13333 - Investigating the Impact of Merger Driven Shocks

Cycle: 21, 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) NGC3256	WFC3/UVIS	7	11-Jul-2013 15:57:59.0	yes
02	(1) NGC3256	WFC3/UVIS	3	11-Jul-2013 15:58:22.0	yes

10 Total Orbits Used

ABSTRACT

Integral field spectroscopy of NGC 3256, the most luminous system in the local universe (z<0.01), reveals a blended, composite starburst/shock spectrum with no trace of an AGN. Galaxy-wide shocks in starbursts and merging systems like NGC 3256 are a prime source of feedback, though the impact that such shocks have on the ISM and their effects on star formation remain poorly understood. The combination of wide-field, narrow-band and high-resolution achieved by WFC3 imaging allows us to probe the relationship between shocks and their hosts better than ever before. We propose to image NGC 3256 in several diagnostic lines including [O III], H-beta, [N II], H-alpha, [S II] and [O I]. High-resolution WFC3 observations will enable us to spatially resolve shocked vs. star forming regions, allowing us to isolate the superwind and starburst-ionized gas for the first time, and to estimate the total energy budget and physical characteristics of the wind and shocks in NGC 3256. A comparison with complementary data, including HST, Spitzer, Chandra and ALMA observations, will also allow us to trace obscured and unobscured star formation and their proximity to shocks and to search for shocks driven by merger-induced gas flows which could help transport gas to the observed nuclear starbursts in U/LIRGs. As the nearest extreme starburst, an infrared luminous galaxy and the host of a galactic superwind, NGC 3256 is ideally suited for an analysis of the impact of shocks and large-scale gas flows on the surrounding ISM and star formation and will serve as a key laboratory for the detailed study of a fundamental feedback process in LIRGs, which dominate cosmic star formation at high redshift.

OBSERVING DESCRIPTION

The merging galaxy NGC 3256 is to be observed in 5 quad & narrow band filters, FQ492N, FQ508N, FQ634N, F665N and F673N, corresponding to Hbeta, [OIII], [OI], [NII]+Halpha and [SII] emission. The merger is also to be imaged in two medium band filters, F467M and F621M, to help establish continuum regions.

An 8-point dither pattern is to be used for the quad filters (FQ492N, FQ508N & FQ634N), a 3-point gap-filling dither is to be used for the medium filters (F467M & F621M) and the narrow filter F665N. A 4-point gap-filling dither is to be used for the narrow filter F673N.

REAL TIME JUSTIFICATION

n/a

CALIBRATION JUSTIFICATION

n/a

ADDITIONAL COMMENTS

n/a

Visit

Proposal 13333, Visit 01 Thu Jul 11 19:58:32 GMT 2013

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Diagnostics

(FQ492N (01.001)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

(FQ508N (01.004)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

Patterns

#	Primary Pattern		Secondary Pattern		Exposures
(2)	Pattern Type=WFC3-UVIS-GAP-LINE Purpose=MOSAIC Number Of Points=2 Point Spacing=2.414 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.759 Angle Between Sides= Center Pattern=true	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false	(1), (4)
(3)	Pattern Type=WFC3-UVIS-GAP-LINE Purpose=MOSAIC Number Of Points=4 Point Spacing=2.414 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.759 Angle Between Sides= Center Pattern=true			(2)
(5)	Pattern Type=WFC3-UVIS-GAP-LINE Purpose=MOSAIC Number Of Points=3 Point Spacing=2.414 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.759 Angle Between Sides= Center Pattern=true			(3)

Fixed Targets

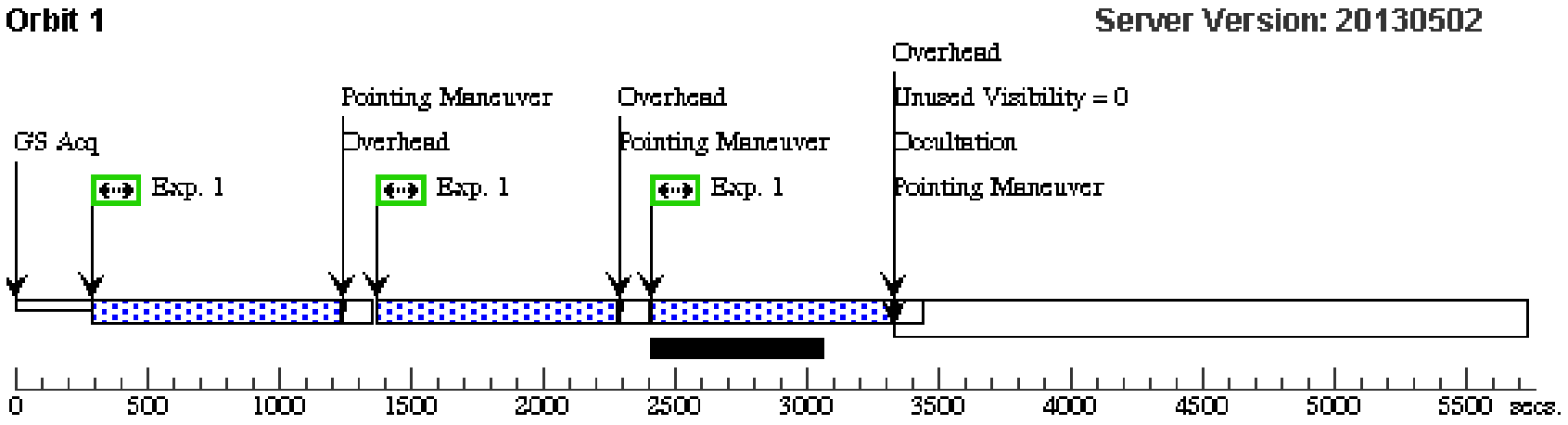
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	NGC3256	RA: 10 27 51.2500 (156.9635417d) Dec: -43 54 15.00 (-43.90417d) Equinox: J2000		V=11.33	Reference Frame: SIMBAD

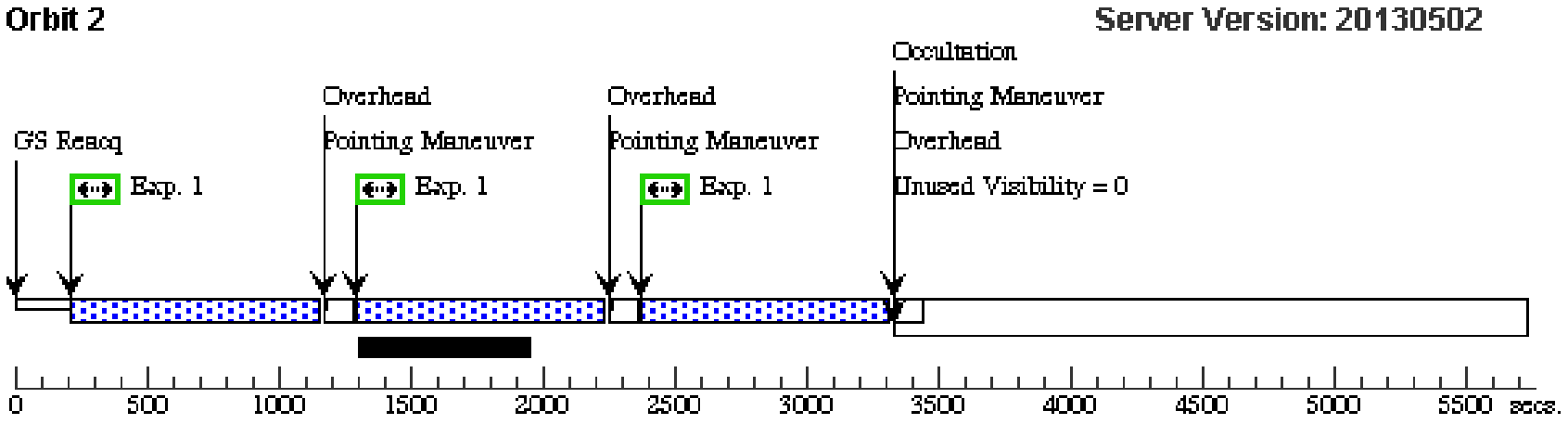
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

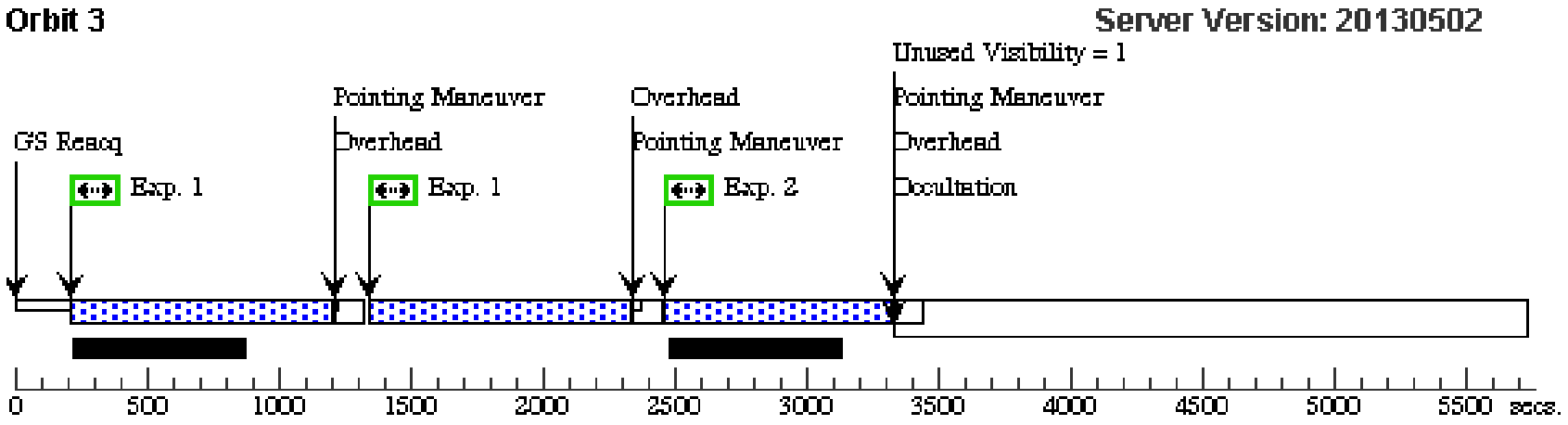
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	FQ492N	(1) NGC3256	WFC3/UVIS, ACCUM, UVIS-QUAD	FQ492N	FLASH=9		Pattern 2, Exps 1-1 in Visit 01 (2)	900 Secs (7535 Secs)	
								[==>908.0 Secs (Pattern 1,1)]	***[1]***
								[==>908.0 Secs (Pattern 1,2)]	
								[==>908.0 Secs (Pattern 1,3)]	
								[==>945.0 Secs (Pattern 1,4)]	***[2]***
								[==>945.0 Secs (Pattern 2,1)]	
								[==>945.0 Secs (Pattern 2,2)]	
								[==>988.0 Secs (Pattern 2,3)]	***[3]***
								[==>988.0 Secs (Pattern 2,4)]	
2	F673N	(1) NGC3256	WFC3/UVIS, ACCUM, UVIS1	F673N	FLASH=9		Pattern 3, Exps 2-2 in Visit 01 (3)	750 Secs (3295 Secs)	
								[==>838.0 Secs (Pattern 1)]	***[3]***
								[==>819.0 Secs (Pattern 2)]	***[4]***
								[==>819.0 Secs (Pattern 3)]	
								[==>819.0 Secs (Pattern 4)]	
3	F621M	(1) NGC3256	WFC3/UVIS, ACCUM, UVIS1	F621M	FLASH=10		Pattern 5, Exps 3-3 in Visit 01 (5)	150 Secs (805 Secs)	
								[==>219.0 Secs (Pattern 1)]	***[4]***
								[==>293.0 Secs (Pattern 2)]	***[5]***
								[==>293.0 Secs (Pattern 3)]	
4	FQ508N	(1) NGC3256	WFC3/UVIS, ACCUM, UVIS-QUAD	FQ508N	FLASH=9		Pattern 2, Exps 4-4 in Visit 01 (2)	900 Secs (7756 Secs)	
								[==>1043.0 Secs (Pattern 1,1)]	***[5]***
								[==>1043.0 Secs (Pattern 1,2)]	
								[==>945.0 Secs (Pattern 1,3)]	***[6]***
								[==>945.0 Secs (Pattern 1,4)]	
								[==>945.0 Secs (Pattern 2,1)]	
								[==>945.0 Secs (Pattern 2,2)]	***[7]***
								[==>945.0 Secs (Pattern 2,3)]	
								[==>945.0 Secs (Pattern 2,4)]	

Orbit Structure



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GS Reacq
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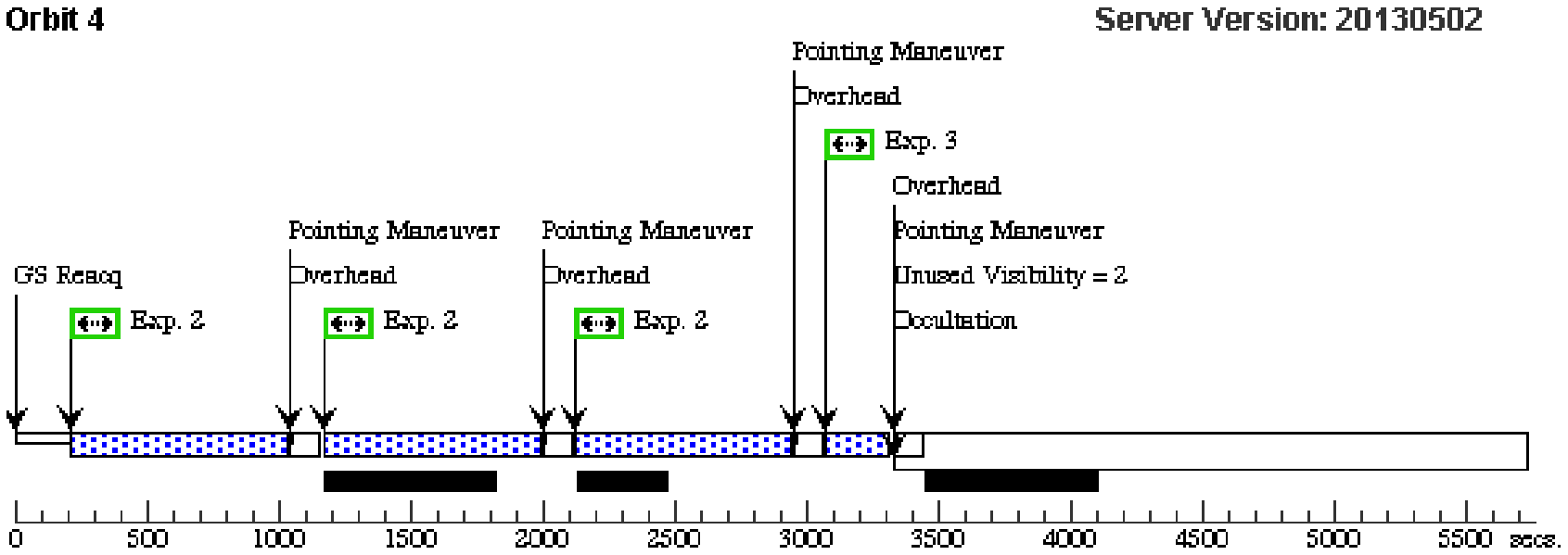
Overhead
Exp. 1
Overhead
Pointing Maneuver
Exp. 2
Unused Visibility = 1
Pointing Maneuver
Overhead
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.


Orbit 4
Server Version: 20130502
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Exp. 2
Pointing Maneuver
Overhead
Exp. 2
Pointing Maneuver
Overhead
Exp. 2
Pointing Maneuver
Overhead
Exp. 3
Overhead
Pointing Maneuver
Unused Visibility = 2
Occultation
0
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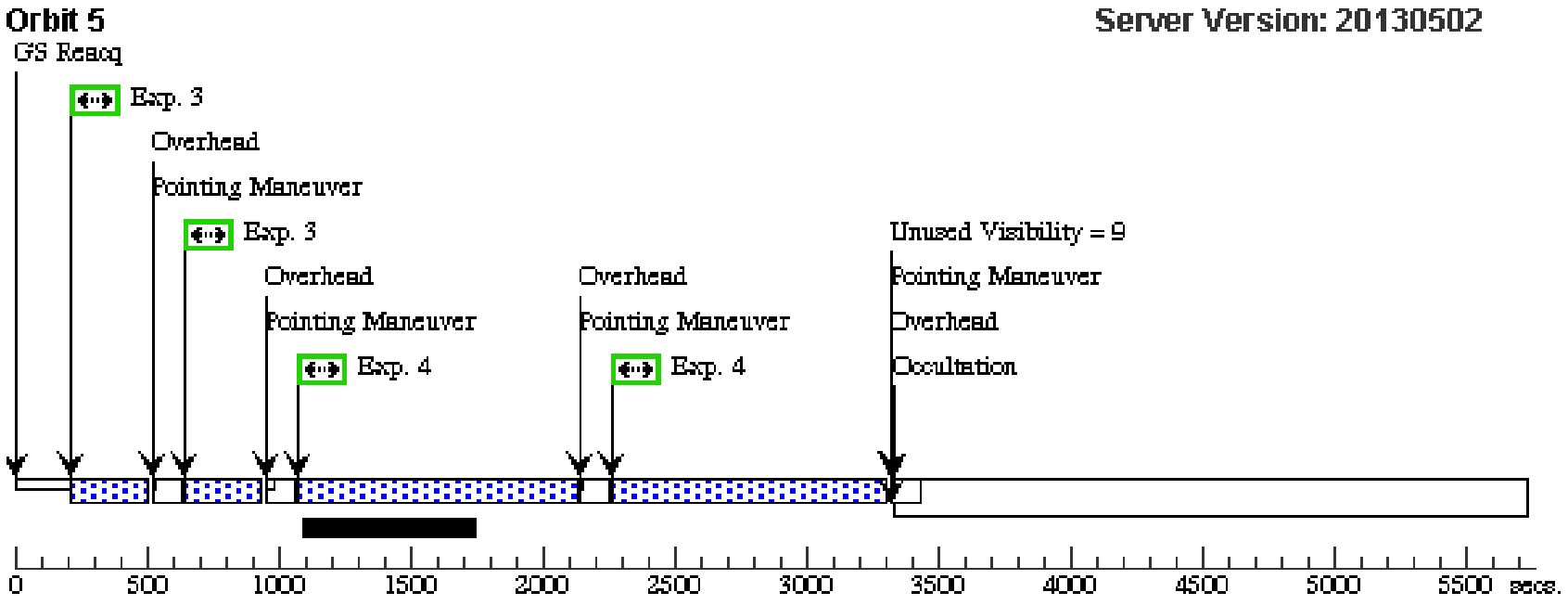
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.


Orbit 5
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Overhead
Pointing Maneuver
Exp. 3
Overhead
Pointing Maneuver
Exp. 4
Overhead
Pointing Maneuver
Exp. 4
Unused Visibility = 9
Pointing Maneuver
Overhead
Occultation
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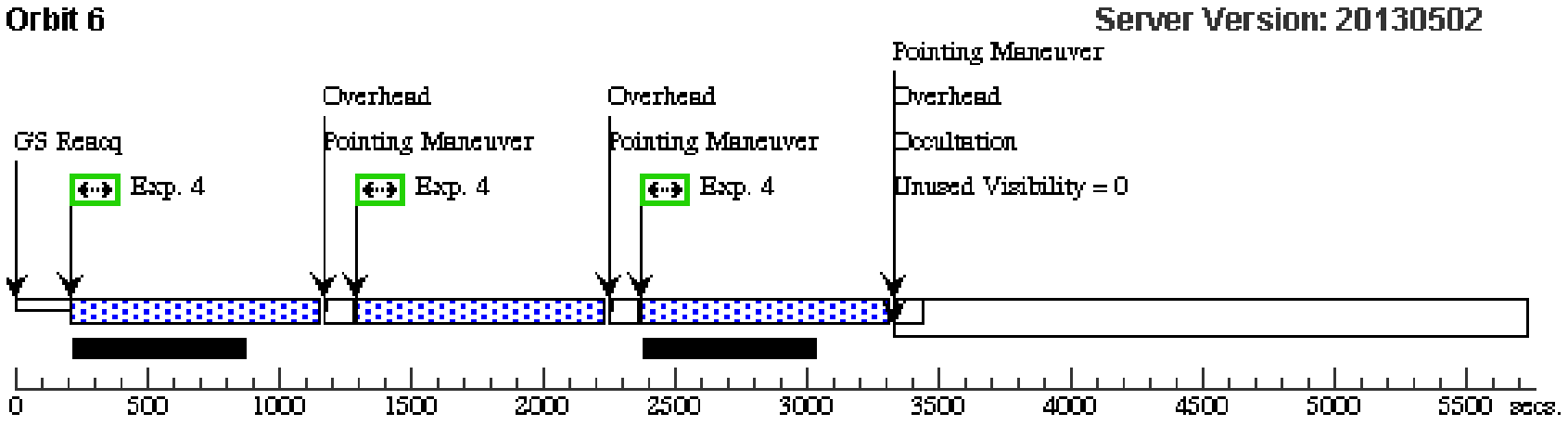
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.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Pointing Maneuver
Overhead
Overhead
Pointing Maneuver
Pointing Maneuver
Overhead
Occultation
GS Reacq
Exp. 4
Exp. 4
Exp. 4
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1000
1500
2000
2500
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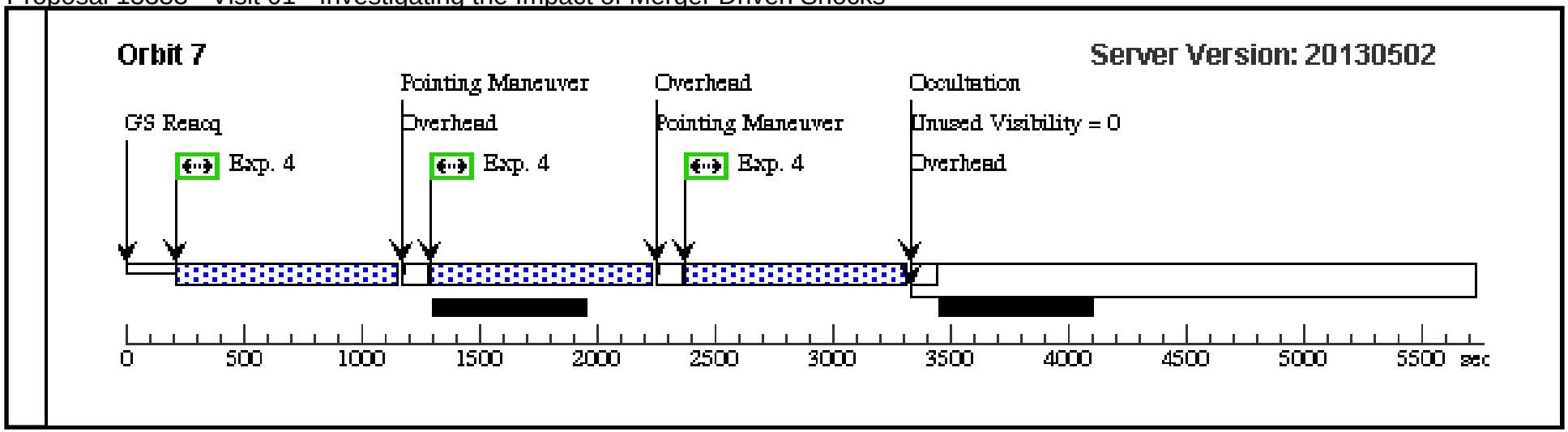
3500
4000
4500
5000
5500
secs.


Orbit 7
Server Version: 20130502
GS Reacq
Exp. 4
Pointing Maneuver
Overhead
Exp. 4
Overhead
Pointing Maneuver
Exp. 4
Occultation
Unused Visibility = 0
Overhead
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 13333, Visit 02 Thu Jul 11 19:58:37 GMT 2013

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: (none)

Diagnostics

(FQ634N (02.002)) Warning (Form): POS TARG & PATTERN should be used carefully with ACS ramp or WFC3 quad filters as central wavelengths & transmission efficiencies vary within the apertures.

Patterns

#	Primary Pattern		Secondary Pattern		Exposures
(2)	Pattern Type=WFC3-UVIS-GAP-LINE Purpose=MOSAIC Number Of Points=2 Point Spacing=2.414 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.759 Angle Between Sides= Center Pattern=true	Pattern Type=WFC3-UVIS-DITHER-BOX Purpose=DITHER Number Of Points=4 Point Spacing=0.173 Line Spacing=0.112	Coordinate Frame=POS-TARG Pattern Orientation=23.884 Angle Between Sides=81.785 Center Pattern=false	(2)
(5)	Pattern Type=WFC3-UVIS-GAP-LINE Purpose=MOSAIC Number Of Points=3 Point Spacing=2.414 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=85.759 Angle Between Sides= Center Pattern=true			(1), (3)

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
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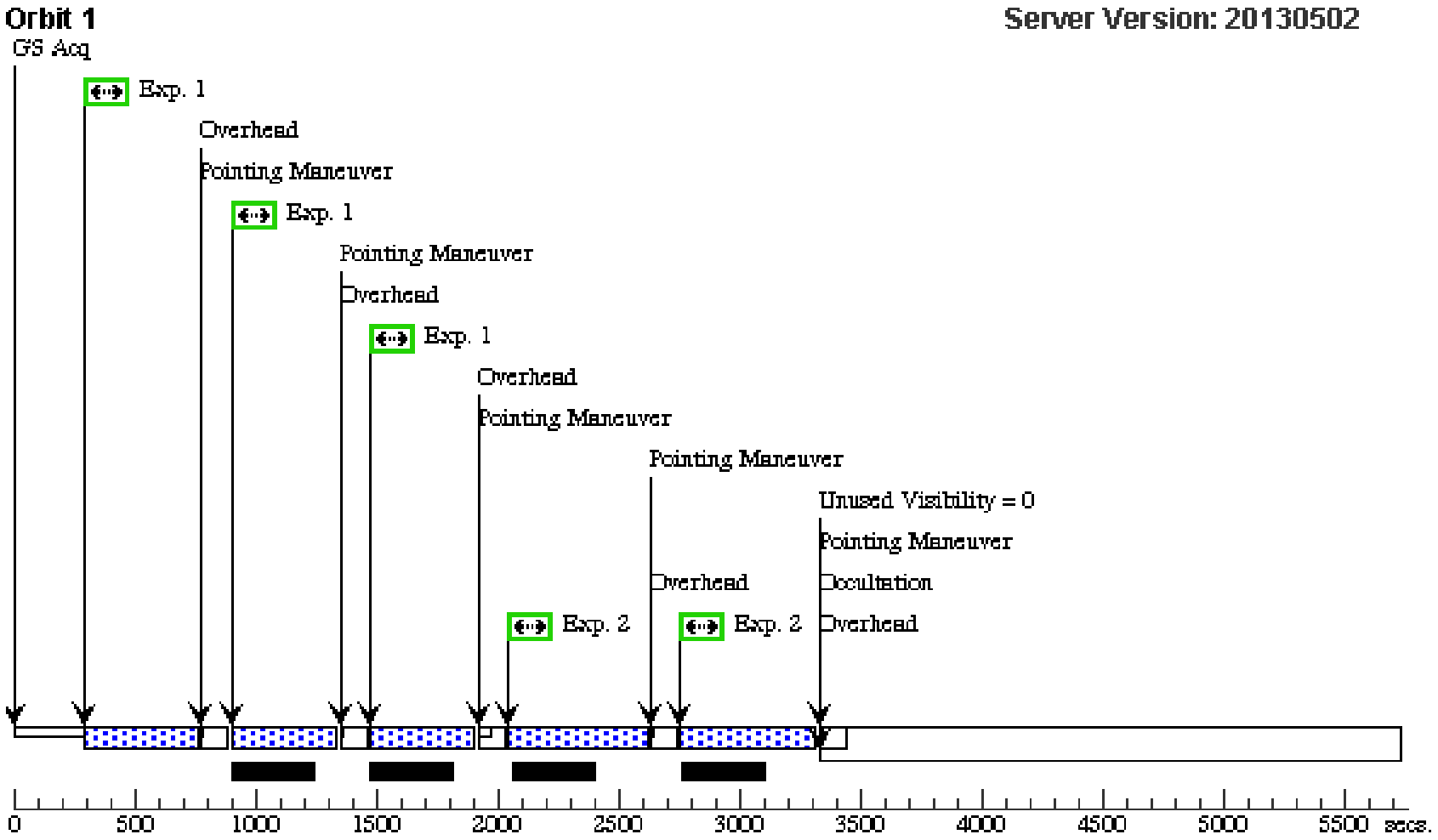
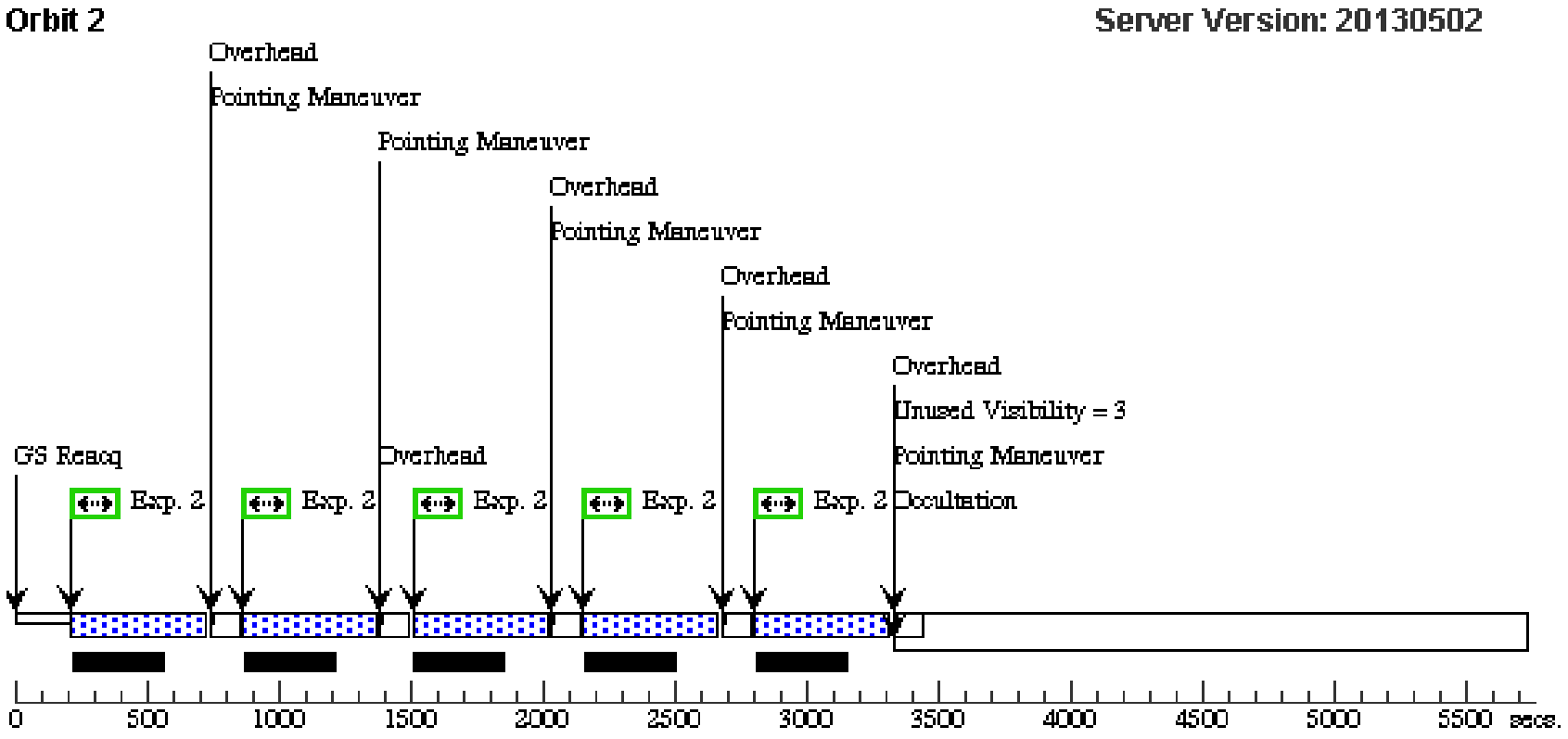
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F665N	(1) NGC3256	WFC3/UVIS, ACCUM, UVIS1	F665N	FLASH=11		Pattern 5, Exps 1-1 in Visit 02 (5)	375 Secs (1311 Secs)	
								[==>437.0 Secs (Pattern 1)] *[==>437.0 Secs (Pattern 2)]* *[==>437.0 Secs (Pattern 3)]*	***[1]***
2	FQ634N	(1) NGC3256	WFC3/UVIS, ACCUM, UVIS-QUAD	FQ634N	FLASH=11		Pattern 2, Exps 2-2 in Visit 02 (2)	500 Secs (4183 Secs)	
								[==>562.0 Secs (Pattern 1,1)] *[==>562.0 Secs (Pattern 1,2)]*	***[1]***
								[==>512.0 Secs (Pattern 1,3)] *[==>512.0 Secs (Pattern 1,4)]* *[==>512.0 Secs (Pattern 2,1)]* *[==>512.0 Secs (Pattern 2,2)]* *[==>512.0 Secs (Pattern 2,3)]*	***[2]***
								[==>499.0 Secs (Pattern 2,4)]	***[3]***
3	F467M	(1) NGC3256	WFC3/UVIS, ACCUM, UVIS1	F467M	FLASH=8		Pattern 5, Exps 3-3 in Visit 02 (5)	725 Secs (2172 Secs)	
								[==>724.0 Secs (Pattern 1)] *[==>724.0 Secs (Pattern 2)]* *[==>724.0 Secs (Pattern 3)]*	***[3]***

Orbit Structure

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Pointing Maneuver
Pointing Maneuver
Overhead
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Overhead
Pointing Maneuver
Overhead
Unused Visibility = 3
Pointing Maneuver
Occultation
GS Reacq
Overhead
Exp. 2
Exp. 2
Exp. 2
Exp. 2
Exp. 2
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1000
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3000
3500
4000
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5000
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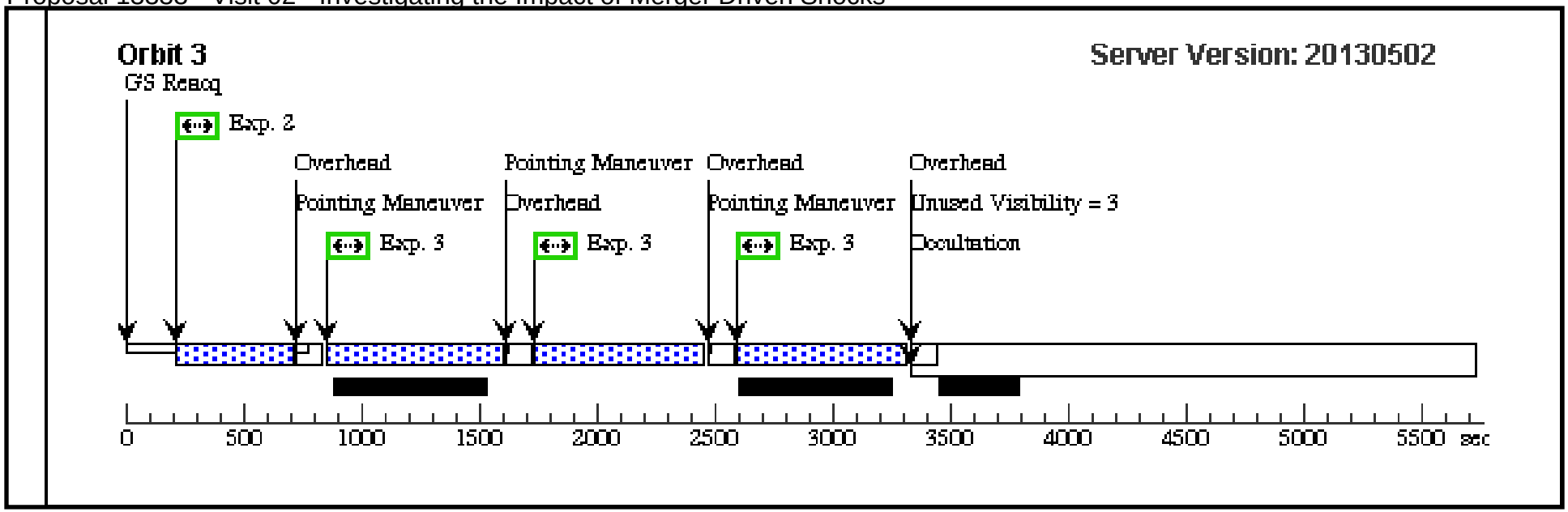
secs.


Orbit 3
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GS Reacq
Exp. 2
Overhead
Pointing Maneuver
Exp. 3
Pointing Maneuver
Overhead
Exp. 3
Overhead
Pointing Maneuver
Exp. 3
Overhead
Unused Visibility = 3
Occultation
0
500
1000
1500
2000
2500
3000
3500
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5000
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sec