



17821 - Anatomy of a Starburst: Spatially resolving Star Formation and Feedback in the nucleus of M83

Cycle: 32, Proposal Category: GO

(UV Initiative)

(Availability Mode: SUPPORTED)

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) M83-P1	STIS/CCD STIS/FUV-MAMA	3	26-Mar-2026 15:01:04.0	yes
02	(1) M83-P1 (2) M83-P2	STIS/CCD STIS/FUV-MAMA	1	26-Mar-2026 15:01:04.0	yes
03	(1) M83-P1 (3) M83-P3	STIS/CCD STIS/FUV-MAMA	1	26-Mar-2026 15:01:04.0	yes
04	(1) M83-P1 (4) M83-P4	STIS/CCD STIS/FUV-MAMA	1	26-Mar-2026 15:01:05.0	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>
05	(1) M83-P1 (3) M83-P3	STIS/CCD STIS/FUV-MAMA	1	26-Mar-2026 15:01:05.0	yes

7 Total Orbits Used

ABSTRACT

Given that most of the stellar mass in the Universe was assembled in intense and powerful episodes of star formation (SF) at high-redshift, studies of local starburst galaxies provide us with the unique opportunity to investigate in detail a phenomenon with profound cosmic consequences. FUV spectroscopic studies, available only through the unmatched UV capabilities of HST, are the only venue to access a complete characterization of these young stellar populations formed in nearby highly star-forming galaxies. In an effort to improve our understanding on (1) the parameters that regulate galaxy evolution, (2) the link between pc-scale physics and galactic-scale mechanisms, and (3) the direct effects of young stellar populations onto their surrounding multiphase ISM, we propose a unique spatially-resolved HST/STIS longslit study of 15 young massive clusters in the nuclear region of M83. With this program we aim to quantify for the first time the effects of these young stars, shaping the properties of the gas in extreme environments like those observed in starbursts. Our program will correlate the ionizing and mechanical feedback from these massive stellar populations with the observed properties of the ionized and warm molecular gas (from archival JWST/MIRI MRS observations) at the unprecedented spatial scales of ~ 5 pc. Our efficient project will take us one step forward to probing how young massive stars impact and influence galaxy evolution, and star formation at large.

OBSERVING DESCRIPTION

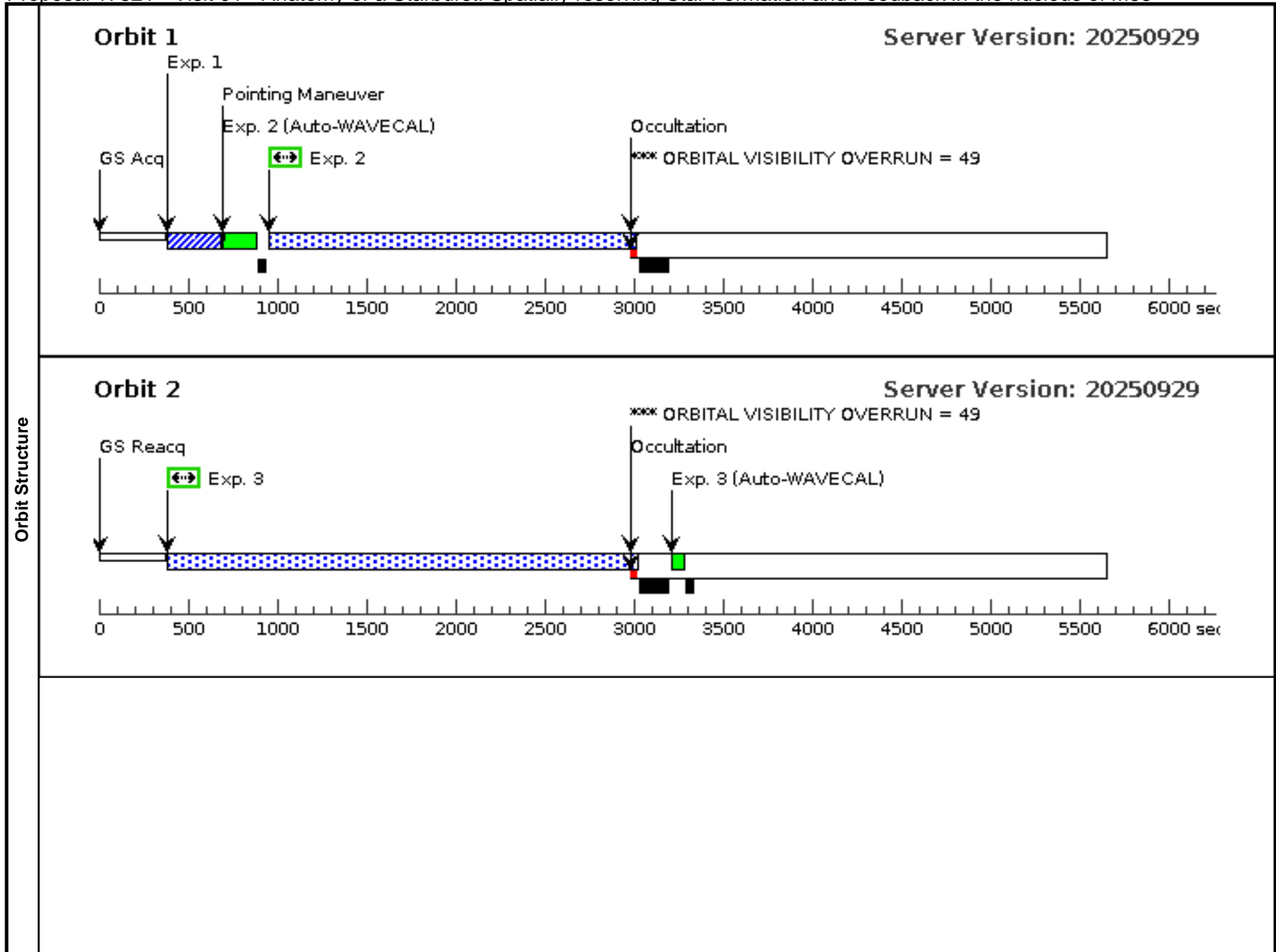
This HST/STIS program targets a sample of young massive clusters in the nuclear region of the spiral galaxy, M83. We use the G140L/52X0.2 setting to collect spectra for 10 spatially resolved star clusters. Given the nature of the starburst region in M83, in each visit we acquire the bright young star cluster in the south-east region of the nucleus, and then apply an offset to the brightest target of interest in the STIS slit. The sample of star clusters was chosen from the photometric catalog by Harris et al. (2001). We note that in each visit, we taken exposures with a single slit orientation, targeting between 2 and 4 clusters at a time.

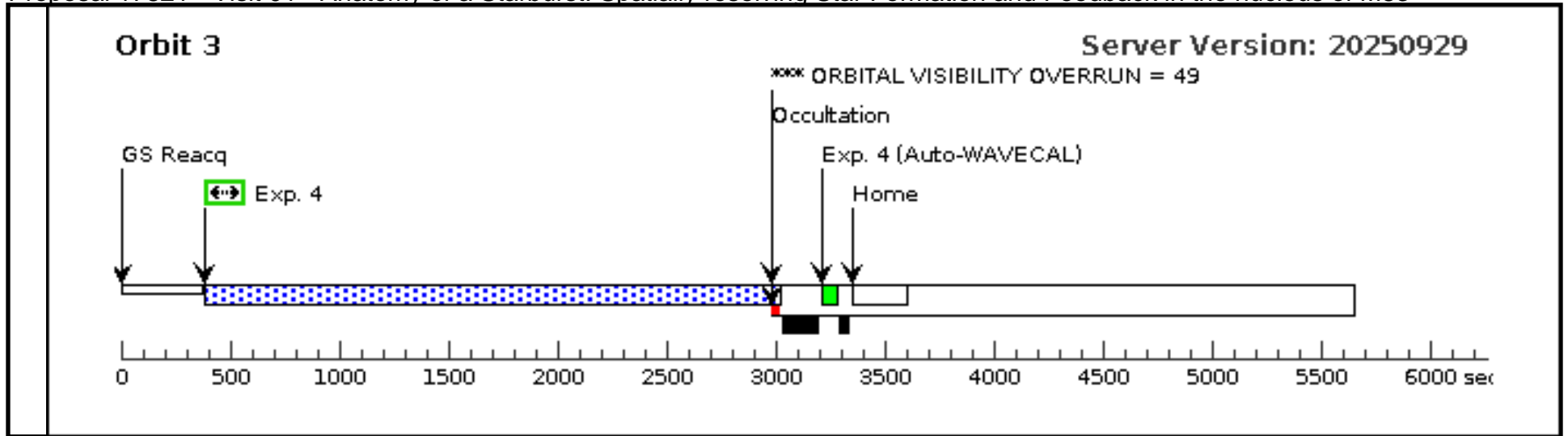
The exposure times were estimated adopting a flat spectrum in F_{λ} , normalized to the magnitudes estimated for the brightest cluster according to Harris et al. (2001). Our observations reach a $S/N \sim 6$ at a wavelength of 1550 Å (C IV).

Proposal 17821 - Visit 01 - Anatomy of a Starburst: Spatially resolving Star Formation and Feedback in the nucleus of M83

Thu Mar 26 19:01:05 GMT 2026

Visit	Proposal 17821, Visit 01, completed Diagnostic Status: Warning Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: ORIENT 320D TO 321 D									
	(Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN (Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN (Visit 01) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN									
Diagnosics										
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	M83-P1	RA: 13 37 0.8424 (204.2535100d) Dec: -29 52 2.99 (-29.86750d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0	V=18.25+/-0.01	Reference Frame: ICRS				
<i>Comments: This object was generated by the targetselector and retrieved from the NED database.</i> Category=GALAXY Description=[STARBURST]										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(STIS.ta.192 9500)	(1) M83-P1	STIS/CCD, ACQ, 50CCD	MIRROR				15 Secs (15 Secs) [==>]	[1]
	2	(STIS.sp.19 29501)	(1) M83-P1	STIS/FUV-MAMA, TIME-TAG, 52X0.2	G140L 1425 A	BUFFER-TIME=20 00			2000 Secs (2048 Secs) [==>2048.0 Secs]	[1]
	3	(STIS.sp.19 29501)	(1) M83-P1	STIS/FUV-MAMA, TIME-TAG, 52X0.2	G140L 1425 A	BUFFER-TIME=20 00			2000 Secs (2624 Secs) [==>2624.0 Secs]	[2]
	4	(STIS.sp.19 29501)	(1) M83-P1	STIS/FUV-MAMA, TIME-TAG, 52X0.2	G140L 1425 A	BUFFER-TIME=20 00			2000 Secs (2624 Secs) [==>2624.0 Secs]	[3]





Proposal 17821 - Visit 02 - Anatomy of a Starburst: Spatially resolving Star Formation and Feedback in the nucleus of M83

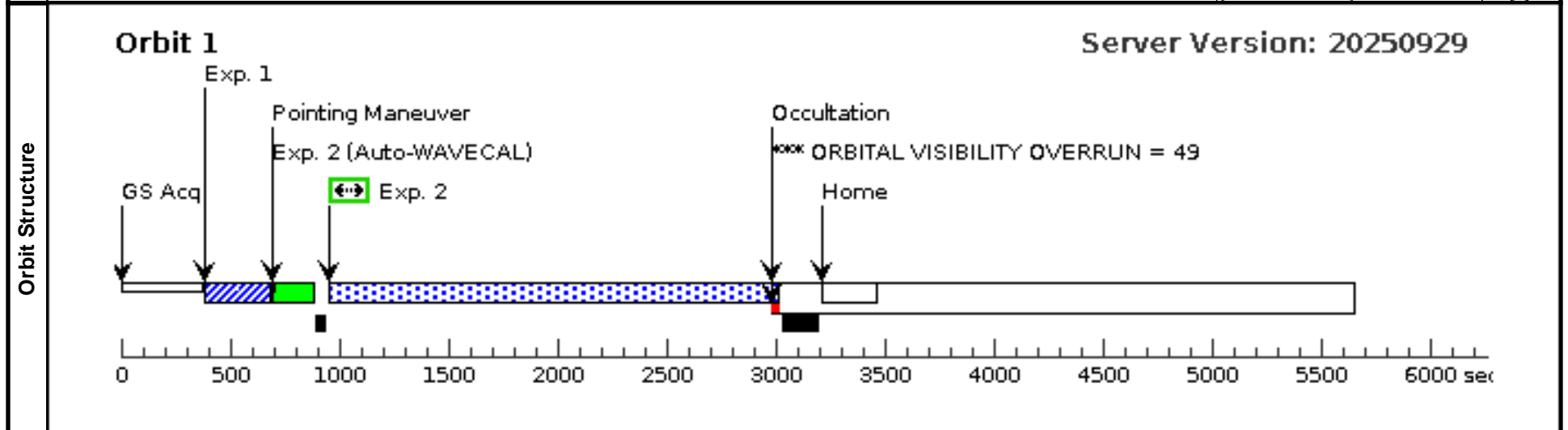
Thu Mar 26 19:01:05 GMT 2026

Visit	Proposal 17821, Visit 02, completed Diagnostic Status: Warning Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: ORIENT 300D TO 301 D
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Diagnostics	(Visit 02) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN
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#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	M83-P1	RA: 13 37 0.8424 (204.2535100d) Dec: -29 52 2.99 (-29.86750d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0	V=18.25+/-0.01	Reference Frame: ICRS
<i>Comments: This object was generated by the targetselector and retrieved from the NED database. Category=GALAXY Description=[STARBURST]</i>					
(2)	M83-P2	Offset from M83-P1 RA Offset: -0.0011537 Degrees Dec Offset: 4.263999E-4 Degrees		V=16.69+/-0.01	Offset Position (M83-P2)
<i>Comments: This object was generated by the targetselector and retrieved from the NED database. Category=GALAXY Description=[STARBURST]</i>					

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.192 9500)	(1) M83-P1	STIS/CCD, ACQ, 50CCD	MIRROR				15 Secs (15 Secs)	
								[==>]	[1]
2	(STIS.sp.19 29503)	(2) M83-P2	STIS/FUV-MAMA, TIME-TAG, 52X0.2	G140L 1425 A	BUFFER-TIME=20 00			2000 Secs (2048 Secs)	
								[==>2048.0 Secs]	[1]



Proposal 17821 - Visit 03 - Anatomy of a Starburst: Spatially resolving Star Formation and Feedback in the nucleus of M83

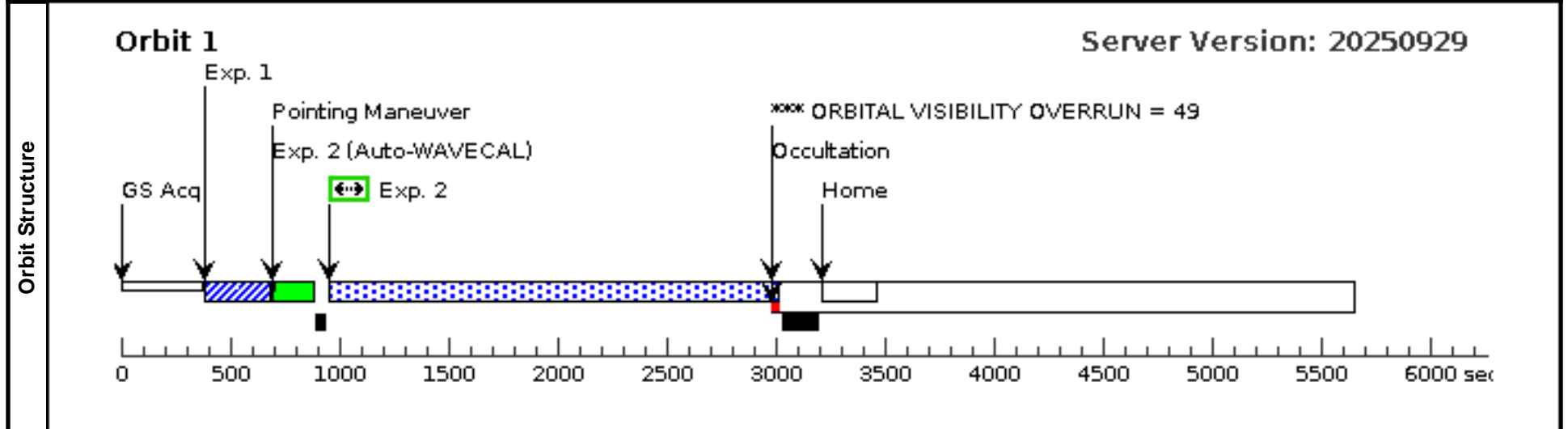
Thu Mar 26 19:01:05 GMT 2026

Visit	Proposal 17821, Visit 03, failed Diagnostic Status: Warning Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: ORIENT 325D TO 326 D
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Diagnostics	(Visit 03) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN
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#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	M83-P1	RA: 13 37 0.8424 (204.2535100d) Dec: -29 52 2.99 (-29.86750d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0	V=18.25+/-0.01	Reference Frame: ICRS
<i>Comments: This object was generated by the targetselector and retrieved from the NED database. Category=GALAXY Description=[STARBURST]</i>					
(3)	M83-P3	Offset from M83-P1 RA Offset: -0.001744599999 Degrees Dec Offset: 8.3469999999E-4 Degrees		V=17.33+/-0.01	Offset Position (M83-P3)
<i>Comments: This object was generated by the targetselector and retrieved from the NED database. Category=GALAXY Description=[STARBURST]</i>					

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	(STIS.ta.192 9500)	(1) M83-P1	STIS/CCD, ACQ, 50CCD	MIRROR				15 Secs (15 Secs)	
								[==>]	[1]
2	(STIS.sp.19 29504)	(3) M83-P3	STIS/FUV-MAMA, TIME-TAG, 52X0.2	G140L 1425 A	BUFFER-TIME=20 00			1000 Secs (2048 Secs)	
								[==>2048.0 Secs]	[1]



Proposal 17821 - Visit 04 - Anatomy of a Starburst: Spatially resolving Star Formation and Feedback in the nucleus of M83

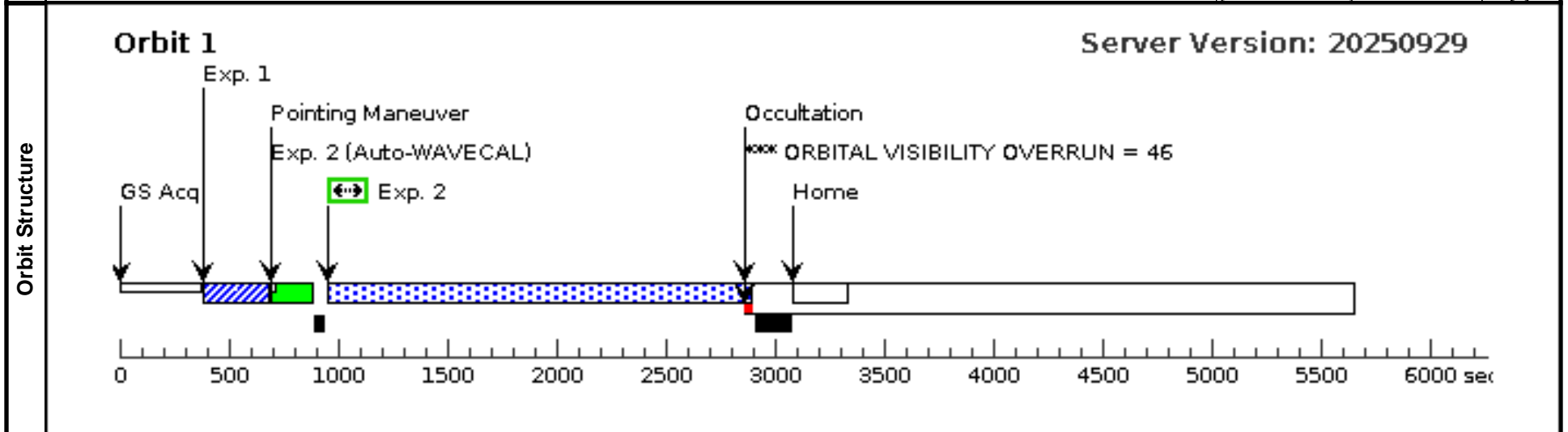
Thu Mar 26 19:01:06 GMT 2026

Visit	Proposal 17821, Visit 04, completed Diagnostic Status: Warning Scientific Instruments: STIS/CCD, STIS/FUV-MAMA Special Requirements: SCHED 100%; ORIENT 280D TO 281 D
	(Visit 04) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN

Diagnostics	(Visit 04) Warning (Orbit Planner): ORBITAL VISIBILITY OVERRUN
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Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	M83-P1	RA: 13 37 0.8424 (204.2535100d) Dec: -29 52 2.99 (-29.86750d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0	V=18.25+/-0.01	Reference Frame: ICRS
<i>Comments: This object was generated by the targetselector and retrieved from the NED database. Category=GALAXY Description=[STARBURST]</i>						
(4)	M83-P4	Offset from M83-P1 RA Offset: -0.0015 Degrees Dec Offset: 0.0022179999999 Degrees		V=16.68+/- 0.01	Offset Position (M83-P4)	
<i>Comments: This object was generated by the targetselector and retrieved from the NED database. Category=GALAXY Description=[STARBURST]</i>						

Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(STIS.ta.192 9500)	(1) M83-P1	STIS/CCD, ACQ, 50CCD	MIRROR					15 Secs (15 Secs)
[=>]										[1]
2	(STIS.sp.19 29505)	(4) M83-P4	STIS/FUV-MAMA, TIME-TAG, 52X0.2D1	G140L 1425 A	BUFFER-TIME=20 00				2000 Secs (1926 Secs)	
[=>1926.0 Secs]										[1]



Proposal 17821 - Visit 05 - Anatomy of a Starburst: Spatially resolving Star Formation and Feedback in the nucleus of M83

Thu Mar 26 19:01:06 GMT 2026

Visit	Proposal 17821, Visit 05				
	Diagnostic Status: No Diagnostics				
	Scientific Instruments: STIS/CCD, STIS/FUV-MAMA				
	Special Requirements: ORIENT 312D TO 317 D				

Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(1)	M83-P1	RA: 13 37 0.8424 (204.2535100d) Dec: -29 52 2.99 (-29.86750d) Equinox: J2000	Proper Motion RA: 0 Proper Motion Dec: 0	V=18.25+/-0.01	Reference Frame: ICRS
	<i>Comments: This object was generated by the targetselector and retrieved from the NED database. Category=GALAXY Description=[STARBURST]</i>					
(3)	M83-P3	Offset from M83-P1 RA Offset: -0.001744599999 Degrees Dec Offset: 8.346999999E-4 Degrees		V=17.33+/-0.01	Offset Position (M83-P3)	
<i>Comments: This object was generated by the targetselector and retrieved from the NED database. Category=GALAXY Description=[STARBURST]</i>						

Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
	1	(STIS.ta.192 9500)	(1) M83-P1	STIS/CCD, ACQ, 50CCD	MIRROR					15 Secs (15 Secs)	
										[==>]	[1]
2	(STIS.sp.19 29504)	(3) M83-P3	STIS/FUV-MAMA, TIME-TAG, 52X0.2	G140L 1425 A	BUFFER-TIME=20 00				1000 Secs (1999 Secs)		
									[==>1999.0 Secs]	[1]	

