



## 14172 - Imaging Accreting Protoplanets in the Young Cluster IC 348

Cycle: 23, Proposal Category: GO

(Availability Mode: SUPPORTED)

### INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
<b>Dr. Brendan Bowler (PI) (Contact)</b>	<b>University of Texas at Austin</b>	<b>bpbowler@caltech.edu</b>
Dr. Adam L. Kraus (CoI)	University of Texas at Austin	alk@astro.as.utexas.edu
Dr. Gregory J. Herczeg (CoI)	Peking University	gherczeg1@gmail.com
Dr. Lynne A. Hillenbrand (CoI)	California Institute of Technology	lah@astro.caltech.edu
Dr. Michael J. Ireland (CoI)	Australian National University	michael.ireland@anu.edu.au
Dr. Zhaohuan Zhu (CoI)	Princeton University	zhzhu@astro.princeton.edu
Dr. Sean M Andrews (CoI)	Smithsonian Institution Astrophysical Observatory	sandrews@cfa.harvard.edu
Dr. Aaron Rizzuto (CoI)	University of Texas at Austin	arizz@astro.as.utexas.edu

### 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) IC-348-POS1A (2) IC-348-POS1B	ACS/WFC WFC3/UVIS	1	22-Jan-2016 21:10:17.0	yes
02	(3) IC-348-POS2A (4) IC-348-POS2B	ACS/WFC WFC3/UVIS	1	22-Jan-2016 21:10:19.0	yes
03	(5) IC-348-POS3A (6) IC-348-POS3B	ACS/WFC WFC3/UVIS	1	22-Jan-2016 21:10:20.0	yes
04	(7) IC-348-POS4A (8) IC-348-POS4B	ACS/WFC WFC3/UVIS	1	22-Jan-2016 21:10:21.0	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>
05	(9) IC-348-POS5A (10) IC-348-POS5B	ACS/WFC WFC3/UVIS	1	22-Jan-2016 21:10:22.0	yes
06	(11) IC-348-POS6A (12) IC-348-POS6B	ACS/WFC WFC3/UVIS	1	22-Jan-2016 21:10:24.0	yes
07	(13) IC-348-POS7A (14) IC-348-POS7B	ACS/WFC WFC3/UVIS	1	22-Jan-2016 21:10:25.0	yes
08	(15) IC-348-POS8A (16) IC-348-POS8B	ACS/WFC WFC3/UVIS	1	22-Jan-2016 21:10:26.0	yes
09	(17) IC-348-POS9A (18) IC-348-POS9B	ACS/WFC WFC3/UVIS	1	22-Jan-2016 21:10:27.0	yes
10	(19) IC-348-POS10A (20) IC-348-POS10B	ACS/WFC WFC3/UVIS	1	22-Jan-2016 21:10:28.0	yes
11	(21) IC-348-POS11A (22) IC-348-POS11B	ACS/WFC WFC3/UVIS	1	22-Jan-2016 21:10:29.0	yes
12	(23) IC-348-POS12A (24) IC-348-POS12B	ACS/WFC WFC3/UVIS	1	22-Jan-2016 21:10:30.0	yes

12 Total Orbits Used

## **ABSTRACT**

Giant planets generate accretion luminosity as they form, much of which is radiated in the form of H $\alpha$  line emission at 6563 Ang. We propose a novel survey to identify accreting protoplanets in the young (~2 Myr) cluster IC 348. Our efficient program will target 225 cluster members, offering the first opportunity to study sub-Jovian-mass planets with direct imaging and characterize a population of planets generally inaccessible with ground-based adaptive optics imaging. This survey will clarify the origin of planetary-mass companions on ultra-wide orbits of hundreds of AU by probing masses of ~0.5-5 MJup, which is below the fragmentation limit set by disk instability and cloud fragmentation but should be heavily populated in the case of planet/core scattering. Based on the frequency of massive giant planets at wide separations, we also stand to increase the number of accreting 5-15 Mjup companions by ~50%. Finally, these data will have lasting value as a rich resource to study accretion, multiplicity, and the internal kinematics of IC 348.

## **OBSERVING DESCRIPTION**

The primary goal of this survey is to obtain deep imaging of as many IC 348 cluster members as possible with WFC3 with the narrow band H $\alpha$  filter. The most efficient way to do this is to target the densest part of the cluster in a mosaic pattern. Based on the WFC3 exposure time calculator, we achieve a S/N of 7 for an accreting 0.5 MJup planet in 1100 seconds with the F656N filter. We therefore require ~20 min per field. To avoid reacquisition overheads we will offset by 120" mid-orbit to obtain a second pointing. For each orbit this produces a 160"x240" rectangular coverage with an overlapping 160"x40" strip.

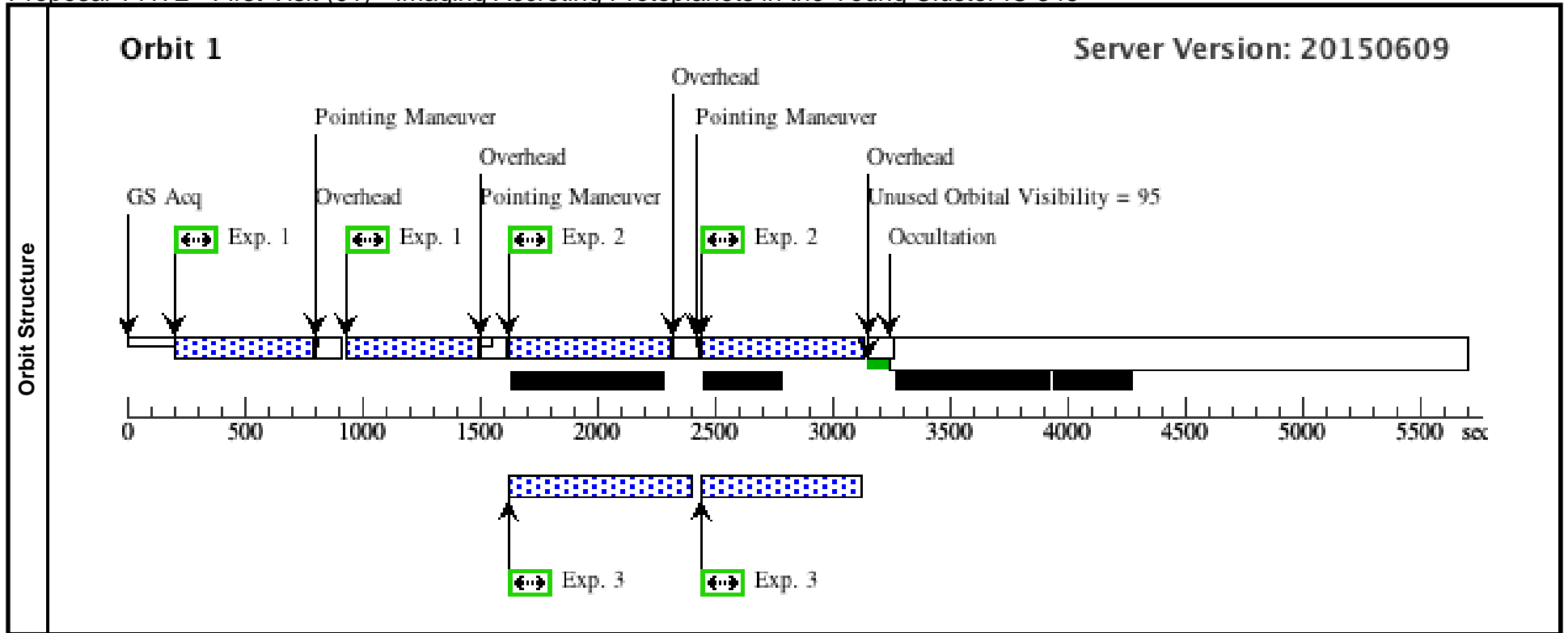
Each orbit will consist of a 6 min acquisition sequence, UVIS exposure overheads (2.6 min + 3x2.1 min), four 9.5 min exposures (a dithered pair at the initial pointing and another dithered pair after the 120" offset), and spacecraft maneuvers (2x0.5 min + 1.1 min for the offset), totaling 55 min.

We will use ACS/WFC to obtain F625-W-band observations of this region with as much overlap as our WFC3 observations as possible. Each field uses a WFC3-UVIS-MOSAIC-LINE pattern to dither over the inter-chip gap on both detectors.

Proposal 14172 - First Visit (01) - Imaging Accreting Protoplanets in the Young Cluster IC 348

Sat Jan 23 02:10:31 GMT 2016

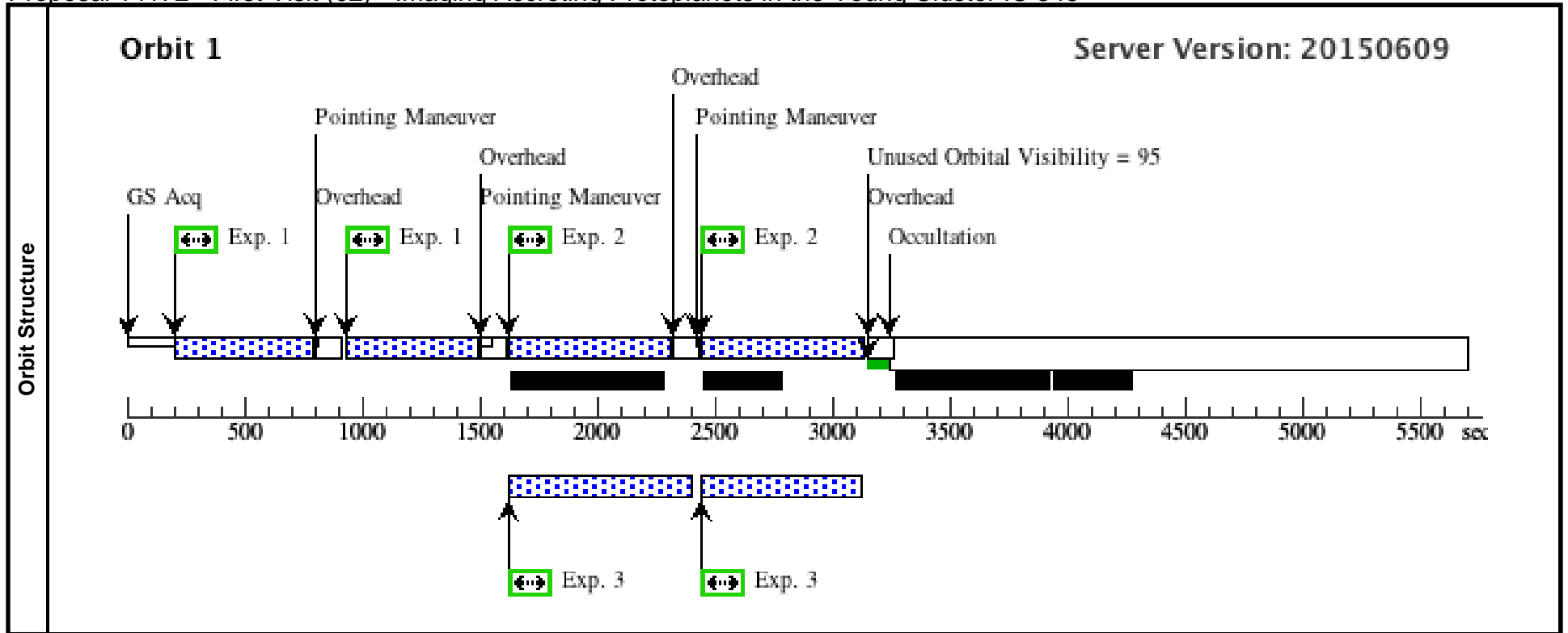
Visit	<b>Proposal 14172, First Visit (01), scheduled</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 50D TO 60 D									
	#	Primary Pattern	Secondary Pattern	Exposures						
Patterns	(1)	Pattern Type=WFC3-UVIS-MOSAIC-LINE Purpose=MOSAIC Number Of Points=2 Point Spacing=3.264 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=63.697 Angle Between Sides= Center Pattern=false		(1), (2-3)						
	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
Fixed Targets	(1)	IC-348-POS1A	RA: 03 44 33.6000 (56.1400000d) Dec: +32 13 48.00 (32.23000d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD				
	<i>Comments: Extended=NO</i>									
(2)	IC-348-POS1B	RA: 03 44 41.6000 (56.1733333d) Dec: +32 13 48.00 (32.23000d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD					
<i>Comments: Extended=NO</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	First Exposure	(1) IC-348-POS1A	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12	GS ACQ SCENARIO SINGLE	Pattern 1, Exps 1-1 in First Visit (01) (1)	500 Secs (1118 Secs)	
									[==>559.0 Secs (Pattern 1)]	[1]
									[==>559.0 Secs (Pattern 2)]	
2	First Exposure	(2) IC-348-POS1B	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12		Pattern 1, Exps 2-3 in First Visit (01) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (01)	500 Secs (1378 Secs)		
								[==>689.0 Secs (Pattern 1)]	[1]	
								[==>689.0 Secs (Pattern 2)]		
3	ACS_parallel	(1) IC-348-POS1A	ACS/WFC, ACCUM, WFC	F625W			Pattern 1, Exps 2-3 in First Visit (01) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (01)	500 Secs (1138 Secs)		
								[==>578.0 Secs (Pattern 1)]	[1]	
								[==>560.0 Secs (Pattern 2)]		



Proposal 14172 - First Visit (02) - Imaging Accreting Protoplanets in the Young Cluster IC 348

