



11454 - Activation Test

Cycle: 17, Proposal Category: SM4/WFC3

(Availability Mode: RESTRICTED)

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	DARK	S/C	3	06-Apr-2009 21:02:24.0	yes
02	BIAS DARK TUNGSTEN	S/C WFC3/UVIS	1	06-Apr-2009 21:02:30.0	yes
03	DARK TUNGSTEN	WFC3/IR	1	06-Apr-2009 21:02:34.0	yes
04	DARK	S/C	1	06-Apr-2009 21:02:35.0	yes
05	DARK	S/C	1	06-Apr-2009 21:02:37.0	yes
5A	DARK	S/C	1	06-Apr-2009 21:02:38.0	yes
06	DARK	S/C	1	06-Apr-2009 21:02:39.0	yes
07	DARK	S/C	3	06-Apr-2009 21:02:40.0	yes

12 Total Orbits Used

ABSTRACT

This program (WFC3 SMOV program WFC3-01) verifies that WFC3 is in the same condition after release from the Shuttle as during the Functional Test (FT), which was conducted with HST in the Shuttle's payload bay. This analog test will be implemented in stored commanding that will be generated from a Phase II proposal, whereas the in-bay FT was run with real-time CCLs.

The purpose of the FT was to demonstrate that WFC3 is viable for scientific research. This was accomplished by demonstrating that WFC3 can be commanded to the nominal scientific operating state and can carry out nominal scientific operations of the UVIS and IR channels, including operation of the thermoelectric coolers (TECs), corrector and focus mechanisms, UVIS shutter, SOFA and FSM filter wheels, detectors, and Control Section (CS). Only one Side of the CS is verified.

This test is compatible with execution during the post-FT, Safe-Protect period. Operability of the TECs is not demonstrated in this test, but is demonstrated in the SMOV Detector & TEC activation programs, WFC3-04 and WFC3-05.

OBSERVING DESCRIPTION

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

In the in-bay FT, six UVIS images are obtained, and 4 IR images, all of which will be obtained in this program.

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).

REAL TIME JUSTIFICATION

N/A.

CALIBRATION JUSTIFICATION

N/A.

ADDITIONAL COMMENTS

WFC3 Protect thermal set-points are used throughout the test.

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.

Visits should be executed in the order 01, 02, 03, 05, 5A, 06, 07.

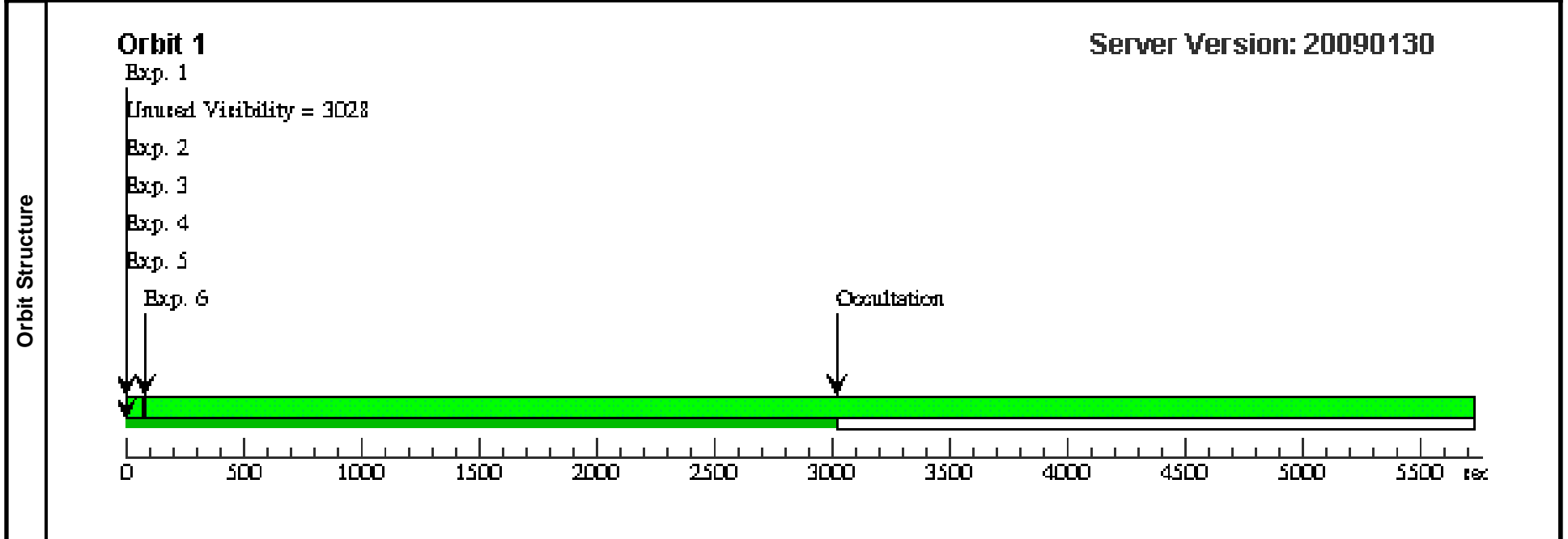
Proposal 11454 - Visit 01 - Activation Test

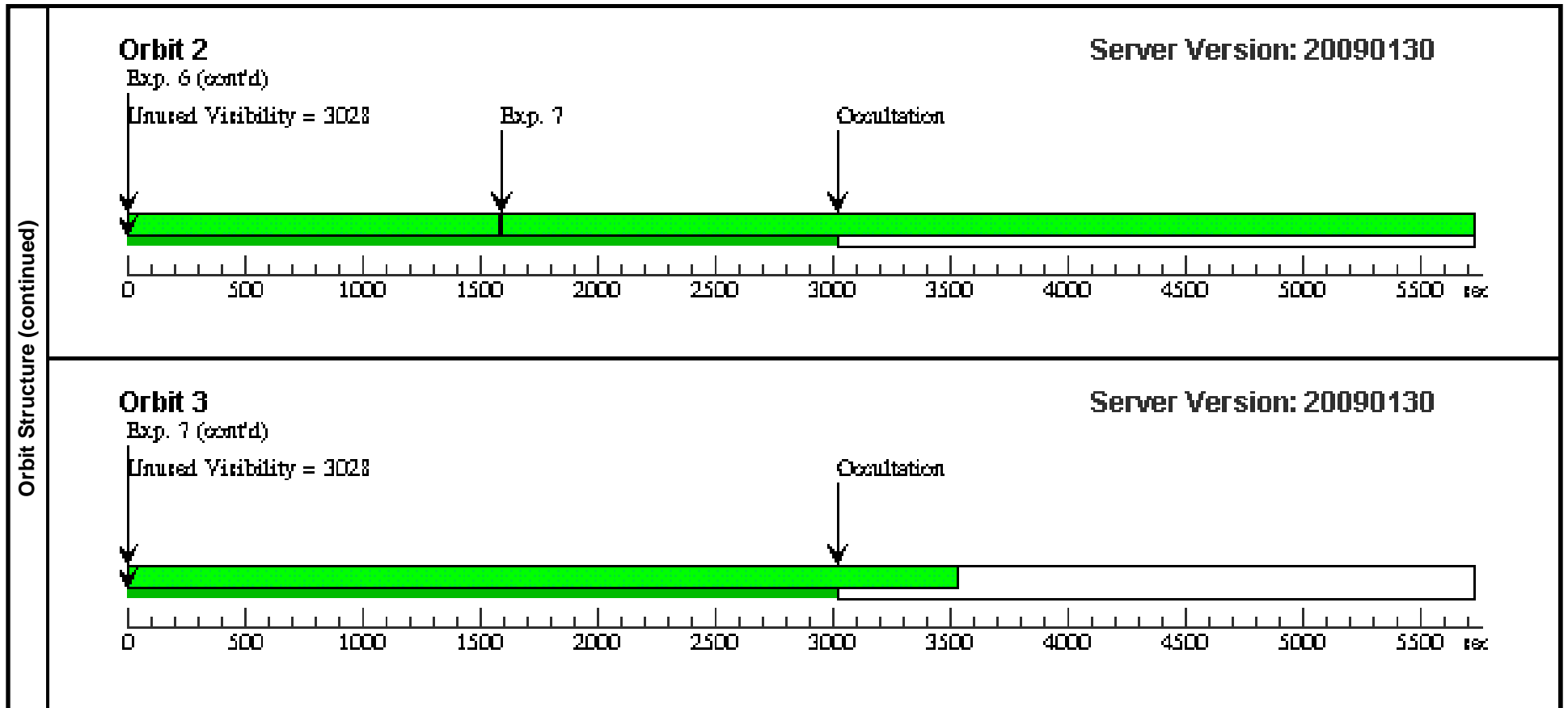
Tue Apr 07 01:02:43 GMT 2009

Visit	Proposal 11454, Visit 01, scheduling									
	Diagnostic Status: Warning									
Diagnostics	Scientific Instruments: S/C									
	Special Requirements: PCS MODE GYRO; GYRO MODE 3GOBAD; SEQ 01,02,03,04 WITHIN 5 D; PARALLEL									
	<i>Comments: WFC3 Safing Recovery. The first three exposures will configure the NSSC-I 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>									
	(Visit 01) Warning (Orbit Planner): MERGING RULE VIOLATED DURING AUTOMATIC MERGING									
	(Visit 01) Warning (Orbit Planner): EXPOSURE NOT IN REQUESTED ORBIT									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	Clear Flag 7	DARK	S/C, DATA, NONE			SAA CONTOUR 11; Same Alignment SPEC COM INSTR EIFLAG7CLR; QASISTATES WFC 3 SI HOLD HOLD		1.0 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; Same Alignment SPEC COM INSTR EIFLAG8; AFTER BY 120 S		1.0 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; Same Alignment SPEC COM INSTR EIFLAG9; AFTER BY 120 S		1.0 Secs [==>]	[1]
	<i>Comments: SET WFC3 Event Flag 9 to prevent IR TEC turn-on.</i>									
	4	Clear Flag 10	DARK	S/C, DATA, NONE			SAA CONTOUR 11; Same Alignment SPEC COM INSTR EIFLAG10CLR; AFTER BY 120 S		1.0 Secs [==>]	[1]
	<i>Comments: Clear NSSC-I event flag 10 in order to allow safing.</i>									
	5	Safe Recovery	DARK	S/C, DATA, NONE			SAA CONTOUR 11; Same Alignment SPEC COM INSTR EIRECOVER		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 11454 - Visit 01 - Activation Test

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
6	Hold to Boot	DARK	S/C, DATA, NONE			SAA CONTOUR 11; Same Alignment		7260.0 Secs	[1]
						SPEC COM INSTR RIHDTBT; NEW ALIGNMENT ; QASISTATES WFC 3 SI HOLD OPERA TE	[==>]		
<i>Comments: Perform the Hold to Boot transition by direct call. Includes time for the 2 hour electronics warmup before proceeding.</i>									
7	Boot to Operate	DARK	S/C, DATA, NONE			SAA CONTOUR 11; Same Alignment		7700.0 Secs	[2]
						SPEC COM INSTR RIBTOP	[==>]		
<i>Comments: Perform the BOOT to OPERATE transition by direct call, bypassing the 140 minute IR 6-stage TEC cooldown time. The time for the UVIS 4-stage TEC cooling cannot be skipped even though that TEC will not be commanded.</i>									





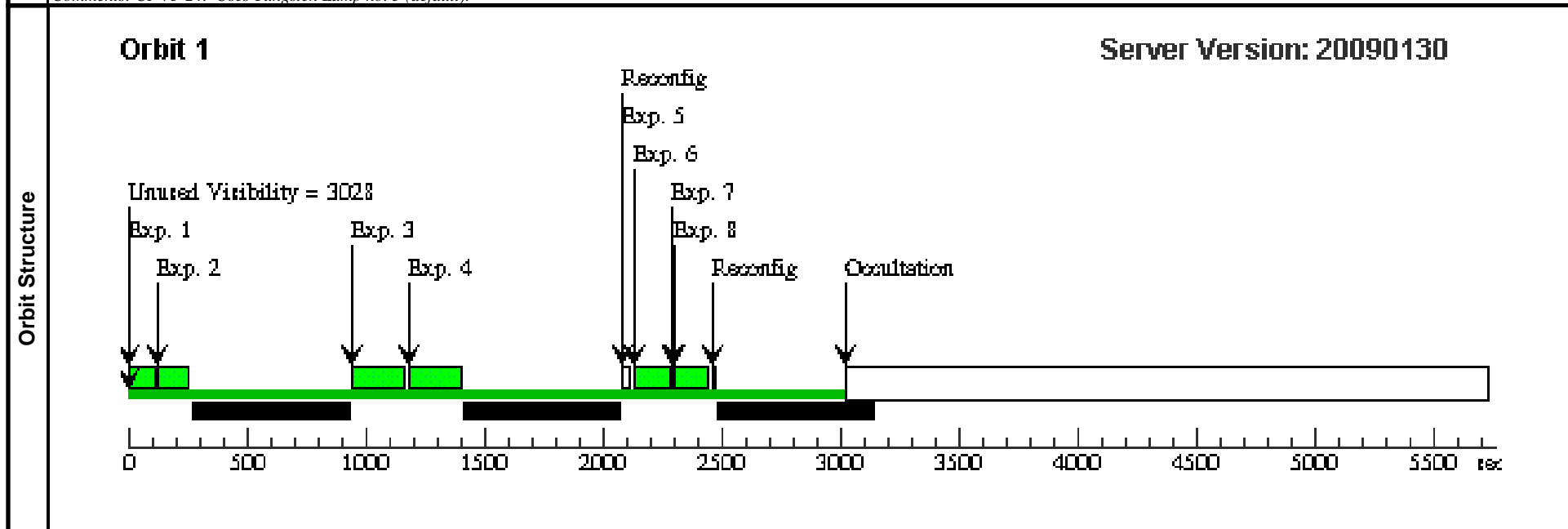
Proposal 11454 - Visit 02 - Activation Test

Tue Apr 07 01:02:45 GMT 2009

Visit	Proposal 11454, Visit 02, scheduling									
	Diagnostic Status: No Diagnostics Scientific Instruments: S/C, WFC3/UVIS Special Requirements: PARALLEL Comments: UVIS exposures from SM-4 per CP 14.0, Section 75.									
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
1		BIAS	WFC3/UVIS, ACCUM, UVIS	DEF	AMP=ABCD			0 Secs		
								[==>]		[1]
Comments: CP 75-11.										
2		DARK	WFC3/UVIS, ACCUM, UVIS	DEF	AMP=ABCD	AFTER BY 120 S		20 Secs		
								[==>]		[1]
Comments: CP 75-12.										
3		DARK	WFC3/UVIS, ACCUM, UVIS	DEF	AMP=AD	SPEC COM INSTR EIWARMOBS; AFTER BY 120 S; NEW ALIGNMENT		1 Secs		
								[==>]		[1]
Comments: CP 75-15. Needs special engineering pattern for WARM target.										
4		DARK	WFC3/UVIS, ACCUM, UVIS	DEF	AMP=BC	SPEC COM INSTR EIWARMOBS; AFTER BY 240 S; NEW ALIGNMENT		1 Secs		
								[==>]		[1]
Comments: CP 75-16. Needs special engineering pattern for WARM target.										
5		DARK	S/C, DATA, NONE			SPEC COM INSTR EITLAMP; AFTER BY 240 S; QASISTATES WFC 3 DET HOLD UVFL AT; QASISTATES WFC 3 SI OBSERVE OB SERVE; QASISTATES WFC 3 COR HOLD HOL D; QESIPARM LAMP UV01; QESIPARM LAMP WR ON		15 Secs		
								[==>]		[1]
Comments: Turn on Lamp 1.										
6		TUNGSTEN	WFC3/UVIS, ACCUM, UVIS	F606W	AMP=ABCD		Same Alignment	1 Secs		
								[==>]		[1]
Comments: CP 75-20. Uses Tungsten Lamp no. 1.										

Proposal 11454 - Visit 02 - Activation Test

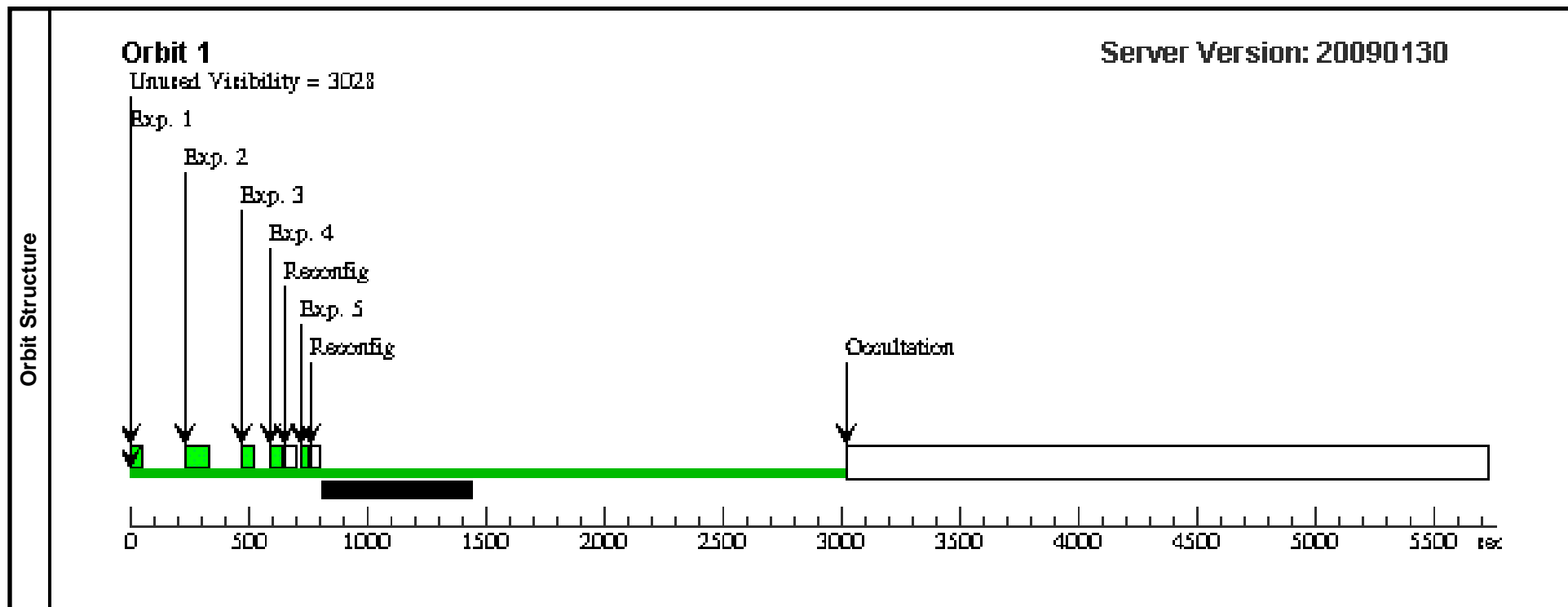
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
7	DARK	S/C, DATA, NONE				SPEC COM INSTR EITLAMP; QASISTATES WFC 3 DET UVFLAT HO LD; QASISTATES WFC 3 SI OBSERVE OB SERVE; QASISTATES WFC 3 COR HOLD HOL D; QESIPARM LAMP UV01; QESIPARM LAMP WR OFF	Same Alignment	15 Secs	[1]
								[==>]	
<i>Comments: Turn off Lamp 1.</i>									
8	TUNGSTEN	WFC3/UVIS, ACCUM, UVIS		F350LP	AMP=ABCD			1 Secs	[1]
								[==>]	
<i>Comments: CP 75-24. Uses Tungsten Lamp no. 3 (default).</i>									



Proposal 11454 - Visit 03 - Activation Test

Tue Apr 07 01:02:46 GMT 2009

Visit	Proposal 11454, Visit 03, scheduling									
	Diagnostic Status: No Diagnostics									
Scientific Instruments: WFC3/IR										
Special Requirements: (none)										
<i>Comments: IR exposures from SM-4 per CP 14.0, Section 75.</i>										
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
		1		DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=RAPID ; NSAMP=7			[==>]
	<i>Comments: CP 75-28.</i>									
	2		DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=STEP2 5; NSAMP=7	AFTER BY 240 S		[==>]	[1]
	<i>Comments: CP 75-29.</i>									
	3		DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=RAPID ; NSAMP=7	SPEC COM INSTR EIENGOBS; AFTER BY 240 S; NEW ALIGNMENT		[==>]	[1]
	<i>Comments: CP 75-30. Uses special IR engineering noise test sequence, rather than RAPID.</i>									
	4		DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=RAPID ; NSAMP=7	SPEC COM INSTR EIENGOBS; AFTER BY 120 S; NEW ALIGNMENT		[==>]	[1]
	<i>Comments: CP 75-31. Uses special IR engineering noise test sequence, rather than RAPID.</i>									
	5		TUNGSTEN	WFC3/IR, MULTIACCUM, IRSUB64	F140W	SAMP-SEQ=RAPID ; NSAMP=15	AFTER BY 120 S		[==>]	[1]
	<i>Comments: CP 75-33. Force movement of FSM to F140W with a short exposure, which is not part of CP.</i>									



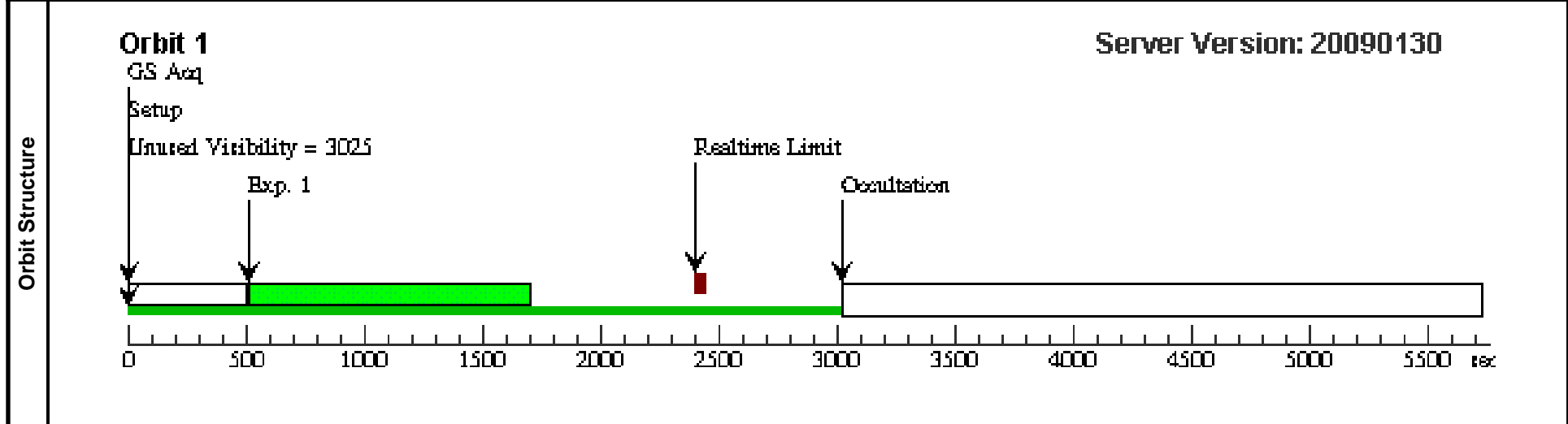
Proposal 11454 - Visit 04 - Activation Test

Tue Apr 07 01:02:46 GMT 2009

Visit	Proposal 11454, Visit 04, implementation Diagnostic Status: No Diagnostics Scientific Instruments: S/C Special Requirements: ON HOLD ; PARALLEL <i>On Hold Comments: Originally, it was thought that we would want to safe WFC3 at the end of this proposal. But it would be good to leave WFC3 in Boot or higher so we can see the telemetry for an extended period in Protect mode. Therefore, we do not want to execute this visit as a nominal end of the FT repeat activities.</i>									
	Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]
1		Safe	DARK	S/C, DATA, NONE			SPEC COM INSTR EISAFE; QASISTATES WFC 3 SI HOLD HOLD		60 Secs [==>]	[1]
<i>Comments: Safe WFC3 unless Event Flag 10 is set. The flag was cleared in Visit 1.</i>										
Orbit Structure	Orbit 1 Unused Visibility = 3028 Server Version: 20090130									
	<p>The diagram shows a horizontal timeline from 0 to 5500 seconds. A green bar representing 'Exp. 1' starts at 0 and ends at 3000 seconds. A white bar representing 'Occultation' starts at 3000 and ends at 5500 seconds. Arrows point to the start of each bar. The x-axis is labeled with values 0, 500, 1000, 1500, 2000, 2500, 3000, 3500, 4000, 4500, 5000, and 5500 sec.</p>									

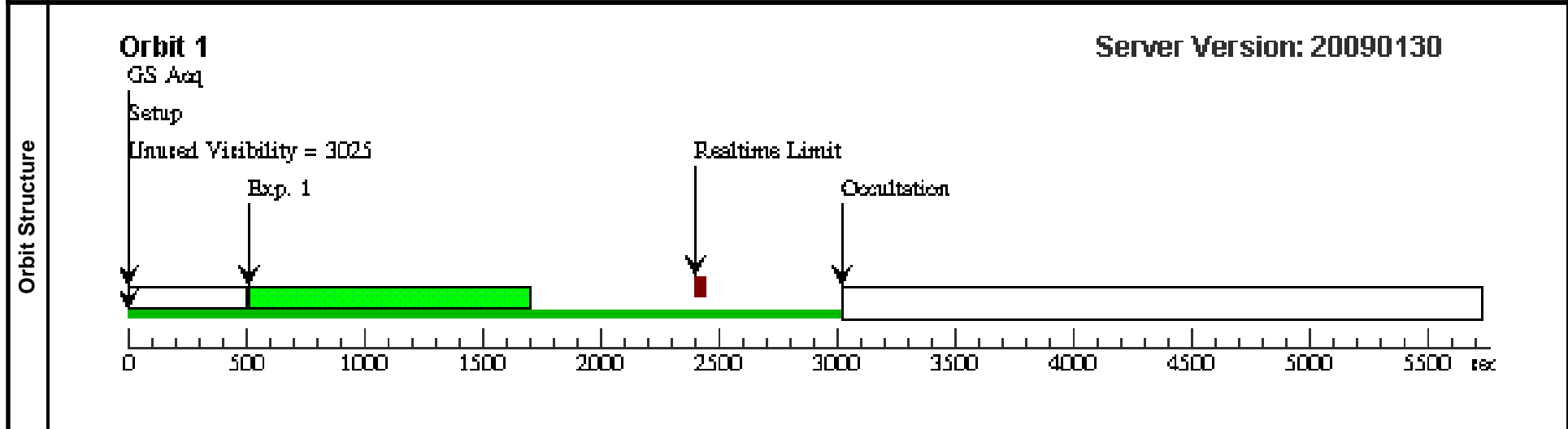
Visit	Proposal 11454, Visit 05, scheduling Diagnostic Status: No Diagnostics Scientific Instruments: S/C Special Requirements: (none) <i>Comments: This visit is to be scheduled about 48 hours prior to the 21-day CARD outgassing constraint time. This visit is to transition the optical bench heaters in preparation for the TEC turnons and cooldown.</i>									

Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	Reconfigure Optical Bench Heaters	DARK		S/C, DATA, NONE			REQ UPLINK		1200 Secs [==>]
<i>Comments: This exposure is used to schedule an opportunity to execute an Ops Request to: 1) Run CCL IPRO2NRM to transition heaters and event flag 6 for Nominal mode</i>										



Visit	Proposal 11454, Visit 5A Diagnostic Status: No Diagnostics Scientific Instruments: S/C Special Requirements: AFTER 05 BY 48 H TO 72 H Comments: This visit should be scheduled when the 21-day CARD outgassing timer expires. This visit Configures the TEC event flags and turns on the 6-stage TEC at -90C									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	Enable the 6 -stage TEC	DARK	S/C, DATA, NONE				REQ UPLINK		1200 Secs [==>]
Comments: This exposure is used to schedule an opportunity to execute an Ops Request to: 1) Contigure the TEC event flags 2) Turnon the 6-stage TEC at -90C										
Orbit Structure	Orbit 1 GS Acq Unused Visibility = 3025 Server Version: 20090130									
	<p>The diagram shows a timeline for Orbit 1 from 0 to 6000 seconds. Key events are marked with arrows: 'Setup' at approximately 100s, 'Exp. 1' at 500s, 'Realtime Limit' at 2400s, and 'Occultation' at 3000s. A green bar represents the active period from 0 to approximately 1700s, and a white bar represents the period from 3000s to 6000s. A small red bar is located at the Realtime Limit mark.</p>									

Visit	Proposal 11454, Visit 06, scheduling Diagnostic Status: No Diagnostics Scientific Instruments: S/C Special Requirements: AFTER 5A BY 6 H TO 12 H Comments: This visit follows visit 05 by at least 2 hours to allow the IR 6-stage TEC to reach its -90 degC setpoint.									
	Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]
1		Enable TEC FIRE	DARK	S/C, DATA, NONE				REQ UPLINK		1200 Secs [==>]
Comments: This exposure is used to schedule an opportunity to execute an Ops Request to: 1) Enable TECFIRE at CE = -45 degC and DB = -53 degC										



Visit	Proposal 11454, Visit 07, scheduling Diagnostic Status: No Diagnostics Scientific Instruments: S/C Special Requirements: AFTER 06 BY 12 H TO 24 H; PARALLEL Comments: <i>This visit must be executed before any other post-Protect WFC3 program.</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1	Ramp 4-stage e & 6-stage Cold	DARK	S/C, DATA, NONE				SPEC COM INSTR RIPHTOP		13450 Secs [==>]
Comments: <i>Invoke Instruction RIPHTOP, the WFC3 PreHeat to Operate reconfiguration. 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.</i> Setting <i>qasi</i> states is not necessary. 10.2 will already be thinking WFC3 is in Operate.										
Orbit Structure	<div style="display: flex; justify-content: space-between;"> <div> <p>Orbit 1 Exp. 1</p> <p>Unused Visibility = 3028</p> </div> <div> <p>Server Version: 20090130</p> </div> </div>									

