



13200 - WFC3 SS Activation Test

Cycle: 27, Proposal Category: CAL/WFC3

(Availability Mode: RESTRICTED)

INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
Dr. John W. MacKenty (PI) (Contact)	Space Telescope Science Institute	mackenty@stsci.edu
Heather Gunning (CoI)	Space Telescope Science Institute	gunning@stsci.edu
Dr. Elena Sabbi (CoI)	Space Telescope Science Institute	sabbi@stsci.edu
Ms. Ilana Dashevsky (CoI)	Space Telescope Science Institute	idash@stsci.edu
Dr. Alan D. Welty (CoI)	Space Telescope Science Institute	welty@stsci.edu

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	DARK	S/C	1	17-Oct-2019 14:00:17.0	yes
02	BIAS DARK TUNGSTEN	S/C WFC3/UVIS	1	17-Oct-2019 14:00:18.0	yes
03	DARK-NM TUNGSTEN	WFC3/IR	1	17-Oct-2019 14:00:19.0	yes
04	DARK	S/C	8	17-Oct-2019 14:00:19.0	yes

11 Total Orbits Used

ABSTRACT

Part of side switch activities.

Proposal 13200 (STScI Edit Number: 4, Created: Thursday, October 17, 2019 at 1:00:20 PM Eastern Standard Time) - Overview

This program verifies that both the IR and UVIS channels of WFC3 are viable under the new electronic side, after the side switch. This program is modified from the SMOV activation program 11454 (WF01). Prerequisite for executing this program is that WFC3 be in Safe mode, not Safe-Protect. Following this proposal we will execute data buffer tests and functional tests for each channel. These will determine if WFC3/UVIS and/or WFC3/IR are ready to advance to further science-ready testing.

This proposal's dark exposures have been modified from DARK to DARK-NM where necessary to limit the movement of the CSM. Visit 02 does not require DARK-NM as the darks follow a bias.

ID: WF01

OBSERVING DESCRIPTION

Part of side switch activities.

Only internal targets are used - no external targets or pointing restrictions are used.

The UVIS images are (Visit 02):

1 full-frame bias

1 full-frame 20-sec dark

2 engineering read noise tests of the 4 detector amplifiers (using Special Commanding EIWARMOBS)

1 full-frame F606W tungsten lamp (with non-default lamp UV01)

1 full-frame F350LP tungsten lamp (with default lamp UV03).

The IR images are (Visit 03):

1 7-sample full-frame RAPID dark

1 7-sample full-frame STEP25 dark

2 7-sample full-frame engineering read noise tests (using Special Commanding EIENGOBS).

An additional IR exposure is required in this program in order to demonstrate movement of the Filter Select Mechanism (FSM). That exposure will be a 15-sample full-frame RAPID F140W tungsten lamp exposure (Visit 03).

----- Additional Comments -----

Event flag 7 is cleared and flags 8, and 9 are set at the start of the SMS in order to prevent turning on the TECs. Event flag 10 is cleared in order to allow safing. Visit 01, Exposure 7 circumvents the nominal reconfiguration and 3-hr CEB stabilization.

Proposal 13200 - Recover via 10.2, no TEC cmd (01) - WFC3 SS Activation Test

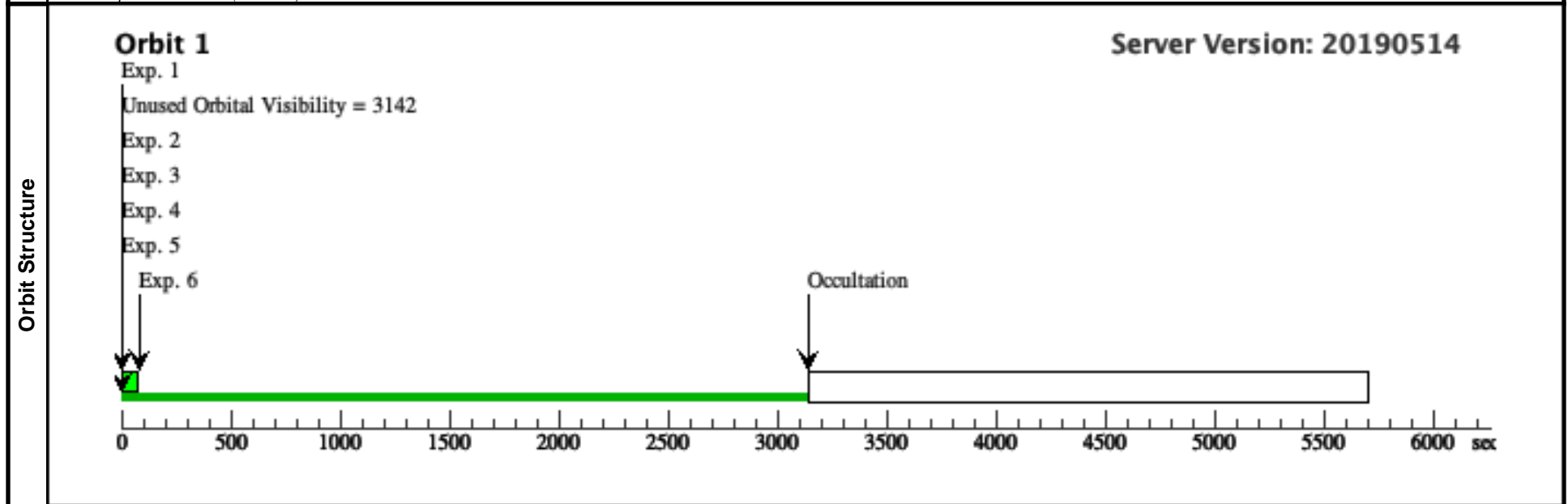
Visit	<p>Proposal 13200, Recover via 10.2, no TEC cmd (01), implementation Thu Oct 17 18:00:20 GMT 2019</p> <p>Diagnostic Status: Warning</p> <p>Scientific Instruments: S/C</p> <p>Special Requirements: PARALLEL</p> <p><i>Comments: WFC3 recovery from safe without commanding the TECs. The first three exposures will configure the NSSC-1 Event Flags 7, 8 and 9 to prevent the 6-stage, UVIS and IR TEC turn-on respectively. Flag 10 is cleared to allow safing.</i></p> <p><i>Based upon proposal 11454 visit 01.</i></p>
	Diagnostics
(Recover via 10.2, no TEC cmd (01)) Warning (Orbit Planner): EXPOSURE WITH SAA CONTOUR 11 WILL EXECUTE ON GYRO	
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Proposal 13200 - Recover via 10.2, no TEC cmd (01) - WFC3 SS Activation Test

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
Exposures	1	Clear Flag 7	DARK	S/C, DATA, NONE		SAA CONTOUR 11; SPEC COM INSTR EIFLAG7CLR; QASISTATES WFC 3 SI HOLD HOLD; QASISTATES WFC 3 ANNL HOLD HO LD; QASISTATES WFC 3 COR HOLD HOL D; QASISTATES WFC 3 DET HOLD HOL D	Same Alignment in Recover via 10.2, no TEC cmd (01)	1.0 Secs (1 Secs) [==>]	[1]	
	<i>Comments: CLEAR WFC3 Event Flag 7 to inhibit the IR 6-stage TEC turn-on in Safing Recovery.</i>									
	2	Set Flag 8	DARK	S/C, DATA, NONE			SAA CONTOUR 11; SPEC COM INSTR EIFLAG8; AFTER BY 120.0 S	Same Alignment in Recover via 10.2, no TEC cmd (01)	1.0 Secs (1 Secs) [==>]	[1]
	<i>Comments: SET WFC3 Event Flag 8 to prevent UVIS TEC turn-on.</i>									
	3	Set Flag 9	DARK	S/C, DATA, NONE			SAA CONTOUR 11; SPEC COM INSTR EIFLAG9; AFTER BY 120.0 S	Same Alignment in Recover via 10.2, no TEC cmd (01)	1.0 Secs (1 Secs) [==>]	[1]
<i>Comments: SET WFC3 Event Flag 9 to prevent IR TEC turn-on.</i>										
4	Clear Flag 1 0	DARK	S/C, DATA, NONE			SAA CONTOUR 11; SPEC COM INSTR EIFLAG10CLR; AFTER BY 120.0 S	Same Alignment in Recover via 10.2, no TEC cmd (01)	1.0 Secs (1 Secs) [==>]	[1]	
<i>Comments: Clear NSSC-I event flag 10 in order to allow safing.</i>										
5	Safe Recove ry	DARK	S/C, DATA, NONE			SAA CONTOUR 11; SPEC COM INSTR EIRECOVER	Same Alignment in Recover via 10.2, no TEC cmd (01)	80 Secs (80 Secs) [==>]	[1]	
<i>Comments: WFC3 Instrument Safing Recovery. If the Event Flags 7 (6-stage) is cleared, and Event Flags 8 (UVIS) and 9 (IR) are set, the corresponding TEC turn-on commands will be bypassed, and the corresponding TECs will remain off throughout the test.</i>										

Proposal 13200 - Recover via 10.2, no TEC cmd (01) - WFC3 SS Activation Test

6	Hold-Boot- DARK Operate	S/C, DATA, NONE	SAA CONTOUR 11; NEW ALIGNMENT ; QASISTATES WFC 3 SI OPERATE OPE RATE; QASISTATES WFC 3 ANNL HOLD HO LD; QASISTATES WFC 3 COR HOLD HOL D; QASISTATES WFC 3 DET HOLD HOL D	1 Secs (1 Secs) [==>]	[!]
<p>Comments: Perform the nominal transitions from Hold to Operate via SPSS. Transition durations: Hold to Boot: 60 secs cmd + 4 hrs warm time. Boot to Oper: 45000 secs (12.5 hrs).</p>					



Proposal 13200 - UVIS check out (02) - WFC3 SS Activation Test

Visit	<p>Proposal 13200, UVIS check out (02), implementation</p> <p>Diagnostic Status: Warning</p> <p>Scientific Instruments: WFC3/UVIS, S/C</p> <p>Special Requirements: PARALLEL</p> <p><i>Comments: Basic UVIS activation. Exposures from SM-4 per CP 14.0, Section 75.</i></p> <p><i>Based upon proposal 11454 visit 02.</i></p>	Thu Oct 17 18:00:20 GMT 2019
Diagnostics	<p>(UVIS check out (02)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU</p> <p>(FLAT Lamp =1 (02.006)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(FLAT Lamp=3 (02.008)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p>	

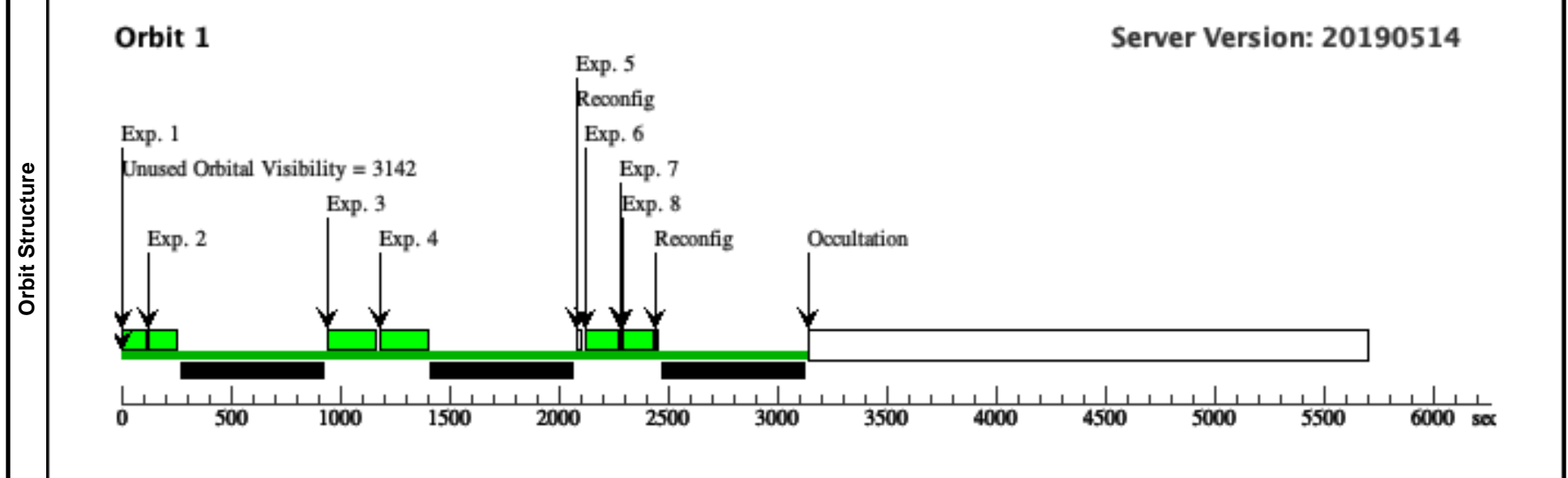
Proposal 13200 - UVIS check out (02) - WFC3 SS Activation Test

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	BIAS	BIAS	WFC3/UVIS, ACCUM, UVIS	DEF	AMP=ABCD			0 Secs (0 Secs) [==>]	[1]
<i>Comments: CP 75-11.</i>									
2	DARK AM P=ABCD	DARK	WFC3/UVIS, ACCUM, UVIS	DEF	AMP=ABCD	AFTER BY 120.0 S		20 Secs (20 Secs) [==>]	[1]
<i>Comments: CP 75-12.</i>									
3	DARK AM P=AD	DARK	WFC3/UVIS, ACCUM, UVIS	DEF	AMP=AD	SPEC COM INSTR EIWARMOBS; AFTER BY 120.0 S; NEW ALIGNMENT		1 Secs (1 Secs) [==>]	[1]
<i>Comments: CP 75-15. Needs special engineering pattern for WARM target.</i>									
4	DARK AM P=BC	DARK	WFC3/UVIS, ACCUM, UVIS	DEF	AMP=BC	SPEC COM INSTR EIWARMOBS; AFTER BY 240.0 S; NEW ALIGNMENT		1 Secs (1 Secs) [==>]	[1]
<i>Comments: CP 75-16. Needs special engineering pattern for WARM target.</i>									
5	Turn on La mp 1	DARK	S/C, DATA, NONE			SPEC COM INSTR EITLAMP; AFTER BY 240.0 S; QASISTATES WFC 3 DET HOLD UVFL AT; QASISTATES WFC 3 SI UVOBS UVOB S; QASISTATES WFC 3 COR HOLD HOL D; QESIPARM LAMP UV01; QESIPARM LAMP WR ON		15 Secs (15 Secs) [==>]	[1]
<i>Comments: Turn on Lamp 1.</i>									
6	FLAT Lamp =1	TUNGSTEN	WFC3/UVIS, ACCUM, UVIS	F606W	AMP=ABCD		Same Alignment in UVIS check out (02)	1 Secs (1 Secs) [==>]	[1]
<i>Comments: CP 75-20. Uses Tungsten Lamp no. 1.</i>									

Exposures

Proposal 13200 - UVIS check out (02) - WFC3 SS Activation Test

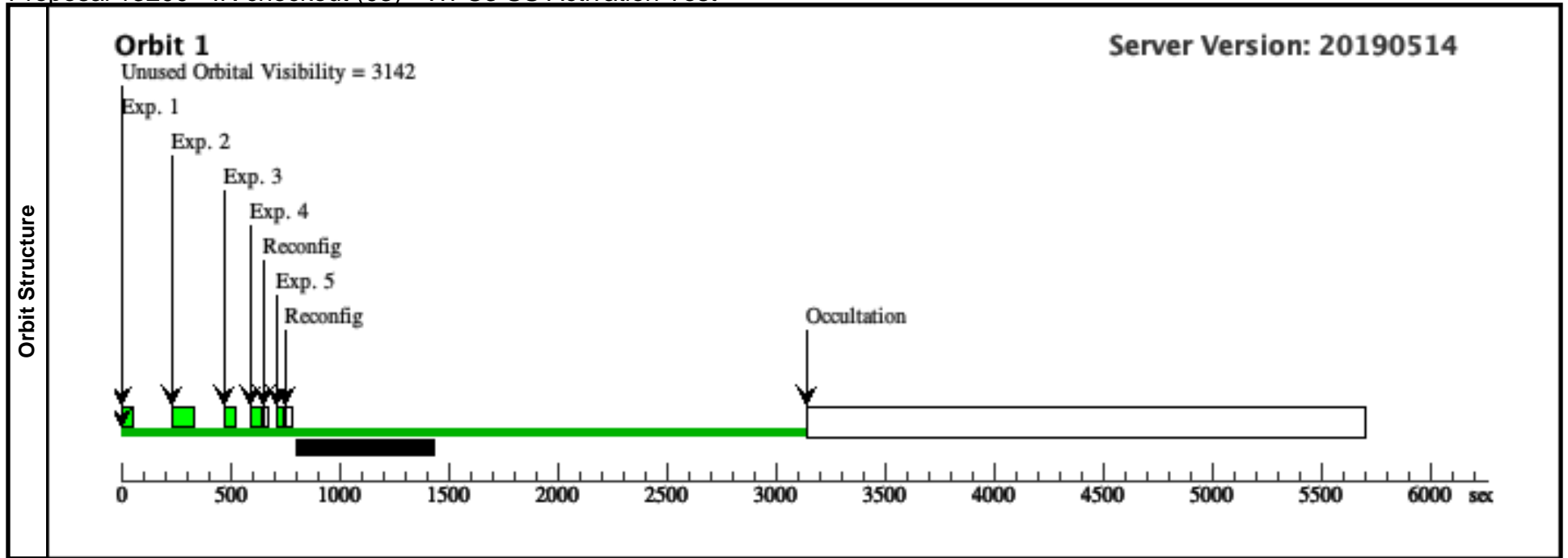
7	Turn off Lamp 1	DARK	S/C, DATA, NONE	SPEC COM INSTR EITLAMP;	Same Alignment in UVIS check out (02)	15 Secs (15 Secs)	[==>]	[1]
QASISTATES WFC 3 DET UVFLAT HO LD; QASISTATES WFC 3 SI UVOBS UVOB S; QASISTATES WFC 3 COR HOLD HOL D; QESIPARM LAMP UV01; QESIPARM LAMP WR OFF								
<i>Comments: Turn off Lamp 1.</i>								
8	FLAT Lamp =3	TUNGSTEN	WFC3/UVIS, ACCUM, UVIS	F350LP	AMP=ABCD	1 Secs (1 Secs)	[==>]	[1]
<i>Comments: CP 75-24. Uses Tungsten Lamp no. 3 (default).</i>								



Proposal 13200 - IR checkout (03) - WFC3 SS Activation Test

Thu Oct 17 18:00:20 GMT 2019

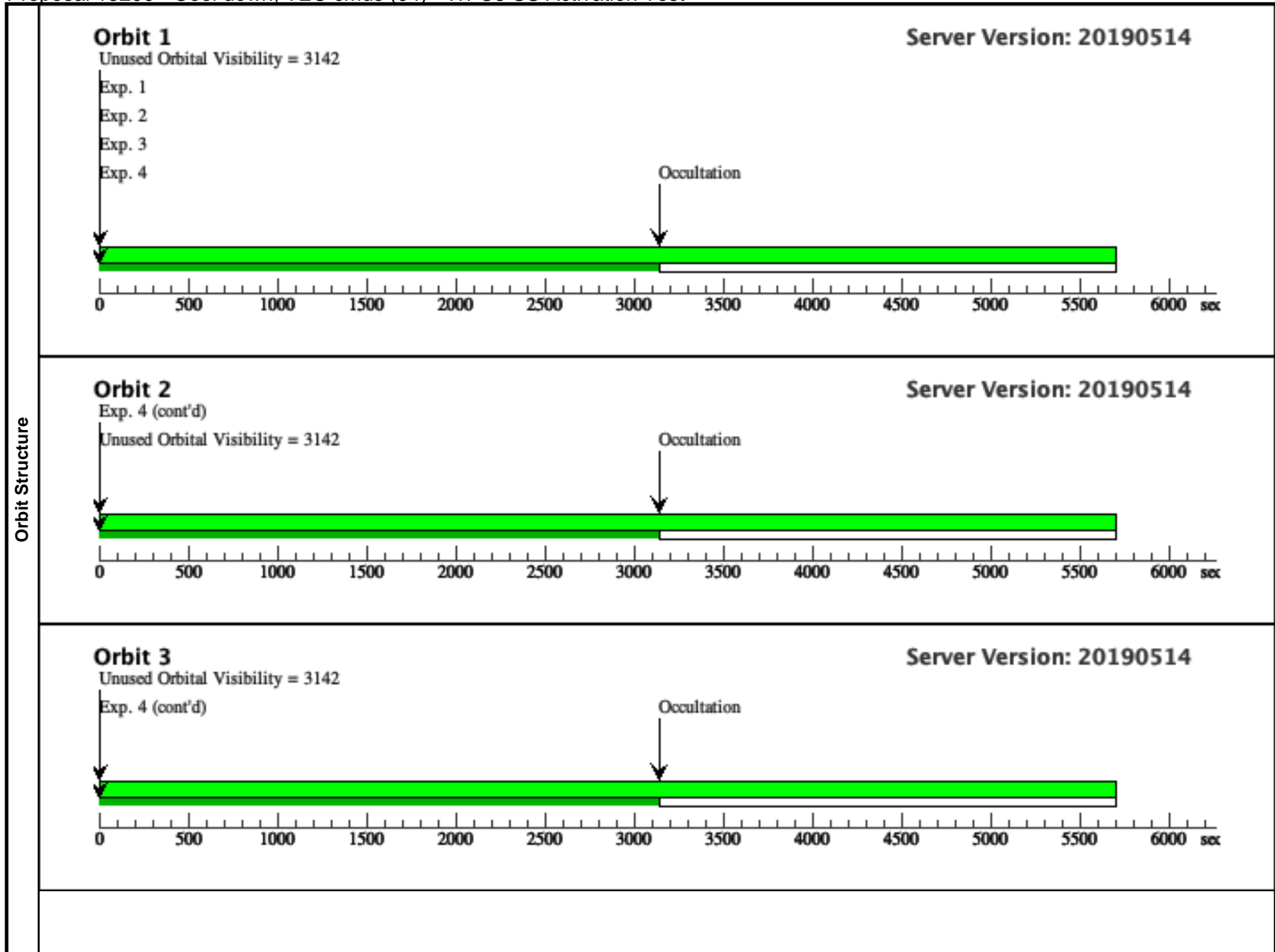
Visit	Proposal 13200, IR checkout (03), implementation									
	Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: (none) Comments: Basic IR check out. Exposures from SM-4 per CP 14.0, Section 75. Based upon proposal 11454 visit 03. SQL required to increase some alignment times.									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
		1	DARK-NM	DARK-NM	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=RAPID ; NSAMP=7			20.526037 Secs (20.526 Secs) [==>]
Comments: CP 75-28.										
2		DARK-NM	DARK-NM	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=STEP2 5; NSAMP=7	AFTER BY 240.0 S		74.230741 Secs (74.231 Secs) [==>]	[1]
Comments: CP 75-29.										
3		DARK-NM	DARK-NM	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=RAPID ; NSAMP=7	SPEC COM INSTR EIENGOBS; AFTER BY 240.0 S; NEW ALIGNMENT		20.526037 Secs (20.526 Secs) [==>]	[1]
Comments: CP 75-30. Uses special IR engineering noise test sequence, rather than RAPID. SQL to add 8s to qalignment.time_require.										
	4	DARK-NM	DARK-NM	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=RAPID ; NSAMP=7	SPEC COM INSTR EIENGOBS; AFTER BY 120.0 S; NEW ALIGNMENT		20.526037 Secs (20.526 Secs) [==>]	[1]
	Comments: CP 75-31. Uses special IR engineering noise test sequence, rather than RAPID. SQL to add 8s to qalignment.time_require.									
	5	Force move ment of FS M to F140W	TUNGSTEN	WFC3/IR, MULTIACCUM, IRSUB64	F140W	SAMP-SEQ=RAPID ; NSAMP=15	AFTER BY 120.0 S		0.91161 Secs (0.912 Secs) [==>]	[1]
Comments: CP 75-33. Force movement of FSM to F140W with a short exposure, which is not part of CP.										



Proposal 13200 - Cool down, TEC cmds (04) - WFC3 SS Activation Test

Thu Oct 17 18:00:20 GMT 2019

Visit	<p>Proposal 13200, Cool down, TEC cmds (04), implementation</p> <p>Diagnostic Status: Warning</p> <p>Scientific Instruments: S/C</p> <p>Special Requirements: PARALLEL</p> <p><i>Comments: Cool down. The first three exposures will configure the NSSC-1 Event Flags 7, 8 and 9 to allow the 6-stage, UVIS and IR TEC turn-ons respectively. The cool down is then initiated via direct call.</i></p> <p><i>Equivalent SMOV4 action was proposal 11454 visit 07.</i></p> <p><i>Need to decide if the event flags should be kept here or done in real time. Real time allows for choosing whether or not the cool down executes.</i></p>									
	<p>(Cool down, TEC cmds (04)) Warning (Orbit Planner): EXPOSURE WITH SAA CONTOUR 11 WILL EXECUTE ON GYRO</p> <p>(Cool down, TEC cmds (04)) Warning (Orbit Planner): EXPOSURE WITH SAA CONTOUR 11 WILL EXECUTE ON GYRO</p> <p>(Cool down, TEC cmds (04)) Warning (Orbit Planner): EXPOSURE WITH SAA CONTOUR 11 WILL EXECUTE ON GYRO</p> <p>(Cool down, TEC cmds (04)) Warning (Orbit Planner): EXPOSURE WITH SAA CONTOUR 11 WILL EXECUTE ON GYRO</p> <p>(Cool down, TEC cmds (04)) Warning (Orbit Planner): INCOMPATIBLE SEPARATION CONSTRAINTS</p> <p>(Cool down, TEC cmds (04)) Warning (Orbit Planner): INCOMPATIBLE SEPARATION CONSTRAINTS</p> <p>(Cool down, TEC cmds (04)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU</p> <p>(Cool down, TEC cmds (04)) Warning (Orbit Planner): MERGING RULE VIOLATED DURING AUTOMATIC MERGING</p> <p>(Cool down, TEC cmds (04)) Warning (Orbit Planner): MERGING RULE VIOLATED DURING AUTOMATIC MERGING</p>									
Diagnosics										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Set Flag 7	DARK	S/C, DATA, NONE			SAA CONTOUR 11; SPEC COM INSTR EIFLAG7; QASISTATES WFC 3 SI OPERATE OPERATE; QASISTATES WFC 3 COR HOLD HOLD; QASISTATES WFC 3 DET HOLD HOLD; QASISTATES WFC 3 ANNL HOLD HOLD	Same Alignment in Cool down, TEC cmds (04)	1.0 Secs (1 Secs) [==>]	[1]
	<i>Comments: SET WFC3 Event Flag 7 to allow the IR 6-stage TEC turn-on.</i>									
	2	Clear Flag 8	DARK	S/C, DATA, NONE			SAA CONTOUR 11; SPEC COM INSTR EIFLAG8CLR; AFTER BY 120.0 S	Same Alignment in Cool down, TEC cmds (04)	1.0 Secs (1 Secs) [==>]	[1]
	<i>Comments: CLEAR WFC3 Event Flag 8 to allow UVIS TEC turn-on.</i>									
3	Clear Flag 9	DARK	S/C, DATA, NONE			SAA CONTOUR 11; SPEC COM INSTR EIFLAG9CLR; AFTER BY 120.0 S	Same Alignment in Cool down, TEC cmds (04)	1.0 Secs (1 Secs) [==>]	[1]	
<i>Comments: CLEAR WFC3 Event Flag 9 to allow IR TEC turn-on.</i>										
4	Ramp 4-stage & 6-stage Cold	DARK	S/C, DATA, NONE			SAA CONTOUR 11; SPEC COM INSTR EIBTOP4	Same Alignment in Cool down, TEC cmds (04)	45000 Secs (45000 Secs) [==>]	[1]	
<i>Comments: Cool the TECs by direct call of the WFC3 TEC cool down instruction contained in the Boot-to-Operate transition. This includes "ramped" cooling the UVIS 4-stage TEC from 0 to -83 degC and two-step cooling of the IR 6-stage TEC from -90 to -128 degC. No other Boot-to-Operate commanding is performed.</i>										



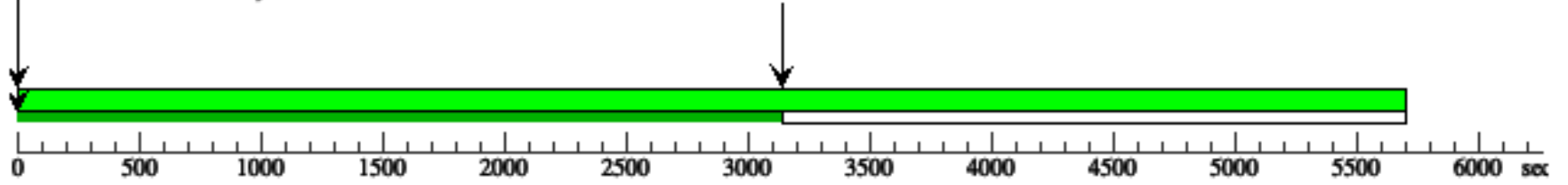
Orbit 4

Server Version: 20190514

Exp. 4 (cont'd)

Unused Orbital Visibility = 3142

Occultation



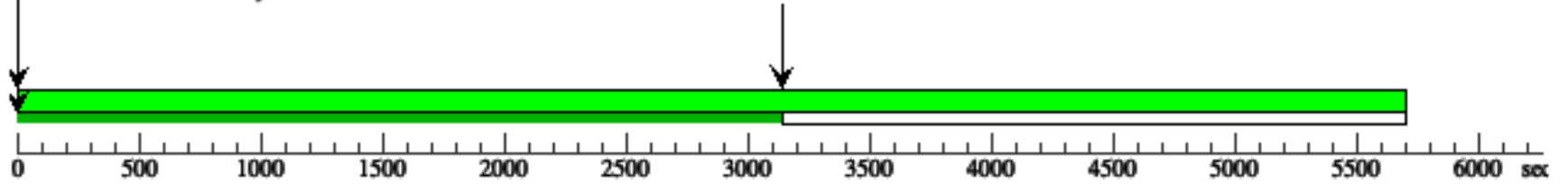
Orbit 5

Server Version: 20190514

Exp. 4 (cont'd)

Unused Orbital Visibility = 3142

Occultation



Orbit 6

Server Version: 20190514

Exp. 4 (cont'd)

Unused Orbital Visibility = 3142

Occultation

