



15965 - Comet outburst target of opportunity

Cycle: 27, Proposal Category: GO

(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>
33	(1) SCHWASSMAN-WACHMAN-1	WFC3/UVIS	1	22-Oct-2019 13:00:15.0	yes
34	(1) SCHWASSMAN-WACHMAN-1	WFC3/UVIS	1	22-Oct-2019 13:00:16.0	yes
35	(1) SCHWASSMAN-WACHMAN-1	WFC3/UVIS	1	22-Oct-2019 13:00:17.0	yes
36	(1) SCHWASSMAN-WACHMAN-1	WFC3/UVIS	1	22-Oct-2019 13:00:18.0	yes
37	(1) SCHWASSMAN-WACHMAN-1	WFC3/UVIS	1	22-Oct-2019 13:00:19.0	yes
38	(1) SCHWASSMAN-WACHMAN-1	WFC3/UVIS	1	22-Oct-2019 13:00:19.0	yes
47	(1) SCHWASSMAN-WACHMAN-1	WFC3/UVIS	1	22-Oct-2019 13:00:20.0	yes
48	(1) SCHWASSMAN-WACHMAN-1	WFC3/UVIS	1	22-Oct-2019 13:00:21.0	yes

8 Total Orbits Used

ABSTRACT

We request 6 orbits of observing time to investigate the aftermath of a >1 mag cometary outburst using WFC3/UVIS. The goal of this project is to connect larger cometary outbursts detectable from Earth ($>10^6$ kg) with smaller outbursts seen by Rosetta and Deep Impact ($<10^6$ kg) to determine what processes drive them and to evaluate their effect on comet evolution. We will characterize the morphology and amount of the ejected material, use its color to evaluate its ice content, and search for fragments.

OBSERVING DESCRIPTION

This is a ToO observation with the target to be identified based on the triggering criteria: A comet that has just undergone an outburst of >1 mag in total brightness. The observing plan described here is therefore a skeleton sequence and is subject to adjustment based on the particular target identified. The items to be adjusted could include:

1. Name and orbital elements of target.
2. Exposure time.
3. Optional exposure settings such as FLASH.
4. Probaly apertures.

We will observe the target in three epochs, separated by about a week, with two consecutive orbits in each epoch. All six orbits will contain similar sequence, nominally with one exposure from each of the two medium-band filters, F689M and F845M, and two long-exposure from the narrow-band F487N with 2x2 binning in between. If more time available in each orbit, depending on the brightness of the comet and the likelihood of producing fragments from the outburst, we will either add more medium band exposures to boost the signal-to-noise ratio of the color ratio map, or add a long exposure with F350LP for a deep search of fragments.

The exposure time for medium-band filter is tentatively set to be 250 s, and for narrow-band filter F487N 500 s. Based on our previous observations of 46P/Wirtanen (HST-GO15372), this exposure time will result in appropriate exposure level (1/3 saturation level) at the center region for a comet of 2 mag fainter. We will adjust the exposure time based on the brightness of the comet we pick, and the previous observations of 46P and other comets through the same filters.

Proposal 15965 (STScI Edit Number: 1, Created: Tuesday, October 22, 2019 at 12:00:22 PM Eastern Standard Time) - Overview

In order to avoid bad pixels/columns, we will offset the pointing in the second orbit in each epoch by (1", 1") using the POSTARG parameter.

Update 10/01/2019 (JYL):

Remove 2x2 binning, and adjust the order of exposures for Bright Comet case (11, 12, 21, 22, 31, 32).

Adjust exposure times to fill up the visibility for all visits. New exposure time: F487N 470 s in visit 11, 21, 31; F689M and F845M 400 s in visits 33 - 38; F470N 650 s in visits 33-38.

Add or adjust FLASH as needed.

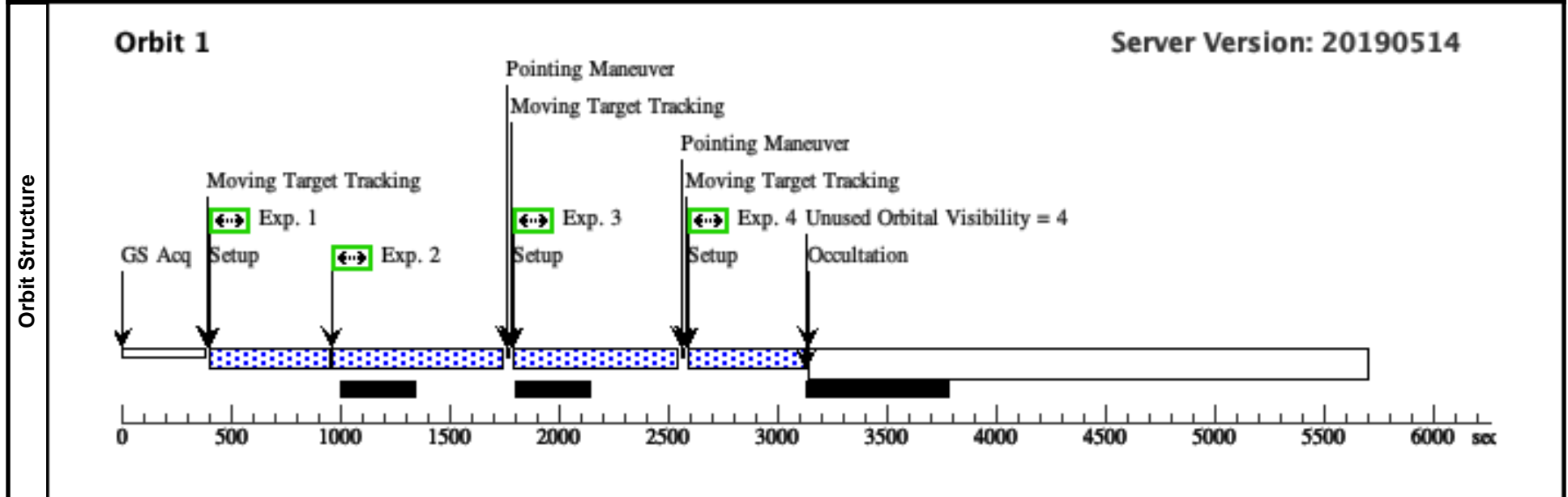
Proposal 15965 - Faint Comet (33) - Comet outburst target of opportunity

Tue Oct 22 17:00:22 GMT 2019

Visit	Proposal 15965, Faint Comet (33), completed					
	Diagnostic Status: No Diagnostics					
	Scientific Instruments: WFC3/UVIS					
	Special Requirements: (none)					

Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(1)	SCHWASSMAN-WACHMAN-1	TYPE=COMET,Q=5.7200236155604 54,E=0.04508948605828594,I=9.3914 17228373571 .O=312.6323328080696,W=49.048790 60489311,T=12-JUL- 2004:23:08:59,TTimeScale=TDB,EQ UINOX=J2000,EPOCH=07-MAY- 2010:00:00:00,EpochTimeScale=TDB				EARTH
	<i>Comments: Orbital elements need to be updated when comet is chosen</i>						
	<i>Description=comet 29P Extended=YES</i>						

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F689M	FLASH=9	POS TARG 20,10		400 Secs (400 Secs) [==>]	[1]
	2		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F487N	FLASH=11	POS TARG 20,10		625 Secs (625 Secs) [==>]	[1]
	3		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F487N	FLASH=11	POS TARG 20.1,8		625 Secs (625 Secs) [==>]	[1]
	4		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F845M	FLASH=10	POS TARG 20,10		400 Secs (400 Secs) [==>]	[1]



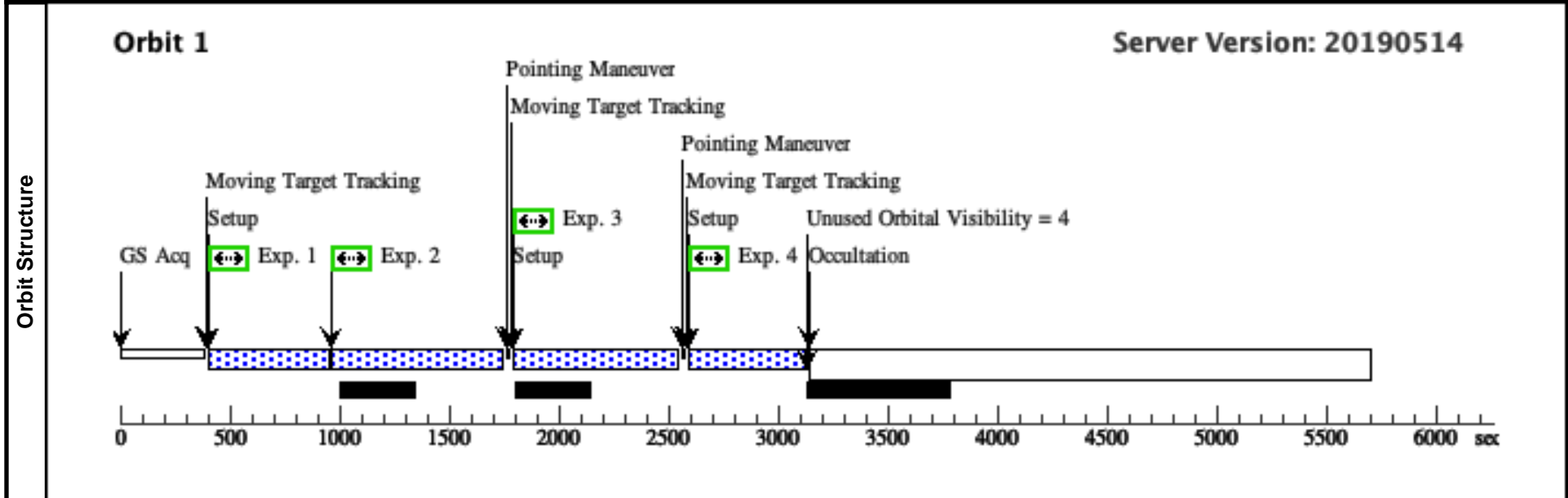
Proposal 15965 - Faint Comet (34) - Comet outburst target of opportunity

Tue Oct 22 17:00:22 GMT 2019

Visit	Proposal 15965, Faint Comet (34), completed					
	Diagnostic Status: No Diagnostics					
	Scientific Instruments: WFC3/UVIS					
	Special Requirements: AFTER 33 BY 0.8 Orbits TO 1.2 Orbits					

Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(1)	SCHWASSMAN-WACHMAN-1	TYPE=COMET,Q=5.7200236155604 54,E=0.04508948605828594,I=9.3914 17228373571 .O=312.6323328080696,W=49.048790 60489311,T=12-JUL- 2004:23:08:59,TTimeScale=TDB,EQ UINOX=J2000,EPOCH=07-MAY- 2010:00:00:00,EpochTimeScale=TDB				EARTH
	<i>Comments: Orbital elements need to be updated when comet is chosen</i>						
	<i>Description=comet 29P</i> <i>Extended=YES</i>						

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) SCHWASSMAN-WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F689M	FLASH=9	POS TARG 19,8.5		400 Secs (400 Secs)	
									[==>]	[1]
	2		(1) SCHWASSMAN-WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F487N	FLASH=11	POS TARG 19,8.5		625 Secs (625 Secs)	
									[==>]	[1]
	3		(1) SCHWASSMAN-WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F487N	FLASH=11	POS TARG 19.1,6.5		625 Secs (625 Secs)	
									[==>]	[1]
	4		(1) SCHWASSMAN-WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F845M	FLASH=10	POS TARG 19,8.5		400 Secs (400 Secs)	
									[==>]	[1]



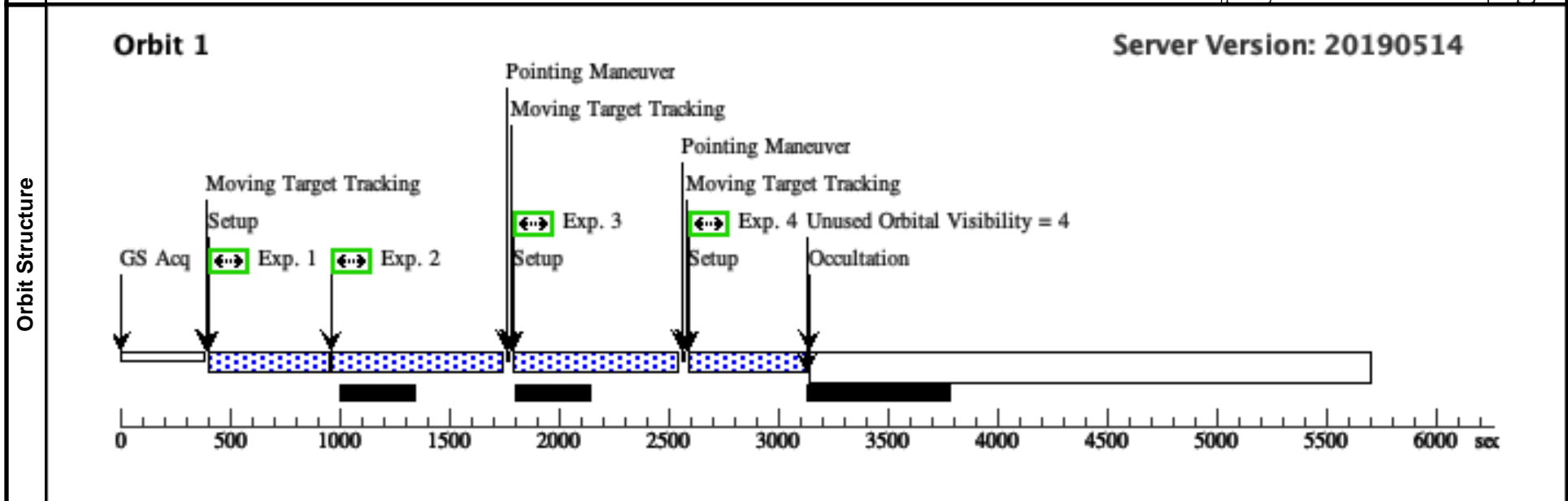
Proposal 15965 - Faint Comet (35) - Comet outburst target of opportunity

Tue Oct 22 17:00:22 GMT 2019

Visit	Proposal 15965, Faint Comet (35), completed					
	Diagnostic Status: No Diagnostics					
	Scientific Instruments: WFC3/UVIS					
	Special Requirements: AFTER 34 BY 6.5 D TO 7.5 D					

Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(1)	SCHWASSMAN-WACHMAN-1	TYPE=COMET,Q=5.7200236155604 54,E=0.04508948605828594,I=9.3914 17228373571 .O=312.6323328080696,W=49.048790 60489311,T=12-JUL- 2004:23:08:59,TimeScale=TDB,EQ UINOX=J2000,EPOCH=07-MAY- 2010:00:00:00,EpochTimeScale=TDB				EARTH
	<i>Comments: Orbital elements need to be updated when comet is chosen</i>						
	<i>Description=comet 29P Extended=YES</i>						

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) SCHWASSMAN-WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F689M	FLASH=9	POS TARG 20,10		400 Secs (400 Secs) [==>]	[1]
	2		(1) SCHWASSMAN-WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F487N	FLASH=11	POS TARG 20,10		625 Secs (625 Secs) [==>]	[1]
	3		(1) SCHWASSMAN-WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F487N	FLASH=11	POS TARG 20.1,8		625 Secs (625 Secs) [==>]	[1]
	4		(1) SCHWASSMAN-WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F845M	FLASH=10	POS TARG 20,10		400 Secs (400 Secs) [==>]	[1]



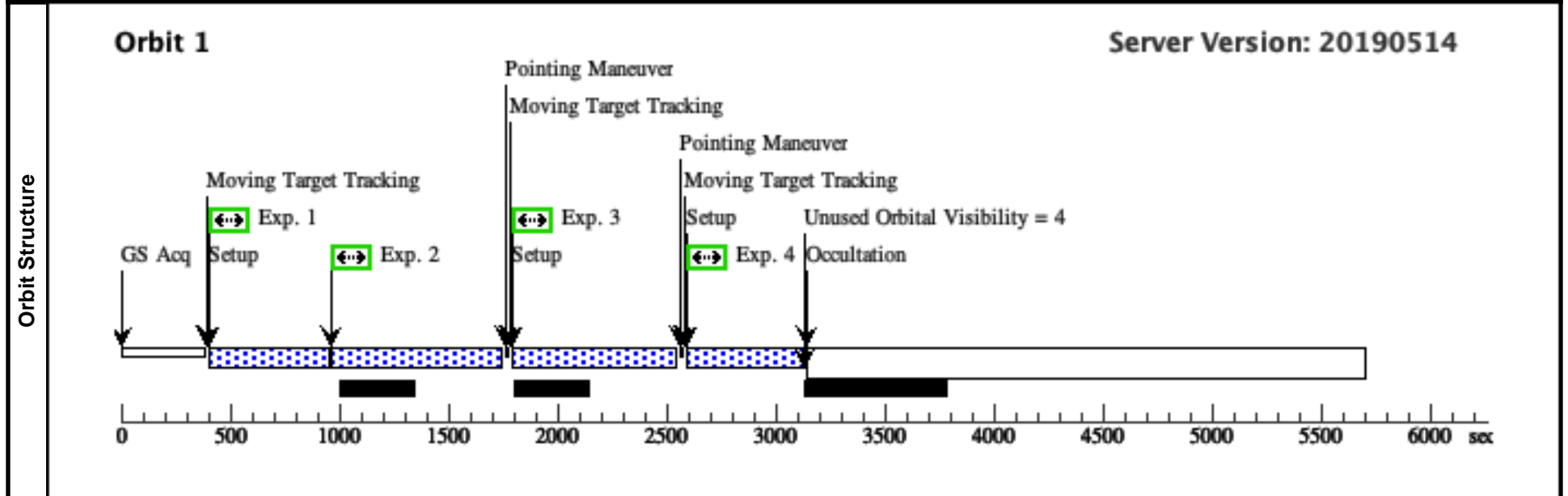
Proposal 15965 - Faint Comet (36) - Comet outburst target of opportunity

Tue Oct 22 17:00:22 GMT 2019

Visit	Proposal 15965, Faint Comet (36), completed					
	Diagnostic Status: No Diagnostics					
	Scientific Instruments: WFC3/UVIS					
	Special Requirements: AFTER 35 BY 0.8 Orbits TO 1.2 Orbits					

Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(1)	SCHWASSMAN-WACHMAN-1	TYPE=COMET,Q=5.7200236155604 54,E=0.04508948605828594,I=9.3914 17228373571 .O=312.6323328080696,W=49.048790 60489311,T=12-JUL- 2004:23:08:59,TTimeScale=TDB,EQ UINOX=J2000,EPOCH=07-MAY- 2010:00:00:00,EpochTimeScale=TDB				
<i>Comments: Orbital elements need to be updated when comet is chosen</i>							
<i>Description=comet 29P</i>							
<i>Extended=YES</i>							

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) SCHWASSMAN-WACHMAN-1	(1) SCHWASSMAN-WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F689M	FLASH=9	POS TARG 19,8.5		400 Secs (400 Secs)
									[==>]	[1]
2		(1) SCHWASSMAN-WACHMAN-1	(1) SCHWASSMAN-WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F487N	FLASH=11	POS TARG 19,8.5		625 Secs (625 Secs)	
									[==>]	[1]
3		(1) SCHWASSMAN-WACHMAN-1	(1) SCHWASSMAN-WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F487N	FLASH=11	POS TARG 19.1,6.5		625 Secs (625 Secs)	
									[==>]	[1]
4		(1) SCHWASSMAN-WACHMAN-1	(1) SCHWASSMAN-WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F845M	FLASH=10	POS TARG 19,8.5		400 Secs (400 Secs)	
									[==>]	[1]



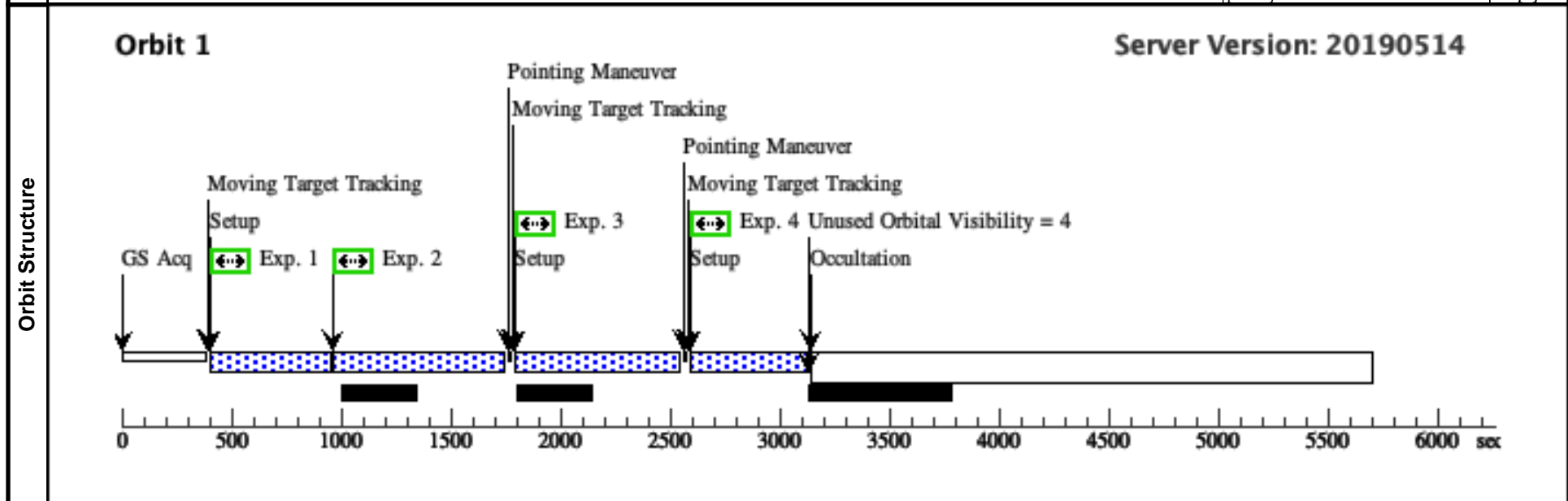
Proposal 15965 - Faint Comet (37) - Comet outburst target of opportunity

Tue Oct 22 17:00:22 GMT 2019

Visit	Proposal 15965, Faint Comet (37), scheduling					
	Diagnostic Status: No Diagnostics					
	Scientific Instruments: WFC3/UVIS					
	Special Requirements: AFTER 36 BY 6.5 D TO 7.5 D					

Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(1)	SCHWASSMAN-WACHMAN-1	TYPE=COMET,Q=5.7200236155604 54,E=0.04508948605828594,I=9.3914 17228373571 .O=312.6323328080696,W=49.048790 60489311,T=12-JUL- 2004:23:08:59,TimeScale=TDB,EQ UINOX=J2000,EPOCH=07-MAY- 2010:00:00:00,EpochTimeScale=TDB				EARTH
	<i>Comments: Orbital elements need to be updated when comet is chosen</i>						
	Description=comet 29P Extended=YES						

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F689M	FLASH=9	POS TARG 20,10		400 Secs (400 Secs) [==>]	[1]
	2		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F487N	FLASH=11	POS TARG 20,10		625 Secs (625 Secs) [==>]	[1]
	3		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F487N	FLASH=11	POS TARG 20.1,8		625 Secs (625 Secs) [==>]	[1]
	4		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F845M	FLASH=10	POS TARG 20,10		400 Secs (400 Secs) [==>]	[1]



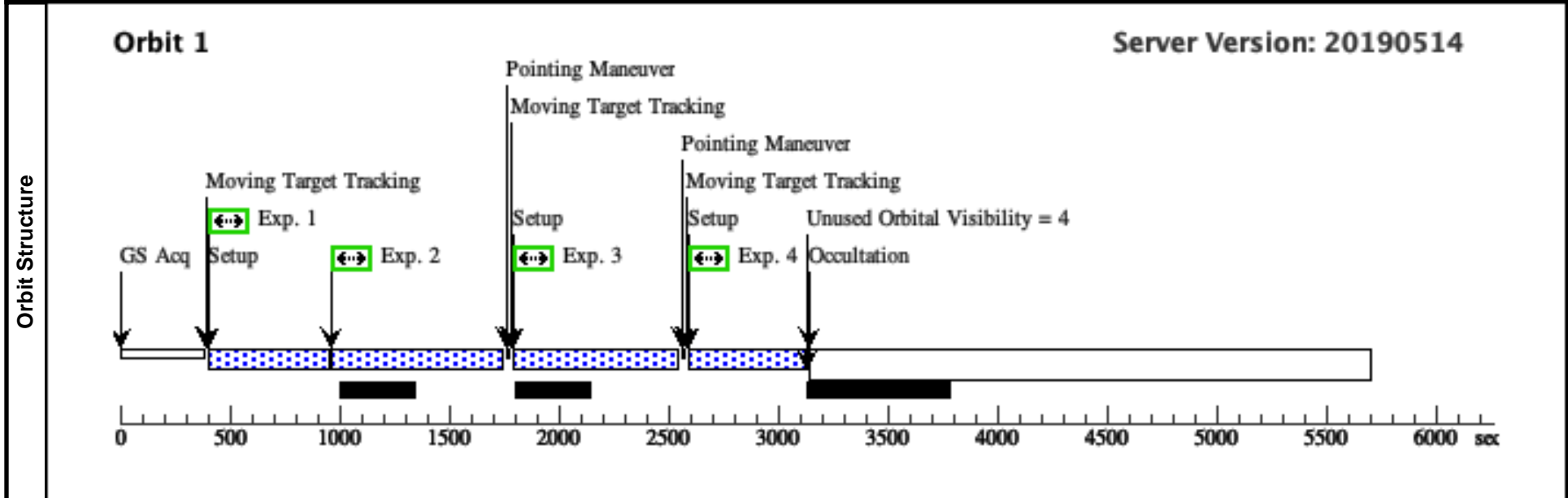
Proposal 15965 - Faint Comet (38) - Comet outburst target of opportunity

Tue Oct 22 17:00:22 GMT 2019

Visit	Proposal 15965, Faint Comet (38), scheduling					
	Diagnostic Status: No Diagnostics					
	Scientific Instruments: WFC3/UVIS					
	Special Requirements: AFTER 37 BY 0.8 Orbits TO 1.2 Orbits					

Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
	(1)	SCHWASSMAN-WACHMAN-1	TYPE=COMET,Q=5.7200236155604 54,E=0.04508948605828594,I=9.3914 17228373571 .O=312.6323328080696,W=49.048790 60489311,T=12-JUL- 2004:23:08:59,TTimeScale=TDB,EQ UINOX=J2000,EPOCH=07-MAY- 2010:00:00:00,EpochTimeScale=TDB				EARTH
	<i>Comments: Orbital elements need to be updated when comet is chosen</i>						
	<i>Description=comet 29P</i>						
	<i>Extended=YES</i>						

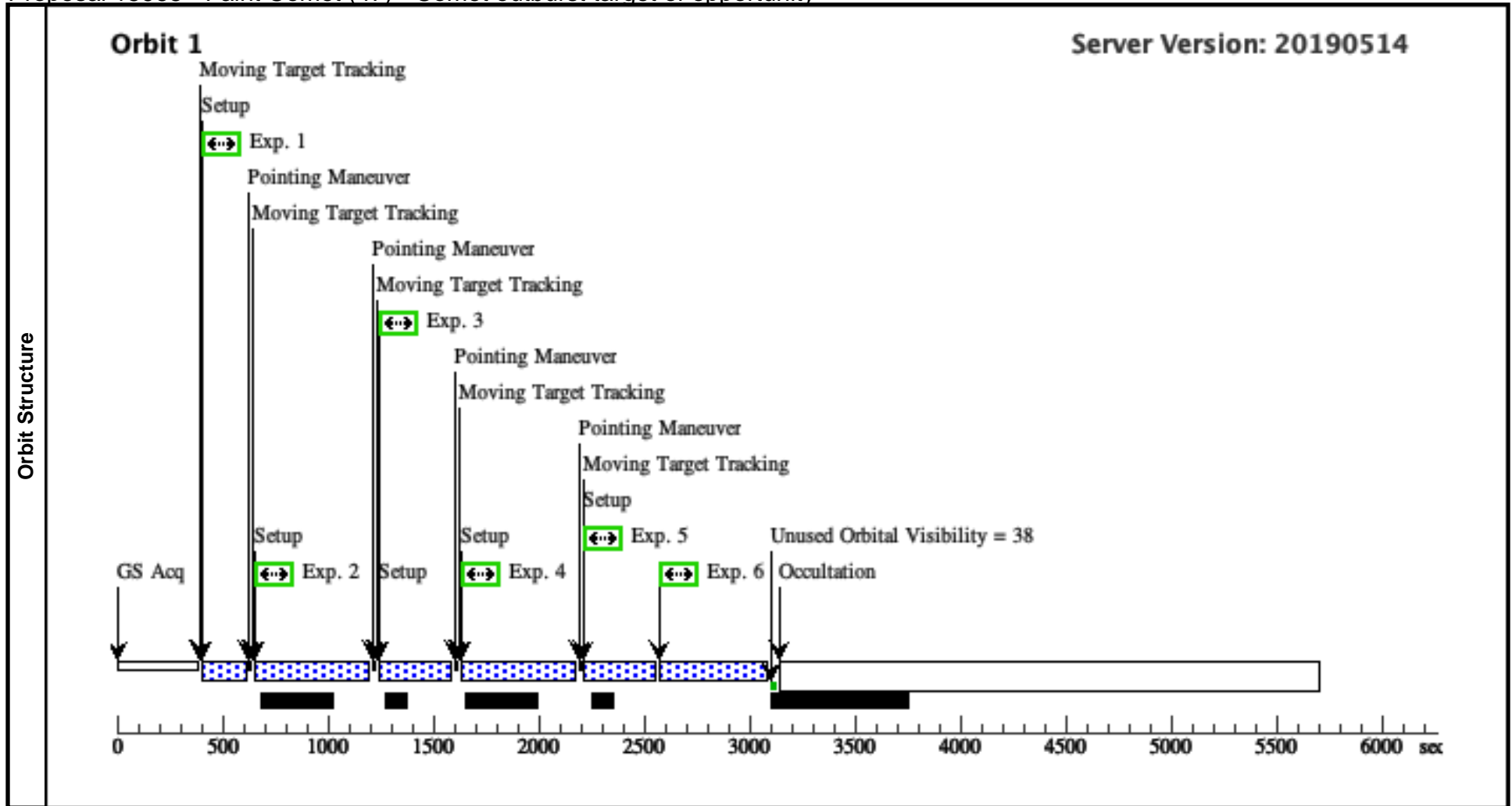
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F689M	FLASH=9	POS TARG 19,8.5		400 Secs (400 Secs)	
									[==>]	[1]
	2		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F487N	FLASH=11	POS TARG 19,8.5		625 Secs (625 Secs)	
									[==>]	[1]
	3		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F487N	FLASH=11	POS TARG 19.1,6.5		625 Secs (625 Secs)	
									[==>]	[1]
	4		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F845M	FLASH=10	POS TARG 19,8.5		400 Secs (400 Secs)	
									[==>]	[1]



Proposal 15965 - Faint Comet (47) - Comet outburst target of opportunity

Tue Oct 22 17:00:22 GMT 2019

Visit	Proposal 15965, Faint Comet (47) Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: AFTER 36 BY 6.5 D TO 7.5 D									
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center		
	(1)	SCHWASSMAN-WACHMAN-1	TYPE=COMET,Q=5.7200236155604 54,E=0.04508948605828594,I=9.3914 17228373571 .O=312.6323328080696,W=49.048790 604893111,T=12-JUL- 2004:23:08:59,TimeScale=TDB,EQ UINOX=J2000,EPOCH=07-MAY- 2010:00:00:00,EpochTimeScale=TDB					EARTH		
	<i>Comments: Orbital elements need to be updated when comet is chosen</i> Description=comet 29P Extended=YES									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F350LP	FLASH=10	POS TARG 19,8.5		50 Secs (50 Secs)	
									[==>]	[1]
	2		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F689M	FLASH=9	POS TARG 0,0		350 Secs (350 Secs)	
									[==>]	[1]
	3		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F350LP		POS TARG 19,8.5		200 Secs (200 Secs)	
									[==>]	[1]
4		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F689M	FLASH=9	POS TARG 0.5,0.5		350 Secs (350 Secs)		
								[==>]	[1]	
5		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F350LP			POS TARG 19.1,10. 5	200 Secs (200 Secs)		
								[==>]	[1]	
6		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F350LP			POS TARG 19.1,10. 5	400 Secs (400 Secs)		
								[==>]	[1]	



Proposal 15965 - Faint Comet (48) - Comet outburst target of opportunity

Tue Oct 22 17:00:22 GMT 2019

Visit	Proposal 15965, Faint Comet (48) Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: AFTER 47 BY 0.8 Orbits TO 1.2 Orbits									
	Solar System Targets	#	Name	Level 1	Level 2	Level 3	Window	Ephem Center		
	(1)	SCHWASSMAN-WACHMAN-1	TYPE=COMET,Q=5.7200236155604 54,E=0.04508948605828594,I=9.3914 17228373571 .O=312.6323328080696,W=49.048790 604893111,T=12-JUL- 2004:23:08:59,TimeScale=TDB,EQ UINOX=J2000,EPOCH=07-MAY- 2010:00:00:00,EpochTimeScale=TDB					EARTH		
	<i>Comments: Orbital elements need to be updated when comet is chosen</i> Description=comet 29P Extended=YES									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F350LP	FLASH=10	POS TARG 19,8.5		50 Secs (50 Secs)	
									[==>]	[1]
	2		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F689M	FLASH=9	POS TARG 0,0		350 Secs (350 Secs)	
									[==>]	[1]
	3		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F350LP		POS TARG 19,8.5		200 Secs (200 Secs)	
									[==>]	[1]
4		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS2-2K2C-SUB	F689M	FLASH=9	POS TARG 0.5,0.5		350 Secs (350 Secs)		
								[==>]	[1]	
5		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F350LP			POS TARG 19.1,10. 5	200 Secs (200 Secs)		
								[==>]	[1]	
6		(1) SCHWASSMAN -WACHMAN-1	WFC3/UVIS, ACCUM, UVIS	F350LP			POS TARG 19.1,10. 5	400 Secs (400 Secs)		
								[==>]	[1]	

