



12368 - Extreme Mergers from the Massive Cluster Survey

Cycle: 18, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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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) MACSJ1226.8+2153-NE ANY	ACS/WFC WFC3/UVIS	2	15-Mar-2011 21:15:15.0	yes
02	(2) MACSJ1226.8+2153-S ANY	ACS/WFC WFC3/UVIS	2	15-Mar-2011 21:15:28.0	yes

4 Total Orbits Used

ABSTRACT

We will observe an extraordinary, high-redshift galaxy cluster from the Massive Cluster Survey. The target is a very rare, triple merger system, and likely lies at the one of deepest nodes of the cosmic web. The target shows multiple strong gravitational lensing arcs in the cluster core. This target only possesses a very short (10ks) Chandra observations, and is unobserved by XMM-Newton. The X-ray data from this joint Chandra/HST proposal will be used to probe the mass distribution of hot, baryonic gas, and to reveal the details of the merger physics and the process of cluster assembly. We will also search for hints of X-ray emission from filaments between the merging clumps. Subaru and some Hubble Space Telescope imaging data are in hand; we will gather additional HST coverage for a lensing analysis.

OBSERVING DESCRIPTION

The galaxy cluster MACS J1226 consists of three merging sub-clumps. The two main clumps (NE and S) each possess strong gravitational lensing arcs. We will observe these two main clumps with two separate pointings. Our aim is a combined strong and weak gravitational lensing analysis. The prime instrument will be ACS, with WFC3 operating in coordinated parallel mode for increased spatial coverage of this significantly extended galaxy cluster. Each pointing will consist of two orbits, one in F606W and one in F814W. The LOW SKY condition is required to allow a weak lensing analysis (this needs accurate shape measurements of faint background galaxies and hence the lowest possible instrumental background).

The time required to dump the ACS and WFC3 buffers makes it impossible to obtain more than three equal length exposures in any one orbit. Since we prefer to use more than 3 dither positions for effective removal of cosmic rays etc, the exposures are of non-equal length so that it is possible to fit 4 of them into each orbit.

ADDITIONAL COMMENTS

There are fairly bright stars at i) 12 26 46.17, +21 48 50.57; and ii) 12 26 38.81, +21 47 21.13.

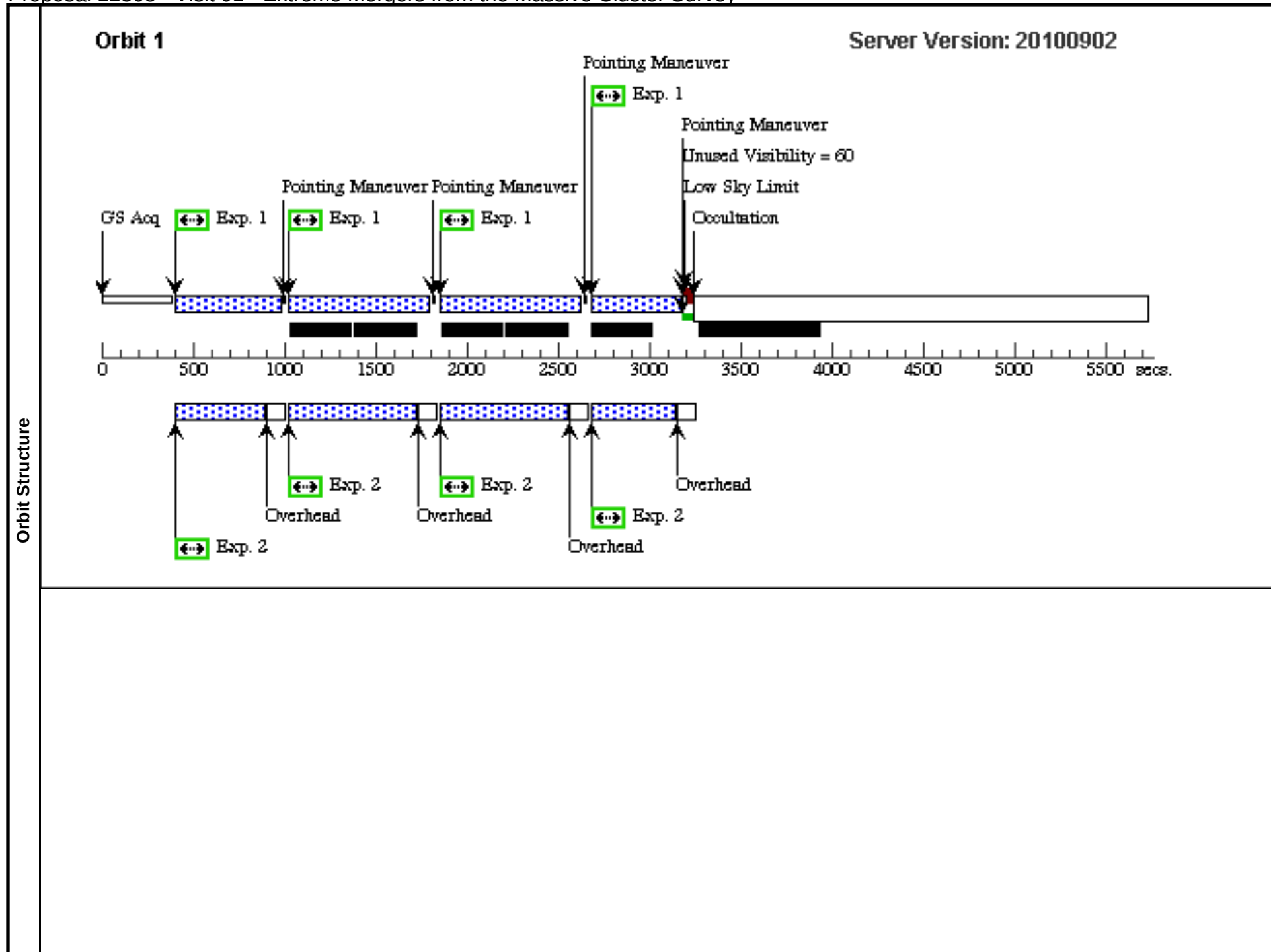
The latter is of unknown magnitude in BOT but is clearly visible as a bright object in our existing ground-based Subaru data.

Depending on the roll angle with which the observations are performed, these stars could potentially impact the quality of science data from the ACS exposure of the S clump (star i) and both parallel WFC3 observations (star ii).

It might therefore be advantageous to allow us to fine-tune the target positions (by of the order of 10 arc-seconds) and/or the precise roll angle once the observations are scheduled and the range of allowed roll angles is known. Because these sources are highly extended, there is quite a wide range of acceptable target positions. This flexibility would also allow us to position the apertures to cover the largest possible fraction of the region of interest. (The system is much larger than the ACS field of view, but the W direction, towards the third sub-clump, is likely the most interesting direction.)

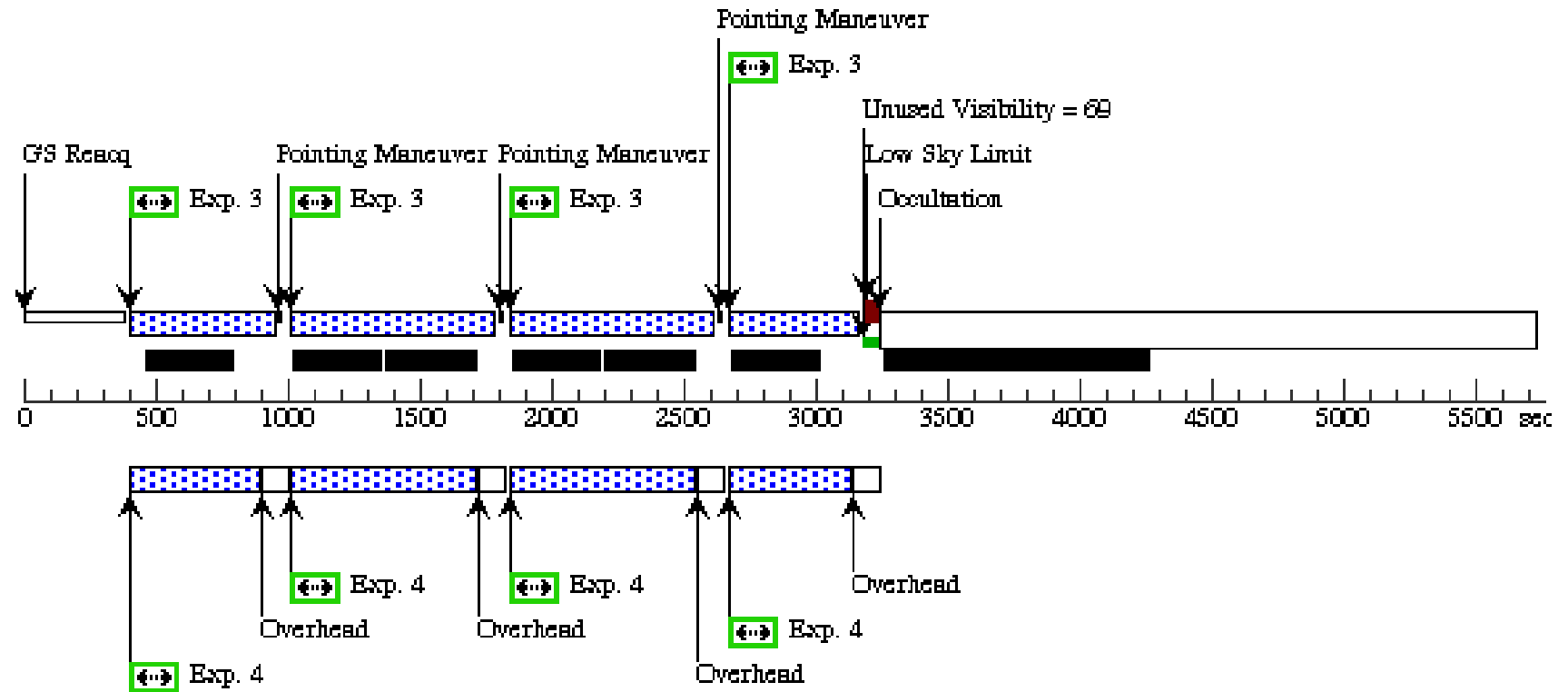
Proposal 12368 - Visit 01 - Extreme Mergers from the Massive Cluster Survey

Visit	Proposal 12368, Visit 01, implementation										Wed Mar 16 01:15:34 GMT 2011
	Diagnostic Status: Warning										
	Scientific Instruments: WFC3/UVIS, ACS/WFC										
	Special Requirements: ORIENT 148D TO 154 D										
Diagnostics	(Primary NE606 (01.001) special requirements) Warning (Form): Be very careful mixing POS TARG and Center_Pattern = Yes										
	(Primary NE814 (01.003) special requirements) Warning (Form): Be very careful mixing POS TARG and Center_Pattern = Yes										
Patterns	#	Primary Pattern					Secondary Pattern				Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=4 Point Spacing=3.011 Line Spacing=					Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides= Center Pattern=true				(1-2), (3-4)
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(1)	MACSJ1226.8+2153-NE	RA: 12 26 51.6500 (186.7152083d) Dec: +21 52 25.00 (21.87361d) Equinox: J2000		Redshift: 0.437		V=16+/-1		Reference Frame: ICRS		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	NE606	(1) MACSJ1226.8+2153-NE	ACS/WFC, ACCUM, WFC1-FIX	F606W	CR-SPLIT=NO	POS TARG 17,0; LOW-SKY	Pattern 1, Exps 1-2 in Visit 01 (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in Visit 01	650 Secs [==>370.0 Secs (Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>370.0 Secs (Pattern 4)]	[1]	
	2	NE606par	ANY	WFC3/UVIS, ACCUM, UVIS	F606W	CR-SPLIT=NO		Pattern 1, Exps 1-2 in Visit 01 (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in Visit 01	700 Secs [==>465.0 Secs (Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>465.0 Secs (Pattern 4)]	[1]	
	3	NE814	(1) MACSJ1226.8+2153-NE	ACS/WFC, ACCUM, WFC1-FIX	F814W	CR-SPLIT=NO	POS TARG 17,0; LOW-SKY	Pattern 1, Exps 3-4 in Visit 01 (1) Prime + Parallel Group 3-4 in Pattern 1, Exps 3-4 in Visit 01	650 Secs [==>370.0 Secs (Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>370.0 Secs (Pattern 4)]	[2]	
	4	NE814par	ANY	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Pattern 1, Exps 3-4 in Visit 01 (1) Prime + Parallel Group 3-4 in Pattern 1, Exps 3-4 in Visit 01	700 Secs [==>465.0 Secs (Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>465.0 Secs (Pattern 4)]	[2]	



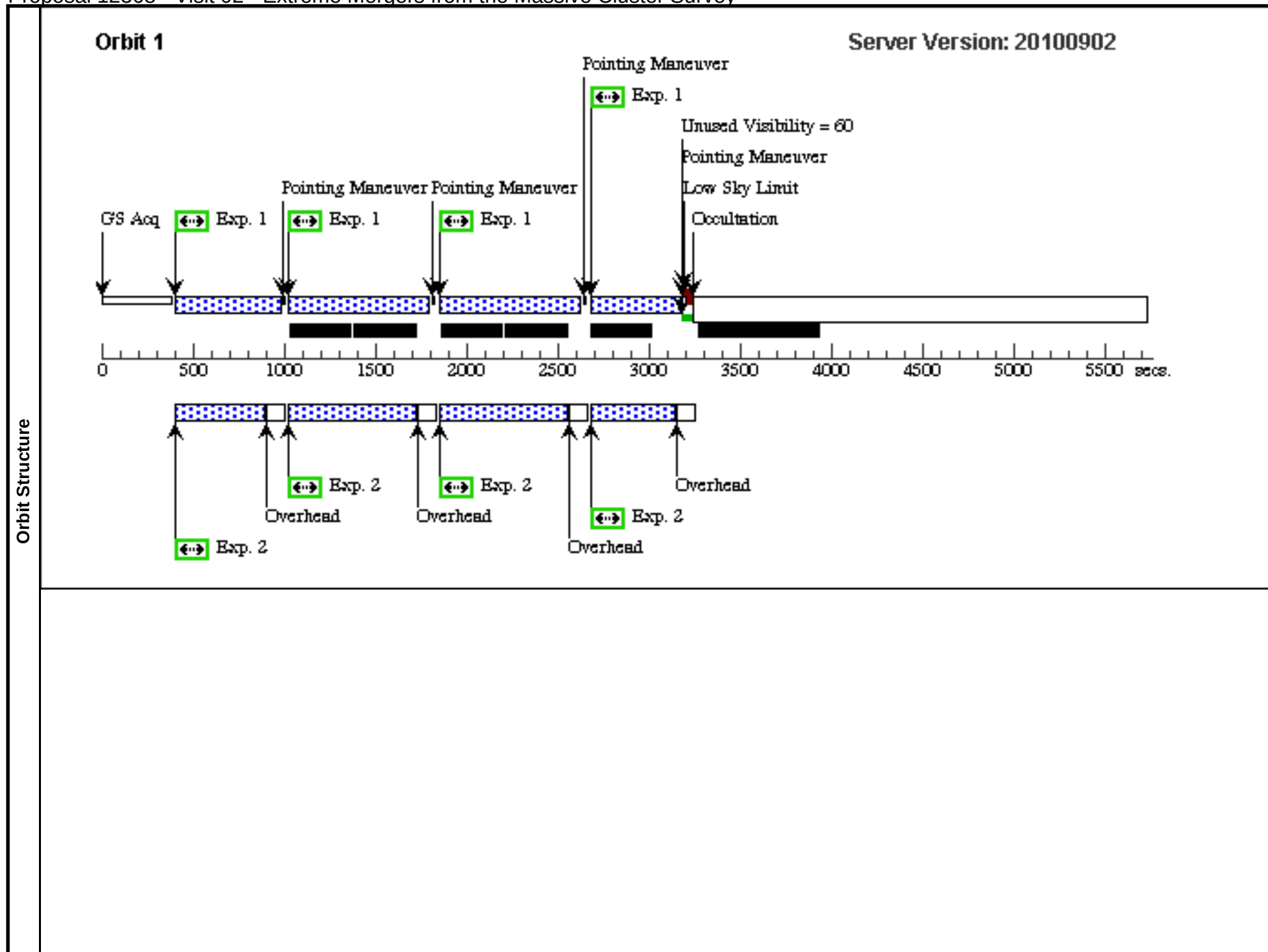
Orbit 2

Server Version: 20100902



Proposal 12368 - Visit 02 - Extreme Mergers from the Massive Cluster Survey

Visit	Proposal 12368, Visit 02, implementation										Wed Mar 16 01:15:36 GMT 2011
	Diagnostic Status: Warning										
	Scientific Instruments: WFC3/UVIS, ACS/WFC										
	Special Requirements: ORIENT 148D TO 154 D										
Diagnostics	(Primary S606 (02.001) special requirements) Warning (Form): Be very careful mixing POS TARG and Center_Pattern = Yes										
	(Primary S814 (02.003) special requirements) Warning (Form): Be very careful mixing POS TARG and Center_Pattern = Yes										
Patterns	#	Primary Pattern					Secondary Pattern				Exposures
	(1)	Pattern Type=ACS-WFC-DITHER-LINE Purpose=DITHER Number Of Points=4 Point Spacing=3.011 Line Spacing=			Coordinate Frame=POS-TARG Pattern Orientation=85.28 Angle Between Sides= Center Pattern=true						(1-2), (3-4)
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(2)	MACSJ1226.8+2153-S	RA: 12 26 51.1600 (186.7131667d) Dec: +21 49 52.50 (21.83125d) Equinox: J2000		Redshift: 0.437		V=16+/-1		Reference Frame: ICRS		
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1	S606	(2) MACSJ1226.8+2153-S	ACS/WFC, ACCUM, WFC1-FIX	F606W	CR-SPLIT=NO	POS TARG -11,1; LOW-SKY	Pattern 1, Exps 1-2 in Visit 02 (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in Visit 02	650 Secs [==>370.0 Secs (Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>370.0 Secs (Pattern 4)]	[1]	
	2	S606par	ANY	WFC3/UVIS, ACCUM, UVIS	F606W	CR-SPLIT=NO		Pattern 1, Exps 1-2 in Visit 02 (1) Prime + Parallel Group 1-2 in Pattern 1, Exps 1-2 in Visit 02	700 Secs [==>465.0 Secs (Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>465.0 Secs (Pattern 4)]	[1]	
	3	S814	(2) MACSJ1226.8+2153-S	ACS/WFC, ACCUM, WFC1-FIX	F814W	CR-SPLIT=NO	POS TARG -11,1; LOW-SKY	Pattern 1, Exps 3-4 in Visit 02 (1) Prime + Parallel Group 3-4 in Pattern 1, Exps 3-4 in Visit 02	650 Secs [==>370.0 Secs (Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>370.0 Secs (Pattern 4)]	[2]	
	4	S814par	ANY	WFC3/UVIS, ACCUM, UVIS	F814W	CR-SPLIT=NO		Pattern 1, Exps 3-4 in Visit 02 (1) Prime + Parallel Group 3-4 in Pattern 1, Exps 3-4 in Visit 02	700 Secs [==>465.0 Secs (Pattern 1)] [==>(Pattern 2)] [==>(Pattern 3)] [==>465.0 Secs (Pattern 4)]	[2]	



Orbit 2

Server Version: 20100902

