



15992 - Eta Carinae: Taking the Plunge

Cycle: 27, Proposal Category: GO

(Availability Mode: AVAILABLE)

INVESTIGATORS

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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) -ETA-CAR WAVE	STIS/CCD STIS/FUV-MAMA	1	17-Feb-2020 16:00:16.0	yes
02	(1) -ETA-CAR WAVE	STIS/CCD STIS/FUV-MAMA	1	17-Feb-2020 16:00:18.0	yes

<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>
03	(1) -ETA-CAR WAVE	STIS/CCD STIS/FUV-MAMA	1	17-Feb-2020 16:00:19.0	yes
04	(1) -ETA-CAR WAVE	STIS/CCD STIS/FUV-MAMA	1	17-Feb-2020 16:00:20.0	yes

4 Total Orbits Used

ABSTRACT

Eta Carinae is the nearest superluminous binary system we can easily study. Over the past 20 years the HETGS has been a key to unlocking the dynamics of the wind-wind collision and the nature of the hidden companion star. The AO 21 interval includes the next periastron passage, offering us a view of the hot gas in the wind-wind bow shock as it plunges towards the primary. We request Chandra and HST imaging spectrometry to uniquely probe the wind-wind shock on scales from the stellar separation to 100s of AU. These observations and our approved AO20 HETG Eta Car observations (not yet obtained), with new imaging with VLTI/MATISSE, and previous X-ray spectra from Chandra and other instruments will provide a detailed view of the colliding wind shock structure and the nature of the companion.

The four HST/STIS orbits are committed to monitor the FUV spectral changes as the X-ray flux peaks, then drops through the minimum.

OBSERVING DESCRIPTION

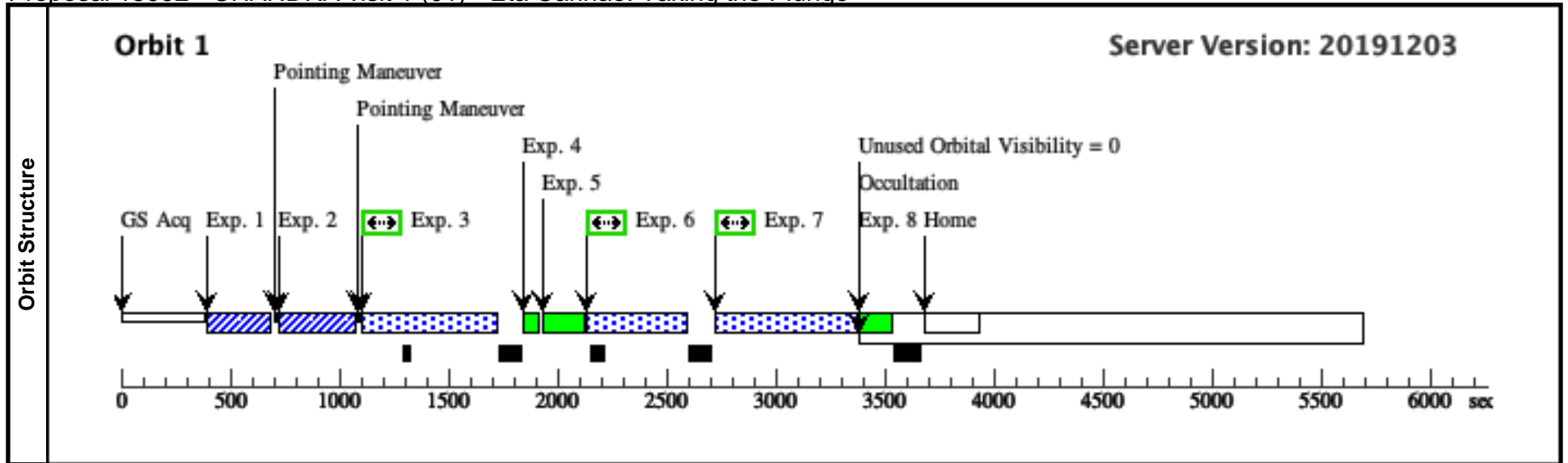
The four orbits will be dedicated to single orbit visits recording the FUV spectra in coordination with the X-ray spectroscopic visits by CHANDRA. Visibility has evolved for Eta Carinae. Previously it has been accessible for nominal orbits throughout the year, but apparently is less accessible. The projected windows, 19-Dec-31 Dec-2019, 8-Feb- to 24 Feb-2020 and 20-Mar-13-Apr-2020 do not align as well as anticipated during the proposal cycle. The best match appears to be as follows:

