10570 - Hosts of Quasars with Opaque Partial Covering

Cycle: 14, 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) Q0449-135 (2) STAR-045139-131945	ACS/HRC	3	01-Dec-2006 21:01:55.0	yes
51	(1) Q0449-135 (2) STAR-045139-131945	ACS/HRC	1	01-Dec-2006 21:02:08.0	yes
A1	(3) Q0449-135-COPY (4) STAR-045139-131945-COPY	ACS/HRC	1	01-Dec-2006 21:02:13.0	yes

5 Total Orbits Used

ABSTRACT

A few quasars are known to exhibit associated absorption lines with opaque partial covering. These are the lines which are clearly saturated but not completely dark, so that these absorbing clouds are opaquely and partially covering the quasar light. In some cases, ionization parameter and density arguments indicate that the absorbers are on kpc scale. This implies that at least in some cases, the residual, unabsorbed optical (rest-UV) continuum component originates from ~kpc scales, rather than microscopic scales (such as ~100 Schwarzschild radii). This could be a superluminous host galaxy or starbursting core, and could be resolved by HST. We address the nature of these opaquely and partially covered quasars with a simple and robust ACS imaging.

OBSERVING DESCRIPTION

We image the quasar Q0449-135 with ACS/HRC using the narrow band filter F502N, which accidentally falls at the opaque partial covering absorption doublet lines NV1240. This will greatly enhance the contrast of the underlying ``residual'' continuum at these lines to the other component of the quasar light which is thought to be compact.

We will use the HRC to get critical spatial sampling. Since we want to measure the quasar's PSF core to look for any extension, we will take a short exposure image of a star to measure the size of the core of the PSF just before and after the quasar

observation. While the HST focus vary within the observation of three orbits, the PSF core FWHM will not change significantly (the larger effect is a change in the core/wing flux ratio; John Krist, p.c.). The two sets of the PSF star observations will be combined to achieve the necessary S/N, but also will be used to double-check the stability of the PSF core. The PSF star will be the one with B=15.2mag at ~80" from the target. Since the slew from the star to the target is small, pointing-dependent focus change will be insignificant (John Krist, p.c.). We use the same narrow-band filter (F502N) for the PSF star observation, so that the color difference between the star and target will not be a problem.

In the first orbit, we will take a 13min exposure with 2 integer-pixel dither positions (for removing CR hits and hot pixels) for the PSF star and a 29min exposure with 2 integer-pixel dither positions for the target, with 13min overhead out of the visibility period 55min. Then in the second orbit, we will take a 45min exposure with 3 integer-pixel dither positions for the target, with the overhead 10min. The third orbit will be essentially idential with the first orbit except that the exposure for the PSF star will be at the end of the orbit: 30min for the target, 13min exposure for the star, 12min overhead. (Total exposure time for the target = 104min; PSF star = 26min; overhead = 35min.) We estimate that the target gives 26 cts/sec. The PSF star is ~16 times brighter than this.

Visit

Proposal 10570, Visit 01, failed Sat Dec 02 02:02:17 GMT 2006

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/HRC

Special Requirements: PCS MODE FINE; SCHED 30%

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-HRC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.198 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=44.3 Angle Between Sides= Center Pattern=false		(1), (2), (4), (5)
(2)	Pattern Type=ACS-HRC-DITHER-LINE Purpose=DITHER Number Of Points=3 Point Spacing=0.198 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=44.3 Angle Between Sides= Center Pattern=false		(3)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	Q0449-135	RA: 04 51 42.5690 (72.9273708d) Dec: -13 20 47.19 (-13.34644d) Equinox: J2000 Plate Id: 03Y9		V=18.2+/-0.2	Coordinate Source: GSC_SURVEY_PLATE
(2)	STAR-045139-131945 Alt Name1: GSC0532800598	RA: 04 51 39.4800 (72.9145000d) Dec: -13 19 44.67 (-13.32907d) Equinox: J2000 Plate Id: 03Y9		V=14.9+/-0.4	Coordinate Source: GSC_SURVEY_PLATE

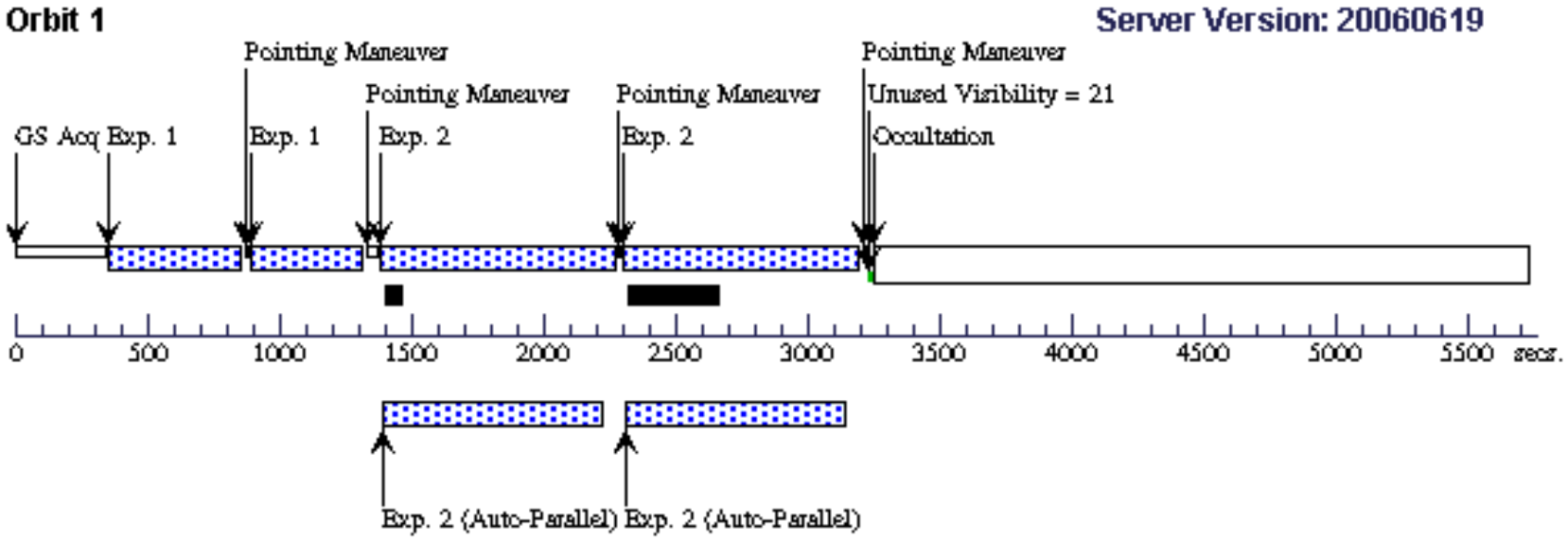
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	psfstar1	(2) STAR-045139-131945	ACS/HRC, ACCUM, HRC	F502N	CR-SPLIT=NO		Pattern 1-1 (1)	390.0 Secs	
								[==>(Pattern 1)] *[==>(Pattern 2)]*	***[1]***
2	quasar1	(1) Q0449-135	ACS/HRC, ACCUM, HRC	F502N	CR-SPLIT=NO		Pattern 2-2 (1)	855.0 Secs	
								[==>(Pattern 1)] *[==>(Pattern 2)]*	***[1]***
3	quasar2	(1) Q0449-135	ACS/HRC, ACCUM, HRC	F502N	CR-SPLIT=NO		Pattern 3-3 (2)	900.0 Secs	
								[==>(Pattern 1)] *[==>(Pattern 2)]* *[==>(Pattern 3)]*	***[2]***

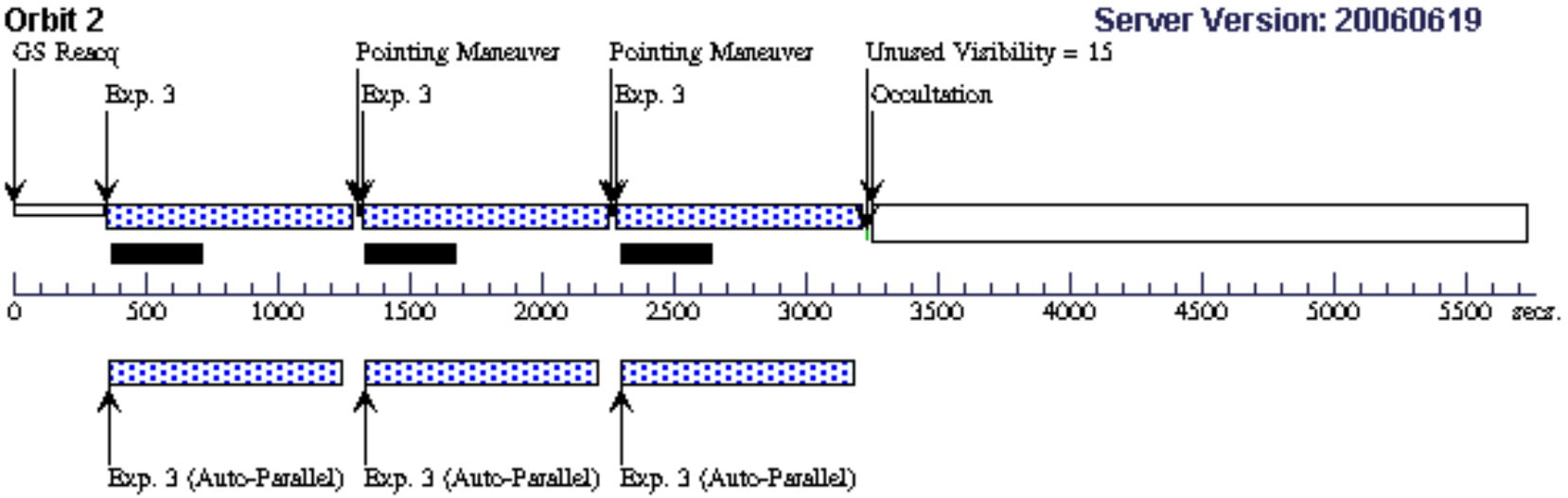
Exposures (continued)

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
4	quasar3	(1) Q0449-135	ACS/HRC, ACCUM, HRC	F502N	CR-SPLIT=NO		Pattern 4-4 (1)	900.0 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]*	***[3]***
5	psfstar2	(2) STAR-045139-1 31945	ACS/HRC, ACCUM, HRC	F502N	CR-SPLIT=NO		Pattern 5-5 (1)	390.0 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]*	***[3]***

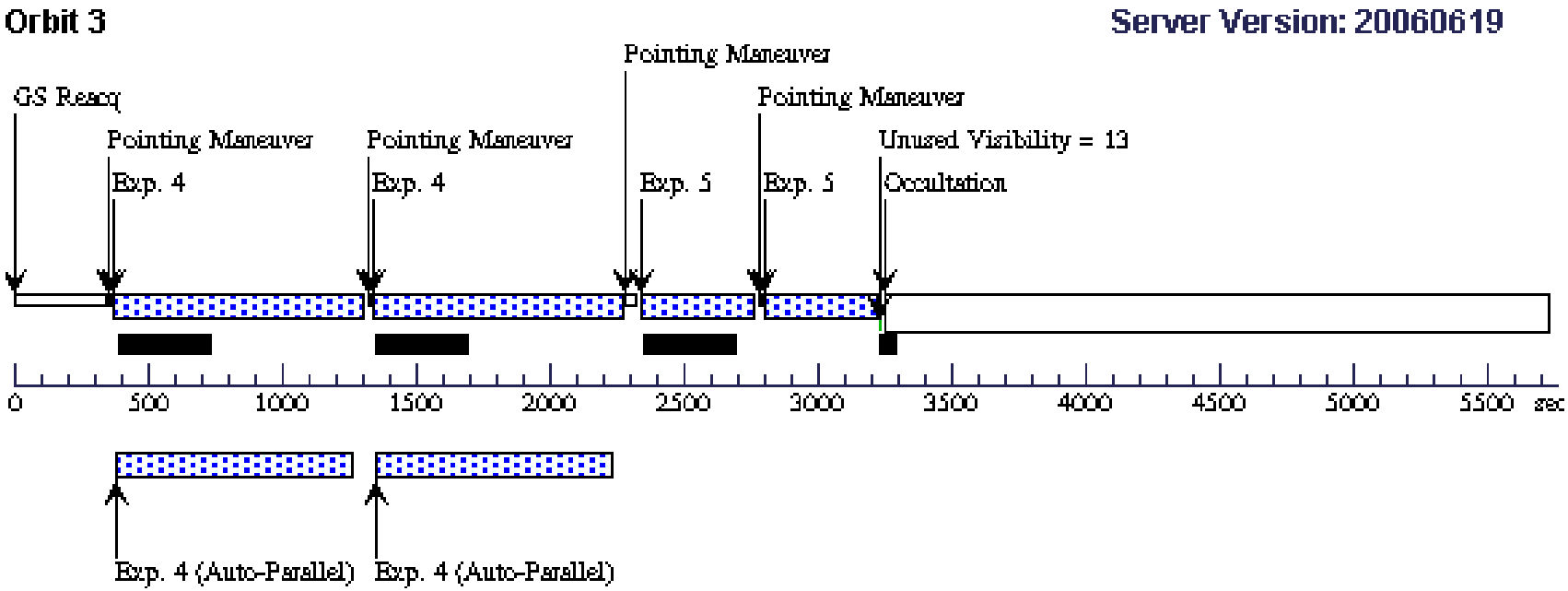
Orbit Structure



Orbit Structure (continued)



Orbit Structure (continued)



Visit

Proposal 10570, Visit 51, completed Sat Dec 02 02:02:20 GMT 2006

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/HRC

Special Requirements: PCS MODE FINE; SCHED 30%

Comments: This is for the repeat of the orbit 1 of Visit 01.

Patterns

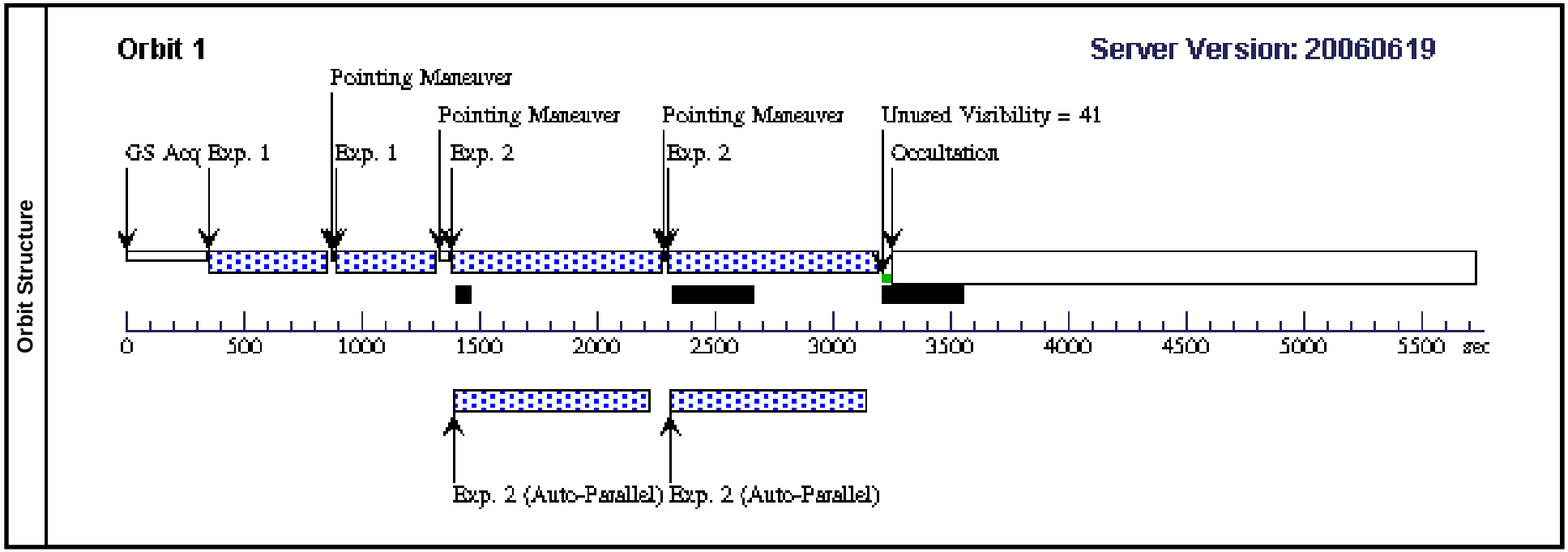
#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-HRC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.198 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=44.3 Angle Between Sides= Center Pattern=false		(1), (2)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	Q0449-135	RA: 04 51 42.5690 (72.9273708d) Dec: -13 20 47.19 (-13.34644d) Equinox: J2000 Plate Id: 03Y9		V=18.2+/-0.2	Coordinate Source: GSC_SURVEY_PLATE
(2)	STAR-045139-131945 Alt Name1: GSC0532800598	RA: 04 51 39.4800 (72.9145000d) Dec: -13 19 44.67 (-13.32907d) Equinox: J2000 Plate Id: 03Y9		V=14.9+/-0.4	Coordinate Source: GSC_SURVEY_PLATE

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	psfstar1	(2) STAR-045139-131945	ACS/HRC, ACCUM, HRC	F502N	CR-SPLIT=NO		Pattern 1-1 (1)	390.0 Secs	
								[==>(Pattern 1)] *[==>(Pattern 2)]*	***[1]***
2	quasar1	(1) Q0449-135	ACS/HRC, ACCUM, HRC	F502N	CR-SPLIT=NO		Pattern 2-2 (1)	855.0 Secs	
								[==>(Pattern 1)] *[==>(Pattern 2)]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20060619
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Unused Visibility = 41
GS Acq
Exp. 1
Exp. 1
Exp. 2
Exp. 2
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec
Exp. 2 (Auto-Parallel)
Exp. 2 (Auto-Parallel)

Visit

Proposal 10570, Visit A1 Sat Dec 02 02:02:21 GMT 2006

Diagnostic Status: No Diagnostics

Scientific Instruments: ACS/HRC

Special Requirements: PCS MODE FINE; SCHED 30%

Comments: This is for the repeat of the orbit 1 of Visit 01.

Patterns

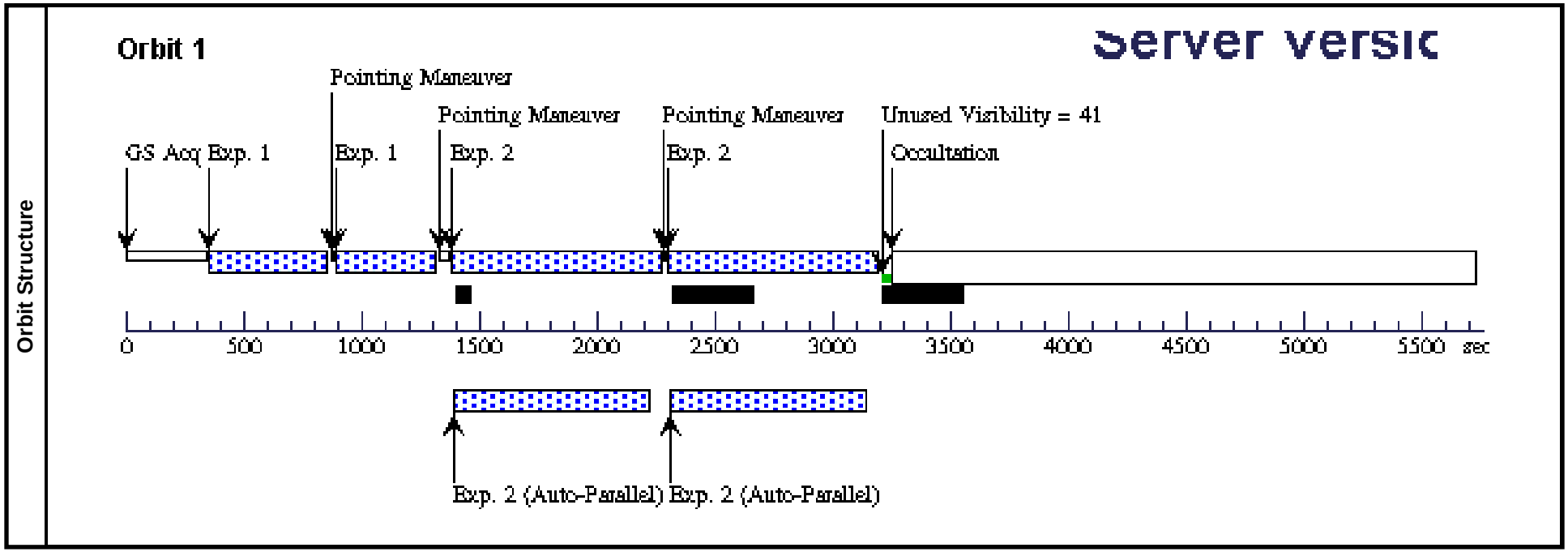
#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=ACS-HRC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.198 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=44.3 Angle Between Sides= Center Pattern=false		(1), (2)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	Q0449-135-COPY	RA: 04 51 42.5690 (72.9273708d) Dec: -13 20 47.19 (-13.34644d) Equinox: J2000 Plate Id: 03Y9		V=18.2+/-0.2	Coordinate Source: GSC_SURVEY_PLATE
(4)	STAR-045139-131945-COPY Alt Name1: GSC0532800598	RA: 04 51 39.4800 (72.9145000d) Dec: -13 19 44.67 (-13.32907d) Equinox: J2000 Plate Id: 03Y9		V=14.9+/-0.4	Coordinate Source: GSC_SURVEY_PLATE

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	psfstar1	(4) STAR-045139-131945-COPY	ACS/HRC, ACCUM, HRC	F502N	CR-SPLIT=NO		Pattern 1-1 (1)	390.0 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]*	***[1]***
2	quasar1	(3) Q0449-135-COPY	ACS/HRC, ACCUM, HRC	F502N	CR-SPLIT=NO		Pattern 2-2 (1)	855.0 Secs *[==>(Pattern 1)]* *[==>(Pattern 2)]*	***[1]***


Orbit Structure
Orbit 1
Server versic
Pointing Maneuver
Pointing Maneuver
Pointing Maneuver
Unused Visibility = 41
GS Acq
Exp. 1
Exp. 1
Exp. 2
Exp. 2
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec
Exp. 2 (Auto-Parallel)
Exp. 2 (Auto-Parallel)