTER OF GALAXIES Description=[NUCLEUS] Extended=YES</i>											
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	SPT0311 ACS	(1)SPT0311ACSPOINT	ACS/WFC, ACCUM, WFC	F814W		POS TARG 5,5	Pattern 1, Exps 1-1 in SPT0311 ACS_HOPR (Z3) (1)	25800 Secs (5308 Secs)		
									[==>1309.0 Secs (Pattern 1)]		[1]
									[==>1309.0 Secs (Pattern 2)]		
								[==>1345.0 Secs (Pattern 3)]			
								[==>1345.0 Secs (Pattern 4)]		[2]	
<i>Comments: 11000s of ACS Pointing of SPT0311 with dithering</i>											



Proposal 16237 - SPT0311 ACS (04) - A massive protocluster at z=7 selected by the South Pole Telescope

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Visit	Proposal 16237, SPT0311 ACS (04), completed Diagnostic Status: No Diagnostics Scientific Instruments: ACS/WFC Special Requirements: (none) <i>Comments: 5300s of ACS Pointing of SPT0311 with dithering</i>										
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
(1)		Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.262 Line Spacing=0.192		Coordinate Frame=POS-TARG Pattern Orientation=18.39 Angle Between Sides=68.14 Center Pattern=false					(1)		
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(1)	SPT0311ACSPPOINT	RA: 03 11 26.1000 (47.8587500d) Dec: -58 24 12.40 (-58.40344d) Equinox: J2000		Proper Motion RA: 0 Proper Motion Dec: 0 Redshift: 6.9		V=27+/-1	Reference Frame: ICRS			
<i>Comments: Category=CLUSTER OF GALAXIES Description=[NUCLEUS] Extended=YES</i>											
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	SPT0311 ACS	(1)SPT0311ACSP INT	ACS/WFC, ACCUM, WFC	F814W		POS TARG 5,-5	Pattern 1, Exps 1-1 i n SPT0311 ACS (04) (1)	25800 Secs (5308 Secs)		
									[==>1309.0 Secs (Pattern 1)]		[1]
									[==>1309.0 Secs (Pattern 2)]		
								[==>1345.0 Secs (Pattern 3)]			
								[==>1345.0 Secs (Pattern 4)]		[2]	
<i>Comments: 11000s of ACS Pointing of SPT0311 with dithering</i>											

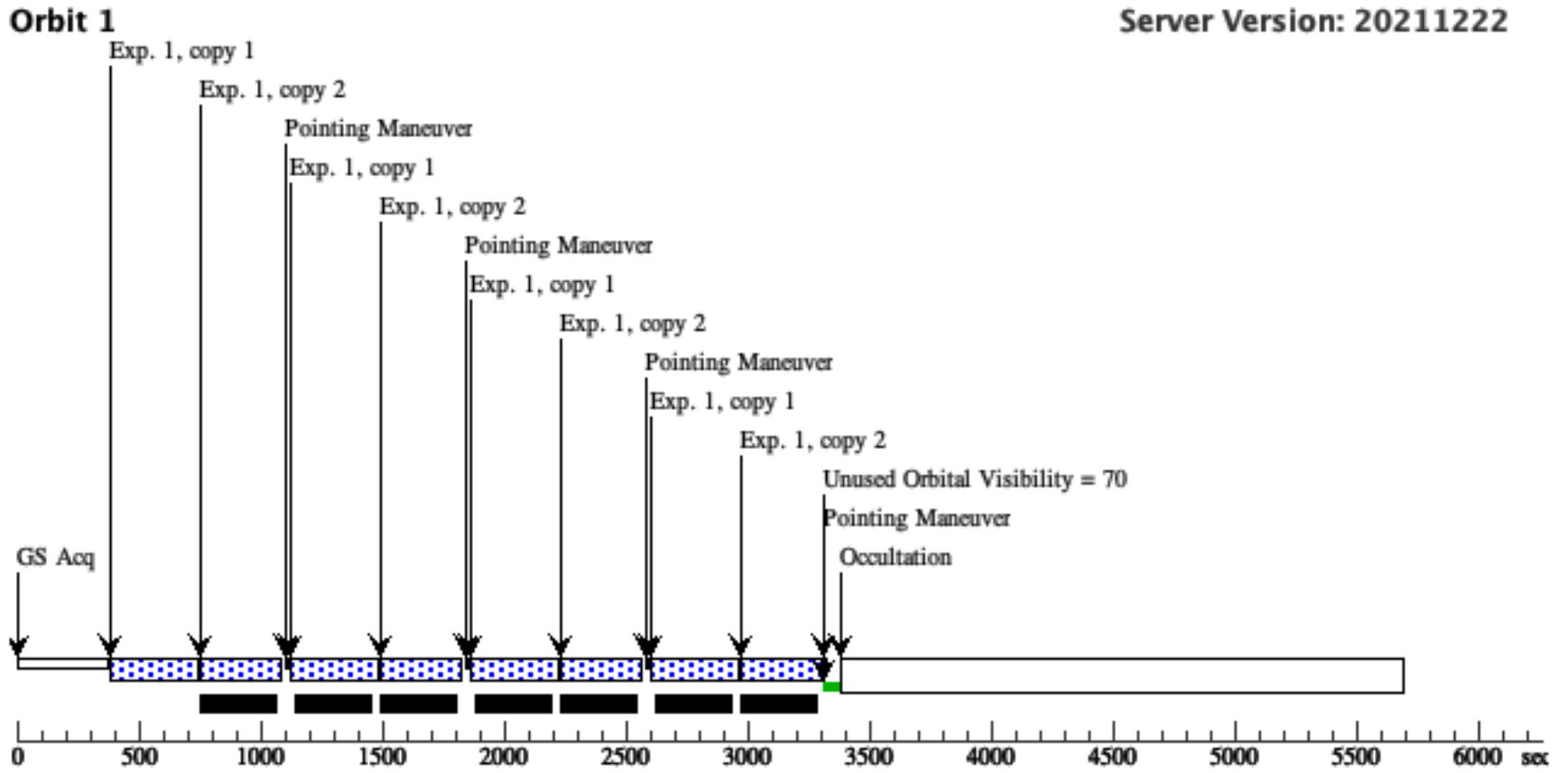


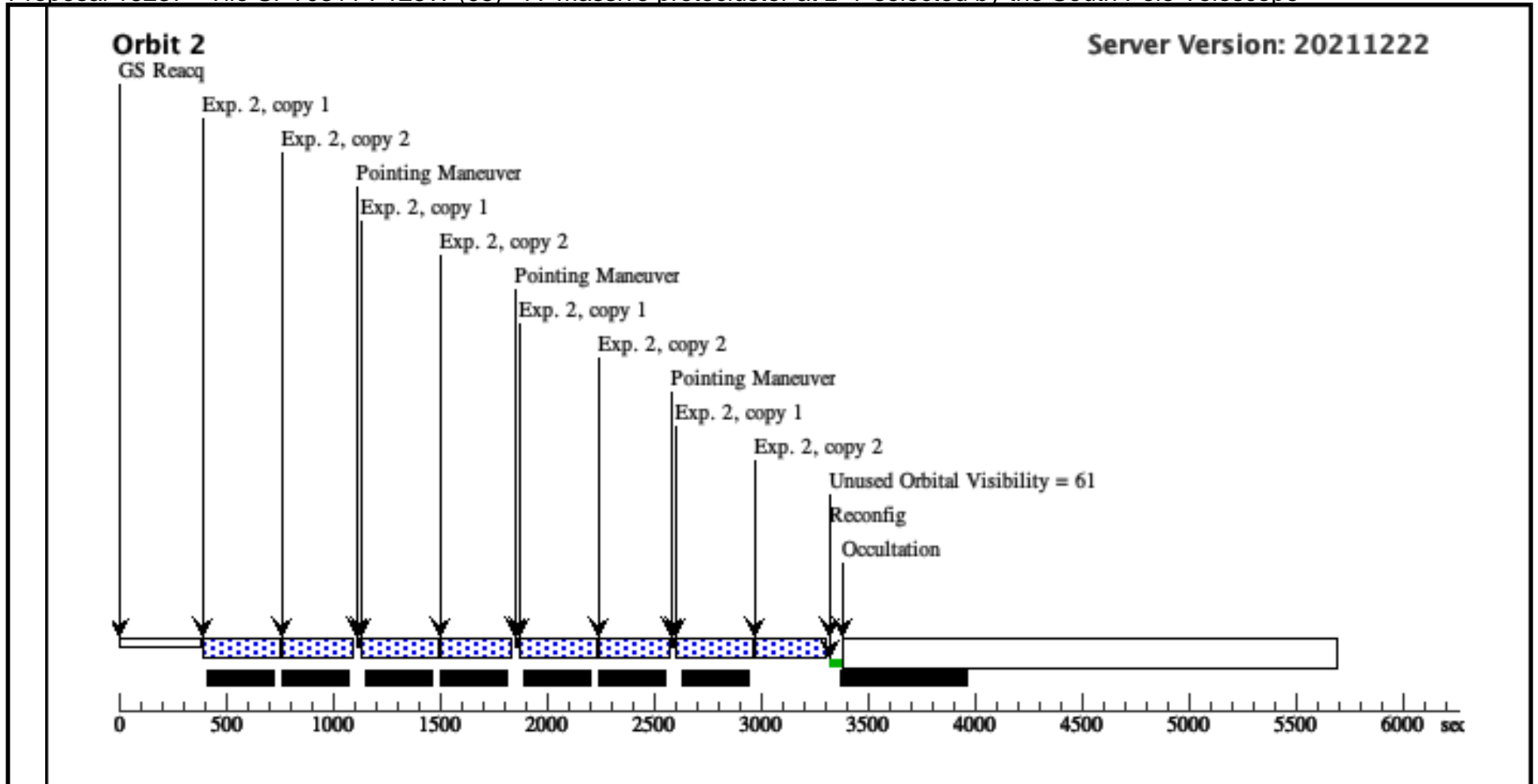
Proposal 16237 - Tile SPT0311 F125W (05) - A massive protocluster at z=7 selected by the South Pole Telescope

Tue Apr 05 20:00:36 GMT 2022

Visit	Proposal 16237, Tile SPT0311 F125W (05), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: ORIENT 135D TO 135D FROM 01 Comments: 5000s on-source in F125W filter targeting SPT0311									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(2)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1), (2)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	SPT0311ACSPPOINT	RA: 03 11 26.1000 (47.8587500d) Dec: -58 24 12.40 (-58.40344d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0 Redshift: 6.9	V=27+/-1	Reference Frame: ICRS				
	Comments: Category=CLUSTER OF GALAXIES Description=[NUCLEUS] Extended=YES									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1) SPT0311ACSPO INT	(1) SPT0311ACSPO INT	WFC3/IR, MULTIACCUM, IR	F125W	NSAMP=14; SAMP-SEQ=SPARS25	POS TARG -61.871 242499999994,-54.8417999999997	Pattern 2, Exps 1-1 in Tile SPT0311 F125W (05) (2)	327.938986 Secs X 2 (2623.512 Secs)	[1]
	Comments: 5000s on-source in F125W filter targeting SPT0311									
2	(1) SPT0311ACSPO INT	(1) SPT0311ACSPO INT	(1) SPT0311ACSPO INT	WFC3/IR, MULTIACCUM, IR	F125W	NSAMP=14; SAMP-SEQ=SPARS25	POS TARG -62.507 2425,-54.205799999 99997	Pattern 2, Exps 2-2 in Tile SPT0311 F125W (05) (2)	327.938986 Secs X 2 (2623.512 Secs)	[2]
	Comments: 5000s on-source in F125W filter targeting SPT0311									

Orbit Structure



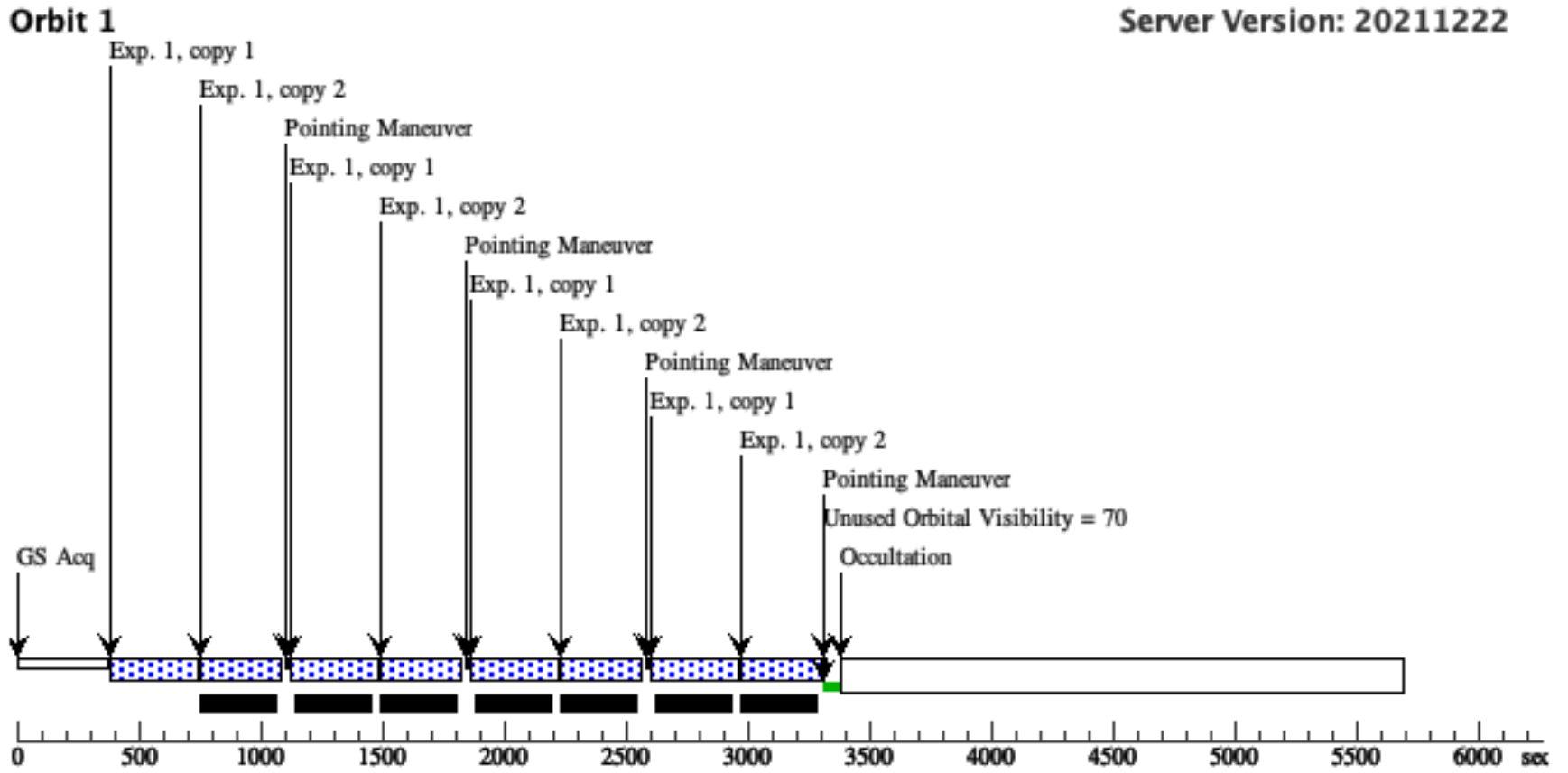


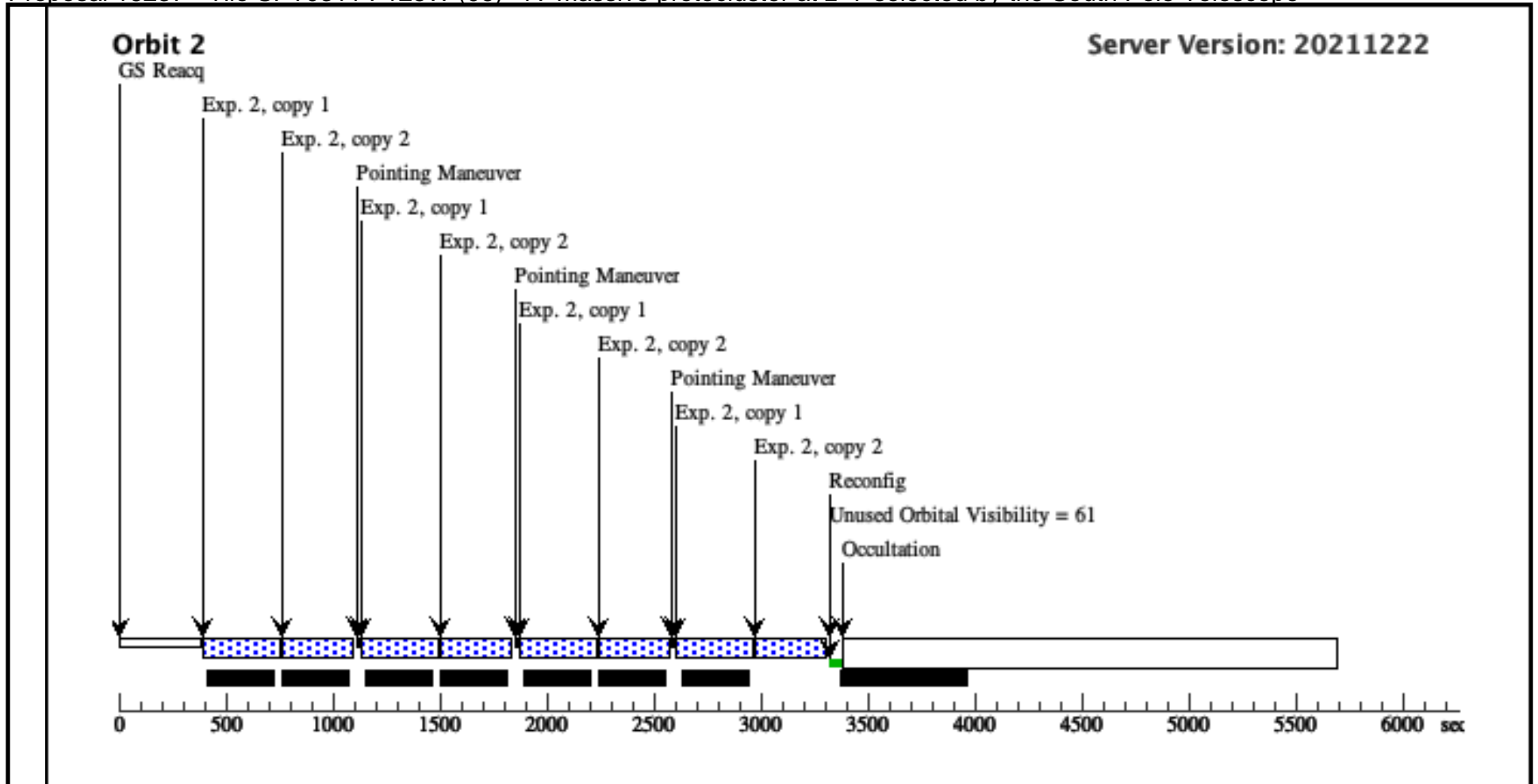
Proposal 16237 - Tile SPT0311 F125W (06) - A massive protocluster at z=7 selected by the South Pole Telescope

Tue Apr 05 20:00:36 GMT 2022

Visit	Proposal 16237, Tile SPT0311 F125W (06), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: SAME ORIENT AS 05 Comments: 5000s on-source in F125W filter targeting SPT0311									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(2)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1), (2)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	SPT0311ACSPPOINT	RA: 03 11 26.1000 (47.8587500d) Dec: -58 24 12.40 (-58.40344d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0 Redshift: 6.9	V=27+/-1	Reference Frame: ICRS				
	Comments: Category=CLUSTER OF GALAXIES Description=[NUCLEUS] Extended=YES									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1) SPT0311ACSP INT	(1) SPT0311ACSP	WFC3/IR, MULTIACCUM, IR	F125W	NSAMP=14; SAMP-SEQ=SPAR S25	POS TARG 61.8712 42499999999,-54.84 179999999997	Pattern 2, Exps 1-1 in Tile SPT0311 F125W (06) (2)	327.938986 Secs X 2 (2623.512 Secs)	[1]
	Comments: 5000s on-source in F125W filter targeting SPT0311									
2	(1) SPT0311ACSP INT	(1) SPT0311ACSP	WFC3/IR, MULTIACCUM, IR	F125W	NSAMP=14; SAMP-SEQ=SPAR S25	POS TARG 61.2352 42499999999,-54.205 799999999997	Pattern 2, Exps 2-2 in Tile SPT0311 F125W (06) (2)	327.938986 Secs X 2 (2623.512 Secs)	[2]	
	Comments: 5000s on-source in F125W filter targeting SPT0311									

Orbit Structure

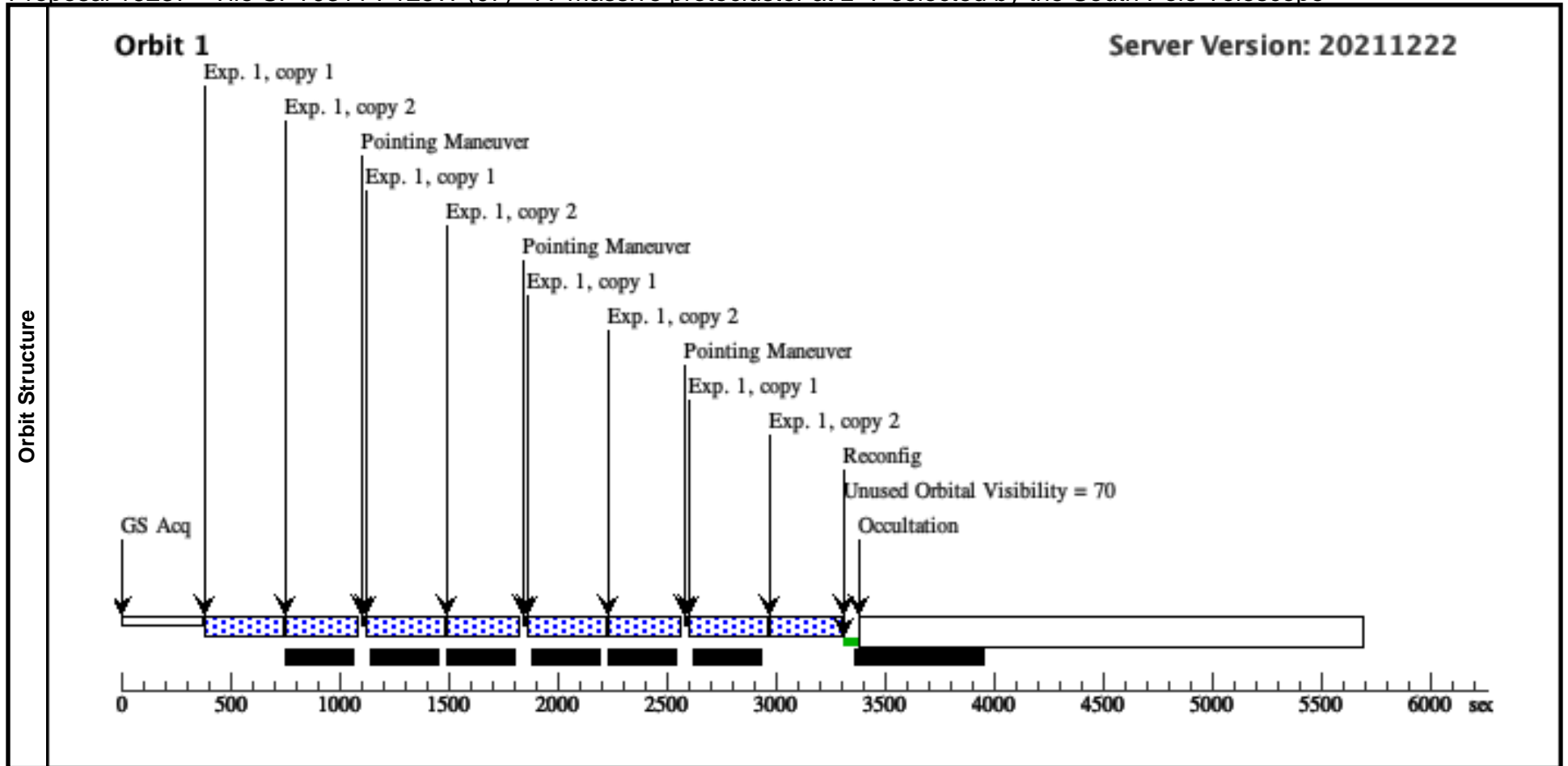




Proposal 16237 - Tile SPT0311 F125W (07) - A massive protocluster at z=7 selected by the South Pole Telescope

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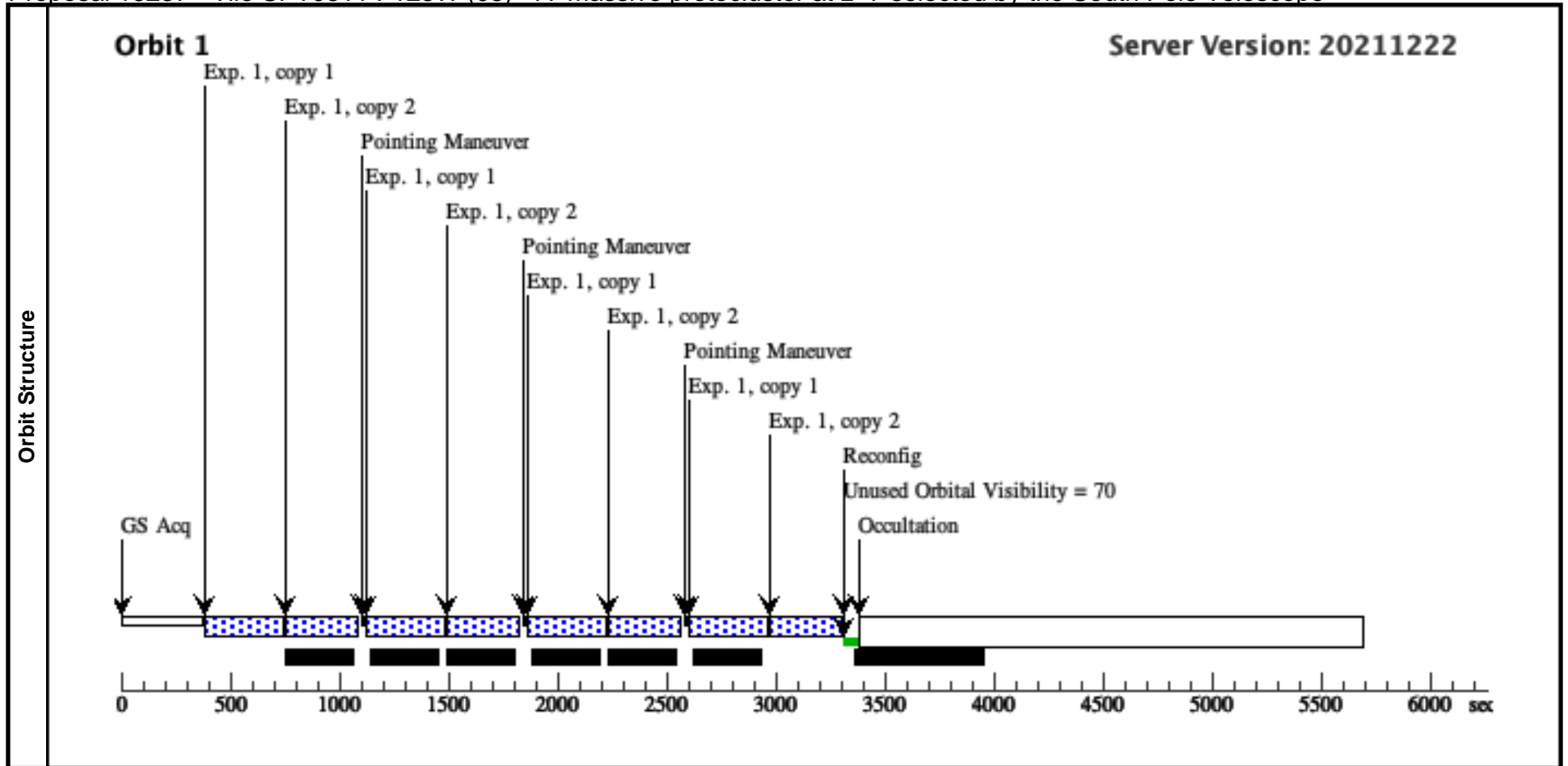
Visit	Proposal 16237, Tile SPT0311 F125W (07), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: SAME ORIENT AS 05 Comments: 5000s on-source in F125W filter targeting SPT0311										
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
(2)		Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false						(1)		
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(1)	SPT0311ACSPPOINT	RA: 03 11 26.1000 (47.8587500d)	Dec: -58 24 12.40 (-58.40344d)	Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0 Redshift: 6.9	V=27+/-1	Reference Frame: ICRS			
	Comments: Category=CLUSTER OF GALAXIES Description=[NUCLEUS] Extended=YES										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	(1) SPT0311ACSPPOINT	INT	WFC3/IR, MULTIACCUM, IR	F125W	NSAMP=14; SAMP-SEQ=SPARS25	POS TARG -61.871 242499999994,54.84 179999999997	Pattern 2, Exps 1-1 in Tile SPT0311 F125W (07) (2)	327.938986 Secs X 2 (2623.512 Secs)		[1]
	Comments: 5000s on-source in F125W filter targeting SPT0311 [=>(Pattern 1, Copy 1)] [=>(Pattern 1, Copy 2)] [=>(Pattern 2, Copy 1)] [=>(Pattern 2, Copy 2)] [=>(Pattern 3, Copy 1)] [=>(Pattern 3, Copy 2)] [=>(Pattern 4, Copy 1)] [=>(Pattern 4, Copy 2)]										



Proposal 16237 - Tile SPT0311 F125W (08) - A massive protocluster at z=7 selected by the South Pole Telescope

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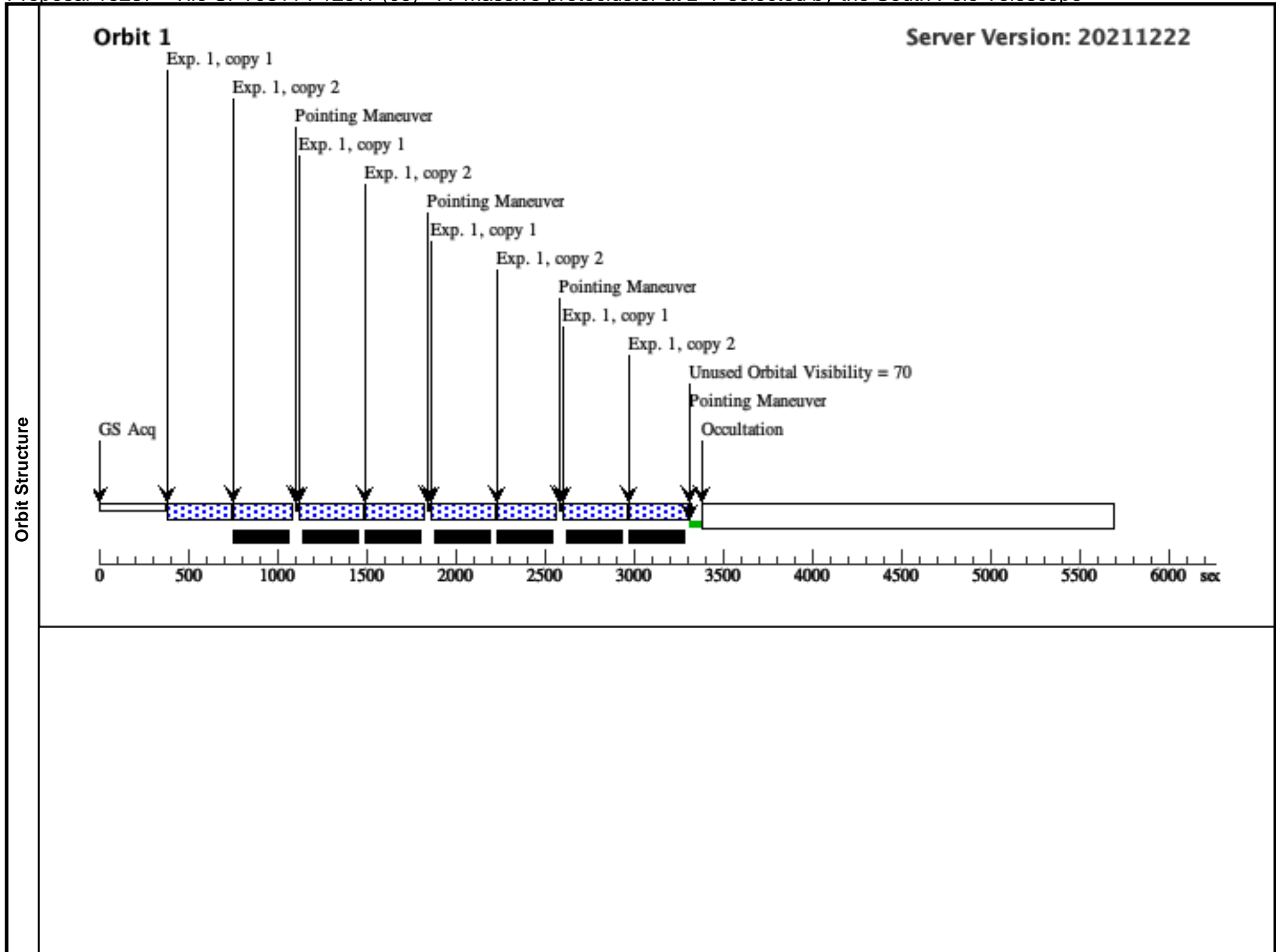
Visit	Proposal 16237, Tile SPT0311 F125W (08), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: SAME ORIENT AS 05 <i>Comments: 5000s on-source in F125W filter targeting SPT0311</i>										
	Patterns	#	Primary Pattern				Secondary Pattern			Exposures	
(2)		Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false						(1)		
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes	Miscellaneous			
	(1)	SPT0311ACSPPOINT	RA: 03 11 26.1000 (47.8587500d) Dec: -58 24 12.40 (-58.40344d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0 Redshift: 6.9		V=27+/-1	Reference Frame: ICRS				
	<i>Comments: Category=CLUSTER OF GALAXIES Description=[NUCLEUS] Extended=YES</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	(1) SPT0311ACSPPOINT	INT	WFC3/IR, MULTIACCUM, IR	F125W	NSAMP=14; SAMP-SEQ=SPARS25	POS TARG 61.8712 42499999994,54.841 79999999997	Pattern 2, Exps 1-1 in Tile SPT0311 F125W (08) (2)	327.938986 Secs X 2 (2623.512 Secs)		[1]
	<i>Comments: 5000s on-source in F125W filter targeting SPT0311</i>										

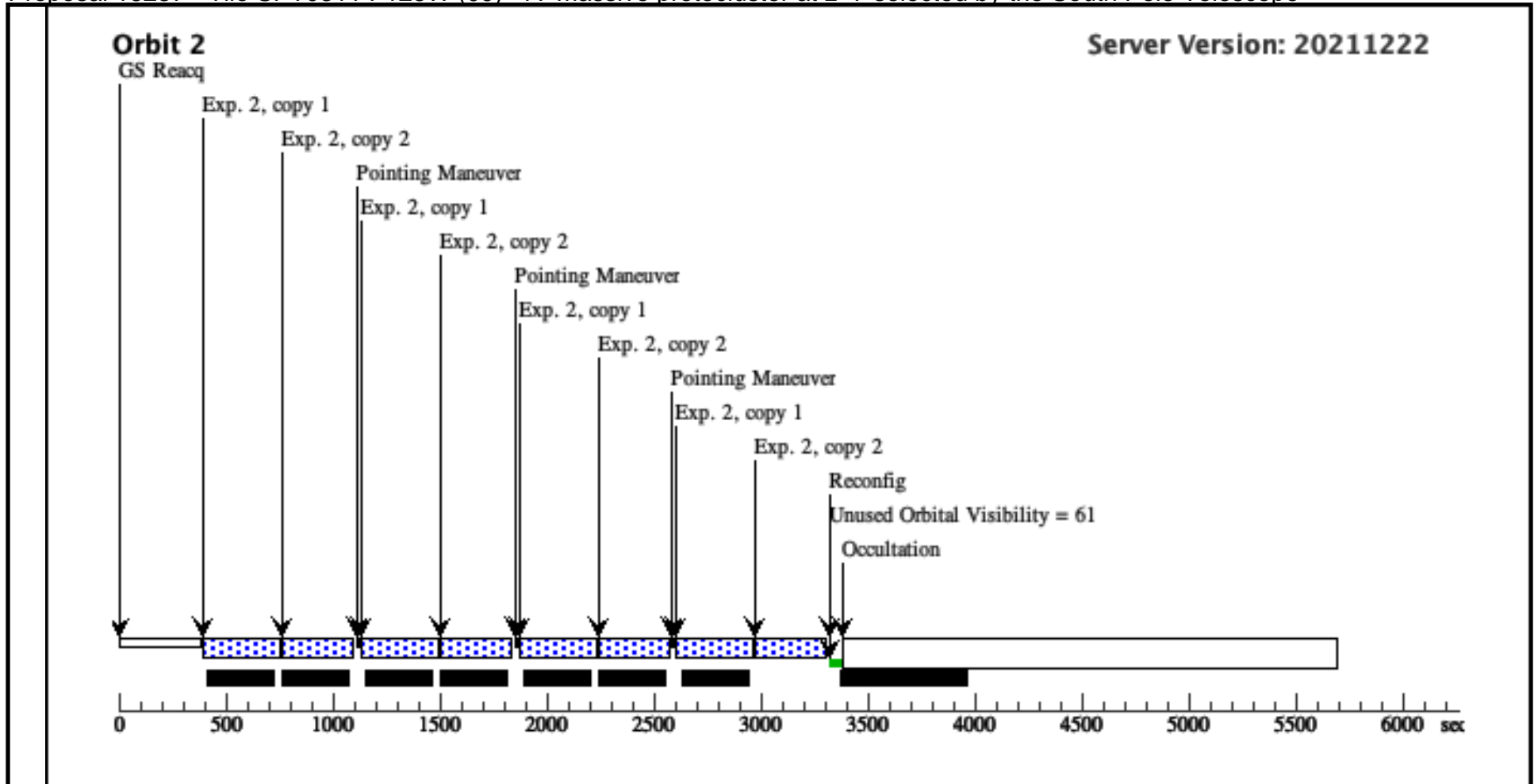


Proposal 16237 - Tile SPT0311 F125W (09) - A massive protocluster at z=7 selected by the South Pole Telescope

Tue Apr 05 20:00:36 GMT 2022

Visit	Proposal 16237, Tile SPT0311 F125W (09), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: SAME ORIENT AS 05 Comments: 5000s on-source in F160W filter targeting SPT0311									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(2)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1), (2)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	SPT0311ACSPPOINT	RA: 03 11 26.1000 (47.8587500d) Dec: -58 24 12.40 (-58.40344d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0 Redshift: 6.9	V=27+/-1	Reference Frame: ICRS				
	Comments: Category=CLUSTER OF GALAXIES Description=[NUCLEUS] Extended=YES									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1) SPT0311ACSP INT	(1) SPT0311ACSP	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=14; SAMP-SEQ=SPAR S25	POS TARG -61.871 242499999994,-54.8 4179999999997	Pattern 2, Exps 1-1 i n Tile SPT0311 F12 5W (09) (2)	327.938986 Secs X 2 (2623.512 Sec s)	
									[==>(Pattern 1, Copy 1)] [==>(Pattern 1, Copy 2)] [==>(Pattern 2, Copy 1)] [==>(Pattern 2, Copy 2)] [==>(Pattern 3, Copy 1)] [==>(Pattern 3, Copy 2)] [==>(Pattern 4, Copy 1)] [==>(Pattern 4, Copy 2)]	[1]
	Comments: 5000s on-source in F160W filter targeting SPT0311									
	2	(1) SPT0311ACSP INT	(1) SPT0311ACSP	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=14; SAMP-SEQ=SPAR S25	POS TARG -62.507 2425,-54.205799999 99997	Pattern 2, Exps 2-2 i n Tile SPT0311 F12 5W (09) (2)	327.938986 Secs X 2 (2623.512 Sec s)	
									[==>(Pattern 1, Copy 1)] [==>(Pattern 1, Copy 2)] [==>(Pattern 2, Copy 1)] [==>(Pattern 2, Copy 2)] [==>(Pattern 3, Copy 1)] [==>(Pattern 3, Copy 2)] [==>(Pattern 4, Copy 1)] [==>(Pattern 4, Copy 2)]	[2]
	Comments: 5000s on-source in F160W filter targeting SPT0311									





Proposal 16237 - Tile SPT0311 F125W (10) - A massive protocluster at z=7 selected by the South Pole Telescope

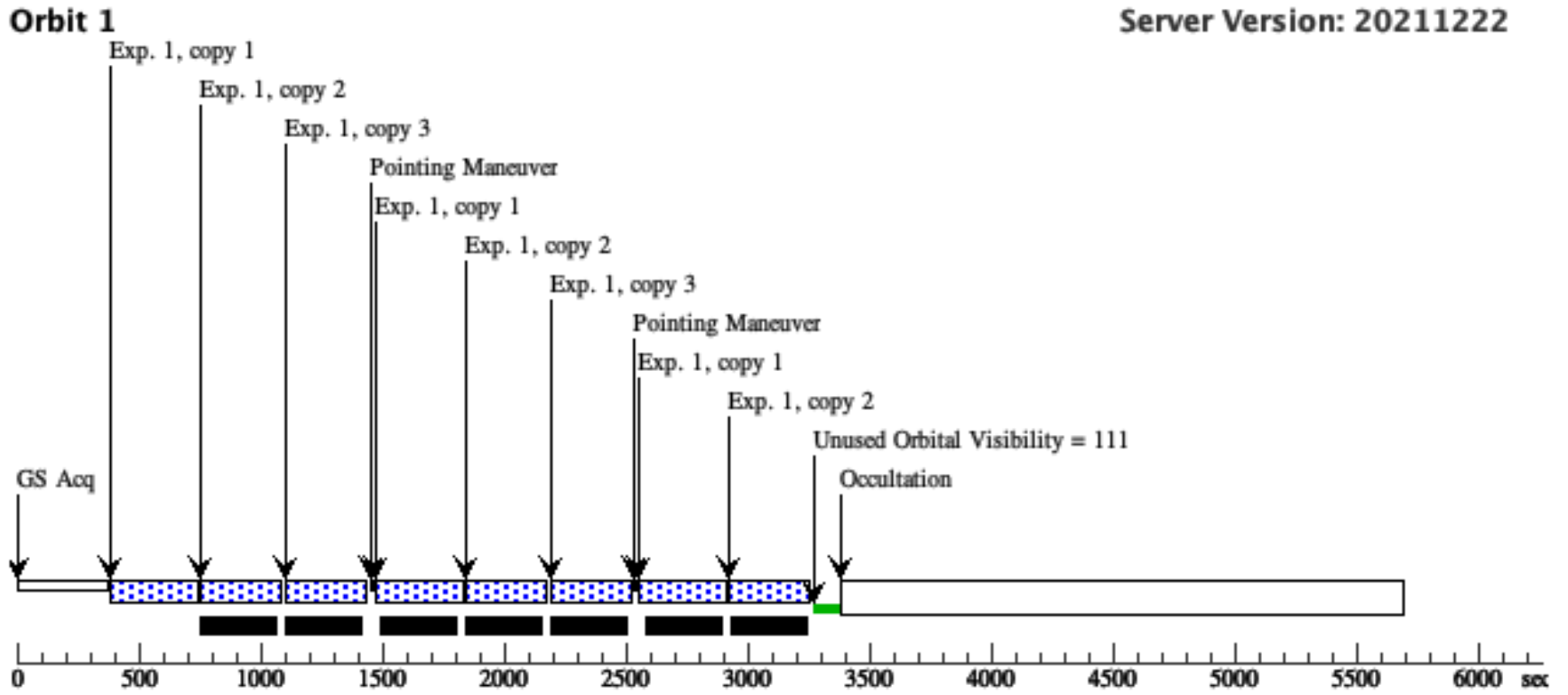
Visit	Proposal 16237, Tile SPT0311 F125W (10), implementation Tue Apr 05 20:00:36 GMT 2022 Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: SAME ORIENT AS 09 <i>Comments: 5000s on-source in F160W filter targeting SPT0311</i>					
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures	
	(2)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1), (2)	
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	SPT0311ACSPPOINT	RA: 03 11 26.1000 (47.8587500d) Dec: -58 24 12.40 (-58.40344d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0 Redshift: 6.9	V=27+/-1	Reference Frame: ICRS
	<i>Comments:</i> Category=CLUSTER OF GALAXIES Description=[NUCLEUS] Extended=YES					

Proposal 16237 - Tile SPT0311 F125W (10) - A massive protocluster at z=7 selected by the South Pole Telescope

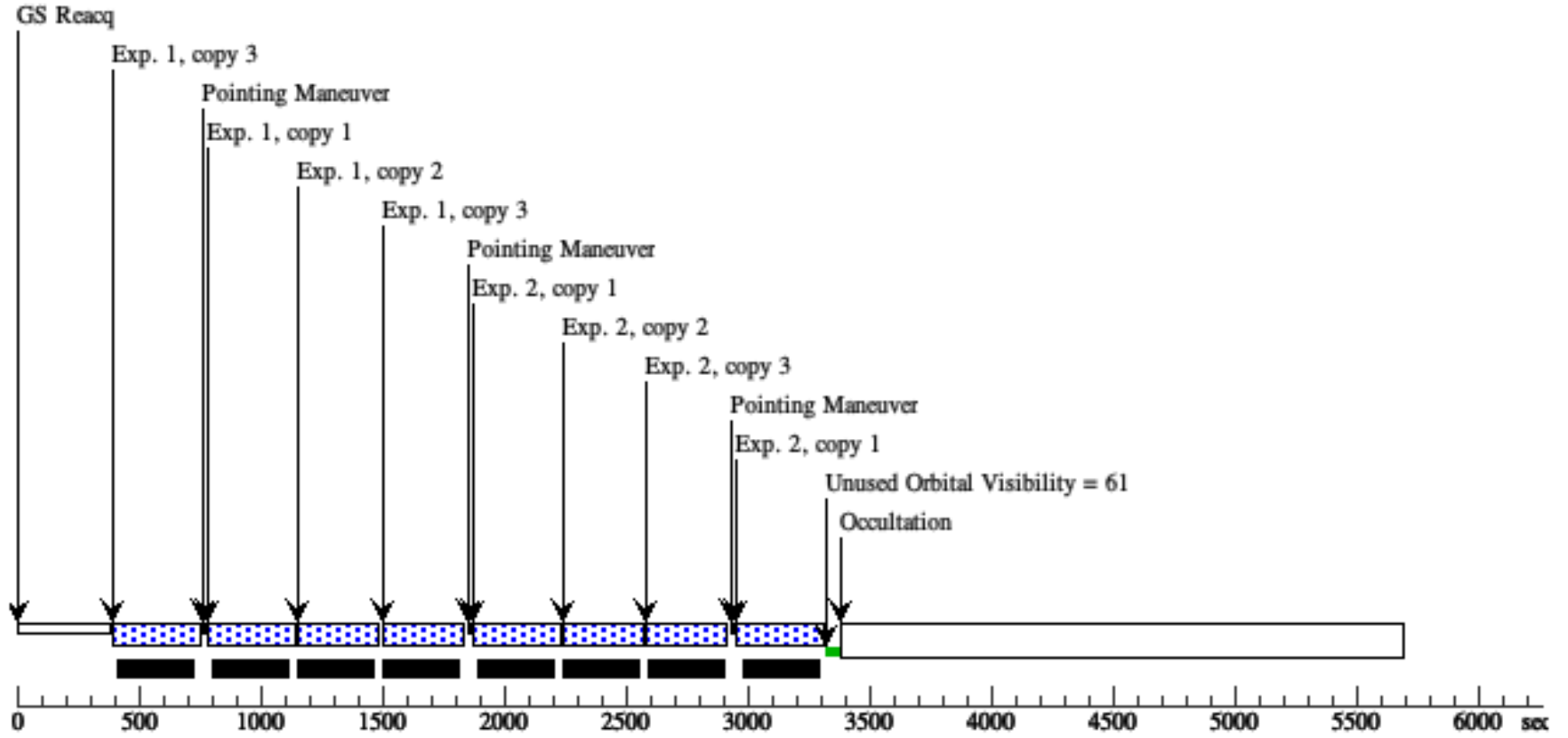
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
Exposures	1	(1) SPT0311ACSPO INT	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=14; SAMP-SEQ=SPAR S25	POS TARG 61.8712 42499999994,-54.84 17999999997	Pattern 2, Exps 1-1 i n Tile SPT0311 F12 5W (10) (2)	327.938986 Secs X 3 (3935.268 Sec s)	
								[==>(Pattern 1, Copy 1)]	[1]
								[==>(Pattern 1, Copy 2)]	
								[==>(Pattern 1, Copy 3)]	
								[==>(Pattern 2, Copy 1)]	
								[==>(Pattern 2, Copy 2)]	
								[==>(Pattern 2, Copy 3)]	
								[==>(Pattern 3, Copy 1)]	
								[==>(Pattern 3, Copy 2)]	[2]
								[==>(Pattern 3, Copy 3)]	
[==>(Pattern 4, Copy 1)]									
[==>(Pattern 4, Copy 2)]									
[==>(Pattern 4, Copy 3)]									
<i>Comments: 5000s on-source in F160W filter targeting SPT0311</i>									
Exposures	2	(1) SPT0311ACSPO INT	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=14; SAMP-SEQ=SPAR S25	POS TARG 61.2352 42499999999,-54.205 79999999997	Pattern 2, Exps 2-2 i n Tile SPT0311 F12 5W (10) (2)	327.938986 Secs X 3 (3935.268 Sec s)	
								[==>(Pattern 1, Copy 1)]	[2]
								[==>(Pattern 1, Copy 2)]	
								[==>(Pattern 1, Copy 3)]	
								[==>(Pattern 2, Copy 1)]	
								[==>(Pattern 2, Copy 2)]	[3]
								[==>(Pattern 2, Copy 3)]	
								[==>(Pattern 3, Copy 1)]	
								[==>(Pattern 3, Copy 2)]	
								[==>(Pattern 3, Copy 3)]	
[==>(Pattern 4, Copy 1)]									
[==>(Pattern 4, Copy 2)]									
[==>(Pattern 4, Copy 3)]									
<i>Comments: 5000s on-source in F160W filter targeting SPT0311</i>									

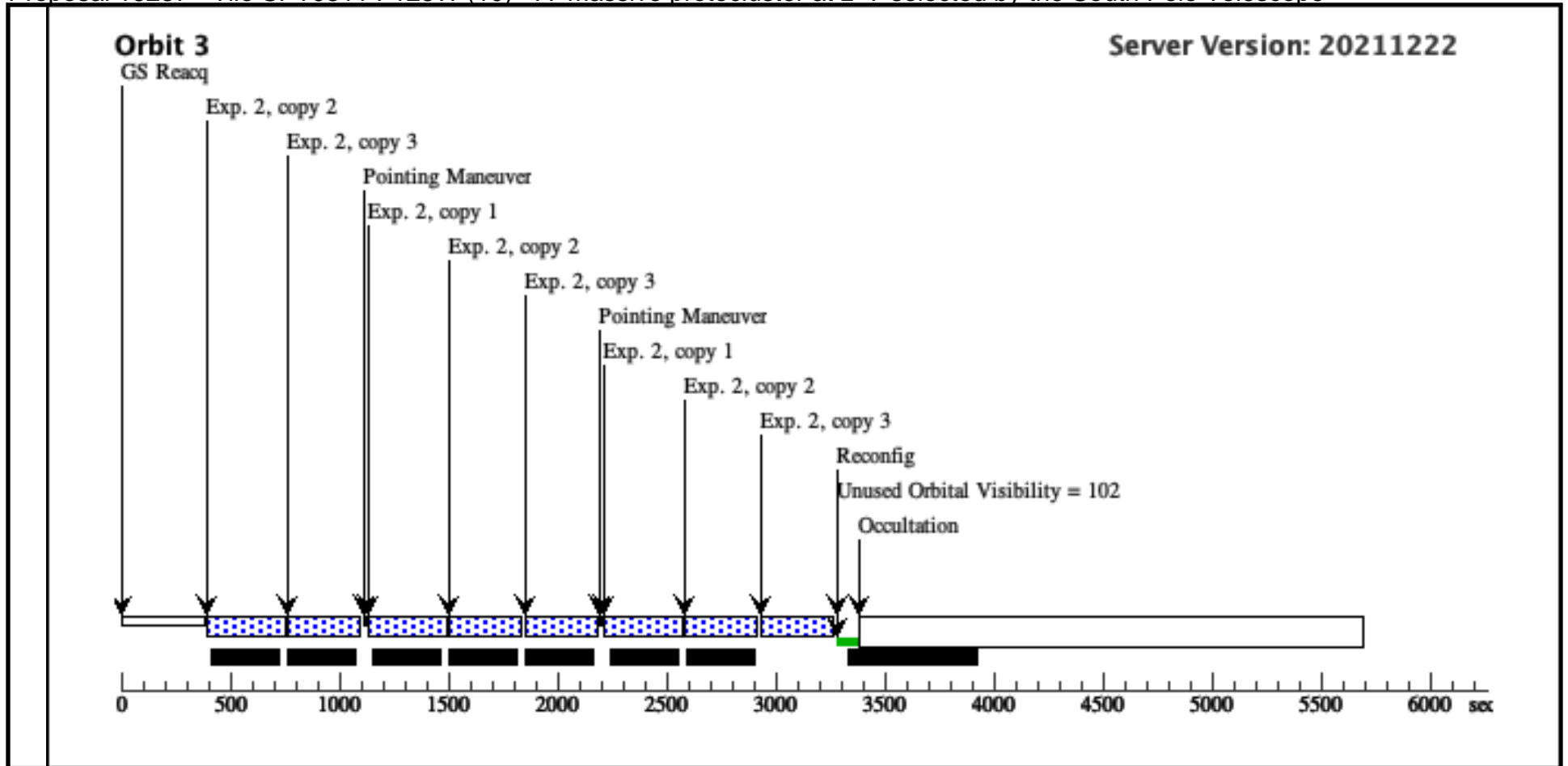
Server Version: 20211222

Orbit Structure



Orbit 2



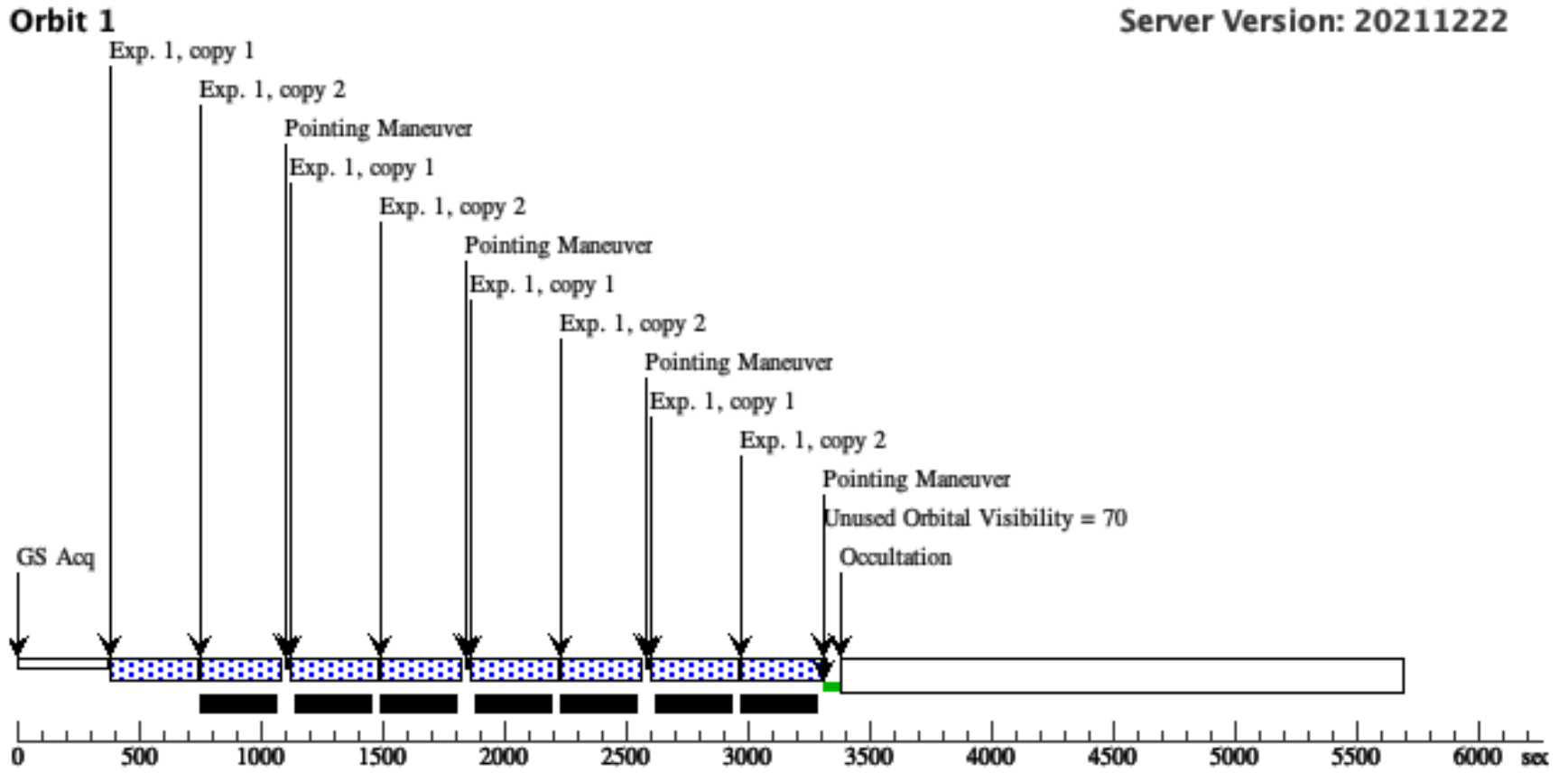


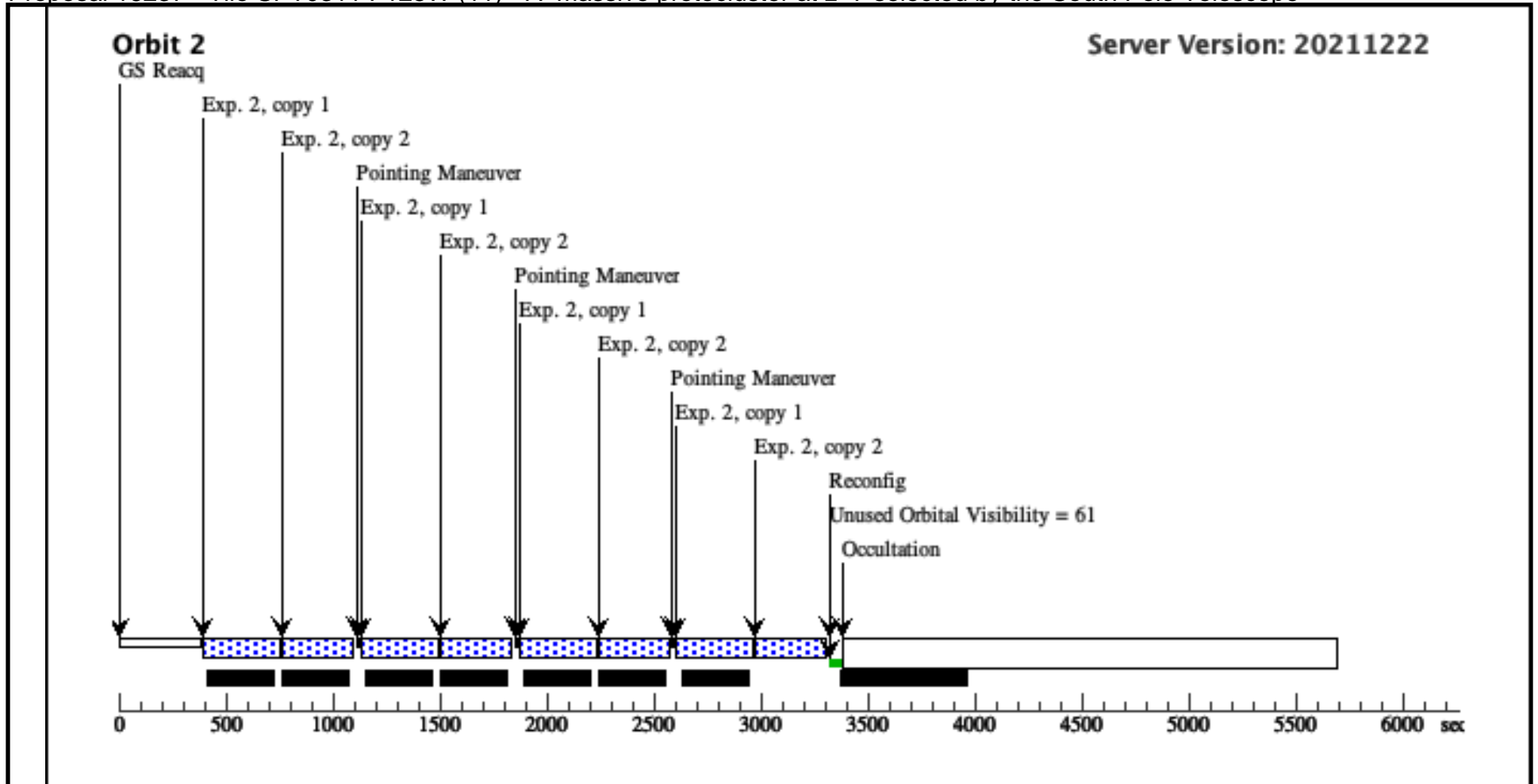
Proposal 16237 - Tile SPT0311 F125W (11) - A massive protocluster at z=7 selected by the South Pole Telescope

Tue Apr 05 20:00:36 GMT 2022

Visit	Proposal 16237, Tile SPT0311 F125W (11), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: SAME ORIENT AS 09 Comments: 5000s on-source in F160W filter targeting SPT0311										
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures						
	(2)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1), (2)						
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous					
	(1)	SPT0311ACSPPOINT	RA: 03 11 26.1000 (47.8587500d) Dec: -58 24 12.40 (-58.40344d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0 Redshift: 6.9	V=27+/-1	Reference Frame: ICRS					
	Comments: Category=CLUSTER OF GALAXIES Description=[NUCLEUS] Extended=YES										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
	1	(1) SPT0311ACSP INT	(1) SPT0311ACSP	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=14; SAMP-SEQ=SPAR S25	POS TARG -61.871 242499999994,54.84 179999999997	Pattern 2, Exps 1-1 i n Tile SPT0311 F12 5W (11) (2)	327.938986 Secs X 2 (2623.512 Secs)		
									[==>(Pattern 1, Copy 1)] [==>(Pattern 1, Copy 2)] [==>(Pattern 2, Copy 1)] [==>(Pattern 2, Copy 2)] [==>(Pattern 3, Copy 1)] [==>(Pattern 3, Copy 2)] [==>(Pattern 4, Copy 1)] [==>(Pattern 4, Copy 2)]	[1]	
	Comments: 5000s on-source in F160W filter targeting SPT0311										
	2	(1) SPT0311ACSP INT	(1) SPT0311ACSP	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=14; SAMP-SEQ=SPAR S25	POS TARG -62.507 2425,55.4777999999 99974	Pattern 2, Exps 2-2 i n Tile SPT0311 F12 5W (11) (2)	327.938986 Secs X 2 (2623.512 Secs)		
									[==>(Pattern 1, Copy 1)] [==>(Pattern 1, Copy 2)] [==>(Pattern 2, Copy 1)] [==>(Pattern 2, Copy 2)] [==>(Pattern 3, Copy 1)] [==>(Pattern 3, Copy 2)] [==>(Pattern 4, Copy 1)] [==>(Pattern 4, Copy 2)]	[2]	
	Comments: 5000s on-source in F160W filter targeting SPT0311										

Orbit Structure





Proposal 16237 - Tile SPT0311 F125W (12) - A massive protocluster at z=7 selected by the South Pole Telescope

Tue Apr 05 20:00:36 GMT 2022

Visit	Proposal 16237, Tile SPT0311 F125W (12), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: SAME ORIENT AS 09 Comments: 5000s on-source in F160W filter targeting SPT0311									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(2)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1), (2)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	SPT0311ACSPPOINT	RA: 03 11 26.1000 (47.8587500d) Dec: -58 24 12.40 (-58.40344d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0 Redshift: 6.9	V=27+/-1	Reference Frame: ICRS				
	Comments: Category=CLUSTER OF GALAXIES Description=[NUCLEUS] Extended=YES									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1) SPT0311ACSP INT	(1) SPT0311ACSP	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=14; SAMP-SEQ=SPAR S25	POS TARG 61.8712 42499999994,54.841 79999999997	Pattern 2, Exps 1-1 i n Tile SPT0311 F12 5W (12) (2)	327.938986 Secs X 2 (2623.512 Secs)	
									[==>(Pattern 1, Copy 1)] [==>(Pattern 1, Copy 2)] [==>(Pattern 2, Copy 1)] [==>(Pattern 2, Copy 2)] [==>(Pattern 3, Copy 1)] [==>(Pattern 3, Copy 2)] [==>(Pattern 4, Copy 1)] [==>(Pattern 4, Copy 2)]	[1]
	Comments: 5000s on-source in F160W filter targeting SPT0311									
	2	(1) SPT0311ACSP INT	(1) SPT0311ACSP	WFC3/IR, MULTIACCUM, IR	F160W	NSAMP=14; SAMP-SEQ=SPAR S25	POS TARG 61.2352 42499999999,55.4777 99999999974	Pattern 2, Exps 2-2 i n Tile SPT0311 F12 5W (12) (2)	327.938986 Secs X 2 (2623.512 Secs)	
									[==>(Pattern 1, Copy 1)] [==>(Pattern 1, Copy 2)] [==>(Pattern 2, Copy 1)] [==>(Pattern 2, Copy 2)] [==>(Pattern 3, Copy 1)] [==>(Pattern 3, Copy 2)] [==>(Pattern 4, Copy 1)] [==>(Pattern 4, Copy 2)]	[2]
	Comments: 5000s on-source in F160W filter targeting SPT0311									

Orbit Structure