CHANDRA visit	WINDOW	HST VISIT	APT PLANNING HST/STIS WINDOW
1-3	5 Jan to 5 Feb-2020	1	28 to 31-DEC-2019 (two or three visits planned for CHANDRA grating)
4	18 to 25 Feb-2020	2	8 to 24-FEB-2020 Visit with CHANDRA/ACIS
5	29-Feb to 8-MAR-2020	3	20 to 31-MAR-2020 2nd visit with CHANDRA/ACIS
		4	1 to 18-APR-2020 Followup during late portion of low state

Proposal 15992 - CHANDRA visit 1 (01) - Eta Carinae: Taking the Plunge

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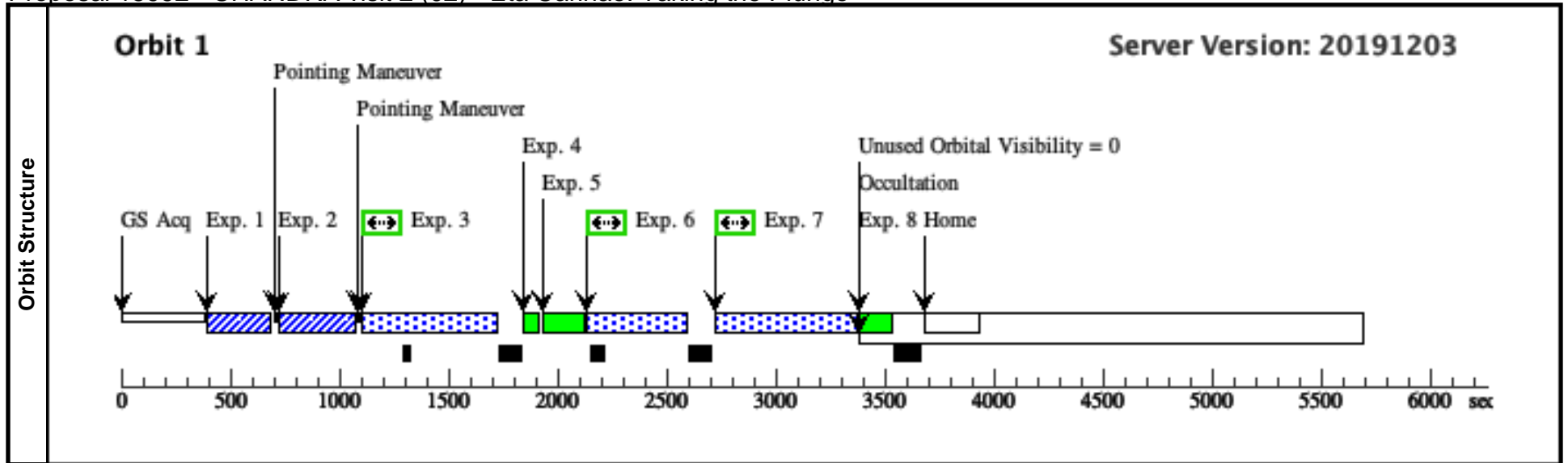
Visit	Proposal 15992, CHANDRA visit 1 (01), completed Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: BETWEEN 28-DEC-2019 AND 10-JAN-2020 <i>Comments: This visit is to be within the first CHANDRA window in January 2020</i>									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
		(1)	-ETA-CAR	RA: 10 45 3.5910 (161.2649625d) Dec: -59 41 4.26 (-59.68452d) Equinox: J2000 Plate Id: ZZZQ	Proper Motion RA: 0 sec of time/yr Proper Motion Dec: 0 arcsec/yr Parallax: .0004" Epoch of Position: 2000	V=4.8+/-0.3 2e-11 erg cm ² s at 1400A	Reference Frame: GSC1			
	<i>Comments: This utilizes special astrometry that has been accurate for observations from 2000 to 2019. The stated flux is an upper limit as historically Eta Car begins to fade in the UV a few months before periastron. However, being very cautious of the MAMA global count rate, we shift from E140M to E140H.</i> Category=STAR Description=[ETA CARINAE STAR, WOLF RAYET - WN] Extended=NO									
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Acquisition exposure	(1) -ETA-CAR	STIS/CCD, ACQ, F25ND3	MIRROR				0.3 Secs (0.3 Secs) [==>]	[1]
	<i>Comments: Peak=9290 e-, Total=15480 e-, S/N=123</i>									
	2	ACQ/Peak	(1) -ETA-CAR	STIS/CCD, ACQ/PEAK, 52X0.1	G750M 7795 A				0.4 Secs (0.4 Secs) [==>]	[1]
	3	(STIS.sp.13 41238)	(1) -ETA-CAR	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H 1598 A	WAVECAL=NO			440 Secs (440 Secs) [==>]	[1]
	4		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H 1598 A				[==>]	[1]
	5		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H 1416 A				[==>]	[1]
	6	(STIS.sp.13 41236)	(1) -ETA-CAR	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H 1416 A	WAVECAL=NO			450 Secs (450 Secs) [==>]	[1]
	<i>Comments: Count rates for same exposure in proposal 15067, visit 2 was 75539 c/s. The predicted magnitude (Damineli) is slightly fainter for May 2019 than in April 2018.</i>									
	7	(STIS.sp.13 41236)	(1) -ETA-CAR	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H 1234 A	WAVECAL=NO			519 Secs (519 Secs) [==>]	[1]
<i>Comments: Count rates for same exposure in proposal 15067, visit 2 was 75539 c/s. The predicted magnitude (Damineli) is slightly fainter for May 2019 than in April 2018.</i>										
8		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H 1234 A				100 Secs (100 Secs) [==>]	[1]	



Proposal 15992 - CHANDRA visit 2 (02) - Eta Carinae: Taking the Plunge

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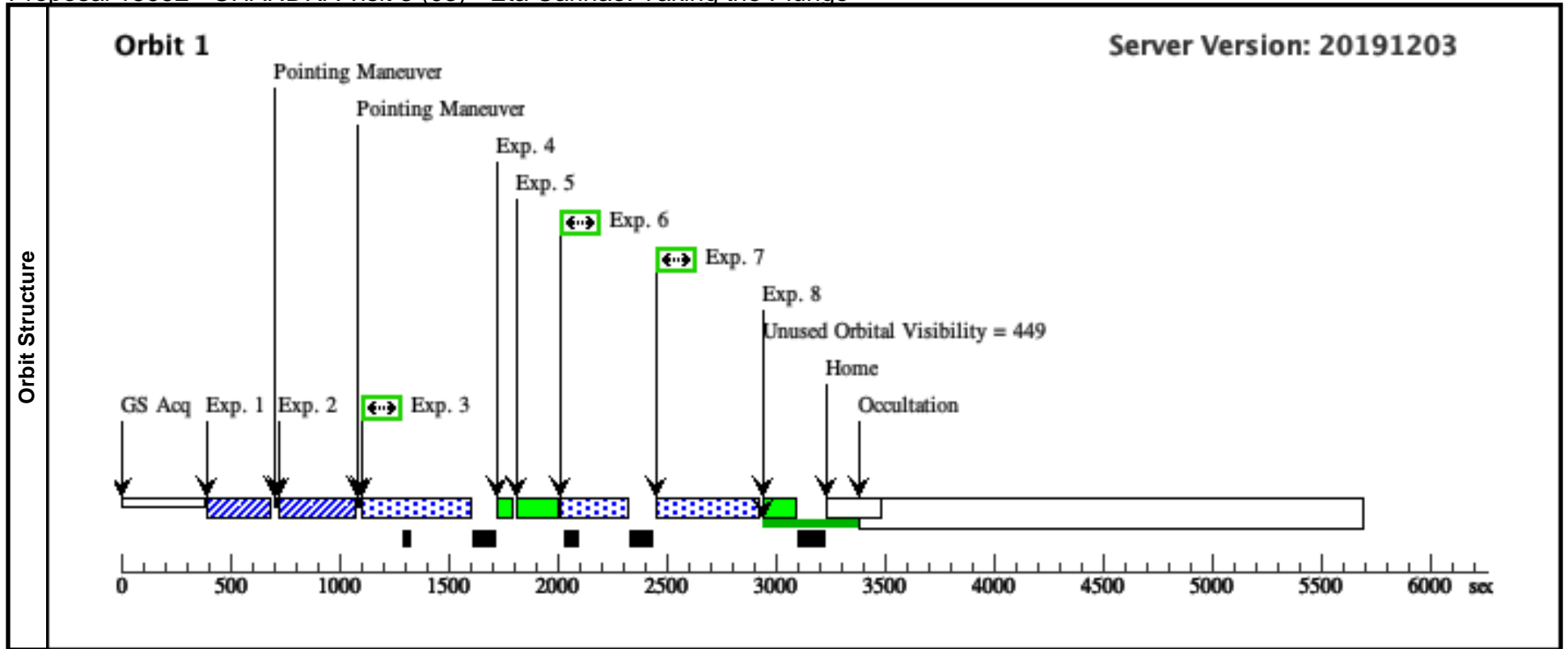
Visit	Proposal 15992, CHANDRA visit 2 (02), completed Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: AFTER 01: BETWEEN 20-JAN-2020 AND 15-FEB-2020									
	Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous			
		(1)	-ETA-CAR	RA: 10 45 3.5910 (161.2649625d) Dec: -59 41 4.26 (-59.68452d) Equinox: J2000 Plate Id: ZZZQ	Proper Motion RA: 0 sec of time/yr Proper Motion Dec: 0 arcsec/yr Parallax: .0004" Epoch of Position: 2000	V=4.8+/-0.3 2e-11 erg cm ² s at 1400A	Reference Frame: GSC1			
	<i>Comments: This utilizes special astrometry that has been accurate for observations from 2000 to 2019. The stated flux is an upper limit as historically Eta Car begins to fade in the UV a few months before periastron. However, being very cautious of the MAMA global count rate, we shift from E140M to E140H.</i> Category=STAR Description=[ETA CARINAE STAR, WOLF RAYET - WN] Extended=NO									
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Acquisition exposure	(1) -ETA-CAR	STIS/CCD, ACQ, F25ND3	MIRROR				0.3 Secs (0.3 Secs) [==>]	[1]
	<i>Comments: Peak=9290 e-, Total=15480 e-, S/N=123</i>									
	2	ACQ/Peak	(1) -ETA-CAR	STIS/CCD, ACQ/PEAK, 52X0.1	G750M 7795 A				0.4 Secs (0.4 Secs) [==>]	[1]
	3	(STIS.sp.13 41238)	(1) -ETA-CAR	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H 1598 A	WAVECAL=NO			440 Secs (440 Secs) [==>]	[1]
	4		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H 1598 A				[==>]	[1]
	5		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H 1416 A				[==>]	[1]
	6	(STIS.sp.13 41236)	(1) -ETA-CAR	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H 1416 A	WAVECAL=NO			450 Secs (450 Secs) [==>]	[1]
	<i>Comments: Count rates for same exposure in proposal 15067, visit 2 was 75539 c/s. The predicted magnitude (Damineli) is slightly fainter for May 2019 than in April 2018.</i>									
	7	(STIS.sp.13 41236)	(1) -ETA-CAR	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H 1234 A	WAVECAL=NO			519 Secs (519 Secs) [==>]	[1]
	<i>Comments: Count rates for same exposure in proposal 15067, visit 2 was 75539 c/s. The predicted magnitude (Damineli) is slightly fainter for May 2019 than in April 2018.</i>									
	8		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H 1234 A				100 Secs (100 Secs) [==>]	[1]



Proposal 15992 - CHANDRA visit 3 (03) - Eta Carinae: Taking the Plunge

Mon Feb 17 21:00:21 GMT 2020

Visit		Proposal 15992, CHANDRA visit 3 (03), implementation Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: AFTER 02; BETWEEN 01-MAR-2020 AND 15-MAR-2020									
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous					
	(1)	-ETA-CAR	RA: 10 45 3.5910 (161.2649625d) Dec: -59 41 4.26 (-59.68452d) Equinox: J2000 Plate Id: ZZZQ	Proper Motion RA: 0 sec of time/yr Proper Motion Dec: 0 arcsec/yr Parallax: .0004" Epoch of Position: 2000	V=4.8+/-0.3 2e-11 erg cm ² s at 1400A	Reference Frame: GSC1					
<i>Comments: This utilizes special astrometry that has been accurate for observations from 2000 to 2019. The stated flux is an upper limit as historically Eta Car begins to fade in the UV a few months before periastron. However, being very cautious of the MAMA global count rate, we shift from E140M to E140H.</i> Category=STAR Description=[ETA CARINAE STAR, WOLF RAYET - WN] Extended=NO											
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
	1	Acquisition exposure	(1) -ETA-CAR	STIS/CCD, ACQ, F25ND3	MIRROR				0.3 Secs (0.3 Secs)		
	[==>]									[1]	
	<i>Comments: Peak=9290 e-, Total=15480 e-, S/N=123</i>										
	2	ACQ/Peak	(1) -ETA-CAR	STIS/CCD, ACQ/PEAK, 52X0.1	G750M					0.4 Secs (0.4 Secs)	
	7795 A									[==>]	[1]
	3	(STIS.sp.13 41238)	(1) -ETA-CAR	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H		WAVECAL=NO			320 Secs (320 Secs)	
	1598 A									[==>]	[1]
	4		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H					[==>]	[1]
	1598 A									[==>]	[1]
5		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H					[==>]	[1]	
1416 A									[==>]	[1]	
6	(STIS.sp.13 41236)	(1) -ETA-CAR	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H		WAVECAL=NO			300 Secs (300 Secs)		
1416 A									[==>]	[1]	
<i>Comments: Count rates for same exposure in proposal 15067, visit 2 was 75539 c/s. The predicted magnitude (Damineli) is slightly fainter for May 2019 than in April 2018.</i>											
7	(STIS.sp.13 41236)	(1) -ETA-CAR	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H		WAVECAL=NO			340 Secs (340 Secs)		
1234 A									[==>]	[1]	
<i>Comments: Count rates for same exposure in proposal 15067, visit 2 was 75539 c/s. The predicted magnitude (Damineli) is slightly fainter for May 2019 than in April 2018.</i>											
8		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H					100 Secs (100 Secs)		
1234 A									[==>]	[1]	



Proposal 15992 - CHANDRA visit 4 (04) - Eta Carinae: Taking the Plunge

Mon Feb 17 21:00:21 GMT 2020

Visit	Proposal 15992, CHANDRA visit 4 (04), implementation Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: AFTER 03 BY 16 D TO 46 D; BETWEEN 01-APR-2020:00:00:00 AND 30-APR-2020:00:00:00									
	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
Fixed Targets	(1)	-ETA-CAR	RA: 10 45 3.5910 (161.2649625d) Dec: -59 41 4.26 (-59.68452d) Equinox: J2000 Plate Id: ZZZQ	Proper Motion RA: 0 sec of time/yr Proper Motion Dec: 0 arcsec/yr Parallax: .0004" Epoch of Position: 2000	V=4.8+/-0.3 2e-11 erg cm ² s at 1400A	Reference Frame: GSC1				
	<i>Comments: This utilizes special astrometry that has been accurate for observations from 2000 to 2019. The stated flux is an upper limit as historically Eta Car begins to fade in the UV a few months before periastron. However, being very cautious of the MAMA global count rate, we shift from E140M to E140H.</i> Category=STAR Description=[ETA CARINAE STAR, WOLF RAYET - WN] Extended=NO									
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Acquisition exposure	(1) -ETA-CAR	STIS/CCD, ACQ, F25ND3	MIRROR				0.3 Secs (0.3 Secs) [==>]	[1]
<i>Comments: Peak=9290 e-, Total=15480 e-, S/N=123</i>										
2	ACQ/Peak	(1) -ETA-CAR	STIS/CCD, ACQ/PEAK, 52X0.1	G750M 7795 A				0.4 Secs (0.4 Secs) [==>]	[1]	
3	(STIS.sp.13 41238)	(1) -ETA-CAR	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H 1598 A	WAVECAL=NO			440 Secs (440 Secs) [==>]	[1]	
4		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H 1598 A				[==>]	[1]	
5		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H 1416 A				[==>]	[1]	
6	(STIS.sp.13 41236)	(1) -ETA-CAR	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H 1416 A				450 Secs (450 Secs) [==>]	[1]	
<i>Comments: Count rates for same exposure in proposal 15067, visit 2 was 75539 c/s. The predicted magnitude (Damineli) is slightly fainter for May 2019 than in April 2018.</i>										
7	(STIS.sp.13 41236)	(1) -ETA-CAR	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H 1234 A	WAVECAL=NO			519 Secs (519 Secs) [==>]	[1]	
<i>Comments: Count rates for same exposure in proposal 15067, visit 2 was 75539 c/s. The predicted magnitude (Damineli) is slightly fainter for May 2019 than in April 2018.</i>										
8		WAVE	STIS/FUV-MAMA, ACCUM, 0.2X0.2	E140H 1234 A				100 Secs (100 Secs) [==>]	[1]	

