



13612 - Hubble Investigation of the First Known, Multi-Fragment Main Belt Comet: P/2013 R3

Cycle: 21, Proposal Category: GO/DD

(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) P2013R3-EPOCH1	WFC3/UVIS	1	20-Nov-2013 21:08:14.0	yes
02	(2) P2013R3-EPOCH2	WFC3/UVIS	1	20-Nov-2013 21:08:24.0	yes
03	(3) P2013R3-EPOCH3	WFC3/UVIS	1	20-Nov-2013 21:08:31.0	yes
04	(4) P2013R3-EPOCH4	WFC3/UVIS	1	20-Nov-2013 21:08:39.0	yes
05	(5) P2013R3-EPOCH5	WFC3/UVIS	1	20-Nov-2013 21:08:46.0	yes

5 Total Orbits Used

ABSTRACT

Proposal 13612 (STScI Edit Number: 0, Created: Wednesday, November 20, 2013 9:08:54 PM EST) - Overview

Comet-like object P/2013 R3, announced on 2013 Sept 27, is the latest of the newly discovered class of active asteroids (equivalently main-belt comets, MBCs). Observations with the Keck 10-m telescope on Oct 01 and 02 reveal that P/2013 R3 is a multiple object, with three co-moving components resolved at 1.0 arcsec resolution. Multiplicity has never before been seen in the MBCs and offers the opportunity to study internal dynamics in detail. We request five orbits of DD time to explore P/2013 R3 at resolutions and sensitivities only possible with Hubble, to search for fainter fragments and to determine the dynamics of the components. P/2013 R3 is a leading candidate for a body breaking up under rotational stresses (presumably induced by YORP radiation forces), and Hubble data will test this hypothesis by pin-pointing the dates of ejection of the fragments, their speeds, and their directions. Our Hubble MBC program has been remarkably successful in probing the activation triggers for this new class of objects, and our proposed program on P/2013 R3 will provide the first opportunity to track fragments associated with the activation event.

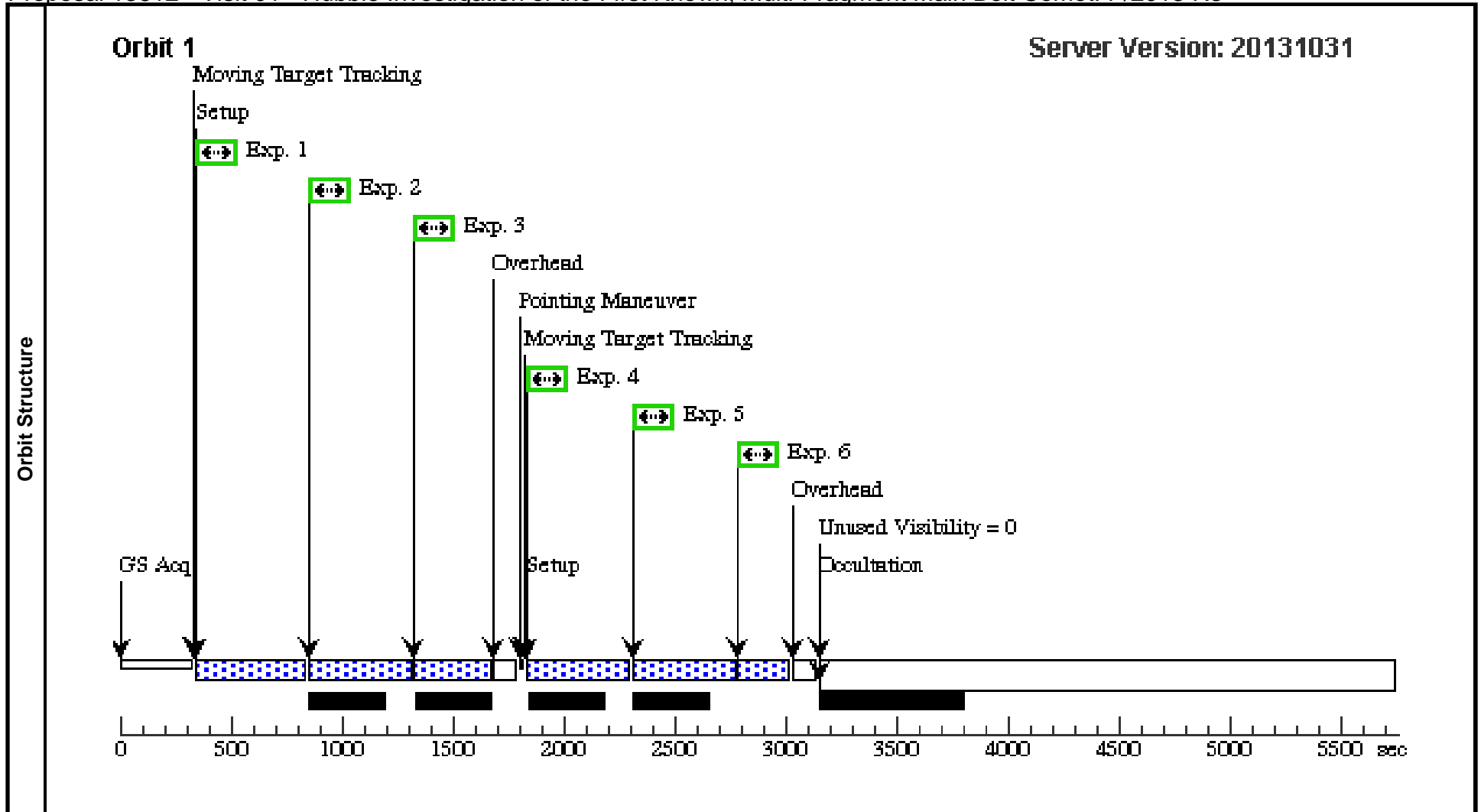
OBSERVING DESCRIPTION

TBD

Proposal 13612 - Visit 01 - Hubble Investigation of the First Known, Multi-Fragment Main Belt Comet: P/2013 R3

Thu Nov 21 02:08:55 GMT 2013

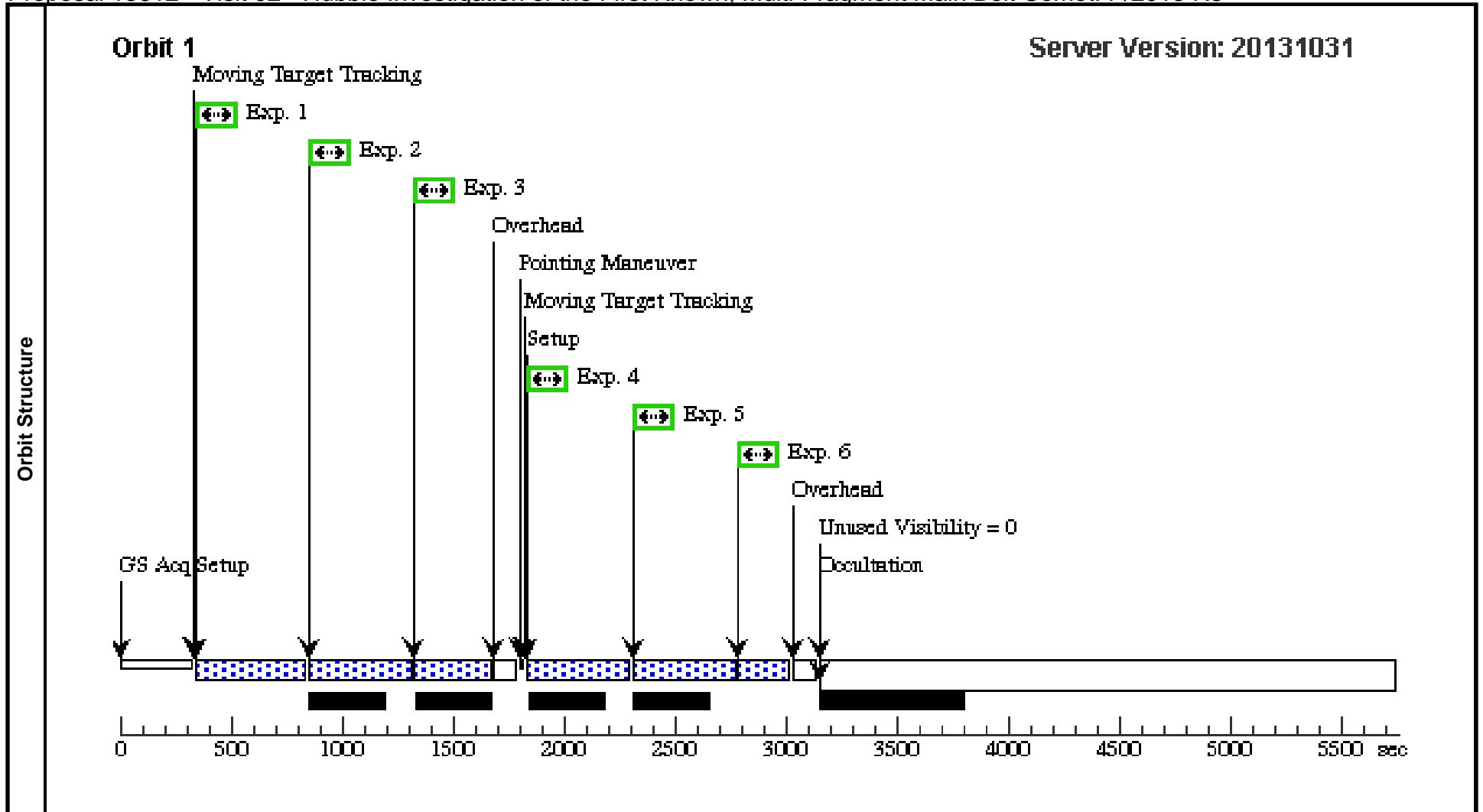
Visit	Proposal 13612, Visit 01, completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: BETWEEN 11-OCT-2013 AND 04-NOV-2013; VISIBILITY INTERVAL 52.5 M									
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center		
	(1)	P2013R3-EPOCH1	TYPE=COMET,Q=2.2041802859778 25,E=0.2731088336618457,I=0.89917 77757766721,O=342.6902297221328, W=8.35570687519,T=05-AUG- 2013:12:02:32,TTimeScale=TDT,EQU INOX=J2000,EPOCH=26-SEP- 2013,EpochTimeScale=TDT					EARTH	<i>Comments: JPL #2 solution</i>	
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) P2013R3-EPOCH1	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO			348 Secs (348 Secs)	
									[==>]	[1]
	2		(1) P2013R3-EPOCH1	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO			348 Secs (348 Secs)	
									[==>]	[1]
	3		(1) P2013R3-EPOCH1	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO			348 Secs (348 Secs)	
									[==>]	[1]
4		(1) P2013R3-EPOCH1	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO	POS TARG 0.2,2,41		348 Secs (348 Secs)		
								[==>]	[1]	
5		(1) P2013R3-EPOCH1	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO	POS TARG 0.2,2,41		348 Secs (348 Secs)		
								[==>]	[1]	
6		(1) P2013R3-EPOCH1	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO	POS TARG 0.2,2,41		233 Secs (233 Secs)		
								[==>]	[1]	
<i>Comments: Please adjust to match observability window</i>										



Proposal 13612 - Visit 02 - Hubble Investigation of the First Known, Multi-Fragment Main Belt Comet: P/2013 R3

Thu Nov 21 02:08:57 GMT 2013

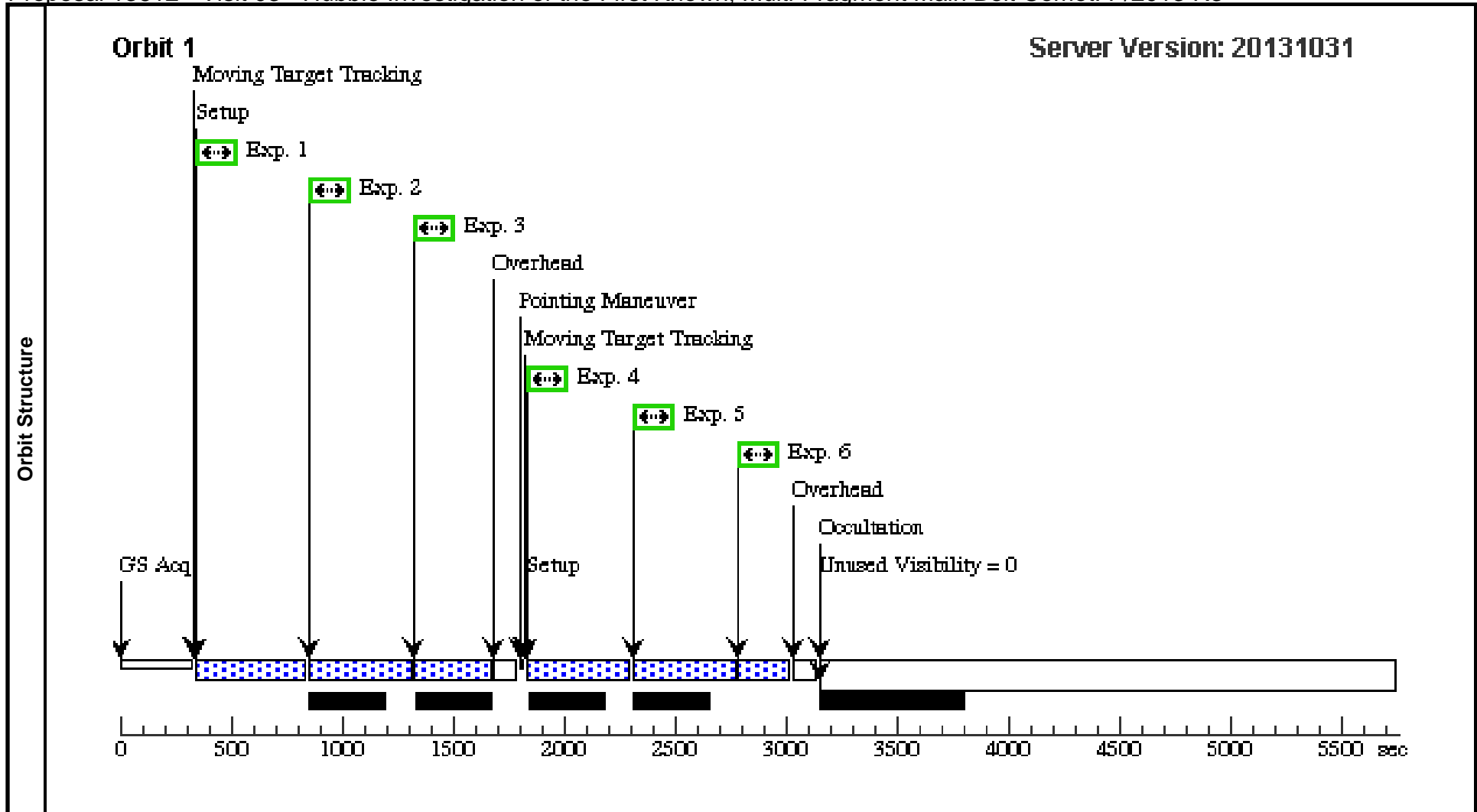
Solar System Targets	Visit							Ephem Center		
	#	Name	Level 1	Level 2	Level 3	Window				
	Proposal 13612, Visit 02, completed Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: BETWEEN 13-NOV-2013 AND 27-NOV-2013; VISIBILITY INTERVAL 52.5 M							EARTH		
	(2)	P2013R3-EPOCH2	TYPE=COMET,Q=2.2020473820567 31,E=0.2736476725132956,I=0.89780 56165201912,O=342.6619734463128, W=8.222080560884772,T=05-AUG- 2013:02:41:35,TimeScale=TDT,EQU INOX=J2000,EPOCH=26-SEP- 2013,EpochTimeScale=TDT							
	<i>Comments: JPL #4 solution</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(2) P2013R3-EPOCH2	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO			348 Secs (348 Secs)	
									[==>]	[1]
	2		(2) P2013R3-EPOCH2	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO			348 Secs (348 Secs)	
									[==>]	[1]
	3		(2) P2013R3-EPOCH2	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO			348 Secs (348 Secs)	
									[==>]	[1]
4		(2) P2013R3-EPOCH2	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO	POS TARG 0.2,2,41		348 Secs (348 Secs)		
								[==>]	[1]	
5		(2) P2013R3-EPOCH2	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO	POS TARG 0.2,2,41		348 Secs (348 Secs)		
								[==>]	[1]	
6		(2) P2013R3-EPOCH2	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO	POS TARG 0.2,2,41		233 Secs (233 Secs)		
								[==>]	[1]	
	<i>Comments: Please adjust to match observability window</i>									



Proposal 13612 - Visit 03 - Hubble Investigation of the First Known, Multi-Fragment Main Belt Comet: P/2013 R3

Thu Nov 21 02:08:58 GMT 2013

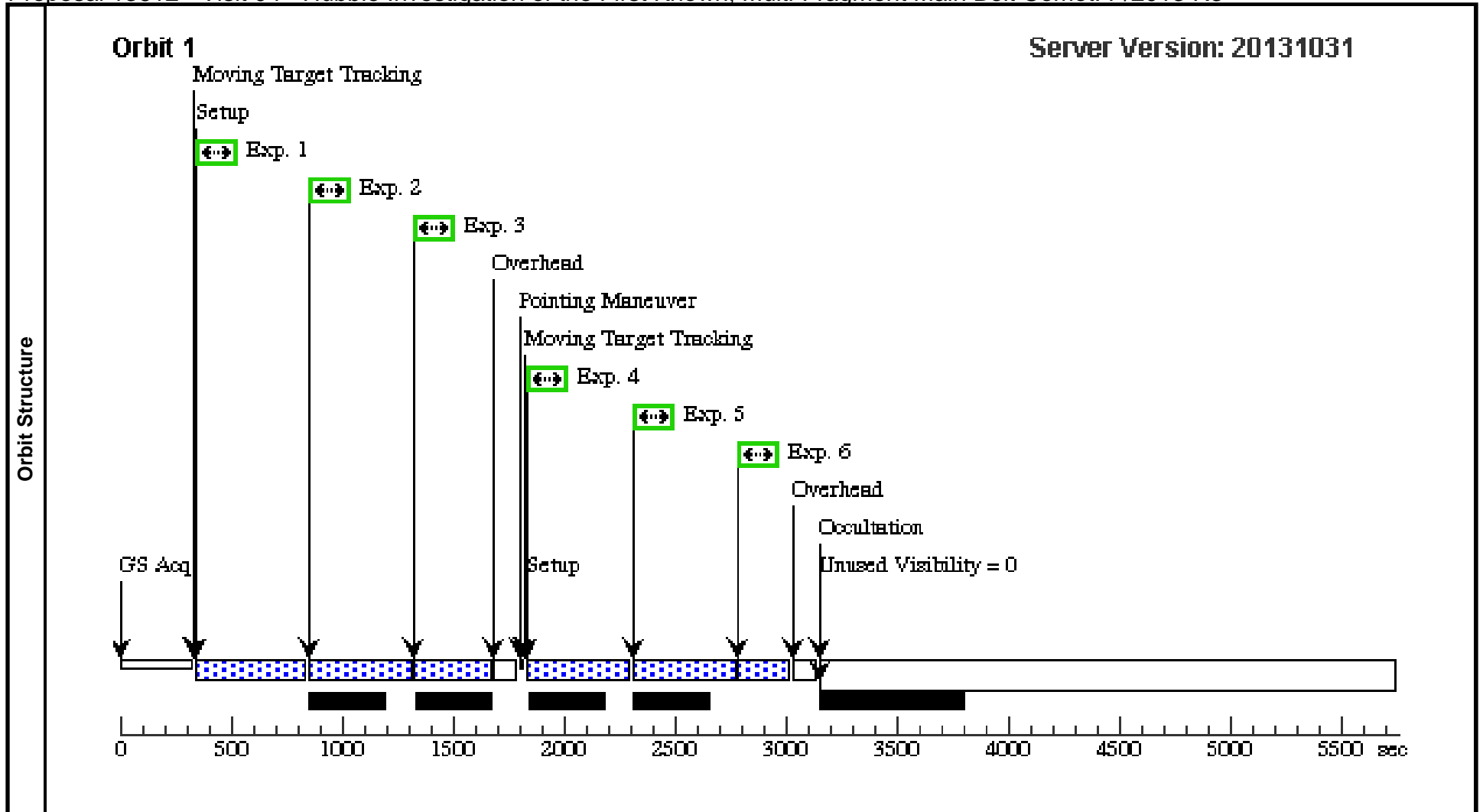
Visit	Proposal 13612, Visit 03, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: BETWEEN 13-DEC-2013 AND 27-DEC-2013: VISIBILITY INTERVAL 52.5 M									
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center		
	(3)	P2013R3-EPOCH3	TYPE=COMET,Q=2.2035924428667 04,E=0.2734796901495439,I=0.89903 05933678789,O=342.6873033223817, W=8.205805962554951,T=05-AUG- 2013:01:43:58,TimeScale=TDT,EQU INOX=J2000,EPOCH=08-OCT- 2013,EpochTimeScale=TDT					EARTH	<i>Comments: JPL #8 solution</i>	
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(3) P2013R3-EPOCH3	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO			348 Secs (348 Secs)	
									[==>]	[1]
	2		(3) P2013R3-EPOCH3	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO			348 Secs (348 Secs)	
									[==>]	[1]
	3		(3) P2013R3-EPOCH3	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO			348 Secs (348 Secs)	
									[==>]	[1]
4		(3) P2013R3-EPOCH3	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO	POS TARG 0.2,2.41		348 Secs (348 Secs)		
								[==>]	[1]	
5		(3) P2013R3-EPOCH3	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO	POS TARG 0.2,2.41		348 Secs (348 Secs)		
								[==>]	[1]	
6		(3) P2013R3-EPOCH3	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO	POS TARG 0.2,2.41		233 Secs (233 Secs)		
								[==>]	[1]	
<i>Comments: Please adjust to match observability window</i>										



Proposal 13612 - Visit 04 - Hubble Investigation of the First Known, Multi-Fragment Main Belt Comet: P/2013 R3

Thu Nov 21 02:08:59 GMT 2013

Visit	Proposal 13612, Visit 04, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: BETWEEN 13-JAN-2014 AND 27-JAN-2014; VISIBILITY INTERVAL 52.5 M									
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center		
	(4)	P2013R3-EPOCH4	TYPE=COMET,Q=2.2035924428667 04,E=0.2734796901495439,I=0.89903 05933678789,O=342.6873033223817, W=8.205805962554951,T=05-AUG- 2013:01:43:58,TimeScale=TDT,EQU INOX=J2000,EPOCH=08-OCT- 2013,EpochTimeScale=TDT					EARTH	<i>Comments: JPL #8 solution</i>	
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(4) P2013R3-EPOCH4	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO			348 Secs (348 Secs)	
									[==>]	[1]
	2		(4) P2013R3-EPOCH4	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO			348 Secs (348 Secs)	
									[==>]	[1]
	3		(4) P2013R3-EPOCH4	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO			348 Secs (348 Secs)	
									[==>]	[1]
4		(4) P2013R3-EPOCH4	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO	POS TARG 0.2,2.41		348 Secs (348 Secs)		
								[==>]	[1]	
5		(4) P2013R3-EPOCH4	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO	POS TARG 0.2,2.41		348 Secs (348 Secs)		
								[==>]	[1]	
6		(4) P2013R3-EPOCH4	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO	POS TARG 0.2,2.41		233 Secs (233 Secs)		
								[==>]	[1]	
<i>Comments: Please adjust to match observability window</i>										



Proposal 13612 - Visit 05 - Hubble Investigation of the First Known, Multi-Fragment Main Belt Comet: P/2013 R3

Thu Nov 21 02:09:00 GMT 2013

Visit	Proposal 13612, Visit 05, implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: BETWEEN 13-FEB-2014 AND 27-FEB-2014; VISIBILITY INTERVAL 52.5 M									
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center		
	(5)	P2013R3-EPOCH5	TYPE=COMET,Q=2.2035924428667 04,E=0.2734796901495439,I=0.89903 05933678789,O=342.6873033223817, W=8.205805962554951,T=05-AUG- 2013:01:43:58,TimeScale=TDT,EQU INOX=J2000,EPOCH=08-OCT- 2013,EpochTimeScale=TDT					EARTH	<i>Comments: JPL #8 solution</i>	
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(5) P2013R3-EPOCH5	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO			348 Secs (348 Secs)	
									[==>]	[1]
	2		(5) P2013R3-EPOCH5	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO			348 Secs (348 Secs)	
									[==>]	[1]
	3		(5) P2013R3-EPOCH5	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO			348 Secs (348 Secs)	
									[==>]	[1]
4		(5) P2013R3-EPOCH5	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO	POS TARG 0.2,2,41		348 Secs (348 Secs)		
								[==>]	[1]	
5		(5) P2013R3-EPOCH5	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO	POS TARG 0.2,2,41		348 Secs (348 Secs)		
								[==>]	[1]	
6		(5) P2013R3-EPOCH5	WFC3/UVIS, ACCUM, UVIS2	F350LP	CR-SPLIT=NO	POS TARG 0.2,2,41		233 Secs (233 Secs)		
								[==>]	[1]	
	<i>Comments: Please adjust to match observability window</i>									

