



18337 - The failed supernova candidate in the low metallicity galaxy PHL293B: Still there, but what is it?

Cycle: 34, Proposal Category: GO

(UV Initiative)

(Availability Mode: SUPPORTED)

INVESTIGATORS

<i>Name</i>	<i>Institution</i>
Dr. Nathan Smith (PI) (Contact)	University of Arizona
Mr. Andrew Allan (CoI) (ESA Member)	Universiteit Leiden
Dr. Jennifer Andrews (CoI)	NOIRLab - Gemini North (HI)
Mr. Eoin Farrell (CoI) (ESA Member)	Trinity College Dublin
Dr. Andrea Mehner (CoI) (ESA Member)	European Southern Observatory - Chile

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) PHL293B-LBV	WFC3/UVIS	2	31-Aug-2026 09:00:15.0	yes
02	(1) PHL293B-LBV WAVE	STIS/CCD	8	31-Aug-2026 09:00:17.0	yes

10 Total Orbits Used

ABSTRACT

The metal-poor dwarf galaxy PHL293B (23 Mpc) contained a luminous blue variable (LBV) identified by its spectrum. This source had roughly constant luminosity during 2001-2009, and was modeled as a massive LBV similar to Eta Carinae, and notably, similar to the progenitors of SN2009ip and SN2015bh. In more recent data, the source faded beyond ground-based limits, and spectral signatures of the LBV disappeared.

PHL293B was proposed as the first viable candidate of a failed SN event from a massive LBV star. Subsequent HST images, however, reveal a lingering blue source at the same position. So what happened? If this was indeed a failed SN, the lingering source could be a host cluster. Or if the sudden fading marks the end of an LBV giant eruption, then characterizing its current faint post-eruption state with spectroscopy is important for two reasons: (1) We know very little about the recovery time and the physical state of massive stars after an eruption, or if they return to their pre-outburst state. (2) This object offers a cautionary tale for other failed SN candidates. Whether a failed SN or not, spectroscopy is essential for assessing the star's post-eruption state, but ground-based data cannot do this because the source is lost in galaxy light. We propose deep STIS spectroscopy to determine once and for all if the LBV disappeared as a failed SN, and 2 orbits of imaging photometry to reproduce the Cycle 28 imaging and measure its UV/optical SED. The SED is needed to evaluate the LBVs current luminosity, or to estimate the age of the host cluster and thus the approximate initial mass of the LBV) if indeed the LBV has disappeared.

OBSERVING DESCRIPTION

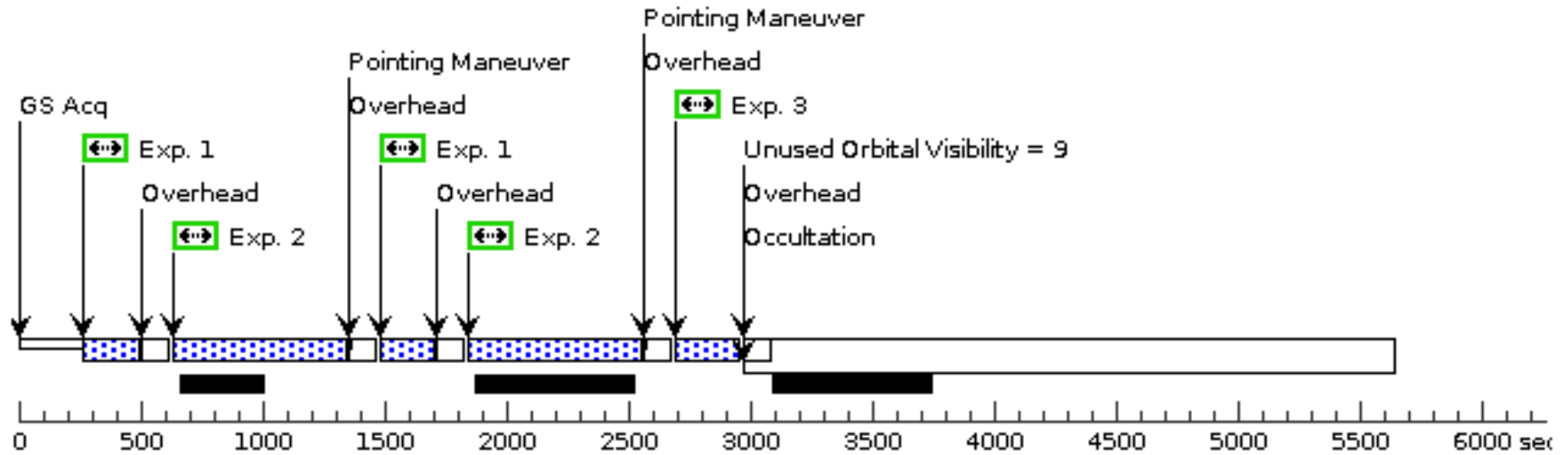
This program repeats earlier imaging to obtain a current epoch of photometry in several filters. The STIS observations will obtain a spectrum of the LBV that is resolved from surrounding galaxy light for the first time, both low and medium resolution.

Proposal 18337 - VISIT 01 - WFC3 (01) - The failed supernova candidate in the low metallicity galaxy PHL293B: Still there, but what is...

Visit	Proposal 18337, VISIT 01 - WFC3 (01)										Mon Aug 31 13:00:18 GMT 2026
	Diagnostic Status: No Diagnostics										
	Scientific Instruments: WFC3/UVIS										
	Special Requirements: (none)										
Patterns	#	Primary Pattern					Secondary Pattern				Exposures
	(1)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=			Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false						(1-2), (4-5)
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(1)	PHL293B-LBV	RA: 22 30 36.7500 (337.6531250d) Dec: -00 06 39.00 (-.11083d) Equinox: J2000		Proper Motion RA: 0 Proper Motion Dec: 0		V=21.5+/-1		Reference Frame: ICRS		
	Comments: Category=EXT-STAR Description=[LUMINOUS BLUE VARIABLE]										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]		Orbit
	1		(1) PHL293B-LBV	WFC3/UVIS, ACCUM, UVIS2	F606W	FLASH=12		Pattern 1, Exps 1-2 in VISIT 01 - WFC3 (01) (1)	200 Secs (400 Secs)		
									[==>(Pattern 1)]		[1]
									[==>(Pattern 2)]		
	2		(1) PHL293B-LBV	WFC3/UVIS, ACCUM, UVIS2	F225W	FLASH=18		Pattern 1, Exps 1-2 in VISIT 01 - WFC3 (01) (1)	690 Secs (1380 Secs)		
									[==>(Pattern 1)]		[1]
									[==>(Pattern 2)]		
	3		(1) PHL293B-LBV	WFC3/UVIS, ACCUM, UVIS2	F438W	FLASH=18			240 Secs (240 Secs)		
									[==>]		[1]
	4		(1) PHL293B-LBV	WFC3/UVIS, ACCUM, UVIS2	F814W	FLASH=15		Pattern 1, Exps 4-5 in VISIT 01 - WFC3 (01) (1)	210 Secs (430 Secs)		
								[==>215.0 Secs (Pattern 1)]		[2]	
								[==>215.0 Secs (Pattern 2)]			
5		(1) PHL293B-LBV	WFC3/UVIS, ACCUM, UVIS2	F336W	FLASH=18		Pattern 1, Exps 4-5 in VISIT 01 - WFC3 (01) (1)	670 Secs (1350 Secs)			
								[==>675.0 Secs (Pattern 1)]		[2]	
								[==>675.0 Secs (Pattern 2)]			
6		(1) PHL293B-LBV	WFC3/UVIS, ACCUM, UVIS2	F438W	FLASH=18		POS TARG -3.4088 166189286015E-4,-1 .425343380764952		240 Secs (245 Secs)		
								[==>245.0 Secs]		[2]	

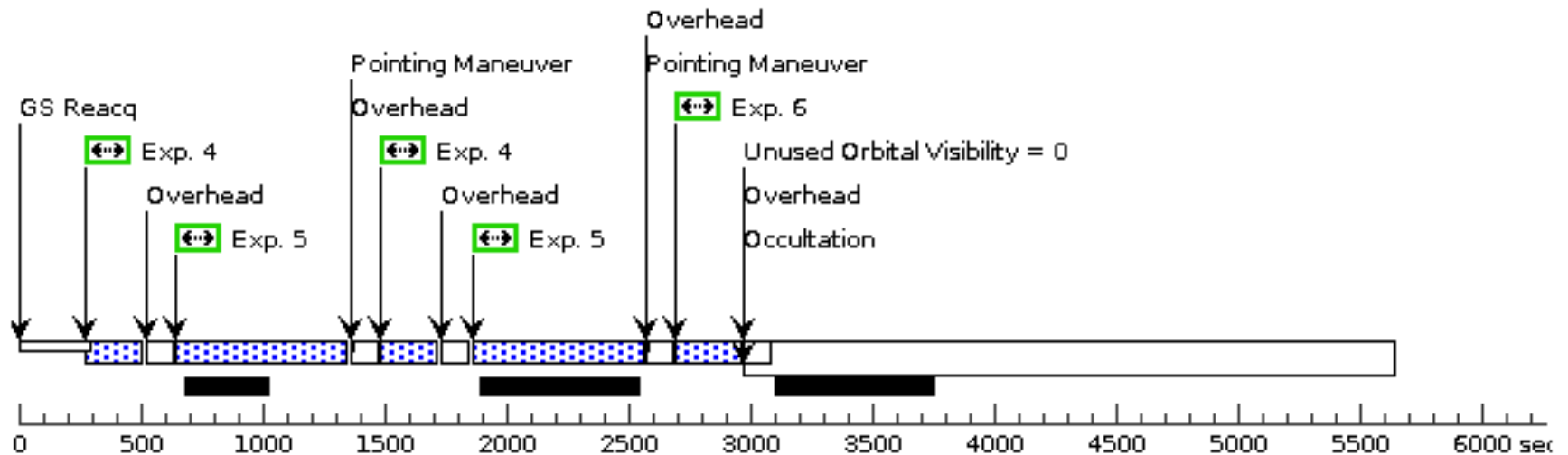
Orbit 1

Server Version: 20260618



Orbit 2

Server Version: 20260618

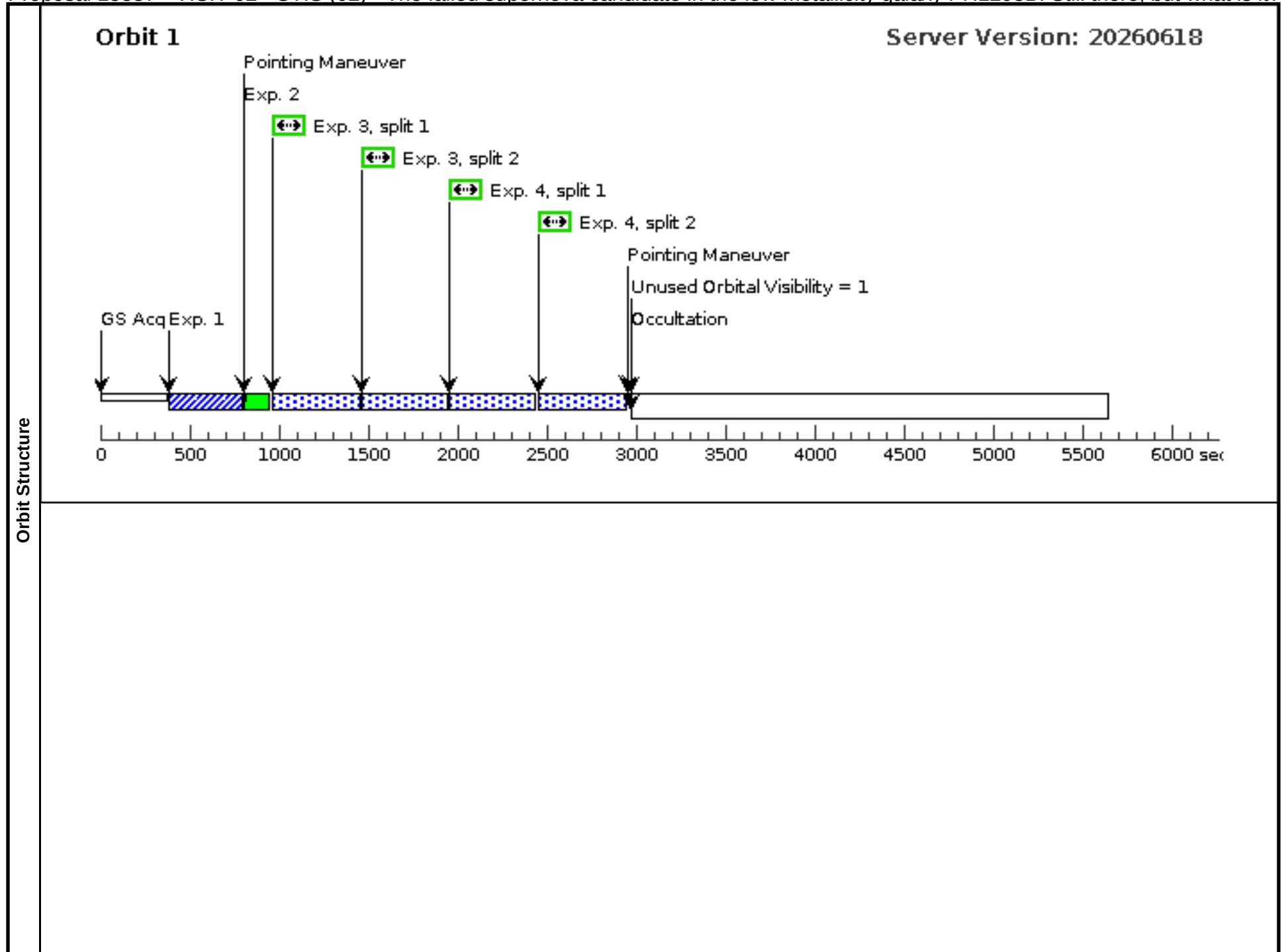


Proposal 18337 - VISIT 02 - STIS (02) - The failed supernova candidate in the low metallicity galaxy PHL293B: Still there, but what is it?

Visit	Proposal 18337, VISIT 02 - STIS (02)				Mon Aug 31 13:00:18 GMT 2026	
	Diagnostic Status: Warning					
	Scientific Instruments: STIS/CCD					
	Special Requirements: (none)					
Diagnostics	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS EXPOSURE TIME ROUNDED DOWN TO NEAREST 0.1 SECONDS					
	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS EXPOSURE TIME ROUNDED DOWN TO NEAREST 0.1 SECONDS					
	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS EXPOSURE TIME ROUNDED DOWN TO NEAREST 0.1 SECONDS					
	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS EXPOSURE TIME ROUNDED DOWN TO NEAREST 0.1 SECONDS					
	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS EXPOSURE TIME ROUNDED DOWN TO NEAREST 0.1 SECONDS					
	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS EXPOSURE TIME ROUNDED DOWN TO NEAREST 0.1 SECONDS					
	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS EXPOSURE TIME ROUNDED DOWN TO NEAREST 0.1 SECONDS					
	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS EXPOSURE TIME ROUNDED DOWN TO NEAREST 0.1 SECONDS					
	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS EXPOSURE TIME ROUNDED DOWN TO NEAREST 0.1 SECONDS					
	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS EXPOSURE TIME ROUNDED DOWN TO NEAREST 0.1 SECONDS					
	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS EXPOSURE TIME ROUNDED DOWN TO NEAREST 0.1 SECONDS					
	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS SCIENCE TOO FAR FROM WAVECAL					
	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS SCIENCE TOO FAR FROM WAVECAL					
	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS SCIENCE TOO FAR FROM WAVECAL					
	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS SCIENCE TOO FAR FROM WAVECAL					
	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS SCIENCE TOO FAR FROM WAVECAL					
	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS SCIENCE TOO FAR FROM WAVECAL					
	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS SCIENCE TOO FAR FROM WAVECAL					
	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS SCIENCE TOO FAR FROM WAVECAL					
	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS SCIENCE TOO FAR FROM WAVECAL					
	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS SCIENCE TOO FAR FROM WAVECAL					
	(VISIT 02 - STIS (02)) Warning (Orbit Planner): STIS SCIENCE TOO FAR FROM WAVECAL					
	Patterns	#	Primary Pattern		Secondary Pattern	Exposures
(2)		Pattern Type=STIS-ALONG-SLIT Purpose=DITHER Number Of Points=2 Point Spacing=0.2 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=90.0 Angle Between Sides= Center Pattern=false		(3-4), (8-10)	
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	PHL293B-LBV	RA: 22 30 36.7500 (337.6531250d) Dec: -00 06 39.00 (-.11083d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0	V=21.5+/-1	Reference Frame: ICRS
	Comments: Category=EXT-STAR Description=[LUMINOUS BLUE VARIABLE]					

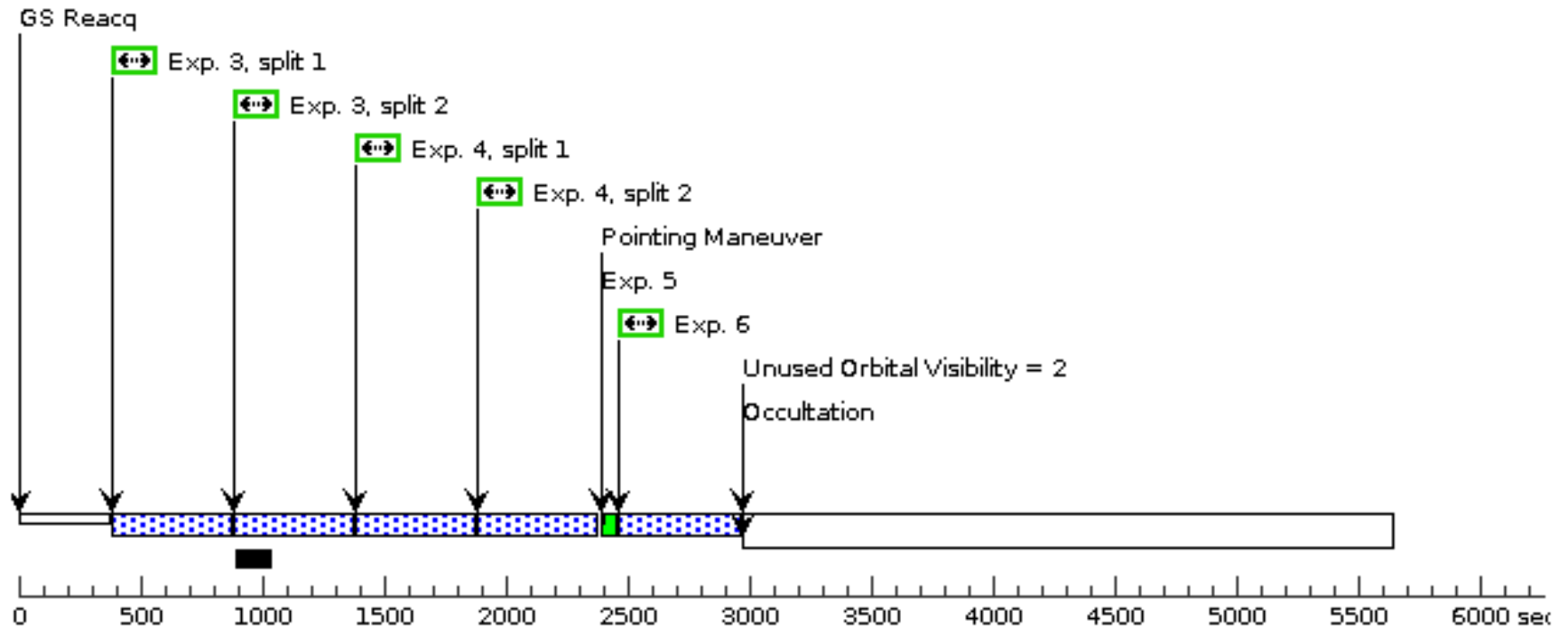
Proposal 18337 - VISIT 02 - STIS (02) - The failed supernova candidate in the low metallicity galaxy PHL293B: Still there, but what is it?

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Acquisition	(1) PHL293B-LBV	STIS/CCD, ACQ, F25ND3	MIRROR				30 Secs (30 Secs)	
									[==>]	[1]
	2	wavecal	WAVE	STIS/CCD, ACCUM, 52X0.2	G430L 4300 A				[==>]	[1]
	3	lowres 430L	(1) PHL293B-LBV	STIS/CCD, ACCUM, 52X0.2	G430L 4300 A	WAVECAL=NO; CR-SPLIT=2		Pattern 2, Exps 3-4 in VISIT 02 - STIS (02) (2)	900 Secs (1824 Secs) [==>454.0 Secs (Pattern 1, Split 1)] [==>454.0 Secs (Pattern 1, Split 2)] [==>458.0 Secs (Pattern 2, Split 1)] [==>458.0 Secs (Pattern 2, Split 2)]	[1] [2]
	4	lowres 430L	(1) PHL293B-LBV	STIS/CCD, ACCUM, 52X0.2	G430L 4300 A	CR-SPLIT=2; WAVECAL=NO		Pattern 2, Exps 3-4 in VISIT 02 - STIS (02) (2)	900 Secs (1824 Secs) [==>454.0 Secs (Pattern 1, Split 1)] [==>454.0 Secs (Pattern 1, Split 2)] [==>458.0 Secs (Pattern 2, Split 1)] [==>458.0 Secs (Pattern 2, Split 2)]	[1] [2]
	5	wavecal	WAVE	STIS/CCD, ACCUM, 52X0.2	G430L 4300 A				[==>]	[2]
	6	lowres 430L	(1) PHL293B-LBV	STIS/CCD, ACCUM, 52X0.2	G430L 4300 A	CR-SPLIT=NO; WAVECAL=NO			450 Secs (458 Secs) [==>458.0 Secs]	[2]
	7	wavecal	WAVE	STIS/CCD, ACCUM, 52X0.2	G750M 6581 A				[==>]	[3]
	8	midres 750 M	(1) PHL293B-LBV	STIS/CCD, ACCUM, 52X0.2	G750M 6581 A	CR-SPLIT=3; WAVECAL=NO		Pattern 2, Exps 8-10 in VISIT 02 - STIS (02) (2)	2439 Secs (4878 Secs) [==>(Pattern 1, Split 1)] [==>(Pattern 1, Split 2)] [==>(Pattern 1, Split 3)] [==>(Pattern 2, Split 1)] [==>(Pattern 2, Split 2)] [==>(Pattern 2, Split 3)]	[3] [6]
	9	midres 750 M	(1) PHL293B-LBV	STIS/CCD, ACCUM, 52X0.2	G750M 6581 A	CR-SPLIT=3; WAVECAL=NO		Pattern 2, Exps 8-10 in VISIT 02 - STIS (02) (2)	2440 Secs (4880 Secs) [==>(Pattern 1, Split 1)] [==>(Pattern 1, Split 2)] [==>(Pattern 1, Split 3)] [==>(Pattern 2, Split 1)] [==>(Pattern 2, Split 2)] [==>(Pattern 2, Split 3)]	[4] [7]
	10	midres 750 M	(1) PHL293B-LBV	STIS/CCD, ACCUM, 52X0.2	G750M 6581 A	CR-SPLIT=3; WAVECAL=NO		Pattern 2, Exps 8-10 in VISIT 02 - STIS (02) (2)	2440 Secs (4880 Secs) [==>(Pattern 1, Split 1)] [==>(Pattern 1, Split 2)] [==>(Pattern 1, Split 3)] [==>(Pattern 2, Split 1)] [==>(Pattern 2, Split 2)] [==>(Pattern 2, Split 3)]	[5] [8]



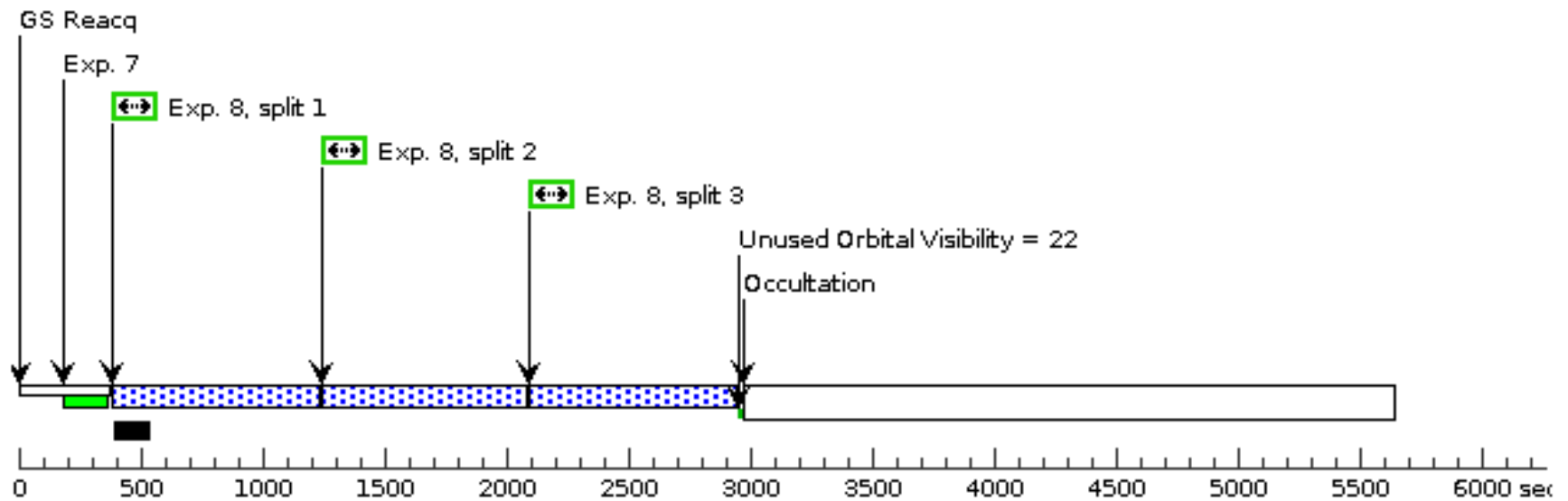
Orbit 2

Server Version: 20260618



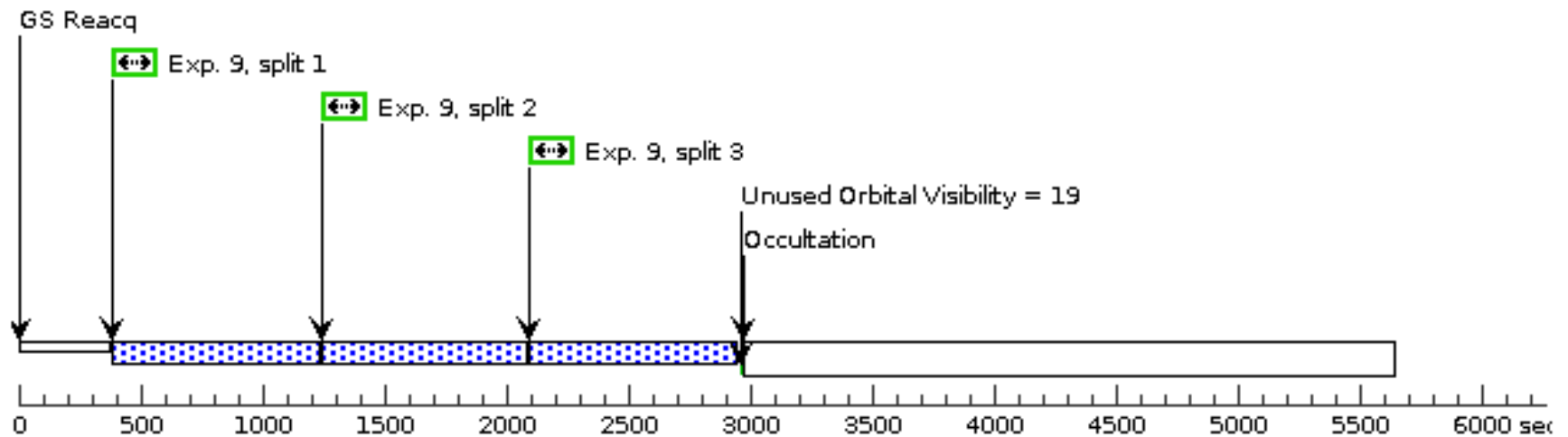
Orbit 3

Server Version: 20260618



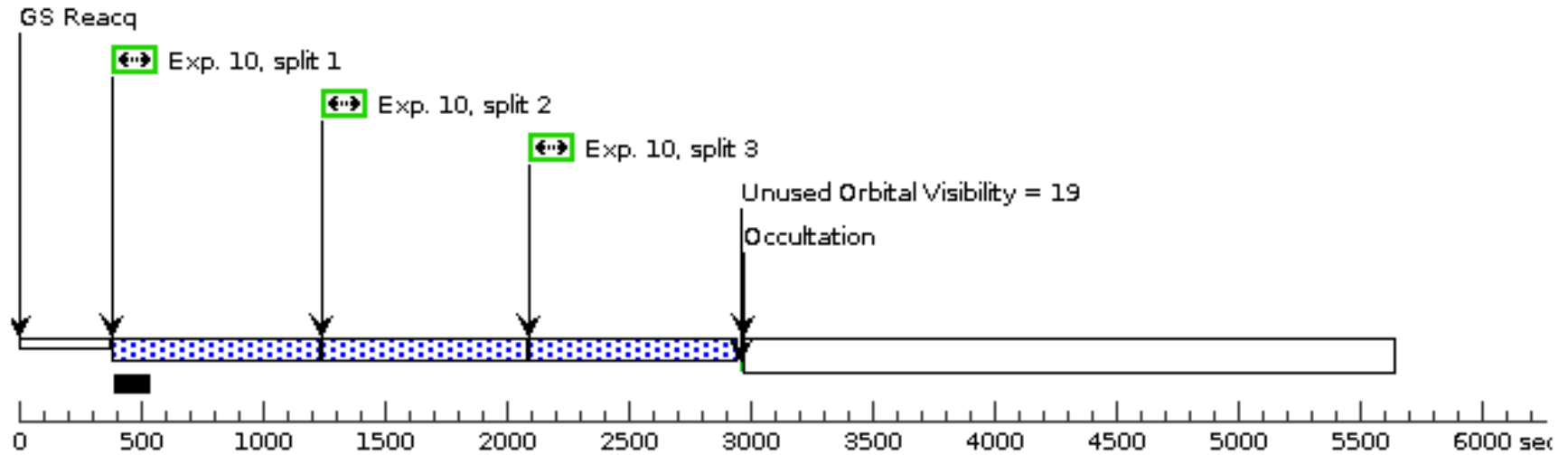
Orbit 4

Server Version: 20260618



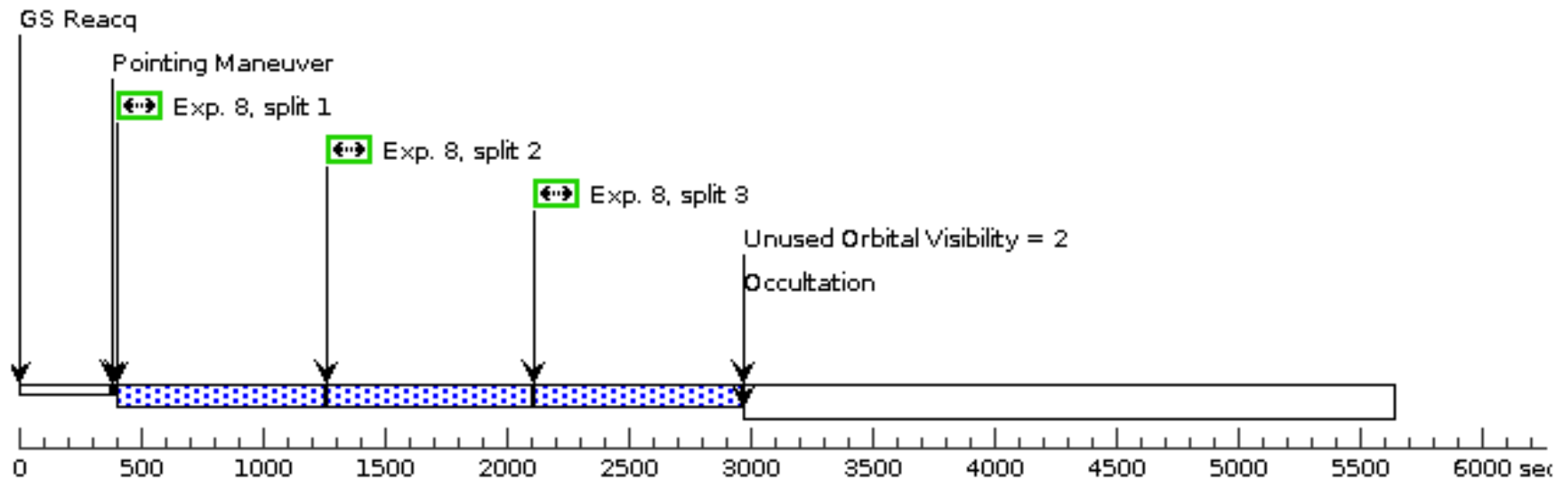
Orbit 5

Server Version: 20260618



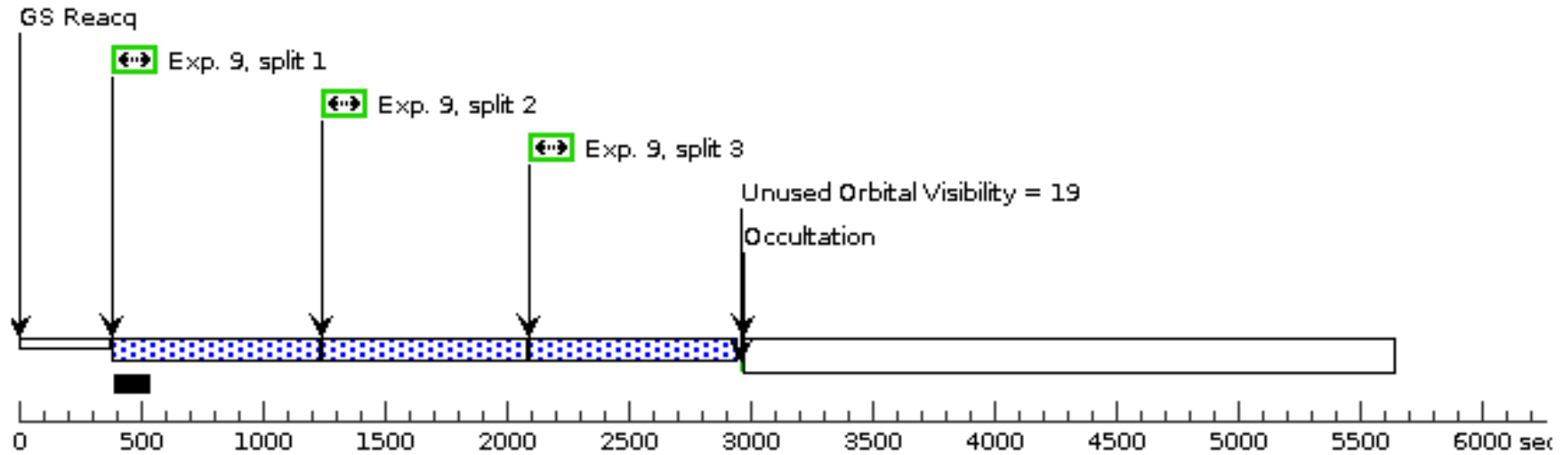
Orbit 6

Server Version: 20260618



Orbit 7

Server Version: 20260618



Orbit 8

Server Version: 20260618

