



## 12319 - Proper Motion Survey of Classical and SDSS Local Group Dwarf Galaxies

Cycle: 18, Proposal Category: GO

(Availability Mode: SUPPORTED)

### INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
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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) COM-Q122653+235458	WFC3/UVIS	3	01-Nov-2011 21:01:18.0	yes
02	(2) COM-Q122659+234954	WFC3/UVIS	3	01-Nov-2011 21:01:35.0	yes
03	(3) BOOI-Q135959+143633	WFC3/UVIS	3	01-Nov-2011 21:01:46.0	yes
04	(4) BOOI-Q140032+142327	WFC3/UVIS	3	01-Nov-2011 21:02:00.0	yes

12 Total Orbits Used

### ABSTRACT

Using the superior resolution of HST, we propose to continue our proper motion survey of Galactic dwarf galaxies. The target galaxies include one classical dwarf, Leo II, and six that were recently identified in the Sloan Digital Sky Survey data: Bootes I, Canes Venatici I, Canes

Venatici II, Coma Berenices, Leo IV, and Ursa Major II. We will observe a total of 16 fields, each centered on a spectroscopically-confirmed QSO. Using QSOs as standards of rest in measuring absolute proper motions has proven to be the most accurate and most efficient method. HST is our only option to quickly determine the space motions of the SDSS dwarfs because suitable ground-based imaging is only a few years old and such data need several decades to produce a proper motion. The two most distant galaxies in our sample will require time baselines of four years to achieve our goal of a 30-50 km/s uncertainty in the tangential velocity; given this and the finite lifetime of HST, it is imperative that first-epoch observations be taken in this cycle. The SDSS dwarfs have dramatically lower surface brightnesses and luminosities than the classical dwarfs. Proper motions are crucial for determining orbits of the galaxies and knowing the orbits will allow us to test theories for the formation and evolution of these galaxies and, more generally, for the formation of the Local Group.

## **OBSERVING DESCRIPTION**

A series of papers by Piatek et al. (2002, 2003, 2005 -- 2008) describes our method for deriving proper motions for dwarf galaxies using WFPC2, STIS, and ACS/HRC imaging. A known QSO in the target field provides the reference point for measuring the motion of the stars in the galaxy. The QSO and stars in the field are used to construct an effective point-spread function (e.g., Anderson & King 2000). Fitting this PSF to star-like images yields positions. Dithered exposures at each epoch both refine the PSF and provide independent position measurements which are averaged to reduce the final uncertainty. We prefer to minimize the effects of distortions in the cameras by maintaining the same orientation at each epoch, though

we have successfully reduced data where this is not the case.

Our proposed exposure times will achieve  $S/N = 15--20$  at  $V=25.5$  according to the ETC and confirmed by our Draco ACS/WFC data (GO 10812). The data for the Draco J1720+5755 field, which is close to the center and for which we have two epochs, gives a measured surface density of stars to  $V=25.5$ . Proper motions indicate that almost all are members. We have used this measured surface density to predict the central surface density to  $V=25.5$  for our target galaxies, taking their different distances and central surface brightnesses into account. To determine the surface density at the locations of our target fields, we use density profiles from the literature.

We propose to observe with the WFC3 rather than ACS/WFC because it has smaller pixels, yields a higher  $S/N$  for a given exposure time when used with the F350LP filter, has a less degraded CCD, and has the possibility of mitigating CTE degradation with charge injection. We concluded that these advantages outweighed the 1.6X larger field of view of ACS/WFC. Our exposure times are generally determined by the requirement that the QSO be half-way to saturation. We choose the 50% limit for the QSOs in order to provide some buffer for photometric variability --- with this limit we have never saturated a QSO.

Our experience shows that we should have at least 12 images per epoch to achieve the required accuracies for the proper motions. For the exposure times needed to reach  $V=25.5$  with  $S/N=15$ , this requires 3 orbits per field at each epoch. Thus, our program will require 49 orbits in cycle 17, 12 orbits in cycle 18, and 49 orbits in cycle 19. The total is 110 orbits spread over the three cycles.

Proposal 12319 - Visit 01 - Proper Motion Survey of Classical and SDSS Local Group Dwarf Galaxies

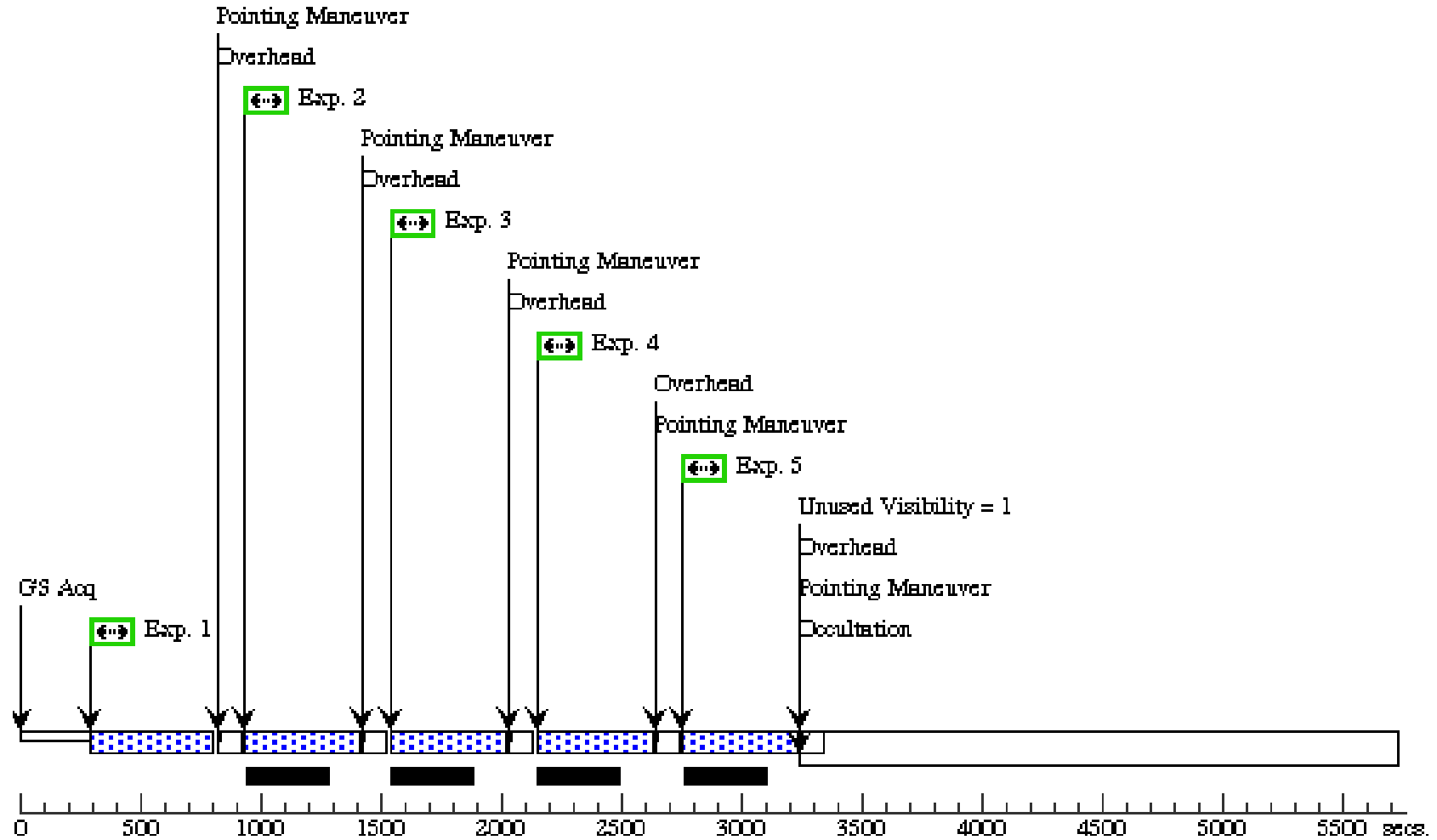
Wed Nov 02 01:02:08 GMT 2011

Visit	<b>Proposal 12319, Visit 01, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 302.8360D TO 302.9360 D; AFTER 04-AUG-2011:00:00:00 <i>Comments: The first-epoch observation of this field, data sets ib5i08voq to ib5i08wfg, have an average PA_V3 = 122.8860 degrees. Since U3 = -V3, having the same orientation for the second-epoch images requires an orientation of 122.8860+180 = 302.8860 degrees. We allow a range of 0.1 degree so that objects are shifted by no more than +2 pixels in the corner of the chip.</i>									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(1)	COM-Q122653+235458	RA: 12 26 53.5500 (186.7231250d) Dec: +23 54 58.50 (23.91625d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0	V=20.35	Reference Frame: ICRS				
	<i>Comments: The coordinates are for a QSO behind the dwarf spheroidal galaxy Coma Bernices.</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(1) COM-Q122653+235458	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG -0.5511, -0.5897	470. Secs [=>474.0 Secs ]	[1]		
	2	(1) COM-Q122653+235458	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG -0.4527, -0.5041	479 Secs [=>474.0 Secs ]	[1]		
	3	(1) COM-Q122653+235458	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG -0.3838, -0.4107	479 Secs [=>474.0 Secs ]	[1]		
	4	(1) COM-Q122653+235458	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG -0.2854, -0.3251	479 Secs [=>474.0 Secs ]	[1]		
	5	(1) COM-Q122653+235458	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG -0.2362, -0.2330	479 Secs [=>474.0 Secs ]	[1]		
	6	(1) COM-Q122653+235458	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG -0.1378, -0.1474	500 Secs [=>496.0 Secs ]	[2]		
	7	(1) COM-Q122653+235458	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG -0.0689, -0.0540	500 Secs [=>496.0 Secs ]	[2]		
	8	(1) COM-Q122653+235458	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG 0.0295.0 .0316	500 Secs [=>496.0 Secs ]	[2]		
	9	(1) COM-Q122653+235458	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG 0.0787.0 .0842	500 Secs [=>496.0 Secs ]	[2]		
	10	(1) COM-Q122653+235458	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG 0.1771.0 .1698	500 Secs [=>496.0 Secs ]	[2]		
	11	(1) COM-Q122653+235458	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG 0.2460.0 .2633	500 Secs [=>496.0 Secs ]	[3]		
	12	(1) COM-Q122653+235458	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG 0.3444.0 .3489	500 Secs [=>496.0 Secs ]	[3]		
	13	(1) COM-Q122653+235458	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG 0.3936.0 .4410	500 Secs [=>496.0 Secs ]	[3]		
	14	(1) COM-Q122653+235458	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG 0.4921.0 .5265	500 Secs [=>496.0 Secs ]	[3]		
15	(1) COM-Q122653+235458	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG 0.5610.0 .6200	500 Secs [=>496.0 Secs ]	[3]			

Orbit 1

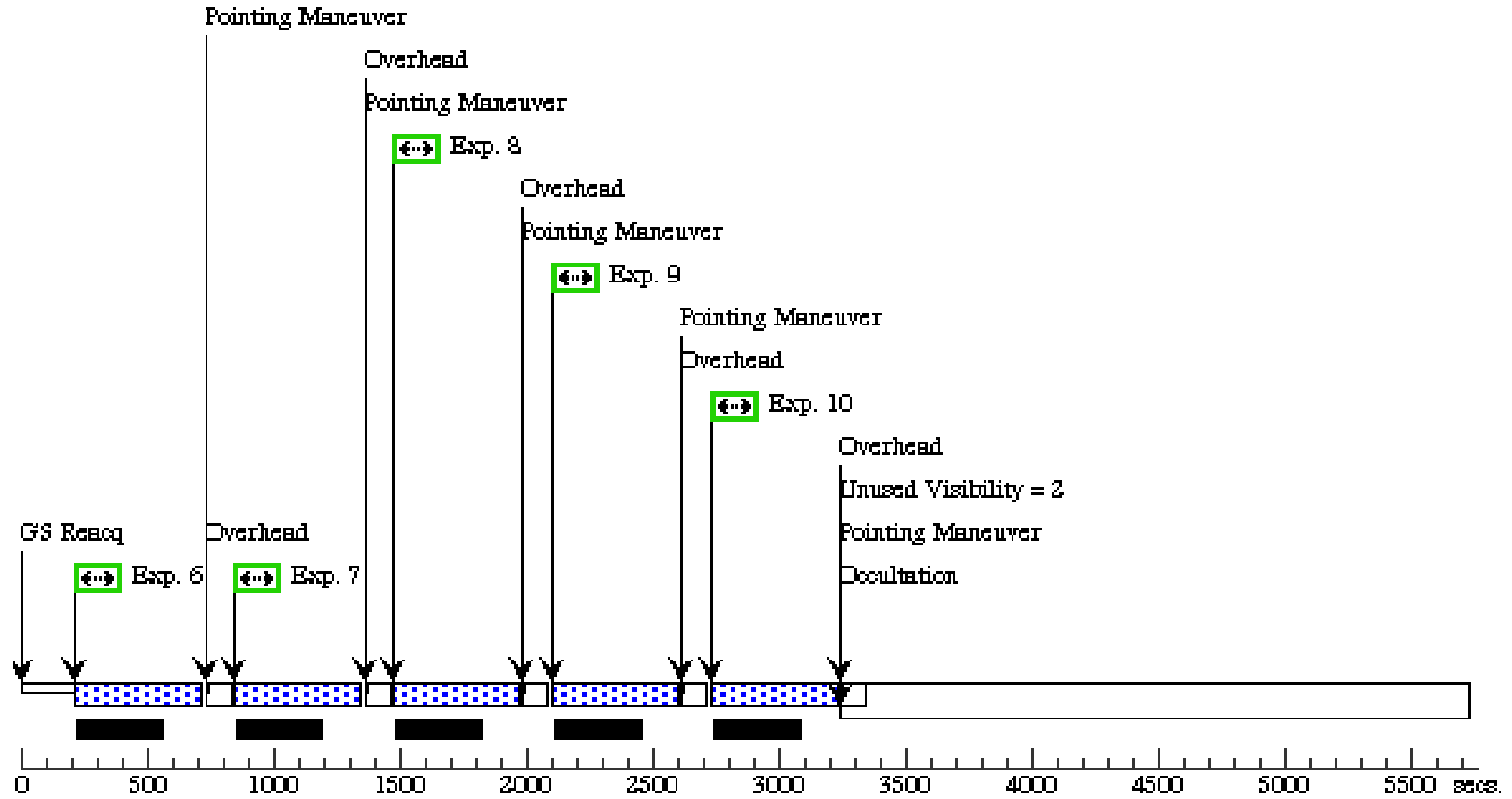
Server Version: 20110825

Orbit Structure



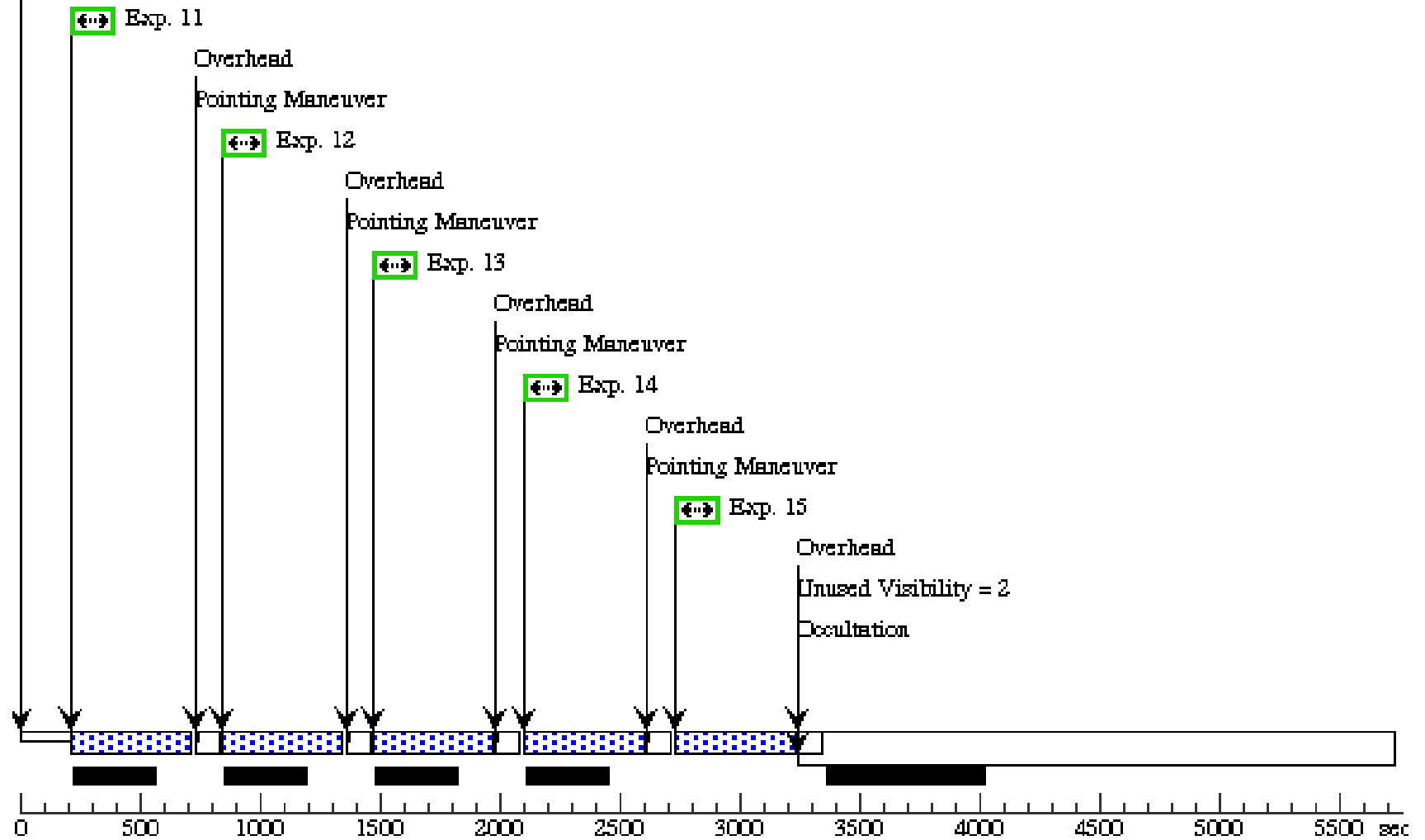
Orbit 2

Server Version: 20110825



**Orbit 3**

GS Req



# Proposal 12319 - Visit 02 - Proper Motion Survey of Classical and SDSS Local Group Dwarf Galaxies

Wed Nov 02 01:02:10 GMT 2011

<b>Visit</b>	<p><b>Proposal 12319, Visit 02, completed</b></p> <p><b>Diagnostic Status: Error</b></p> <p>Scientific Instruments: WFC3/UVIS</p> <p>Special Requirements: ORIENT 114.0734D TO 114.1734 D</p> <p><i>Comments: The first-epoch observations of this field, data set ib5i09e5q - ib5i09ewq, have PA_V3 = 294.1234 degrees. Since U3 = -V3, having the same orientation for the second-epoch images requires an orientation of 294.1234-180.0 = 114.1234 degrees. I allow a range of 0.1 degrees so that objects are shifted by no more than +/-2 pixels in the corners of the chip.</i></p> <p><i>The visit has been modified to use LINE10 charge injection. The exposures have been shortened by 4 or 5 sec to fit the orbits.</i></p>
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# Proposal 12319 - Visit 02 - Proper Motion Survey of Classical and SDSS Local Group Dwarf Galaxies

## Diagnosics

(Exposure 1 (Visit 02)) Error (Form): ACCUM is not a valid selection.  
(Exposure 1 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Optional\_Parameter=INJECT=LINE10  
For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.  
(Exposure 1 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Mode=ACCUM  
For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.  
(Exposure 1 (Visit 02)) Error (Form): LINE10 is not a valid selection  
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(Exposure 1 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Config=WFC3/UVIS  
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(Exposure 2 (Visit 02)) Error (Form): ACCUM is not a valid selection.  
(Exposure 2 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Mode=ACCUM  
For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.  
(Exposure 2 (Visit 02)) Error (Form): LINE10 is not a valid selection  
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For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.  
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(Exposure 4 (Visit 02)) Error (Form): ACCUM is not a valid selection.  
(Exposure 4 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Mode=ACCUM  
For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.  
(Exposure 4 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Optional\_Parameter=INJECT=LINE10  
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For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.  
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(Exposure 5 (Visit 02)) Error (Form): ACCUM is not a valid selection.  
(Exposure 5 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Mode=ACCUM  
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(Exposure 5 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Optional\_Parameter=INJECT=LINE10  
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For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.

## Proposal 12319 - Visit 02 - Proper Motion Survey of Classical and SDSS Local Group Dwarf Galaxies

(Exposure 6 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Mode=ACCUM  
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(Exposure 7 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Mode=ACCUM  
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(Exposure 7 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Optional\_Parameter=INJECT=LINE10  
For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.

(Exposure 7 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Config=WFC3/UVIS  
For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.

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(Exposure 7 (Visit 02)) Error (Form): ACCUM is not a valid selection.

(Exposure 8 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Config=WFC3/UVIS  
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(Exposure 8 (Visit 02)) Error (Form): LINE10 is not a valid selection

(Exposure 8 (Visit 02)) Error (Form): ACCUM is not a valid selection.

(Exposure 8 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Optional\_Parameter=INJECT=LINE10  
For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.

(Exposure 8 (Visit 02)) Error (Form): LINE10 is not a valid selection

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(Exposure 9 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Optional\_Parameter=INJECT=LINE10  
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(Exposure 9 (Visit 02)) Error (Form): ACCUM is not a valid selection.

(Exposure 9 (Visit 02)) Error (Form): LINE10 is not a valid selection

(Exposure 9 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Mode=ACCUM  
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(Exposure 9 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Config=WFC3/UVIS  
For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.

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(Exposure 10 (Visit 02)) Error (Form): LINE10 is not a valid selection

(Exposure 10 (Visit 02)) Error (Form): LINE10 is not a valid selection

(Exposure 10 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Mode=ACCUM  
For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.

(Exposure 10 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Config=WFC3/UVIS  
For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.

(Exposure 11 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Config=WFC3/UVIS  
For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.

(Exposure 11 (Visit 02)) Error (Form): LINE10 is not a valid selection

(Exposure 11 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Optional\_Parameter=INJECT=LINE10  
For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.

(Exposure 11 (Visit 02)) Error (Form): ACCUM is not a valid selection.

(Exposure 11 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Mode=ACCUM  
For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.

(Exposure 11 (Visit 02)) Error (Form): LINE10 is not a valid selection

## Proposal 12319 - Visit 02 - Proper Motion Survey of Classical and SDSS Local Group Dwarf Galaxies

(Exposure 12 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Optional\_Parameter=INJECT=LINE10  
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For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.

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For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.

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(Exposure 12 (Visit 02)) Error (Form): ACCUM is not a valid selection.

(Exposure 12 (Visit 02)) Error (Form): LINE10 is not a valid selection

(Exposure 13 (Visit 02)) Error (Form): ACCUM is not a valid selection.

(Exposure 13 (Visit 02)) Error (Form): LINE10 is not a valid selection

(Exposure 13 (Visit 02)) Error (Form): LINE10 is not a valid selection

(Exposure 13 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Optional\_Parameter=INJECT=LINE10  
For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.

(Exposure 13 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Config=WFC3/UVIS  
For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.

(Exposure 13 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Mode=ACCUM  
For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.

(Exposure 14 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Config=WFC3/UVIS  
For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.

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For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.

(Exposure 14 (Visit 02)) Error (Form): LINE10 is not a valid selection

(Exposure 14 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Mode=ACCUM  
For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.

(Exposure 14 (Visit 02)) Error (Form): LINE10 is not a valid selection

(Exposure 15 (Visit 02)) Error (Form): LINE10 is not a valid selection

(Exposure 15 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Mode=ACCUM  
For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.

(Exposure 15 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Optional\_Parameter=INJECT=LINE10  
For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.

(Exposure 15 (Visit 02)) Error (Form): This attribute cannot have this value due to other choices: Config=WFC3/UVIS  
For WFC3/UVIS ACCUM exposures in Supported Mode, INJECT can only be NONE or YES.

(Exposure 15 (Visit 02)) Error (Form): ACCUM is not a valid selection.

(Exposure 15 (Visit 02)) Error (Form): LINE10 is not a valid selection

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(2)	COM-Q122659+234954	RA: 12 26 59.5900 (186.7482917d) Dec: +23 49 54.40 (23.83178d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0	V=20.41	Reference Frame: ICRS
<i>Comments: The coordinates are for a QSO behind the dwarf spheroidal galaxy Coma Bernices.</i>						

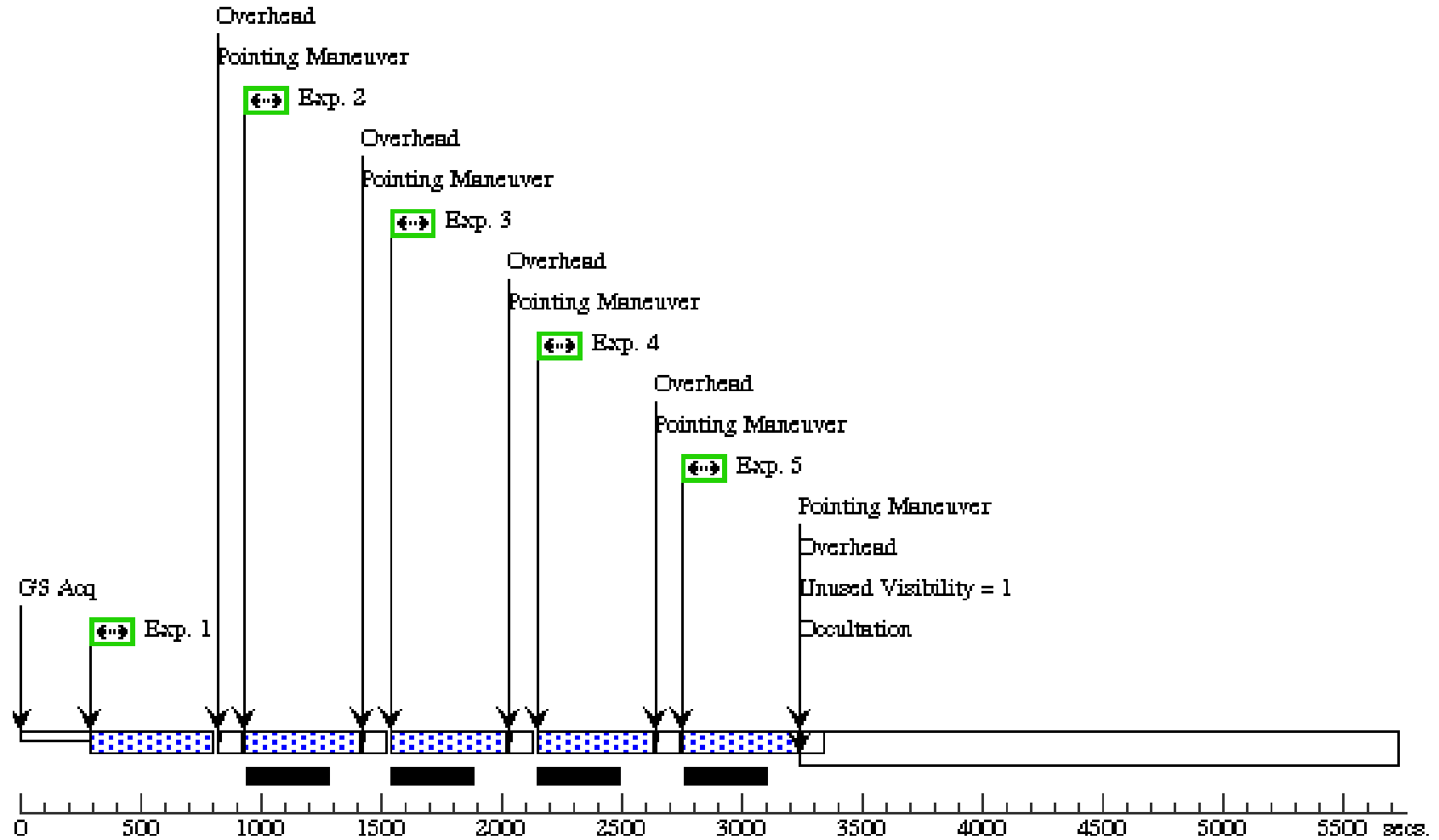
Proposal 12319 - Visit 02 - Proper Motion Survey of Classical and SDSS Local Group Dwarf Galaxies

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(2) COM-Q122659+ 234954	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=LINE10	POS TARG -0.5511, -0.5897		474. Secs [==>]	[1]
	2		(2) COM-Q122659+ 234954	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=LINE10	POS TARG -0.4527, -0.5041		474. Secs [==>]	[1]
	3		(2) COM-Q122659+ 234954	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=LINE10	POS TARG -0.3838, -0.4107		474. Secs [==>]	[1]
	4		(2) COM-Q122659+ 234954	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=LINE10	POS TARG -0.2854, -0.3251		474. Secs [==>]	[1]
	5		(2) COM-Q122659+ 234954	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=LINE10	POS TARG -0.2362, -0.2330		474. Secs [==>]	[1]
	6		(2) COM-Q122659+ 234954	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=LINE10	POS TARG -0.1378, -0.1474		496. Secs [==>]	[2]
	7		(2) COM-Q122659+ 234954	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=LINE10	POS TARG -0.0689, -0.0540		496. Secs [==>]	[2]
	8		(2) COM-Q122659+ 234954	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=LINE10	POS TARG 0.0295,0 .0316		496. Secs [==>]	[2]
	9		(2) COM-Q122659+ 234954	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=LINE10	POS TARG 0.0787,0 .0842		496. Secs [==>]	[2]
	10		(2) COM-Q122659+ 234954	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=LINE10	POS TARG 0.1771,0 .1698		496. Secs [==>]	[2]
	11		(2) COM-Q122659+ 234954	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=LINE10	POS TARG 0.2460,0 .2633		496. Secs [==>]	[3]
	12		(2) COM-Q122659+ 234954	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=LINE10	POS TARG 0.3444,0 .3489		496. Secs [==>]	[3]
	13		(2) COM-Q122659+ 234954	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=LINE10	POS TARG 0.3936,0 .4410		496. Secs [==>]	[3]
	14		(2) COM-Q122659+ 234954	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=LINE10	POS TARG 0.4921,0 .5265		496. Secs [==>]	[3]
15		(2) COM-Q122659+ 234954	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=LINE10	POS TARG 0.5610,0 .6200		496. Secs [==>]	[3]	

Orbit 1

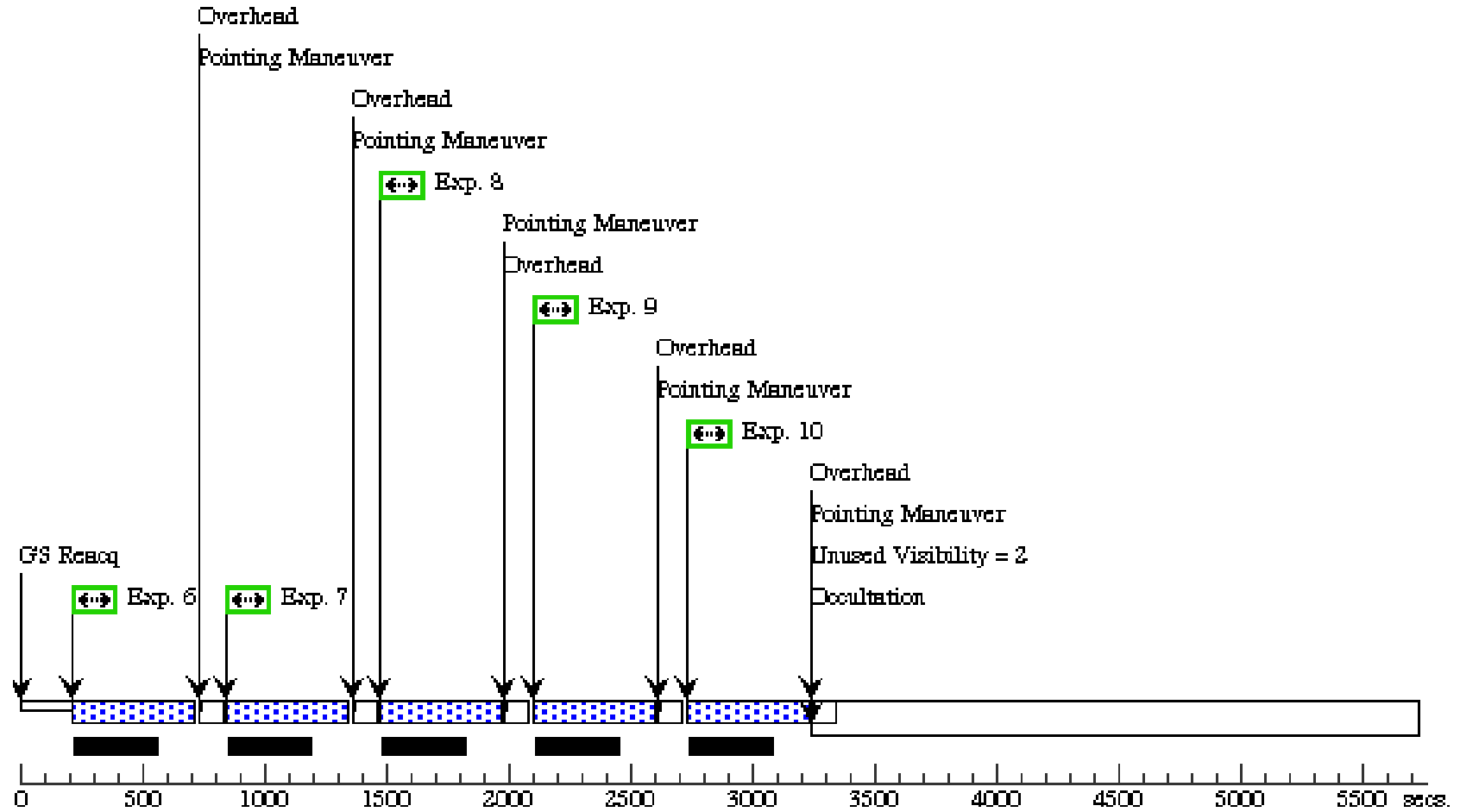
Server Version: 20110825

Orbit Structure



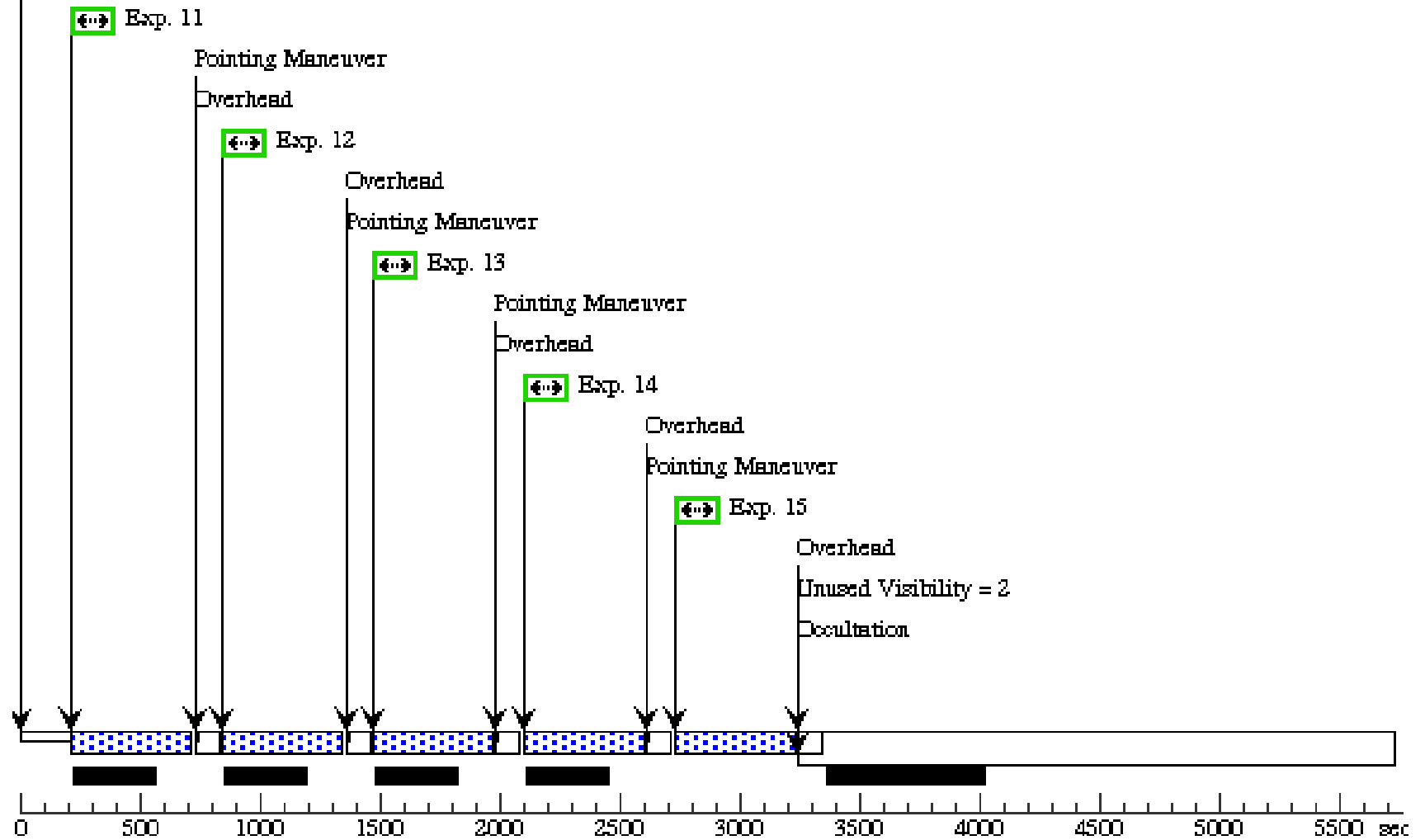
Orbit 2

Server Version: 20110825



**Orbit 3**

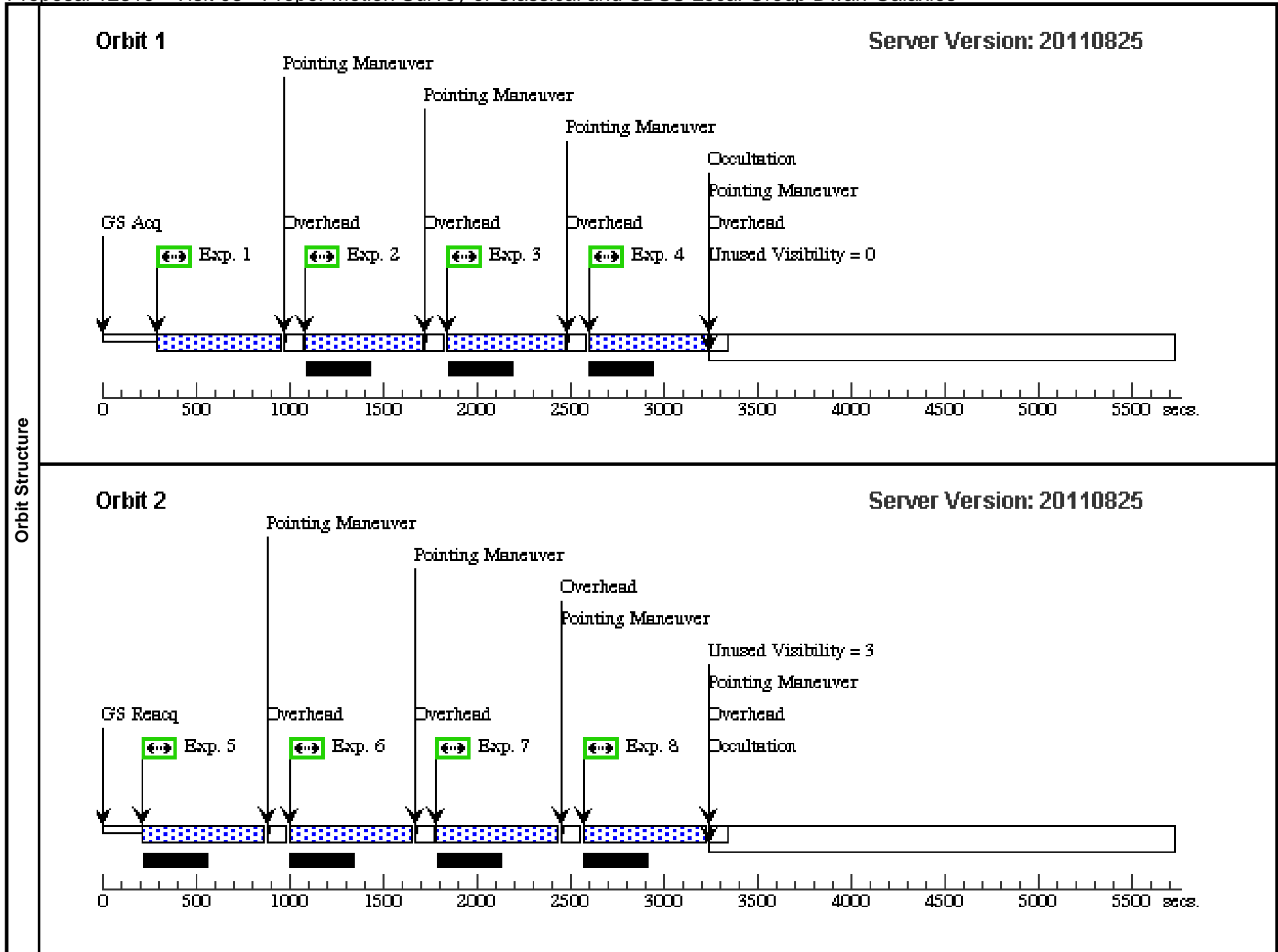
GS Req

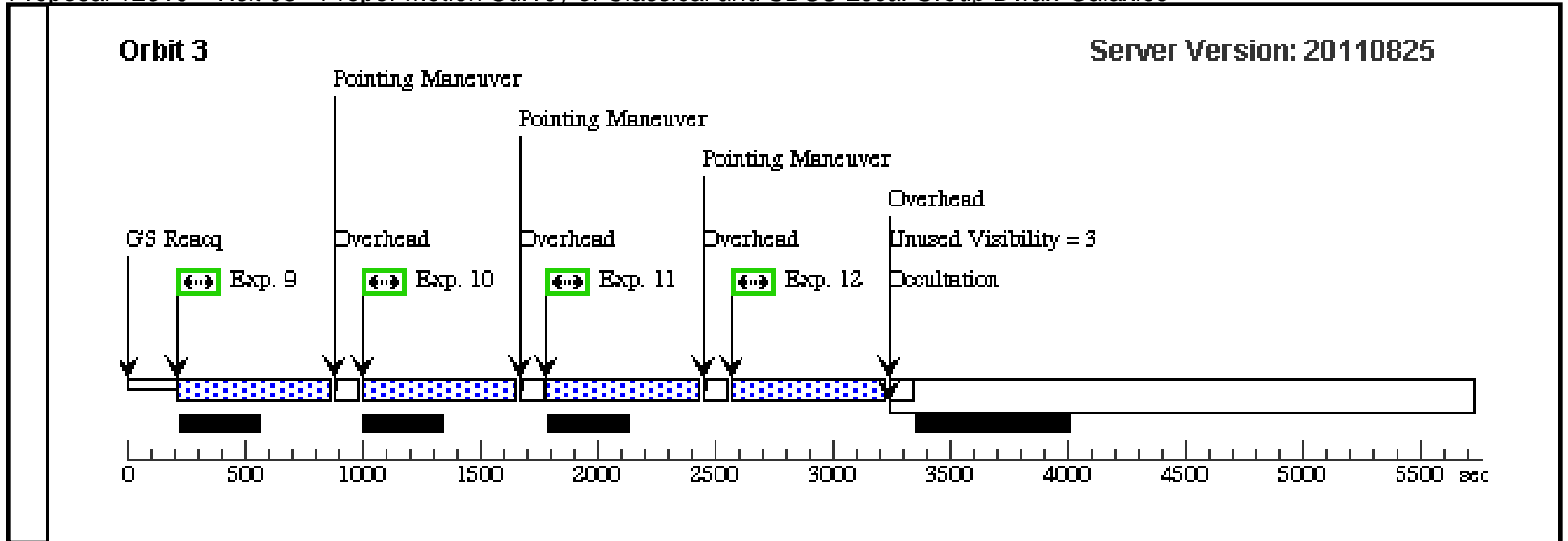


Proposal 12319 - Visit 03 - Proper Motion Survey of Classical and SDSS Local Group Dwarf Galaxies

Wed Nov 02 01:02:12 GMT 2011

Visit	<b>Proposal 12319, Visit 03, implementation</b> <b>Diagnostic Status: No Diagnostics</b> Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 280.3117D TO 280.4117 D; AFTER 01-SEP-2011:00:00:00 <i>Comments: The first-epoch observations of this field, data sets ib5i15kwq to ib5i15m0q, have an average PA_V3 = 100.3617 degrees. Since U3 = -V3, having the same orientation for the second-epoch images requires an orientation of 100.3617+180 = 280.3617 degrees. We allow a range of 0.1 degrees so that objects are shifted by no more than +2 pixels in the corner of the chip.</i>									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
	(3)	BOOI-Q135959+143633	RA: 13 59 59.7100 (209.9987917d) Dec: +14 36 33.20 (14.60922d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0	V=20.60	Reference Frame: ICRS				
	<i>Comments: The coordinates are for a QSO behind the dwarf spheroidal galaxy Bootes I.</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	(3) BOOI-Q135959+143633	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG -0.3740, -0.4002	550 Secs [==>652.0 Secs ]		[1]	
	2	(3) BOOI-Q135959+143633	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG -0.2952, -0.3357	550 Secs [==>652.0 Secs ]		[1]	
	3	(3) BOOI-Q135959+143633	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG -0.2263, -0.2422	550 Secs [==>652.0 Secs ]		[1]	
	4	(3) BOOI-Q135959+143633	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG -0.1279, -0.1566	550 Secs [==>652.0 Secs ]		[1]	
	5	(3) BOOI-Q135959+143633	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG -0.0787, -0.0645	550 Secs [==>652.0 Secs ]		[2]	
	6	(3) BOOI-Q135959+143633	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES		550 Secs [==>652.0 Secs ]		[2]	
	7	(3) BOOI-Q135959+143633	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG 0.0886,0 .1145	550 Secs [==>652.0 Secs ]		[2]	
	8	(3) BOOI-Q135959+143633	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG 0.1870,0 .2001	550 Secs [==>652.0 Secs ]		[2]	
	9	(3) BOOI-Q135959+143633	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG 0.2362,0 .2527	550 Secs [==>652.0 Secs ]		[3]	
	10	(3) BOOI-Q135959+143633	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG 0.3346,0 .3383	550 Secs [==>652.0 Secs ]		[3]	
	11	(3) BOOI-Q135959+143633	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG 0.3936,0 .4410	550 Secs [==>652.0 Secs ]		[3]	
12	(3) BOOI-Q135959+143633	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO; INJECT=YES	POS TARG 0.4921,0 .5265	550 Secs [==>652.0 Secs ]		[3]		





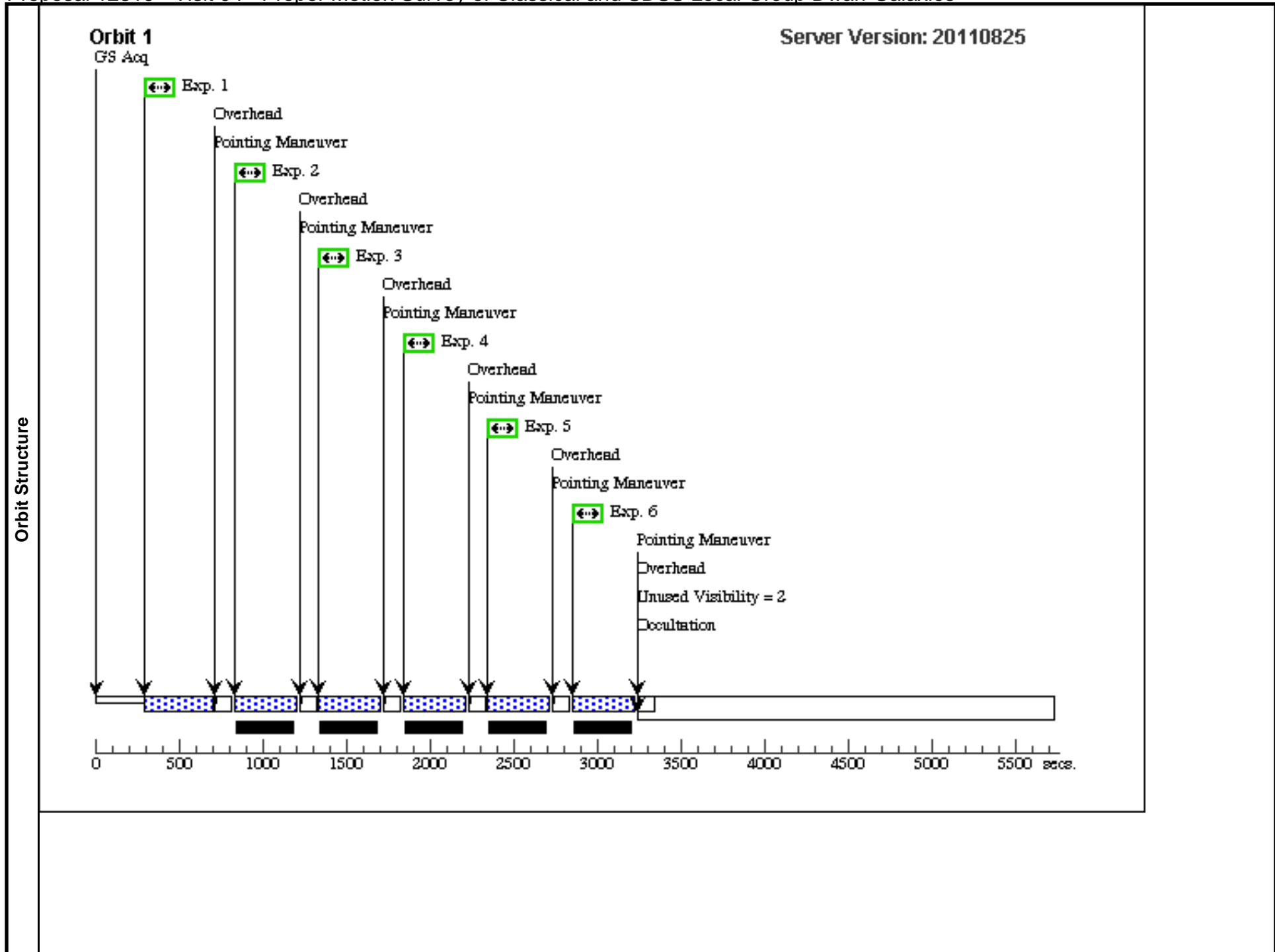
# Proposal 12319 - Visit 04 - Proper Motion Survey of Classical and SDSS Local Group Dwarf Galaxies

Wed Nov 02 01:02:13 GMT 2011

<b>Visit</b>	<p><b>Proposal 12319, Visit 04, completed</b></p> <p><b>Diagnostic Status: No Diagnostics</b></p> <p>Scientific Instruments: WFC3/UVIS</p> <p>Special Requirements: ORIENT 300.7867D TO 300.8867 D</p> <p><i>Comments: The first-epoch observations of this field, data set ib5i16trq - ib5i16uoq, have PA_V3 = 120.8367 degrees. Since U3 = -V3, having the same orientation for the second-epoch images requires an orientation of 120.8367+180.0 = 300.8367 degrees. I allow a range of 0.1 degrees so that objects are shifted by no more than +/-2 pixels in the corners of the chip.</i></p>					
	<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>	<b>Fluxes</b>
(4)		BOOI-Q140032+142327	RA: 14 00 32.1800 (210.1340833d) Dec: +14 23 27.30 (14.39092d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0	V=20.05	Reference Frame: ICRS
	<p><i>Comments: The coordinates are for a QSO behind the dwarf spheroidal galaxy Bootes I.</i></p>					

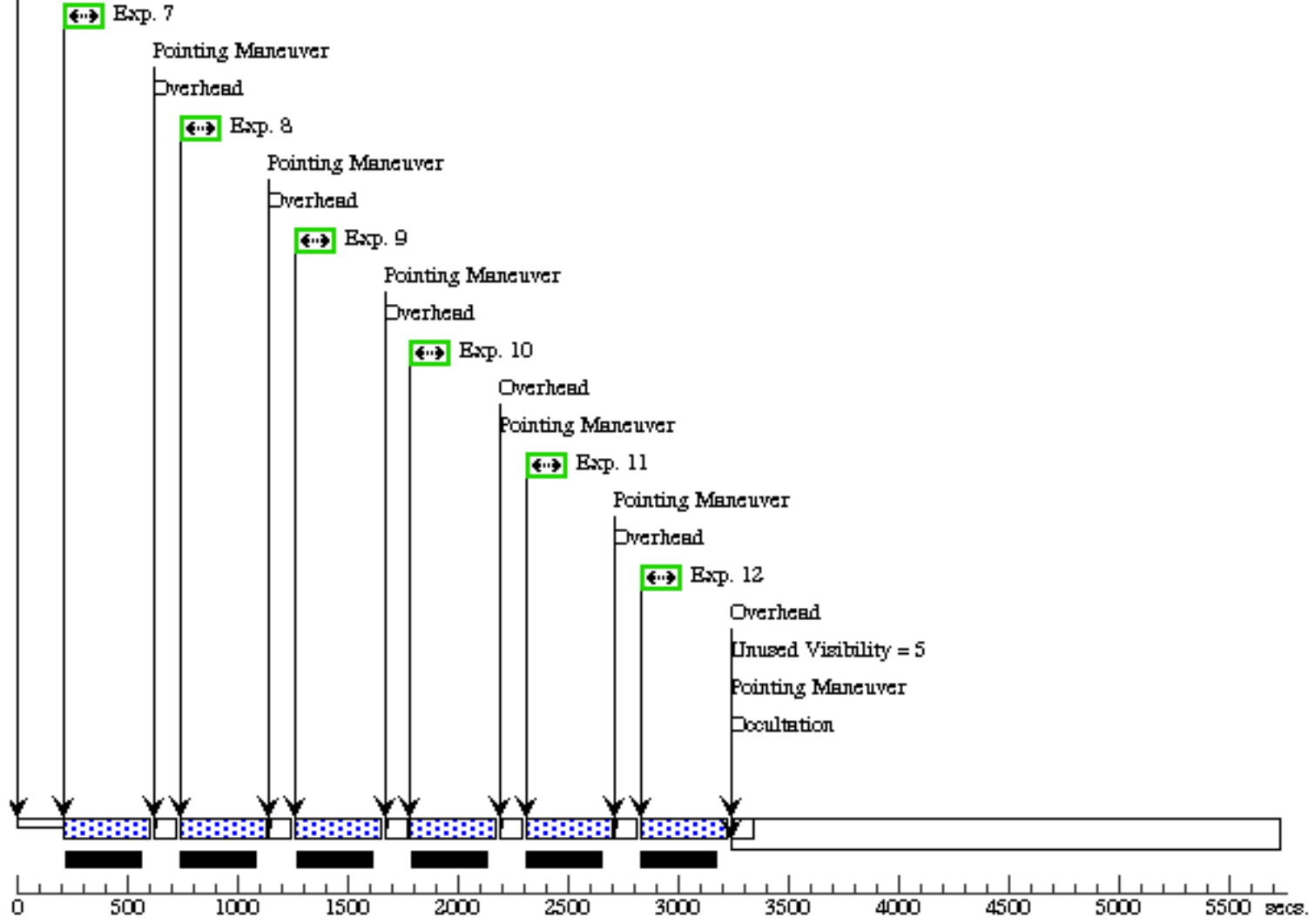
Proposal 12319 - Visit 04 - Proper Motion Survey of Classical and SDSS Local Group Dwarf Galaxies

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
Exposures	1	(4) BOOI-Q140032+ 142327	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO	POS TARG -0.5511, -0.5897		377 Secs	[==>]	[1]
	2	(4) BOOI-Q140032+ 142327	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO	POS TARG -0.4527, -0.5041		377 Secs	[==>]	[1]
	3	(4) BOOI-Q140032+ 142327	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO	POS TARG -0.3838, -0.4107		377 Secs	[==>]	[1]
	4	(4) BOOI-Q140032+ 142327	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO	POS TARG -0.2854, -0.3251		377 Secs	[==>]	[1]
	5	(4) BOOI-Q140032+ 142327	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO	POS TARG -0.2362, -0.2330		377 Secs	[==>]	[1]
	6	(4) BOOI-Q140032+ 142327	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO	POS TARG -0.1378, -0.1474		377 Secs	[==>]	[1]
	7	(4) BOOI-Q140032+ 142327	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO	POS TARG -0.0689, -0.0540		395 Secs	[==>]	[2]
	8	(4) BOOI-Q140032+ 142327	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO	POS TARG 0.0295,0 .0316		395 Secs	[==>]	[2]
	9	(4) BOOI-Q140032+ 142327	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO	POS TARG 0.0787,0 .0842		395 Secs	[==>]	[2]
	10	(4) BOOI-Q140032+ 142327	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO	POS TARG 0.1771,0 .1698		395 Secs	[==>]	[2]
	11	(4) BOOI-Q140032+ 142327	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO	POS TARG 0.2460,0 .2633		395 Secs	[==>]	[2]
	12	(4) BOOI-Q140032+ 142327	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO	POS TARG 0.3444,0 .3489		395 Secs	[==>]	[2]
	13	(4) BOOI-Q140032+ 142327	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO	POS TARG 0.3936,0 .4410		395 Secs	[==>]	[3]
	14	(4) BOOI-Q140032+ 142327	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO	POS TARG 0.4921,0 .5265		395 Secs	[==>]	[3]
	15	(4) BOOI-Q140032+ 142327	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO	POS TARG 0.5610,0 .6200		395 Secs	[==>]	[3]
	16	(4) BOOI-Q140032+ 142327	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO	POS TARG 0.6594,0 .7056		395 Secs	[==>]	[3]
	17	(4) BOOI-Q140032+ 142327	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO	POS TARG 0.7086,0 .7582		395 Secs	[==>]	[3]
	18	(4) BOOI-Q140032+ 142327	WFC3/UVIS, ACCUM, UVIS1-FIX	F350LP	CR-SPLIT=NO	POS TARG 0.8070,0 .8438		395 Secs	[==>]	[3]



**Orbit 2**

GS Req



**Orbit 3**

