



18419 - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Observations with WFC3/IR

Cycle: 34, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

<i>Name</i>	<i>Institution</i>
Dr. Caroline Huang (PI) (Contact)	Smithsonian Institution Astrophysical Observatory
Mr. Antonio Capodagli (CoI)	Florida State University
Dr. Louise Breuval (CoI) (ESA Member)	Space Telescope Science Institute - ESA
Dr. Stefano Casertano (CoI)	Space Telescope Science Institute
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Dr. Lucas M. Macri (CoI)	University of Texas Rio Grande Valley
Dr. Massimo Marengo (CoI)	Florida State University
Dr. Marina Rejkuba (CoI) (ESA Member)	European Southern Observatory - Germany
Dr. Adam Riess (CoI)	The Johns Hopkins University
Dr. Wenlong Yuan (CoI)	The Johns Hopkins University

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) NGC4258-INNER	WFC3/IR	1	19-Aug-2026 07:00:16.0	yes
02	(1) NGC4258-INNER	WFC3/IR	1	19-Aug-2026 07:00:16.0	yes
03	(1) NGC4258-INNER	WFC3/IR	1	19-Aug-2026 07:00:17.0	yes
04	(1) NGC4258-INNER	WFC3/IR	1	19-Aug-2026 07:00:17.0	yes
05	(1) NGC4258-INNER	WFC3/IR	1	19-Aug-2026 07:00:17.0	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>
06	(2) CEN-A-F1	WFC3/IR	1	19-Aug-2026 07:00:18.0	yes
07	(2) CEN-A-F1	WFC3/IR	1	19-Aug-2026 07:00:18.0	yes
08	(2) CEN-A-F1	WFC3/IR	1	19-Aug-2026 07:00:19.0	yes
09	(2) CEN-A-F1	WFC3/IR	1	19-Aug-2026 07:00:20.0	yes
10	(2) CEN-A-F1	WFC3/IR	1	19-Aug-2026 07:00:20.0	yes
11	(3) CEN-A-F2	WFC3/IR	1	19-Aug-2026 07:00:21.0	yes
12	(3) CEN-A-F2	WFC3/IR	1	19-Aug-2026 07:00:22.0	yes
13	(3) CEN-A-F2	WFC3/IR	1	19-Aug-2026 07:00:22.0	yes
14	(3) CEN-A-F2	WFC3/IR	1	19-Aug-2026 07:00:23.0	yes
15	(3) CEN-A-F2	WFC3/IR	1	19-Aug-2026 07:00:23.0	yes
16	(4) M-51	WFC3/IR	1	19-Aug-2026 07:00:24.0	yes
17	(4) M-51	WFC3/IR	1	19-Aug-2026 07:00:24.0	yes
18	(4) M-51	WFC3/IR	1	19-Aug-2026 07:00:24.0	yes
19	(4) M-51	WFC3/IR	1	19-Aug-2026 07:00:25.0	yes
20	(4) M-51	WFC3/IR	1	19-Aug-2026 07:00:25.0	yes
21	(4) M-51	WFC3/IR	1	19-Aug-2026 07:00:25.0	yes
22	(4) M-51	WFC3/IR	1	19-Aug-2026 07:00:26.0	yes

22 Total Orbits Used

ABSTRACT

The discrepancy between the local and early-Universe measurements of the Hubble constant (H_0) remains a key unresolved issue in cosmology. The tension has grown even more robust in recent joint analysis from the Local Distance Network collaboration, with a baseline result 7.1sigma from the early Universe + LambdaCDM value, hinting at missing physics beyond the standard model. In this networked approach, reducing reliance on any single method requires robust cross-checks between independent indicators. Luminous, oxygen-rich Mira variables are uniquely positioned to provide these vital cross-checks across all distances and host environments.

To maximize the utility of HST's archival WFC3/IR data before the instrument's eventual decommissioning, we propose new, multi-epoch observations of three nearby galaxies: NGC 4258, NGC 5128, and M51. Combined with archival data, this program will 1) extend and improve the absolute calibration of the Mira Period-Luminosity Relation, 2) bridge HST and ground-based IR filter systems, 3) demonstrate the feasibility of obtaining Mira distances across diverse galaxy environments, and 4) conduct a novel cross-checks against Cepheids, TRGB, and the Type IIP supernova expanding photosphere method. Because neither JWST nor Roman can replicate Hubble's observational flexibility and cadence for nearby resolved stellar populations, this program represents an essential, time-sensitive investment to finalize the Mira distance scale.

OBSERVING DESCRIPTION

This program consists of a total of 33 orbits divided between Cycle 34 (22 orbits) and Cycle 35 (11 orbits). We will target 3 galaxies: M51, Cen A, and NGC 4258. The observations are designed to synergize with the existing archival observations while allowing as large of visibility windows as possible. In order to recover periods precisely, we have designated the necessary timing requirements in the observation setups. All observations will be made with WFC3/IR and do not have any orientation angle constraints. Targets are resolved stellar populations in nearby galaxies.

NGC 4258 and M51 are located at ~ 7 Mpc, and thus we will observe only F160W to increase the recovery of fainter, shorter-period stars. Cen A, which is at ~ 3.5 Mpc will be observed in both F160W and F110W to add broadband color information.

Cycle 34 Observations

NGC 4258: 1 field which will be observed in 5 epochs, each consisting of 1 orbit. Observations will utilize a four-point dither pattern and F160W filter. Observations will have a semi-logarithmic spacing to reduce potential aliasing, while also recovering shorter periods more accurately.

Cen A: 2 fields (F1 and F2, based on the designations from Rejkuba+2003a,b and 2004), each with 5 epochs, consisting of 1 orbit (a total of 10 epochs/orbits). Observations will utilize a four-point dither pattern and F160W and F110W filters. Observations will be spaced approximately monthly over the course of the year during visibility windows.

M51: 1 field which will be observed in 7 epochs each consisting of 1 orbit. Observations will utilize a four-point dither pattern and F160W filter. Observations will have roughly monthly spacing over the course of a year.

Cycle 35 Observations

NGC 4258: No observations in Cycle 35.

Cen A: 2 fields observed in 3 epochs consisting of 1 orbit each (a total of 6 orbits). Observations will utilize a four-point dither pattern and F160W and F110W filters. Observing over Cycle 34 and 35 will improve the baseline for long-period variables.

M51: 1 field observed in 5 epochs, consisting of 1 orbit each for a total of 5 orbits. Observations will utilize a four-point dither pattern and F160W filter. Combined with Cycle 34 observations these will result in an improved long-period variable baseline.

Proposal 18419 - Visit 1, NGC 4258 (01) - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Ob...

Visit	Proposal 18419, Visit 1, NGC 4258 (01)					Wed Aug 19 11:00:26 GMT 2026				
	Diagnostic Status: No Diagnostics									
	Scientific Instruments: WFC3/IR									
	Special Requirements: BEFORE 01-DEC-2026:00:00:00									
Patterns	#	Primary Pattern			Secondary Pattern		Exposures			
	(1)	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)	NGC4258-INNER	RA: 12 18 47.5140 (184.6979750d) Dec: +47 20 20.25 (47.33896d) Equinox: J2000 Comments: Category=GALAXY Description=[DISK, SPIRAL, SPIRAL ARM]		V=8.41	Reference Frame: ICRS				
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	F160W	(1) NGC4258-INNE R	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 50; NSAMP=13		Pattern 1, Exps 1-1 i n Visit 1, NGC 4258 (01) (1)	602.937703 Secs (2411.751 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]
Orbit Structure	Orbit 1									
	Server Version: 20260618									

Visit	Proposal 18419, Visit 2, NGC 4258 (02)										Wed Aug 19 11:00:26 GMT 2026	
	Diagnostic Status: No Diagnostics											
	Scientific Instruments: WFC3/IR											
	Special Requirements: AFTER 01 BY 20 D TO 40 D											
Patterns	#	Primary Pattern				Secondary Pattern				Exposures		
	(1)	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)	NGC4258-INNER	RA: 12 18 47.5140 (184.6979750d) Dec: +47 20 20.25 (47.33896d) Equinox: J2000				V=8.41		Reference Frame: ICRS			
	Comments: Category=GALAXY Description=[DISK, SPIRAL, SPIRAL ARM]											
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit	
	1	F160W	(1) NGC4258-INNE R	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 50; NSAMP=13		Pattern 1, Exps 1-1 i n Visit 2, NGC 4258 (02) (1)	602.937703 Secs (2411.751 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]	
Orbit Structure	Orbit 1											Server Version: 20260618

Proposal 18419 - Visit 3, NGC 4258 (03) - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Ob...

Visit	Proposal 18419, Visit 3, NGC 4258 (03)										Wed Aug 19 11:00:26 GMT 2026	
	Diagnostic Status: No Diagnostics											
	Scientific Instruments: WFC3/IR											
	Special Requirements: AFTER 01 BY 100 D TO 120 D											
Patterns	#	Primary Pattern					Secondary Pattern				Exposures	
	(1)	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)	NGC4258-INNER	RA: 12 18 47.5140 (184.6979750d) Dec: +47 20 20.25 (47.33896d) Equinox: J2000				V=8.41		Reference Frame: ICRS			
	Comments: Category=GALAXY Description=[DISK, SPIRAL, SPIRAL ARM]											
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit	
	1	F160W	(1) NGC4258-INNE R	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 50; NSAMP=13		Pattern 1, Exps 1-1 i n Visit 3, NGC 4258 (03) (1)	602.937703 Secs (2411.751 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]		[1]	
Orbit Structure	Orbit 1											Server Version: 20260618
	The diagram illustrates the orbital structure over a 6000-second period. Key events include: GS Acq at ~100s, four Exp. 1 exposures at ~300s, ~1000s, ~1600s, and ~2300s, three Pointing Maneuvers at ~1100s, ~1700s, and ~2400s, a Reconfig at ~2900s, and an Occultation at ~3000s. A blue checkered bar represents the observation period from ~300s to ~2900s. Black bars below the timeline indicate unused orbital visibility periods. A text label states 'Unused Orbital Visibility = 70'.											

Proposal 18419 - Visit 4, NGC 4258 (04) - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Ob...

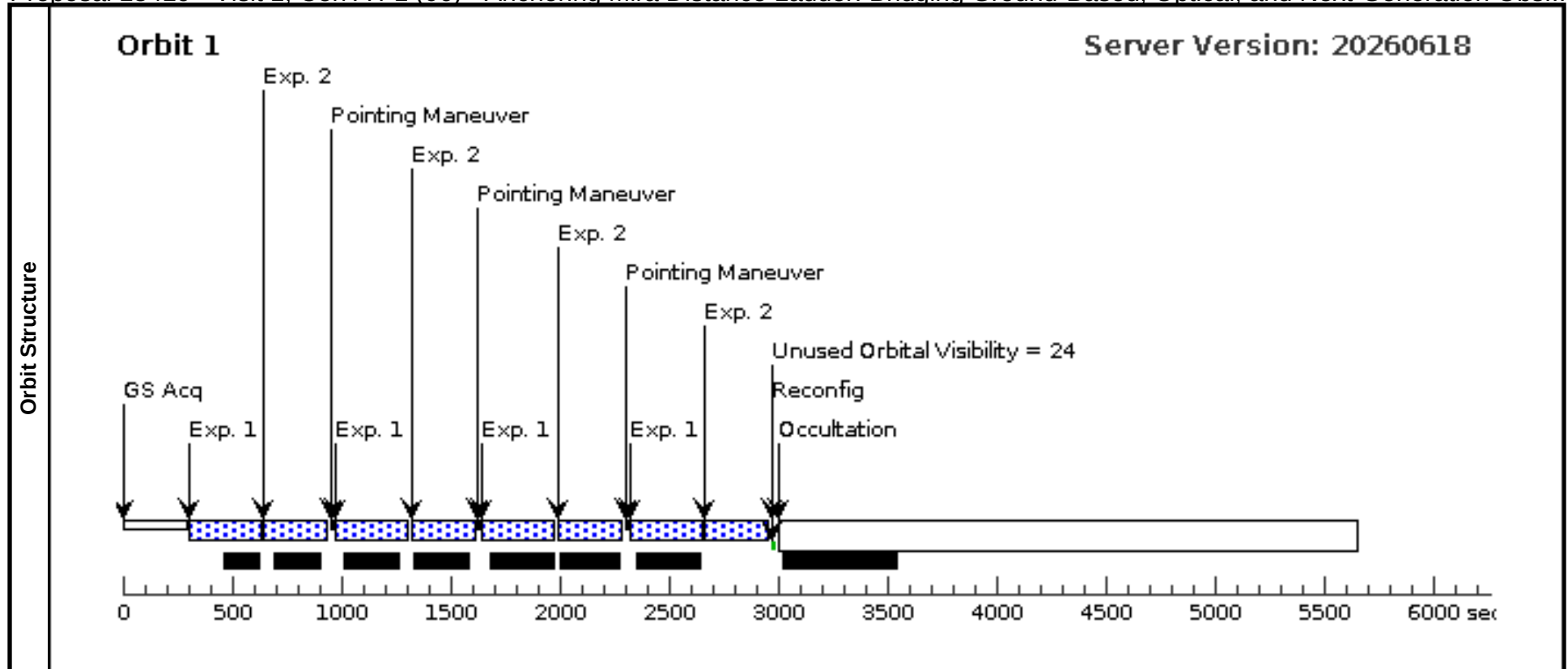
Visit	Proposal 18419, Visit 4, NGC 4258 (04)										Wed Aug 19 11:00:26 GMT 2026	
	Diagnostic Status: No Diagnostics											
	Scientific Instruments: WFC3/IR											
	Special Requirements: AFTER 01 BY 170 D TO 220 D											
Patterns	#	Primary Pattern				Secondary Pattern				Exposures		
	(1)	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)	NGC4258-INNER	RA: 12 18 47.5140 (184.6979750d) Dec: +47 20 20.25 (47.33896d) Equinox: J2000				V=8.41		Reference Frame: ICRS			
	Comments: Category=GALAXY Description=[DISK, SPIRAL, SPIRAL ARM]											
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit	
	1	F160W	(1) NGC4258-INNE R	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 50; NSAMP=13		Pattern 1, Exps 1-1 i n Visit 4, NGC 4258 (04) (1)	602.937703 Secs (2411.751 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]		[1]	
Orbit Structure	Orbit 1											Server Version: 20260618
	The diagram illustrates the orbit structure over a 6000-second period. Key events include: GS Acq: Ground Station Acquisition at approximately 100 seconds. Exp. 1: Four exposures of duration 602.94 seconds each, occurring at approximately 300, 900, 1600, and 2300 seconds. Pointing Maneuver: Three maneuvers occurring between exposures at approximately 1100, 1700, and 2400 seconds. Reconfig: A reconfiguration event at approximately 2900 seconds. Occultation: An occultation event at approximately 3000 seconds. Unused Orbital Visibility: A period of 70 seconds of unused visibility following the occultation, extending to approximately 3070 seconds. The timeline is marked with a scale from 0 to 6000 seconds.											

Proposal 18419 - Visit 5, NGC 4258 (05) - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Ob...

Visit	Proposal 18419, Visit 5, NGC 4258 (05)										Wed Aug 19 11:00:26 GMT 2026	
	Diagnostic Status: No Diagnostics											
	Scientific Instruments: WFC3/IR											
	Special Requirements: AFTER 01 BY 300 D TO 365 D											
Patterns	#	Primary Pattern				Secondary Pattern				Exposures		
	(1)	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)	NGC4258-INNER	RA: 12 18 47.5140 (184.6979750d) Dec: +47 20 20.25 (47.33896d) Equinox: J2000				V=8.41		Reference Frame: ICRS			
Comments: Category=GALAXY Description=[DISK, SPIRAL, SPIRAL ARM]												
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit	
	1	F160W	(1) NGC4258-INNE R	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 50; NSAMP=13		Pattern 1, Exps 1-1 i n Visit 5, NGC 4258 (05) (1)	602.937703 Secs (2411.751 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]		[1]	
Orbit Structure	Orbit 1											Server Version: 20260618
	The diagram illustrates the orbit structure over a 6000-second timeline. Key events include GS Acq at 0s, four exposures (Exp. 1) at approximately 300s, 900s, 1600s, and 2300s, each preceded by a Pointing Maneuver. A Reconfig event occurs at 3000s, followed by Occultation. The timeline ends with Unused Orbital Visibility = 70 seconds. The timeline is represented by a horizontal bar with various colored segments and arrows indicating events.											

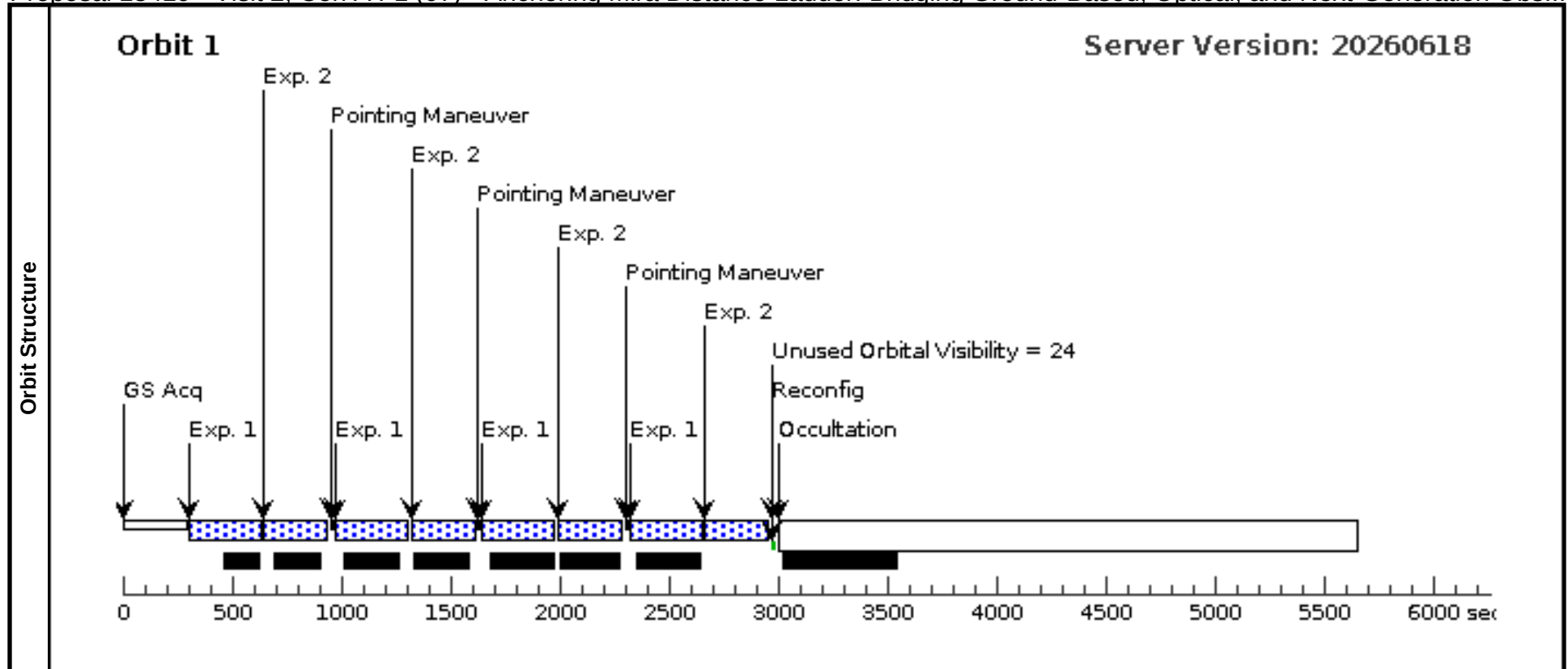
Proposal 18419 - Visit 1, Cen A F1 (06) - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Obs...

Visit	Proposal 18419, Visit 1, Cen A F1 (06)										Wed Aug 19 11:00:26 GMT 2026
	Diagnostic Status: No Diagnostics										
	Scientific Instruments: WFC3/IR										
	Special Requirements: BEFORE 31-DEC-2026:00:00:00										
Patterns	#	Primary Pattern				Secondary Pattern				Exposures	
	(1)	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		
	(2)	CEN-A-F1	RA: 13 26 23.5000 (201.5979167d) Dec: -42 52 0.00 (-42.86667d) Equinox: J2000				V=6.84		Reference Frame: ICRS		
	Comments: Category=GALAXY Description=[ELLIPTICAL, LENTICULAR]										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	F160W	(2) CEN-A-F1	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 25; NSAMP=13		Pattern 1, Exps 1-2 in Visit 1, Cen A F1 (06) (1)	302.938471 Secs (1211.754 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]
	2	F110W	(2) CEN-A-F1	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=SPARS 25; NSAMP=12		Pattern 1, Exps 1-2 in Visit 1, Cen A F1 (06) (1)	277.937956 Secs (1111.752 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]



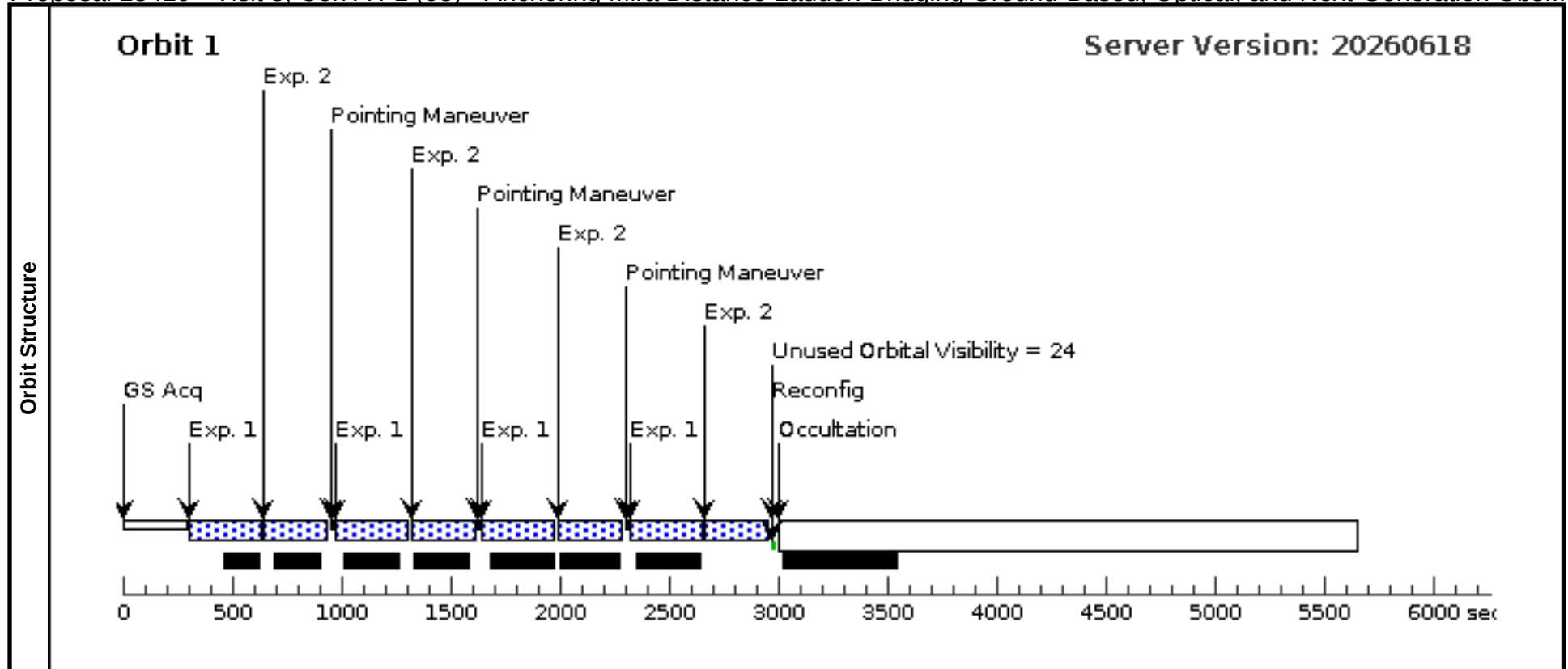
Proposal 18419 - Visit 2, Cen A F1 (07) - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Obs...

Visit	Proposal 18419, Visit 2, Cen A F1 (07)										Wed Aug 19 11:00:26 GMT 2026		
	Diagnostic Status: No Diagnostics												
	Scientific Instruments: WFC3/IR												
	Special Requirements: AFTER 06 BY 5 D TO 30 D												
Patterns	#	Primary Pattern					Secondary Pattern					Exposures	
	(1)	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			
	(2)	CEN-A-F1		RA: 13 26 23.5000 (201.5979167d) Dec: -42 52 0.00 (-42.86667d) Equinox: J2000				V=6.84		Reference Frame: ICRS			
	Comments: Category=GALAXY Description=[ELLIPTICAL, LENTICULAR]												
Exposures	#	Label	Target	Config,Mode,Aperture		Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit	
	1	F160W	(2) CEN-A-F1	WFC3/IR, MULTIACCUM, IR-FIX		F160W	SAMP-SEQ=SPARS 25; NSAMP=13		Pattern 1, Exps 1-2 in Visit 2, Cen A F1 (07) (1)	302.938471 Secs (1211.754 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]	
	2	F110W	(2) CEN-A-F1	WFC3/IR, MULTIACCUM, IR-FIX		F110W	SAMP-SEQ=SPARS 25; NSAMP=12		Pattern 1, Exps 1-2 in Visit 2, Cen A F1 (07) (1)	277.937956 Secs (1111.752 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]	



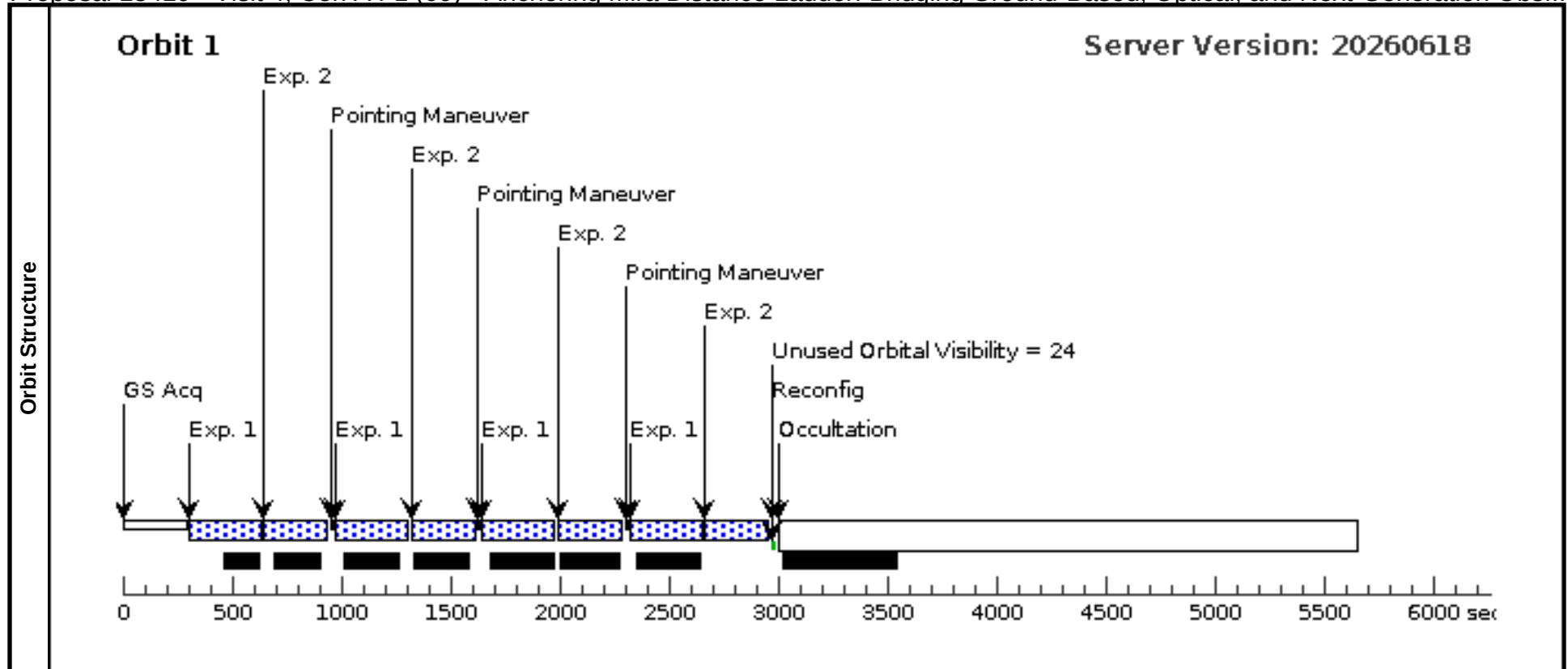
Proposal 18419 - Visit 3, Cen A F1 (08) - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Obs...

Visit	Proposal 18419, Visit 3, Cen A F1 (08)										Wed Aug 19 11:00:26 GMT 2026	
	Diagnostic Status: No Diagnostics											
	Scientific Instruments: WFC3/IR											
	Special Requirements: AFTER 07 BY 20 D TO 110 D											
Patterns	#	Primary Pattern				Secondary Pattern				Exposures		
	(1)	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			
	(2)	CEN-A-F1	RA: 13 26 23.5000 (201.5979167d) Dec: -42 52 0.00 (-42.86667d) Equinox: J2000				V=6.84		Reference Frame: ICRS			
	Comments: Category=GALAXY Description=[ELLIPTICAL, LENTICULAR]											
Exposures	#	Label	Target	Config,Mode,Aperture		Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	F160W	(2) CEN-A-F1	WFC3/IR, MULTIACCUM, IR-FIX		F160W	SAMP-SEQ=SPARS 25; NSAMP=13		Pattern 1, Exps 1-2 in Visit 3, Cen A F1 (08) (1)	302.938471 Secs (1211.754 Secs)		
										[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]	
	2	F110W	(2) CEN-A-F1	WFC3/IR, MULTIACCUM, IR-FIX		F110W	SAMP-SEQ=SPARS 25; NSAMP=12		Pattern 1, Exps 1-2 in Visit 3, Cen A F1 (08) (1)	277.937956 Secs (1111.752 Secs)		
										[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]	[1]	



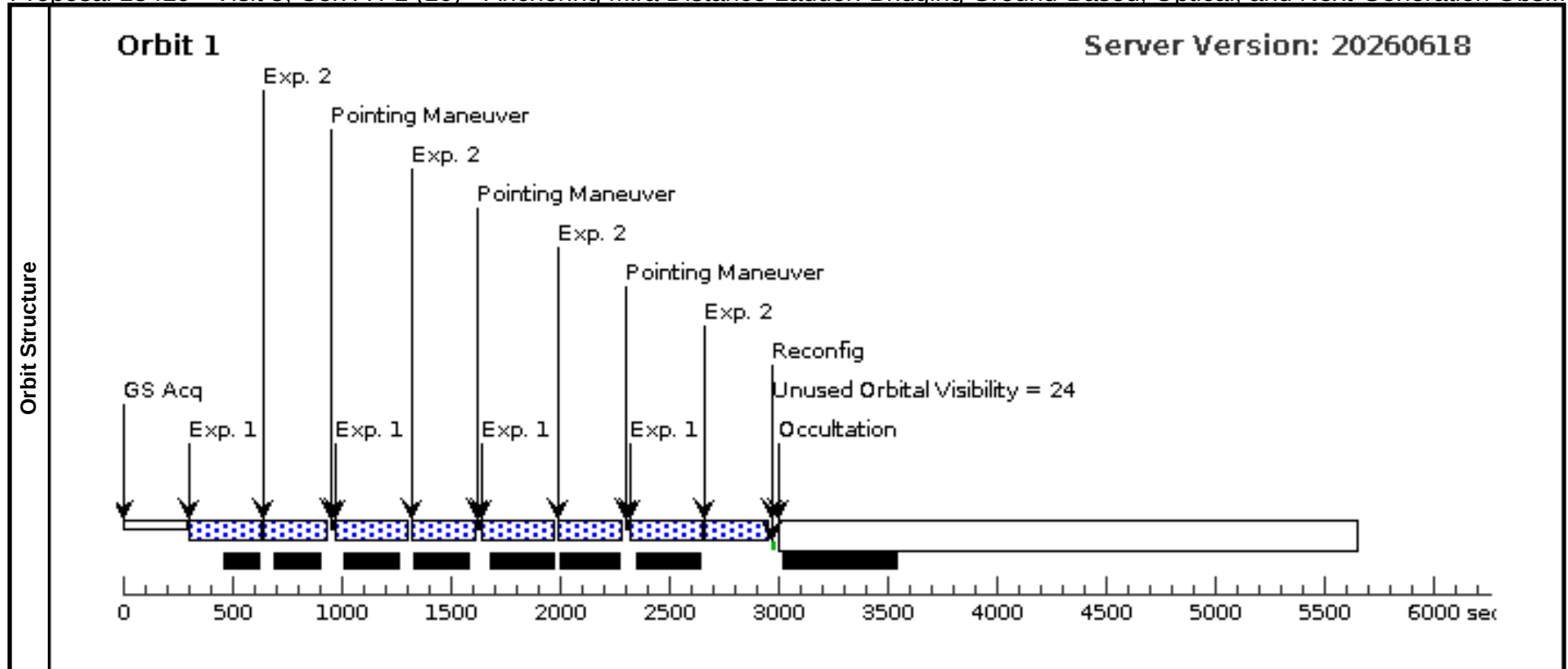
Proposal 18419 - Visit 4, Cen A F1 (09) - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Obs...

Visit	Proposal 18419, Visit 4, Cen A F1 (09)										Wed Aug 19 11:00:26 GMT 2026		
	Diagnostic Status: No Diagnostics												
	Scientific Instruments: WFC3/IR												
	Special Requirements: AFTER 08 BY 20 D TO 110 D												
Patterns	#	Primary Pattern					Secondary Pattern					Exposures	
	(1)	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			
	(2)	CEN-A-F1		RA: 13 26 23.5000 (201.5979167d) Dec: -42 52 0.00 (-42.86667d) Equinox: J2000				V=6.84		Reference Frame: ICRS			
	Comments: Category=GALAXY Description=[ELLIPTICAL, LENTICULAR]												
Exposures	#	Label	Target	Config,Mode,Aperture		Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit	
	1	F160W	(2) CEN-A-F1	WFC3/IR, MULTIACCUM, IR-FIX		F160W	SAMP-SEQ=SPARS 25; NSAMP=13		Pattern 1, Exps 1-2 in Visit 4, Cen A F1 (09) (1)	302.938471 Secs (1211.754 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]	
	2	F110W	(2) CEN-A-F1	WFC3/IR, MULTIACCUM, IR-FIX		F110W	SAMP-SEQ=SPARS 25; NSAMP=12		Pattern 1, Exps 1-2 in Visit 4, Cen A F1 (09) (1)	277.937956 Secs (1111.752 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]	



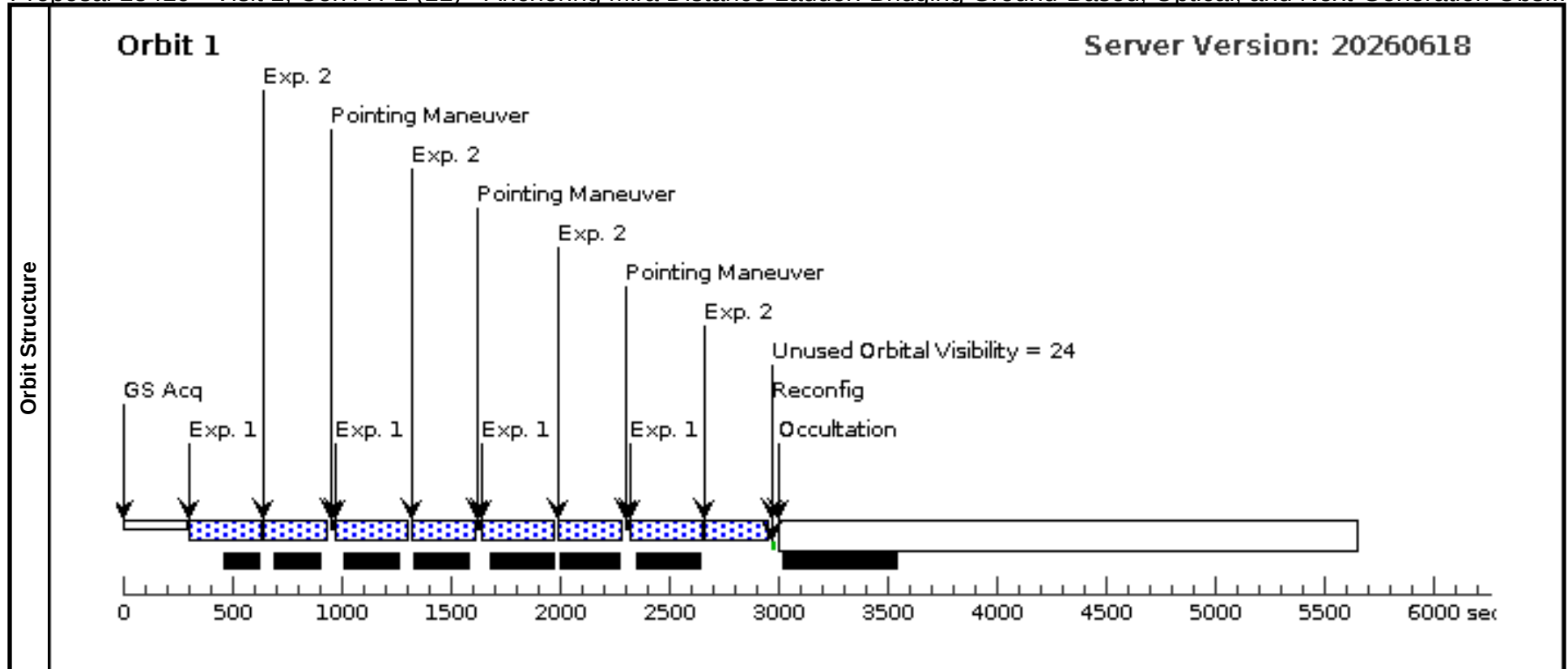
Proposal 18419 - Visit 5, Cen A F1 (10) - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Obs...

Visit	Proposal 18419, Visit 5, Cen A F1 (10)										Wed Aug 19 11:00:26 GMT 2026	
	Diagnostic Status: No Diagnostics											
	Scientific Instruments: WFC3/IR											
	Special Requirements: AFTER 09 BY 20 D TO 110 D											
Patterns	#	Primary Pattern					Secondary Pattern				Exposures	
	(1)	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			
	(2)	CEN-A-F1	RA: 13 26 23.5000 (201.5979167d) Dec: -42 52 0.00 (-42.86667d) Equinox: J2000				V=6.84		Reference Frame: ICRS			
	Comments: Category=GALAXY Description=[ELLIPTICAL, LENTICULAR]											
Exposures	#	Label	Target	Config,Mode,Aperture		Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	F160W	(2) CEN-A-F1	WFC3/IR, MULTIACCUM, IR-FIX		F160W	SAMP-SEQ=SPARS 25; NSAMP=13		Pattern 1, Exps 1-2 in Visit 5, Cen A F1 (10) (1)	302.938471 Secs (1211.754 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]
	2	F110W	(2) CEN-A-F1	WFC3/IR, MULTIACCUM, IR-FIX		F110W	SAMP-SEQ=SPARS 25; NSAMP=12		Pattern 1, Exps 1-2 in Visit 5, Cen A F1 (10) (1)	277.937956 Secs (1111.752 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]



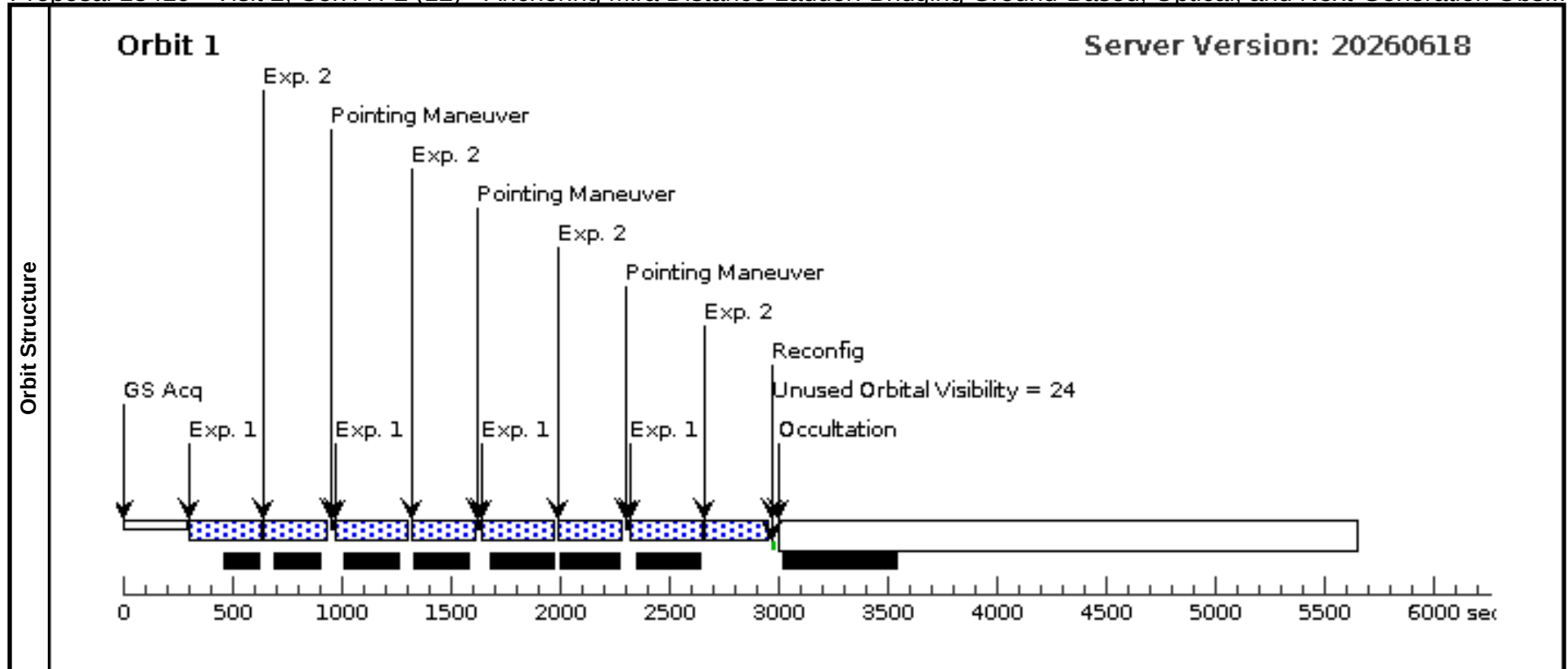
Proposal 18419 - Visit 1, Cen A F2 (11) - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Obs...

Visit	Proposal 18419, Visit 1, Cen A F2 (11)										Wed Aug 19 11:00:26 GMT 2026
	Diagnostic Status: No Diagnostics										
	Scientific Instruments: WFC3/IR										
	Special Requirements: BEFORE 31-DEC-2026:00:00:00										
Patterns	#	Primary Pattern				Secondary Pattern				Exposures	
	(1)	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		
	(3)	CEN-A-F2	RA: 13 25 24.0000 (201.3500000d) Dec: -43 10 0.00 (-43.16667d) Equinox: J2000				V=6.84		Reference Frame: ICRS		
Comments: Category=GALAXY Description=[ELLIPTICAL, LENTICULAR]											
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	F160W	(3) CEN-A-F2	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 25; NSAMP=13		Pattern 1, Exps 1-2 in Visit 1, Cen A F2 (11) (1)	302.938471 Secs (1211.754 Secs)		
									[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]
	2	F110W	(3) CEN-A-F2	WFC3/IR, MULTIACCUM, IR-FIX	F110W	SAMP-SEQ=SPARS 25; NSAMP=12		Pattern 1, Exps 1-2 in Visit 1, Cen A F2 (11) (1)	277.937956 Secs (1111.752 Secs)		
									[==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]



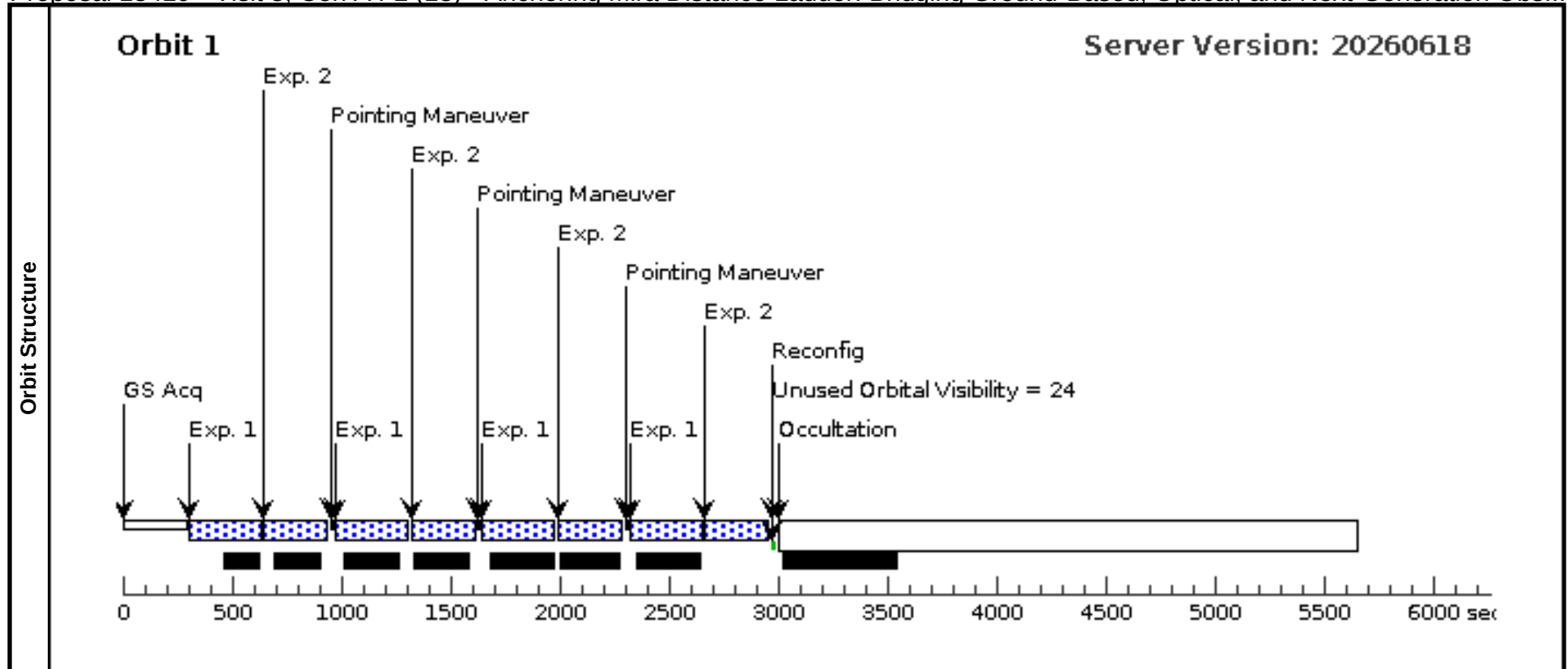
Proposal 18419 - Visit 2, Cen A F2 (12) - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Obs...

Visit	Proposal 18419, Visit 2, Cen A F2 (12)										Wed Aug 19 11:00:26 GMT 2026		
	Diagnostic Status: No Diagnostics												
	Scientific Instruments: WFC3/IR												
	Special Requirements: AFTER 11 BY 5 D TO 30 D												
Patterns	#	Primary Pattern					Secondary Pattern					Exposures	
	(1)	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			
	(3)	CEN-A-F2		RA: 13 25 24.0000 (201.3500000d) Dec: -43 10 0.00 (-43.16667d) Equinox: J2000				V=6.84		Reference Frame: ICRS			
	Comments: Category=GALAXY Description=[ELLIPTICAL, LENTICULAR]												
Exposures	#	Label	Target	Config,Mode,Aperture		Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit	
	1	F160W	(3) CEN-A-F2	WFC3/IR, MULTIACCUM, IR-FIX		F160W	SAMP-SEQ=SPARS 25; NSAMP=13		Pattern 1, Exps 1-2 in Visit 2, Cen A F2 (12) (1)	302.938471 Secs (1211.754 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]	
	2	F110W	(3) CEN-A-F2	WFC3/IR, MULTIACCUM, IR-FIX		F110W	SAMP-SEQ=SPARS 25; NSAMP=12		Pattern 1, Exps 1-2 in Visit 2, Cen A F2 (12) (1)	277.937956 Secs (1111.752 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]	



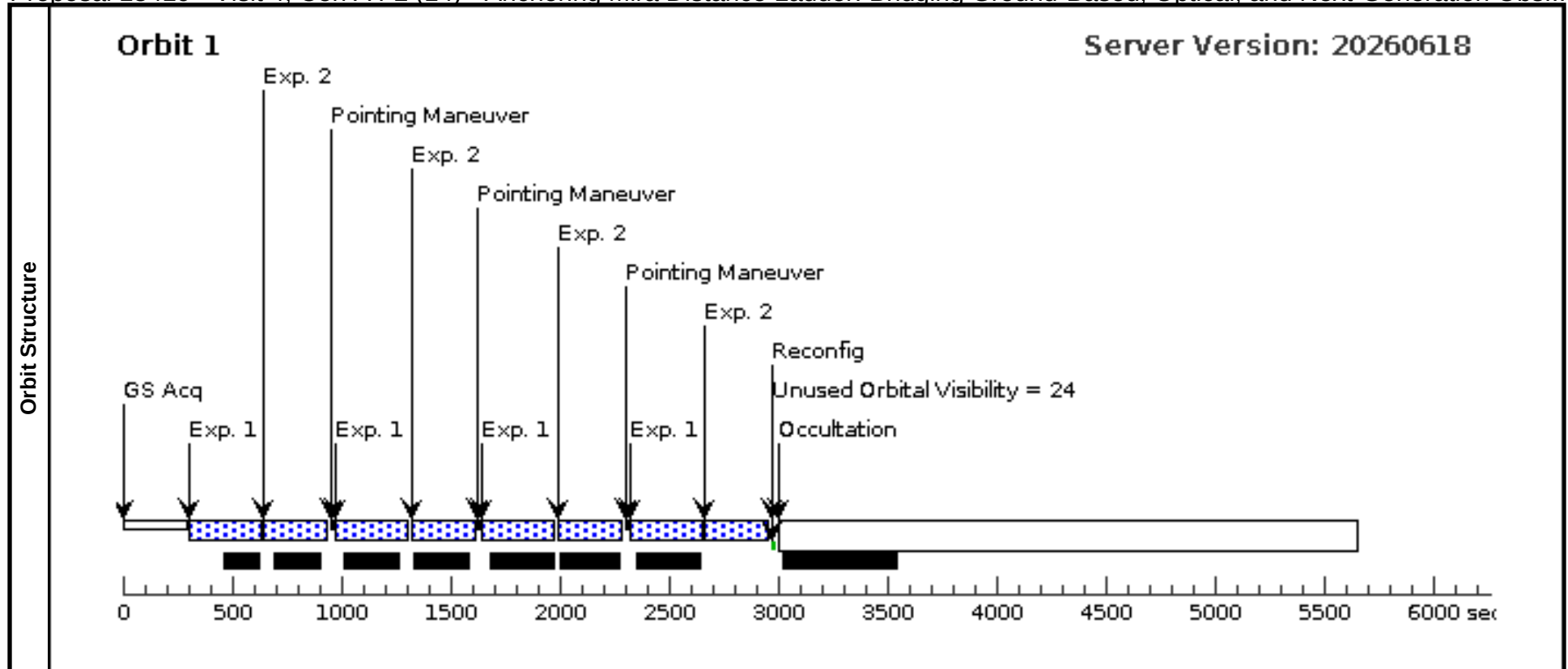
Proposal 18419 - Visit 3, Cen A F2 (13) - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Obs...

Visit	Proposal 18419, Visit 3, Cen A F2 (13)										Wed Aug 19 11:00:26 GMT 2026		
	Diagnostic Status: No Diagnostics												
	Scientific Instruments: WFC3/IR												
	Special Requirements: AFTER 12 BY 20 D TO 110 D												
Patterns	#	Primary Pattern					Secondary Pattern					Exposures	
	(1)	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			
	(3)	CEN-A-F2		RA: 13 25 24.0000 (201.3500000d) Dec: -43 10 0.00 (-43.16667d) Equinox: J2000				V=6.84		Reference Frame: ICRS			
	Comments: Category=GALAXY Description=[ELLIPTICAL, LENTICULAR]												
Exposures	#	Label	Target	Config,Mode,Aperture		Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit	
	1	F160W	(3) CEN-A-F2	WFC3/IR, MULTIACCUM, IR-FIX		F160W	SAMP-SEQ=SPARS 25; NSAMP=13		Pattern 1, Exps 1-2 in Visit 3, Cen A F2 (13) (1)	302.938471 Secs (1211.754 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]	
	2	F110W	(3) CEN-A-F2	WFC3/IR, MULTIACCUM, IR-FIX		F110W	SAMP-SEQ=SPARS 25; NSAMP=12		Pattern 1, Exps 1-2 in Visit 3, Cen A F2 (13) (1)	277.937956 Secs (1111.752 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]	



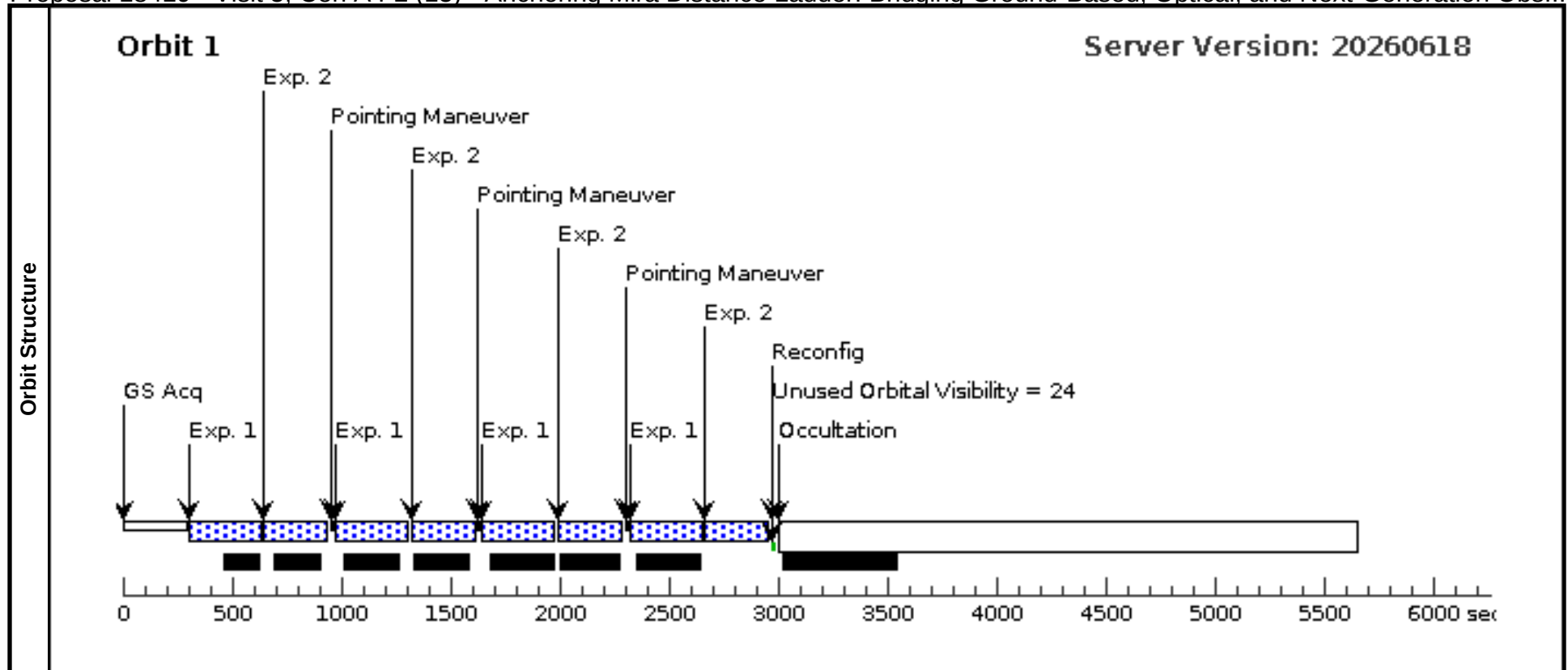
Proposal 18419 - Visit 4, Cen A F2 (14) - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Obs...

Visit	Proposal 18419, Visit 4, Cen A F2 (14)										Wed Aug 19 11:00:26 GMT 2026		
	Diagnostic Status: No Diagnostics												
	Scientific Instruments: WFC3/IR												
	Special Requirements: AFTER 13 BY 20 D TO 110 D												
Patterns	#	Primary Pattern					Secondary Pattern					Exposures	
	(1)	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			
	(3)	CEN-A-F2		RA: 13 25 24.0000 (201.3500000d) Dec: -43 10 0.00 (-43.16667d) Equinox: J2000				V=6.84		Reference Frame: ICRS			
	Comments: Category=GALAXY Description=[ELLIPTICAL, LENTICULAR]												
Exposures	#	Label	Target	Config,Mode,Aperture		Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit	
	1	F160W	(3) CEN-A-F2	WFC3/IR, MULTIACCUM, IR-FIX		F160W	SAMP-SEQ=SPARS 25; NSAMP=13		Pattern 1, Exps 1-2 in Visit 4, Cen A F2 (14) (1)	302.938471 Secs (1211.754 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]	
	2	F110W	(3) CEN-A-F2	WFC3/IR, MULTIACCUM, IR-FIX		F110W	SAMP-SEQ=SPARS 25; NSAMP=12		Pattern 1, Exps 1-2 in Visit 4, Cen A F2 (14) (1)	277.937956 Secs (1111.752 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]	



Proposal 18419 - Visit 5, Cen A F2 (15) - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Obs...

Visit	Proposal 18419, Visit 5, Cen A F2 (15)										Wed Aug 19 11:00:26 GMT 2026	
	Diagnostic Status: No Diagnostics											
	Scientific Instruments: WFC3/IR											
	Special Requirements: AFTER 14 BY 20 D TO 110 D											
Patterns	#	Primary Pattern				Secondary Pattern				Exposures		
	(1)	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			
	(3)	CEN-A-F2	RA: 13 25 24.0000 (201.3500000d) Dec: -43 10 0.00 (-43.16667d) Equinox: J2000				V=6.84		Reference Frame: ICRS			
	Comments: Category=GALAXY Description=[ELLIPTICAL, LENTICULAR]											
Exposures	#	Label	Target	Config,Mode,Aperture		Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1	F160W	(3) CEN-A-F2	WFC3/IR, MULTIACCUM, IR-FIX		F160W	SAMP-SEQ=SPARS 25; NSAMP=13		Pattern 1, Exps 1-2 in Visit 5, Cen A F2 (15) (1)	302.938471 Secs (1211.754 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]
	2	F110W	(3) CEN-A-F2	WFC3/IR, MULTIACCUM, IR-FIX		F110W	SAMP-SEQ=SPARS 25; NSAMP=12		Pattern 1, Exps 1-2 in Visit 5, Cen A F2 (15) (1)	277.937956 Secs (1111.752 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]



Proposal 18419 - Visit 1, M51 (16) - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Observati...

Visit	Proposal 18419, Visit 1, M51 (16)										Wed Aug 19 11:00:26 GMT 2026						
	Diagnostic Status: No Diagnostics																
	Scientific Instruments: WFC3/IR																
	Special Requirements: BEFORE 01-DEC-2026:00:00:00																
Patterns	#	Primary Pattern					Secondary Pattern					Exposures					
	(1)	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							
	(4)	M-51		RA: 13 29 59.0000 (202.4958333d) Dec: +47 11 12.69 (47.18686d) Equinox: J2000				V=8.36		Reference Frame: ICRS							
	Comments: Category=GALAXY Description=[DISK, SPIRAL, SPIRAL ARM]																
Exposures	#	Label	Target	Config,Mode,Aperture		Spectral Els.		Opt. Params.		Special Reqs.		Groups	Exp. Time (Total)/[Actual Dur.]		Orbit		
	1	F160W	(4) M-51	WFC3/IR, MULTIACCUM, IR-FIX		F160W		SAMP-SEQ=SPARS 50; NSAMP=13				Pattern 1, Exps 1-1 in Visit 1, M51 (16) (1)	602.937703 Secs (2411.751 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]		[1]		
Orbit Structure	Orbit 1															Server Version: 20260618	

Proposal 18419 - Visit 2, M51 (17) - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Observati...

Visit	Proposal 18419, Visit 2, M51 (17)										Wed Aug 19 11:00:27 GMT 2026						
	Diagnostic Status: No Diagnostics																
	Scientific Instruments: WFC3/IR																
	Special Requirements: AFTER 16 BY 20 D TO 70 D																
Patterns	#	Primary Pattern					Secondary Pattern					Exposures					
	(1)	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							
	(4)	M-51		RA: 13 29 59.0000 (202.4958333d) Dec: +47 11 12.69 (47.18686d) Equinox: J2000				V=8.36		Reference Frame: ICRS							
	Comments: Category=GALAXY Description=[DISK, SPIRAL, SPIRAL ARM]																
Exposures	#	Label	Target	Config,Mode,Aperture		Spectral Els.		Opt. Params.		Special Reqs.		Groups	Exp. Time (Total)/[Actual Dur.]		Orbit		
	1	F160W	(4) M-51	WFC3/IR, MULTIACCUM, IR-FIX		F160W		SAMP-SEQ=SPARS 50; NSAMP=13				Pattern 1, Exps 1-1 in Visit 2, M51 (17) (1)	602.937703 Secs (2411.751 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]		
Orbit Structure	Orbit 1															Server Version: 20260618	

Proposal 18419 - Visit 3, M51 (18) - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Observati...

Visit	Proposal 18419, Visit 3, M51 (18)										Wed Aug 19 11:00:27 GMT 2026	
	Diagnostic Status: No Diagnostics											
	Scientific Instruments: WFC3/IR											
	Special Requirements: AFTER 17 BY 20 D TO 90 D											
Patterns	#	Primary Pattern					Secondary Pattern			Exposures		
	(1)	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			
	(4)	M-51	RA: 13 29 59.0000 (202.4958333d) Dec: +47 11 12.69 (47.18686d) Equinox: J2000				V=8.36		Reference Frame: ICRS			
	Comments: Category=GALAXY Description=[DISK, SPIRAL, SPIRAL ARM]											
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit	
	1	F160W	(4) M-51	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 50; NSAMP=13		Pattern 1, Exps 1-1 in Visit 3, M51 (18) (1)	602.937703 Secs (2411.751 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]		[1]	
Orbit Structure	Orbit 1											Server Version: 20260618
	The diagram illustrates the timeline of Orbit 1, spanning from 0 to 6000 seconds. Key events are marked with arrows: GS Acq at 0s, Exp. 1 at approximately 300s, 900s, 1600s, 2200s, and 2900s. Pointing Maneuvers occur between these exposures. A Reconfig event is shown at 3000s, followed by Occultation. A long horizontal bar represents the total orbit duration, with a segment at the end labeled 'Unused Orbital Visibility = 70'. The timeline is divided into segments by vertical lines, with some segments shaded in blue and others in black.											

Proposal 18419 - Visit 4, M51 (19) - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Observati...

Visit	Proposal 18419, Visit 4, M51 (19)										Wed Aug 19 11:00:27 GMT 2026	
	Diagnostic Status: No Diagnostics											
	Scientific Instruments: WFC3/IR											
	Special Requirements: AFTER 18 BY 20 D TO 90 D											
Patterns	#	Primary Pattern					Secondary Pattern			Exposures		
	(1)	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			
	(4)	M-51	RA: 13 29 59.0000 (202.4958333d) Dec: +47 11 12.69 (47.18686d) Equinox: J2000				V=8.36		Reference Frame: ICRS			
	Comments: Category=GALAXY Description=[DISK, SPIRAL, SPIRAL ARM]											
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit	
	1	F160W	(4) M-51	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 50; NSAMP=13		Pattern 1, Exps 1-1 in Visit 4, M51 (19) (1)	602.937703 Secs (2411.751 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]		[1]	
Orbit Structure	Orbit 1											Server Version: 20260618
	The diagram illustrates the orbit structure over a 6000-second timeline. Key events include GS Acq at ~100s, four Exp. 1 exposures at ~300s, ~1000s, ~1600s, and ~2300s, three Pointing Maneuvers at ~1100s, ~1700s, and ~2400s, Reconfig at ~2900s, and Occultation at ~3000s. A blue checkered bar represents the observation period from ~300s to ~2900s. Black bars below the timeline indicate gaps or non-observable periods. Unused Orbital Visibility = 70 is noted.											

Proposal 18419 - Visit 5, M51 (20) - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Observati...

Visit	Proposal 18419, Visit 5, M51 (20)										Wed Aug 19 11:00:27 GMT 2026	
	Diagnostic Status: No Diagnostics											
	Scientific Instruments: WFC3/IR											
	Special Requirements: AFTER 19 BY 20 D TO 70 D											
Patterns	#	Primary Pattern					Secondary Pattern			Exposures		
	(1)	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			
	(4)	M-51	RA: 13 29 59.0000 (202.4958333d) Dec: +47 11 12.69 (47.18686d) Equinox: J2000				V=8.36		Reference Frame: ICRS			
	Comments: Category=GALAXY Description=[DISK, SPIRAL, SPIRAL ARM]											
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit	
	1	F160W	(4) M-51	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 50; NSAMP=13		Pattern 1, Exps 1-1 in Visit 5, M51 (20) (1)	602.937703 Secs (2411.751 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]		[1]	
Orbit Structure	Orbit 1											Server Version: 20260618

Proposal 18419 - Visit 6, M51 (21) - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Observati...

Visit	Proposal 18419, Visit 6, M51 (21)										Wed Aug 19 11:00:27 GMT 2026						
	Diagnostic Status: No Diagnostics																
	Scientific Instruments: WFC3/IR																
	Special Requirements: AFTER 20 BY 25 D TO 70 D																
Patterns	#	Primary Pattern					Secondary Pattern					Exposures					
	(1)	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							
	(4)	M-51		RA: 13 29 59.0000 (202.4958333d) Dec: +47 11 12.69 (47.18686d) Equinox: J2000				V=8.36		Reference Frame: ICRS							
	Comments: Category=GALAXY Description=[DISK, SPIRAL, SPIRAL ARM]																
Exposures	#	Label	Target	Config,Mode,Aperture		Spectral Els.		Opt. Params.		Special Reqs.		Groups	Exp. Time (Total)/[Actual Dur.]		Orbit		
	1	F160W	(4) M-51	WFC3/IR, MULTIACCUM, IR-FIX		F160W		SAMP-SEQ=SPARS 50; NSAMP=13				Pattern 1, Exps 1-1 in Visit 6, M51 (21) (1)	602.937703 Secs (2411.751 Secs) [==>(Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>(Pattern 4)]		[1]		
Orbit Structure	Orbit 1															Server Version: 20260618	

Proposal 18419 - Visit 7, M51 (22) - Anchoring Mira Distance Ladder: Bridging Ground-Based, Optical, and Next-Generation Observati...

Visit	Proposal 18419, Visit 7, M51 (22)										Wed Aug 19 11:00:27 GMT 2026	
	Diagnostic Status: No Diagnostics											
	Scientific Instruments: WFC3/IR											
	Special Requirements: AFTER 21 BY 20 D TO 120 D											
Patterns	#	Primary Pattern					Secondary Pattern			Exposures		
	(1)	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			
	(4)	M-51	RA: 13 29 59.0000 (202.4958333d) Dec: +47 11 12.69 (47.18686d) Equinox: J2000				V=8.36		Reference Frame: ICRS			
	Comments: Category=GALAXY Description=[DISK, SPIRAL, SPIRAL ARM]											
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit	
	1	F160W	(4) M-51	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 50; NSAMP=13		Pattern 1, Exps 1-1 in Visit 7, M51 (22) (1)	602.937703 Secs (2411.751 Secs) [=>(Pattern 1)] [=>(Pattern 2)] [=>(Pattern 3)] [=>(Pattern 4)]		[1]	
Orbit Structure	Orbit 1											Server Version: 20260618