15224 - The host galaxy and environment of a bright QSO at z=7.54

Cycle: 25, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

Name	*Institution*	*E-Mail*
Eduardo Banados (PI) (Contact)	**Carnegie Institution of Washington**	**ebanados@carnegiescience.edu**
Dr. Fabian Walter (CoI) (ESA Member)	Max-Planck-Institut fur Astronomie, Heidelberg	walter@mpia.de
Dr. Daniel K Stern (CoI)	Jet Propulsion Laboratory	daniel.k.stern@jpl.nasa.gov
Dr. Bram Venemans (CoI) (ESA Member)	Max-Planck-Institut fur Astronomie, Heidelberg	venemans@mpia-hd.mpg.de
Dr. Roberto Decarli (CoI) (ESA Member)	Max-Planck-Institut fur Astronomie, Heidelberg	decarli@mpia.de
Ms. Chiara Giulia Mazzucchelli (CoI) (ESA Member)	Max-Planck-Institut fur Astronomie, Heidelberg	mazzucchelli@mpia.de
Prof. Xiaohui Fan (CoI)	University of Arizona	fan@as.arizona.edu
Dr. Emanuele Paolo Farina (CoI) (ESA Member)	Max-Planck-Institut fur Astronomie, Heidelberg	emanuele.paolo.farina@gmail.com
Mr. Feige Wang (CoI)	University of Arizona	fgwang.astro@gmail.com

VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) PISCO	WFC3/IR	3	14-Jul-2017 13:04:11.0	yes
02	(1) PISCO	WFC3/IR	3	14-Jul-2017 13:04:13.0	yes
03	(1) PISCO	WFC3/IR	3	14-Jul-2017 13:04:15.0	yes
04	(1) PISCO	WFC3/IR	3	14-Jul-2017 13:04:16.0	yes
05	(1) PISCO	ACS/WFC	3	14-Jul-2017 13:04:18.0	yes
06	(1) PISCO	ACS/WFC	3	14-Jul-2017 13:04:19.0	yes
07	(1) PISCO	ACS/WFC	3	14-Jul-2017 13:04:20.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
08	(1) PISCO	ACS/WFC	3	14-Jul-2017 13:04:21.0	yes
09	(1) PISCO	ACS/WFC	1	14-Jul-2017 13:04:21.0	yes

25 Total Orbits Used

ABSTRACT

After almost a decade of intense search, our team has finally discovered a bright QSO well within the epoch of reionization, at z=7.54. This is by far the most distant QSO known (previous record: 7.08), at a cosmic age of 690 Myr, i.e., only 5% of our universe's current age. This is the first QSO whose spectrum shows clear evidence of an intergalactic medium that is >10% neutral and that reionization is underway. We propose deep HST ACS and WFC/IR imaging of this unique source with two main goals. (i) Unveil the rest-frame UV stellar light from the host galaxy to directly probe supermassive black hole/galaxy co-evolution at the highest accessible redshift. (ii) Search for galaxies physically associated with the QSO and test whether this object resides in one of the densest and most biased environment at the peak of the reionization epoch. HST observations are indispensable to address these topics for two reasons: (a) only HST provides the spatial resolution to separate the central bright light source from the underlying host galaxy and (b) at this record-redshift, only space-based imaging can provide the depths necessary to constrain the environment. These HST observations will provide key insights into the formation and evolution of the first super massive black holes, galaxies, and large-scale structure of the universe.

OBSERVING DESCRIPTION

We aim to characterize the environment and the host galaxy of the most distant quasar currently known, pisco, at z=7.54. The filters used for this program are WFC3/IR F125W and F105W and ACS/WFC F814W

The WFC3 observations will be undertaken as 2x2 mosaics in order to cover a similar area as the ACS field of view (~11 arcmin2). The mosaics are designed such as the central quasar is observed at each pointing, as a result the quasar will have a total exposure time four times longer than the rest of the field. We will use the default 4-step box dither pattern (WFC3-IR-DITHER-BOX-MIN) since 1) it gives adequate subpixel sampling to reconstruct nyquist-sampled (2pix/FWHM) images, and 2) it is a commonly-used pattern, which facilitates finding a PSF reference with the same sampling for PSF subtraction purposes. We decided to increase the dither steps to avoid possible self-persistence issues due to the bright quasar.

We also dither the ACS images in order to cover the gap between the two WFC CCDs.

Since we need to cover the same region with WFC3 and ACS, the ACS orientation is restricted to be similar to the WFC3 one (with a tolerance of 5 degrees). Thus, the first ACS visit has the requirement ORIENT FROM Tile Pisco WFC3 (1) by -48 to -38. However, given the symmetry other acceptable ranges are: -138 TO -128, 42 to 52, and 132 TO 142. The following ACS observations have an ORIENT same as Tile Pisco ACS (05).

Visit

Proposal 15224, Tile Pisco WFC3 (01) Fri Jul 14 17:04:22 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1), (2)

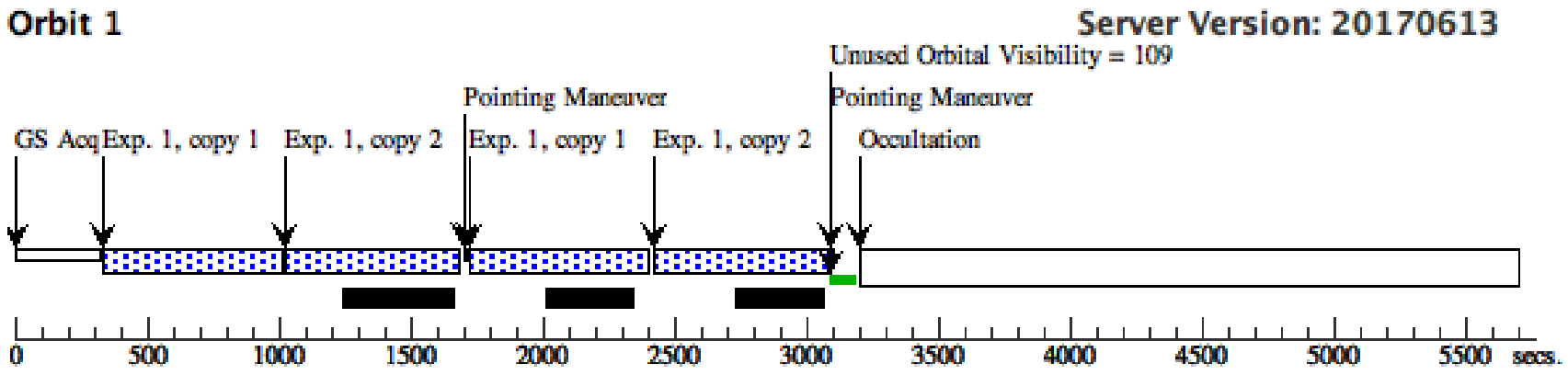
Fixed Targets

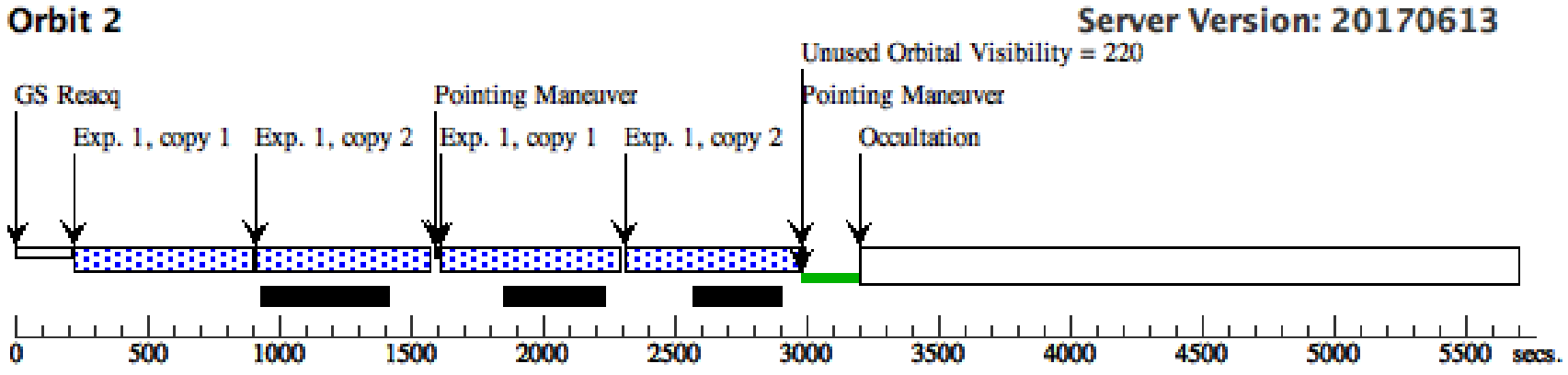
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	PISCO	RA: 13 42 8.1050 (205.5337708d) Dec: +09 28 38.61 (9.47739d) Equinox: J2000		V=(?) J(AB)=20.3	Reference Frame: ICRS

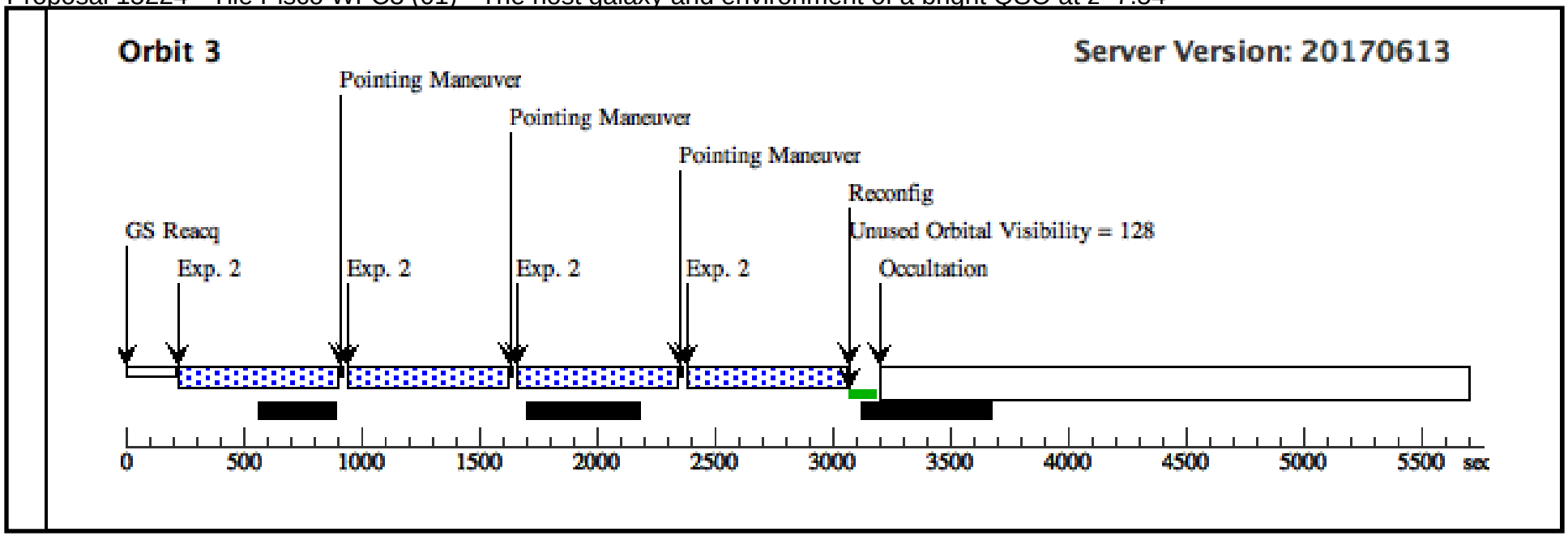
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F105W Pisco	(1) PISCO	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=14; SAMP-SEQ=SPARS50	POS TARG -61.176016000000004,-54.140812000000004	Pattern 2, Exps 1-1 in Tile Pisco WFC3 (01) (2)	652.938154 Secs X 2 (5223.505 Secs)	
								[==>(Pattern 1, Copy 1)] *[==>(Pattern 1, Copy 2)]* *[==>(Pattern 2, Copy 1)]* *[==>(Pattern 2, Copy 2)]*	***[1]***
								[==>(Pattern 3, Copy 1)] *[==>(Pattern 3, Copy 2)]* *[==>(Pattern 4, Copy 1)]* *[==>(Pattern 4, Copy 2)]*	***[2]***
2	F125W Pisco	(1) PISCO	WFC3/IR, MULTIACCUM, IR-FIX	F125W	NSAMP=14; SAMP-SEQ=SPARS50	POS TARG -61.176016000000004,-54.140812000000004	Pattern 2, Exps 2-2 in Tile Pisco WFC3 (01) (2)	652.938154 Secs (2611.753 Secs)	
								[==>(Pattern 1)] *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[3]***

Orbit Structure






Orbit 3
Server Version: 20170613
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Reconfig
GS Reacq
Unused Orbital Visibility = 128
Exp. 2
Exp. 2
Exp. 2
Exp. 2
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15224, Tile Pisco WFC3 (02) Fri Jul 14 17:04:23 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: SAME ORIENT AS 01

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1), (2)

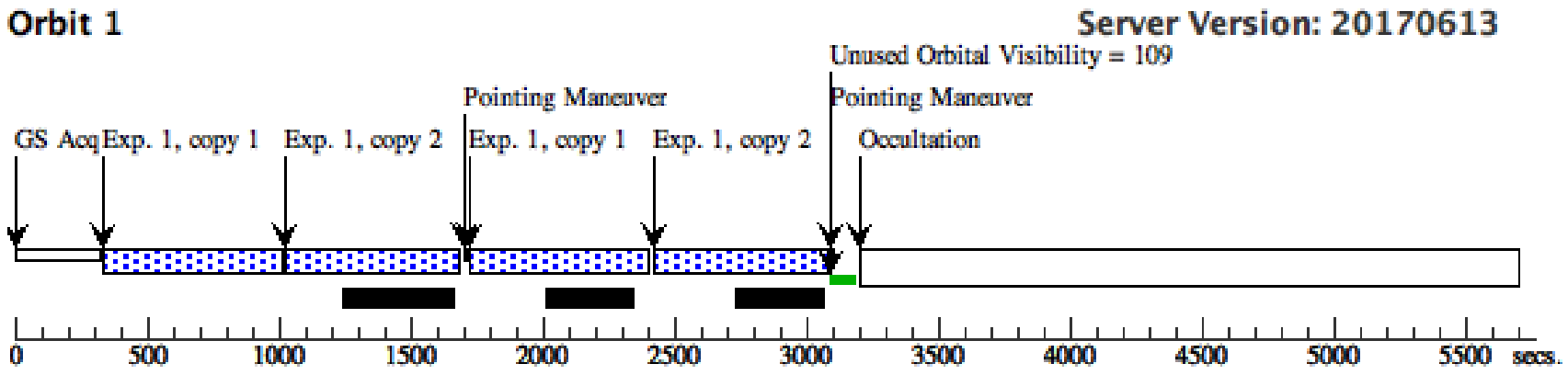
Fixed Targets

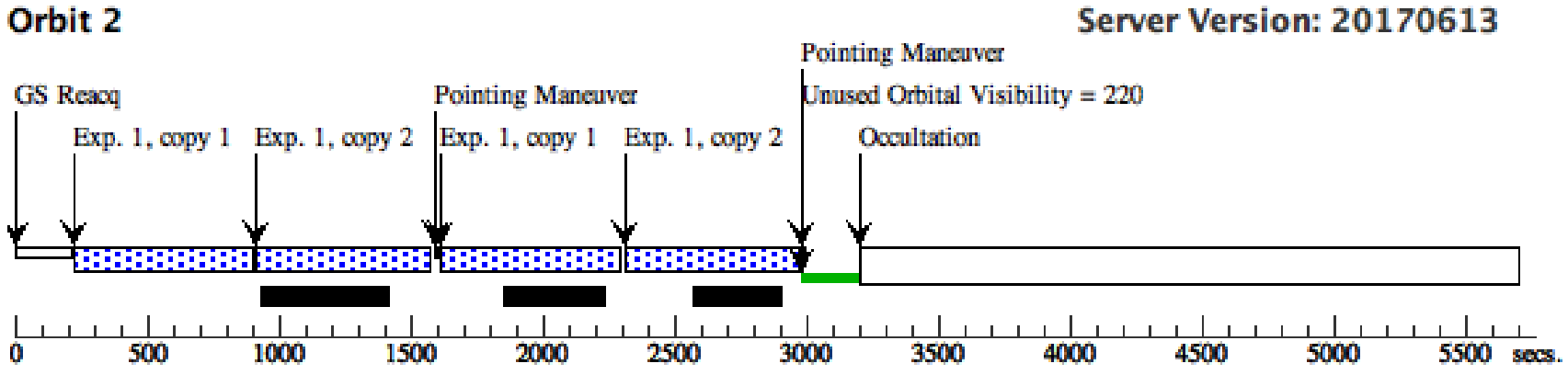
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	PISCO	RA: 13 42 8.1050 (205.5337708d) Dec: +09 28 38.61 (9.47739d) Equinox: J2000		V=(?) J(AB)=20.3	Reference Frame: ICRS

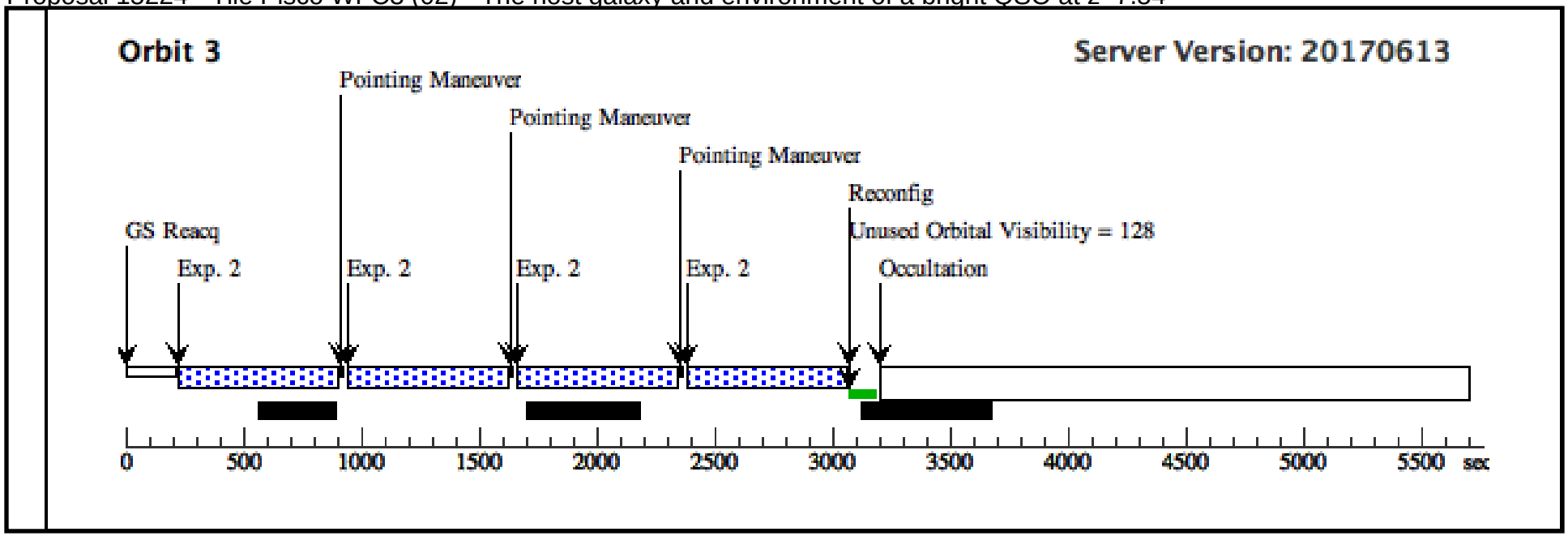
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F105W Pisco	(1) PISCO	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=14; SAMP-SEQ=SPARS50	POS TARG 61.176016000000004,-54.140812000000004	Pattern 2, Exps 1-1 in Tile Pisco WFC3 (02) (2)	652.938154 Secs X 2 (5223.505 Secs)	
								[==>(Pattern 1, Copy 1)] *[==>(Pattern 1, Copy 2)]* *[==>(Pattern 2, Copy 1)]* *[==>(Pattern 2, Copy 2)]*	***[1]***
								[==>(Pattern 3, Copy 1)] *[==>(Pattern 3, Copy 2)]* *[==>(Pattern 4, Copy 1)]* *[==>(Pattern 4, Copy 2)]*	***[2]***
2	F125W Pisco	(1) PISCO	WFC3/IR, MULTIACCUM, IR-FIX	F125W	NSAMP=14; SAMP-SEQ=SPARS50	POS TARG 61.176016000000004,-54.140812000000004	Pattern 2, Exps 2-2 in Tile Pisco WFC3 (02) (2)	652.938154 Secs (2611.753 Secs)	
								[==>(Pattern 1)] *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[3]***

Orbit Structure






Orbit 3
Server Version: 20170613
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Reconfig
GS Reacq
Unused Orbital Visibility = 128
Exp. 2
Exp. 2
Exp. 2
Exp. 2
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15224, Tile Pisco WFC3 (03) Fri Jul 14 17:04:23 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: SAME ORIENT AS 01

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1), (2)

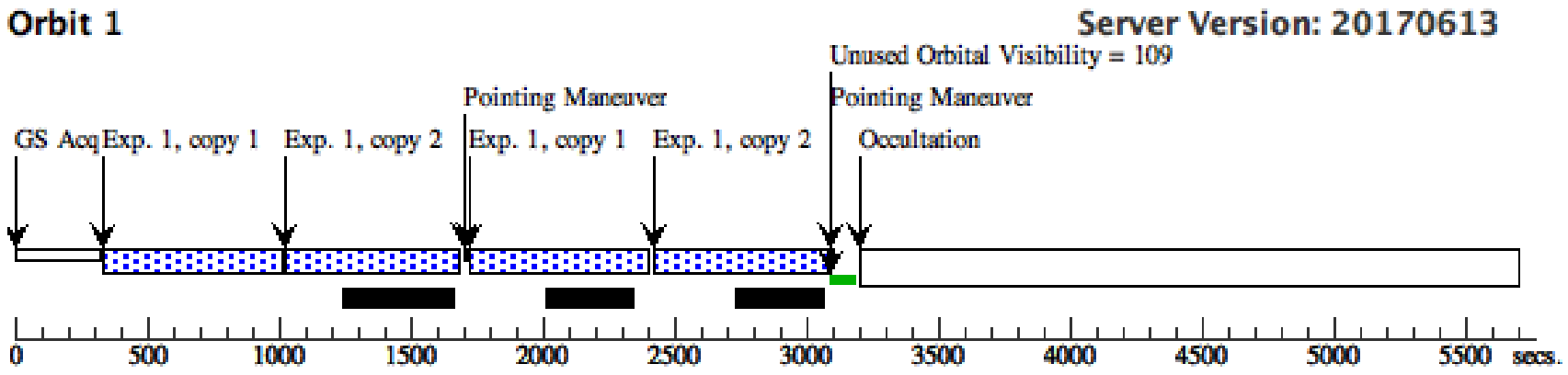
Fixed Targets

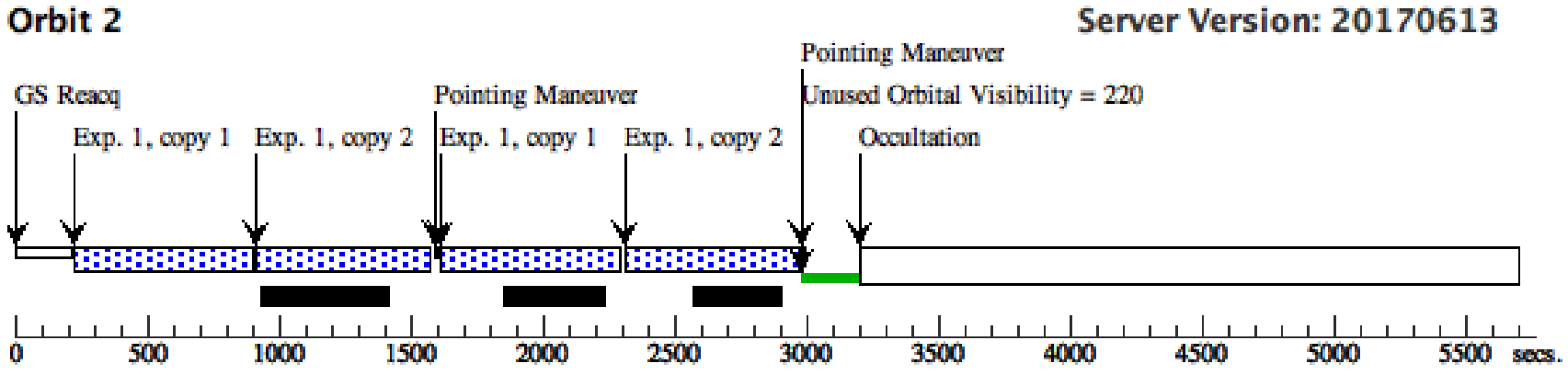
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	PISCO	RA: 13 42 8.1050 (205.5337708d) Dec: +09 28 38.61 (9.47739d) Equinox: J2000		V=(?) J(AB)=20.3	Reference Frame: ICRS

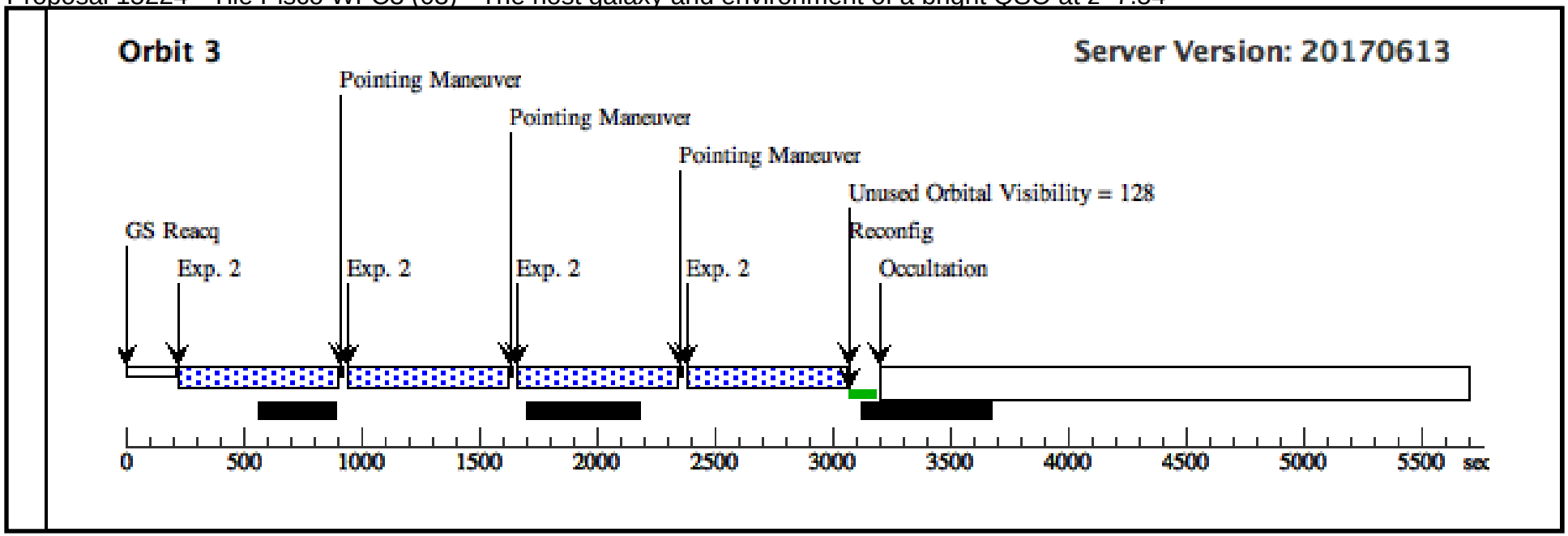
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F105W Pisco	(1) PISCO	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=14; SAMP-SEQ=SPARS50	POS TARG -61.176016000000004,54.140812000000004	Pattern 2, Exps 1-1 in Tile Pisco WFC3 (03) (2)	652.938154 Secs X 2 (5223.505 Secs)	
								[==>(Pattern 1, Copy 1)] *[==>(Pattern 1, Copy 2)]* *[==>(Pattern 2, Copy 1)]* *[==>(Pattern 2, Copy 2)]*	***[1]***
								[==>(Pattern 3, Copy 1)] *[==>(Pattern 3, Copy 2)]* *[==>(Pattern 4, Copy 1)]* *[==>(Pattern 4, Copy 2)]*	***[2]***
2	F125W Pisco	(1) PISCO	WFC3/IR, MULTIACCUM, IR-FIX	F125W	NSAMP=14; SAMP-SEQ=SPARS50	POS TARG -61.176016000000004,54.140812000000004	Pattern 2, Exps 2-2 in Tile Pisco WFC3 (03) (2)	652.938154 Secs (2611.753 Secs)	
								[==>(Pattern 1)] *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[3]***

Orbit Structure






Orbit 3
Server Version: 20170613
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Unused Orbital Visibility = 128
GS Reacq
Reconfig
Exp. 2
Exp. 2
Exp. 2
Exp. 2
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15224, Tile Pisco WFC3 (04) Fri Jul 14 17:04:23 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: SAME ORIENT AS 01

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(2)	Pattern Type=WFC3-IR-DITHER-BOX-MIN Purpose=DITHER Number Of Points=4 Point Spacing=4.004 Line Spacing=4.015	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1), (2)

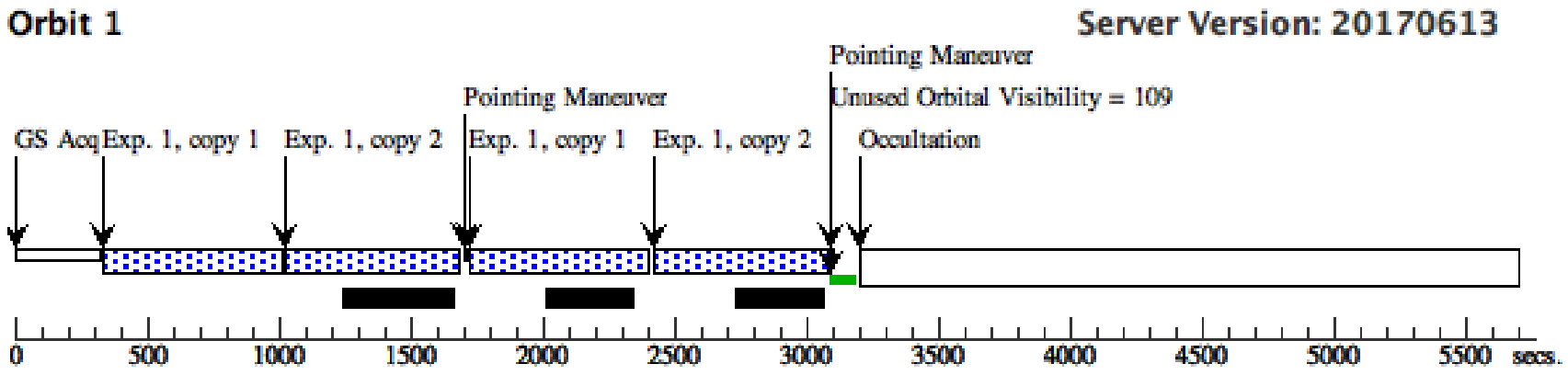
Fixed Targets

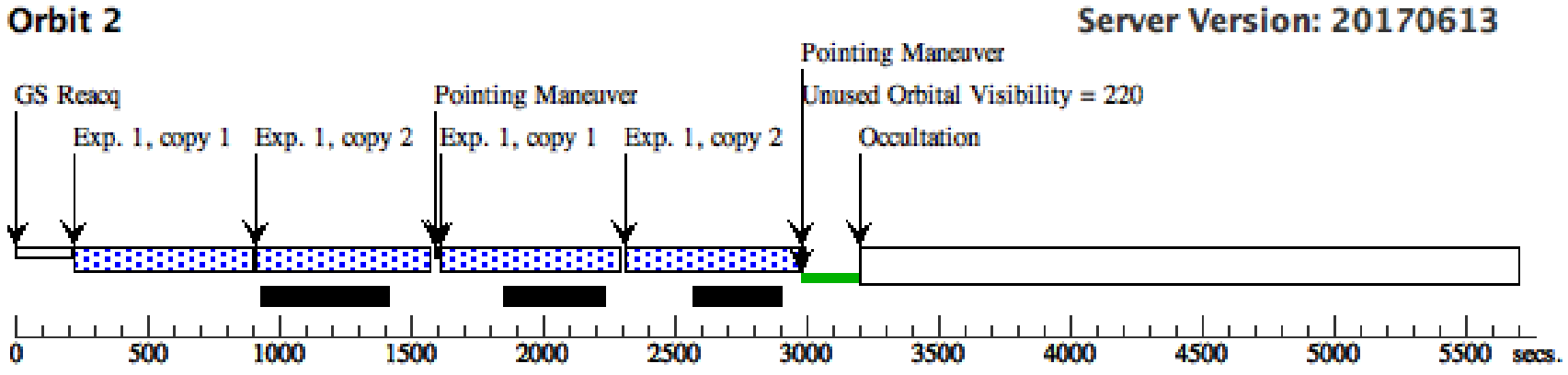
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	PISCO	RA: 13 42 8.1050 (205.5337708d) Dec: +09 28 38.61 (9.47739d) Equinox: J2000		V=(?) J(AB)=20.3	Reference Frame: ICRS

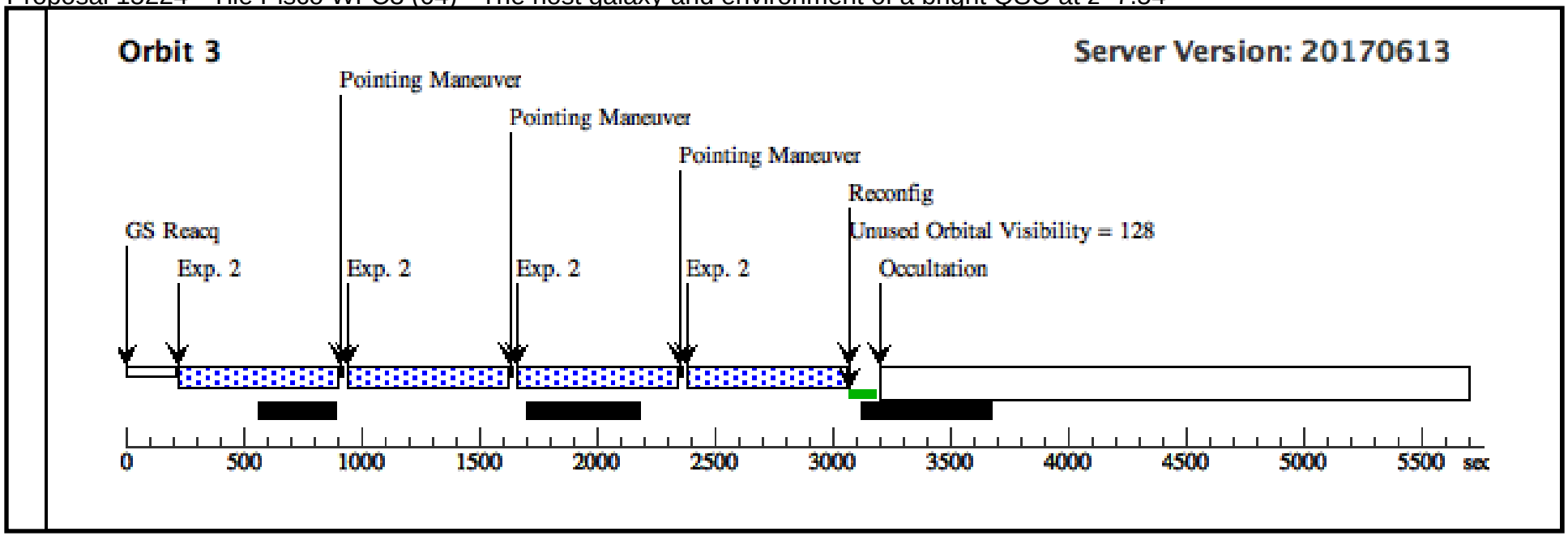
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F105W Pisco	(1) PISCO	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=14; SAMP-SEQ=SPARS50	POS TARG 61.1760160000000004,54.140812000000004	Pattern 2, Exps 1-1 in Tile Pisco WFC3 (04) (2)	652.938154 Secs X 2 (5223.505 Secs)	
								[==>(Pattern 1, Copy 1)] *[==>(Pattern 1, Copy 2)]* *[==>(Pattern 2, Copy 1)]* *[==>(Pattern 2, Copy 2)]*	***[1]***
								[==>(Pattern 3, Copy 1)] *[==>(Pattern 3, Copy 2)]* *[==>(Pattern 4, Copy 1)]* *[==>(Pattern 4, Copy 2)]*	***[2]***
2	F125W Pisco	(1) PISCO	WFC3/IR, MULTIACCUM, IR-FIX	F125W	NSAMP=14; SAMP-SEQ=SPARS50	POS TARG 61.1760160000000004,54.140812000000004	Pattern 2, Exps 2-2 in Tile Pisco WFC3 (04) (2)	652.938154 Secs (2611.753 Secs)	
								[==>(Pattern 1)] *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[3]***

Orbit Structure






Orbit 3
Server Version: 20170613
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Reconfig
GS Reacq
Unused Orbital Visibility = 128
Exp. 2
Exp. 2
Exp. 2
Exp. 2
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15224, Tile Pisco ACS (05) Fri Jul 14 17:04:23 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: ORIENT -48D TO -38D FROM 01

Comments: This tile ACS visit has the requirement ORIENT FROM Tile Pisco WFC3 (1) by -48 to -38 in order to have the same orientation as the WFC3 mosaic. However, given the symmetry other acceptable ranges are: -138 TO -128, 42 to 52, and 132 TO 142. The following ACS observations have an ORIENT same as this Tile Pisco ACS.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(3)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.146 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=47.17 Angle Between Sides= Center Pattern=false		(1)
(4)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.265 Line Spacing=0.187	Coordinate Frame=POS-TARG Pattern Orientation=20.67 Angle Between Sides=69.05 Center Pattern=false		(2)

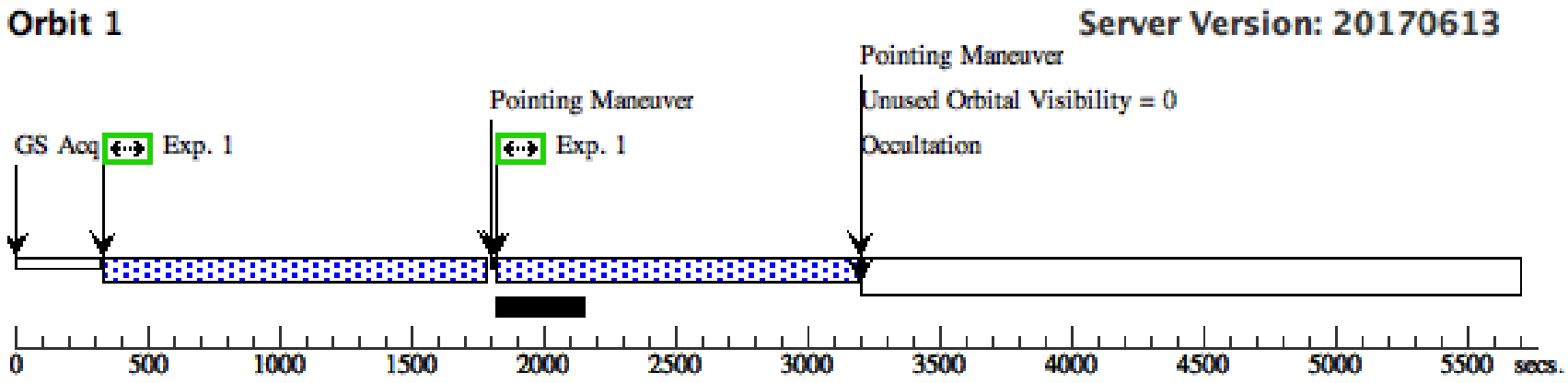
Fixed Targets

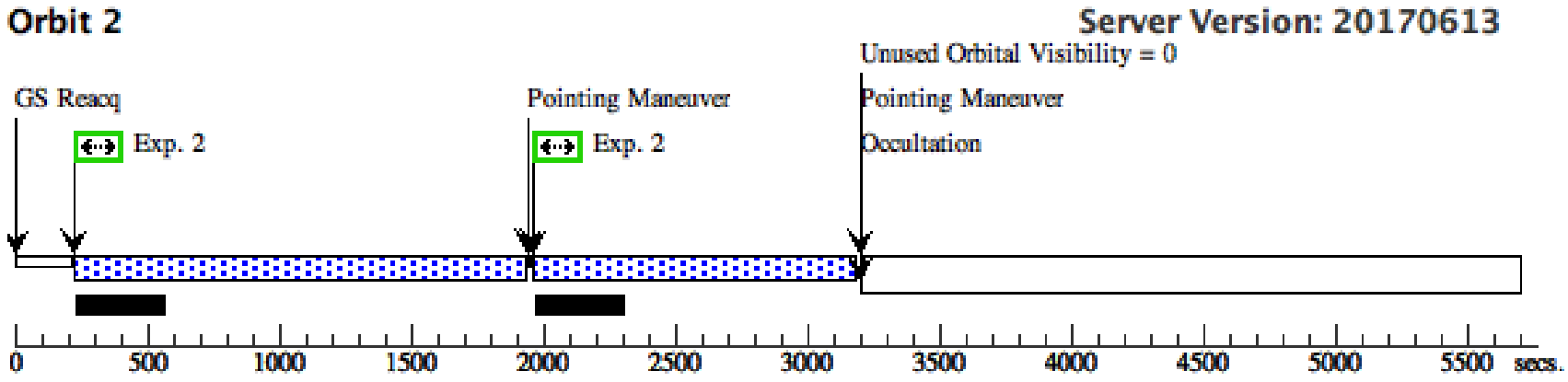
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	PISCO	RA: 13 42 8.1050 (205.5337708d) Dec: +09 28 38.61 (9.47739d) Equinox: J2000		V=(?) J(AB)=20.3	Reference Frame: ICRS

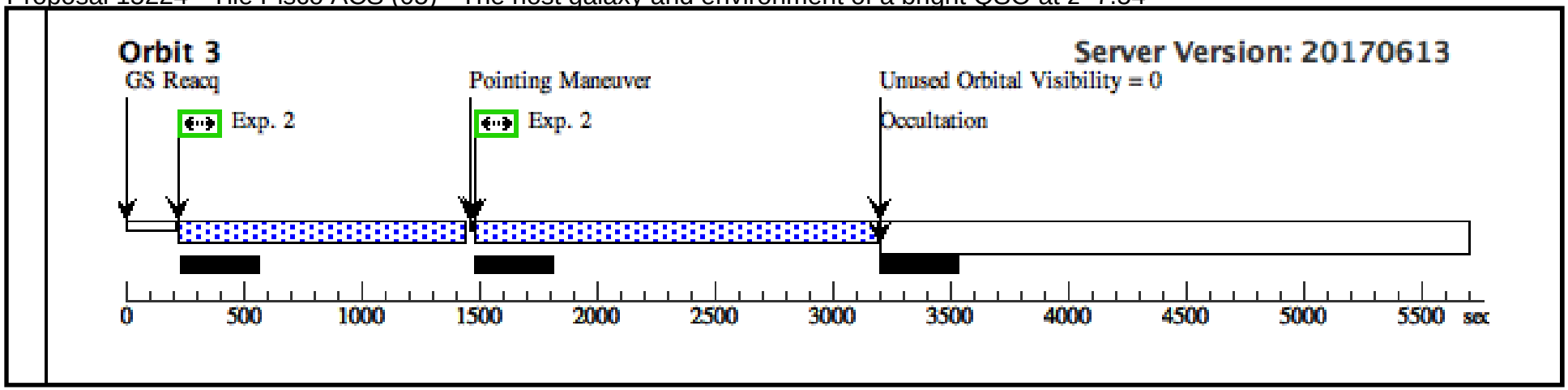
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F814W	(1) PISCO	ACS/WFC, ACCUM, WFCENTER	F814W		POS TARG 0.05781833384296024,-6.625324827790584	Pattern 3, Exps 1-1 in Tile Pisco ACS (05) (3)	1200 Secs (2494 Secs) *[==>1247.0 Secs (Pattern 1)]* *[==>1247.0 Secs (Pattern 2)]*	***[1]***
2	F814W	(1) PISCO	ACS/WFC, ACCUM, WFCENTER	F814W		POS TARG 0.05781833384296024,-6.625324827790584	Pattern 4, Exps 2-2 in Tile Pisco ACS (05) (4)	1100 Secs (5374 Secs) *[==>1587.0 Secs (Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>1587.0 Secs (Pattern 4)]*	***[2]*** ***[3]***

Orbit Structure






Orbit 3
Server Version: 20170613
GS Reacq
Exp. 2
Pointing Maneuver
Exp. 2
Unused Orbital Visibility = 0
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15224, Tile Pisco ACS (06) Fri Jul 14 17:04:23 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: SAME ORIENT AS 05

Comments: This tile ACS visit has the same ORIENT FROM TO as Tile Pisco ACS (05).
However, given the symmetry other acceptable ranges are: -138 TO -128, 42 to 52, and 132 TO 142. The following ACS observations have an ORIENT same as this Tile Pisco ACS.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(3)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.146 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=47.17 Angle Between Sides= Center Pattern=false		(1)
(4)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.265 Line Spacing=0.187	Coordinate Frame=POS-TARG Pattern Orientation=20.67 Angle Between Sides=69.05 Center Pattern=false		(2)

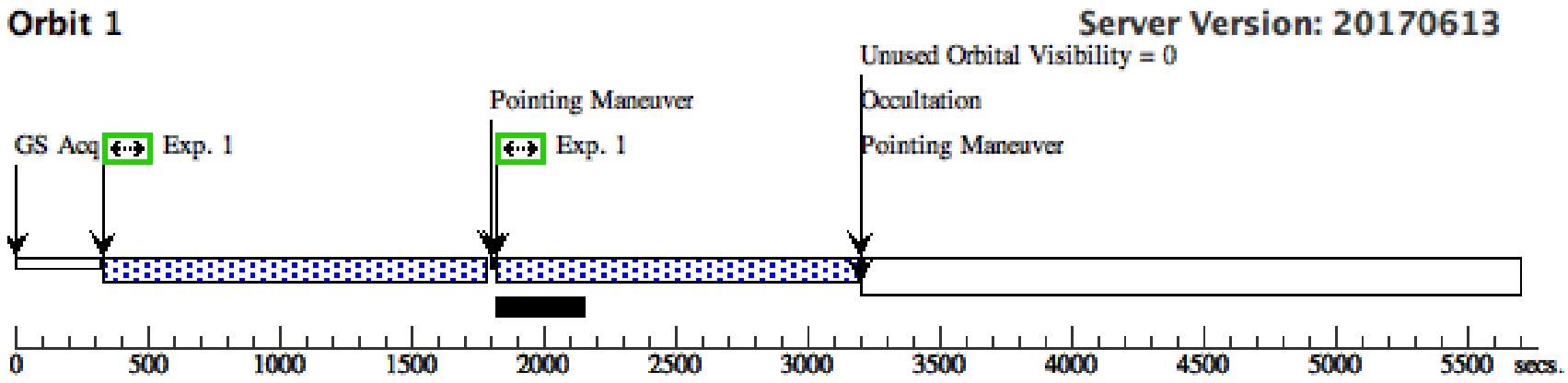
Fixed Targets

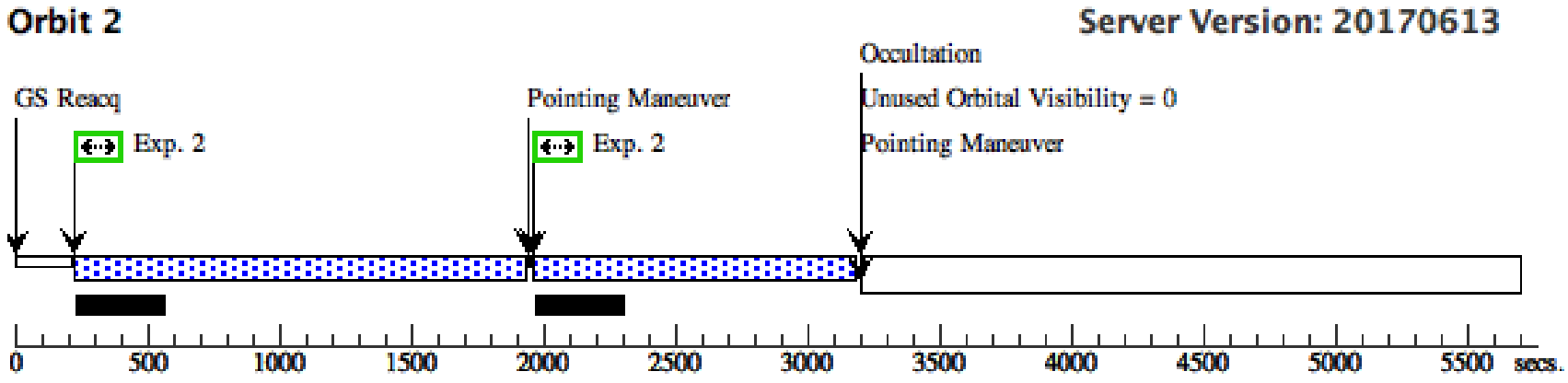
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	PISCO	RA: 13 42 8.1050 (205.5337708d) Dec: +09 28 38.61 (9.47739d) Equinox: J2000		V=(?) J(AB)=20.3	Reference Frame: ICRS

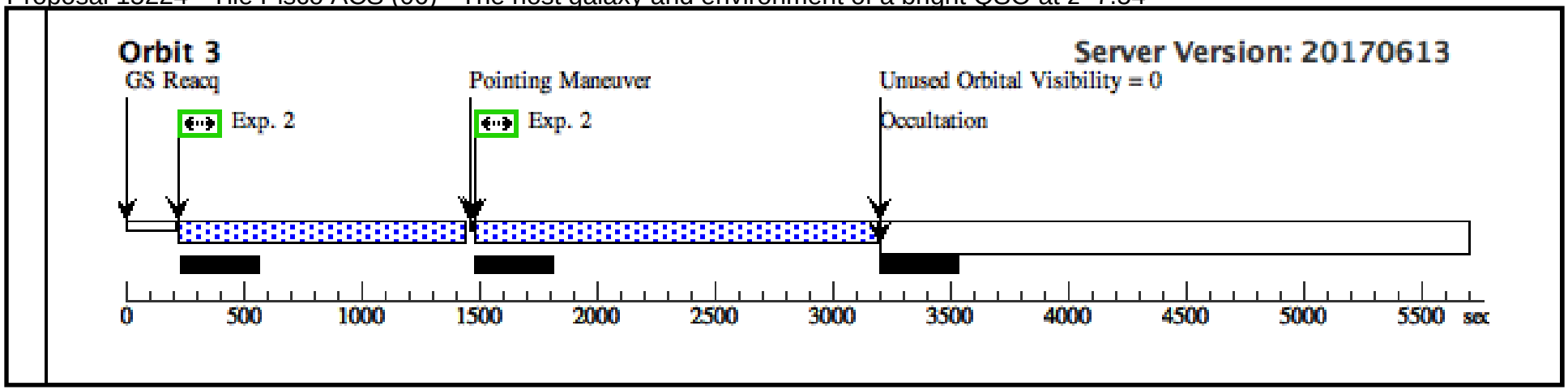
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F814W	(1) PISCO	ACS/WFC, ACCUM, WFCENTER	F814W		POS TARG 0.01927 2777947653412,-2.2 08441609263522	Pattern 3, Exps 1-1 in Tile Pisco ACS (06) (3)	1200 Secs (2494 Secs) *[==>1247.0 Secs (Pattern 1)]* *[==>1247.0 Secs (Pattern 2)]*	***[1]***
2	F814W	(1) PISCO	ACS/WFC, ACCUM, WFCENTER	F814W		POS TARG 0.01927 2777947653412,-2.2 08441609263522	Pattern 4, Exps 2-2 in Tile Pisco ACS (06) (4)	1100 Secs (5374 Secs) *[==>1587.0 Secs (Pattern 1)]* *[==>(Pattern 2)]*	***[2]***
								[==>(Pattern 3)] *[==>1587.0 Secs (Pattern 4)]*	***[3]***

Orbit Structure






Orbit 3
Server Version: 20170613
GS Reacq
Exp. 2
Pointing Maneuver
Exp. 2
Unused Orbital Visibility = 0
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15224, Tile Pisco ACS (07) Fri Jul 14 17:04:23 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: SAME ORIENT AS 05

Comments: This tile ACS visit has the same ORIENT FROM TO as Tile Pisco ACS (05).
However, given the symmetry other acceptable ranges are: -138 TO -128, 42 to 52, and 132 TO 142. The following ACS observations have an ORIENT same as this Tile Pisco ACS.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(3)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.146 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=47.17 Angle Between Sides= Center Pattern=false		(1)
(4)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.265 Line Spacing=0.187	Coordinate Frame=POS-TARG Pattern Orientation=20.67 Angle Between Sides=69.05 Center Pattern=false		(2)

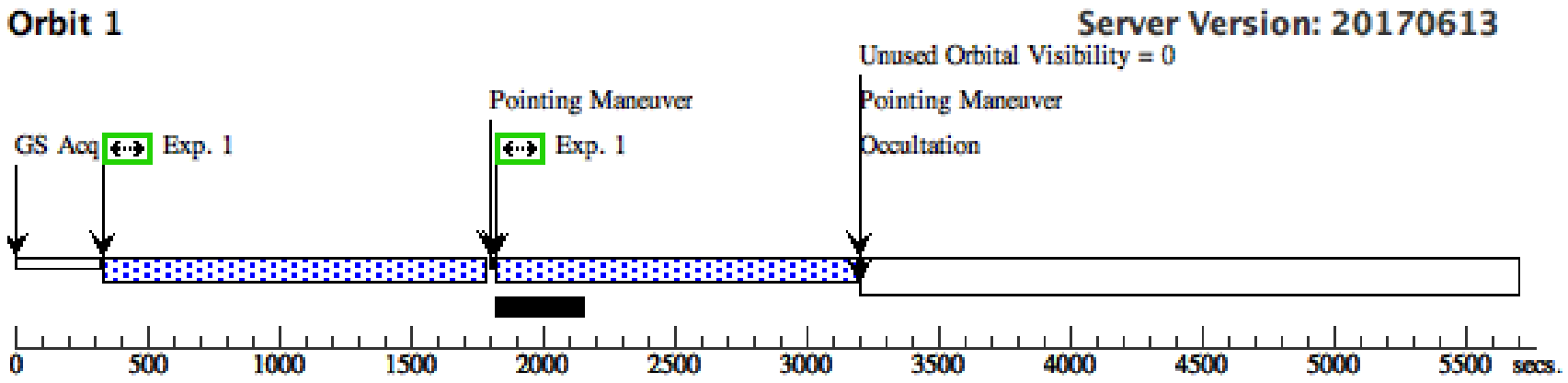
Fixed Targets

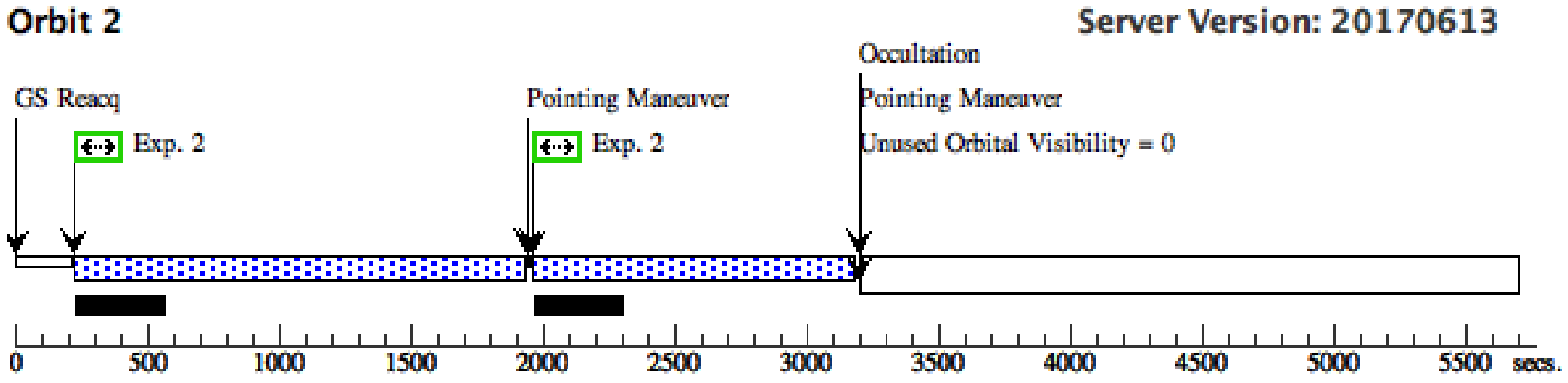
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	PISCO	RA: 13 42 8.1050 (205.5337708d) Dec: +09 28 38.61 (9.47739d) Equinox: J2000		V=(?) J(AB)=20.3	Reference Frame: ICRS

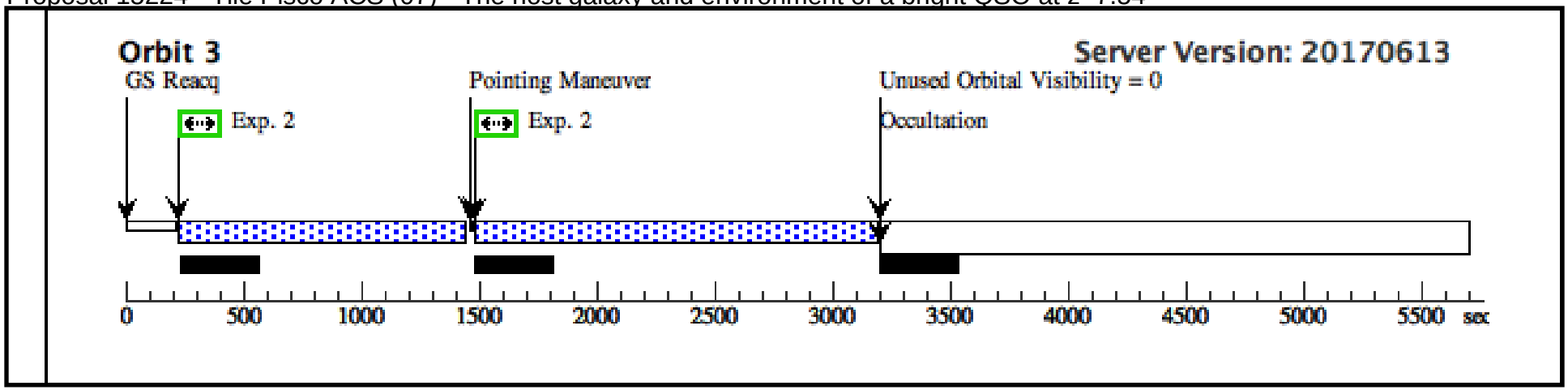
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F814W	(1) PISCO	ACS/WFC, ACCUM, WFCENTER	F814W		POS TARG -0.0192 7277794765342,2.20 84416092635397	Pattern 3, Exps 1-1 in Tile Pisco ACS (07) (3)	1200 Secs (2494 Secs) *[==>1247.0 Secs (Pattern 1)]* *[==>1247.0 Secs (Pattern 2)]*	***[1]***
2	F814W	(1) PISCO	ACS/WFC, ACCUM, WFCENTER	F814W		POS TARG -0.0192 7277794765342,2.20 84416092635397	Pattern 4, Exps 2-2 in Tile Pisco ACS (07) (4)	1100 Secs (5374 Secs) *[==>1587.0 Secs (Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>1587.0 Secs (Pattern 4)]*	***[2]*** ***[3]***

Orbit Structure






Orbit 3
Server Version: 20170613
GS Reacq
Exp. 2
Pointing Maneuver
Exp. 2
Unused Orbital Visibility = 0
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15224, Tile Pisco ACS (08) Fri Jul 14 17:04:23 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: SAME ORIENT AS 05

Comments: This tile ACS visit has the same ORIENT FROM TO as Tile Pisco ACS (05)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(3)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.146 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=47.17 Angle Between Sides= Center Pattern=false		(1)
(4)	Pattern Type=ACS-WFC-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.265 Line Spacing=0.187	Coordinate Frame=POS-TARG Pattern Orientation=20.67 Angle Between Sides=69.05 Center Pattern=false		(2)

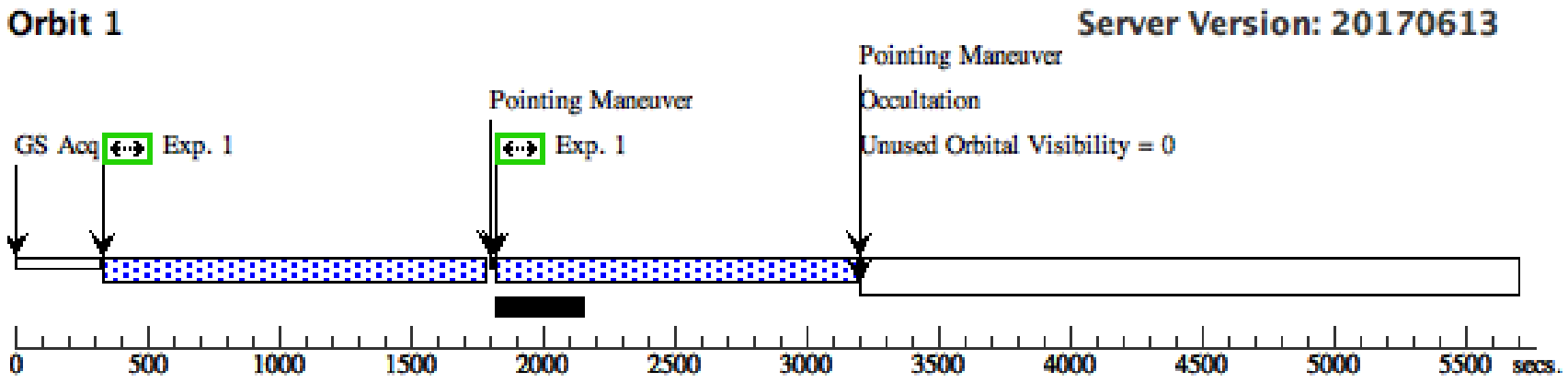
Fixed Targets

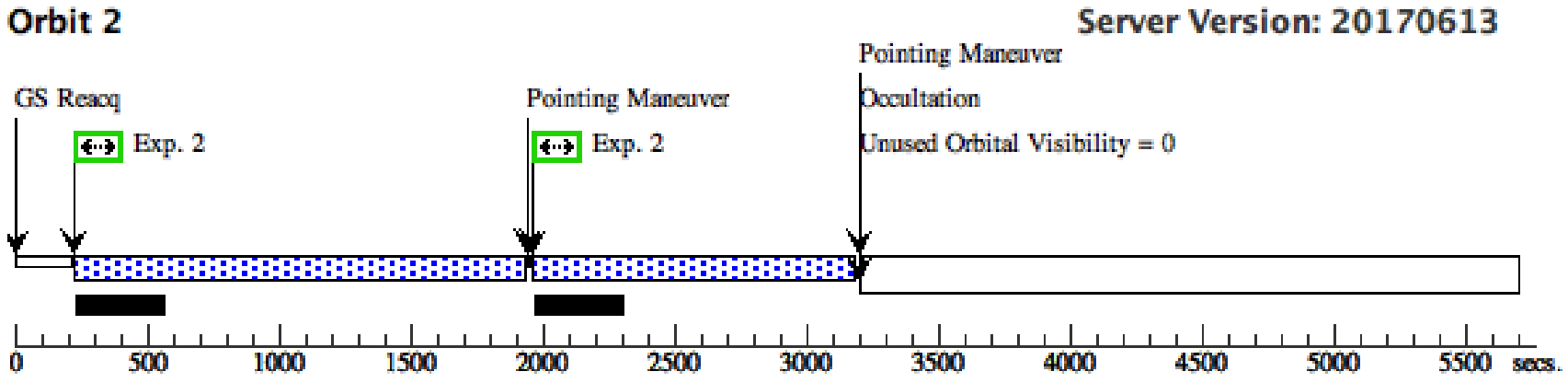
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	PISCO	RA: 13 42 8.1050 (205.5337708d) Dec: +09 28 38.61 (9.47739d) Equinox: J2000		V=(?) J(AB)=20.3	Reference Frame: ICRS

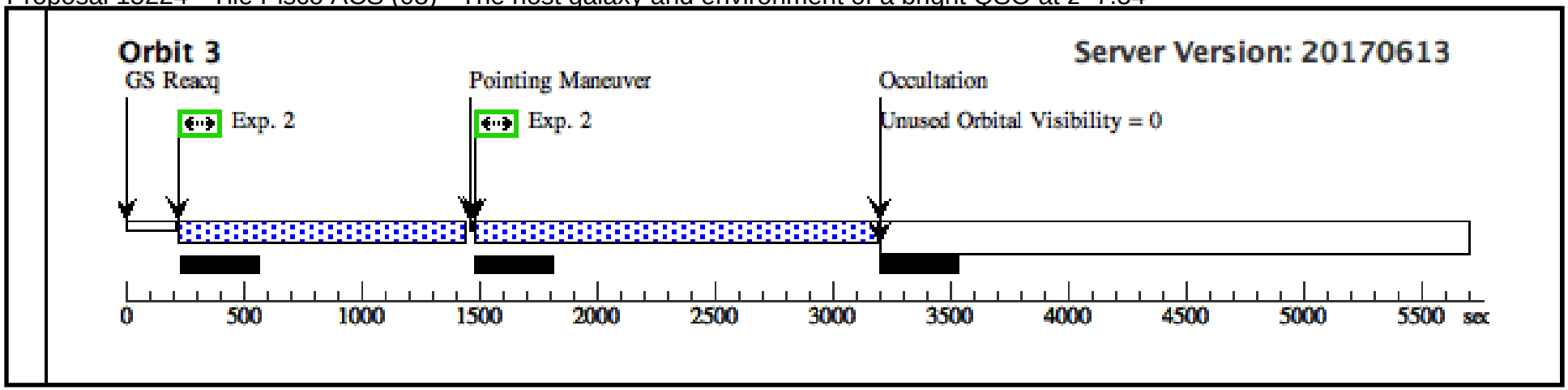
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F814W	(1) PISCO	ACS/WFC, ACCUM, WFCENTER	F814W		POS TARG -0.0578 1833384296024,6.625324827790601	Pattern 3, Exps 1-1 in Tile Pisco ACS (08) (3)	1200 Secs (2494 Secs) *[==>1247.0 Secs (Pattern 1)]* *[==>1247.0 Secs (Pattern 2)]*	 ***[1]***
2	F814W	(1) PISCO	ACS/WFC, ACCUM, WFCENTER	F814W		POS TARG -0.0578 1833384296024,6.625324827790601	Pattern 4, Exps 2-2 in Tile Pisco ACS (08) (4)	1100 Secs (5374 Secs) *[==>1587.0 Secs (Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>1587.0 Secs (Pattern 4)]*	 ***[2]*** ***[3]***

Orbit Structure






Orbit 3
Server Version: 20170613
GS Reacq
Pointing Maneuver
Occultation
Exp. 2
Exp. 2
Unused Orbital Visibility = 0
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15224, Pisco ACS 1 orbit (09) Fri Jul 14 17:04:23 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: SAME ORIENT AS 05

Comments: This tile ACS visit has the same ORIENT FROM TO as Tile Pisco ACS (05).
However, given the symmetry other acceptable ranges are: -138 TO -128, 42 to 52, and 132 TO 142. The following ACS observations have an ORIENT same as this Tile Pisco ACS.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(3)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.146 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=47.17 Angle Between Sides= Center Pattern=false		(1)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	PISCO	RA: 13 42 8.1050 (205.5337708d) Dec: +09 28 38.61 (9.47739d) Equinox: J2000		V=(?) J(AB)=20.3	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1		(1) PISCO	ACS/WFC, ACCUM, WFCENTER	F814W			Pattern 3, Exps 1-1 in Pisco ACS 1 orbit (09) (3)	400 Secs (2494 Secs) *[==>1247.0 Secs (Pattern 1)]* *[==>1247.0 Secs (Pattern 2)]*	*[1]*

Orbit Structure