



## 14538 - WFC3 IR Linearity Monitor

Cycle: 24, Proposal Category: CAL/WFC3

(Availability Mode: RESTRICTED)

### INVESTIGATORS

<i>Name</i>	<i>Institution</i>	<i>E-Mail</i>
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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 TUNGSTEN	WFC3/IR	1	07-Sep-2016 17:33:15.0	yes
02	DARK TUNGSTEN	WFC3/IR	1	07-Sep-2016 17:33:16.0	yes
03	DARK TUNGSTEN	WFC3/IR	1	07-Sep-2016 17:33:17.0	yes
04	DARK TUNGSTEN	WFC3/IR	1	07-Sep-2016 17:33:18.0	yes
05	DARK TUNGSTEN	WFC3/IR	1	07-Sep-2016 17:33:18.0	yes
06	DARK TUNGSTEN	WFC3/IR	1	07-Sep-2016 17:33:19.0	yes
07	DARK TUNGSTEN	WFC3/IR	1	07-Sep-2016 17:33:19.0	yes
08	DARK TUNGSTEN	WFC3/IR	1	07-Sep-2016 17:33:20.0	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>
09	DARK TUNGSTEN	WFC3/IR	1	07-Sep-2016 17:33:21.0	yes
10	DARK TUNGSTEN	WFC3/IR	1	07-Sep-2016 17:33:21.0	yes

10 Total Orbits Used

### **ABSTRACT**

To monitor the non-linearity of the WFC3/IR detector, we observe Tungsten internal flats through the F127M filter. Any changes measured in the non-linearity will be updated in the calibration reference file, crucial to providing a correction for accurate photometry. This program is a continuation of the cycle 23 (program 14375) Linearity calibration program.

### **OBSERVING DESCRIPTION**

We will take Tungsten internal flat fields through the F127M filter to measure the non-linearity of each pixel of the WFC3/IR detector. In order to study the non-linear behavior at all signal levels up the ramp, we vary the sample sequence so that we have six visits with SPARS25 and four visits with SPARS10.

Each visit is identical in structure and begins with a dark current observation. This acts as a monitor of persistence from previous exposures and allows the F126N to move into position before the Tungsten lamp is turned on, a safeguard against persistence induced by a grism or wide band filter rotating through the beam. The two filters (F126N and F127M) used in this program should let in too little flux to trigger persistence. Next, while the lamp warms up, an internal flat field is taken through F126N. This warm-up flat is critical for an accurate non-linearity measurement, which requires a very stable flux for the entirety of the exposure. After the warm-up flat, a final flat field, which will be used to measure the non-linearity, is taken through the F127M filter. Starting in cycle 23, a trailing dark (using SPARS25, nsamp=15) is taken after the final flat in order to measure decay of persistence. This trailing dark is compatible with the IR dark calibration program and can be used as data.

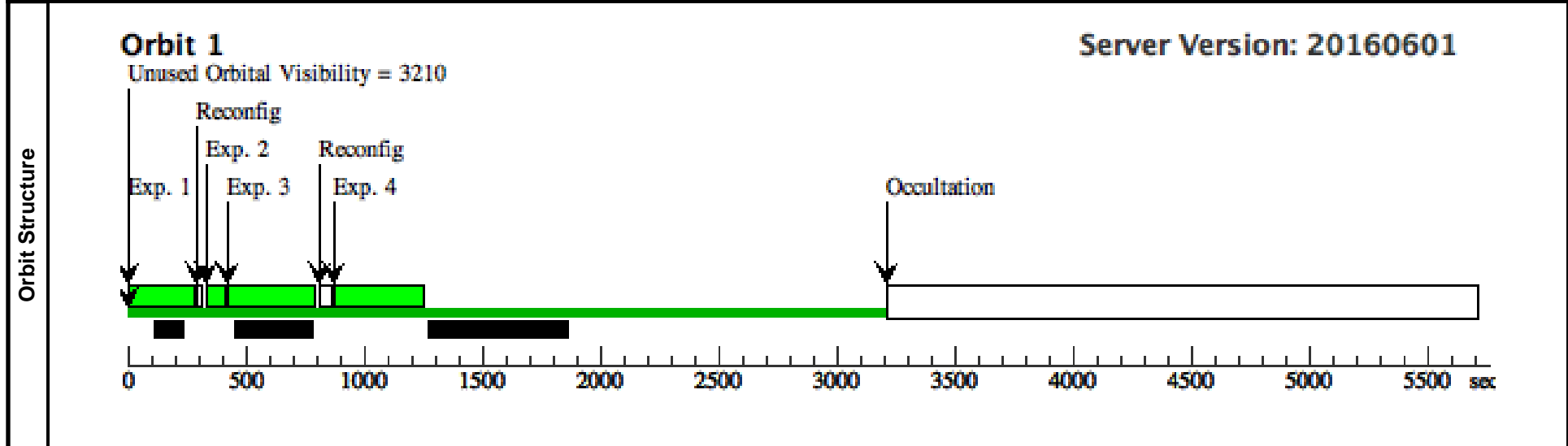
Proposal 14538 - SPARS25a (01) - WFC3 IR Linearity Monitor

Wed Sep 07 21:33:22 GMT 2016

<b>Visit</b>	Proposal 14538, SPARS25a (01), implementation Diagnostic Status: Warning Scientific Instruments: WFC3/IR Special Requirements: BEFORE 01-SEP-2017
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<b>Diagnostics</b>	(SPARS25a (01)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU
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#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			252.937441 Secs (252.937 Secs) [==>]	[1]
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			52.937106 Secs (52.937 Secs) [==>]	[1]
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			352.939501 Secs (352.94 Secs) [==>]	[1]
4	Persistence Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=15			352.939501 Secs (352.94 Secs) [==>]	[1]



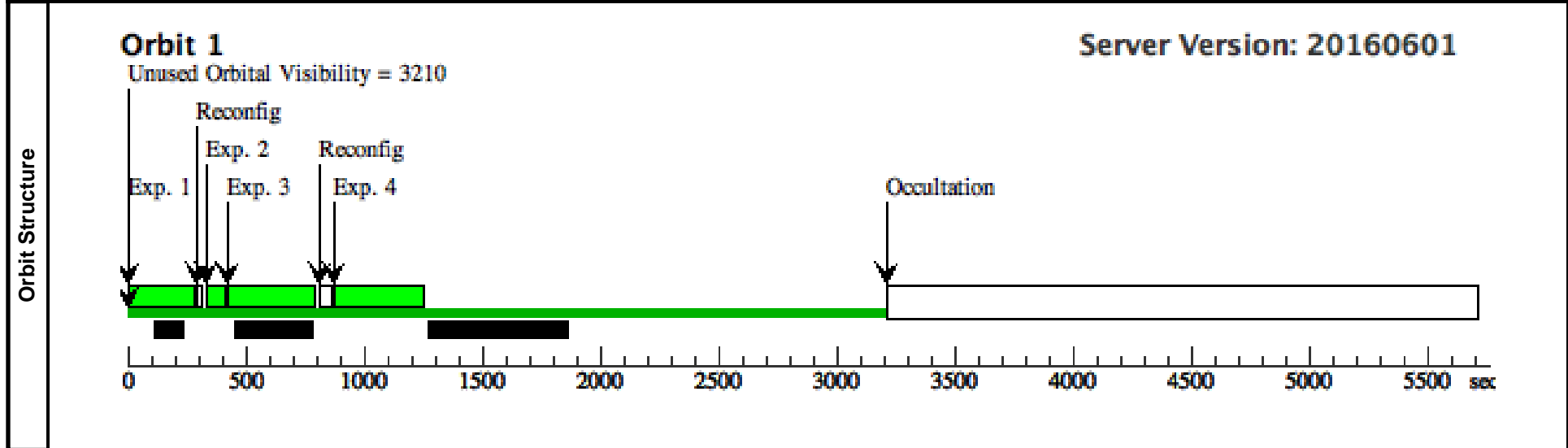
Proposal 14538 - SPARS25b (02) - WFC3 IR Linearity Monitor

Wed Sep 07 21:33:22 GMT 2016

<b>Visit</b>	Proposal 14538, SPARS25b (02), implementation Diagnostic Status: Warning Scientific Instruments: WFC3/IR Special Requirements: BEFORE 01-SEP-2017
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<b>Diagnostics</b>	(SPARS25b (02)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU
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#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			252.937441 Secs (252.937 Secs) [==>]	[1]
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			52.937106 Secs (52.937 Secs) [==>]	[1]
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			352.939501 Secs (352.94 Secs) [==>]	[1]
4	Persistence Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=15			352.939501 Secs (352.94 Secs) [==>]	[1]



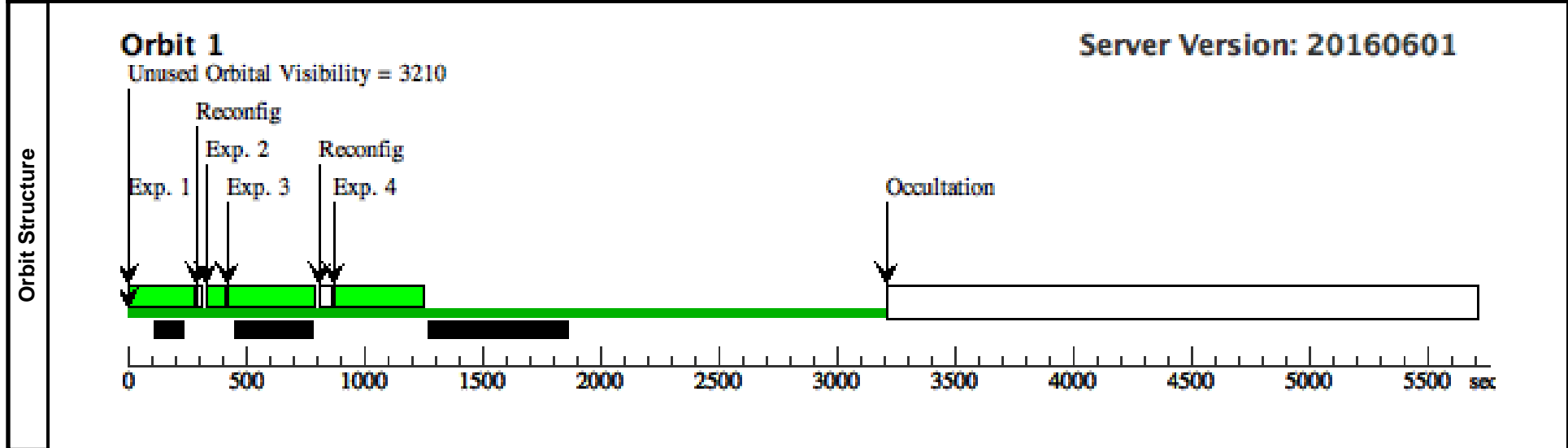
Proposal 14538 - SPARS25c (03) - WFC3 IR Linearity Monitor

Wed Sep 07 21:33:22 GMT 2016

<b>Visit</b>	Proposal 14538, SPARS25c (03), implementation Diagnostic Status: Warning Scientific Instruments: WFC3/IR Special Requirements: BEFORE 01-SEP-2017
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<b>Diagnostics</b>	(SPARS25c (03)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU
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#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			252.937441 Secs (252.937 Secs) [==>]	[1]
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			52.937106 Secs (52.937 Secs) [==>]	[1]
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			352.939501 Secs (352.94 Secs) [==>]	[1]
4	Persistence Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=15			352.939501 Secs (352.94 Secs) [==>]	[1]

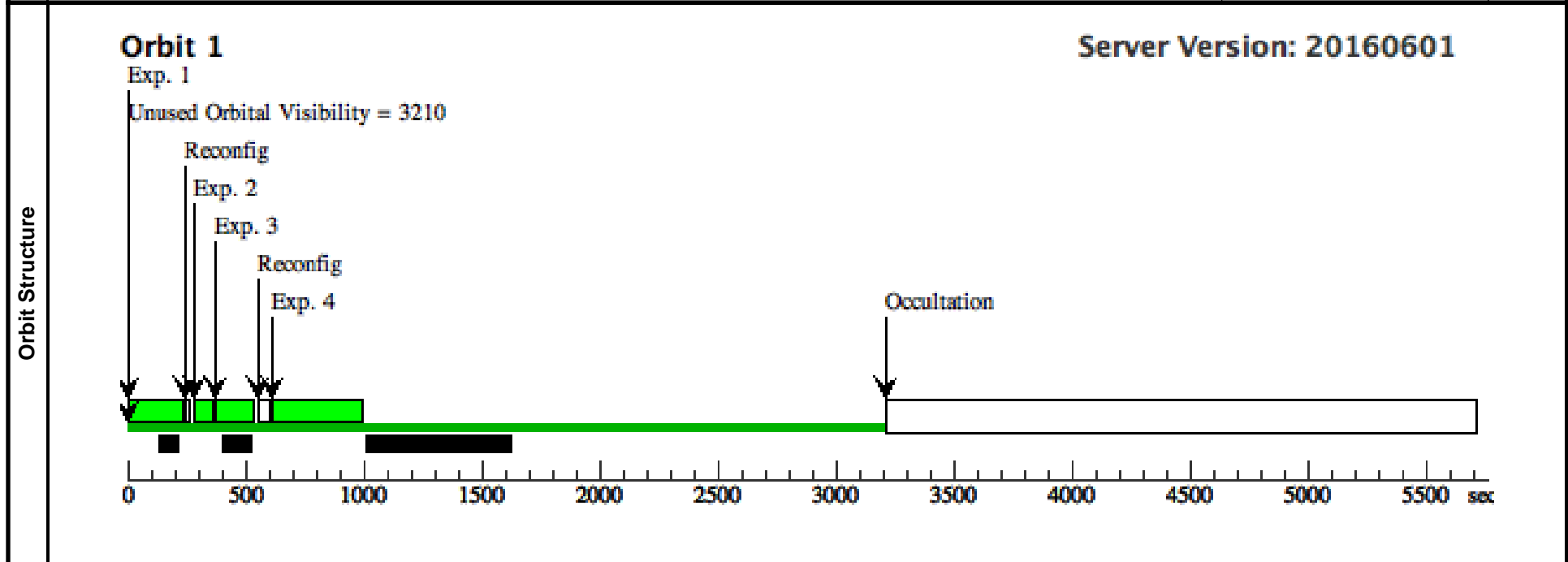


Proposal 14538 - SPARS10a (04) - WFC3 IR Linearity Monitor

Wed Sep 07 21:33:22 GMT 2016

<b>Visit</b>	<b>Proposal 14538, SPARS10a (04), implementation</b>								
	<b>Diagnostic Status: No Diagnostics</b>								
	Scientific Instruments: WFC3/IR								
	Special Requirements: BEFORE 01-SEP-2017								

<b>Exposures</b>	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 100; NSAMP=3			202.932937 Secs (202.933 Secs)	[1]
	2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 50; NSAMP=2			52.932742 Secs (52.933 Secs)	[1]
	3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 10; NSAMP=15			142.945773 Secs (142.946 Secs)	[1]
4	Persistence Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=15			352.939501 Secs (352.94 Secs)	[1]	

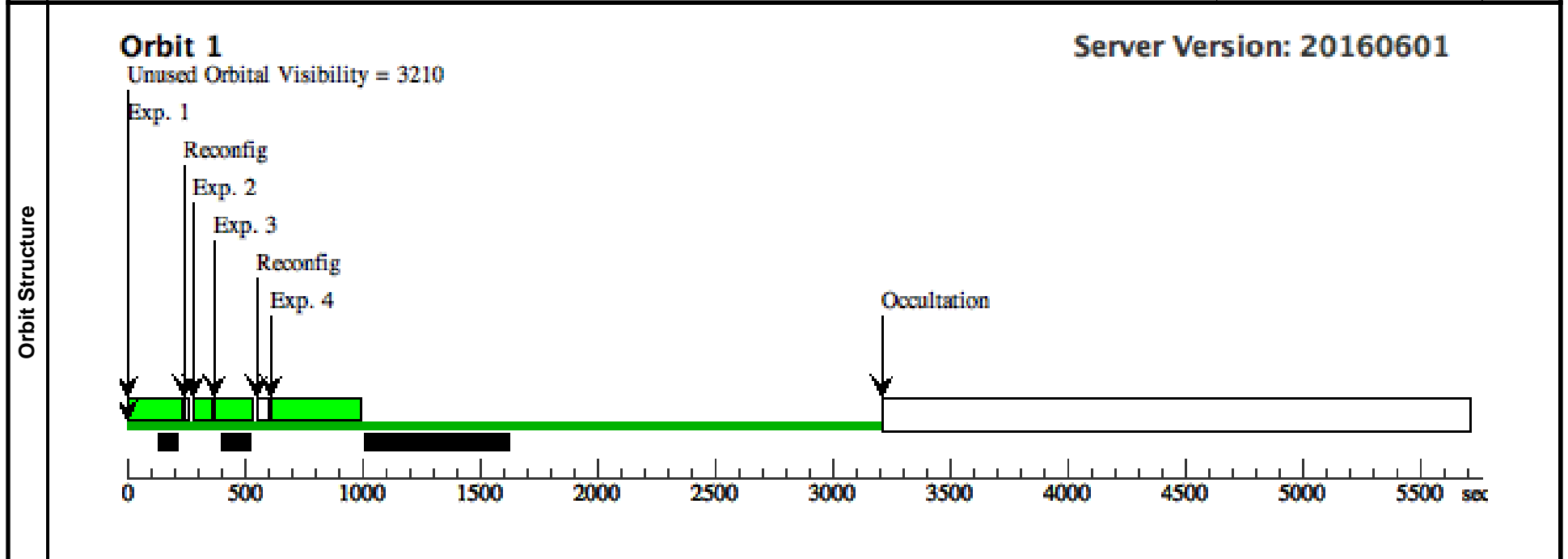


Proposal 14538 - SPARS10b (05) - WFC3 IR Linearity Monitor

Wed Sep 07 21:33:22 GMT 2016

<b>Visit</b>	Proposal 14538, SPARS10b (05), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: BEFORE 01-SEP-2017									
	<b>#</b>	<b>Label</b>	<b>Target</b>	<b>Config,Mode,Aperture</b>	<b>Spectral Els.</b>	<b>Opt. Params.</b>	<b>Special Reqs.</b>	<b>Groups</b>	<b>Exp. Time (Total)/[Actual Dur.]</b>	<b>Orbit</b>
	1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 100; NSAMP=3			202.932937 Secs (202.933 Secs) [==>]	[1]
	2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 50; NSAMP=2			52.932742 Secs (52.933 Secs) [==>]	[1]

<b>Exposures</b>	3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 10; NSAMP=15			142.945773 Secs (142.946 Secs) [==>]	[1]
	4	Persistence Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=15			352.939501 Secs (352.94 Secs) [==>]	[1]

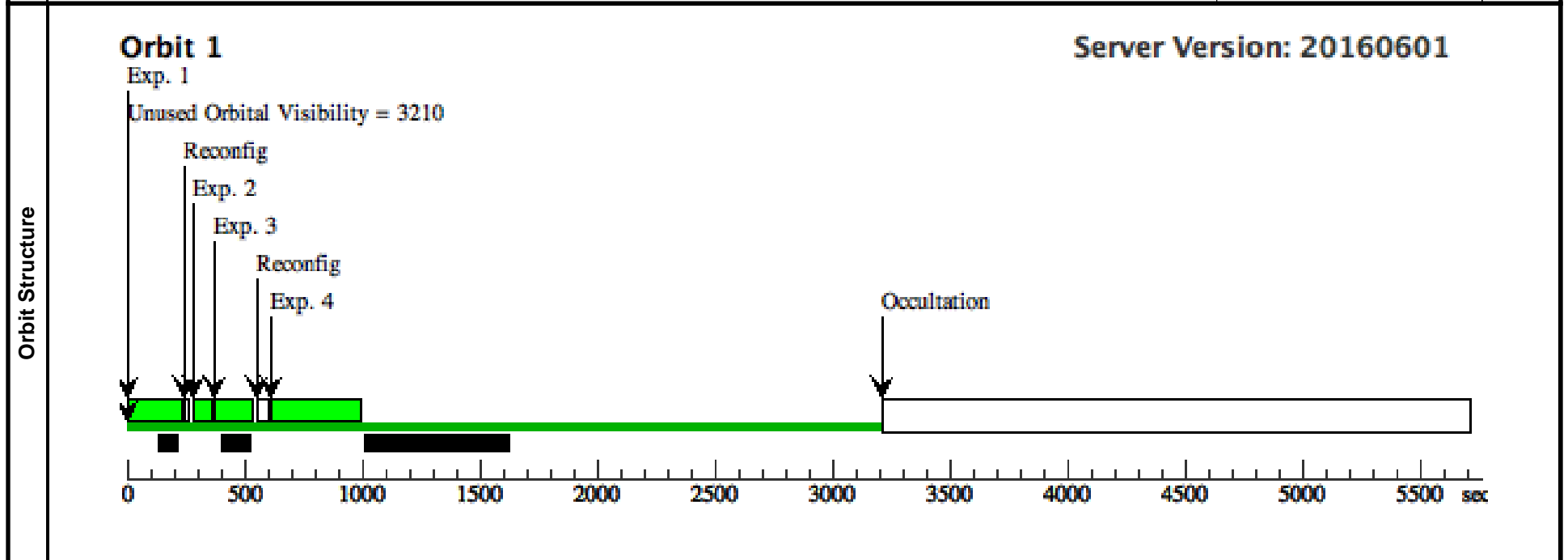


Proposal 14538 - SPARS10c (06) - WFC3 IR Linearity Monitor

Wed Sep 07 21:33:22 GMT 2016

<b>Visit</b>	<b>Proposal 14538, SPARS10c (06), implementation</b>								
	<b>Diagnostic Status: No Diagnostics</b>								
	Scientific Instruments: WFC3/IR								
	Special Requirements: BEFORE 01-SEP-2017								

<b>Exposures</b>	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 100; NSAMP=3			202.932937 Secs (202.933 Secs) [==>]	[1]
	2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 50; NSAMP=2			52.932742 Secs (52.933 Secs) [==>]	[1]
	3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 10; NSAMP=15			142.945773 Secs (142.946 Secs) [==>]	[1]
4	Persistence Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=15			352.939501 Secs (352.94 Secs) [==>]	[1]	



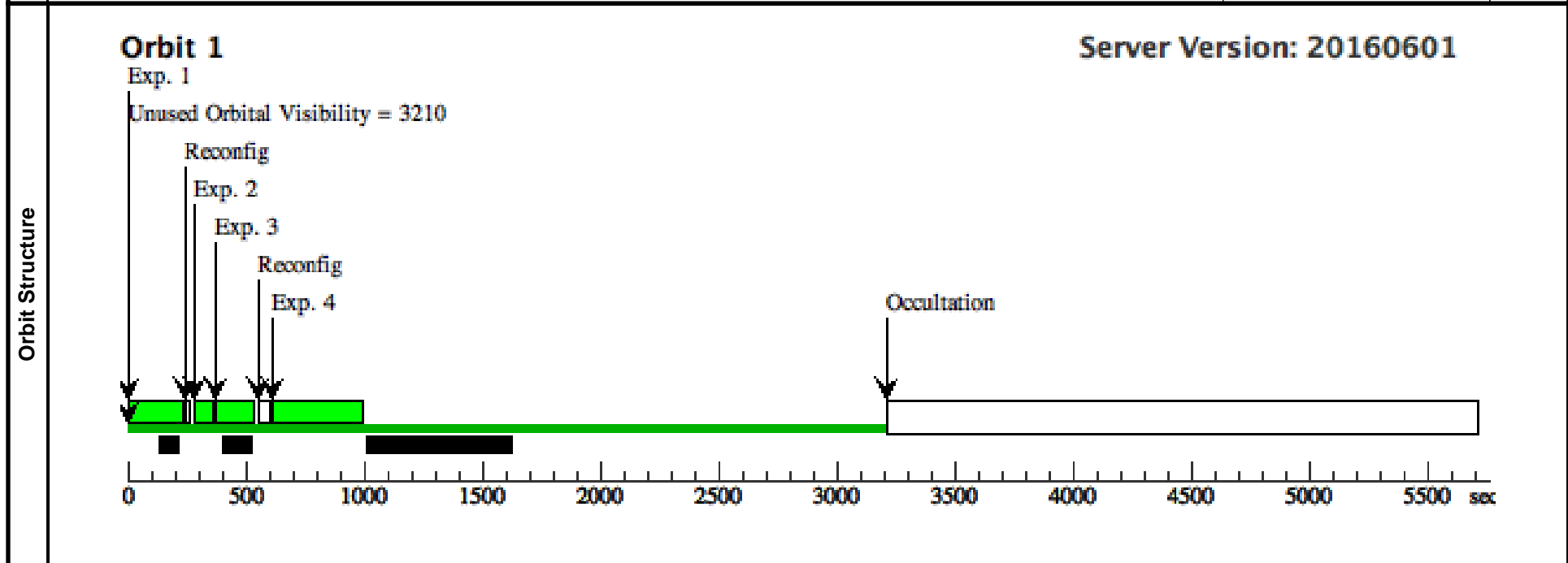


Proposal 14538 - SPARS10d (07) - WFC3 IR Linearity Monitor

Wed Sep 07 21:33:22 GMT 2016

<b>Visit</b>	Proposal 14538, SPARS10d (07), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/IR Special Requirements: BEFORE 01-SEP-2017							
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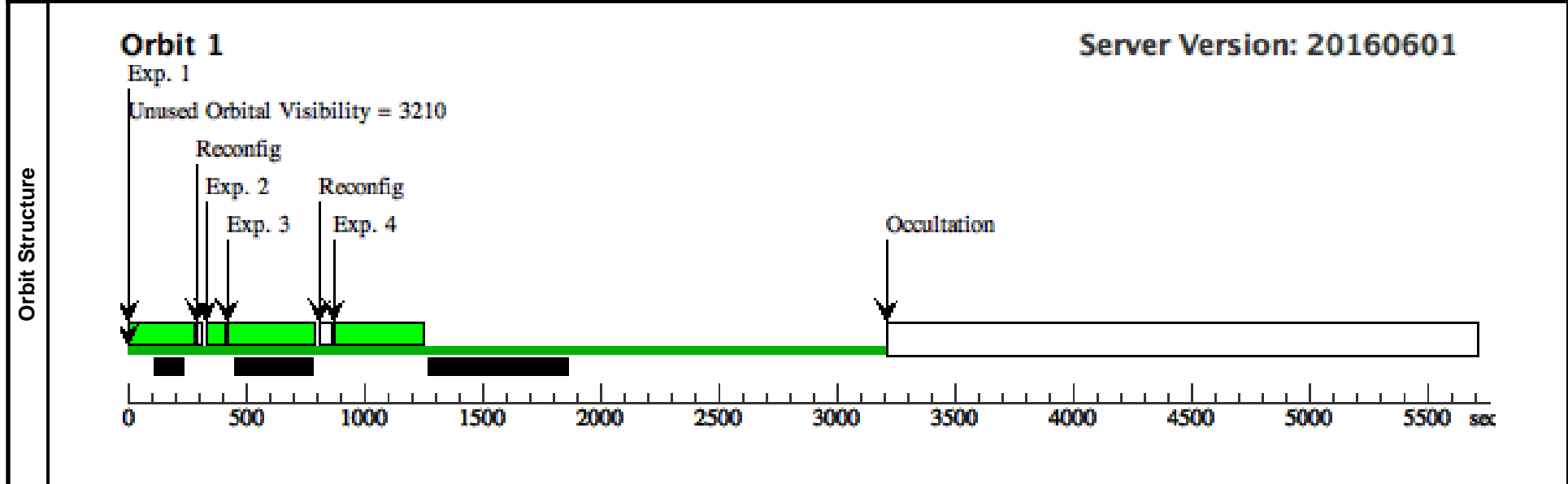
<b>Exposures</b>	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
	1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 100; NSAMP=3			202.932937 Secs (202.933 Secs) [==>]	[1]
	2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 50; NSAMP=2			52.932742 Secs (52.933 Secs) [==>]	[1]
	3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 10; NSAMP=15			142.945773 Secs (142.946 Secs) [==>]	[1]
4	Persistence Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=15			352.939501 Secs (352.94 Secs) [==>]	[1]	



<b>Visit</b>	Proposal 14538, SPARS25d (08), implementation Diagnostic Status: Warning Scientific Instruments: WFC3/IR Special Requirements: BEFORE 01-SEP-2017
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<b>Diagnostics</b>	(SPARS25d (08)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU
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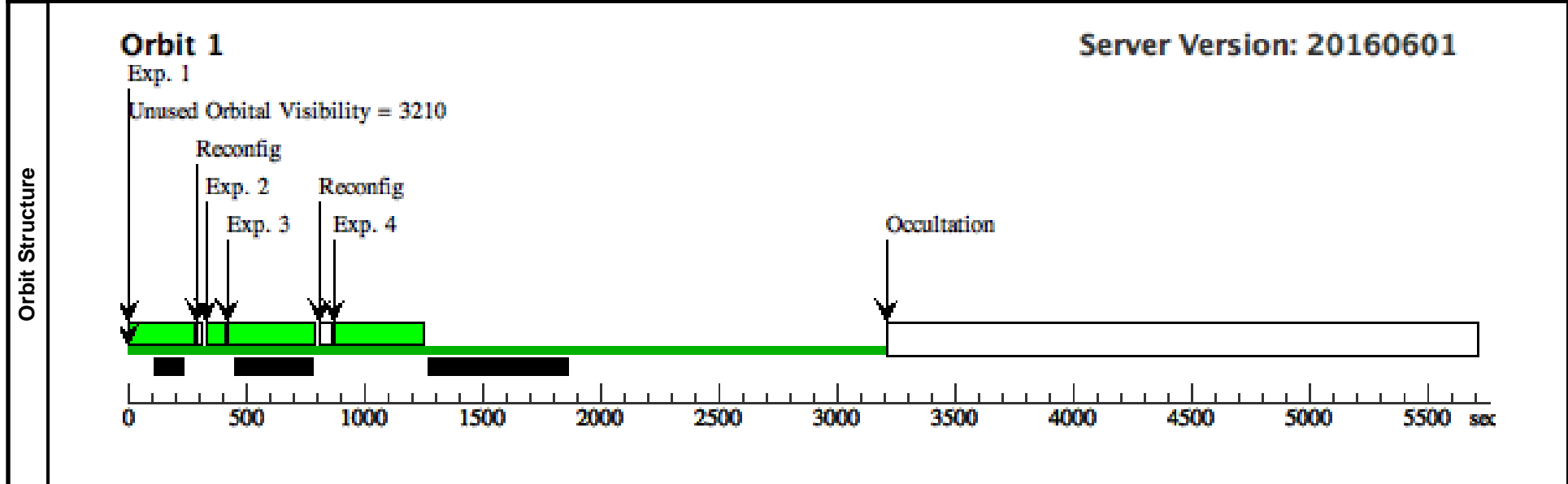
#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			252.937441 Secs (252.937 Secs) [==>]	[1]
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			52.937106 Secs (52.937 Secs) [==>]	[1]
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			352.939501 Secs (352.94 Secs) [==>]	[1]
4	Persistence Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=15			352.939501 Secs (352.94 Secs) [==>]	[1]



<b>Visit</b>	Proposal 14538, SPARS25e (09), implementation Diagnostic Status: Warning Scientific Instruments: WFC3/IR Special Requirements: BEFORE 01-SEP-2017
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<b>Diagnostics</b>	(SPARS25e (09)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU
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#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			252.937441 Secs (252.937 Secs) [==>]	[1]
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			52.937106 Secs (52.937 Secs) [==>]	[1]
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			352.939501 Secs (352.94 Secs) [==>]	[1]
4	Persistence Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=15			352.939501 Secs (352.94 Secs) [==>]	[1]



Proposal 14538 - SPARS25f (10) - WFC3 IR Linearity Monitor

Wed Sep 07 21:33:23 GMT 2016

<b>Visit</b>	Proposal 14538, SPARS25f (10), implementation Diagnostic Status: Warning Scientific Instruments: WFC3/IR Special Requirements: BEFORE 01-SEP-2017
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<b>Diagnostics</b>	(SPARS25f (10)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB SU
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#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			252.937441 Secs (252.937 Secs) [==>]	[1]
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			52.937106 Secs (52.937 Secs) [==>]	[1]
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			352.939501 Secs (352.94 Secs) [==>]	[1]
4	Persistence Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=15			352.939501 Secs (352.94 Secs) [==>]	[1]

