17678 - WFC3 IR Linearity Monitor

Cycle: 32, Proposal Category: CAL/WFC3

(Availability Mode: RESTRICTED)

INVESTIGATORS

Name	*Institution*
Dr. Joel David Green (PI) (Contact)	**Space Telescope Science Institute**
Varun Bajaj (CoI) (Contact)	Space Telescope Science Institute

VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	DARK TUNGSTEN	WFC3/IR	1	15-Jul-2024 15:00:36.0	yes
02	DARK TUNGSTEN	WFC3/IR	1	15-Jul-2024 15:00:37.0	yes
03	DARK TUNGSTEN	WFC3/IR	1	15-Jul-2024 15:00:37.0	yes
04	DARK TUNGSTEN	WFC3/IR	1	15-Jul-2024 15:00:38.0	yes
05	DARK TUNGSTEN	WFC3/IR	1	15-Jul-2024 15:00:38.0	yes
06	DARK TUNGSTEN	WFC3/IR	1	15-Jul-2024 15:00:39.0	yes
07	DARK TUNGSTEN	WFC3/IR	1	15-Jul-2024 15:00:39.0	yes
08	DARK TUNGSTEN	WFC3/IR	1	15-Jul-2024 15:00:40.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
09	DARK TUNGSTEN	WFC3/IR	1	15-Jul-2024 15:00:40.0	yes
10	DARK TUNGSTEN	WFC3/IR	1	15-Jul-2024 15:00:40.0	yes

10 Total Orbits Used

ABSTRACT

The WFC3/IR detector exhibits a non-linear response to incident flux. The data reduction pipeline provides a correction for the non-linearity, which depends on accurate characterization of the response of the detector. To monitor the non-linearity of the WFC3/IR detector, we use a dark observation followed by two internal flats using the Tungsten lamp at different sampling rates, and a trailing dark. 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 31 (program 17358) linearity calibration program

OBSERVING DESCRIPTION

To monitor the non-linearity of the WFC3/IR detector, we use a dark observation followed by two internal flats using the Tungsten lamp. We begin with a narrow band flat to ensure that the lamp is warm and stable, but not so bright as to cause persistence, observing the Tungsten lamp with F126N (half SPARS10 and half SPARS50). Then we take internal flats though the F127M filter at different signal levels and sampling sequence (half SPARS10 and half SPARS25). After the F127M flat, a dark is obtained to measure the persistence decay rate.

Visit

Proposal 17678, SPARS25a (01) Mon Jul 15 19:00:41 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: WFC3/IR

Special Requirements: BEFORE 01-FEB-2025:00:00:00

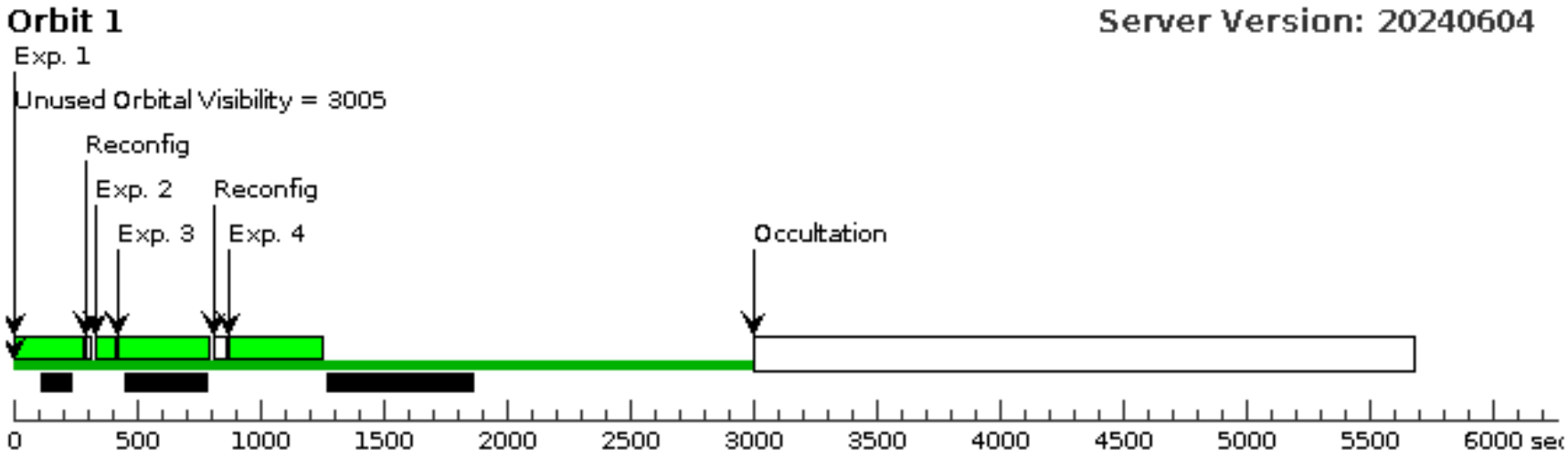
Diagnostics

(SPARS25a (01)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB VISIT

Exposures

#	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=SPARS25; NSAMP=11			252.937441 Secs (252.937 Secs) *[==>]*	*[1]*
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS10; NSAMP=6			52.937106 Secs (52.937 Secs) *[==>]*	*[1]*
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS25; NSAMP=15			352.939501 Secs (352.94 Secs) *[==>]*	*[1]*
4	Persistence Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS25; NSAMP=15			352.939501 Secs (352.94 Secs) *[==>]*	*[1]*

Orbit Structure



Visit

Proposal 17678, SPARS25b (02) Mon Jul 15 19:00:41 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: WFC3/IR

Special Requirements: BEFORE 01-FEB-2025:00:00:00

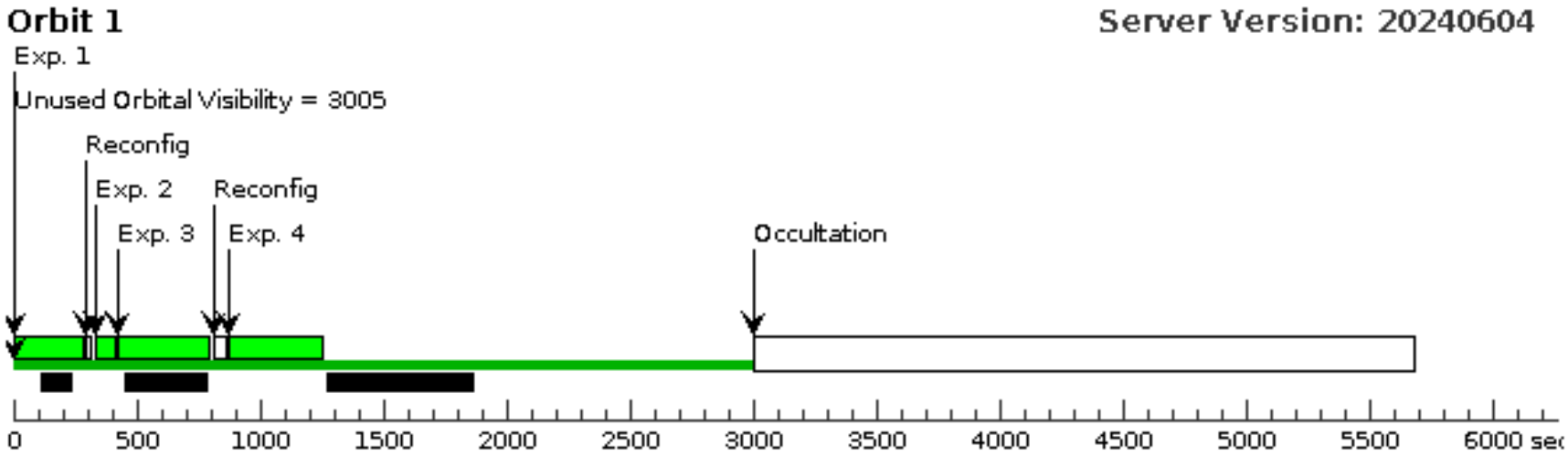
Diagnostics

(SPARS25b (02)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB VISIT

Exposures

#	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=SPARS25; NSAMP=11			252.937441 Secs (252.937 Secs) *[==>]*	*[1]*
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS10; NSAMP=6			52.937106 Secs (52.937 Secs) *[==>]*	*[1]*
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS25; NSAMP=15			352.939501 Secs (352.94 Secs) *[==>]*	*[1]*
4	Persistence Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS25; NSAMP=15			352.939501 Secs (352.94 Secs) *[==>]*	*[1]*

Orbit Structure



Visit

Proposal 17678, SPARS25c (03) Mon Jul 15 19:00:41 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: WFC3/IR

Special Requirements: BEFORE 01-FEB-2025:00:00:00

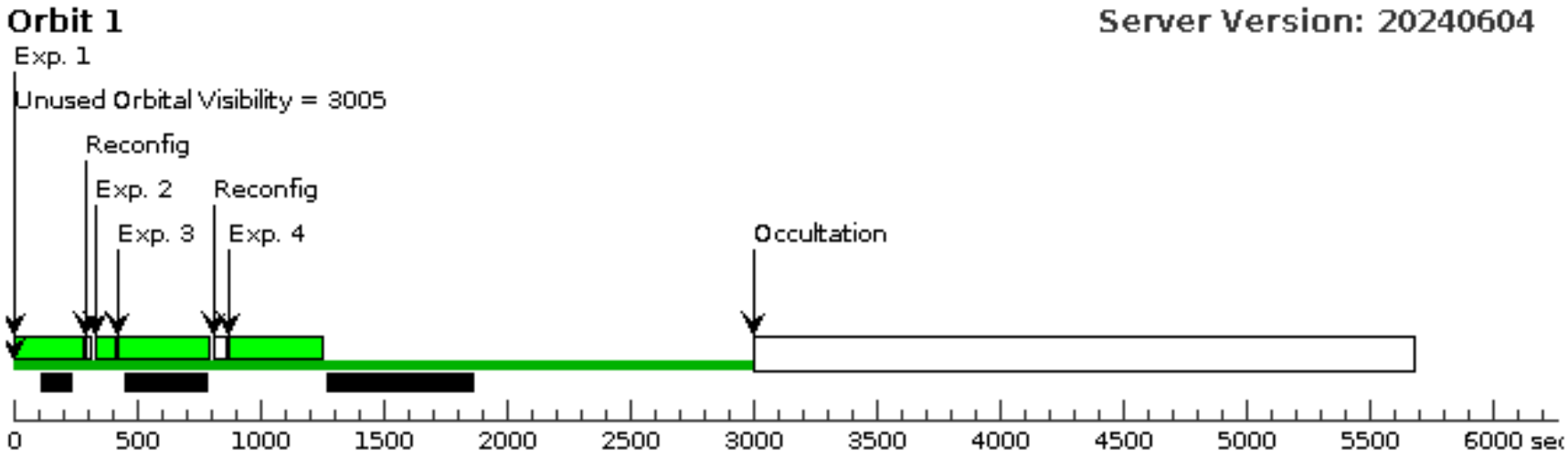
Diagnostics

(SPARS25c (03)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB VISIT

Exposures

#	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=SPARS25; NSAMP=11			252.937441 Secs (252.937 Secs) [==>]	[1]
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS10; NSAMP=6			52.937106 Secs (52.937 Secs) [==>]	[1]
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS25; NSAMP=15			352.939501 Secs (352.94 Secs) [==>]	[1]
4	Persistence Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS25; NSAMP=15			352.939501 Secs (352.94 Secs) [==>]	[1]

Orbit Structure



Visit

Proposal 17678, SPARS25d (04) Mon Jul 15 19:00:41 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: WFC3/IR

Special Requirements: BEFORE 01-FEB-2025:00:00:00

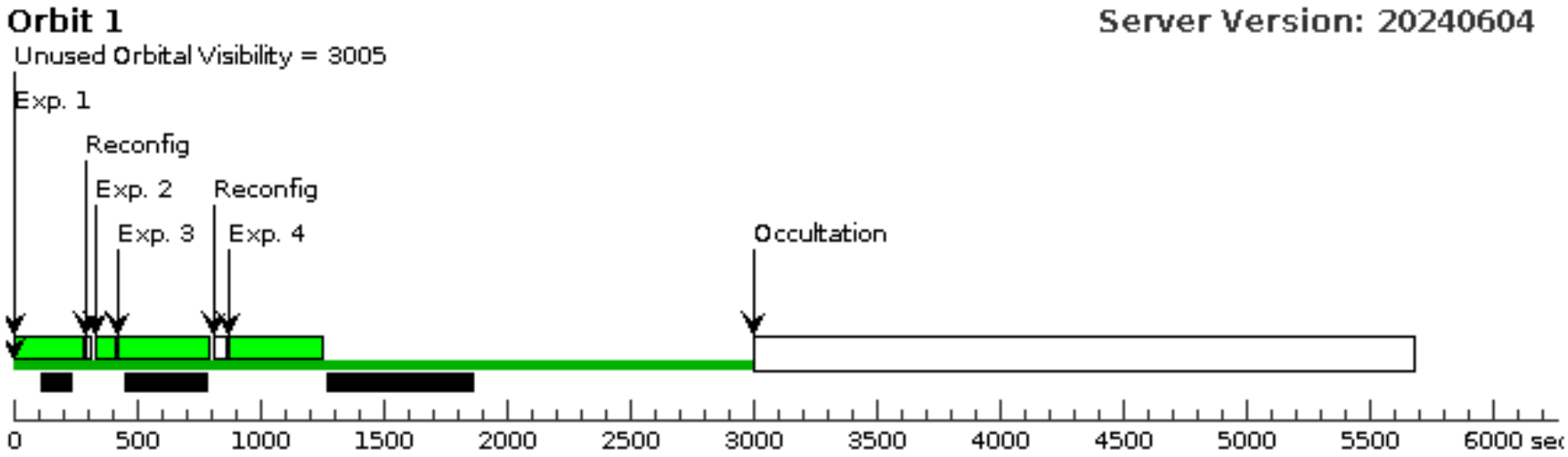
Diagnostics

(SPARS25d (04)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB VISIT

Exposures

#	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=SPARS25; NSAMP=11			252.937441 Secs (252.937 Secs) *[==>]*	*[1]*
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS10; NSAMP=6			52.937106 Secs (52.937 Secs) *[==>]*	*[1]*
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS25; NSAMP=15			352.939501 Secs (352.94 Secs) *[==>]*	*[1]*
4	Persistence Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS25; NSAMP=15			352.939501 Secs (352.94 Secs) *[==>]*	*[1]*

Orbit Structure



Visit

Proposal 17678, SPARS25e (05) Mon Jul 15 19:00:41 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: WFC3/IR

Special Requirements: BEFORE 01-FEB-2025:00:00:00

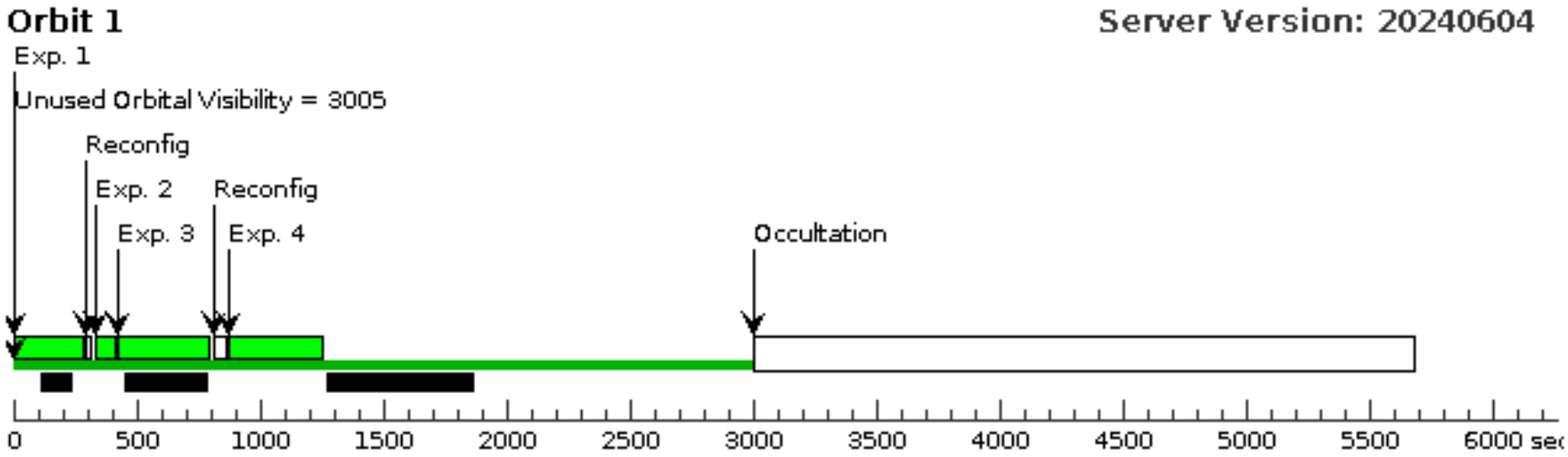
Diagnostics

(SPARS25e (05)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB VISIT

Exposures

#	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=SPARS25; NSAMP=11			252.937441 Secs (252.937 Secs) [==>]	[1]
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS10; NSAMP=6			52.937106 Secs (52.937 Secs) [==>]	[1]
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS25; NSAMP=15			352.939501 Secs (352.94 Secs) [==>]	[1]
4	Persistence Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS25; NSAMP=15			352.939501 Secs (352.94 Secs) [==>]	[1]

Orbit Structure



Visit

Proposal 17678, SPARS25f (06) Mon Jul 15 19:00:41 GMT 2024

Diagnostic Status: Warning

Scientific Instruments: WFC3/IR

Special Requirements: BEFORE 01-FEB-2025:00:00:00

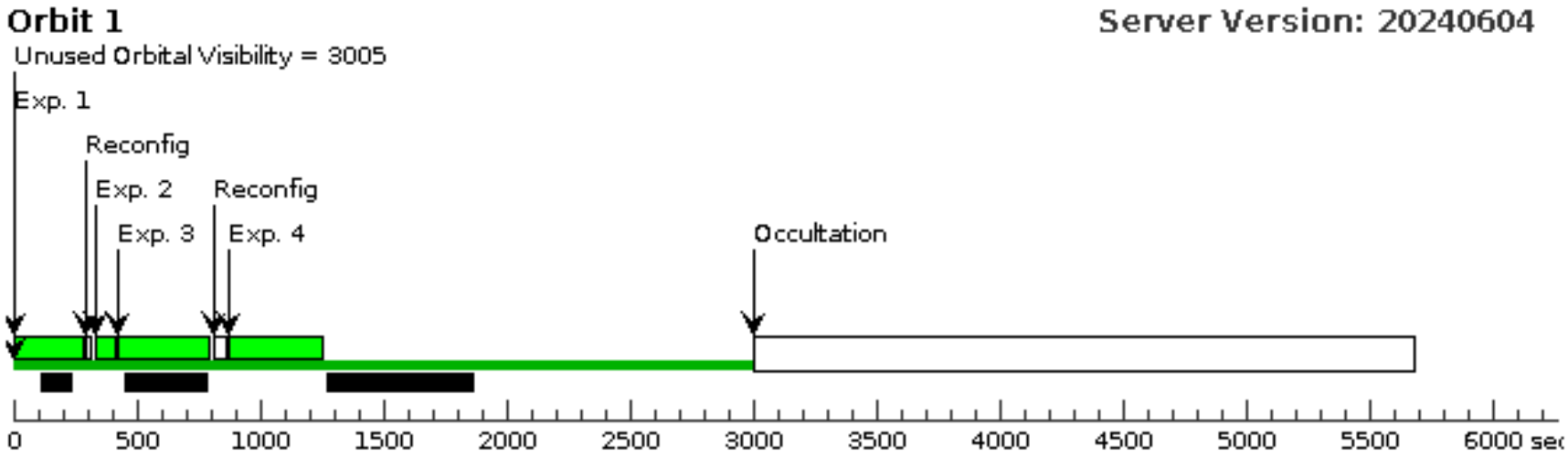
Diagnostics

(SPARS25f (06)) Warning (Orbit Planner): MAXIMUM DURATION EXCEEDED FOR INTERNAL OR EARTH CALIB VISIT

Exposures

#	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=SPARS25; NSAMP=11			252.937441 Secs (252.937 Secs) *[==>]*	*[1]*
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS10; NSAMP=6			52.937106 Secs (52.937 Secs) *[==>]*	*[1]*
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS25; NSAMP=15			352.939501 Secs (352.94 Secs) *[==>]*	*[1]*
4	Persistence Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS25; NSAMP=15			352.939501 Secs (352.94 Secs) *[==>]*	*[1]*

Orbit Structure



Visit

Proposal 17678, SPARS10a (07) Mon Jul 15 19:00:41 GMT 2024

Diagnostic Status: No Diagnostics

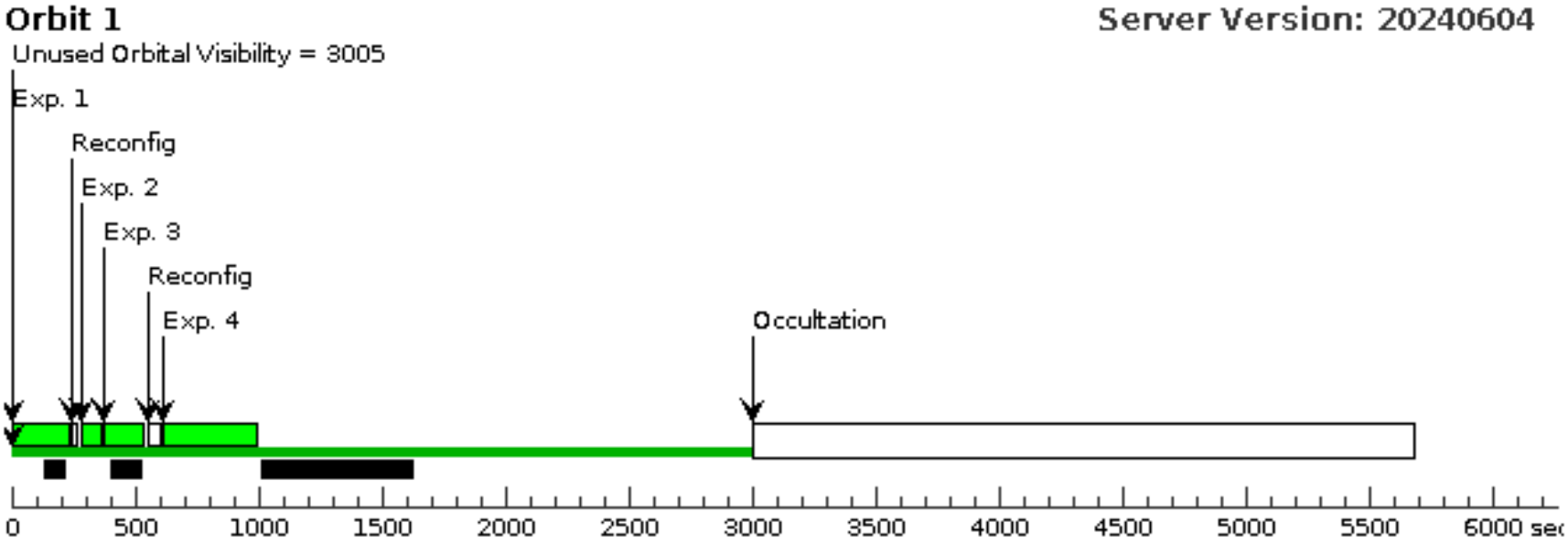
Scientific Instruments: WFC3/IR

Special Requirements: BEFORE 01-FEB-2025:00:00:00

Exposures

#	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]*

Orbit Structure



Visit

Proposal 17678, SPARS10b (08) Mon Jul 15 19:00:41 GMT 2024

Diagnostic Status: No Diagnostics

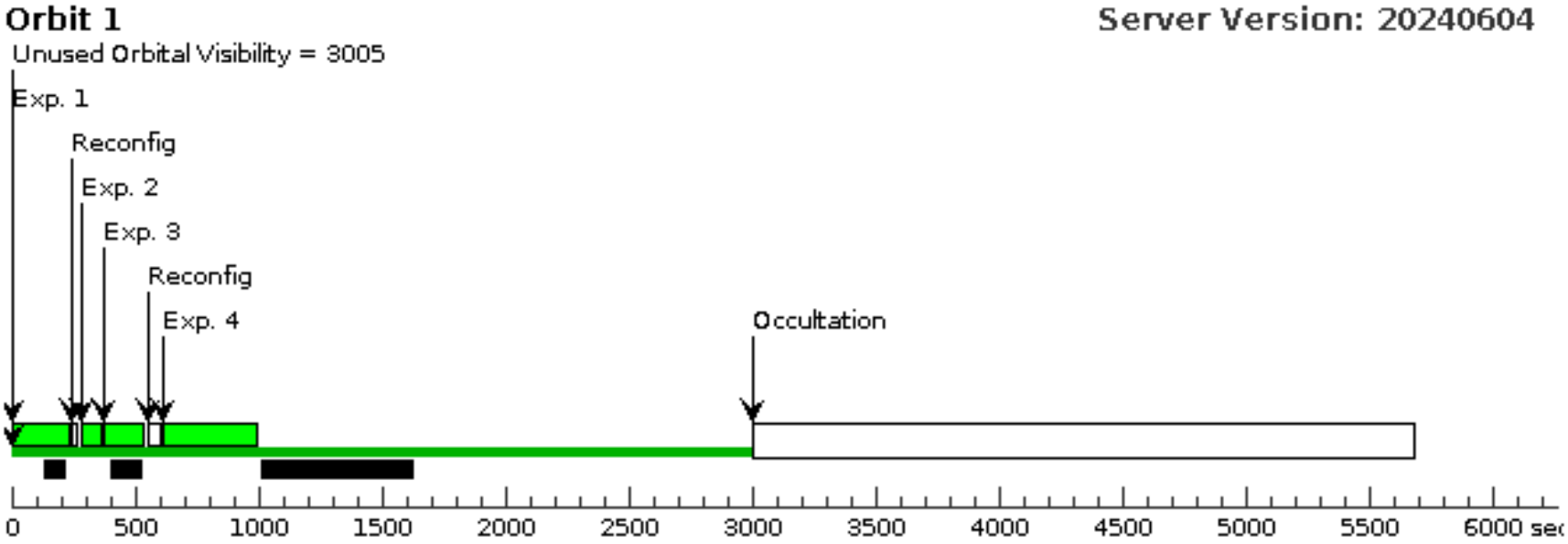
Scientific Instruments: WFC3/IR

Special Requirements: BEFORE 01-FEB-2025:00:00:00

Exposures

#	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]*

Orbit Structure



Visit

Proposal 17678, SPARS10c (09) Mon Jul 15 19:00:41 GMT 2024

Diagnostic Status: No Diagnostics

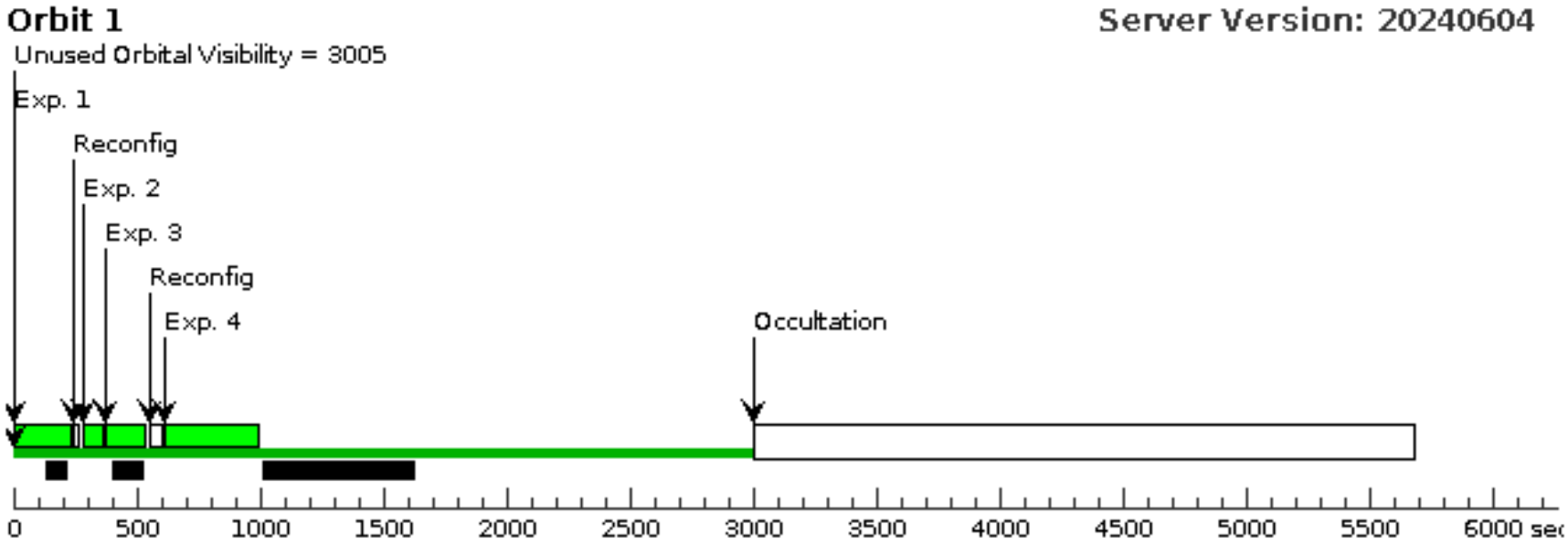
Scientific Instruments: WFC3/IR

Special Requirements: BEFORE 01-FEB-2025:00:00:00

Exposures

#	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]*

Orbit Structure



Visit

Proposal 17678, SPARS10d (10) Mon Jul 15 19:00:41 GMT 2024

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: BEFORE 01-FEB-2025:00:00:00

Exposures

#	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]*

Orbit Structure