Sat Jan 23 02:10:32 GMT 2016

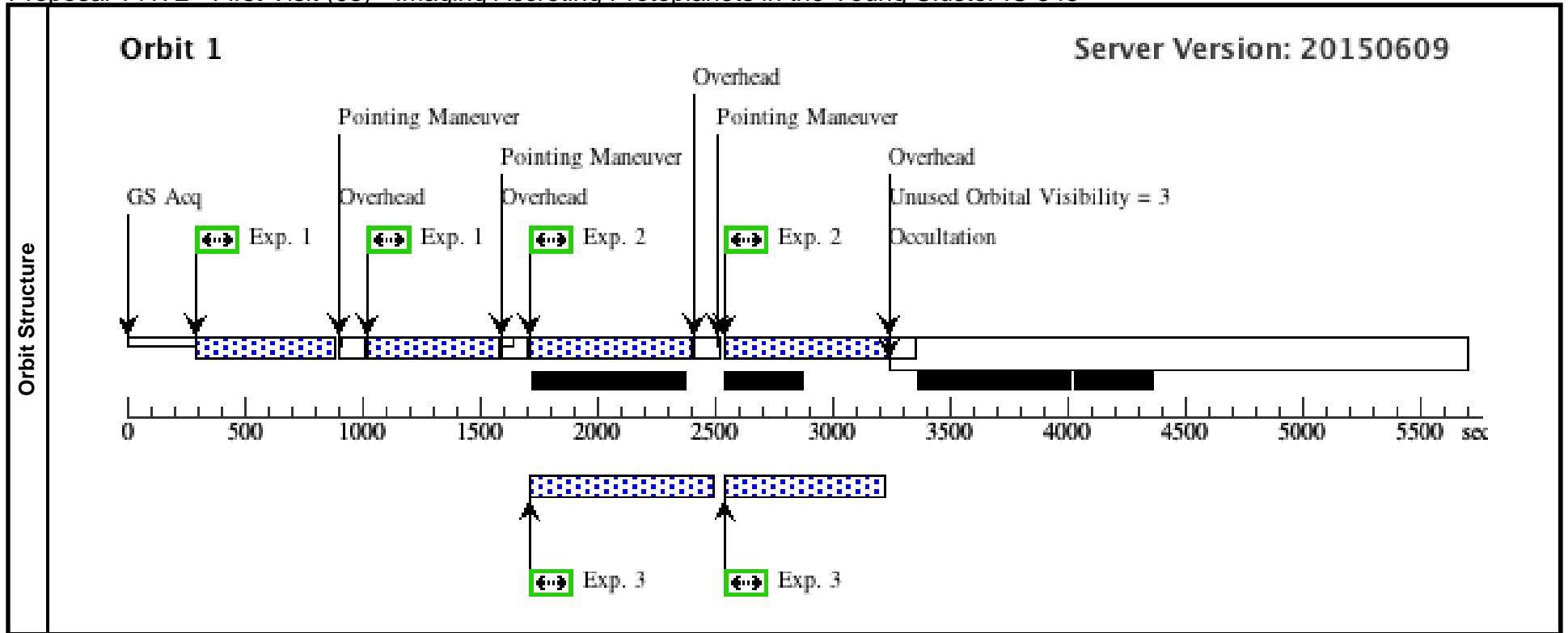
Visit	<b>Proposal 14172, First Visit (02), implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 230D TO 260 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(1)	Pattern Type=WFC3-UVIS-MOSAIC-LINE Purpose=MOSAIC Number Of Points=2 Point Spacing=3.264 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=63.697 Angle Between Sides= Center Pattern=false		(1), (2-3)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(3)	IC-348-POS2A	RA: 03 44 33.6000 (56.1400000d) Dec: +32 11 18.00 (32.18833d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD				
	<i>Comments: Extended=NO</i>									
	(4)	IC-348-POS2B	RA: 03 44 41.6000 (56.1733333d) Dec: +32 11 18.00 (32.18833d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD				
	<i>Comments: Extended=NO</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	First Exposure	(3) IC-348-POS2A	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12	GS ACQ SCENARIO SINGLE	Pattern 1, Exps 1-1 in First Visit (02) (1)	500 Secs (1118 Secs)	
									[==>559.0 Secs (Pattern 1)] [==>559.0 Secs (Pattern 2)]	[1]
	2	First Exposure	(4) IC-348-POS2B	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12		Pattern 1, Exps 2-3 in First Visit (02) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (02)	500 Secs (1378 Secs)	
								[==>689.0 Secs (Pattern 1)] [==>689.0 Secs (Pattern 2)]	[1]	
3	ACS_parallel	(4) IC-348-POS2B	ACS/WFC, ACCUM, WFC	F625W			Pattern 1, Exps 2-3 in First Visit (02) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (02)	500 Secs (1138 Secs)		
								[==>578.0 Secs (Pattern 1)] [==>560.0 Secs (Pattern 2)]	[1]	



Proposal 14172 - First Visit (03) - Imaging Accreting Protoplanets in the Young Cluster IC 348

Sat Jan 23 02:10:32 GMT 2016

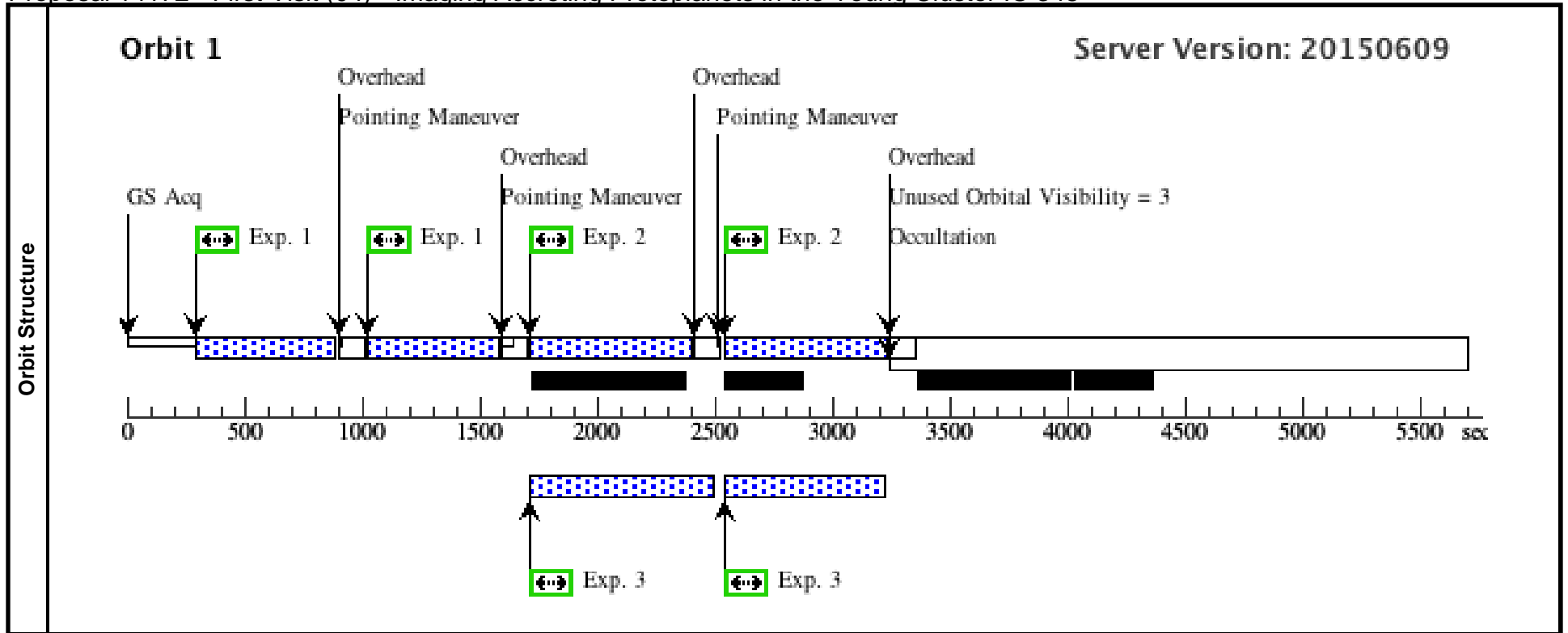
Visit	<b>Proposal 14172, First Visit (03), completed</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 90D TO 95 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(1)	Pattern Type=WFC3-UVIS-MOSAIC-LINE Purpose=MOSAIC Number Of Points=2 Point Spacing=3.264 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=63.697 Angle Between Sides= Center Pattern=false		(1), (2-3)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(5)	IC-348-POS3A	RA: 03 44 33.6000 (56.1400000d) Dec: +32 08 48.00 (32.14667d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD				
	<i>Comments: Extended=NO</i>									
(6)	IC-348-POS3B	RA: 03 44 41.6000 (56.1733333d) Dec: +32 08 48.00 (32.14667d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD					
	<i>Comments: Extended=NO</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	First Exposure	(5) IC-348-POS3A	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12		Pattern 1, Exps 1-1 in First Visit (03) (1)	500 Secs (1118 Secs)	
									[==>559.0 Secs (Pattern 1)] [==>559.0 Secs (Pattern 2)]	[1]
	2	First Exposure	(6) IC-348-POS3B	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12		Pattern 1, Exps 2-3 in First Visit (03) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (03)	500 Secs (1378 Secs)	
								[==>689.0 Secs (Pattern 1)] [==>689.0 Secs (Pattern 2)]	[1]	
3	ACS_parallel	(6) IC-348-POS3B	ACS/WFC, ACCUM, WFC	F625W				Pattern 1, Exps 2-3 in First Visit (03) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (03)	500 Secs (1138 Secs)	
								[==>578.0 Secs (Pattern 1)] [==>560.0 Secs (Pattern 2)]	[1]	



Proposal 14172 - First Visit (04) - Imaging Accreting Protoplanets in the Young Cluster IC 348

Sat Jan 23 02:10:32 GMT 2016

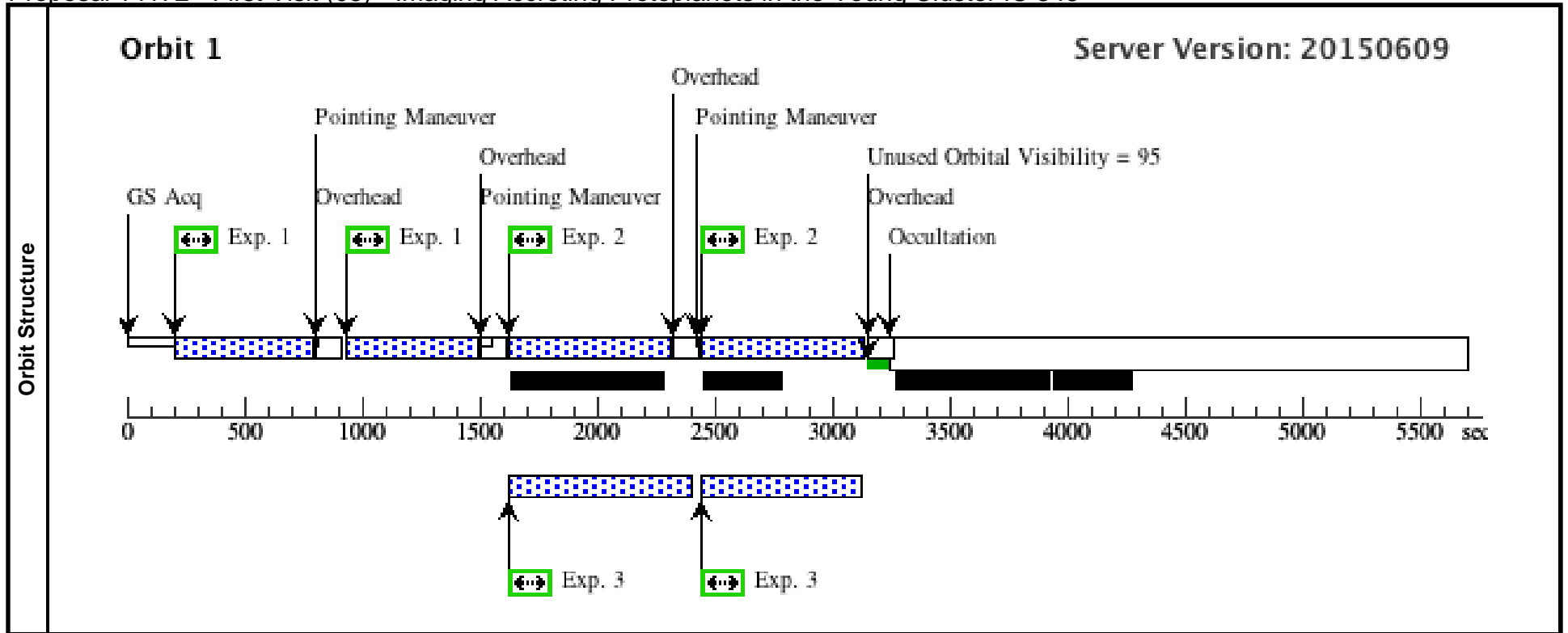
Visit	<b>Proposal 14172, First Visit (04), completed</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 80D TO 90 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(1)	Pattern Type=WFC3-UVIS-MOSAIC-LINE Purpose=MOSAIC Number Of Points=2 Point Spacing=3.264 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=63.697 Angle Between Sides= Center Pattern=false		(1), (2-3)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(7)	IC-348-POS4A	RA: 03 44 33.6000 (56.1400000d) Dec: +32 06 18.00 (32.10500d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD				
	<i>Comments: Extended=NO</i>									
(8)	IC-348-POS4B	RA: 03 44 41.6000 (56.1733333d) Dec: +32 06 18.00 (32.10500d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD					
	<i>Comments: Extended=NO</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	First Exposure	(7) IC-348-POS4A	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12		Pattern 1, Exps 1-1 in First Visit (04) (1)	500 Secs (1118 Secs)	
									[==>559.0 Secs (Pattern 1)] [==>559.0 Secs (Pattern 2)]	[1]
	2	First Exposure	(8) IC-348-POS4B	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12		Pattern 1, Exps 2-3 in First Visit (04) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (04)	500 Secs (1378 Secs)	
								[==>689.0 Secs (Pattern 1)] [==>689.0 Secs (Pattern 2)]	[1]	
3	ACS_parallel	(8) IC-348-POS4B	ACS/WFC, ACCUM, WFC	F625W				Pattern 1, Exps 2-3 in First Visit (04) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (04)	500 Secs (1138 Secs)	
								[==>578.0 Secs (Pattern 1)] [==>560.0 Secs (Pattern 2)]	[1]	



Proposal 14172 - First Visit (05) - Imaging Accreting Protoplanets in the Young Cluster IC 348

Sat Jan 23 02:10:32 GMT 2016

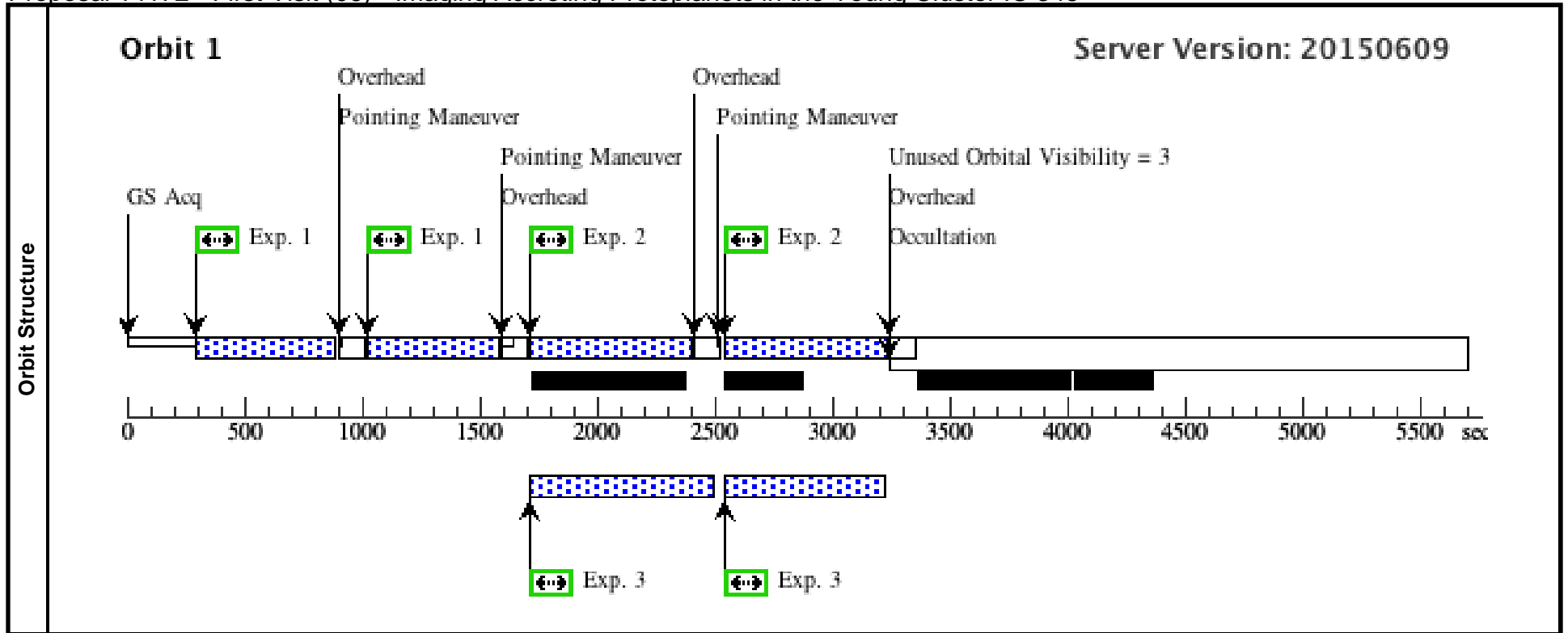
Visit	<b>Proposal 14172, First Visit (05), scheduled</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 60D TO 70 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(1)	Pattern Type=WFC3-UVIS-MOSAIC-LINE Purpose=MOSAIC Number Of Points=2 Point Spacing=3.264 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=63.697 Angle Between Sides= Center Pattern=false		(1), (2-3)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(9)	IC-348-POS5A	RA: 03 44 33.6000 (56.1400000d) Dec: +32 03 48.00 (32.06333d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD				
	<i>Comments: Extended=NO</i>									
	(10)	IC-348-POS5B	RA: 03 44 41.6000 (56.173333d) Dec: +32 03 48.00 (32.06333d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD				
	<i>Comments: Extended=NO</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	First Exposure	(9) IC-348-POS5A	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12	GS ACQ SCENARIO SINGLE	Pattern 1, Exps 1-1 in First Visit (05) (1)	500 Secs (1118 Secs)	
									[==>559.0 Secs (Pattern 1)] [==>559.0 Secs (Pattern 2)]	[1]
	2	First Exposure	(10) IC-348-POS5B	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12		Pattern 1, Exps 2-3 in First Visit (05) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (05)	500 Secs (1378 Secs)	
								[==>689.0 Secs (Pattern 1)] [==>689.0 Secs (Pattern 2)]	[1]	
3	ACS_parallel	(10) IC-348-POS5B	ACS/WFC, ACCUM, WFC	F625W			Pattern 1, Exps 2-3 in First Visit (05) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (05)	500 Secs (1138 Secs)		
								[==>578.0 Secs (Pattern 1)] [==>560.0 Secs (Pattern 2)]	[1]	



Proposal 14172 - First Visit (06) - Imaging Accreting Protoplanets in the Young Cluster IC 348

Sat Jan 23 02:10:32 GMT 2016

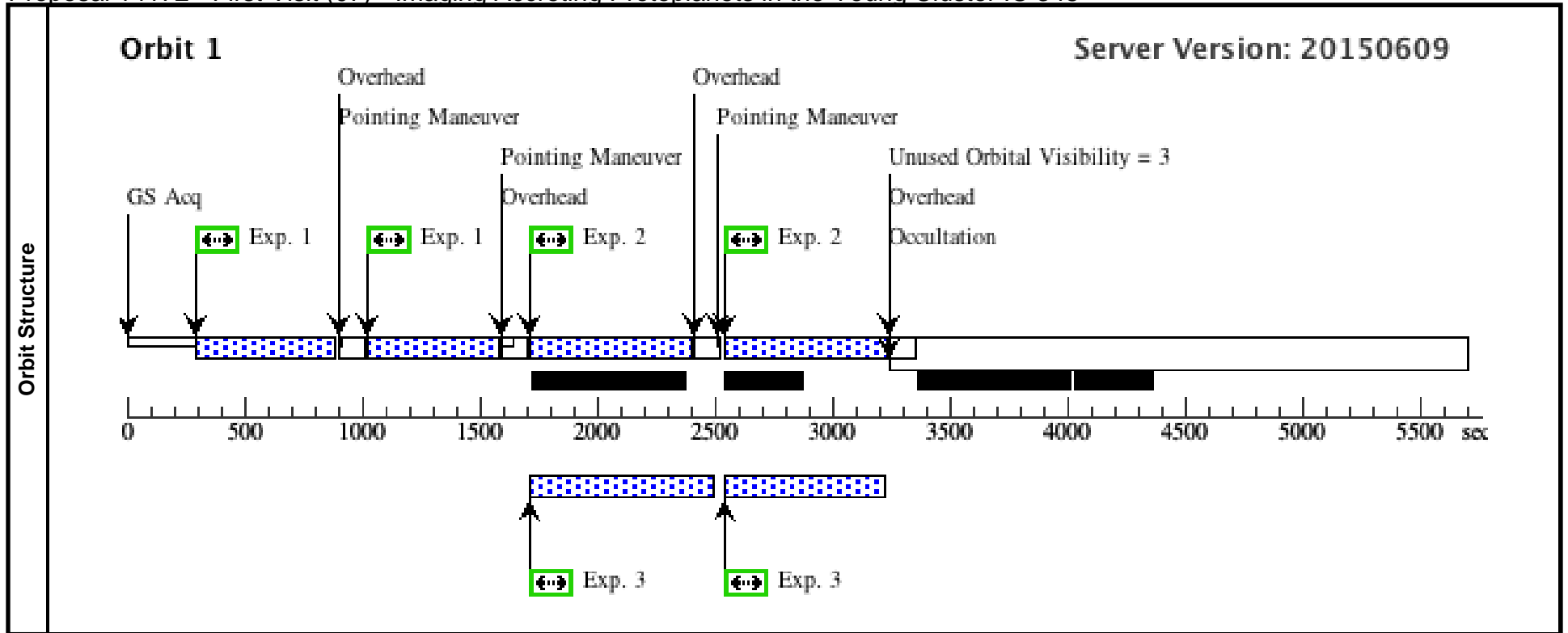
Visit	<b>Proposal 14172, First Visit (06), scheduling</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 270D TO 280 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(1)	Pattern Type=WFC3-UVIS-MOSAIC-LINE Purpose=MOSAIC Number Of Points=2 Point Spacing=3.264 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=63.697 Angle Between Sides= Center Pattern=false		(1), (2-3)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(11)	IC-348-POS6A	RA: 03 44 33.6000 (56.1400000d) Dec: +32 01 18.00 (32.02167d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD				
	<i>Comments: Extended=NO</i>									
(12)	IC-348-POS6B	RA: 03 44 41.6000 (56.1733333d) Dec: +32 01 18.00 (32.02167d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD					
	<i>Comments: Extended=NO</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	First Exposure	(11) IC-348-POS6A	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12	GS ACQ SCENARIO BASE1B3	Pattern 1, Exps 1-1 in First Visit (06) (1)	500 Secs (1118 Secs)	
									[==>559.0 Secs (Pattern 1)] [==>559.0 Secs (Pattern 2)]	[1]
	2	First Exposure	(12) IC-348-POS6B	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12		Pattern 1, Exps 2-3 in First Visit (06) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (06)	500 Secs (1378 Secs)	
								[==>689.0 Secs (Pattern 1)] [==>689.0 Secs (Pattern 2)]	[1]	
3	ACS_parallel	(12) IC-348-POS6B	ACS/WFC, ACCUM, WFC	F625W				Pattern 1, Exps 2-3 in First Visit (06) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (06)	500 Secs (1138 Secs)	
								[==>578.0 Secs (Pattern 1)] [==>560.0 Secs (Pattern 2)]	[1]	



Proposal 14172 - First Visit (07) - Imaging Accreting Protoplanets in the Young Cluster IC 348

Sat Jan 23 02:10:32 GMT 2016

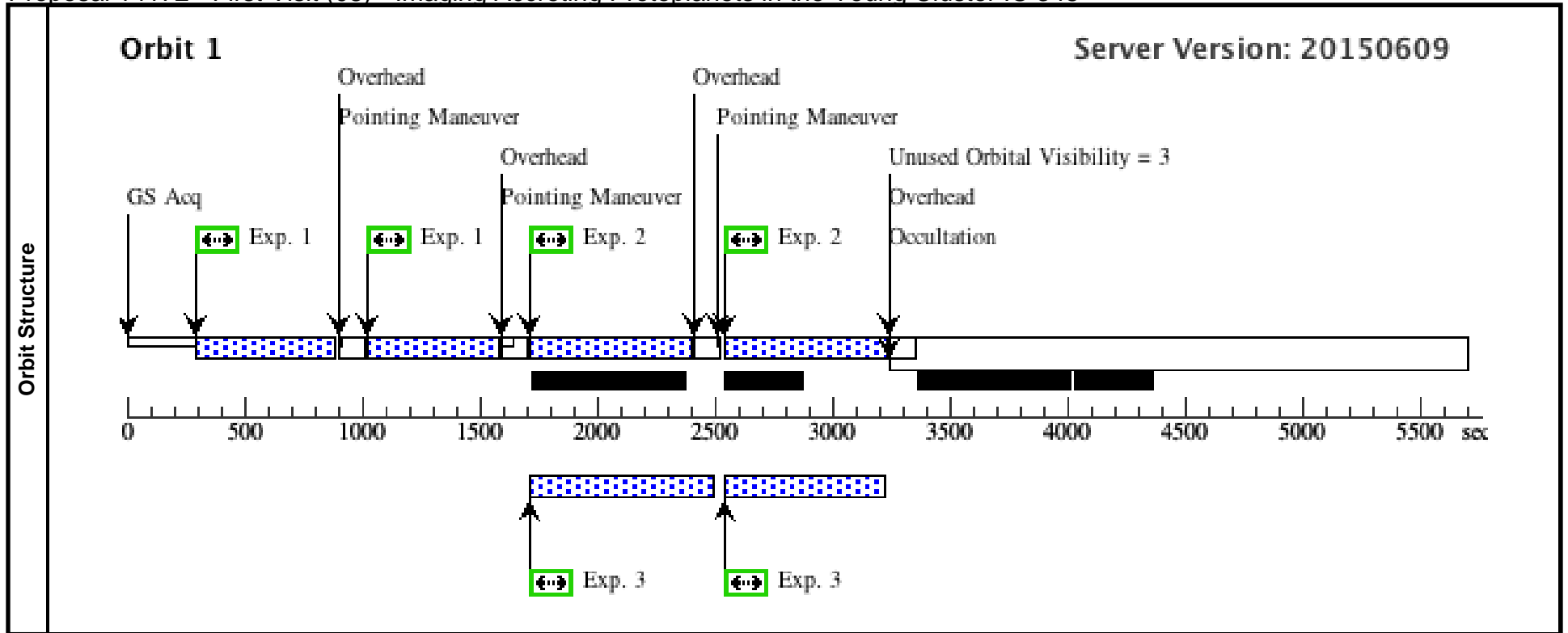
Visit	<b>Proposal 14172, First Visit (07), scheduling</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 230D TO 240 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(1)	Pattern Type=WFC3-UVIS-MOSAIC-LINE Purpose=MOSAIC Number Of Points=2 Point Spacing=3.264 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=63.697 Angle Between Sides= Center Pattern=false		(1), (2-3)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(13)	IC-348-POS7A	RA: 03 44 13.6000 (56.0566667d) Dec: +32 13 48.00 (32.23000d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD				
	<i>Comments: Extended=NO</i>									
(14)	IC-348-POS7B	RA: 03 44 21.6000 (56.0900000d) Dec: +32 13 48.00 (32.23000d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD					
	<i>Comments: Extended=NO</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	First Exposure	(14) IC-348-POS7B	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12	GS ACQ SCENARIO BASE1B3	Pattern 1, Exps 1-1 in First Visit (07) (1)	500 Secs (1118 Secs)	
									[==>559.0 Secs (Pattern 1)]	[1]
									[==>559.0 Secs (Pattern 2)]	
2	First Exposure	(13) IC-348-POS7A	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12		Pattern 1, Exps 2-3 in First Visit (07) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (07)	500 Secs (1378 Secs)		
								[==>689.0 Secs (Pattern 1)]	[1]	
								[==>689.0 Secs (Pattern 2)]		
3	ACS_parallel	(14) IC-348-POS7B	ACS/WFC, ACCUM, WFC	F625W			Pattern 1, Exps 2-3 in First Visit (07) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (07)	500 Secs (1138 Secs)		
								[==>578.0 Secs (Pattern 1)]	[1]	
								[==>560.0 Secs (Pattern 2)]		



Proposal 14172 - First Visit (08) - Imaging Accreting Protoplanets in the Young Cluster IC 348

Sat Jan 23 02:10:32 GMT 2016

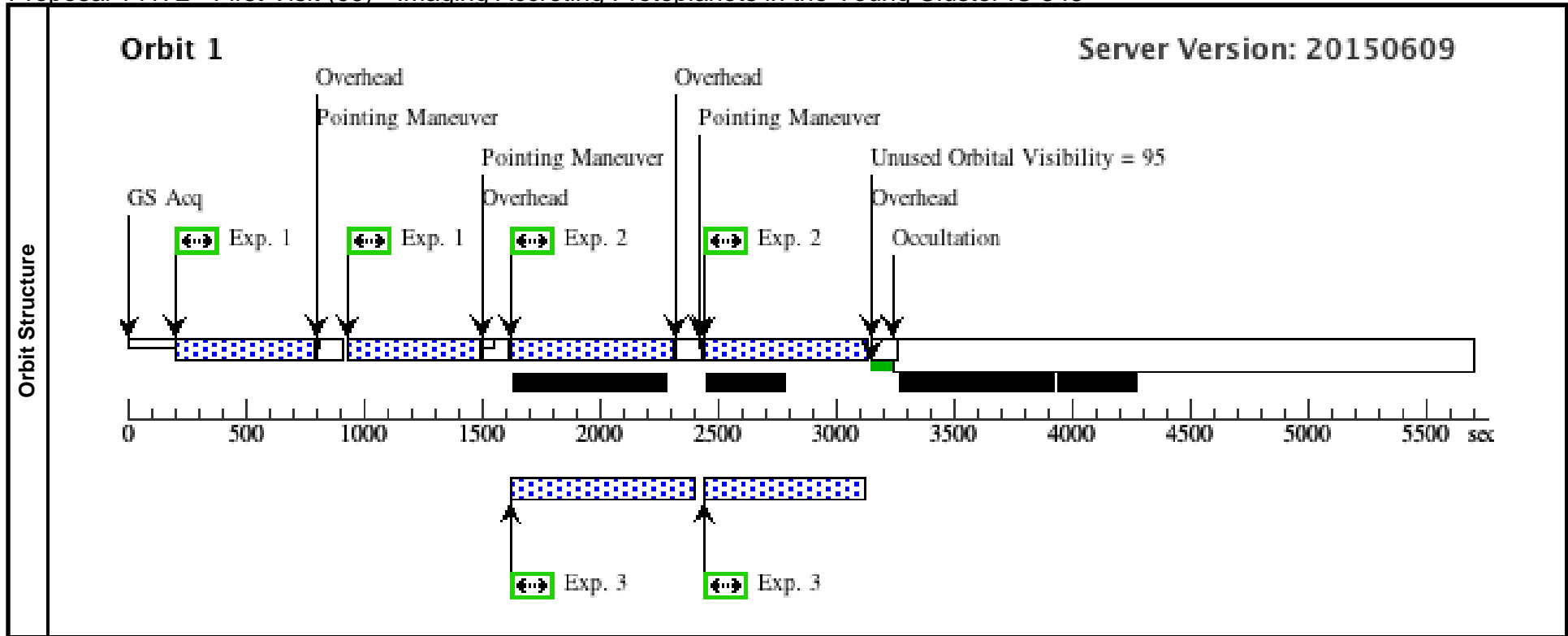
Visit	<b>Proposal 14172, First Visit (08), scheduling</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 230D TO 240 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(1)	Pattern Type=WFC3-UVIS-MOSAIC-LINE Purpose=MOSAIC Number Of Points=2 Point Spacing=3.264 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=63.697 Angle Between Sides= Center Pattern=false		(1), (2-3)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(15)	IC-348-POS8A	RA: 03 44 13.6000 (56.0566667d) Dec: +32 11 18.00 (32.18833d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD				
	<i>Comments: Extended=NO</i>									
(16)	IC-348-POS8B	RA: 03 44 21.6000 (56.0900000d) Dec: +32 11 18.00 (32.18833d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD					
	<i>Comments: Extended=NO</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	First Exposure	(16) IC-348-POS8B	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12	GS ACQ SCENARIO BASE1B3	Pattern 1, Exps 1-1 in First Visit (08) (1)	500 Secs (1118 Secs)	
									[==>559.0 Secs (Pattern 1)]	[1]
									[==>559.0 Secs (Pattern 2)]	
2	First Exposure	(15) IC-348-POS8A	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12		Pattern 1, Exps 2-3 in First Visit (08) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (08)	500 Secs (1378 Secs)		
								[==>689.0 Secs (Pattern 1)]	[1]	
								[==>689.0 Secs (Pattern 2)]		
3	ACS_parallel	(15) IC-348-POS8A	ACS/WFC, ACCUM, WFC	F625W			Pattern 1, Exps 2-3 in First Visit (08) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (08)	500 Secs (1138 Secs)		
								[==>578.0 Secs (Pattern 1)]	[1]	
								[==>560.0 Secs (Pattern 2)]		



Proposal 14172 - First Visit (09) - Imaging Accreting Protoplanets in the Young Cluster IC 348

Sat Jan 23 02:10:32 GMT 2016

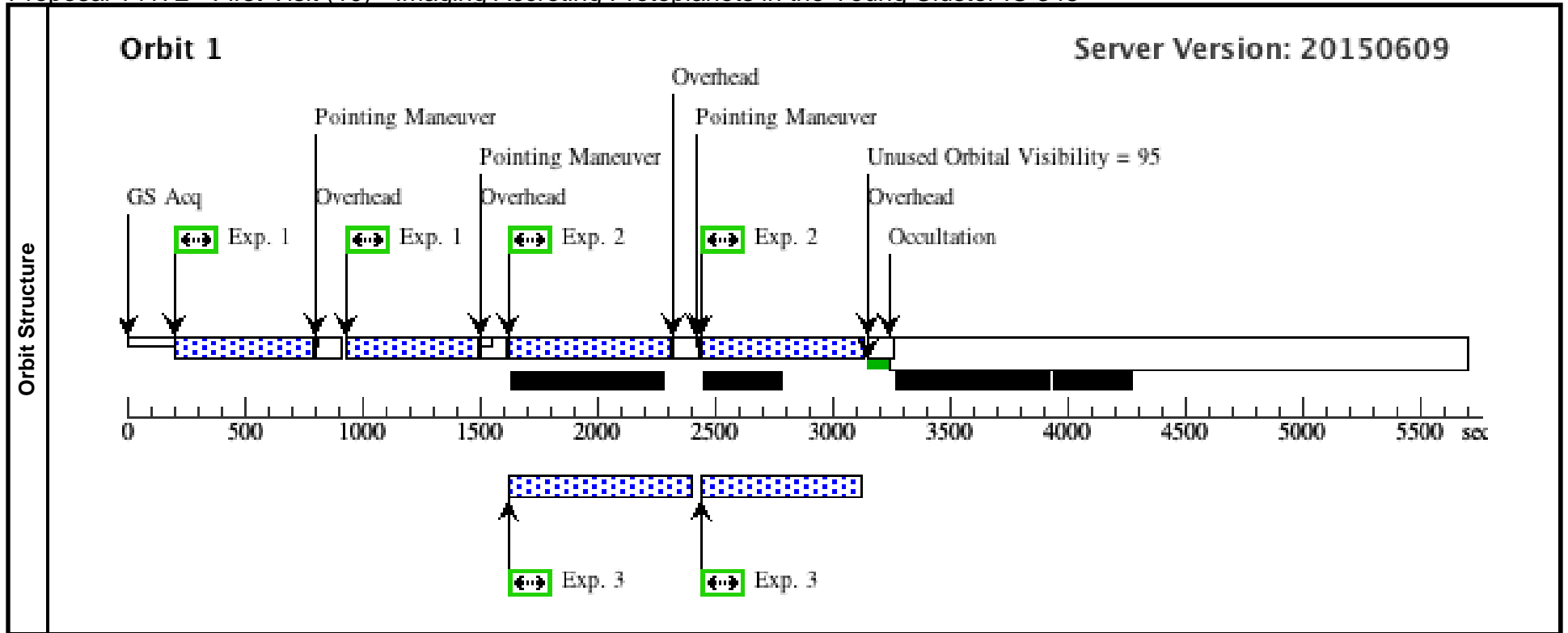
Visit	<b>Proposal 14172, First Visit (09), scheduling</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 230D TO 240 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(1)	Pattern Type=WFC3-UVIS-MOSAIC-LINE Purpose=MOSAIC Number Of Points=2 Point Spacing=3.264 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=63.697 Angle Between Sides= Center Pattern=false		(1), (2-3)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(17)	IC-348-POS9A	RA: 03 44 13.6854 (56.0570225d) Dec: +32 08 0.00 (32.13333d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD				
	<i>Comments: Extended=NO</i>									
(18)	IC-348-POS9B	RA: 03 44 22.8836 (56.0953483d) Dec: +32 08 40.28 (32.14452d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD					
	<i>Comments: Extended=NO</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	First Exposure	(18) IC-348-POS9B	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12	GS ACQ SCENARIO SINGLE	Pattern 1, Exps 1-1 in First Visit (09) (1)	500 Secs (1118 Secs)	
									[==>559.0 Secs (Pattern 1)] [==>559.0 Secs (Pattern 2)]	[1]
	2	First Exposure	(17) IC-348-POS9A	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12		Pattern 1, Exps 2-3 in First Visit (09) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (09)	500 Secs (1378 Secs)	
								[==>689.0 Secs (Pattern 1)] [==>689.0 Secs (Pattern 2)]	[1]	
3	ACS_parallel	(17) IC-348-POS9A	ACS/WFC, ACCUM, WFC	F625W				Pattern 1, Exps 2-3 in First Visit (09) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (09)	500 Secs (1138 Secs)	
								[==>578.0 Secs (Pattern 1)] [==>560.0 Secs (Pattern 2)]	[1]	



Proposal 14172 - First Visit (10) - Imaging Accreting Protoplanets in the Young Cluster IC 348

Sat Jan 23 02:10:32 GMT 2016

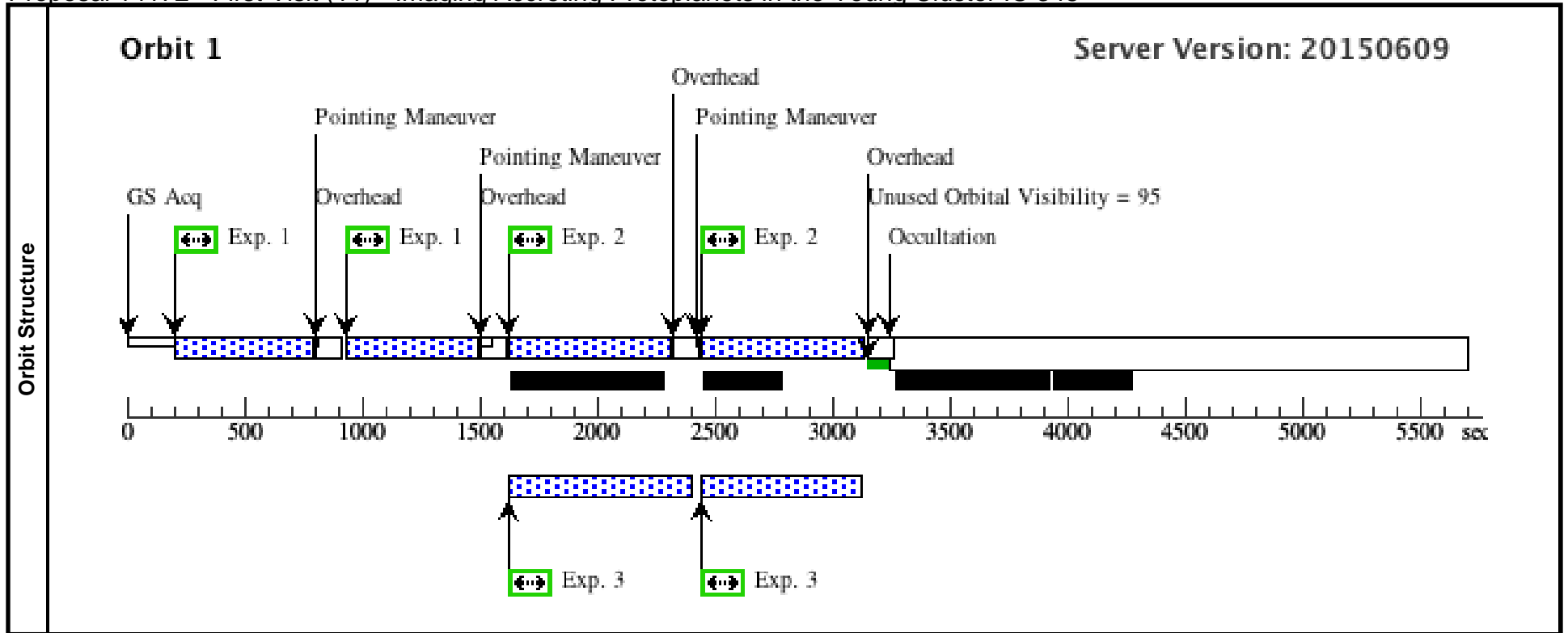
Visit	<b>Proposal 14172, First Visit (10), scheduling</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 230D TO 240 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
	(1)	Pattern Type=WFC3-UVIS-MOSAIC-LINE Purpose=MOSAIC Number Of Points=2 Point Spacing=3.264 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=63.697 Angle Between Sides= Center Pattern=false		(1), (2-3)					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(19)	IC-348-POS10A	RA: 03 44 13.6000 (56.0566667d) Dec: +32 06 18.00 (32.10500d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD				
	<i>Comments: Extended=NO</i>									
	(20)	IC-348-POS10B	RA: 03 44 21.6000 (56.0900000d) Dec: +32 06 18.00 (32.10500d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD				
	<i>Comments: Extended=NO</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	First Exposure	(20) IC-348-POS10B	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12	GS ACQ SCENARIO SINGLE	Pattern 1, Exps 1-1 in First Visit (10) (1)	500 Secs (1118 Secs)	
									[==>559.0 Secs (Pattern 1)]	[1]
									[==>559.0 Secs (Pattern 2)]	
2	First Exposure	(19) IC-348-POS10A	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12		Pattern 1, Exps 2-3 in First Visit (10) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (10)	500 Secs (1378 Secs)		
								[==>689.0 Secs (Pattern 1)]	[1]	
								[==>689.0 Secs (Pattern 2)]		
3	ACS_parallel	(19) IC-348-POS10A	ACS/WFC, ACCUM, WFC	F625W			Pattern 1, Exps 2-3 in First Visit (10) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (10)	500 Secs (1138 Secs)		
								[==>578.0 Secs (Pattern 1)]	[1]	
								[==>560.0 Secs (Pattern 2)]		



Proposal 14172 - First Visit (11) - Imaging Accreting Protoplanets in the Young Cluster IC 348

Sat Jan 23 02:10:32 GMT 2016

Visit	<b>Proposal 14172, First Visit (11), completed</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 130D TO 140 D									
	#	Primary Pattern	Secondary Pattern	Exposures						
Patterns	(1)	Pattern Type=WFC3-UVIS-MOSAIC-LINE Purpose=MOSAIC Number Of Points=2 Point Spacing=3.264 Line Spacing= Coordinate Frame=POS-TARG Pattern Orientation=63.697 Angle Between Sides= Center Pattern=false		(1), (2-3)						
	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
Fixed Targets	(21)	IC-348-POS11A	RA: 03 44 13.6000 (56.0566667d) Dec: +32 03 48.00 (32.06333d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD				
	<i>Comments: Extended=NO</i>									
Fixed Targets	(22)	IC-348-POS11B	RA: 03 44 21.6000 (56.0900000d) Dec: +32 03 48.00 (32.06333d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD				
	<i>Comments: Extended=NO</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	First Exposure	(22) IC-348-POS11B	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12	GS ACQ SCENARIO SINGLE	Pattern 1, Exps 1-1 in First Visit (11) (1)	500 Secs (1118 Secs)	
									[==>559.0 Secs (Pattern 1)]	[1]
									[==>559.0 Secs (Pattern 2)]	
2	First Exposure	(21) IC-348-POS11A	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12		Pattern 1, Exps 2-3 in First Visit (11) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (11)	500 Secs (1378 Secs)		
								[==>689.0 Secs (Pattern 1)]	[1]	
								[==>689.0 Secs (Pattern 2)]		
3	ACS_parallel	(21) IC-348-POS11A	ACS/WFC, ACCUM, WFC	F625W			Pattern 1, Exps 2-3 in First Visit (11) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (11)	500 Secs (1138 Secs)		
								[==>578.0 Secs (Pattern 1)]	[1]	
								[==>560.0 Secs (Pattern 2)]		



Proposal 14172 - First Visit (12) - Imaging Accreting Protoplanets in the Young Cluster IC 348

Sat Jan 23 02:10:32 GMT 2016

Visit	<b>Proposal 14172, First Visit (12), scheduling</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS, ACS/WFC Special Requirements: ORIENT 240D TO 250 D									
	Patterns	#	Primary Pattern	Secondary Pattern	Exposures					
		(1)	Pattern Type=WFC3-UVIS-MOSAIC-LINE Purpose=MOSAIC Number Of Points=2 Point Spacing=3.264 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=63.697 Angle Between Sides= Center Pattern=false		(1), (2-3)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(23)	IC-348-POS12A	RA: 03 44 13.6000 (56.0566667d) Dec: +32 01 18.00 (32.02167d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD				
	<i>Comments: Extended=NO</i>									
(24)	IC-348-POS12B	RA: 03 44 21.6000 (56.0900000d) Dec: +32 01 18.00 (32.02167d) Equinox: J2000	Proper Motion RA: 0 mas/yr Proper Motion Dec: 0 mas/yr Parallax: 0" Epoch of Position: 2000.0	V=15	Reference Frame: SIMBAD					
	<i>Comments: Extended=NO</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	First Exposure	(24) IC-348-POS12B	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12	GS ACQ SCENARIO BASE1B3	Pattern 1, Exps 1-1 in First Visit (12) (1)	500 Secs (1118 Secs)	
									[==>559.0 Secs (Pattern 1)]	[1]
									[==>559.0 Secs (Pattern 2)]	
2	First Exposure	(23) IC-348-POS12A	WFC3/UVIS, ACCUM, UVIS-CENTER	F656N	FLASH=12		Pattern 1, Exps 2-3 in First Visit (12) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (12)	500 Secs (1378 Secs)		
								[==>689.0 Secs (Pattern 1)]	[1]	
								[==>689.0 Secs (Pattern 2)]		
3	ACS_parallel	(23) IC-348-POS12A	ACS/WFC, ACCUM, WFC	F625W			Pattern 1, Exps 2-3 in First Visit (12) (1) Prime + Parallel Group 2-3 in Pattern 1, Exps 2-3 in First Visit (12)	500 Secs (1138 Secs)		
								[==>578.0 Secs (Pattern 1)]	[1]	
								[==>560.0 Secs (Pattern 2)]		

