15067 - Eta Carinae's Change of State: The End Game

Cycle: 25, Proposal Category: GO

(UV Initiative)

(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) ETA-CAR-A CCDFLAT WAVE	STIS/CCD	2	20-Jul-2017 15:01:50.0	yes
02	(1) ETA-CAR-A	STIS/CCD STIS/FUV-MAMA STIS/NUV-MAMA	1	20-Jul-2017 15:01:54.0	yes
03	(1) ETA-CAR-A (2) ETA-CAR-SR CCDFLAT WAVE	STIS/CCD	1	20-Jul-2017 15:01:56.0	yes

4 Total Orbits Used

ABSTRACT

Eta Car is the only giant-eruption survivor that can be observed well. Hence it is genuinely unique for testing instability theories which are crucial for very massive stars. Fortuitously, a rapid change of state began about 1998. This represents an unexpected stage in the recovery following the Great Eruption ("supernova impostor event") seen 170 years ago. Now there are reasons to think that the change of state is nearly complete. HST/STIS has been the main source of information on this phenomenon, and is the only instrument that can show the final (or nearly final) state. Therefore we propose to complete this record in Cy 25. The archival value is very high, because similar observations will later be impossible; the star is changing irreversibly.

HST is needed, because UV is essential and because all ground-based spectroscopy of eta Car is heavily contaminated by emission lines formed about 0.3 arcsec away. For this object each HST orbit produces many high-quality spectra. The same data apply to other problems, e.g. exotic emission processes in the ejecta, bipolar structures, and the nature of the companion star.

We propose STIS observations: (1) A final update of the central star's wind spectrum at selected NUV-to-red wavelengths. (2) Brief UV spectroscopy with the MAMA echelle. This will be the only such data obtained at a time when the companion star is near apoastron. (3) Special sampling of the Homunculus ejecta-nebula using STIS/CCD with long exposure times. This was done once before, in 2000, and major changes have occurred since then.

OBSERVING DESCRIPTION

--- XXX FILLER TEXT XXX --- Will insert real description later...

Visit

Proposal 15067, CCD on star (01) Thu Jul 20 19:01:58 GMT 2017

Diagnostic Status: No Diagnostics

Scientific Instruments: STIS/CCD

Special Requirements: ORIENT 16.8D TO 17.2 D; ORIENT 196.8D TO 197.2 D

Comments: This visit is adapted from Visit 01 of GO 13377 (Cy 21, 2014).
--- USE SPECIAL CATALOG ZZZQ FOR ACQ ---
-- ORIENT requirements: The two brightest Weigelt Knots, ejected blobs about 0.4 arcsec NW of the star, are located near PA= 302 and 332 D. Several previous STIS observations of the star have included those knots by orienting the slit accordingly. The ORIENT parameters listed below are chosen to match the most frequent earlier orientations. ORIENT = about 167.2D or 347.2D would also be OK but not as good as 17D or 197D.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=STIS-ALONG-SLIT	Coordinate Frame=POS-TARG		(10), (12), (19), (21), (23-24), (26)
	Purpose=DITHER	Pattern Orientation=90.0		
	Number Of Points=2	Angle Between Sides=		
	Point Spacing=0.2282	Center Pattern=false		
	Line Spacing=			

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	ETA-CAR-A	RA: 10 45 3.5910 (161.2649625d)		V=5.0+/-1	Reference Frame: GSC1
		Dec: -59 41 4.26 (-59.68452d)			
		Equinox: J2000			
		Plate Id: ZZZQ			

Comments: IMPORTANT: Ref frame is really special catalog ZZZQ, which was used for almost all successful HST acquisitions of Eta Car in the past. ZZZQ coords differ from ICRS by about 0.2 arcsec, see etacar.umn.edu.. --
Catalog ZZZQ was prepared before 1990 because original GSC was inadequate in Carina crowded field. Later version of GSC would _probably_ be OK, but has never been verified for this target. --
See, for example, acquisitions in GO 13377 (and many other programs with this target).

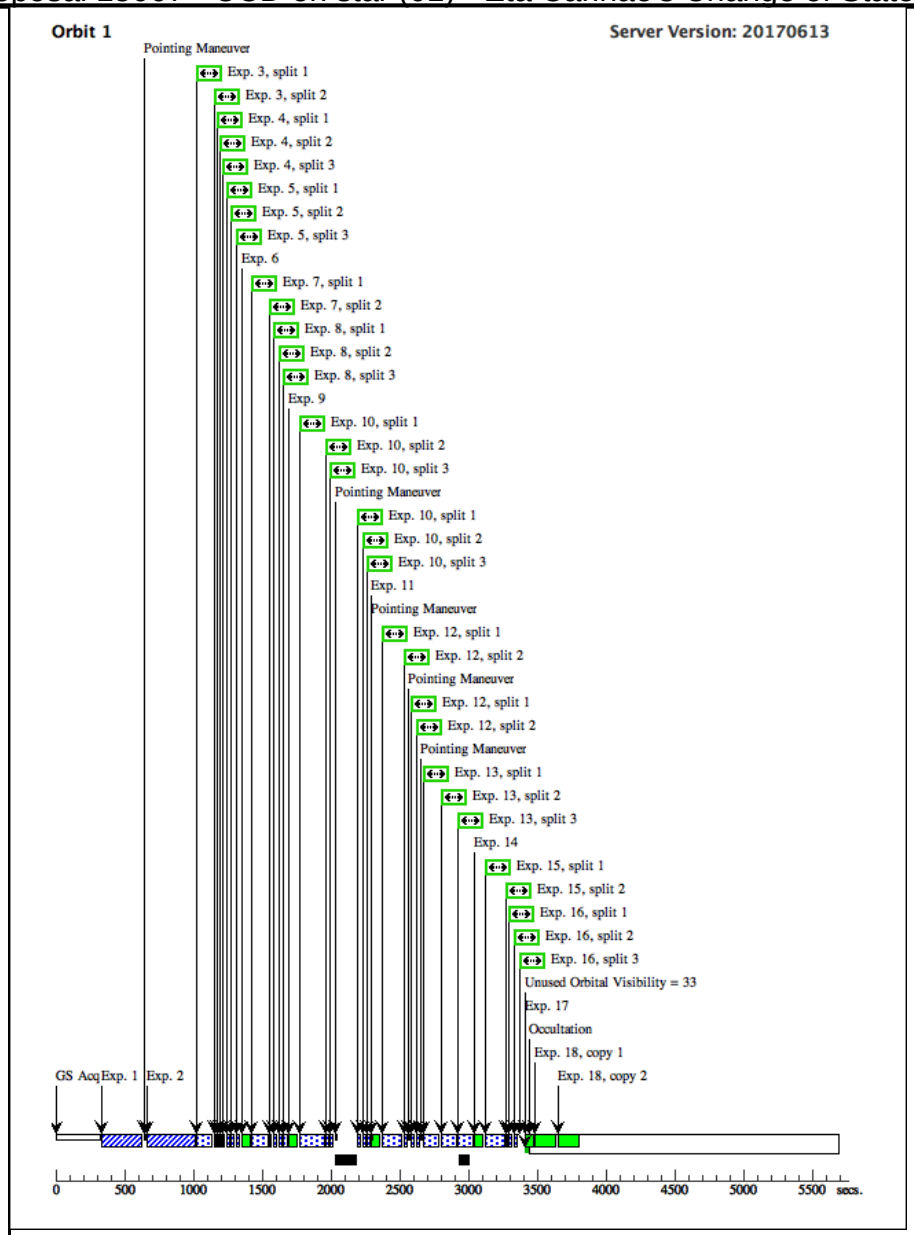
Exposures

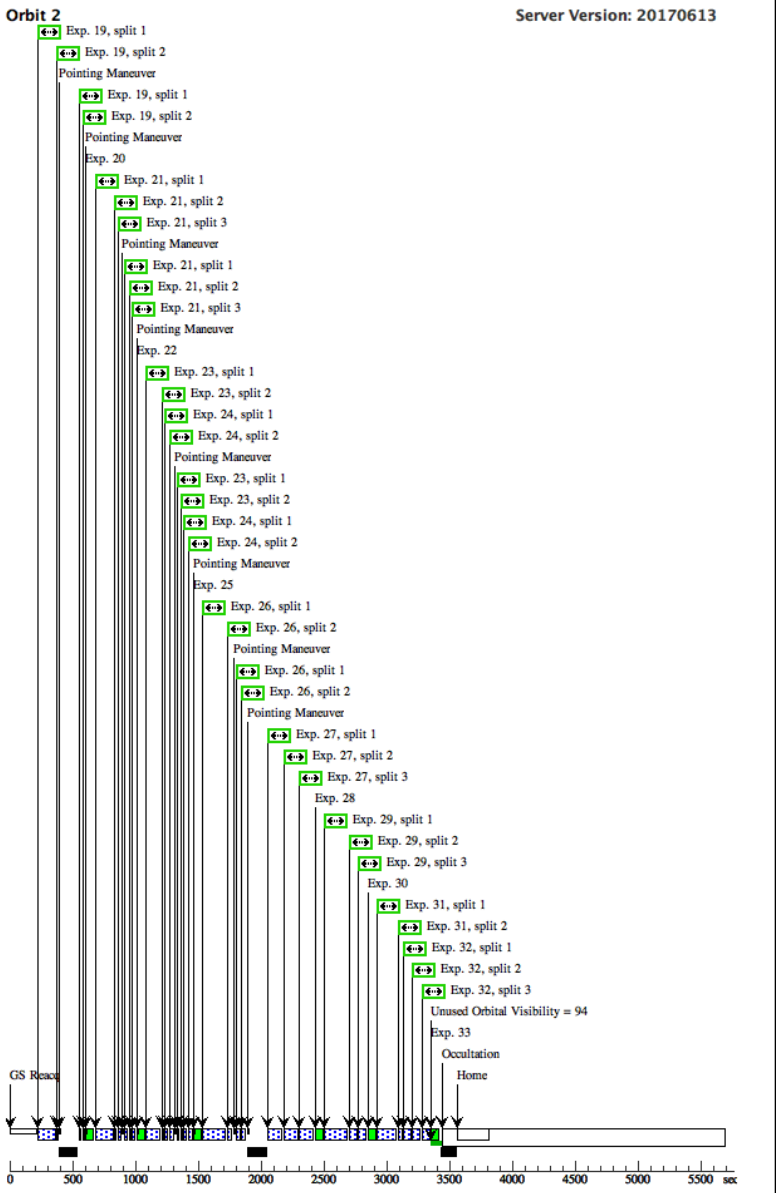
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ 1	(1) ETA-CAR-A	STIS/CCD, ACQ, F25ND3	MIRROR	ACQTYPE=POINT			0.3 Secs (0.3 Secs)	
								[==>]	***[1]***
Comments: IMPORTANT: Special catalog ZZZQ must be used for acquisition, like previous obs of Eta Car. For example, see program GO 13377 (and almost all other programs on this target). --- See comments for target ETA-CAR-A.									
2	ACQ 2	(1) ETA-CAR-A	STIS/CCD, ACQ/PEAK, 52X0.1	G750M				0.4 Secs (0.4 Secs)	
				7795 A				*[==>]*	***[1]***
Comments: We use 7795 A becaise this wvl interval has no bright emission lines. Other wavelength ranges might be perturbed by the nearby Weigelt emission-line blobs.									
3	6768 short	(1) ETA-CAR-A	STIS/CCD, ACCUM, 52X0.1	G750M	CR-SPLIT=2;			0.2 Secs (0.2 Secs)	
				6768 A	GAIN=4;			*[==>(Split 1)]*	
					SIZEAXIS2=100;			*[==>(Split 2)]*	***[1]***
					WAVECAL=NO				
Comments: Very short exposure to get core of very bright H-alpha emission line. WAVE CAL=NO because we are explicitly managing the WAVECALs.									
4	6768 mediu m	(1) ETA-CAR-A	STIS/CCD, ACCUM, 52X0.1	G750M	CR-SPLIT=3;			2.1 Secs (2.1 Secs)	
				6768 A	SIZEAXIS2=160;			*[==>(Split 1)]*	
					GAIN=4;			*[==>(Split 2)]*	***[1]***
					WAVECAL=NO			*[==>(Split 3)]*	
Comments: Some pixels in the H-alpha emission line will be saturated in this exposure. WAVECAL=NO because we explicitly manage the WAVECALS. '									
5	6768 long	(1) ETA-CAR-A	STIS/CCD, ACCUM, 52X0.1	G750M	SIZEAXIS2=480;			15 Secs (15 Secs)	
				6768 A	CR-SPLIT=3;			*[==>(Split 1)]*	
					GAIN=1;			*[==>(Split 2)]*	***[1]***
					WAVECAL=NO			*[==>(Split 3)]*	
Comments: H-alpha emission line on star will be heavily exposed in this exposure.									
6	6768 WCAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G750M				*[==>]*	***[1]***
				6768 A					
7	5734 short	(1) ETA-CAR-A	STIS/CCD, ACCUM, 52X0.1	G750M	CR-SPLIT=2;			4 Secs (4 Secs)	
				5734 A	SIZEAXIS2=200;			*[==>(Split 1)]*	
					GAIN=4;			*[==>(Split 2)]*	***[1]***
					WAVECAL=NO				
8	5734 long	(1) ETA-CAR-A	STIS/CCD, ACCUM, 52X0.1	G750M	CR-SPLIT=3;			30 Secs (30 Secs)	
				5734 A	SIZEAXIS2=400;			*[==>(Split 1)]*	
					GAIN=4;			*[==>(Split 2)]*	***[1]***
					WAVECAL=NO			*[==>(Split 3)]*	
Comments: Includes UV-excited N II multiplet 5668--5712 A. Also useful for V-band photometry. -- This long exposure samples outlying ejecta.									
9	5734 WCAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G750M				*[==>]*	***[1]***
				5734 A					
10	4706	(1) ETA-CAR-A	STIS/CCD, ACCUM, 52X0.1	G430M	CR-SPLIT=3;		Pattern 1, Exps 10-1 0 in CCD on star (01) (1)	30 Secs (60 Secs)	
				4706 A	SIZEAXIS2=200;			*[==>(Pattern 1, Split 1)]*	
					GAIN=4;			*[==>(Pattern 1, Split 2)]*	
					WAVECAL=NO			*[==>(Pattern 1, Split 3)]*	
								[==>(Pattern 2, Split 1)]	***[1]***
								[==>(Pattern 2, Split 2)]	
								[==>(Pattern 2, Split 3)]	
Comments: Dither and CR-SPLIT=3 to get high quality. This wvl interval includes several critical spectr features.									

11	4706 WCAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G430M 4706 A			*[==>]*	***[1]***
12	LODISP 20 00 short	(1) ETA-CAR-A	STIS/CCD, ACCUM, 52X0.1	G230LB 2375 A	CR-SPLIT=2; GAIN=4; SIZEAXIS2=100; WAVECAL=NO	Pattern 1, Exps 12-12 in CCD on star (01) (1)	20 Secs (40 Secs) *[==>(Pattern 1, Split 1)]* *[==>(Pattern 1, Split 2)]* *[==>(Pattern 2, Split 1)]* *[==>(Pattern 2, Split 2)]*	***[1]***
Comments: Grating G230LB is chiefly useful for photometry. However, we use dither because some emission line structures might be omitted from our other wvl samples.								
13	LODISP 20 00 long	(1) ETA-CAR-A	STIS/CCD, ACCUM, 52X0.1	G230LB 2375 A	SIZEAXIS2=200; GAIN=4; CR-SPLIT=3		300 Secs (300 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]*	***[1]***
Comments: We use grating G230LB primarily for photometry. However, it may also indicate NUV emission lines outside the other wvl samples.								
14	:LODISP 20 00 WCAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G230LB 2375 A			*[==>]*	***[1]***
15	7283 short	(1) ETA-CAR-A	STIS/CCD, ACCUM, 52X0.1	G750M 7283 A	GAIN=4; SIZEAXIS2=160; CR-SPLIT=2		3 Secs (3 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
Comments: Wvls near 7283 A are useful chiefly for outlying ejecta.								
16	7283 long	(1) ETA-CAR-A	STIS/CCD, ACCUM, 52X0.1	G750M 7283 A	GAIN=4; SIZEAXIS2=400; CR-SPLIT=3		30 Secs (30 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]*	***[1]***
17	7283 WCAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G750M 7283 A			*[==>]*	***[1]***
18	7283 FFLAT	CCDFLAT	STIS/CCD, ACCUM, 52X0.1	G750M 7283 A			*[==>(Copy 1)]* *[==>(Copy 2)]*	***[1]***
Comments: This FF is intended to occur at the end of orbit visibility, so it can be done in orbit non-visibility time.								
19	LODISP 43 00	(1) ETA-CAR-A	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A	CR-SPLIT=2; GAIN=4; SIZEAXIS2=160; WAVECAL=NO	Pattern 1, Exps 19-19 in CCD on star (01) (1)	2 Secs (4 Secs) *[==>(Pattern 1, Split 1)]* *[==>(Pattern 1, Split 2)]* *[==>(Pattern 2, Split 1)]* *[==>(Pattern 2, Split 2)]*	***[2]***
Comments: Low-dispersion mainly for photometry around 330 nm and 440 nm. WAVECAL is not essential. *-- We use pattern to improve effective spatial resolution.*								
20	LODISP 43 00 WCAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G430L 4300 A			*[==>]*	***[2]***
21	3936	(1) ETA-CAR-A	STIS/CCD, ACCUM, 52X0.1	G430M 3936 A	CR-SPLIT=3; SIZEAXIS2=100; WAVECAL=NO; GAIN=4	Pattern 1, Exps 21-21 in CCD on star (01) (1)	24 Secs (48 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)]*	***[2]***
Comments: Dither and CR-SPLIT=3 to get highest qual data. This wvl range includes critical spectr features.								

22	3936 WCAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G430M 3936 A			*[==>]*	***[2]***
23	4961 short	(1) ETA-CAR-A	STIS/CCD, ACCUM, 52X0.1	G430M 4961 A	CR-SPLIT=2; SIZEAXIS2=100; GAIN=4; WAVECAL=NO	Pattern 1, Exps 23-24 in CCD on star (01) (1)	2 Secs (4 Secs) *[==>(Pattern 1, Split 1)]* *[==>(Pattern 1, Split 2)]* *[==>(Pattern 2, Split 1)]* *[==>(Pattern 2, Split 2)]*	***[2]***
Comments: Short exposure to avoid saturation in core of H-beta line. WCAL=NO because we explicitly manage the wavecals.								
24	4961 long	(1) ETA-CAR-A	STIS/CCD, ACCUM, 52X0.1	G430M 4961 A	CR-SPLIT=2; SIZEAXIS2=400; GAIN=4; WAVECAL=NO	Pattern 1, Exps 23-24 in CCD on star (01) (1)	20 Secs (40 Secs) *[==>(Pattern 1, Split 1)]* *[==>(Pattern 1, Split 2)]* *[==>(Pattern 2, Split 1)]* *[==>(Pattern 2, Split 2)]*	***[2]***
Comments: This wvl interval includes H-beta and other emission lines. WCAL=NO because we're explicitly managing the wavecals.								
25	4961 WCAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G430M 4961 A			*[==>]*	***[2]***
26	2557 short	(1) ETA-CAR-A	STIS/CCD, ACCUM, 52X0.1	G230MB 2557 A	GAIN=4; SIZEAXIS2=160; CR-SPLIT=2; WAVECAL=NO	Pattern 1, Exps 26-26 in CCD on star (01) (1)	40 Secs (80 Secs) *[==>(Pattern 1, Split 1)]* *[==>(Pattern 1, Split 2)]* *[==>(Pattern 2, Split 1)]* *[==>(Pattern 2, Split 2)]*	***[2]***
Comments: This wvl range includes the Fe II 2507 quasi-laser lines. Short exposure because they may be bright.								
27	2557 long	(1) ETA-CAR-A	STIS/CCD, ACCUM, 52X0.1	G230MB 2557 A	GAIN=1; CR-SPLIT=3; SIZEAXIS2=200; WAVECAL=NO		300 Secs (300 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]*	***[2]***
28	2557 WCAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G230MB 2557 A			*[==>]*	***[2]***
29	2697	(1) ETA-CAR-A	STIS/CCD, ACCUM, 52X0.1	G230MB 2697 A	CR-SPLIT=3; SIZEAXIS2=160; GAIN=1; WAVECAL=NO		150 Secs (150 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]*	***[2]***
30	2697 WCAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G230MB 2697 A			*[==>]*	***[2]***
31	2836 short	(1) ETA-CAR-A	STIS/CCD, ACCUM, 52X0.1	G230MB 2836 A	CR-SPLIT=2; SIZEAXIS2=100; GAIN=4; WAVECAL=NO		40 Secs (40 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[2]***
32	2836 long	(1) ETA-CAR-A	STIS/CCD, ACCUM, 52X0.1	G230MB 2836 A	GAIN=1; SIZEAXIS2=160; CR-SPLIT=3; WAVECAL=NO		150 Secs (150 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]*	***[2]***
33	2836 WCAL	WAVE	STIS/CCD, ACCUM, 52X0.1	G230MB 2836 A			*[==>]*	***[2]***

Orbit Structure




Orbit 2
Server Version: 20170613
Exp. 19, split 1
Exp. 19, split 2
Pointing Maneuver
Exp. 19, split 1
Exp. 19, split 2
Pointing Maneuver
Exp. 20
Exp. 21, split 1
Exp. 21, split 2
Exp. 21, split 3
Pointing Maneuver
Exp. 21, split 1
Exp. 21, split 2
Exp. 21, split 3
Pointing Maneuver
Exp. 22
Exp. 23, split 1
Exp. 23, split 2
Exp. 24, split 1
Exp. 24, split 2
Pointing Maneuver
Exp. 23, split 1
Exp. 23, split 2
Exp. 24, split 1
Exp. 24, split 2
Pointing Maneuver
Exp. 25
Exp. 26, split 1
Exp. 26, split 2
Pointing Maneuver
Exp. 26, split 1
Exp. 26, split 2
Pointing Maneuver
Exp. 27, split 1
Exp. 27, split 2
Exp. 27, split 3
Exp. 28
Exp. 29, split 1
Exp. 29, split 2
Exp. 29, split 3
Exp. 30
Exp. 31, split 1
Exp. 31, split 2
Exp. 32, split 1
Exp. 32, split 2
Exp. 32, split 3
Unused Orbital Visibility = 94
Exp. 33
Occultation
Home
GS Reacq
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 15067, UV MAMA on star (02) Thu Jul 20 19:01:58 GMT 2017

Diagnostic Status: No Diagnostics

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

Special Requirements: AFTER 01 BY 24 D TO 75 D; SEQ 01,02 WITHIN 60 D

Comments: This is practically a copy of Visit 3 in program GO 13389, which occurred in Sept 2015. Also Visit 2 iin GO 13377, Oct 2013. `
It is highly desirable for this visit to occur within about 2 months of visit 1. --
IEta Car was safely below the allowed brightness limits during 2013-2015. In this program, we can use STIS/CCD data from Visit 1 to verify that this is still true. --
Note that acquisition uses special catalog ZZZQ, see comments on target and on Visit 1.

Fixed Targets

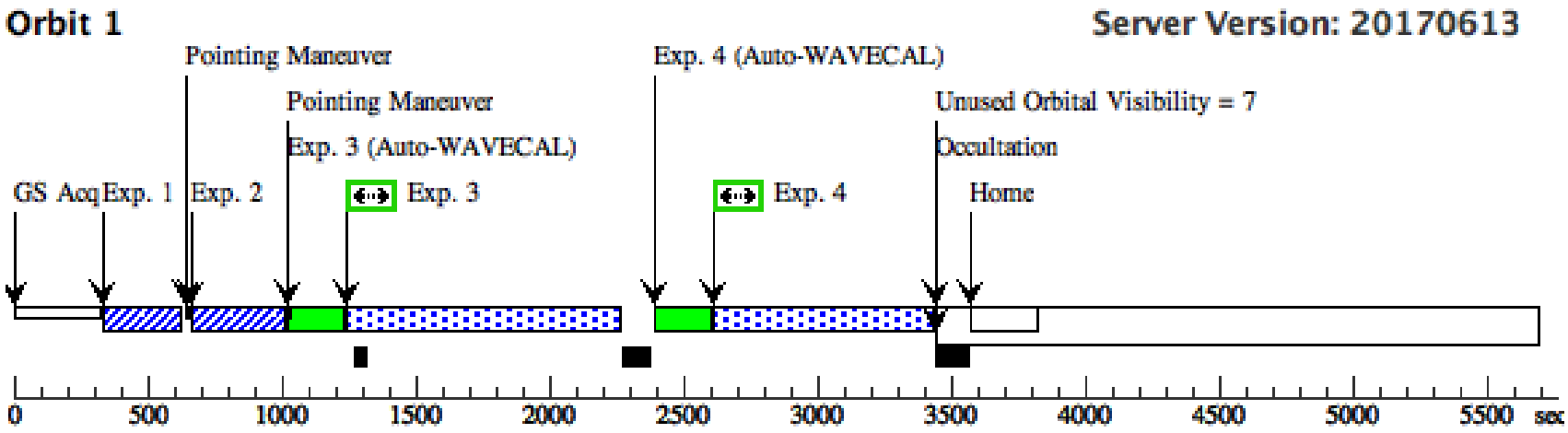
#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	ETA-CAR-A	RA: 10 45 3.5910 (161.2649625d) Dec: -59 41 4.26 (-59.68452d) Equinox: J2000 Plate Id: ZZZQ		V=5.0+/-1	Reference Frame: GSC1

Comments: IMPORTANT: Ref frame is really special catalog ZZZQ, which was used for almost all successful HST acquisitions of Eta Car in the past. ZZZQ coords differ from ICRS by about 0.2 arcsec, see etacar.umn.edu.. --
Catalog ZZZQ was prepared before 1990 because original GSC was inadequate in Carina crowded field. Later version of GSC would _probably_ be OK, but has never been verified for this target. --
See, for example, acquisitions in GO 13377 (and many other programs with this target).

Exposures

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ 1	(1) ETA-CAR-A	STIS/CCD, ACQ, F25ND3	MIRROR	ACQTYPE=POINT			0.3 Secs (0.3 Secs) *[==>]*	 ***[1]***
	Comments: This ACQ has the same parameters as Visit 3 in program GO 13389.								
2	ACQ 2 - CCD peakup	(1) ETA-CAR-A	STIS/CCD, ACQ/PEAK, 52X0.1	G750M 7795 A				0.4 Secs (0.4 Secs) *[==>]*	 ***[1]***
	Comments: Again, just like Visit 3 in program 13389. We use wavelength 7795 because that interval has no strong emission lines. Therefore the peakup will not be perturbed by the nearby Weigelt Knots which are emission-line sources.								
3	FUV 142 nm (000)	(1) ETA-CAR-A	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140M 1425 A				1000 Secs (1000 Secs) *[==>]*	 ***[1]***
	Comments: We omit an ETC run, because observations like this have already been done on Eta Car: 2013 Oct 26 in program 13377, and 2015 Sept 2 in program 13789. Observed MAMA count rates were far below the allowed limits, see below. We will use STIS/CCD Visit 1 to verify that the star has not brightened by a large factor.in the UV. --- *(In any case, Eta Car's UV spectrum is too complicated for a realistic ETC run.) ---* *** Count rates observed in 2013-2015: 0.5 ct/s in peak pixel, global rate 55 thousand cts/s in entire detector. ***"								
4	NUV 198 nm (000)	(1) ETA-CAR-A	STIS/NUV-MAMA, ACCUM, 0.2X0.2	E230M 1978 A				800 Secs (800 Secs) *[==>]*	 ***[1]***
	Comments: We omit an ETC run number for reasons explained in previous exposure. Target was far below allowed brightness limits in MAMA obs 2013 and 2015. --- *** Observed count rates in 2013--2015: Maximum pixel 4.8 cts/s, global 100 thousand cts/s in entire detector. ***"								

Orbit Structure



Visit

Proposal 15067, Wider slit Homunculus (03) Thu Jul 20 19:01:58 GMT 2017

Diagnostic Status: Warning

Scientific Instruments: STIS/CCD

Special Requirements: ORIENT 183.8D TO 183.8 D; ORIENT 3.8D TO 3.8 D

Comments: Here we are trying to duplicate some earlier observations as closely as possible. Those obs occurred in Visit 2 of program GO 8327, done on 2000 March 13. The goal is to use wider slit 52x0.2F1 across Eta Car's Homunculus nebula. The slit must have the same orientation as in 2000, and the star plus Weigelt Knots must be blocked by the slit's occulting bar ("fiducial"). ---
The ORIENT angle is simply copied from the GO 8327 plan, with +180D alternative; if STIS definitions or slit orientation parameters have been revised since 2000, then we should alter the ORIENT angle accordingly. --
We omit a WAVECAL for grating tilt 4961, because there is not enough orbit time; see comment for that exposure. --
Note that acquisition uses special catalog ZZZQ, see comments for target ETA-CAR-A and for Visit 1.

Diagnostics

(Wider slit Homunculus (03)) Warning (Orbit Planner): STIS SCIENCE TOO FAR FROM WAVECAL

(Wider slit Homunculus (03)) Warning (Orbit Planner): STIS SCIENCE TOO FAR FROM WAVECAL

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	ETA-CAR-A	RA: 10 45 3.5910 (161.2649625d) Dec: -59 41 4.26 (-59.68452d) Equinox: J2000 Plate Id: ZZZQ		V=5.0+/-1	Reference Frame: GSC1

Comments: IMPORTANT: Ref frame is really special catalog ZZZQ, which was used for almost all successful HST acquisitions of Eta Car in the past. ZZZQ coords differ from ICRS by about 0.2 arcsec, see etacar.umn.edu.. --
Catalog ZZZQ was prepared before 1990 because original GSC was inadequate in Carina crowded field. Later version of GSC would _probably_ be OK, but has never been verified for this target. --
See, for example, acquisitions in GO 13377 (and many other programs with this target).

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	ETA-CAR-SR	Offset from ETA-CAR-A RA Offset: 0.0 Secs Dec Offset: 0.1 Arcsec		V=5.0+/-1	Offset Position (ETA-CAR-SR)

Comments: Target ETA-CAR-SR is used to duplicate pointing of 52x0.2F1 slit in Visit 2 of GO 8327, done on 2000 March 13. Name "SR" originally implied "strontium" but this has no significance now. We suspect that target SR in 2000 should have been 0.1 arcsec NW of the star, but a typo or misunderstanding put it at 0.1 arcsec N instead. Anyway, here we are trying to duplicate the earlier 52x0.2F1 observations as closely as possible.

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	ACQ 1	(1) ETA-CAR-A	STIS/CCD, ACQ, F25ND3	MIRROR	ACQTYPE=POINT			0.3 Secs (0.3 Secs) *[==>]*	***[1]***
2	ACQ 2	(1) ETA-CAR-A	STIS/CCD, ACQ/PEAK, 52X0.1	G750M 7795 A				0.4 Secs (0.4 Secs) *[==>]*	***[1]***
Comments: We use wvl 7795 A for peakfup, see comments for Visits 1 and 2. -- Note that slit 52x0.1 is used for this peakup, but the main observations in this visit will use slit 52x0.2F1. --									
3	6768 short	(2) ETA-CAR-SR	STIS/CCD, ACCUM, 52X0.2F1	G750M 6768 A	SIZEAXIS2=200; CR-SPLIT=2; GAIN=4; WAVECAL=NO			5 Secs (5 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
Comments: WAVECAL=NO because we are managing WAVECALS explicitly.									
4	6768 long	(2) ETA-CAR-SR	STIS/CCD, ACCUM, 52X0.2F1	G750M 6768 A	CR-SPLIT=2; SIZEAXIS2=500; GAIN=4; WAVECAL=NO			110 Secs (110 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
Comments: Automatic wavecal is assumed for this exposure, not for the preceding one.									
5	6768 WCAL	WAVE	STIS/CCD, ACCUM, 52X0.2	G750M 6768 A				*[==>]*	***[1]***
6	3936	(2) ETA-CAR-SR	STIS/CCD, ACCUM, 52X0.2F1	G430M 3936 A	SIZEAXIS2=500; CR-SPLIT=2; GAIN=4; WAVECAL=NO			60 Secs (60 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
7	3936 WCAL	WAVE	STIS/CCD, ACCUM, 52X0.2	G430M 3936 A				*[==>]*	***[1]***
8	4961	(2) ETA-CAR-SR	STIS/CCD, ACCUM, 52X0.2F1	G430M 4961 A	CR-SPLIT=2; GAIN=4; WAVECAL=NO; SIZEAXIS2=400			40 Secs (40 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
Comments: No WAVECAL for this grating tilt, because the orbit does not allow enough time. We will estimate an approximate wvl calibration by combining information from known features in the object, plus wavecals for 4961 at other times, plus the 6768 and 3936 data in this orbit. Precise wavelengths and velocities ae not needed for the 4961 grating tilt.									
9	2836	(2) ETA-CAR-SR	STIS/CCD, ACCUM, 52X0.2F1	G230MB 2836 A	CR-SPLIT=2; SIZEAXIS2=400; GAIN=1; WAVECAL=NO			70 Secs (70 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
10	2836 WCAL	WAVE	STIS/CCD, ACCUM, 52X0.2	G230MB 2836 A				*[==>]*	***[1]***
11	2697	(2) ETA-CAR-SR	STIS/CCD, ACCUM, 52X0.2F1	G230MB 2697 A	CR-SPLIT=2; WAVECAL=NO; GAIN=1; SIZEAXIS2=400			80 Secs (80 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
12	2697 WCAL	WAVE	STIS/CCD, ACCUM, 52X0.2	G230MB 2697 A				*[==>]*	***[1]***

	13	7283 short	(2) ETA-CAR-SR	STIS/CCD, ACCUM, 52X0.2F1	G750M 7283 A	CR-SPLIT=2; GAIN=4; SIZEAXIS2=400; WAVECAL=NO	10 Secs (10 Secs) *[==>(Split 1)]* *[==>(Split 2)]*	***[1]***
	Comments: Exposures with wvl 7283 A should be at end of orbit, so FFLATs can be done after visibility time ends.							
	14	7283 long	(2) ETA-CAR-SR	STIS/CCD, ACCUM, 52X0.2F1	G750M 7283 A	CR-SPLIT=3; GAIN=4; SIZEAXIS2=500; WAVECAL=NO	120 Secs (120 Secs) *[==>(Split 1)]* *[==>(Split 2)]* *[==>(Split 3)]*	***[1]***
	Comments: This exposure should occur at end of orbit, so FFLAT's can be done after orbit visibility time.							
	15	7283 WCAL	WAVE	STIS/CCD, ACCUM, 52X0.2	G750M 7283 A		*[==>]*	***[1]***
	16	7283 FFLAT	CCDFLAT	STIS/CCD, ACCUM, 52X0.2F1	G750M 7283 A		*[==>(Copy 1)]* *[==>(Copy 2)]*	***[1]***
	Comments: FFLATS should occur after end of visi bility period							

Orbit Structure