12493 - A Candidate Lensed Quasar at z=6.25

Cycle: 19, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) CFHQS-J005006+344522	ACS/WFC	3	11-Jul-2011 21:54:07.0	yes
02	(1) CFHQS-J005006+344522 (3) SDSSJ005004.81+344619.9	WFC3/IR	2	11-Jul-2011 21:54:16.0	yes

5 Total Orbits Used

ABSTRACT

We have identified a candidate lensed quasar at z=6.25 through an ongoing Cycle 18 SNAP program surveying z~6 quasars with WFC3/IR imaging. The object is resolved into multiple components on subarcsecond scales; however, the shallow, single-band SNAP data does not provide a conclusive determination as to the nature of these components. We propose follow-up imaging with ACS/WFC F775W and WFC3/IR F105W. This imaging will test various lensing hypotheses for the observed components, and color selection in these two bands will easily discriminate foreground and

background objects. Faint objects seen within 0.8" of the quasar may be lensed images or possibly galaxies at the quasar redshift, indicating the late stages of merging activity. We will take advantage of the full field-of-view to identify companion galaxies to a quasar at one of the highest redshifts known.

OBSERVING DESCRIPTION

We will obtain ACS/WFC-F775W and WFC3/IR-F105W imaging of a candidate lensed quasar at z=6.25. The ACS imaging comprises 3 orbits and will primarily be used to detect faint foreground galaxies within the field, at a depth of i(AB)~28.7 (3sigma). Objects at the redshift of the quasar will have very red i-Y colors and can be discriminated from foreground galaxies by i-Y color or i non-detection.

The WFC3 imaging comprises 2 orbits and will be used to obtain deep, high-resolution imaging of the quasar, with the goal of deblending components separated by as little as ~0.15". Part of the second WFC3 orbit will be utilized to observe a nearby PSF star (1' from the quasar) with similar colors as the quasar. The WFC3 imaging will also be the detection band for z~6 galaxies in the field, with a depth of Y(AB)~27.

The WFC3 imaging consists of two patterns (4 and 2 dithers) with the using the IR-FIX aperture with a slight offset to avoid the center of the array. The patterns should provide optimal resolution. The same patterns and offsets are repeated for the shorter PSF observations, which use the IRSUB128-FIX aperture and SPARS10 sampling in order to capture the PSF star at high S/N without saturation.

Visit

Proposal 12493, Visit 01 Tue Jul 12 01:54:21 GMT 2011

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/WFC

Special Requirements: (none)

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(7)	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		(1)
(8)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=3.011 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides= Center Pattern=false		(2)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	CFHQS-J005006+344522	RA: 00 50 6.6700 (12.5277917d) Dec: +34 45 22.60 (34.75628d) Equinox: J2000	Redshift: 6.25	V=(?) z=20.5 (AB)	Reference Frame: ICRS

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

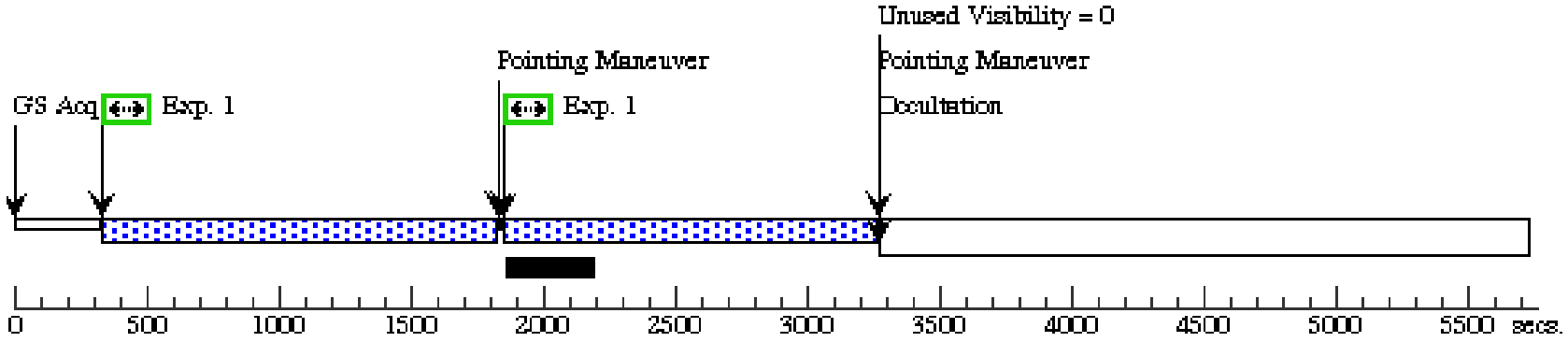
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(1) CFHQS-J005006+344522	ACS/WFC, ACCUM, WFC	F775W			Pattern 7, Exps 1-1 in Visit 01 (7)	1200 Secs	
								[==>1282.0 Secs (Pattern 1)] *[==>1282.0 Secs (Pattern 2)]*	***[1]***
								[==>1378.0 Secs (Pattern 3)] *[==>1378.0 Secs (Pattern 4)]*	***[2]***
2		(1) CFHQS-J005006+344522	ACS/WFC, ACCUM, WFC	F775W			Pattern 8, Exps 2-2 in Visit 01 (8)	1200 Secs	
								[==>1376.0 Secs (Pattern 1)] *[==>1376.0 Secs (Pattern 2)]*	***[3]***

Orbit Structure

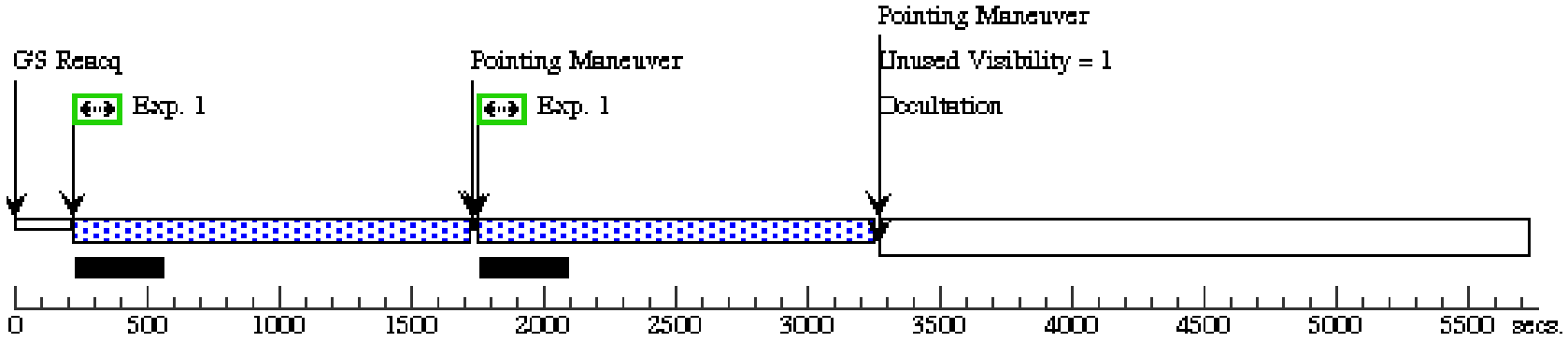
Orbit 1

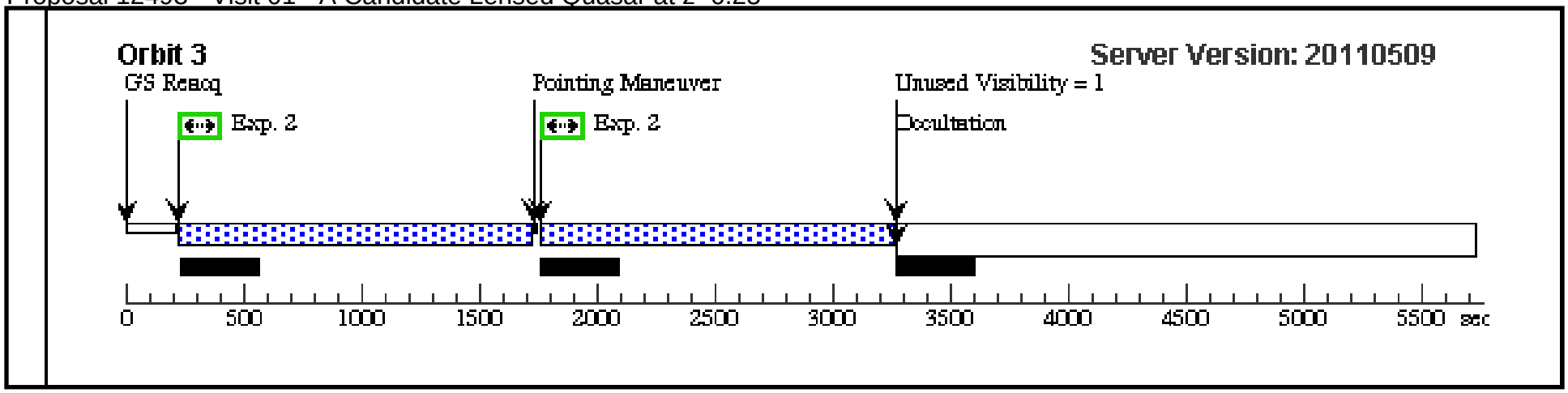
Server Version: 20110509



Orbit 2

Server Version: 20110509




Orbit 3
Server Version: 20110509
GS Reacq
Exp. 2
Pointing Maneuver
Exp. 2
Unused Visibility = 1
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 12493, Visit 02 Tue Jul 12 01:54:22 GMT 2011

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=0.572 Line Spacing=0.365	Coordinate Frame=POS-TARG Pattern Orientation=18.528 Angle Between Sides=74.653 Center Pattern=false		(1), (3)
(6)	Pattern Type=WFC3-IR-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.636 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=41.788 Angle Between Sides= Center Pattern=false		(2), (4)

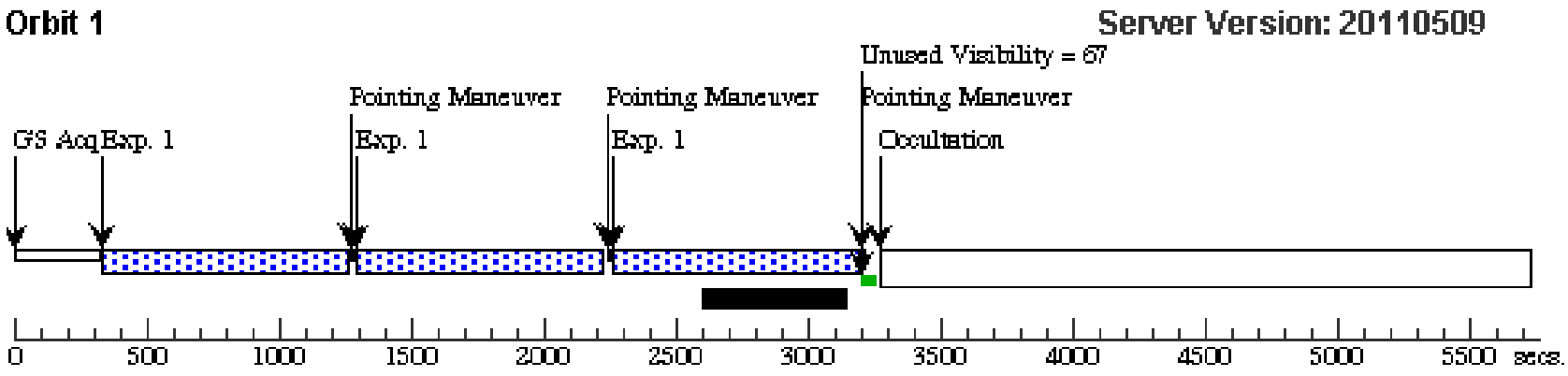
Fixed Targets

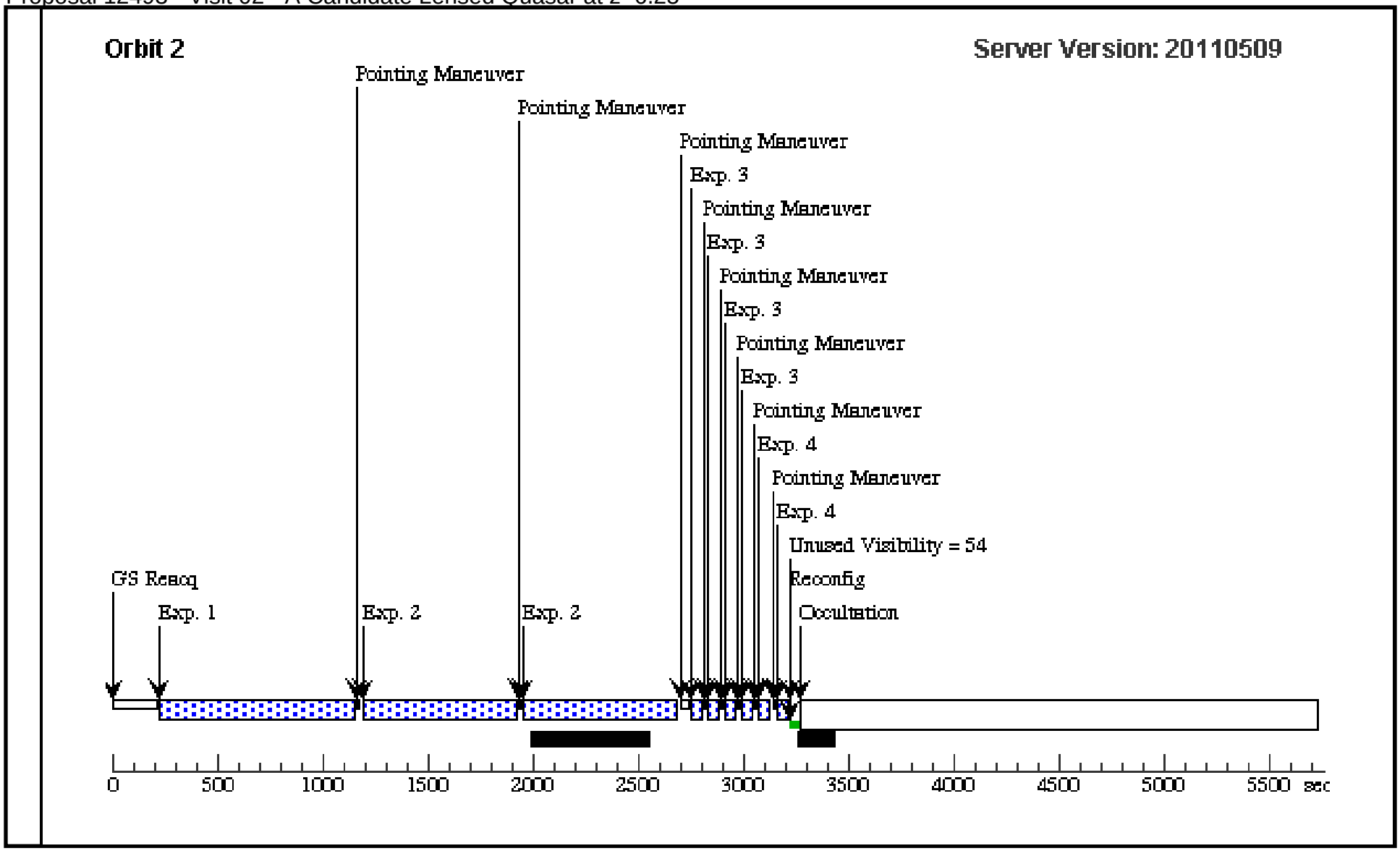
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	CFHQS-J005006+344522	RA: 00 50 6.6700 (12.5277917d) Dec: +34 45 22.60 (34.75628d) Equinox: J2000	Redshift: 6.25	V=(?) z=20.5 (AB)	Reference Frame: ICRS
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.					
(3)	SDSSJ005004.81+344619.9	RA: 00 50 4.8152 (12.5200633d) Dec: +34 46 19.95 (34.77221d) Equinox: J2000		V=(?) J(Vega)=16.8	Reference Frame: ICRS
Comments: PSF star selected based on SDSS/2MASS colors to have a similar SED as the quasar. This star is not above the 2MASS catalog detection limit, but we have determined from aperture photometry that it has J=16.9 and H=15.9.					

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		(1) CFHQS-J005006+344522	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=10; SAMP-SEQ=SPARS100	POS TARG -0.5,-1.5	Pattern 2, Exps 1-1 in Visit 02 (2)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[1]***
								[==>(Pattern 4)]	***[2]***
2		(1) CFHQS-J005006+344522	WFC3/IR, MULTIACCUM, IR-FIX	F105W	NSAMP=8; SAMP-SEQ=SPARS100	POS TARG 0.326,1.326	Pattern 6, Exps 2-2 in Visit 02 (6)	*[==>(Pattern 1)]* *[==>(Pattern 2)]*	***[2]***
3		(3) SDSSJ005004.81+344619.9	WFC3/IR, MULTIACCUM, IRSUB128-FIX	F105W	NSAMP=4; SAMP-SEQ=SPARS10	POS TARG -0.5,-1.5	Pattern 2, Exps 3-3 in Visit 02 (2)	*[==>(Pattern 1)]* *[==>(Pattern 2)]* *[==>(Pattern 3)]* *[==>(Pattern 4)]*	***[2]***
4		(3) SDSSJ005004.81+344619.9	WFC3/IR, MULTIACCUM, IRSUB128-FIX	F105W	NSAMP=4; SAMP-SEQ=SPARS10	POS TARG 0.326,1.326	Pattern 6, Exps 4-4 in Visit 02 (6)	*[==>(Pattern 1)]* *[==>(Pattern 2)]*	***[2]***

Orbit Structure




Orbit 2
Server Version: 20110509
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Exp. 3
Pointing Maneuver
Exp. 3
Pointing Maneuver
Exp. 3
Pointing Maneuver
Exp. 3
Pointing Maneuver
Exp. 4
Pointing Maneuver
Exp. 4
Unused Visibility = 54
Reconfig
Occultation
GS Reacq
Exp. 1
Exp. 2
Exp. 2
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec