11162 - Understanding the Long Term Impacts of Low Magnetic Accretion

Cycle: 16, 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) V-EF-ERI DARK	ACS/SBC S/C	4	17-Jan-2008 23:02:54.0	yes
A1	DARK	S/C	1	17-Jan-2008 23:03:02.0	yes

5 Total Orbits Used

ABSTRACT

The low accretion rate Polar EF Eri has been in a low state for more than 9 years. Our recent GALEX photometry revealed a source of UV light that is producing more flux than the white dwarf and which is highly modulated on the 81 min orbital period of the system. We request UV spectra with the SBC on the ACS to resolve whether limb darkening or cyclotron emission can explain the observed phenomena and provide insight on the long term heating effects under low accretion scenarios.

OBSERVING DESCRIPTION

Our scientific goals require UV observations that cover all orbital
phases of EF Eri. To do this,
we request 4 contiguous HST orbits using the ACS with the SBC and Prism
PR110L. This will give us UV coverage from about 1170-1800\AA.
We have prior experience with the SBC observations with PR110L from our
Cycle 13 observations of three pulsating white dwarfs.
Given the 81 min orbital period of EF Eri and the 96 min HST orbit cycle, the
first orbit on EF Eri (with about 4 min for setup) will cover phases
0-0.53 (arbitrary zero), the second HST orbit phases 0.12-0.70, the
3rd phases 0.31-0.89 and the 4th 0.50-0.08. Thus,
4 orbits will ensure total phase coverage, with some phases having multiple
overlaps so they can be added to increase the S/N. We will be able to
create light curves throughout the wavelength range as well as analyze
spectra at both the high and low fluxes of the UV modulation in order
to resolve the source of FUV light.

Our analysis of the pulsating white dwarf in the system SDSS0131-09
(Szkody et al. 2007, ApJ, 658, 1188) showed
that we can determine temperatures to an accuracy of 1000K using the SBC low
resolution prism. SDSSJ0131 had a comparable V mag of 18 and a slightly
lower 1500A flux (1.1X10^{-15} ergs/cm^2/s/A) compared to EF Eri where
GALEX measured a 1500A flux of 1.3X10^{-15}ergs/cm^2$/s/A.

Our access to the SMARTS consortium guarantees several observations per week to monitor the state of EF Eri. We can supplement this with AAVSO observers, APO observers and other worldwide monitors to ensure that EF Eri would be in a low state throughout the HST observations. Due to the inactivity during the last 9 yrs, it is very unlikely that EF Eri would suddenly enter a high state with no warning.

Visit

Proposal 11162, Visit 01, implementation Fri Jan 18 04:03:05 GMT 2008

Diagnostic Status: Error

Scientific Instruments: ACS/SBC, S/C

Special Requirements: AFTER A1 BY 2.0 Orbits TO 5.5 Orbits

Comments: Ground observations will be used to ensure EF Eri at low state of 18th mag. AFTER BY requirement needed to verify the brightness of the target using ground observations. Also, uplink opportunities are needed in the ~2 orbit interval to clear the NSSC-I Event Flag 2 and allow high-voltage turn-on, if the target is determined to be safe.

Diagnostics

(Exposure 7 (Visit 01)) Error (Form): DATA is not a valid selection

(Exposure 7 (Visit 01)) Error (Form): This attribute is not allowed to have this value: Calibration_Target = DARK
It is an Available option and cannot normally be used in a GO proposal.

(Exposure 7 (Visit 01)) Error (Form): This attribute is not allowed to have this value: Mode = DATA
It is an Available option and cannot normally be used in a GO proposal.

(Exposure 7 (Visit 01)) Error (Form): This attribute is not allowed to have this value: Aperture = NONE
It is an Available option and cannot normally be used in a GO proposal.

(Exposure 7 (Visit 01)) Error (Form): This attribute is not allowed to have this value: Config = S/C
It is an Available option and cannot normally be used in a GO proposal.

(Exposure 7 (Visit 01)) Error (Form): NONE is not a valid selection

(Exposure 7 (Visit 01)) Error (Form): Target DARK is no longer a valid selection

(Exposure 7 (Visit 01)) Error (Form): S/C is not a valid selection

(Exposure 7 (Visit 01) special requirements) Error (Form): Special Commanding (Instrument) may not be specified in Supported mode or PC Only mode.

(Exposure 7 (Visit 01) special requirements) Error (Form): Special Commanding may not be specified in Supported mode or PC Only mode.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-EF-ERI	RA: 03 14 13.0300 (48.5542917d) Dec: -22 35 41.40 (-22.59483d) Equinox: J2000		V=18+/-2 only observe in low state near 18	Reference Frame: ICRS

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/[Actual Dur.]	Orbit
1		(1) V-EF-ERI	ACS/SBC, ACCUM, SBC	F140LP				15.0 Secs	
								[==>]	***[1]***
2		(1) V-EF-ERI	ACS/SBC, ACCUM, SBC	PR110L				239.0 Secs X 9	
								[==>(Copy 1)]	
								[==>(Copy 2)]	
								[==>(Copy 3)]	
								[==>(Copy 4)]	
								[==>(Copy 5)]	***[1]***
								[==>(Copy 6)]	
								[==>(Copy 7)]	
								[==>(Copy 8)]	
								[==>(Copy 9)]	

Exposures (continued)

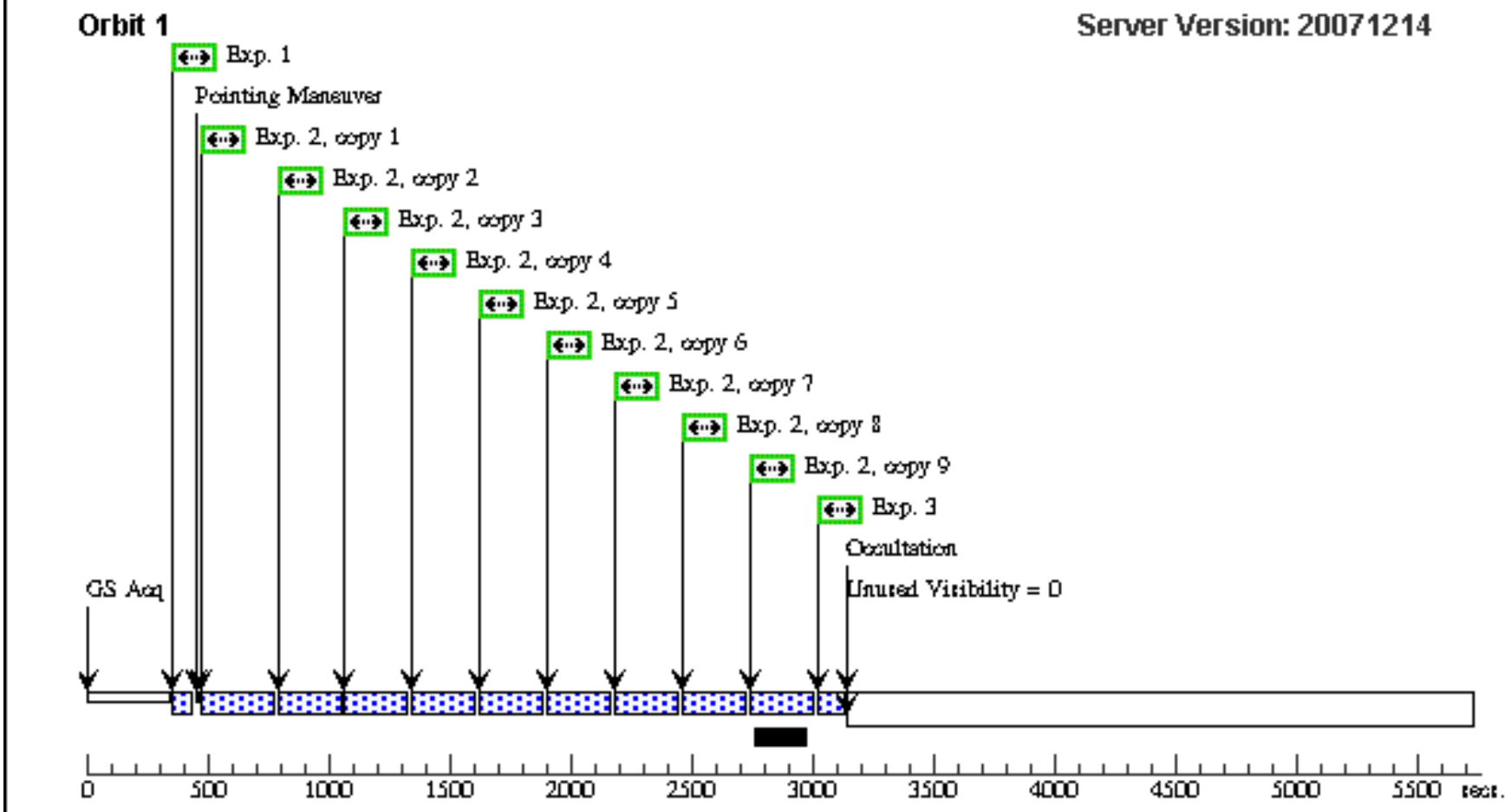
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
3		(1) V-EF-ERI	ACS/SBC, ACCUM, SBC	PR110L				85.0 Secs	
								[==>]	***[1]***
4		(1) V-EF-ERI	ACS/SBC, ACCUM, SBC	PR110L				239.0 Secs X 10	
								[==>(Copy 1)] *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[2]***
5		(1) V-EF-ERI	ACS/SBC, ACCUM, SBC	PR110L				239.0 Secs X 10	
								[==>(Copy 1)] *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[3]***
6		(1) V-EF-ERI	ACS/SBC, ACCUM, SBC	PR110L				239.0 Secs X 10	
								[==>(Copy 1)] *[==>(Copy 2)]* *[==>(Copy 3)]* *[==>(Copy 4)]* *[==>(Copy 5)]* *[==>(Copy 6)]* *[==>(Copy 7)]* *[==>(Copy 8)]* *[==>(Copy 9)]* *[==>(Copy 10)]*	***[4]***

Exposures (continued)

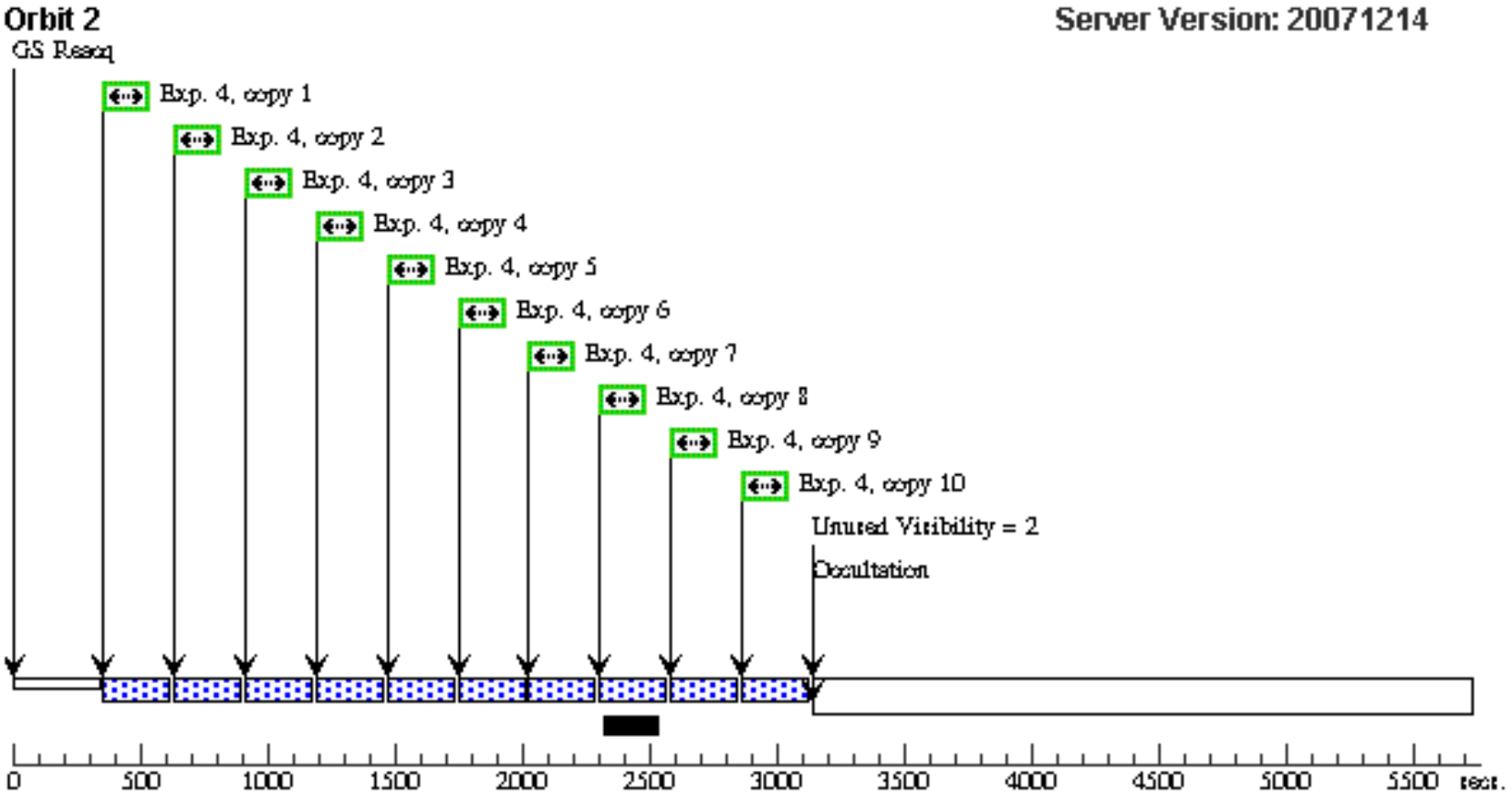
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
7		DARK	S/C, DATA, NONE			SPEC COM INSTR EJFLAG2CLR		10.0 Secs	
								[==>]	***[4]***

Comments: Set NSSC-I Event Flag 2 to allow high-voltage turn-on. Insert SQL for qasi_states ACS start/end = WFHROPER, DOOR start/end = OPEN, HCOR start/end = HOLD, LAMP start/end = HOLD, and WCOR start/end = HOLD.

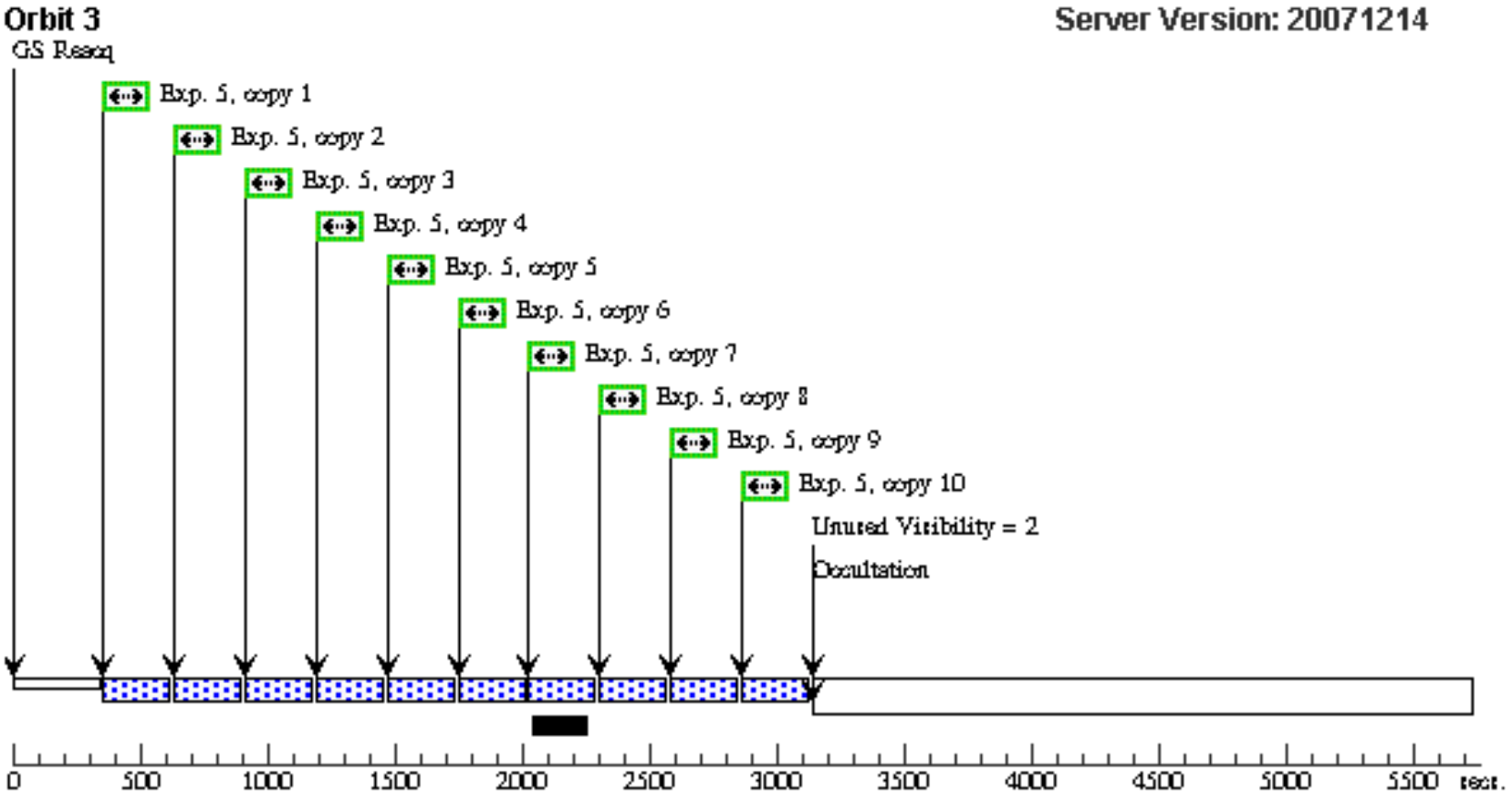
Orbit Structure

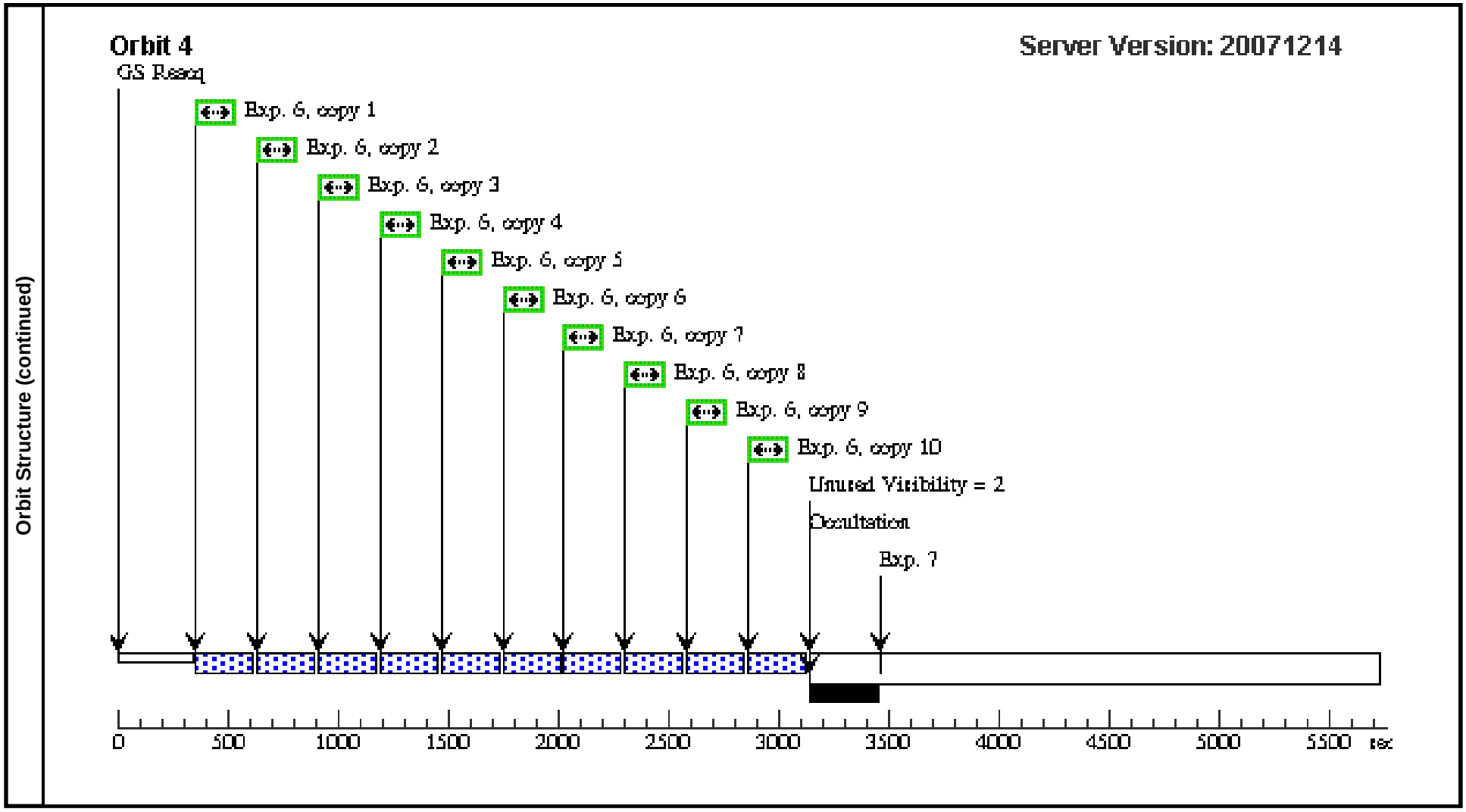


Orbit Structure (continued)



Orbit Structure (continued)




Orbit Structure (continued)
Orbit 4
Server Version: 20071214
GS Reacq
Exp. 6, copy 1
Exp. 6, copy 2
Exp. 6, copy 3
Exp. 6, copy 4
Exp. 6, copy 5
Exp. 6, copy 6
Exp. 6, copy 7
Exp. 6, copy 8
Exp. 6, copy 9
Exp. 6, copy 10
Unused Visibility = 2
Occultation
Exp. 7
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11162, Visit A1 Fri Jan 18 04:03:07 GMT 2008

Diagnostic Status: Error

Scientific Instruments: S/C

Special Requirements: (none)

Comments: This Visit sets the NSSC-I Event Flag 2 that disables the high-voltage turn-on. The high-voltage will be enabled, to allow SBC observations in the corresponding Visit, using real-time commanding if the target is determined to be safe.

Diagnostics

(Exposure 1 (Visit A1)) Error (Form): Target DARK is no longer a valid selection

(Exposure 1 (Visit A1)) Error (Form): This attribute is not allowed to have this value: Mode = DATA
It is an Available option and cannot normally be used in a GO proposal.

(Exposure 1 (Visit A1)) Error (Form): NONE is not a valid selection

(Exposure 1 (Visit A1)) Error (Form): This attribute is not allowed to have this value: Aperture = NONE
It is an Available option and cannot normally be used in a GO proposal.

(Exposure 1 (Visit A1)) Error (Form): S/C is not a valid selection

(Exposure 1 (Visit A1)) Error (Form): This attribute is not allowed to have this value: Calibration_Target = DARK
It is an Available option and cannot normally be used in a GO proposal.

(Exposure 1 (Visit A1)) Error (Form): DATA is not a valid selection

(Exposure 1 (Visit A1)) Error (Form): This attribute is not allowed to have this value: Config = S/C
It is an Available option and cannot normally be used in a GO proposal.

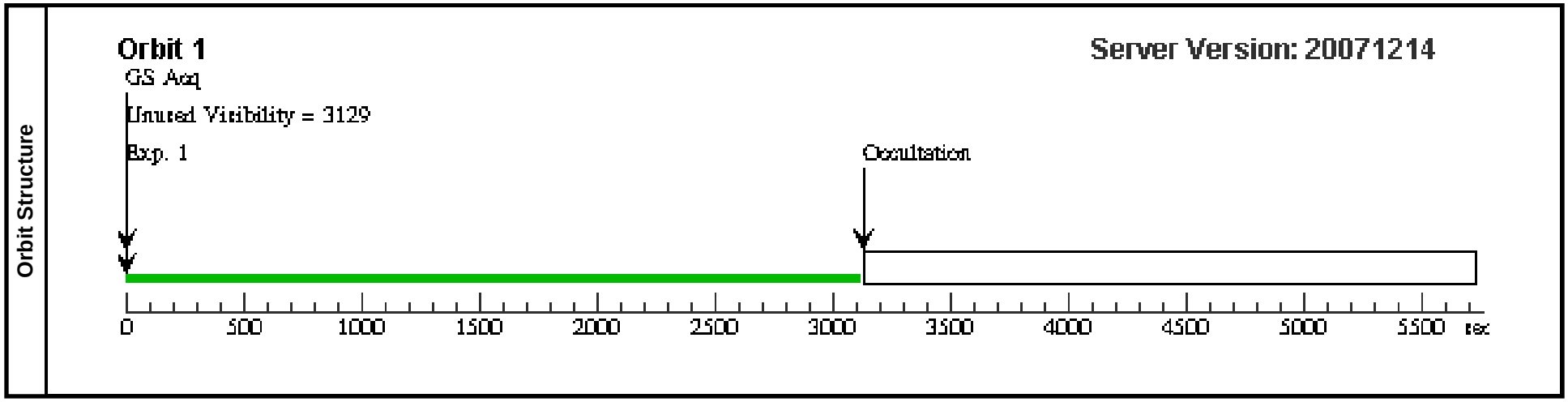
(Exposure 1 (Visit A1) special requirements) Error (Form): Special Commanding may not be specified in Supported mode or PC Only mode.

(Exposure 1 (Visit A1) special requirements) Error (Form): Special Commanding (Instrument) may not be specified in Supported mode or PC Only mode.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1		DARK	S/C, DATA, NONE			SPEC COM INSTR EJFLAG2		25.0 Secs	
								[==>]	***[1]***

Comments: Set NSSC-I Event Flag 2 to prevent high-voltage turn-on. Insert SQL to ensure that the SBC is off when the flag is set, and for qasi_states ACS start/end = WFHROPER, DOOR start/end=OPEN, HCOR start/end=HOLD,LAMP start/end=HOLD, and WCOR start/end=HOLD.


Orbit Structure
Orbit 1
Server Version: 20071214
GS Acq
Unused Visibility = 3129
Exp. 1
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec