



17817 - Tracing a hundred thousand kevin gas in the ram pressure stripped clouds

Cycle: 32, Proposal Category: GO

(UV Initiative)

(Availability Mode: SUPPORTED)

INVESTIGATORS

<i>Name</i>	<i>Institution</i>
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Dr. RONGXIN LUO (CoI)	University of Alabama in Huntsville
Mr. William Vester Waldron (CoI)	University of Alabama in Huntsville

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) IC4040 ANY	ACS/SBC WFC3/UVIS	1	21-Jan-2025 10:01:56.0	yes
07	(1) IC4040 ANY	ACS/SBC WFC3/UVIS	1	21-Jan-2025 10:01:57.0	yes
02	(1) IC4040 ANY	ACS/SBC WFC3/UVIS	1	21-Jan-2025 10:01:57.0	yes
03	(1) IC4040 ANY	ACS/SBC WFC3/UVIS	1	21-Jan-2025 10:01:58.0	yes
04	(1) IC4040 ANY	ACS/SBC WFC3/UVIS	1	21-Jan-2025 10:01:58.0	yes
05	(1) IC4040 ANY	ACS/SBC WFC3/UVIS	1	21-Jan-2025 10:01:59.0	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>
06	(1) IC4040 ANY	ACS/SBC WFC3/UVIS	1	21-Jan-2025 10:01:59.0	yes

7 Total Orbits Used

ABSTRACT

The last decade has witnessed a burst of evidence for ram pressure stripping (RPS) in galaxy clusters in multiple bands, suggesting RPS as a major mechanism perturbing the evolution of galaxies in clusters. Stripped tails have been detected in multi-wavelength, tracing gas at different phases. With the synergy to circumgalactic medium/galactic winds and X-ray cool cores, stripped tails have emerged as ideal targets to study multi-phase media. There has already been some effort to study the energy transfer and connection between different phases in stripped tails, including the recent discovery on a tight correlation between the diffuse X-ray gas (tracing $T \sim 10^7$ K gas) and the diffuse H α gas (tracing $T \sim 10^4$ K gas). However, many outstanding questions on stripped tails remain unanswered, e.g., how strong is radiative cooling in stripped tails? how much gas is there at intermediate temperatures of $T \sim 10^4 - 10^{6.5}$ K in stripped tails? Are stripped tails strong UV emitters? In this proposal, we aim for the first ever detection of the C IV emission from a stripped tail to trace the $T \sim 10^5$ K gas, with the ACS/SBC data on two longpass filters. The data will provide important constraints on the $T \sim 10^5$ K gas in the stripped tail, which further constrain the strength of radiative cooling and energy balance in stripped tails.

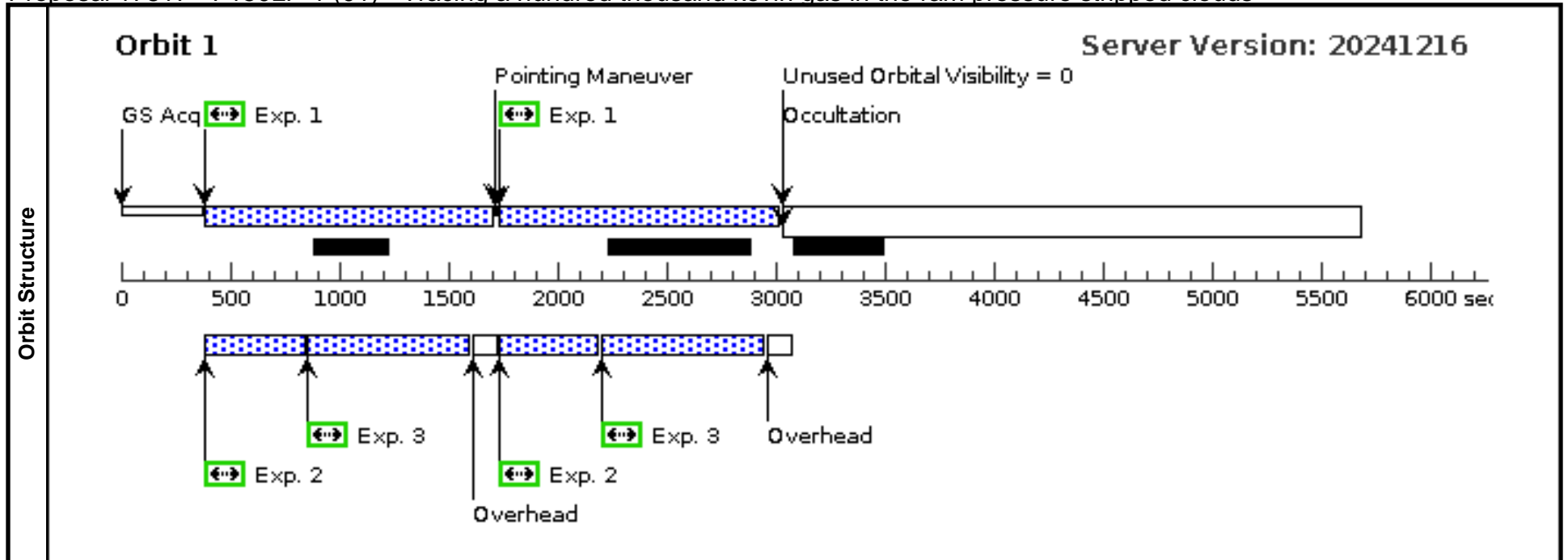
OBSERVING DESCRIPTION

We will use ACS/SBC to map the near tail region of IC 4040 in the Coma cluster. Four orbits with F150LP will be used to map the CIV line, while two orbits with F165LP will be used to subtract the red part of the emission to isolate the CIV emission. We will use single-orbit visits to avoid high SBC operating temperature.

Proposal 17817 - F150LP-1 (01) - Tracing a hundred thousand kevin gas in the ram pressure stripped clouds

Tue Jan 21 15:02:00 GMT 2025

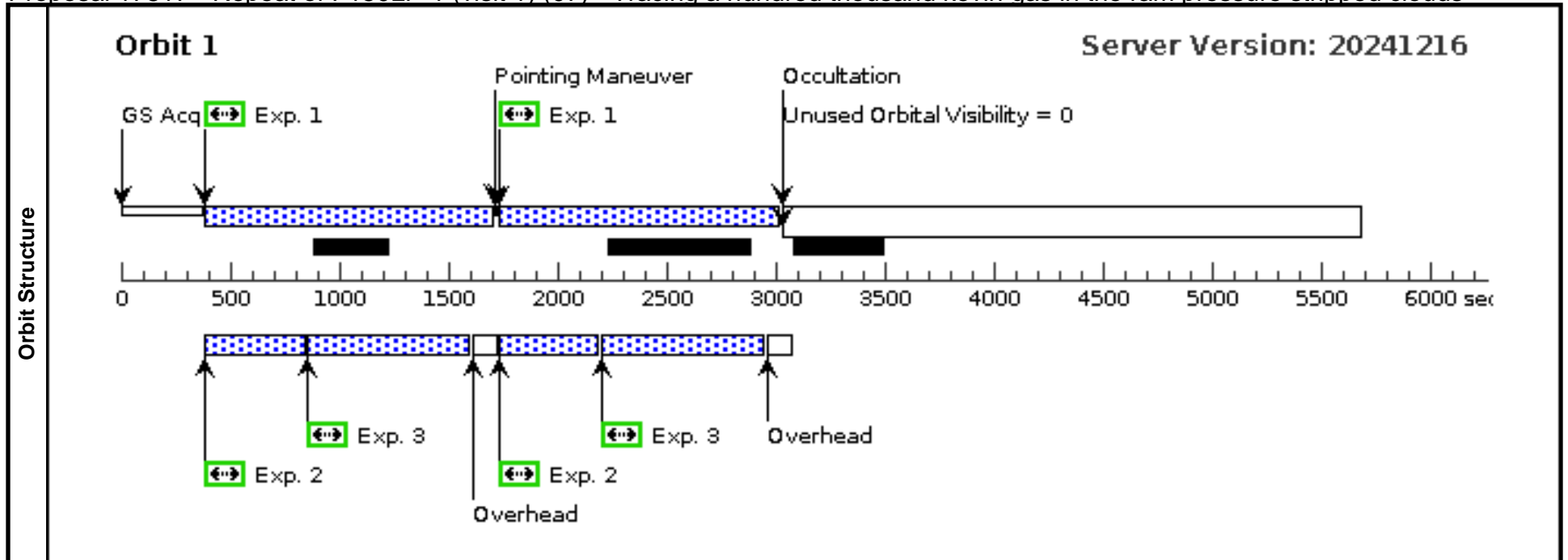
Visit	Proposal 17817, F150LP-1 (01), failed Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS, ACS/SBC Special Requirements: (none)									
	(Parallel Exposure 2 (Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F150LP-1 (01))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser									
Diagnosics										
Patterns	#	Primary Pattern		Secondary Pattern		Exposures				
	(1)	Pattern Type=ACS-SBC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.472 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=44.4 Angle Between Sides= Center Pattern=false			(1-3)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	IC4040	RA: 13 00 39.3070 (195.1637792d) Dec: +28 03 0.41 (28.05011d) Equinox: J2000	Epoch of Position: 2020	V=16	Reference Frame: SIMBAD				
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=GALAXY Description=[EMISSION LINE NEBULA, SPIRAL]										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1933642)	(1) IC4040	ACS/SBC, ACCUM, SBC	F150LP			Pattern 1, Exps 1-3 in F150LP-1 (01) (1) Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F150LP-1 (01)	1255 Secs (2510 Secs) [==>(Pattern 1)] [==>(Pattern 2)]	[1]
	2		ANY	WFC3/UVIS, ACCUM, UVIS	F814W			Pattern 1, Exps 1-3 in F150LP-1 (01) (1) Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F150LP-1 (01)	317 Secs (634 Secs) [==>(Pattern 1)] [==>(Pattern 2)]	[1]
	3		ANY	WFC3/UVIS, ACCUM, UVIS	F475W	FLASH=8		Pattern 1, Exps 1-3 in F150LP-1 (01) (1) Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F150LP-1 (01)	720 Secs (1440 Secs) [==>(Pattern 1)] [==>(Pattern 2)]	[1]



Proposal 17817 - Repeat of F150LP-1 (visit 1) (07) - Tracing a hundred thousand kevin gas in the ram pressure stripped clouds

Tue Jan 21 15:02:00 GMT 2025

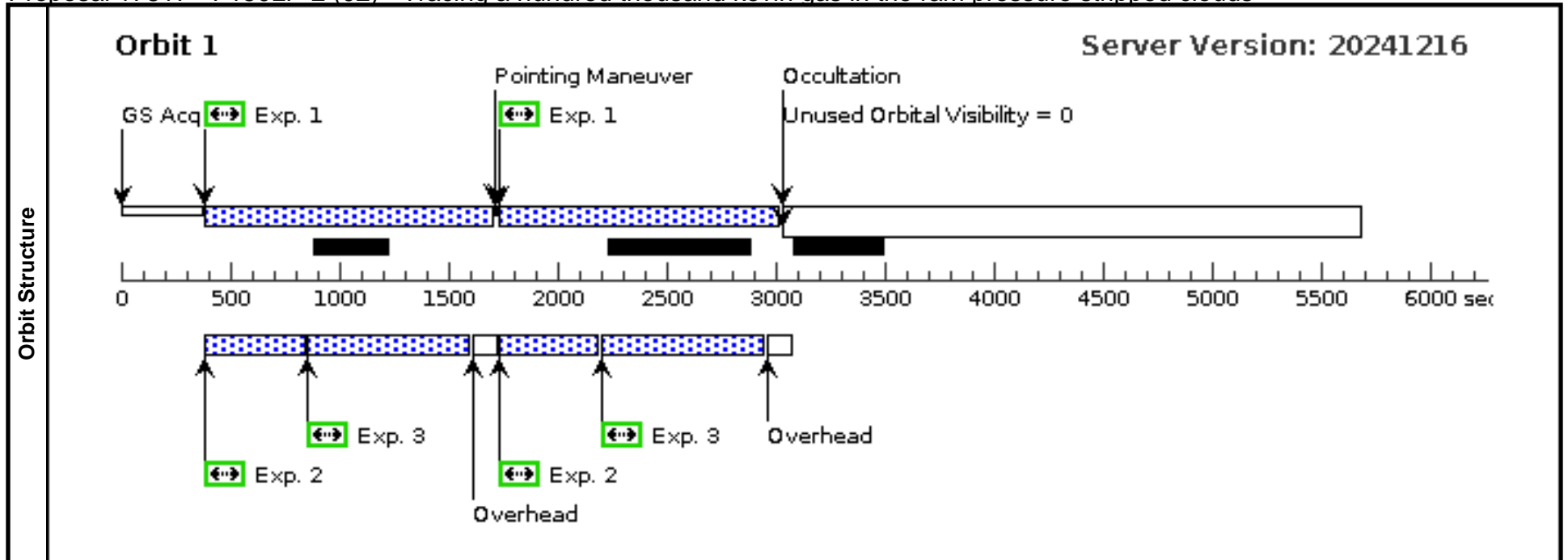
Visit	Proposal 17817, Repeat of F150LP-1 (visit 1) (07) Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS, ACS/SBC Special Requirements: (none)									
	(Parallel Exposure 2 (Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in Repeat of F150LP-1 (visit 1) (07))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser									
Diagnosics										
Patterns	#	Primary Pattern		Secondary Pattern		Exposures				
	(1)	Pattern Type=ACS-SBC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.472 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=44.4 Angle Between Sides= Center Pattern=false			(1-3)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	IC4040	RA: 13 00 39.3070 (195.1637792d) Dec: +28 03 0.41 (28.05011d) Equinox: J2000 <i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=GALAXY Description=[EMISSION LINE NEBULA, SPIRAL]	Epoch of Position: 2020	V=16	Reference Frame: SIMBAD				
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1933642)	(1) IC4040	ACS/SBC, ACCUM, SBC	F150LP			Pattern 1, Exps 1-3 in Repeat of F150LP-1 (visit 1) (07) (1) Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in Repeat of F150LP-1 (visit 1) (07)	1255 Secs (2510 Secs) [==>(Pattern 1)] [==>(Pattern 2)]	[1]
	2		ANY	WFC3/UVIS, ACCUM, UVIS	F814W			Pattern 1, Exps 1-3 in Repeat of F150LP-1 (visit 1) (07) (1) Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in Repeat of F150LP-1 (visit 1) (07)	317 Secs (634 Secs) [==>(Pattern 1)] [==>(Pattern 2)]	[1]
	3		ANY	WFC3/UVIS, ACCUM, UVIS	F475W	FLASH=8		Pattern 1, Exps 1-3 in Repeat of F150LP-1 (visit 1) (07) (1) Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in Repeat of F150LP-1 (visit 1) (07)	720 Secs (1440 Secs) [==>(Pattern 1)] [==>(Pattern 2)]	[1]



Proposal 17817 - F150LP-2 (02) - Tracing a hundred thousand kevin gas in the ram pressure stripped clouds

Tue Jan 21 15:02:00 GMT 2025

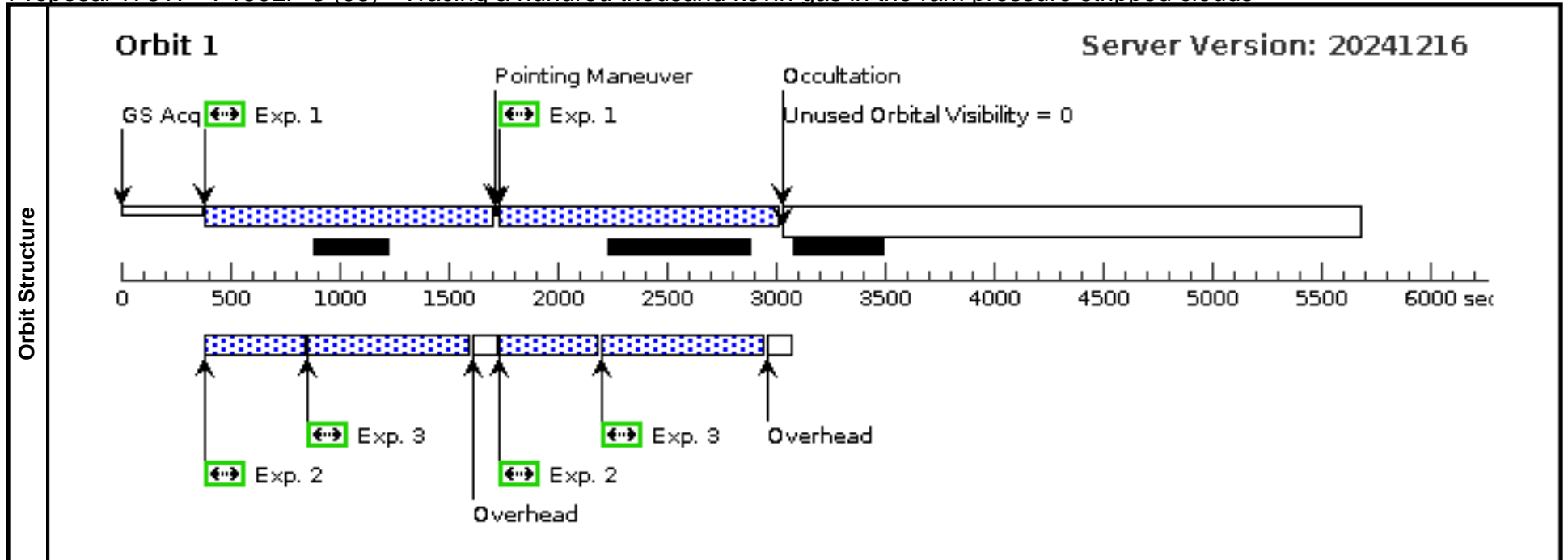
Visit	Proposal 17817, F150LP-2 (02), scheduling Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS, ACS/SBC Special Requirements: (none)									
	(Parallel Exposure 2 (Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F150LP-2 (02))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser									
Diagnosics										
Patterns	#	Primary Pattern		Secondary Pattern		Exposures				
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Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	IC4040	RA: 13 00 39.3070 (195.1637792d) Dec: +28 03 0.41 (28.05011d) Equinox: J2000 <i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=GALAXY Description=[EMISSION LINE NEBULA, SPIRAL]	Epoch of Position: 2020	V=16	Reference Frame: SIMBAD				
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1933642)	(1) IC4040	ACS/SBC, ACCUM, SBC	F150LP			Pattern 1, Exps 1-3 in F150LP-2 (02) (1) Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F150LP-2 (02)	1255 Secs (2510 Secs) [==>(Pattern 1)] [==>(Pattern 2)]	[1]
	2		ANY	WFC3/UVIS, ACCUM, UVIS	F814W			Pattern 1, Exps 1-3 in F150LP-2 (02) (1) Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F150LP-2 (02)	317 Secs (634 Secs) [==>(Pattern 1)] [==>(Pattern 2)]	[1]
	3		ANY	WFC3/UVIS, ACCUM, UVIS	F475W	FLASH=8		Pattern 1, Exps 1-3 in F150LP-2 (02) (1) Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F150LP-2 (02)	720 Secs (1440 Secs) [==>(Pattern 1)] [==>(Pattern 2)]	[1]



Proposal 17817 - F150LP-3 (03) - Tracing a hundred thousand kevin gas in the ram pressure stripped clouds

Tue Jan 21 15:02:00 GMT 2025

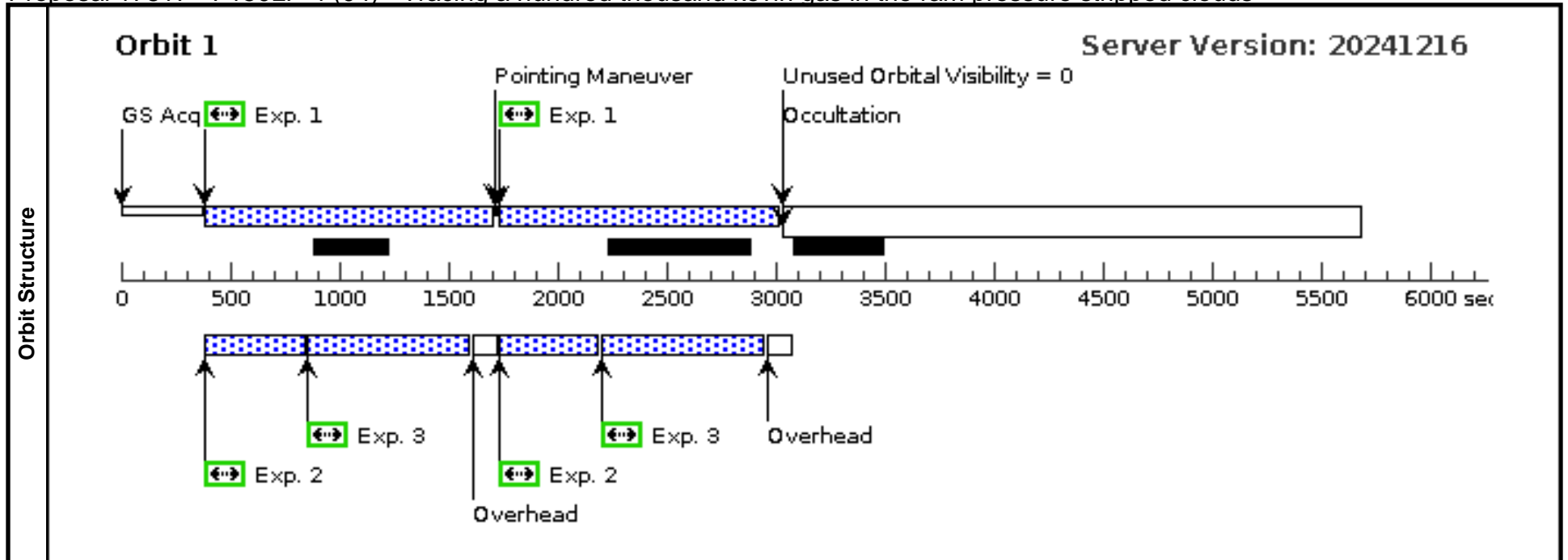
Visit	Proposal 17817, F150LP-3 (03), scheduling Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS, ACS/SBC Special Requirements: (none)									
	(Parallel Exposure 2 (Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F150LP-3 (03))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser									
Diagnosics										
Patterns	#	Primary Pattern		Secondary Pattern		Exposures				
	(1)	Pattern Type=ACS-SBC-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.472 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=44.4 Angle Between Sides= Center Pattern=false			(1-3)				
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	IC4040	RA: 13 00 39.3070 (195.1637792d) Dec: +28 03 0.41 (28.05011d) Equinox: J2000 <i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=GALAXY Description=[EMISSION LINE NEBULA, SPIRAL]	Epoch of Position: 2020	V=16	Reference Frame: SIMBAD				
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1933642)	(1) IC4040	ACS/SBC, ACCUM, SBC	F150LP			Pattern 1, Exps 1-3 in F150LP-3 (03) (1) Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F150LP-3 (03)	1255 Secs (2510 Secs) [==>(Pattern 1)] [==>(Pattern 2)]	[1]
	2		ANY	WFC3/UVIS, ACCUM, UVIS	F814W			Pattern 1, Exps 1-3 in F150LP-3 (03) (1) Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F150LP-3 (03)	317 Secs (634 Secs) [==>(Pattern 1)] [==>(Pattern 2)]	[1]
	3		ANY	WFC3/UVIS, ACCUM, UVIS	F475W	FLASH=8		Pattern 1, Exps 1-3 in F150LP-3 (03) (1) Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F150LP-3 (03)	720 Secs (1440 Secs) [==>(Pattern 1)] [==>(Pattern 2)]	[1]



Proposal 17817 - F150LP-4 (04) - Tracing a hundred thousand kevin gas in the ram pressure stripped clouds

Tue Jan 21 15:02:00 GMT 2025

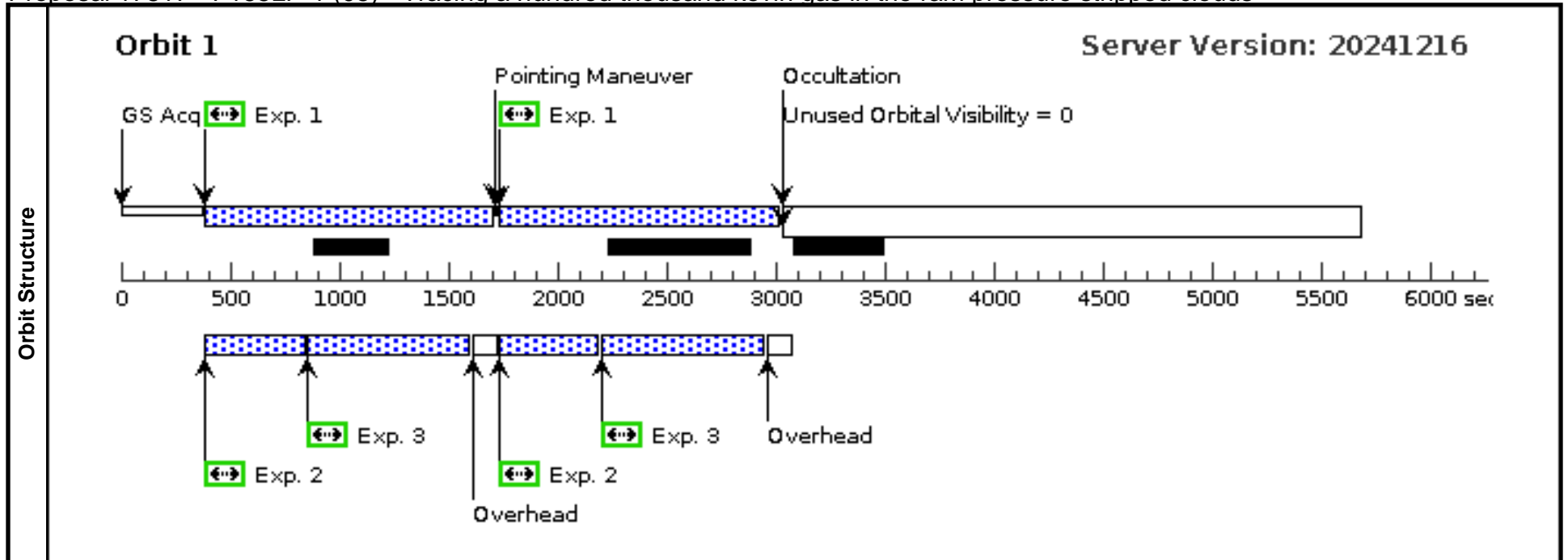
Visit	Proposal 17817, F150LP-4 (04), scheduling Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS, ACS/SBC Special Requirements: (none)									
	(Parallel Exposure 2 (Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F150LP-4 (04))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser									
Diagnosics										
Patterns	#	Primary Pattern		Secondary Pattern		Exposures				
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Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	IC4040	RA: 13 00 39.3070 (195.1637792d) Dec: +28 03 0.41 (28.05011d) Equinox: J2000 <i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i> Category=GALAXY Description=[EMISSION LINE NEBULA, SPIRAL]	Epoch of Position: 2020	V=16	Reference Frame: SIMBAD				
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1933642)	(1) IC4040	ACS/SBC, ACCUM, SBC	F150LP			Pattern 1, Exps 1-3 in F150LP-4 (04) (1) Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F150LP-4 (04)	1255 Secs (2510 Secs) [==>(Pattern 1)] [==>(Pattern 2)]	[1]
	2		ANY	WFC3/UVIS, ACCUM, UVIS	F814W			Pattern 1, Exps 1-3 in F150LP-4 (04) (1) Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F150LP-4 (04)	317 Secs (634 Secs) [==>(Pattern 1)] [==>(Pattern 2)]	[1]
	3		ANY	WFC3/UVIS, ACCUM, UVIS	F475W	FLASH=8		Pattern 1, Exps 1-3 in F150LP-4 (04) (1) Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F150LP-4 (04)	720 Secs (1440 Secs) [==>(Pattern 1)] [==>(Pattern 2)]	[1]



Proposal 17817 - F165LP-1 (05) - Tracing a hundred thousand kevin gas in the ram pressure stripped clouds

Tue Jan 21 15:02:00 GMT 2025

Visit	Proposal 17817, F165LP-1 (05), scheduling Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS, ACS/SBC Special Requirements: (none)									
	(Parallel Exposure 2 (Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F165LP-1 (05))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser									
Diagnosics										
Patterns	#	Primary Pattern		Secondary Pattern		Exposures				
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Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	IC4040	RA: 13 00 39.3070 (195.1637792d) Dec: +28 03 0.41 (28.05011d) Equinox: J2000	Epoch of Position: 2020	V=16	Reference Frame: SIMBAD				
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=GALAXY Description=[EMISSION LINE NEBULA, SPIRAL]										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1933654)	(1) IC4040	ACS/SBC, ACCUM, SBC	F165LP			Pattern 1, Exps 1-3 in F165LP-1 (05) (1) Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F165LP-1 (05)	1255 Secs (2510 Secs) [==>(Pattern 1)] [==>(Pattern 2)]	[1]
	2		ANY	WFC3/UVIS, ACCUM, UVIS	F814W			Pattern 1, Exps 1-3 in F165LP-1 (05) (1) Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F165LP-1 (05)	317 Secs (634 Secs) [==>(Pattern 1)] [==>(Pattern 2)]	[1]
	3		ANY	WFC3/UVIS, ACCUM, UVIS	F475W	FLASH=8		Pattern 1, Exps 1-3 in F165LP-1 (05) (1) Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F165LP-1 (05)	720 Secs (1440 Secs) [==>(Pattern 1)] [==>(Pattern 2)]	[1]



Proposal 17817 - F165LP-2 (06) - Tracing a hundred thousand kevin gas in the ram pressure stripped clouds

Tue Jan 21 15:02:00 GMT 2025

Visit	Proposal 17817, F165LP-2 (06), scheduling Diagnostic Status: Warning Scientific Instruments: WFC3/UVIS, ACS/SBC Special Requirements: (none)									
	(Parallel Exposure 2 (Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F165LP-2 (06))) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser									
Diagnosics										
Patterns	#	Primary Pattern		Secondary Pattern		Exposures				
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Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous				
	(1)	IC4040	RA: 13 00 39.3070 (195.1637792d) Dec: +28 03 0.41 (28.05011d) Equinox: J2000	Epoch of Position: 2020	V=16	Reference Frame: SIMBAD				
Comments: This object was generated by the targetselector and retrieved from the SIMBAD database. Category=GALAXY Description=[EMISSION LINE NEBULA, SPIRAL]										
Exposures	#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	(1933654)	(1) IC4040	ACS/SBC, ACCUM, SBC	F165LP			Pattern 1, Exps 1-3 in F165LP-2 (06) (1) Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F165LP-2 (06)	1255 Secs (2510 Secs) [==>(Pattern 1)] [==>(Pattern 2)]	[1]
	2		ANY	WFC3/UVIS, ACCUM, UVIS	F814W			Pattern 1, Exps 1-3 in F165LP-2 (06) (1) Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F165LP-2 (06)	317 Secs (634 Secs) [==>(Pattern 1)] [==>(Pattern 2)]	[1]
	3		ANY	WFC3/UVIS, ACCUM, UVIS	F475W	FLASH=8		Pattern 1, Exps 1-3 in F165LP-2 (06) (1) Prime + Parallel Group 1-3 in Pattern 1, Exps 1-3 in F165LP-2 (06)	720 Secs (1440 Secs) [==>(Pattern 1)] [==>(Pattern 2)]	[1]

