11660 - Investigation Jet Rotation in Young Stars via High Resolution UV Spectra

Cycle: 17, 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-RW-AUR WAVE	STIS/CCD STIS/NUV-MAMA	5	09-Dec-2010 21:16:37.0	yes
02	(1) V-RW-AUR WAVE	STIS/CCD STIS/NUV-MAMA	4	09-Dec-2010 21:16:48.0	yes
03	(2) V-CW-TAU WAVE	STIS/CCD STIS/NUV-MAMA	3	09-Dec-2010 21:16:59.0	yes
04	(4) V-DP-TAU WAVE	STIS/CCD STIS/NUV-MAMA	3	09-Dec-2010 21:17:08.0	yes
05	(5) V-HN-TAU WAVE	STIS/CCD STIS/NUV-MAMA	3	09-Dec-2010 21:17:15.0	yes

18 Total Orbits Used

ABSTRACT

In recent years we have successfully harnessed the high resolution of STIS in the optical to reveal asymmetries in Doppler shifts transverse to the flow direction in 8 T Tauri jets (Bacciotti ea 2002; Woitas ea 2005; Coffey ea 2004; 2007). We interpret the findings, just 100 AU above the disk, as signatures of jet rotation. The significance of these results is considerable. They form the only existing observational indications supporting the theory that jets extract angular momentum from star-disk systems. Furthermore, they hold the potential to discriminate between the main model contenders: X-wind and Disk-wind (Ferreira ea 2006). Although our results are encouraging, it is evident that we are only marginally resolving the effects of rotation because of the limiting resolution (spatially and spectrally) of STIS in the optical. Therefore, in Cycle 12 we proposed to extend this study into the near-ultraviolet (NUV), giving double the spatial and spectral resolution (proposal ID 9807). Unfortunately, only 3 targets in our survey were observed before the failure of STIS (Coffey ea 2007). Nevertheless, the results were very exciting. Agreement was found between the optical and NUV results in terms of the magnitude and sense of the Doppler shift gradient across the jet. Furthermore, the NUV lines indicated that the observed high velocity gas was launched from about 0.2-0.5 AU, compared to the lower velocity gas traced in optical lines which originates from as far as 2 AU. This puts a strong contraint on MHD launch models, and indeed holds the potential to differentiate between them. Given that the strength of a rotation argument lies in the survey nature of the findings, we need to resume this program in order to see if the same rotation signatures are commonly seen in the NUV, as they are in the optical. Furthermore, the higher spatial and spectral resolution of STIS in the NUV will allow us to more accurately quantify the variation in toroidal velocity as a function of distance from the jet axis. This study will provide an invaluable statistical argument to support the fact that we are indeed observing jet rotation. Such a conclusion is critical to providing observational backing to the widely accepted but untested theory of magnetocentrifugal ejection.

OBSERVING DESCRIPTION

We will exploit the high spatial and spectral resolution of STIS in the NUV to accurately quantify the variation in toroidal velocity between the edges of several jets from T Tauri stars. We have already demonstrated that these jets are observable with STIS in the NUV, see data of Cycle 12 (proposal ID 9807; Coffey et al. 2007). With a modest survey of 5 targets, we want to establish whether jet rotation signatures are common in the NUV, as we have found in the optical (Coffey et al. 2004; 2007).

We propose to use the same configuration as in Cycle 12, i.e. STIS with the long slit (6"X0."2) and E230M echelle grating, centred on 2707 angstroms. With the slit perpendicular to the flow axis, we will be able to spatially sample the transverse velocity profile of the jet. Given the average dispersion per pixel of lambda/60 000, and even allowing for the degradation in velocity resolution which inevitably arises from using the E230M grating with the long-slit on an extended source, we achieve a velocity resolution of 30 km/s. With sufficient signal to noise, we are able to routinely measure velocities with an accuracy as low as 1/10th of the velocity resolution, using Gaussian fitting and cross-correlation techniques. Thus we will

be able to detect radial velocity differences between the borders of the flow of 3 km/s. We require the long slit (6"X0."2) as we want to observe emission from the entire cross-section of the jet in one exposure. From our Cycle 12 NUV data, we have measured jet diameters (fwhm) to be 0."1 - 0."2 in the NUV. Therefore, the usual aperture adopted for the E230M echelle grating, namely 0."2X0."2, is not appropriate. Since we used the long slit with echelle grating in Cycle 12, we know that the position of the lines in the spectra do not cause overlap on the same columns of the detector. We are aware that a disadvantage of using the long-slit with the echelle grating is that the STScI pipeline does not provide calibration of the files. As in previous projects, pointing to the star will be achieved using target acquisition exposures, with the slit rotated at right angles to the outflow. Then the aperture will be offset by a fraction of an arcsecond with respect to the source (typically 0."3 or 0."4 along the flow direction, depending on the target), in order to observe only the jet contributions, at less than 100 AU above the disk-plane. The position angle of the flow, which is a critical parameter, has been found either from images taken from the ground or from the HST Archive. The instrument spatial line spread function has a half-width at zero-maximum of 0."145 in the NUV. Therefore, we can be confident that our observed emission lines originate in jet material excited through low-velocity shocks, rather than any contamination from the star. Note also that any reflected continuum emission can be easily subtracted from our spectra with standard techniques.

Our exposure time estimates are determined primarily by the expected fluxes of the Mg II 2800 doublet. Our observations from Cycle 12 represent the only observations in the NUV of the initial jet beam, and are ideal for deciding optimum exposure times. In order to measure the velocity profile, we require a signal-to-noise of at least 10 in the jet borders. Since DG Tau represents one of the brightest HH jets, and even here the borders grew rapidly faint in Cycle 12 data, it seems wise in further observations to increase the exposure time to ensure accurate measurements at the farthest points from the intensity peak. We expect all but one of our 5 targets to show similar emission intensity as DG Tau. For the RW Aur approaching jet (which shows signatures of rotation in Cycle 11 spectra), the lines will be fainter by about a factor of 2. Only in this one case do we require twice the integration time. To calculate our total HST orbit requirements, we have allowed 6 minutes for guide star acquisition, 6 minutes for STIS target acquisition exposures, 8 minutes for exposure overheads and 4 minutes for an additional GO-wavecal. Sufficient signal-to-noise (>10) in the jet borders can be achieved in 3 orbits. Therefore, we require 3 orbits per target, for four targets. For the faint, yet crucial, case of the RW Aur approaching jet, we require double this exposure time and hence 6 orbits. We therefore require a total of 18 orbits.

Visit

Proposal 11660, Visit 01, completed Fri Dec 10 02:17:20 GMT 2010

Diagnostic Status: Warning

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

Special Requirements: ORIENT 265.0D TO 265.0 D

Comments: We require observations with the dispersion direction perpendicular to the jet position angle.
The visit orientation may therefore be 85.0 degrees or 265.0 degrees, depending on available guide stars. We choose one visit at each orientation in order to isolate possible instrumental effects.

Diagnostics

(Visit 01) Warning (Orbit Planner): VISIBILITY OVERRUN

(Visit 01) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(Visit 01) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(Visit 01) Warning (Orbit Planner): VISIBILITY OVERRUN

(Visit 01) Warning (Orbit Planner): VISIBILITY OVERRUN

(Visit 01) Warning (Orbit Planner): VISIBILITY OVERRUN

(Visit 01) Warning (Orbit Planner): VISIBILITY OVERRUN

Fixed Targets

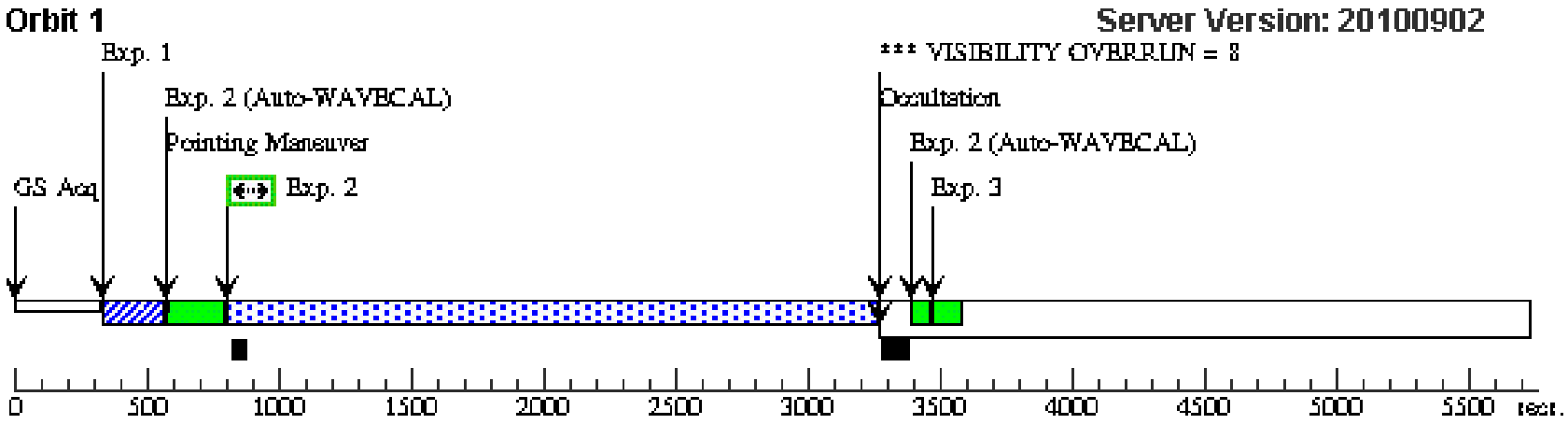
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-RW-AUR	RA: 05 07 49.5679 (76.9565329d)	Proper Motion RA: null	V=10.32+/-	Reference Frame: ICRS
	Alt Name1: GSC02389-00955	Dec: +30 24 5.16 (30.40143d)	Proper Motion Dec: null		
	Alt Name2: HIC23873	Equinox: J2000	Epoch of Position:		

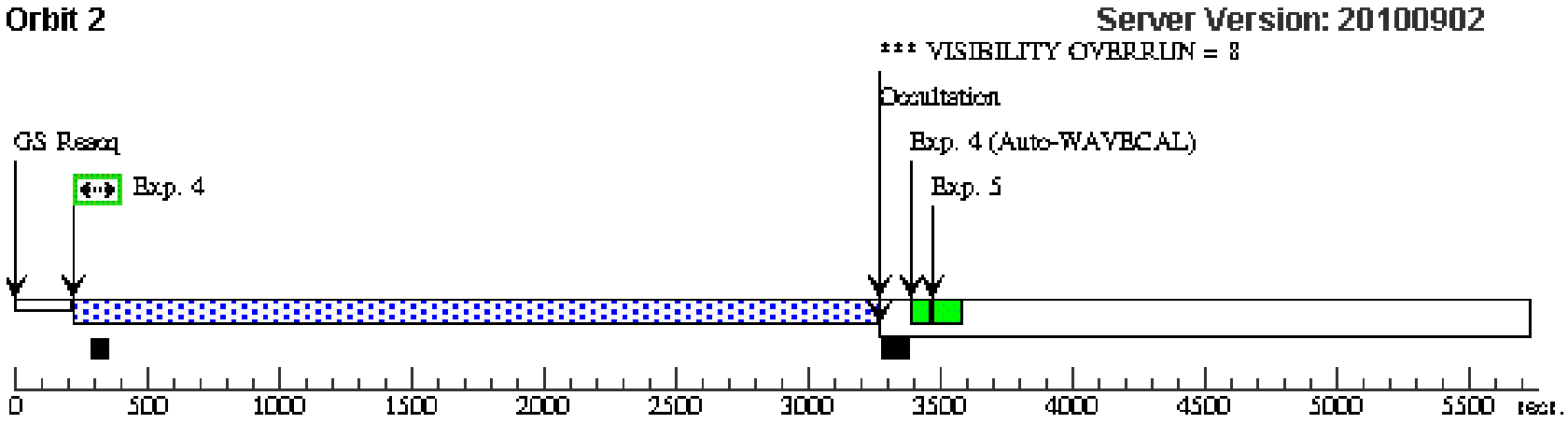
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.This object was generated by the targetselector and retrieved from the SIMBAD database.This object was generated by the targetselector and retrieved from the SIMBAD database.

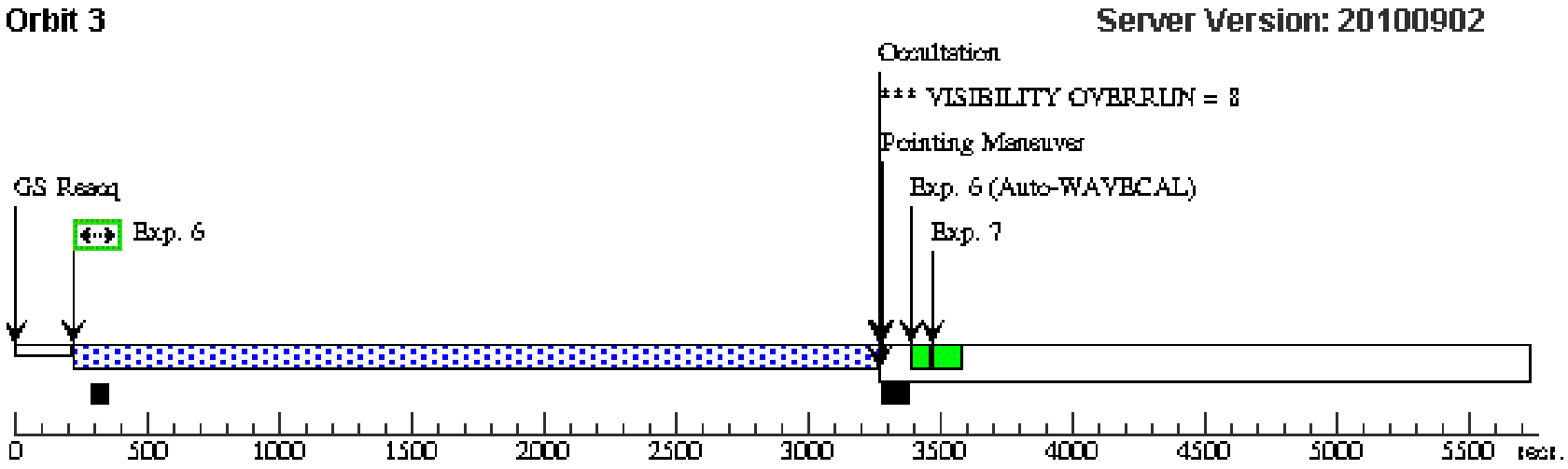
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	RW Aur - star - ACQ 1	(1) V-RW-AUR	STIS/CCD, ACQ, F28X50LP	MIRROR				0.1 Secs *[==>]*	 ***[1]***
2	RW Aur - Blue Lobe - ACCUM 1	(1) V-RW-AUR	STIS/NUV-MAMA, ACCUM, 6X0.2	E230M 2707 A		POS TARG -0.2,0.		2449.0 Secs *[==>]*	 ***[1]***
3	GO-wavecal with 0.2x0.2 aperture in occultation	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				20.0 Secs *[==>]*	 ***[1]***
4	RW Aur - Blue Lobe - ACCUM 2	(1) V-RW-AUR	STIS/NUV-MAMA, ACCUM, 6X0.2	E230M 2707 A		SAME POS AS 2		2983.0 Secs *[==>]*	 ***[2]***
5	GO-wavecal with 0.2x0.2 aperture in occultation	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				20.0 Secs *[==>]*	 ***[2]***
6	RW Aur - Blue Lobe - ACCUM 3	(1) V-RW-AUR	STIS/NUV-MAMA, ACCUM, 6X0.2	E230M 2707 A		SAME POS AS 2		2983.0 Secs *[==>]*	 ***[3]***
7	GO-wavecal with 0.2x0.2 aperture in occultation	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				20.0 Secs *[==>]*	 ***[3]***
8	RW Aur - Red Lobe - ACCUM 1	(1) V-RW-AUR	STIS/NUV-MAMA, ACCUM, 6X0.2	E230M 2707 A		POS TARG +0.3,0.		2983.0 Secs *[==>]*	 ***[4]***
9	GO-wavecal with 0.2x0.2 aperture in occultation	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				20.0 Secs *[==>]*	 ***[4]***
10	RW Aur - Red Lobe - ACCUM 2	(1) V-RW-AUR	STIS/NUV-MAMA, ACCUM, 6X0.2	E230M 2707 A		SAME POS AS 8		2983.0 Secs *[==>]*	 ***[5]***
11	GO-wavecal with 0.2x0.2 aperture in occultation	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				20.0 Secs *[==>]*	 ***[5]***

Orbit Structure






Orbit 3
Server Version: 20100902
Occultation
*** VISIBILITY OVERRUN = 8
Pointing Maneuver
GS Reacq
Exp. 6
Exp. 6 (Auto-WAVECAL)
Exp. 7
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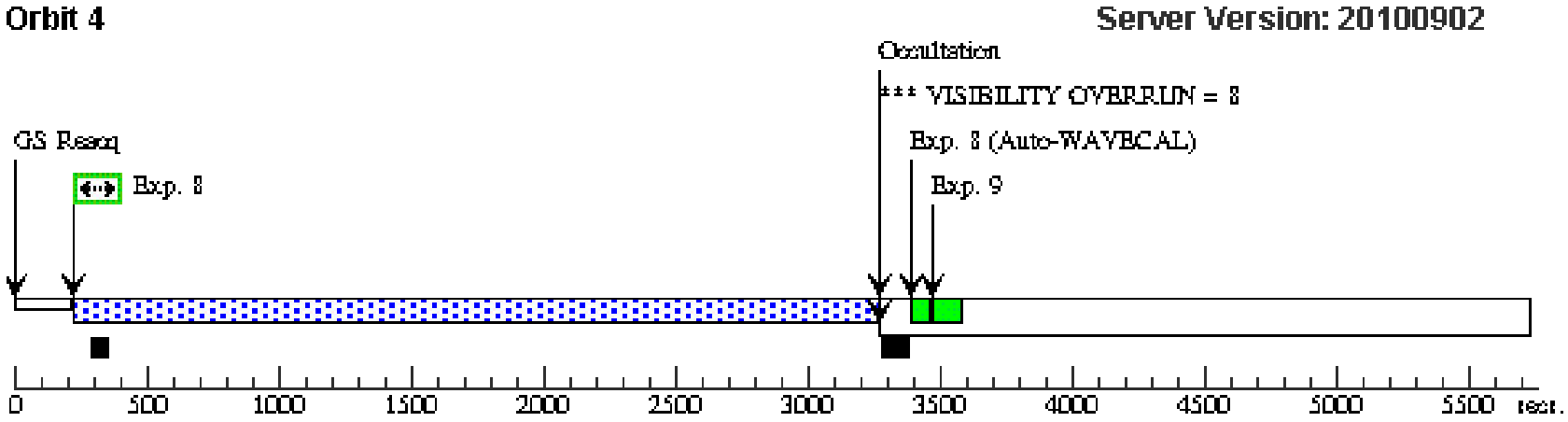
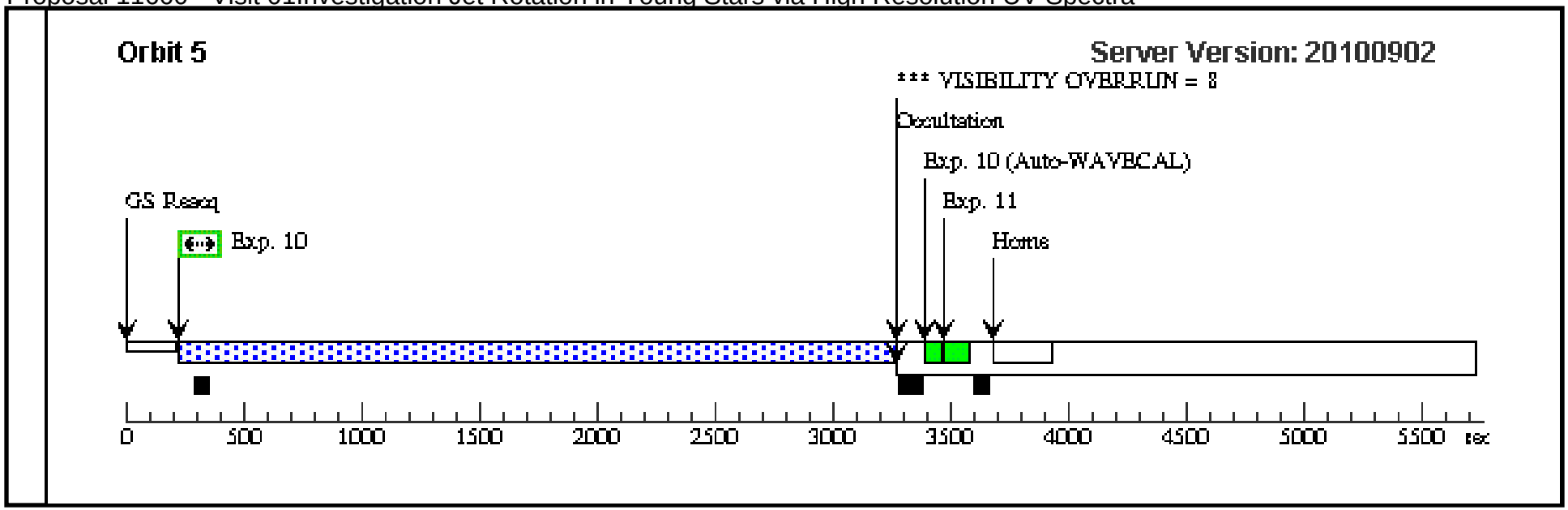
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec.


Orbit 4
Server Version: 20100902
Occultation
*** VISIBILITY OVERRUN = 8
GS Reacq
Exp. 8
Exp. 8 (Auto-WAVECAL)
Exp. 9
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec.


Orbit 5
Server Version: 20100902
*** VISIBILITY OVERRUN = 8
Occultation
Exp. 10 (Auto-WAVECAL)
GS Reacq
Exp. 11
Exp. 10
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11660, Visit 02, scheduling Fri Dec 10 02:17:22 GMT 2010

Diagnostic Status: Warning

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

Special Requirements: ORIENT 85.0D TO 85.0 D

Comments: We require observations with the dispersion direction perpendicular to the jet position angle.
The visit orientation may therefore be 85.0 degrees or 265.0 degrees, depending on available guide stars. We choose one visit at each orientation in order to isolate possible instrumental effects.

Diagnostics

(Visit 02) Warning (Orbit Planner): VISIBILITY OVERRUN

(Visit 02) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(Visit 02) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(Visit 02) Warning (Orbit Planner): VISIBILITY OVERRUN

(Visit 02) Warning (Orbit Planner): VISIBILITY OVERRUN

(Visit 02) Warning (Orbit Planner): VISIBILITY OVERRUN

Fixed Targets

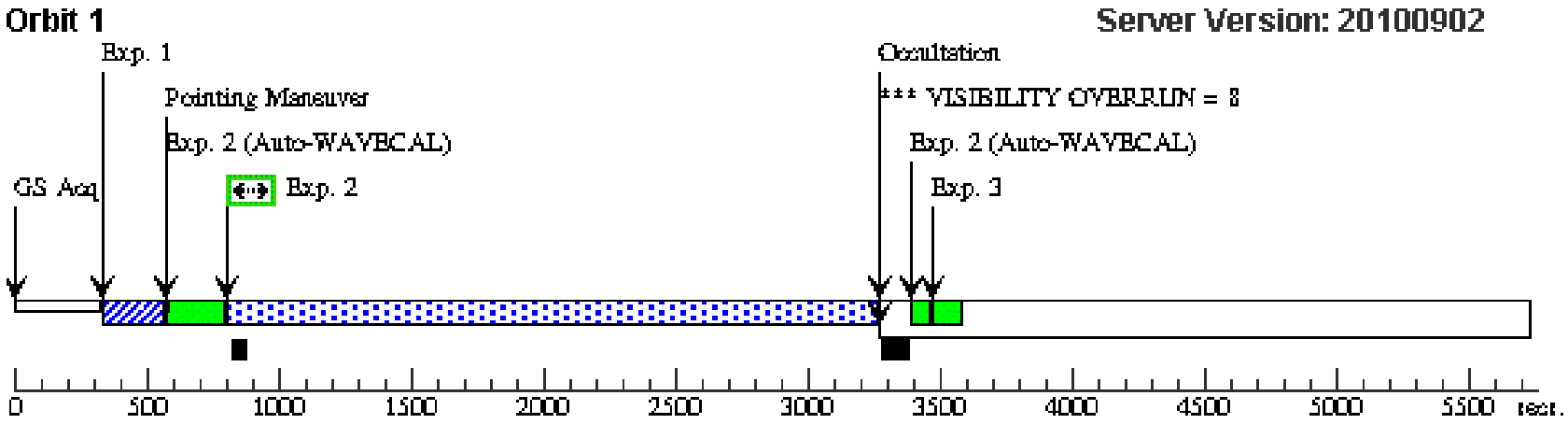
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	V-RW-AUR Alt Name1: GSC02389-00955 Alt Name2: HIC23873	RA: 05 07 49.5679 (76.9565329d) Dec: +30 24 5.16 (30.40143d) Equinox: J2000	Proper Motion RA: null Proper Motion Dec: null Epoch of Position:	V=10.32+/-	Reference Frame: ICRS

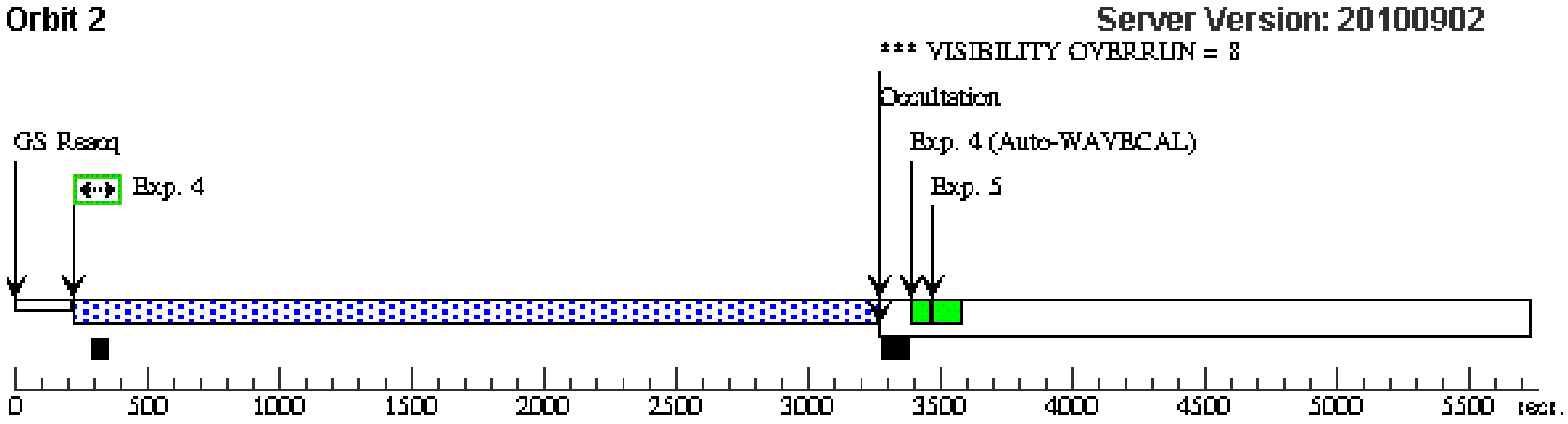
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.This object was generated by the targetselector and retrieved from the SIMBAD database.This object was generated by the targetselector and retrieved from the SIMBAD database.

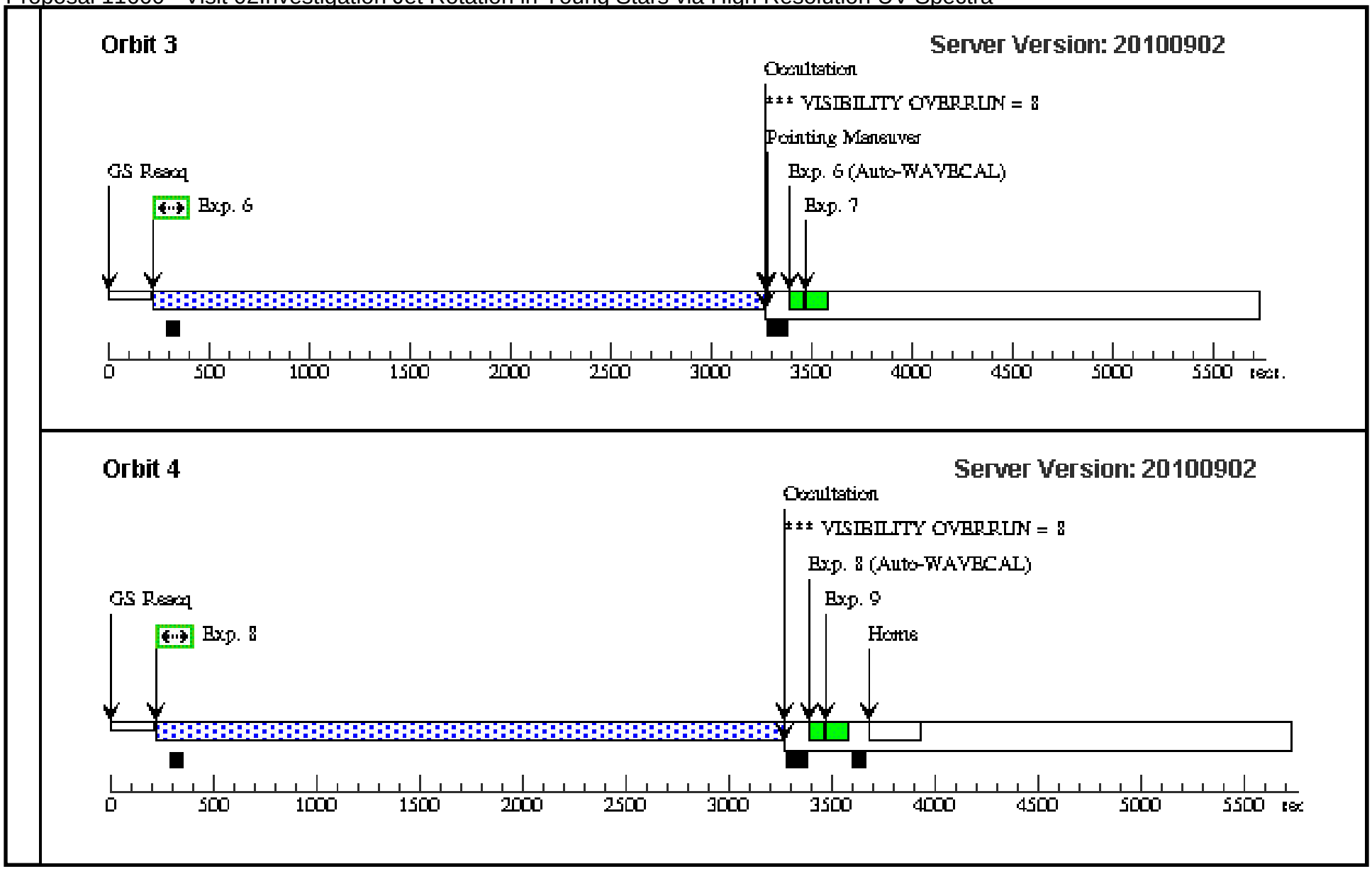
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	RW Aur - star - ACQ 2	(1) V-RW-AUR	STIS/CCD, ACQ, F28X50LP	MIRROR				0.1 Secs *[==>]*	*[1]*
2	RW Aur - Blue Lobe - ACCUM 4	(1) V-RW-AUR	STIS/NUV-MAMA, ACCUM, 6X0.2	E230M 2707 A		POS TARG +0.2,0.		2449.0 Secs *[==>]*	*[1]*
3	GO-wavecal with 0.2x0.2 aperture in occultation	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				20.0 Secs *[==>]*	*[1]*
4	RW Aur - Blue Lobe - ACCUM 5	(1) V-RW-AUR	STIS/NUV-MAMA, ACCUM, 6X0.2	E230M 2707 A		SAME POS AS 2		2983.0 Secs *[==>]*	*[2]*
5	GO-wavecal with 0.2x0.2 aperture in occultation	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				20.0 Secs *[==>]*	*[2]*
6	RW Aur - Blue Lobe - ACCUM 6	(1) V-RW-AUR	STIS/NUV-MAMA, ACCUM, 6X0.2	E230M 2707 A		SAME POS AS 2		2983.0 Secs *[==>]*	*[3]*
7	GO-wavecal with 0.2x0.2 aperture in occultation	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				20.0 Secs *[==>]*	*[3]*
8	RW Aur - Red Lobe - ACCUM 3	(1) V-RW-AUR	STIS/NUV-MAMA, ACCUM, 6X0.2	E230M 2707 A		POS TARG -0.3,0.0		2983.0 Secs *[==>]*	*[4]*
9	GO-wavecal with 0.2x0.2 aperture in occultation	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				20.0 Secs *[==>]*	*[4]*

Orbit Structure






Orbit 3
Server Version: 20100902
Occultation
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Pointing Maneuver
GS Reacq
Exp. 6
Exp. 6 (Auto-WAVECAL)
Exp. 7
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec.
Orbit 4
Server Version: 20100902
Occultation
*** VISIBILITY OVERRUN = 8
Exp. 8 (Auto-WAVECAL)
Exp. 9
Home
GS Reacq
Exp. 8
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11660, Visit 03, scheduling Fri Dec 10 02:17:24 GMT 2010

Diagnostic Status: Warning

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

Special Requirements: ORIENT 110.0D TO 110.0 D

Comments: We require observations with the dispersion direction perpendicular to the jet position angle.
The visit orientation may therefore be 110.0 degrees or 290.0 degrees, depending on available guide stars.
-- PC Note: This visit will execute at the preferred ORIENT of 110.0 degrees on a slightly fainter than default single guide star as a shared-risk observation. --

Diagnostics

(Visit 03) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(Visit 03) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(Visit 03) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

Fixed Targets

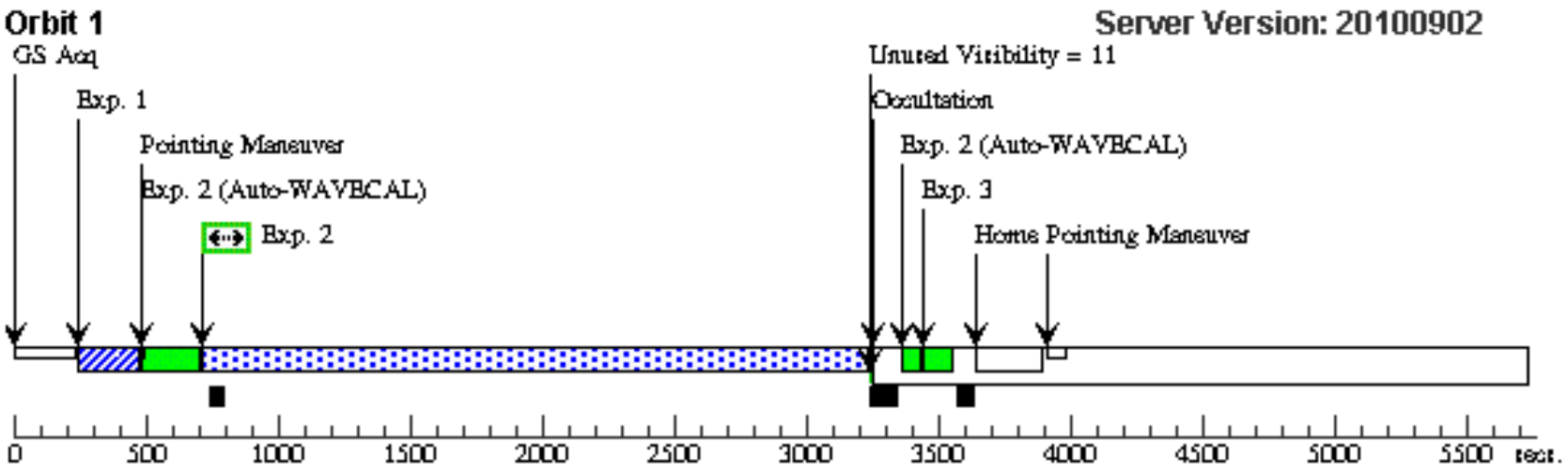
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	V-CW-TAU	RA: 04 14 17.0000 (63.5708333d)	Proper Motion RA: null	V=14.64+/-	Reference Frame: ICRS
		Dec: +28 10 57.80 (28.18272d)	Proper Motion Dec: null		
		Equinox: J2000	Epoch of Position:		

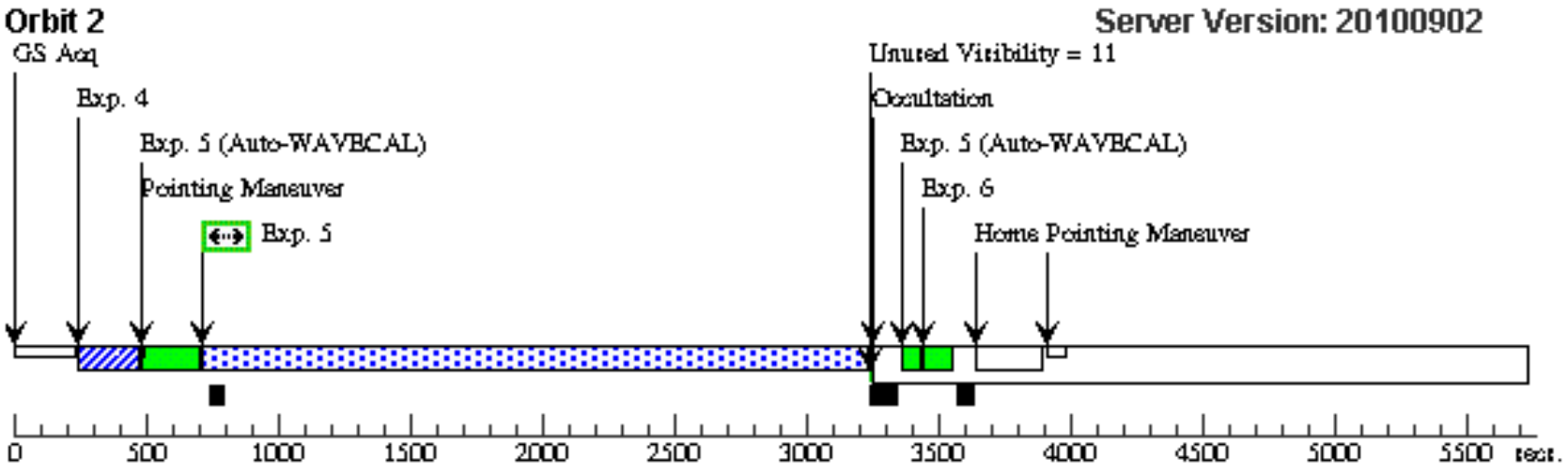
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.This object was generated by the targetselector and retrieved from the SIMBAD database.

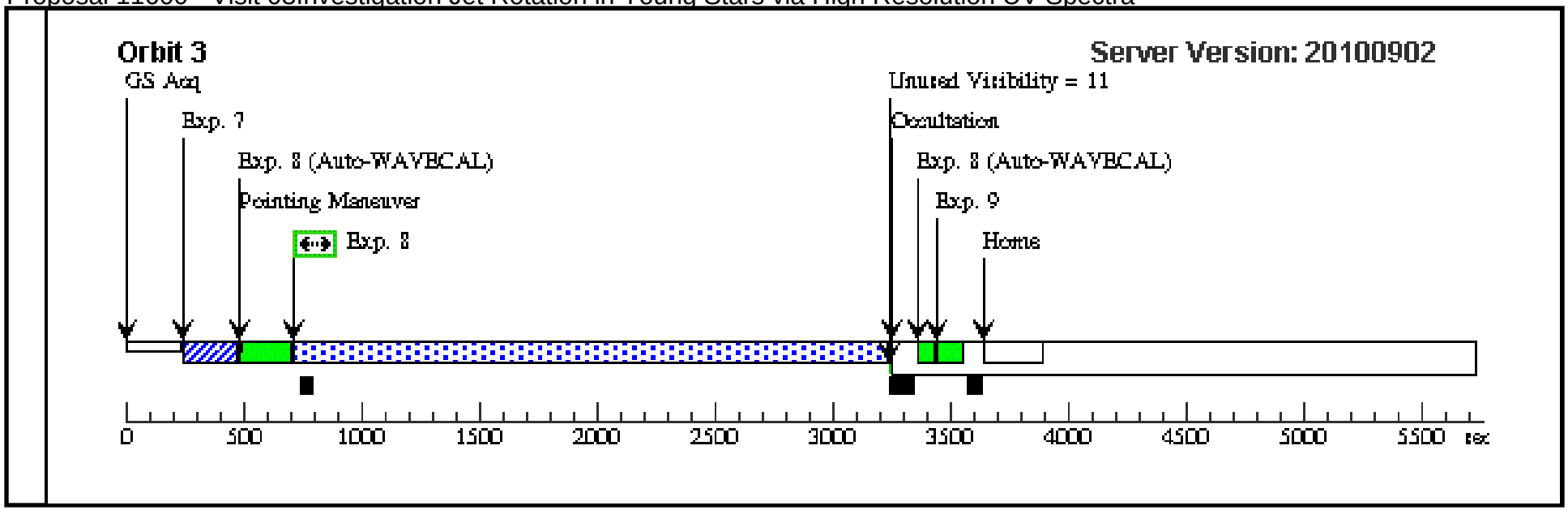
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	CW Tau - star - ACQ 1	(2) V-CW-TAU	STIS/CCD, ACQ, F28X50LP	MIRROR				1 Secs *[==>]*	 ***[1]***
2	CW Tau - Blue Lobe - ACCUM 1	(2) V-CW-TAU	STIS/NUV-MAMA, ACCUM, 6X0.2	E230M 2707 A		POS TARG +0.2,0.; GS ACQ SCENARIO SINGLE		2500.0 Secs *[==>]*	 ***[1]***
3	GO-wavecal with 0.2x0.2 aperture in occultation	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				20.0 Secs *[==>]*	 ***[1]***
4	CW Tau - star - ACQ 1	(2) V-CW-TAU	STIS/CCD, ACQ, F28X50LP	MIRROR		NEW OBSET FULL ACQ; GS ACQ SCENARIO SINGLE		1 Secs *[==>]*	 ***[2]***
5	CW Tau - Blue Lobe - ACCUM 2	(2) V-CW-TAU	STIS/NUV-MAMA, ACCUM, 6X0.2	E230M 2707 A		POS TARG 0.2,0		2500.0 Secs *[==>]*	 ***[2]***
6	GO-wavecal with 0.2x0.2 aperture in occultation	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				20.0 Secs *[==>]*	 ***[2]***
7	CW Tau - star - ACQ 1	(2) V-CW-TAU	STIS/CCD, ACQ, F28X50LP	MIRROR		NEW OBSET FULL ACQ; GS ACQ SCENARIO SINGLE		1 Secs *[==>]*	 ***[3]***
8	CW Tau - Blue Lobe - ACCUM 3	(2) V-CW-TAU	STIS/NUV-MAMA, ACCUM, 6X0.2	E230M 2707 A		POS TARG 0.2,0		2500.0 Secs *[==>]*	 ***[3]***
9	GO-wavecal with 0.2x0.2 aperture in occultation	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				20.0 Secs *[==>]*	 ***[3]***

Orbit Structure






Orbit 3
Server Version: 20100902
GS Acq
Exp. 7
Exp. 8 (Auto-WAVECAL)
Pointing Maneuver
Exp. 8
Unused Visibility = 11
Occultation
Exp. 8 (Auto-WAVECAL)
Exp. 9
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11660, Visit 04, completed Fri Dec 10 02:17:26 GMT 2010

Diagnostic Status: Warning

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

Special Requirements: SCHED 100%; ORIENT 175.0D TO 175.0 D

Comments: We require observations with the dispersion direction perpendicular to the jet position angle.
The visit orientation may therefore be 175.0 degrees or 355.0 degrees (but 355.0 is not allowed by the visit planner).

Diagnostics

(Visit 04) Warning (Orbit Planner): VISIBILITY OVERRUN

(Visit 04) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(Visit 04) Warning (Orbit Planner): VISIBILITY OVERRUN

(Visit 04) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(Visit 04) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(Visit 04) Warning (Orbit Planner): VISIBILITY OVERRUN

Fixed Targets

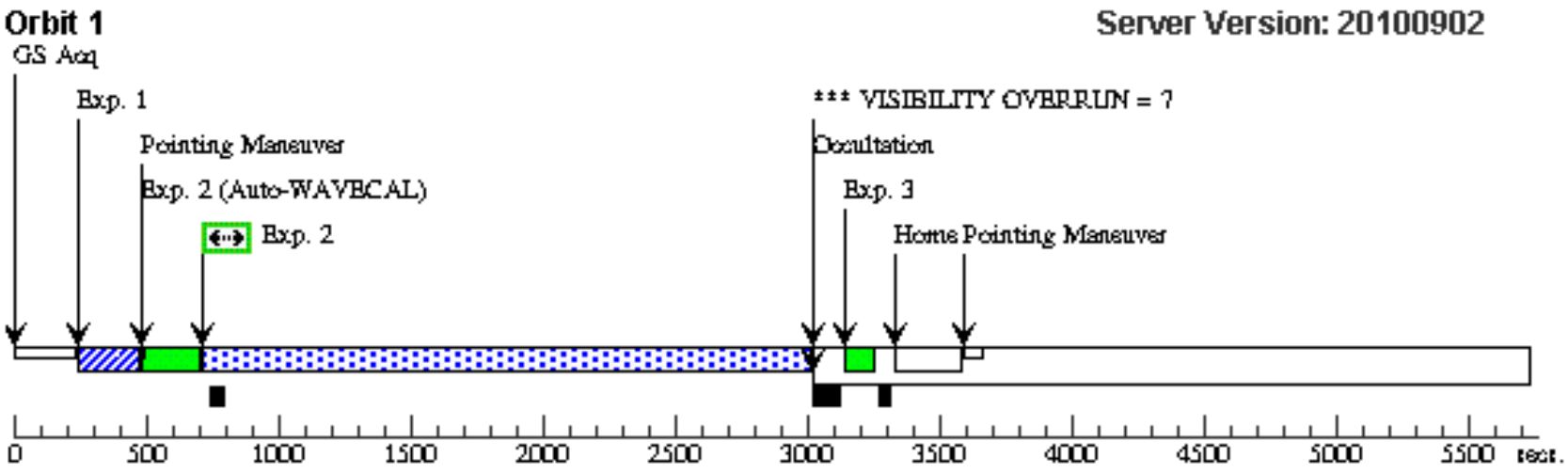
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(4)	V-DP-TAU	RA: 04 42 37.6900 (70.6570417d) Dec: +25 15 37.30 (25.26036d) Equinox: J2000	Proper Motion RA: null Proper Motion Dec: null Epoch of Position:	V=14.0+/-	Reference Frame: ICRS

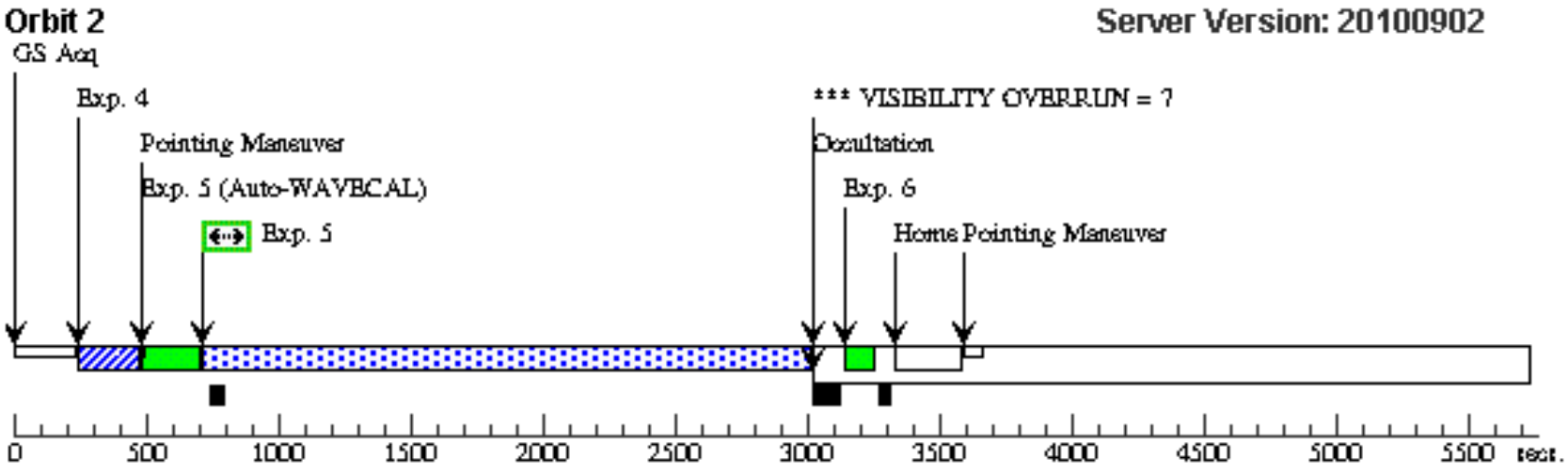
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.This object was generated by the targetselector and retrieved from the SIMBAD database.This object was generated by the targetselector and retrieved from the SIMBAD database.

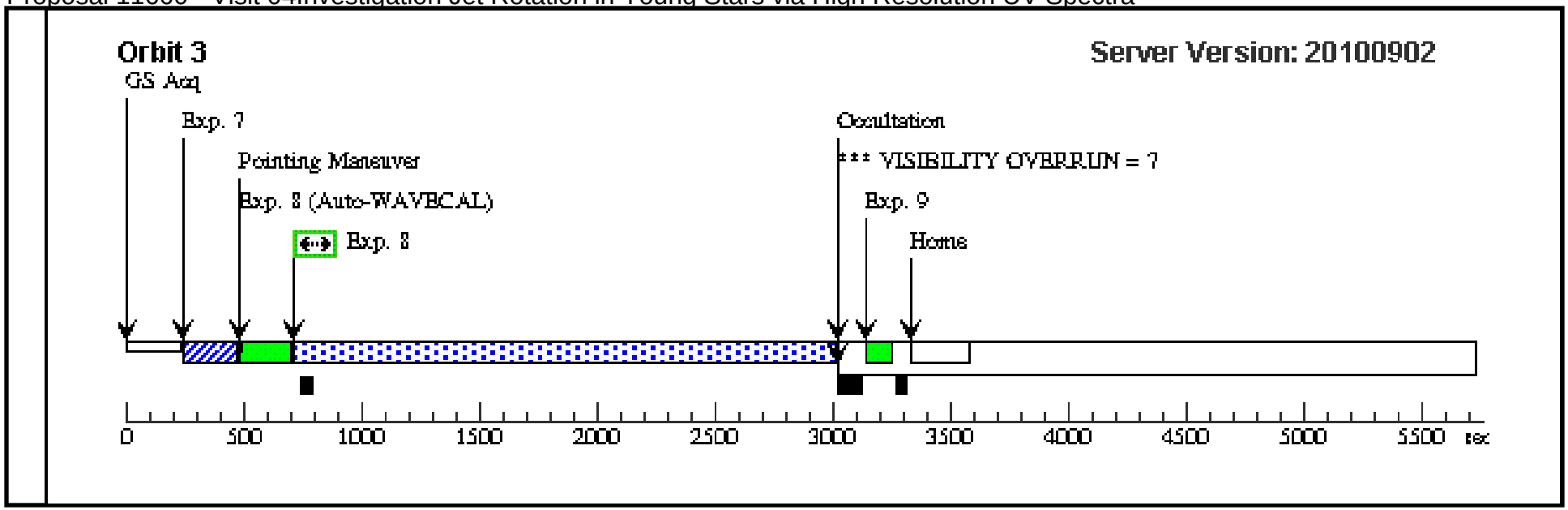
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	DP Tau - Lobe - ACQ 1	(4) V-DP-TAU	STIS/CCD, ACQ, F28X50LP	MIRROR				1 Secs *[==>]*	*[1]*
2	DP Tau - Lobe - ACCUM 1	(4) V-DP-TAU	STIS/NUV-MAMA, ACCUM, 6X0.2	E230M 2707 A		POS TARG -0.3,0.; GS ACQ SCENARIO SINGLE		2282.0 Secs *[==>]*	*[1]*
3	GO-wavecal with 0.2x0.2 aperture in occultation	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				20.0 Secs *[==>]*	*[1]*
4	DP Tau - Lobe - ACQ 1	(4) V-DP-TAU	STIS/CCD, ACQ, F28X50LP	MIRROR		NEW OBSET FULL ACQ; GS ACQ SCENARIO SINGLE		1 Secs *[==>]*	*[2]*
5	DP Tau - Lobe - ACCUM 2	(4) V-DP-TAU	STIS/NUV-MAMA, ACCUM, 6X0.2	E230M 2707 A		POS TARG -0.3,0		2282.0 Secs *[==>]*	*[2]*
6	GO-wavecal with 0.2x0.2 aperture in occultation	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				20.0 Secs *[==>]*	*[2]*
7	DP Tau - Lobe - ACQ 1	(4) V-DP-TAU	STIS/CCD, ACQ, F28X50LP	MIRROR		NEW OBSET FULL ACQ; GS ACQ SCENARIO SINGLE		1 Secs *[==>]*	*[3]*
8	DP Tau - Lobe - ACCUM 3	(4) V-DP-TAU	STIS/NUV-MAMA, ACCUM, 6X0.2	E230M 2707 A		POS TARG -0.3,0		2282.0 Secs *[==>]*	*[3]*
9	GO-wavecal with 0.2x0.2 aperture in occultation	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				20.0 Secs *[==>]*	*[3]*

Orbit Structure






Orbit 3
Server Version: 20100902
GS Acq
Exp. 7
Pointing Maneuver
Exp. 8 (Auto-WAVECAL)
Exp. 8
Occultation
*** VISIBILITY OVERRUN = 7
Exp. 9
Home
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 11660, Visit 05, completed Fri Dec 10 02:17:27 GMT 2010

Diagnostic Status: Warning

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

Special Requirements: SCHED 100%; ORIENT 304.0D TO 306.0 D

Comments: Jet position angle is 171 degress. We require observations with the dispersion direction perpendicular to this.
The visit orientation may therefore be 306.0 degrees (126 does not seem to work with the visit planner.)

Diagnostics

(Visit 05) Warning (Orbit Planner): VISIBILITY OVERRUN

(Visit 05) Warning (Orbit Planner): POS TARG OUTSIDE OF APERTURE

(Visit 05) Warning (Orbit Planner): VISIBILITY OVERRUN

(Visit 05) Warning (Orbit Planner): VISIBILITY OVERRUN

Fixed Targets

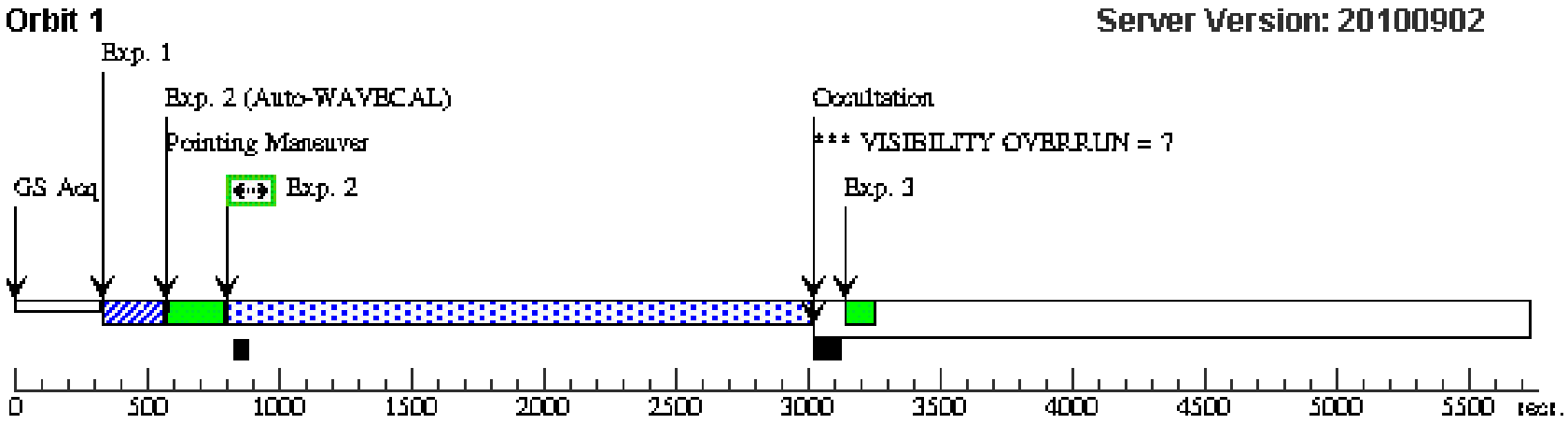
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(5)	V-HN-TAU	RA: 04 33 39.3600 (68.4140000d)	Proper Motion RA: null	V=13.7+/-	Reference Frame: ICRS
		Dec: +17 51 52.30 (17.86453d)	Proper Motion Dec: null		
		Equinox: J2000	Epoch of Position:		

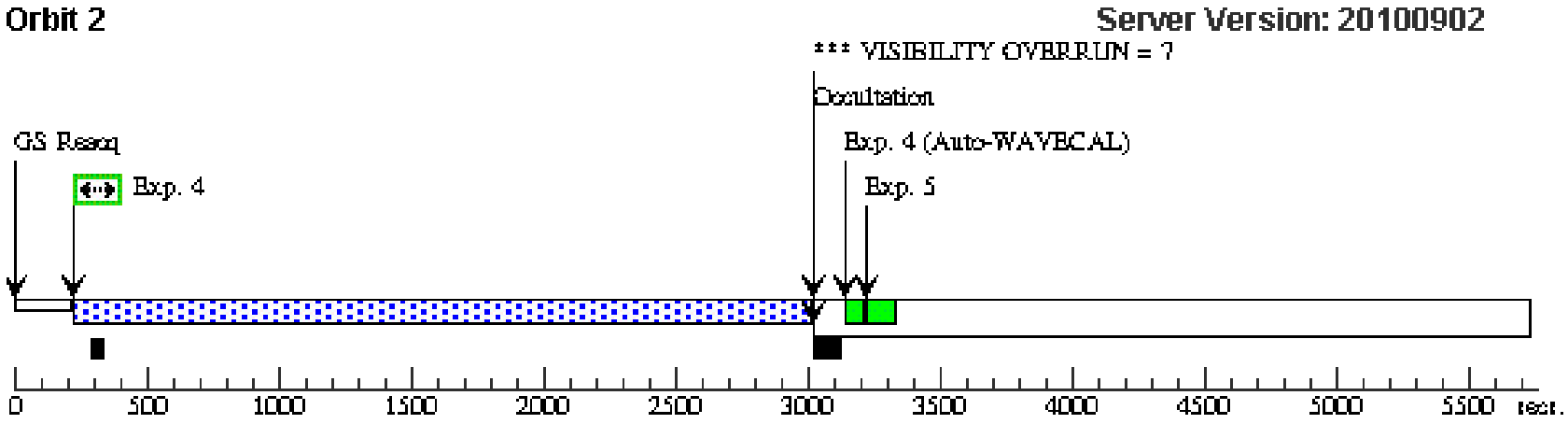
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.This object was generated by the targetselector and retrieved from the SIMBAD database.

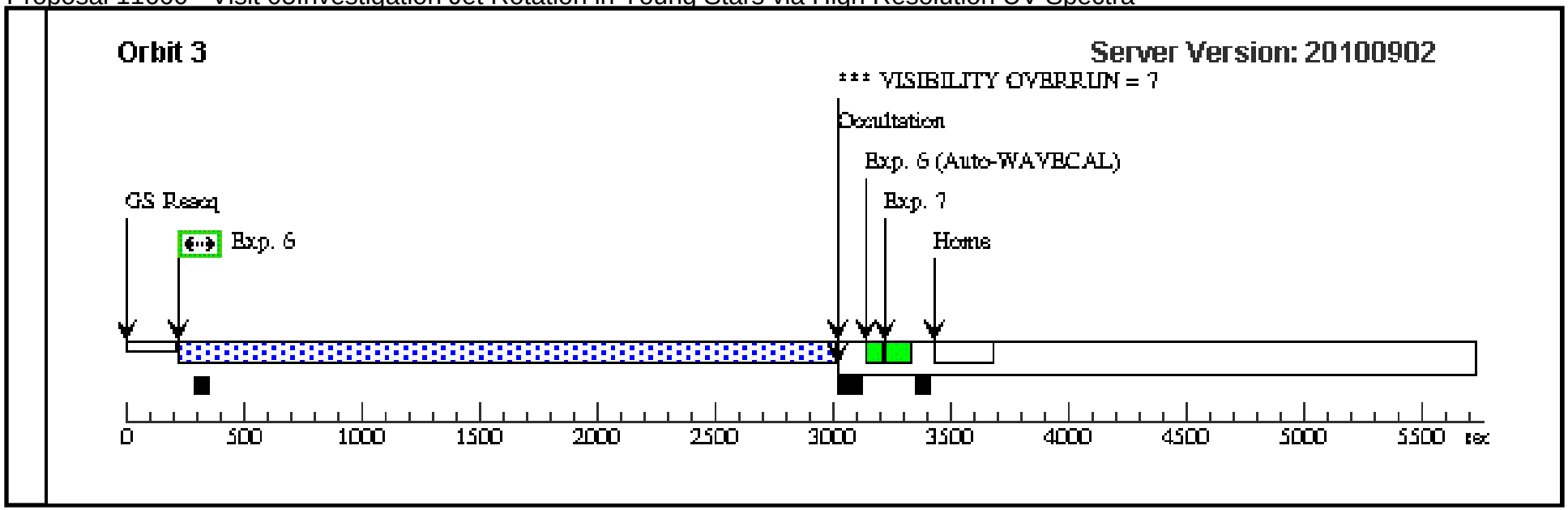
Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	HN Tau - Blue Lobe - ACQ 1	(5) V-HN-TAU	STIS/CCD, ACQ, F28X50LP	MIRROR				1 Secs	
								[==>]	***[1]***
2	HN Tau - Blue Lobe - ACCUM 1	(5) V-HN-TAU	STIS/NUV-MAMA, ACCUM, 6X0.2	E230M 2707 A		POS TARG -0.3,0.		2190.0 Secs	
								[==>]	***[1]***
3	GO-wavecal with 0.2x0.2 aperture in occultation	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				20.0 Secs	
								[==>]	***[1]***
4	HN Tau - Blue Lobe - ACCUM 2	(5) V-HN-TAU	STIS/NUV-MAMA, ACCUM, 6X0.2	E230M 2707 A		SAME POS AS 2		2728.0 Secs	
								[==>]	***[2]***
5	GO-wavecal with 0.2x0.2 aperture in occultation	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				20.0 Secs	
								[==>]	***[2]***
6	HN Tau - Blue Lobe - ACCUM 3	(5) V-HN-TAU	STIS/NUV-MAMA, ACCUM, 6X0.2	E230M 2707 A		SAME POS AS 2		2728.0 Secs	
								[==>]	***[3]***
7	GO-wavecal with 0.2x0.2 aperture in occultation	WAVE	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 2707 A				20.0 Secs	
								[==>]	***[3]***

Orbit Structure






Orbit 3
Server Version: 20100902
*** VISIBILITY OVERRUN = 7
Occultation
Exp. 6 (Auto-WAVECAL)
Exp. 7
Home
GS Reacq
Exp. 6
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec