12489 - The Origin of Wind Variability in CSPNe and its Connection to OB Star Wind Variability.

Cycle: 19, 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) NGC-6543	STIS/CCD STIS/FUV-MAMA	5	30-Jun-2011 21:19:39.0	yes

5 Total Orbits Used

ABSTRACT

Time series analyses of stellar wind lines are a primary tool for determining the nature and origin of structure in stellar winds. They have provided considerable insight into OB star winds and a recent analysis of a fragmentary FUSE time series demonstrated the presence of apparently similar variability in CSPNe winds. Building on these FUSE results, we request 5 STIS orbits to follow the wind variability in the CSPNe NGC6543. The new data will allow us to verify whether the 4.1 hour time scale inferred from the FUSEdata is related to the rotation period of the star, and we will use wind lines from excited states, available in the STIS band, to determine whether the origin of the wind structure is rooted in the stellar photosphere. If true, this result would be at odds with currently accepted theories for the formation of CSPNe and would suggest a sub-surface convection zone as the origin of the wind activity. All of this is possible in just 5 contiguous STIS orbits because, while the wind in NGC6543 has

the same terminal velocity as a typical OB star, it is 20-30 times smaller, resulting in a correspondingly smaller wind flushing time and rotation period.

OBSERVING DESCRIPTION

We intend to obtain a time series of short STIS E140M spectra of the central star of NGC6543 for 5 continuous orbits with a minimal amount of occultation.

Visit

Proposal 12489, Visit 01 Fri Jul 01 01:20:14 GMT 2011

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD, STIS/FUV-MAMA

Special Requirements: VISIBILITY INTERVAL 4550 S

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	NGC-6543	RA: 17 58 33.4230 (269.6392625d) Dec: +66 37 59.52 (66.63320d) Equinox: J2000		V=11.3	Reference Frame: ICRS

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

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	(183975)	(1) NGC-6543	STIS/CCD, ACQ, F28X50LP	MIRROR				2 Secs	
								[==>]	***[1]***
2	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M				180 Secs	
				1425 A				*[==>]*	***[1]***
3	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M				180 Secs	
				1425 A				*[==>]*	***[1]***
4	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M				180 Secs	
				1425 A				*[==>]*	***[1]***
5	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M				180 Secs	
				1425 A				*[==>]*	***[1]***
6	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M				180 Secs	
				1425 A				*[==>]*	***[1]***
7	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M				180 Secs	
				1425 A				*[==>]*	***[1]***
8	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M				180 Secs	
				1425 A				*[==>]*	***[1]***
9	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M				180 Secs	
				1425 A				*[==>]*	***[1]***
10	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M				180 Secs	
				1425 A				*[==>]*	***[1]***
11	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M				180 Secs	
				1425 A				*[==>]*	***[1]***
12	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M				180 Secs	
				1425 A				*[==>]*	***[1]***
13	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M				180 Secs	
				1425 A				*[==>]*	***[1]***
14	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M				180 Secs	
				1425 A				*[==>]*	***[1]***
15	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M				180 Secs	
				1425 A				*[==>]*	***[1]***
16	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M				180 Secs	
				1425 A				*[==>]*	***[1]***
17	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M				180 Secs	
				1425 A				*[==>]*	***[1]***
18	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M				180 Secs	
				1425 A				*[==>]*	***[1]***
19	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M				180 Secs	
				1425 A				*[==>]*	***[2]***
20	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M				180 Secs	
				1425 A				*[==>]*	***[2]***
21	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M				180 Secs	
				1425 A				*[==>]*	***[2]***

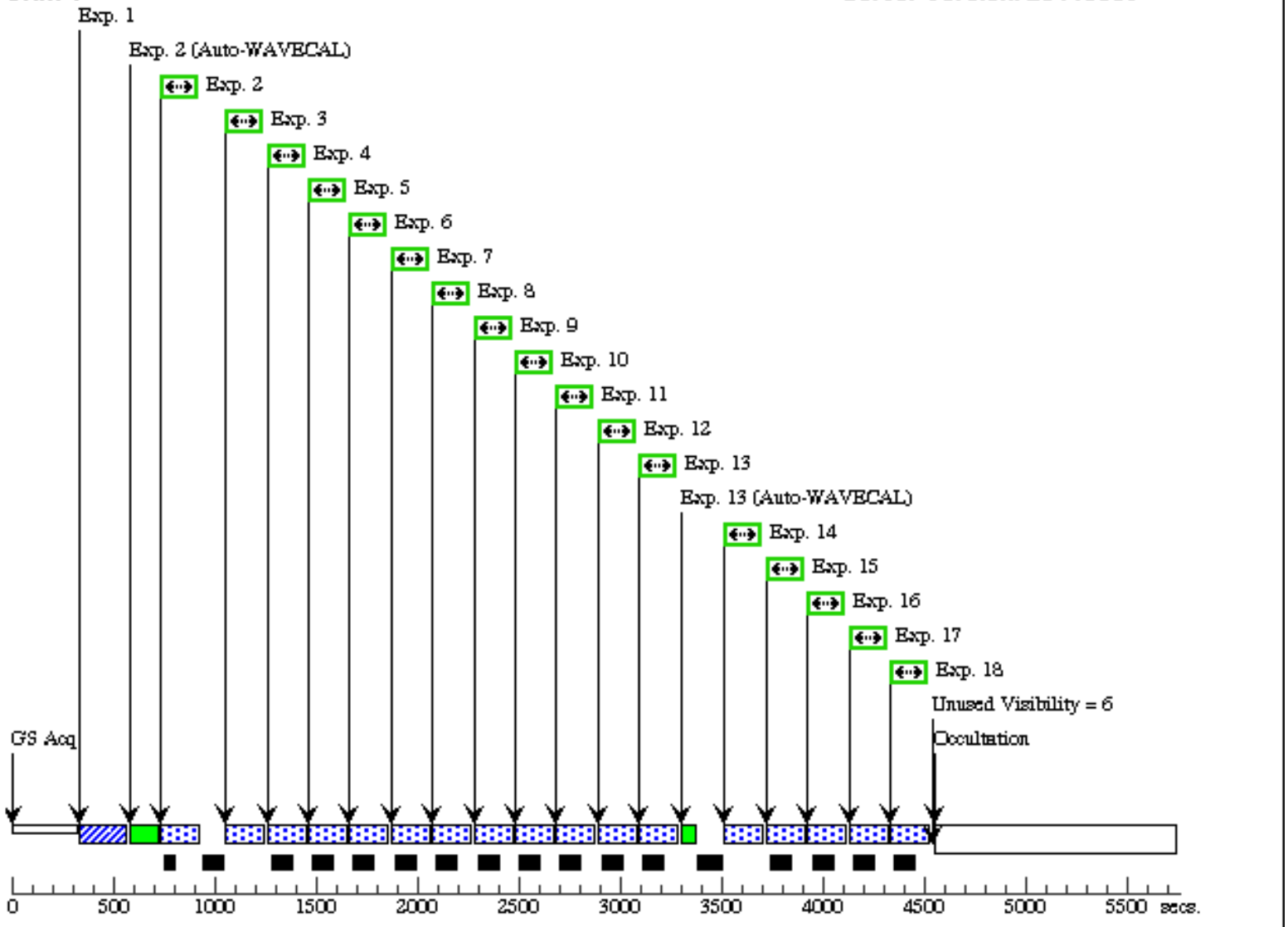
22	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[2]***
23	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[2]***
24	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[2]***
25	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[2]***
26	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[2]***
27	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[2]***
28	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[2]***
29	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[2]***
30	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[2]***
31	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[2]***
32	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[2]***
33	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[2]***
34	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[2]***
35	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[2]***
36	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[2]***
37	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[2]***
38	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[3]***
39	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[3]***
40	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[3]***
41	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[3]***
42	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[3]***
43	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[3]***

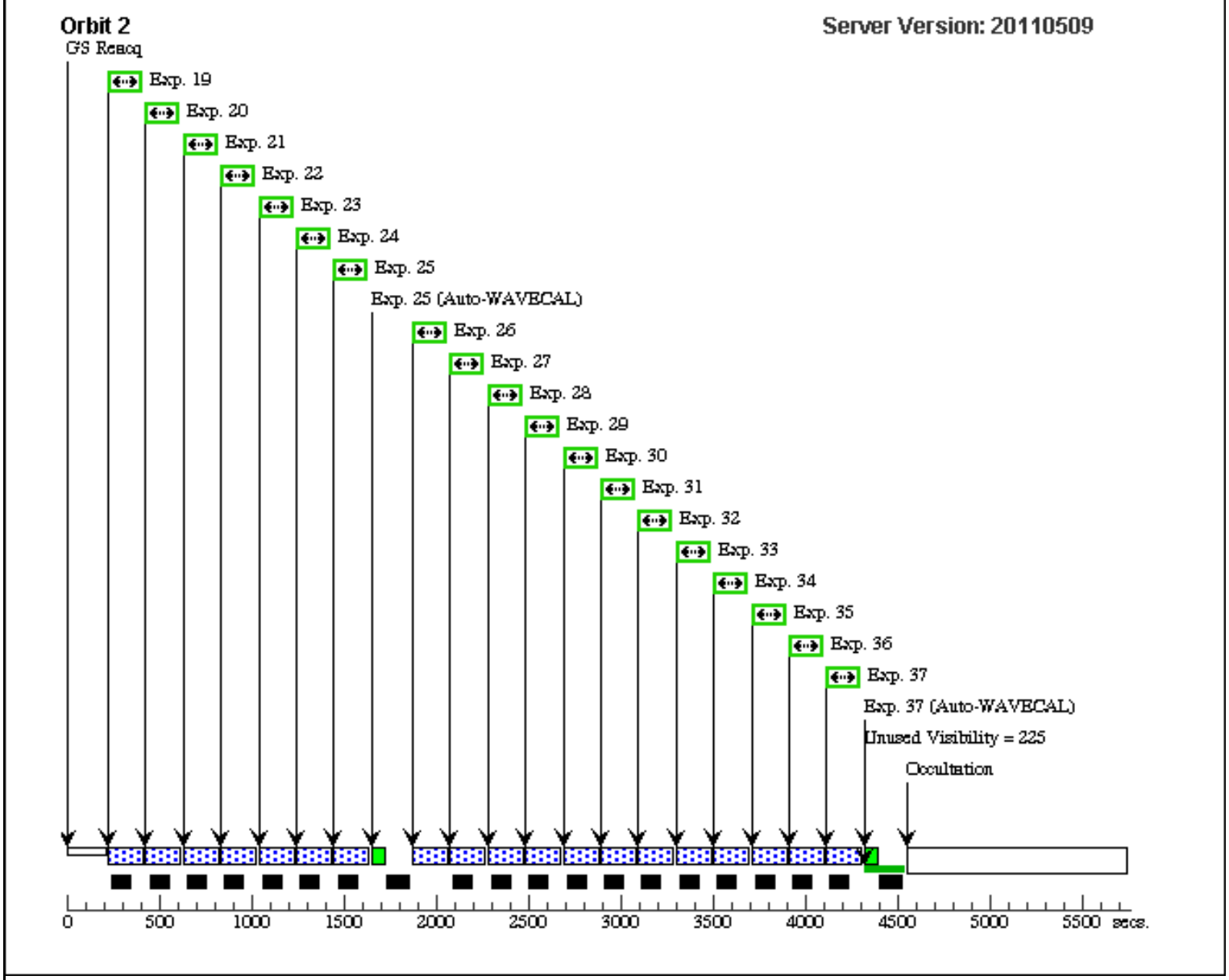
44	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[3]***
45	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[3]***
46	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[3]***
47	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[3]***
48	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[3]***
49	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[3]***
50	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[3]***
51	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[3]***
52	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[3]***
53	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[3]***
54	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[3]***
55	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[3]***
56	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[3]***
57	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[3]***
58	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[4]***
59	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[4]***
60	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[4]***
61	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[4]***
62	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[4]***
63	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[4]***
64	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[4]***
65	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[4]***

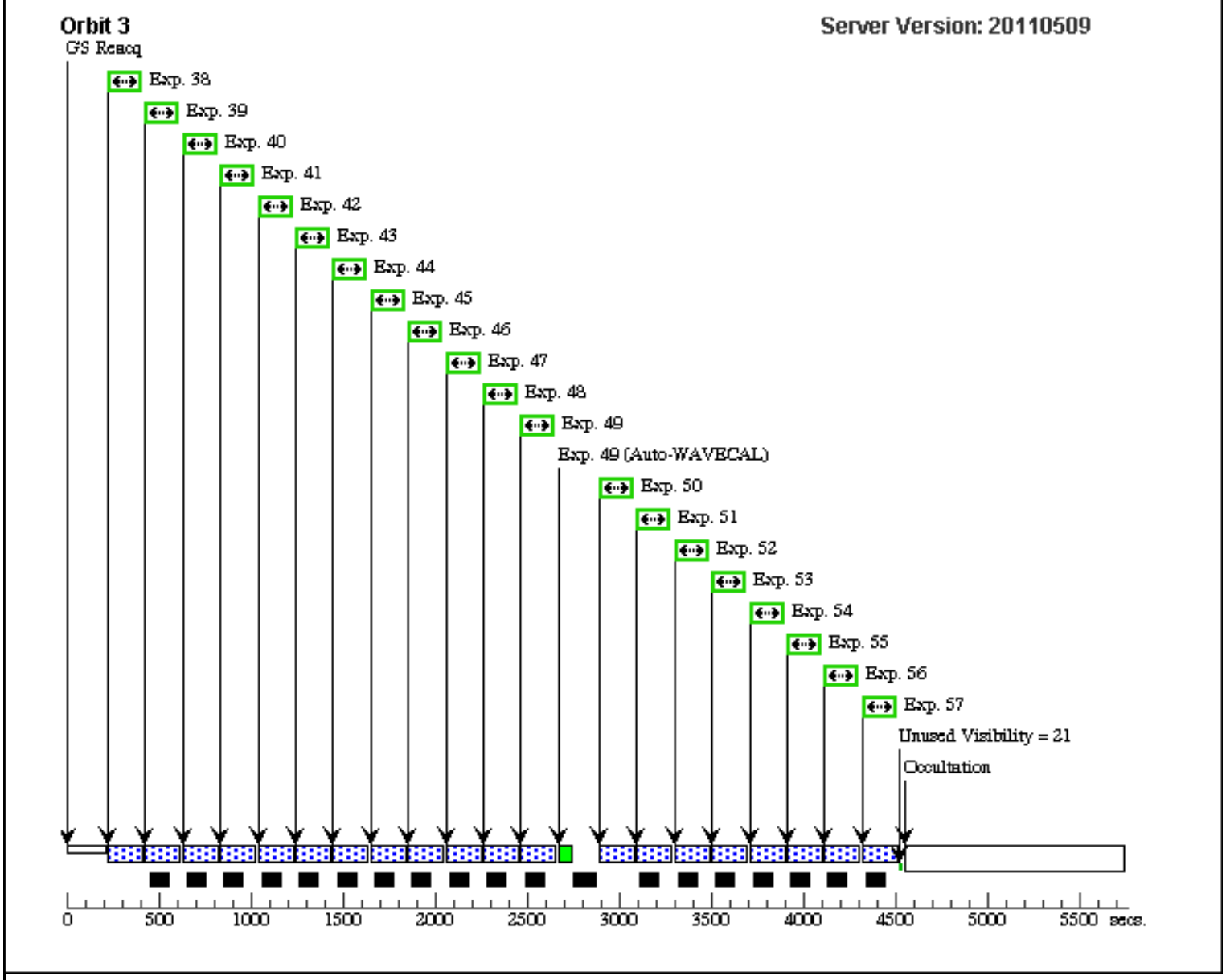
66	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[4]***
67	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[4]***
68	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[4]***
69	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[4]***
70	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[4]***
71	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[4]***
72	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[4]***
73	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[4]***
74	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[4]***
75	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[4]***
76	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[4]***
77	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[5]***
78	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[5]***
79	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[5]***
80	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[5]***
81	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[5]***
82	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[5]***
83	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[5]***
84	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[5]***
85	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[5]***
86	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[5]***
87	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M	1425 A	180 Secs	
						[==>]	***[5]***

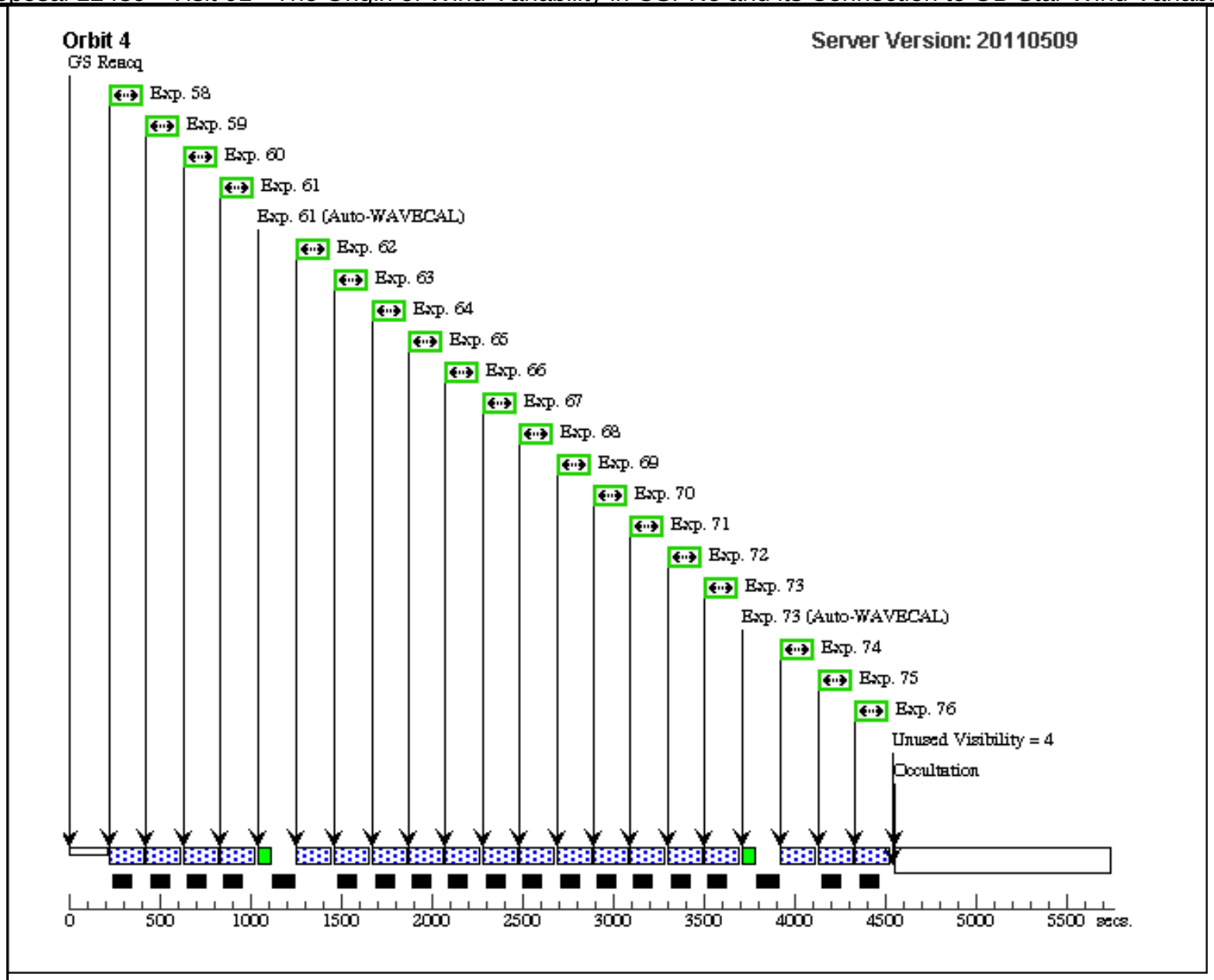
	88	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A	180 Secs *[==>]*	 ***[5]***
	89	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A	180 Secs *[==>]*	 ***[5]***
	90	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A	180 Secs *[==>]*	 ***[5]***
	91	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A	180 Secs *[==>]*	 ***[5]***
	92	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A	180 Secs *[==>]*	 ***[5]***
	93	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A	180 Secs *[==>]*	 ***[5]***
	94	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A	180 Secs *[==>]*	 ***[5]***
	95	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A	180 Secs *[==>]*	 ***[5]***
	96	(153020)	(1) NGC-6543	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A	180 Secs *[==>]*	 ***[5]***

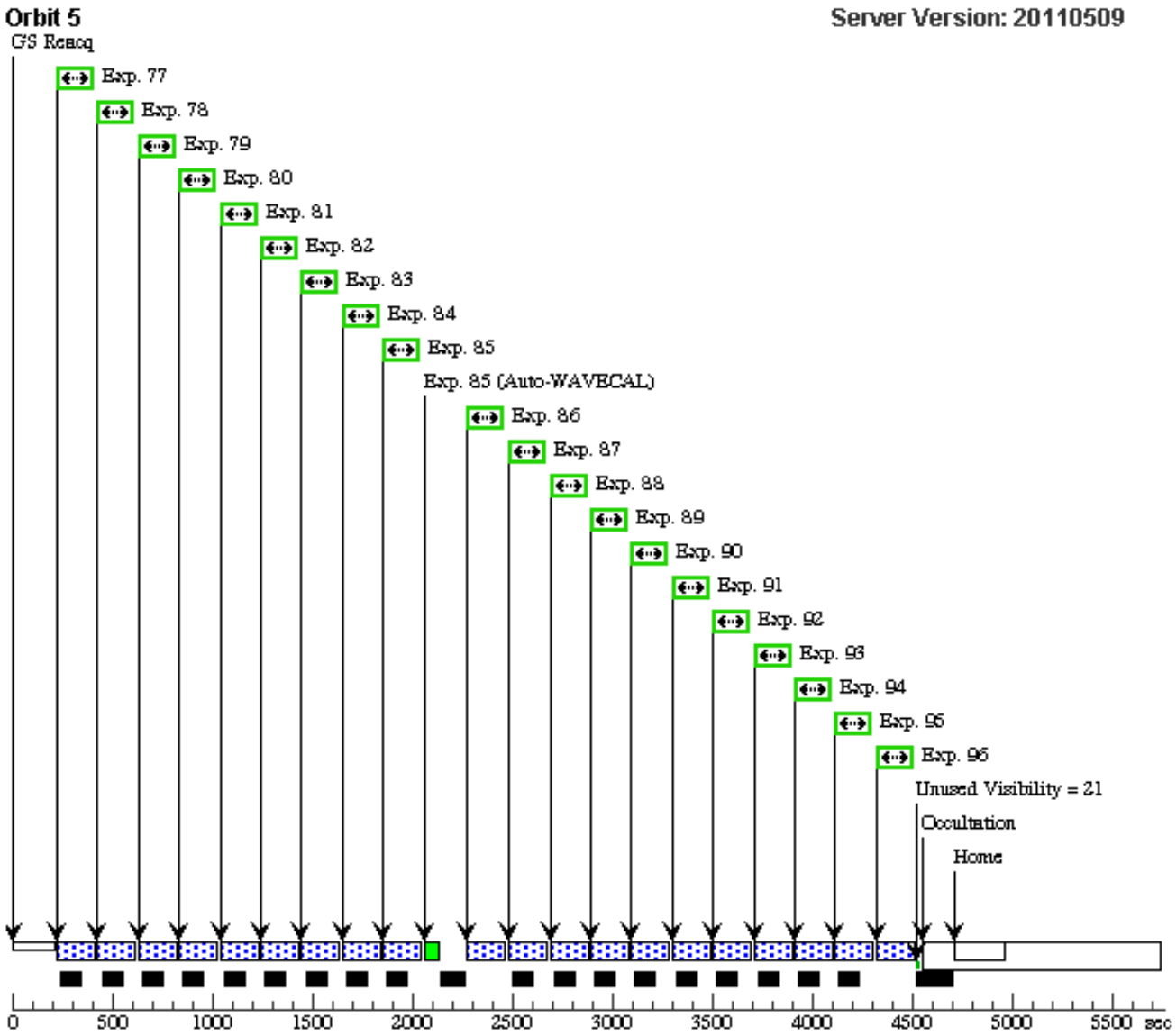
Orbit Structure




Orbit 2
Server Version: 20110509
GS Reacq
Exp. 19
Exp. 20
Exp. 21
Exp. 22
Exp. 23
Exp. 24
Exp. 25
Exp. 25 (Auto-WAVECAL)
Exp. 26
Exp. 27
Exp. 28
Exp. 29
Exp. 30
Exp. 31
Exp. 32
Exp. 33
Exp. 34
Exp. 35
Exp. 36
Exp. 37
Exp. 37 (Auto-WAVECAL)
Unused Visibility = 225
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.


Orbit 3
Server Version: 20110509
GS Reacq
Exp. 38
Exp. 39
Exp. 40
Exp. 41
Exp. 42
Exp. 43
Exp. 44
Exp. 45
Exp. 46
Exp. 47
Exp. 48
Exp. 49
Exp. 49 (Auto-WAVECAL)
Exp. 50
Exp. 51
Exp. 52
Exp. 53
Exp. 54
Exp. 55
Exp. 56
Exp. 57
Unused Visibility = 21
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.


Orbit 4
Server Version: 20110509
GS Reacq
Exp. 58
Exp. 59
Exp. 60
Exp. 61
Exp. 61 (Auto-WAVECAL)
Exp. 62
Exp. 63
Exp. 64
Exp. 65
Exp. 66
Exp. 67
Exp. 68
Exp. 69
Exp. 70
Exp. 71
Exp. 72
Exp. 73
Exp. 73 (Auto-WAVECAL)
Exp. 74
Exp. 75
Exp. 76
Unused Visibility = 4
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
secs.


Orbit 5
Server Version: 20110509
GS Reacq
Exp. 77
Exp. 78
Exp. 79
Exp. 80
Exp. 81
Exp. 82
Exp. 83
Exp. 84
Exp. 85
Exp. 85 (Auto-WAVECAL)
Exp. 86
Exp. 87
Exp. 88
Exp. 89
Exp. 90
Exp. 91
Exp. 92
Exp. 93
Exp. 94
Exp. 95
Exp. 96
Unused Visibility = 21
Occultation
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec