12352 - WFC3/IR Signal Non-linearity Monitor

Cycle: 18, Proposal Category: CAL/WFC3

(Availability Mode: RESTRICTED)

INVESTIGATORS

Name	*Institution*	*E-Mail*
Mr. Bryan Hilbert (PI)	**Space Telescope Science Institute**	**hilbert@stsci.edu**

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	06-Oct-2010 21:36:59.0	yes
02	DARK TUNGSTEN	WFC3/IR	1	06-Oct-2010 21:37:03.0	yes
03	DARK TUNGSTEN	WFC3/IR	1	06-Oct-2010 21:37:06.0	yes
04	DARK TUNGSTEN	WFC3/IR	1	06-Oct-2010 21:37:08.0	yes
05	DARK TUNGSTEN	WFC3/IR	1	06-Oct-2010 21:37:11.0	yes
06	DARK TUNGSTEN	WFC3/IR	1	06-Oct-2010 21:37:14.0	yes
07	DARK TUNGSTEN	WFC3/IR	1	06-Oct-2010 21:37:17.0	yes
08	DARK TUNGSTEN	WFC3/IR	1	06-Oct-2010 21:37:20.0	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	06-Oct-2010 21:37:23.0	yes
20	(1) 47TUC DARK	WFC3/IR	1	06-Oct-2010 21:37:27.0	yes
21	(1) 47TUC DARK	WFC3/IR	1	06-Oct-2010 21:37:32.0	yes
22	(1) 47TUC DARK	WFC3/IR	1	06-Oct-2010 21:37:36.0	yes
10	DARK TUNGSTEN	WFC3/IR	1	06-Oct-2010 21:37:39.0	yes
11	DARK TUNGSTEN	WFC3/IR	1	06-Oct-2010 21:37:41.0	yes
12	DARK TUNGSTEN	WFC3/IR	1	06-Oct-2010 21:37:44.0	yes
13	DARK TUNGSTEN	WFC3/IR	1	06-Oct-2010 21:37:46.0	yes
14	DARK TUNGSTEN	WFC3/IR	1	06-Oct-2010 21:37:49.0	yes
15	DARK TUNGSTEN	WFC3/IR	1	06-Oct-2010 21:37:51.0	yes
16	DARK TUNGSTEN	WFC3/IR	1	06-Oct-2010 21:37:53.0	yes
17	DARK TUNGSTEN	WFC3/IR	1	06-Oct-2010 21:37:56.0	yes
18	DARK TUNGSTEN	WFC3/IR	1	06-Oct-2010 21:37:58.0	yes
23	(1) 47TUC DARK	WFC3/IR	1	06-Oct-2010 21:38:01.0	yes
24	(1) 47TUC DARK	WFC3/IR	1	06-Oct-2010 21:38:06.0	yes
25	(1) 47TUC DARK	WFC3/IR	1	06-Oct-2010 21:38:10.0	yes

24 Total Orbits Used

ABSTRACT

These observations will be used to monitor the signal non-linearity of the IR channel, as well as to update the IR channel non-linearity calibration reference file. The non-linearity behavior of each pixel in the detector will be investigated through the use of full frame and subarray flat fields, while the photometric behavior of point sources will be studied using observations of 47 Tuc.

OBSERVING DESCRIPTION

Two types of data will be collected for this proposal. First we will collect flat field data through the F127M filter, using the internal tungsten calibration lamp. These observations will allow for a pixel-by-pixel examination of the non-linearity of the IR channel across the detector. These observations will be made with a 15-read, SPARS25 sample sequence, in order to allow all pixels in the IR channel to become saturated. In order to investigate any differences between full frame and subarray behavior, we also collect several internal flat fields using the 256x256 pixel subarray.

We will also make observations of 47 Tuc, for the purposes of studying the point source non-linearity behavior of the detector. For these observations, we collect ramps with two different exposure times. This leads to one low- and one high-signal ramp. Comparison of aperture photometry between the low and high signal ramps will provide a measure of the point source non-linearity behavior. Observation times for these ramps are optimized for stars in the magnitude range V = 17 - 22. In the low-signal ramps, stars with V = 17 should just reach full well, while those at V = 22 will have a SNR of ~30. In the high-signal ramps, V = 20 stars should be saturated, and V = 22 stars will have a SNR of approximately 130. At these signal levels 47 Tuc should provide many sources for the analysis of the non-linearity, from the low end at V = 22, to the bright end, where some sources will have signals well over full-well. This observing strategy is modeled after the non-linearity test performed on ACS, and detailed in ACS ISR 2004-01 by R. Gilliland.

CALIBRATION JUSTIFICATION

Accurate photometry of WFC3-IR images depends on a reliable non-linearity calibration. The data collected for this proposal will provide the information necessary to monitor the non-linearity behavior of the detector, as well as provide an update to the non-linearity calibration file produced from ground testing data.

ADDITIONAL COMMENTS

Previous versions of this test were contaminated by persistence from WFC3/IR observations made immediately prior to the calibration observations. For this iteration of the test, we have taken steps to minimize any persistence contaimination while using dark current observations to monitor persistence. Each internal orbit is composed of a dark current ramp, to monitor persistence from prior observations. Also, by beginning the Visit with a dark current ramp, we will have the filter wheel at a known location when the Tungsten lamp is activated for the following flat fields. By choosing the F126N and F127M filters for the flat field collection, we guarantee that the wide band filters and the grisms will not pass through the beam while the tungsten lamp is on. If this were to happen, especially in the case of the grisms, we could very well trigger persistence.

After the dark current ramp, we collect a narrow band filter flat field, which is used to ensure that the Tungsten lamp is warm and stable in preparation for the next exposure. Cycle 17 data analysis have shown that the Tungsten lamp may need an additional 30 - 40 seconds of time beyond the nominal warm-up period before it reaches a stable flux. Since the non-linearity measurement depends critically on having a very stable flux for the duration of the ramp, we insert the short flat field to provide that extra time. By using the F126N filter, the amount of flux reaching the detector should be small enough that it will not trigger persistence.

After the narrow band "spacer" flat, we collect the flat field ramp which will be used to measure the non-linearity through the F127M filter. After this, we collect another dark current ramp, in order to monitor the persistence caused by the flat field observation.

The Cycle 17 version of these observations were also heavily contaminated by a light leak resulting from the observations being taken while HST was pointed toward the bright Earth (limb angle < 0 degrees). For the Cycle 18 version of the test, we request that if possible, the flat field observations be made only when the Earth limb angle is greater than 0 degrees. If this is not possible, experience from SMOV and Cycle 17 suggests that we will lose 30-50% of the flats to light leak. In this case, it should still be possible to obtain a non-linearity calibration, but with a lower signal-to-noise mean flat field ramp.

Finally, given what we have learned about persistence from Cycle 17 data, we are requesting that there is at least 3 hours between Visits containing internal flat fields, in order to be absolutely sure that we are not contaminating our own data with persistence signal.

Visit

Proposal 12352, Visit 01

Thu Oct 07 01:38:14 GMT 2010

Diagnostic Status: No Diagnostics

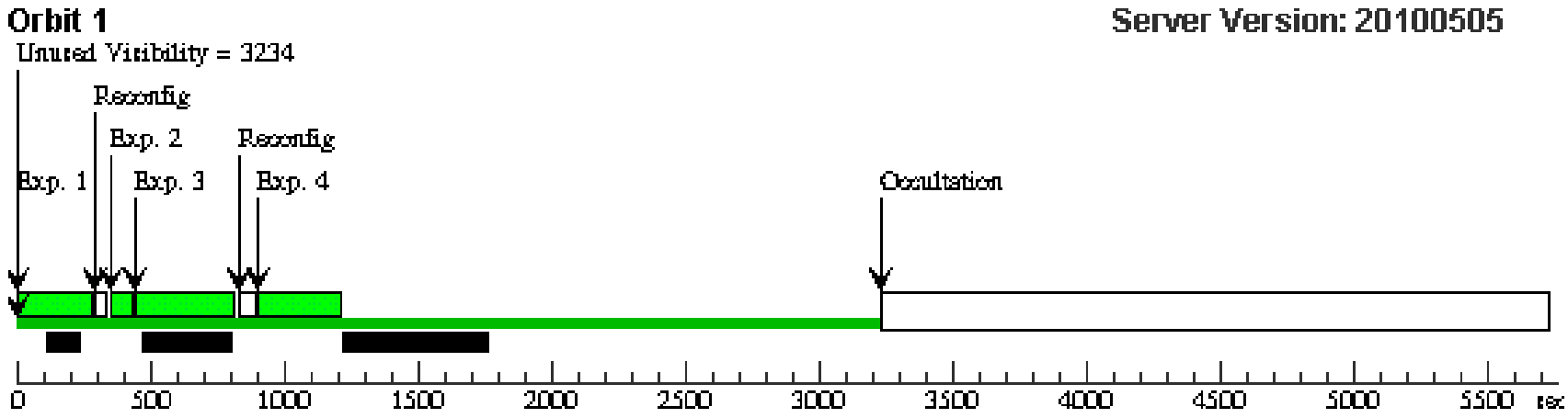
Scientific Instruments: WFC3/IR

Special Requirements: (none)

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			*[==>]*	***[1]***
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			*[==>]*	***[1]***
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			*[==>]*	***[1]***
4	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=12			*[==>]*	***[1]***

Orbit Structure



Visit

Proposal 12352, Visit 02

Thu Oct 07 01:38:14 GMT 2010

Diagnostic Status: No Diagnostics

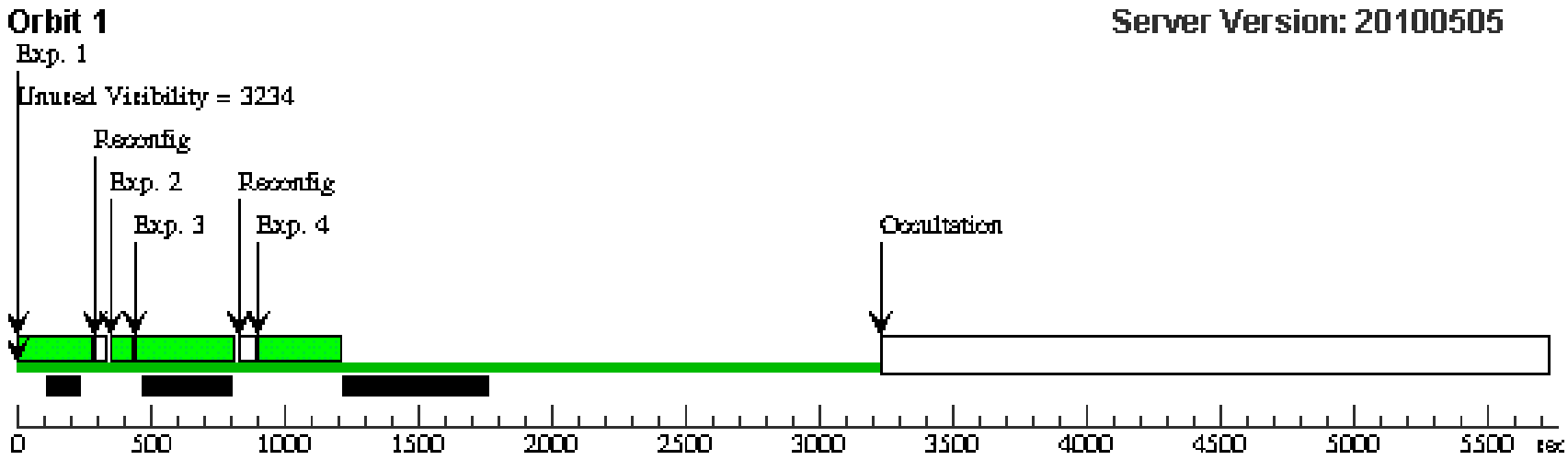
Scientific Instruments: WFC3/IR

Special Requirements: AFTER 01 BY 3 H TO 7 D

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			*[==>]*	*[1]*
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			*[==>]*	*[1]*
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			*[==>]*	*[1]*
4	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=12			*[==>]*	*[1]*

Orbit Structure



Visit

Proposal 12352, Visit 03

Thu Oct 07 01:38:15 GMT 2010

Diagnostic Status: No Diagnostics

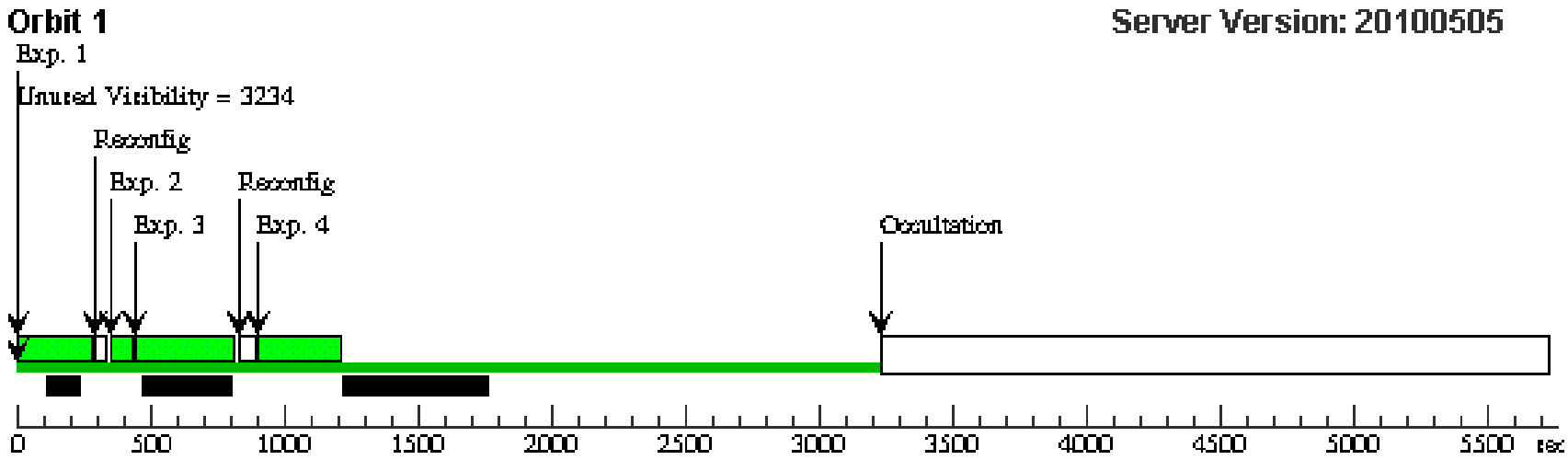
Scientific Instruments: WFC3/IR

Special Requirements: AFTER 02 BY 3 H TO 7 D

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			*[==>]*	*[1]*
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			*[==>]*	*[1]*
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			*[==>]*	*[1]*
4	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=12			*[==>]*	*[1]*

Orbit Structure



Visit

Proposal 12352, Visit 04

Thu Oct 07 01:38:15 GMT 2010

Diagnostic Status: No Diagnostics

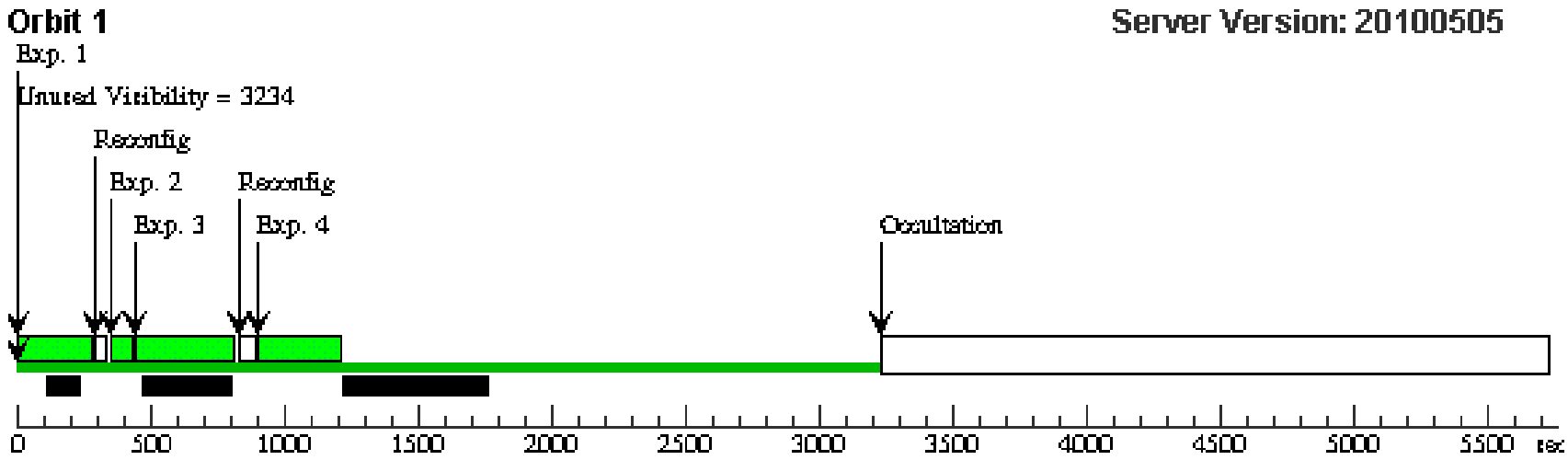
Scientific Instruments: WFC3/IR

Special Requirements: AFTER 03 BY 3 H TO 7 D

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			*[==>]*	*[1]*
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			*[==>]*	*[1]*
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			*[==>]*	*[1]*
4	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=12			*[==>]*	*[1]*

Orbit Structure



Visit

Proposal 12352, Visit 05

Thu Oct 07 01:38:15 GMT 2010

Diagnostic Status: No Diagnostics

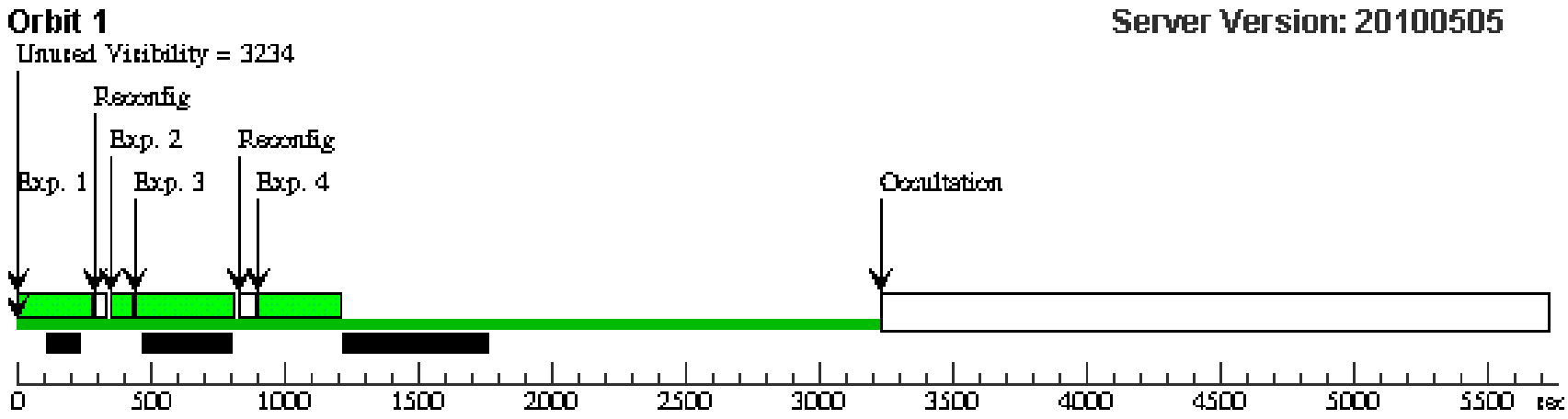
Scientific Instruments: WFC3/IR

Special Requirements: AFTER 04 BY 3 H TO 7 D

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS25; NSAMP=11			*[==>]*	*[1]*
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS10; NSAMP=6			*[==>]*	*[1]*
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS25; NSAMP=15			*[==>]*	*[1]*
4	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS25; NSAMP=12			*[==>]*	*[1]*

Orbit Structure



Visit

Proposal 12352, Visit 06

Thu Oct 07 01:38:16 GMT 2010

Diagnostic Status: No Diagnostics

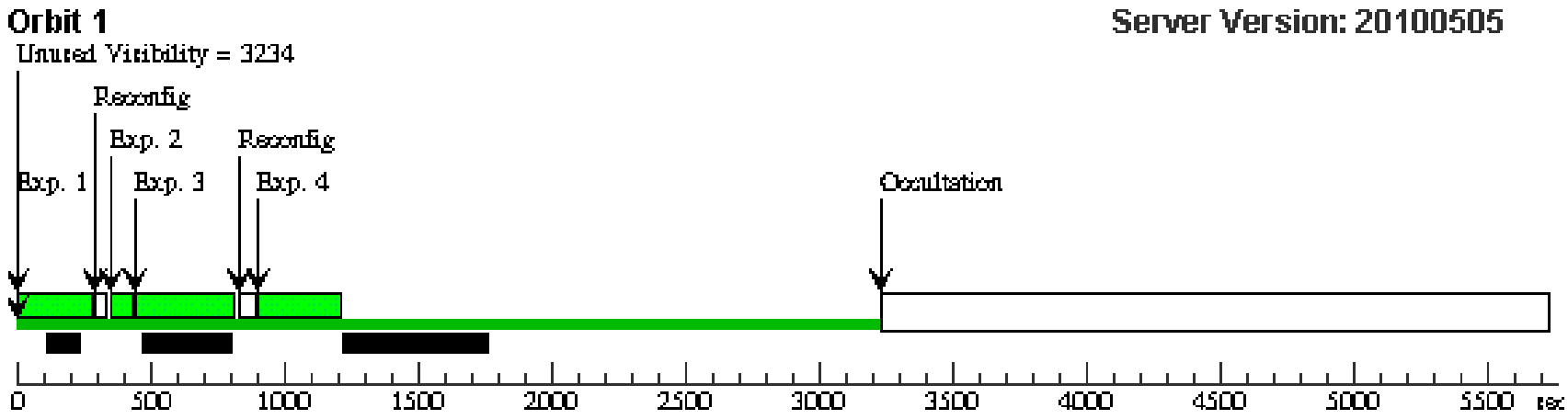
Scientific Instruments: WFC3/IR

Special Requirements: AFTER 05 BY 3 H TO 7 D

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			*[==>]*	*[1]*
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			*[==>]*	*[1]*
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			*[==>]*	*[1]*
4	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=12			*[==>]*	*[1]*

Orbit Structure



Visit

Proposal 12352, Visit 07

Thu Oct 07 01:38:16 GMT 2010

Diagnostic Status: No Diagnostics

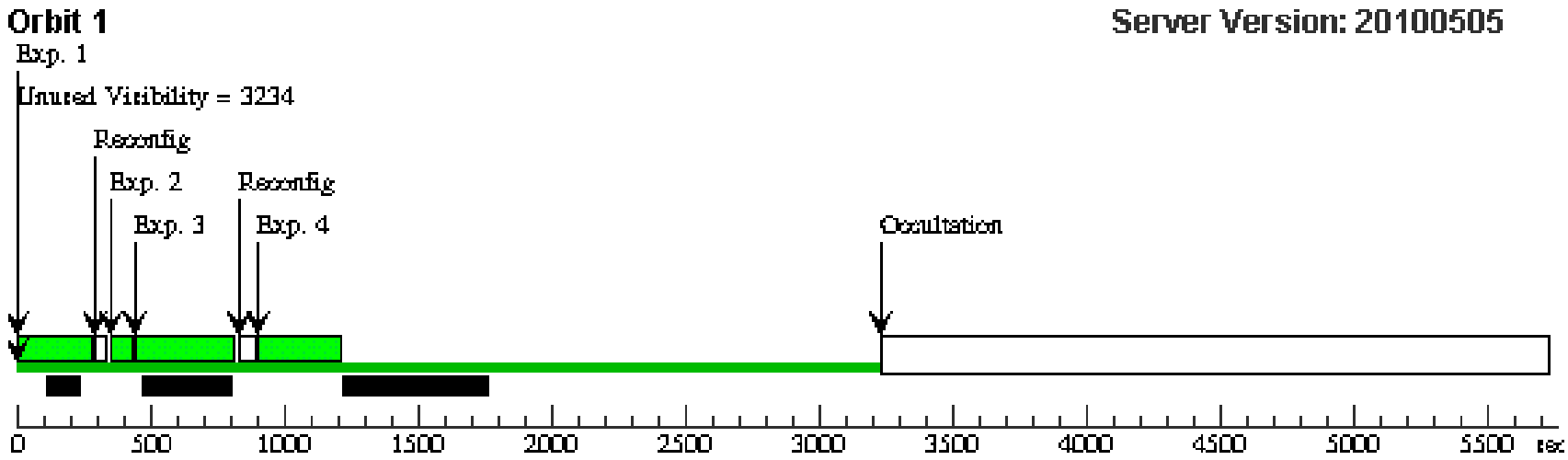
Scientific Instruments: WFC3/IR

Special Requirements: AFTER 06 BY 3 H TO 7 D

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			*[==>]*	*[1]*
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			*[==>]*	*[1]*
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			*[==>]*	*[1]*
4	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=12			*[==>]*	*[1]*

Orbit Structure



Visit

Proposal 12352, Visit 08

Thu Oct 07 01:38:16 GMT 2010

Diagnostic Status: No Diagnostics

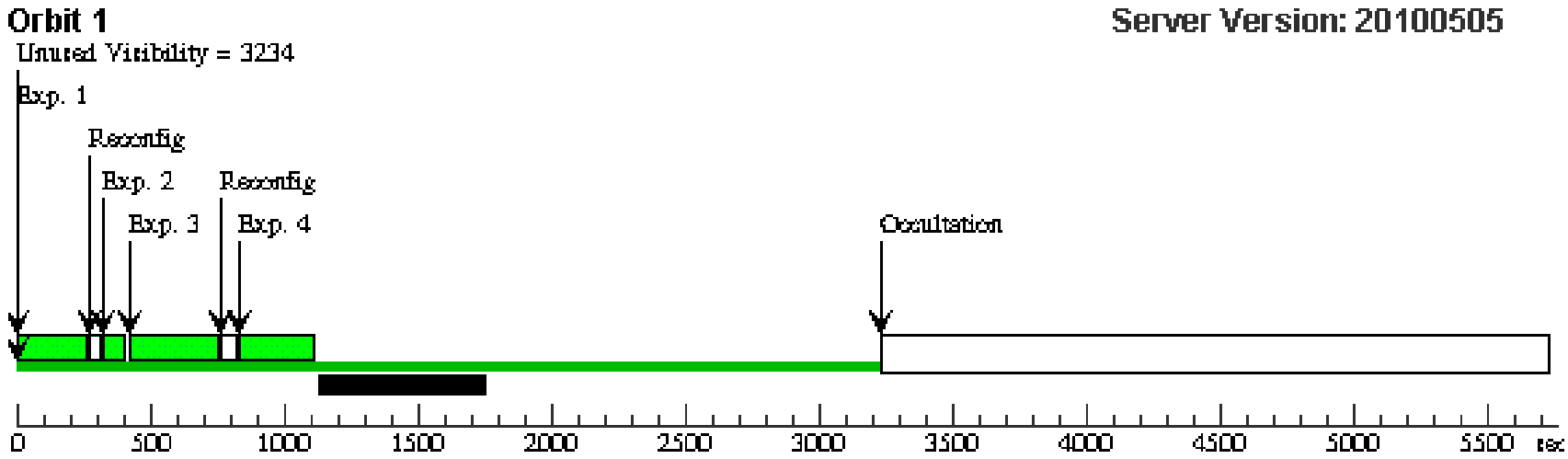
Scientific Instruments: WFC3/IR

Special Requirements: AFTER 07 BY 3 H TO 7 D

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=10			*[==>]*	*[1]*
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			*[==>]*	*[1]*
3	sub flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IRSUB256	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			*[==>]*	*[1]*
4	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			*[==>]*	*[1]*

Orbit Structure



Visit

Proposal 12352, Visit 09

Thu Oct 07 01:38:16 GMT 2010

Diagnostic Status: No Diagnostics

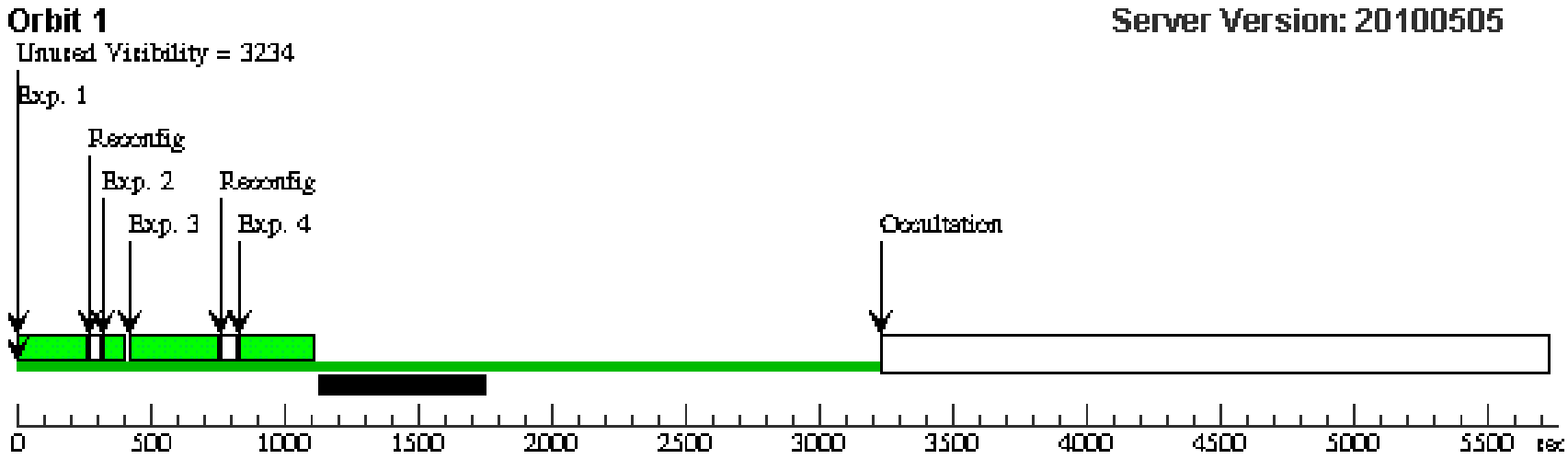
Scientific Instruments: WFC3/IR

Special Requirements: AFTER 08 BY 3 H TO 7 D

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=10			*[==>]*	*[1]*
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			*[==>]*	*[1]*
3	sub flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IRSUB256	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			*[==>]*	*[1]*
4	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			*[==>]*	*[1]*

Orbit Structure



Visit

Proposal 12352, Visit 20 Thu Oct 07 01:38:17 GMT 2010

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

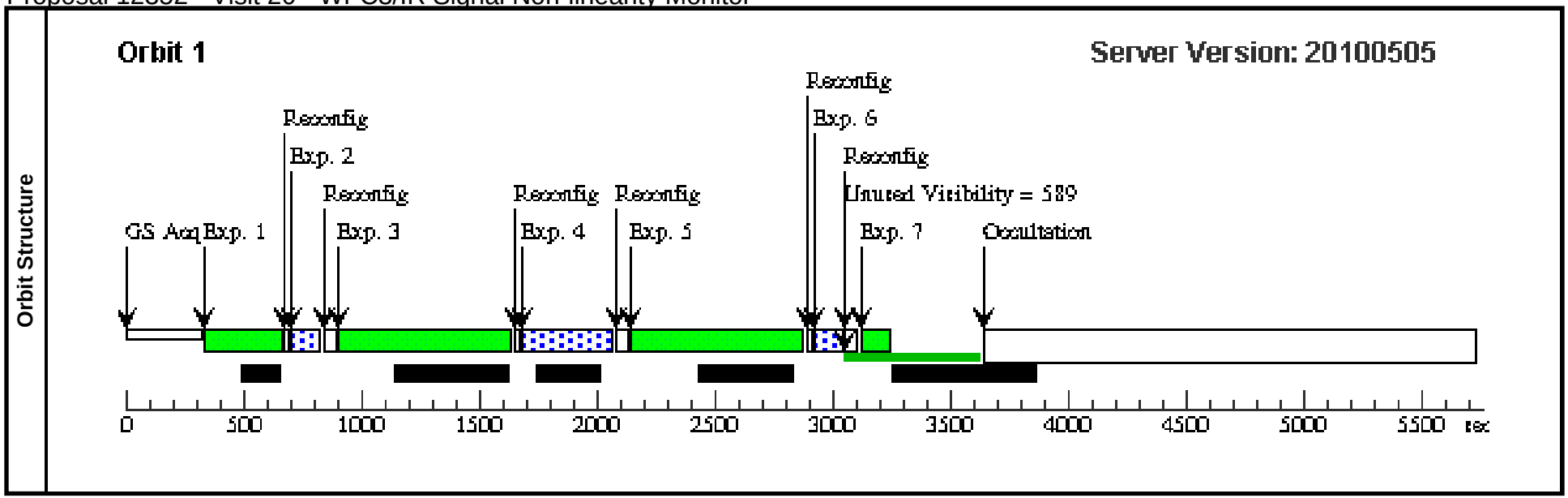
Special Requirements: AFTER_09 BY 0 D TO 15 D

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	47TUC Alt Name1: NGC104	RA: 00 22 27.8446 (5.6160192d) Dec: -72 04 4.75 (-72.06799d) Equinox: J2000		V=22.0	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=13			*[==>]*	***[1]***
2	Short	(1) 47TUC	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 10; NSAMP=10			*[==>]*	***[1]***
3	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 50; NSAMP=15			*[==>]*	***[1]***
4	Long	(1) 47TUC	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 25; NSAMP=15			*[==>]*	***[1]***
Comments: Designed to just saturate V=20 stars.									
5	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 50; NSAMP=15			*[==>]*	***[1]***
6	Short	(1) 47TUC	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 10; NSAMP=10			*[==>]*	***[1]***
7	Dark	DARK	WFC3/IR, MULTIACCUM, IR-FIX	BLANK	SAMP-SEQ=SPARS 10; NSAMP=10			*[==>]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20100505
Reconfig
Exp. 2
Reconfig
Exp. 3
Reconfig
Exp. 4
Reconfig
Exp. 5
Reconfig
Exp. 6
Reconfig
Unused Visibility = 589
Exp. 7
Occultation
GS Acq
Exp. 1
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 12352, Visit 21 Thu Oct 07 01:38:17 GMT 2010

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

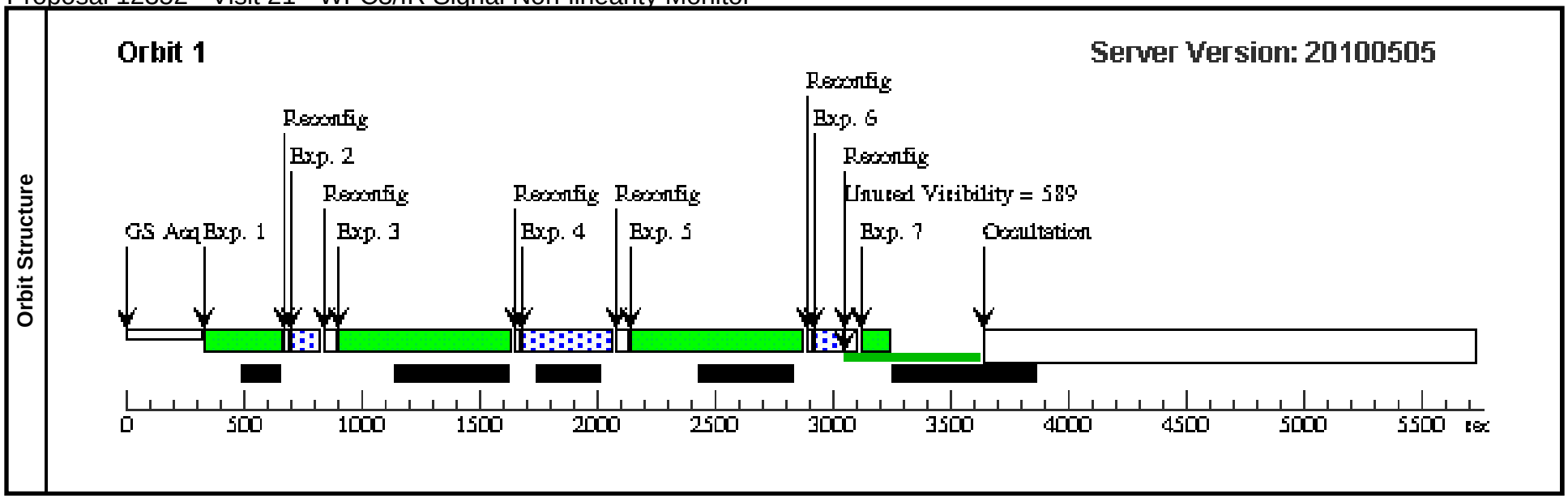
Special Requirements: AFTER_09 BY 0 D TO 15 D

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	47TUC Alt Name1: NGC104	RA: 00 22 27.8446 (5.6160192d) Dec: -72 04 4.75 (-72.06799d) Equinox: J2000		V=22.0	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=13			*[==>]*	***[1]***
2	Short	(1) 47TUC	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 10; NSAMP=10	POS TARG -0.65,-0.65		*[==>]*	***[1]***
3	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 50; NSAMP=15			*[==>]*	***[1]***
4	Long	(1) 47TUC	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 25; NSAMP=15	POS TARG -0.65,-0.65		*[==>]*	***[1]***
Comments: Designed to just saturate V=20 stars.									
5	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 50; NSAMP=15			*[==>]*	***[1]***
6	Short	(1) 47TUC	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 10; NSAMP=10	POS TARG -0.65,-0.65		*[==>]*	***[1]***
7	Dark	DARK	WFC3/IR, MULTIACCUM, IR-FIX	BLANK	SAMP-SEQ=SPARS 10; NSAMP=10			*[==>]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20100505
GS Acq
Exp. 1
Reconfig
Exp. 2
Reconfig
Exp. 3
Reconfig
Exp. 4
Reconfig
Exp. 5
Reconfig
Exp. 6
Reconfig
Unused Visibility = 589
Exp. 7
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 12352, Visit 22 Thu Oct 07 01:38:17 GMT 2010

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

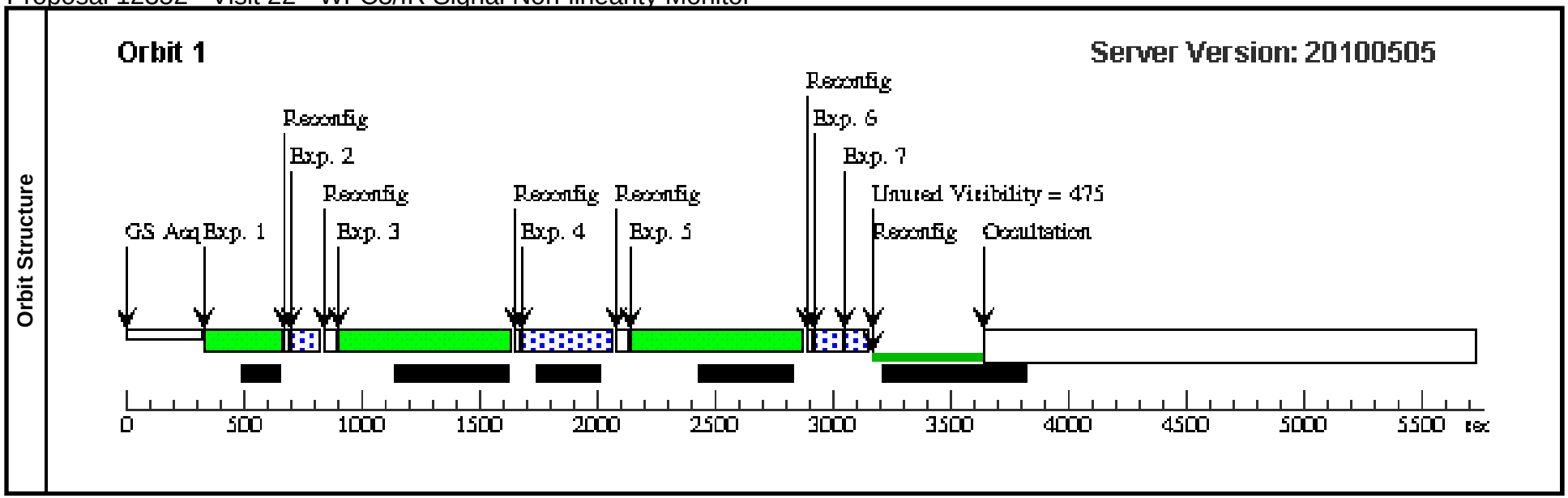
Special Requirements: AFTER_09 BY 0 D TO 15 D

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	47TUC Alt Name1: NGC104	RA: 00 22 27.8446 (5.6160192d) Dec: -72 04 4.75 (-72.06799d) Equinox: J2000		V=22.0	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS25; NSAMP=13			*[==>]*	***[1]***
2	Short	(1) 47TUC	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS10; NSAMP=10	POS TARG 0.65,0.65		*[==>]*	***[1]***
3	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS50; NSAMP=15			*[==>]*	***[1]***
4	Long	(1) 47TUC	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS25; NSAMP=15	POS TARG 0.65,0.65		*[==>]*	***[1]***
Comments: Designed to just saturate V=20 stars.									
5	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS50; NSAMP=15			*[==>]*	***[1]***
6	Short	(1) 47TUC	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS10; NSAMP=10	POS TARG 0.65,0.65		*[==>]*	***[1]***
7	Short	(1) 47TUC	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS10; NSAMP=10	POS TARG 0.65,0.65		*[==>]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20100505
Reconfig
Exp. 2
Reconfig
Exp. 3
Reconfig
Exp. 4
Reconfig
Exp. 5
Reconfig
Exp. 6
Exp. 7
Unused Visibility = 475
Reconfig
Occultation
GS Acq
Exp. 1
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Proposal 12352 - Visit 10 - WFC3/IR Signal Non-linearity Monitor

Visit

Proposal 12352, Visit 10

Thu Oct 07 01:38:18 GMT 2010

Diagnostic Status: No Diagnostics

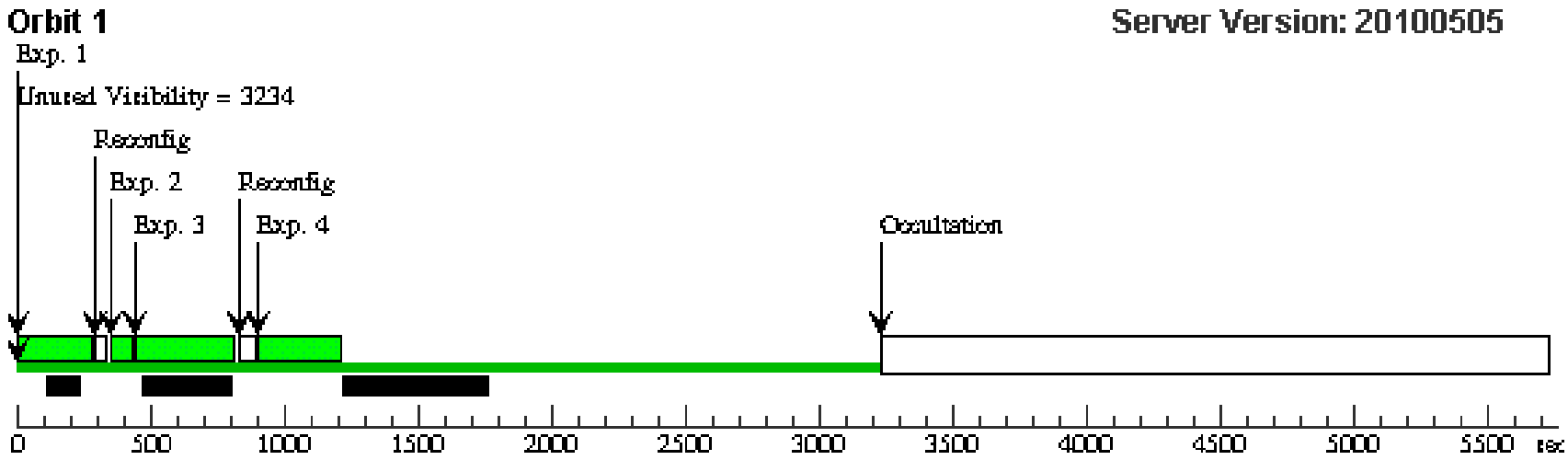
Scientific Instruments: WFC3/IR

Special Requirements: AFTER 09 BY 150 D TO 180 D

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			*[==>]*	*[1]*
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			*[==>]*	*[1]*
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			*[==>]*	*[1]*
4	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=12			*[==>]*	*[1]*

Orbit Structure



Visit

Proposal 12352, Visit 11

Thu Oct 07 01:38:18 GMT 2010

Diagnostic Status: No Diagnostics

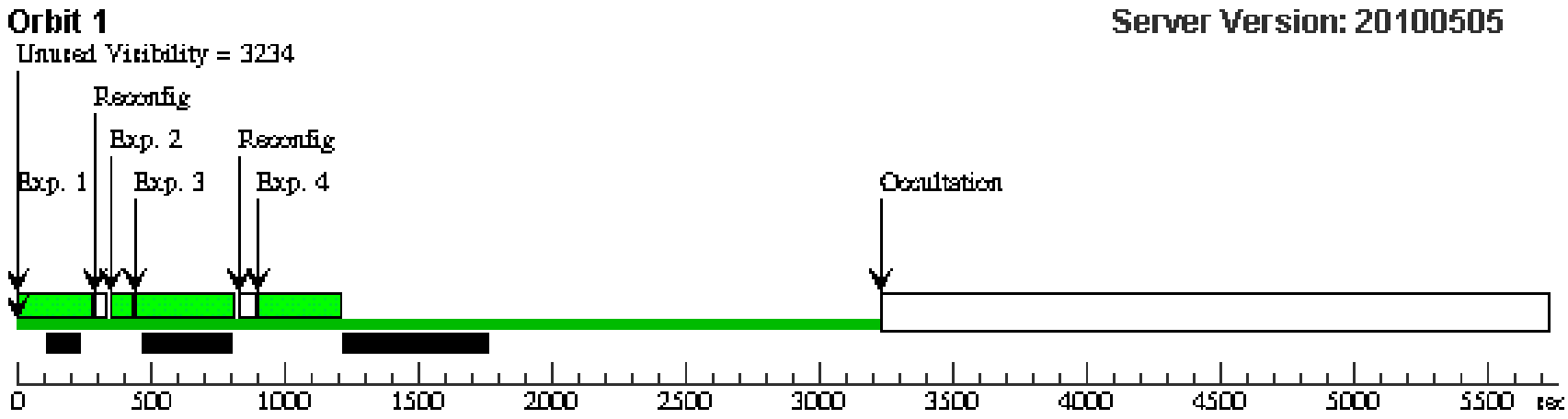
Scientific Instruments: WFC3/IR

Special Requirements: AFTER 10 BY 3 H TO 7 D

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			*[==>]*	*[1]*
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			*[==>]*	*[1]*
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			*[==>]*	*[1]*
4	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=12			*[==>]*	*[1]*

Orbit Structure



Proposal 12352 - Visit 12 - WFC3/IR Signal Non-linearity Monitor

Visit

Proposal 12352, Visit 12

Thu Oct 07 01:38:18 GMT 2010

Diagnostic Status: No Diagnostics

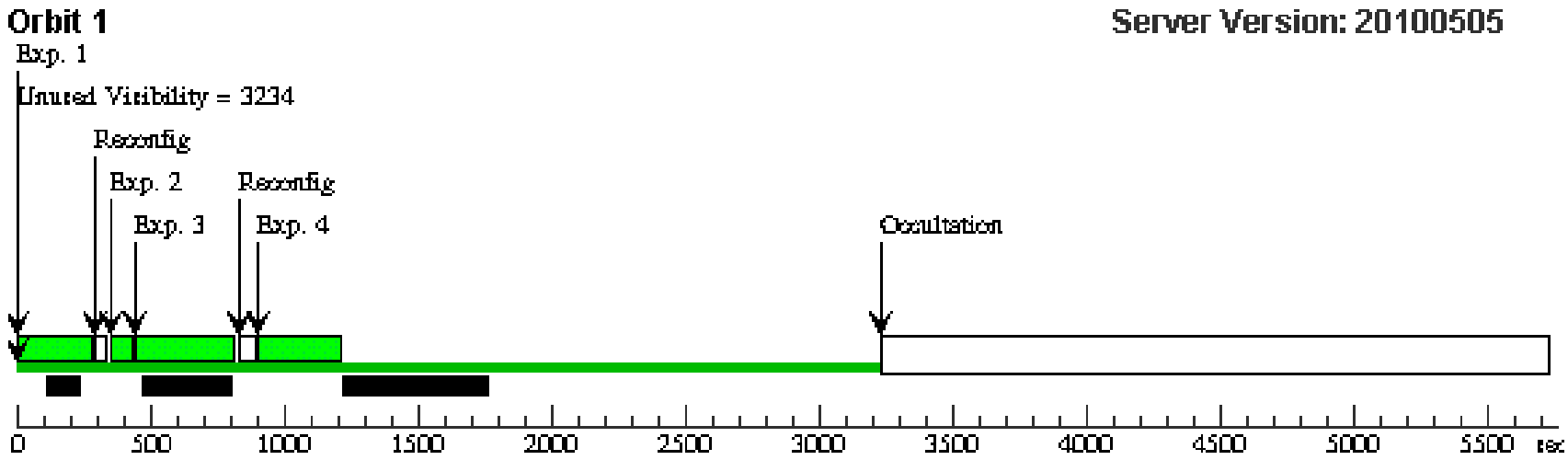
Scientific Instruments: WFC3/IR

Special Requirements: AFTER 11 BY 3 H TO 7 D

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			*[==>]*	*[1]*
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			*[==>]*	*[1]*
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			*[==>]*	*[1]*
4	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=12			*[==>]*	*[1]*

Orbit Structure



Visit

Proposal 12352, Visit 13

Thu Oct 07 01:38:18 GMT 2010

Diagnostic Status: No Diagnostics

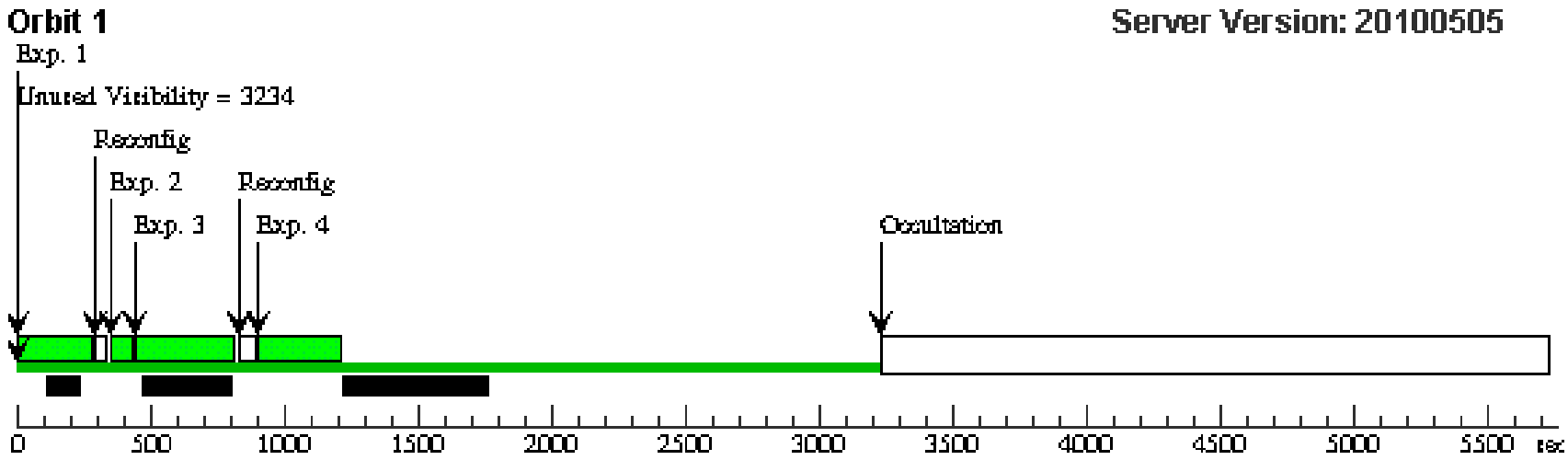
Scientific Instruments: WFC3/IR

Special Requirements: AFTER 12 BY 3 H TO 7 D

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			*[==>]*	*[1]*
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			*[==>]*	*[1]*
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			*[==>]*	*[1]*
4	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=12			*[==>]*	*[1]*

Orbit Structure



Visit

Proposal 12352, Visit 14

Thu Oct 07 01:38:18 GMT 2010

Diagnostic Status: No Diagnostics

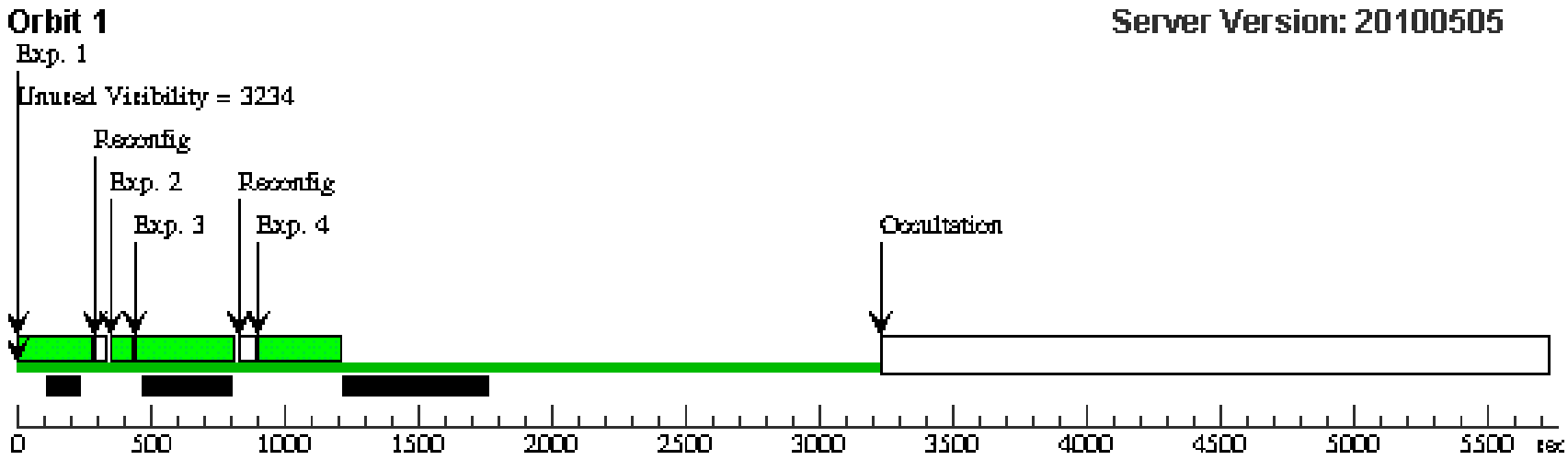
Scientific Instruments: WFC3/IR

Special Requirements: AFTER 13 BY 3 H TO 7 D

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			*[==>]*	*[1]*
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			*[==>]*	*[1]*
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			*[==>]*	*[1]*
4	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=12			*[==>]*	*[1]*

Orbit Structure



Visit

Proposal 12352, Visit 15

Thu Oct 07 01:38:19 GMT 2010

Diagnostic Status: No Diagnostics

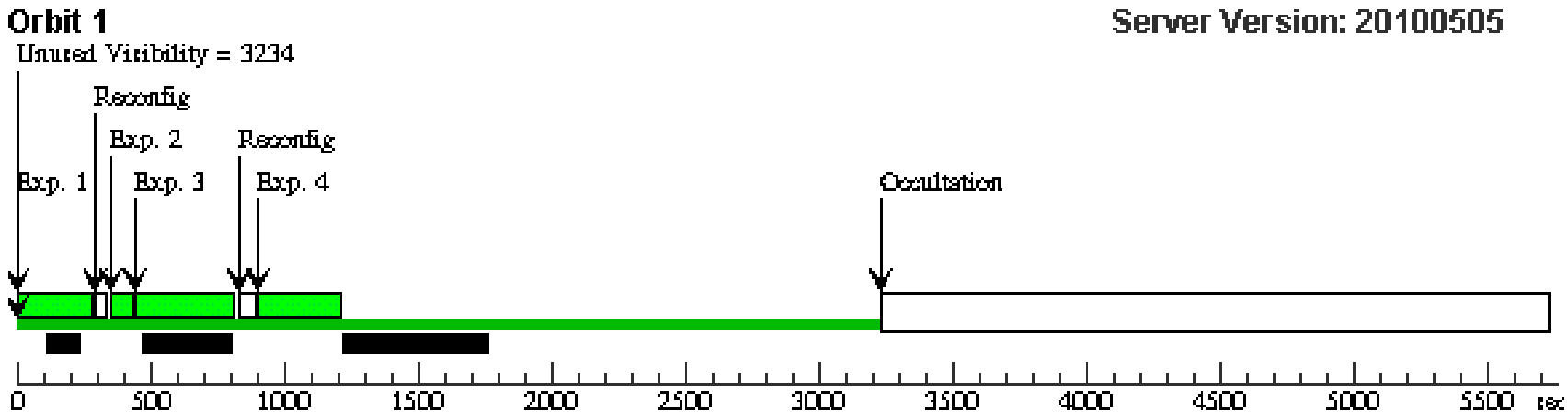
Scientific Instruments: WFC3/IR

Special Requirements: AFTER 14 BY 3 H TO 7 D

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			*[==>]*	***[1]***
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			*[==>]*	***[1]***
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			*[==>]*	***[1]***
4	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=12			*[==>]*	***[1]***

Orbit Structure



Visit

Proposal 12352, Visit 16

Thu Oct 07 01:38:19 GMT 2010

Diagnostic Status: No Diagnostics

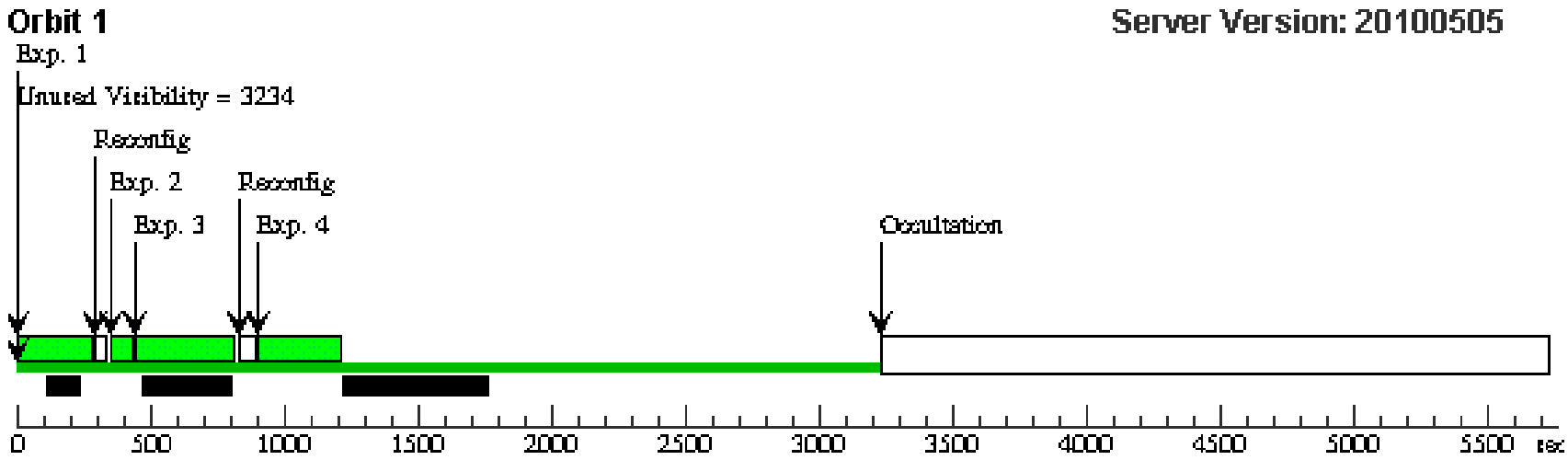
Scientific Instruments: WFC3/IR

Special Requirements: AFTER 15 BY 3 H TO 7 D

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			*[==>]*	*[1]*
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			*[==>]*	*[1]*
3	full flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			*[==>]*	*[1]*
4	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=12			*[==>]*	*[1]*

Orbit Structure



Visit

Proposal 12352, Visit 17

Thu Oct 07 01:38:19 GMT 2010

Diagnostic Status: No Diagnostics

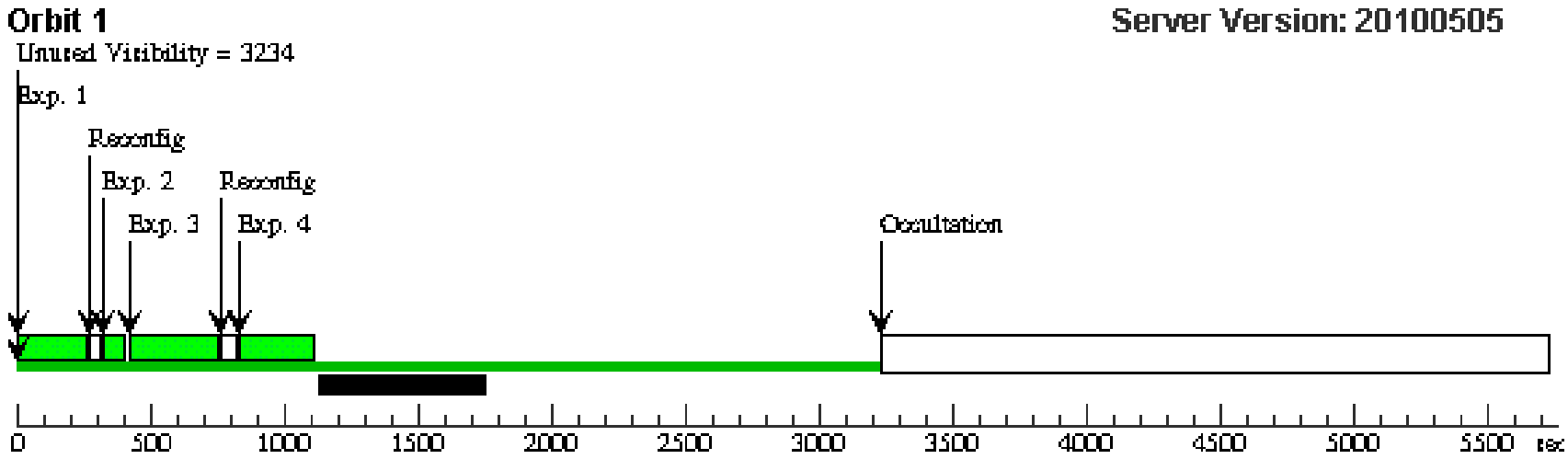
Scientific Instruments: WFC3/IR

Special Requirements: AFTER 16 BY 3 H TO 7 D

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=10			*[==>]*	***[1]***
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			*[==>]*	***[1]***
3	sub flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IRSUB256	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			*[==>]*	***[1]***
4	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			*[==>]*	***[1]***

Orbit Structure



Visit

Proposal 12352, Visit 18

Thu Oct 07 01:38:19 GMT 2010

Diagnostic Status: No Diagnostics

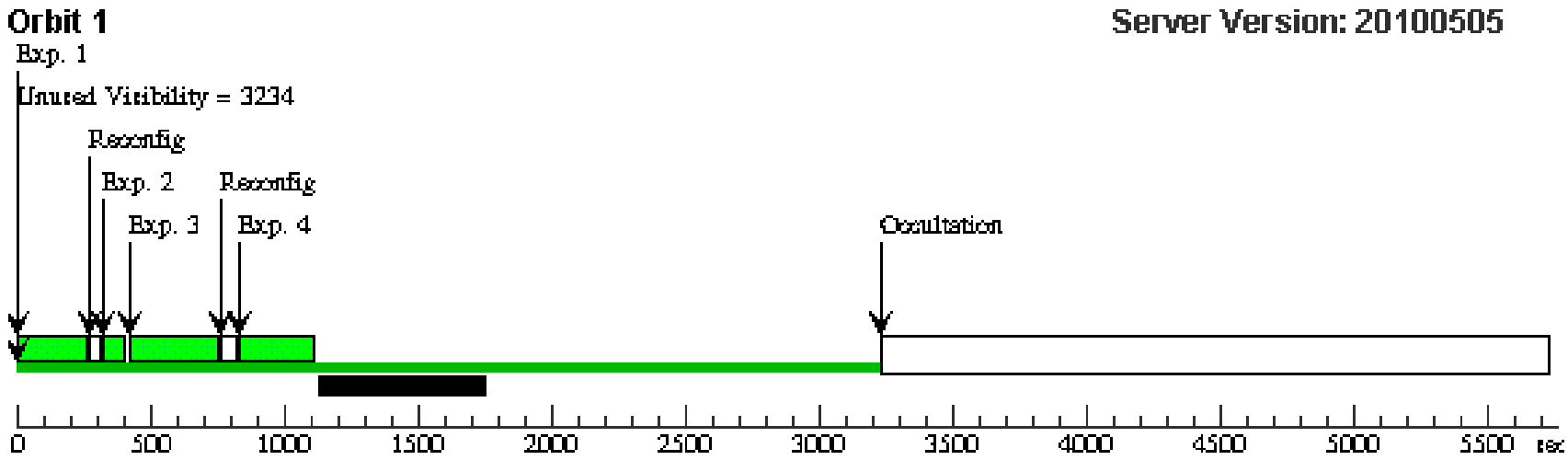
Scientific Instruments: WFC3/IR

Special Requirements: AFTER 17 BY 3 H TO 7 D

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=10			*[==>]*	*[1]*
2	warm up flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IR	F126N	SAMP-SEQ=SPARS 10; NSAMP=6			*[==>]*	*[1]*
3	sub flat	TUNGSTEN	WFC3/IR, MULTIACCUM, IRSUB256	F127M	SAMP-SEQ=SPARS 25; NSAMP=15			*[==>]*	*[1]*
4	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=11			*[==>]*	*[1]*

Orbit Structure



Visit

Proposal 12352, Visit 23 Thu Oct 07 01:38:19 GMT 2010

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

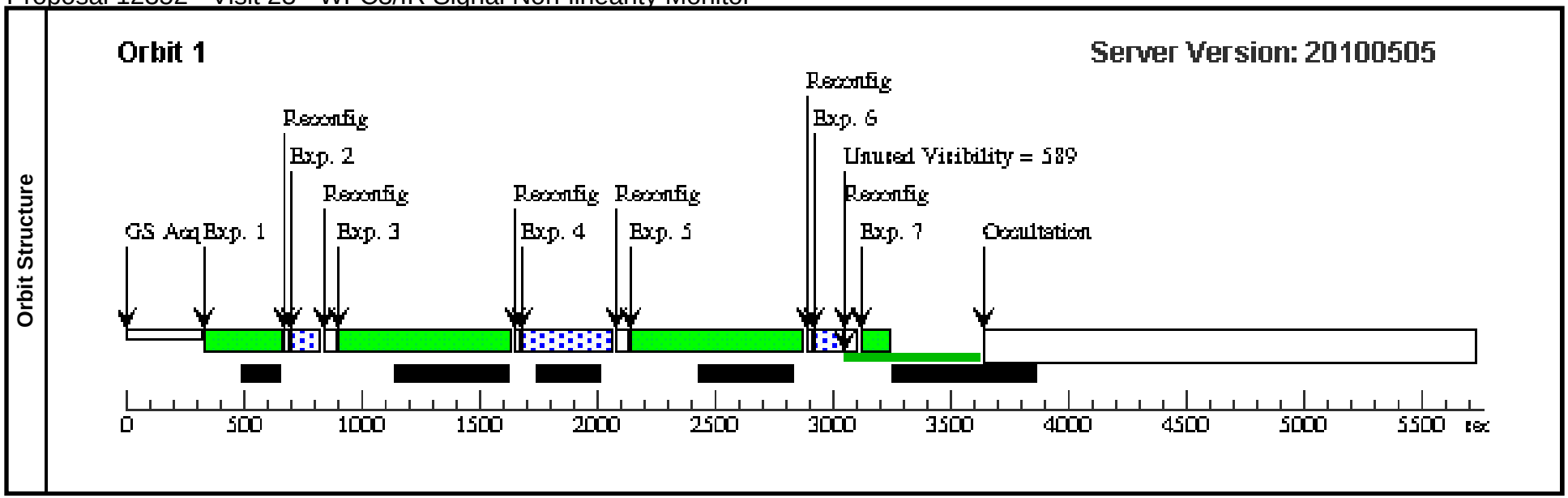
Special Requirements: AFTER 18 BY 0 D TO 15 D

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	47TUC Alt Name1: NGC104	RA: 00 22 27.8446 (5.6160192d) Dec: -72 04 4.75 (-72.06799d) Equinox: J2000		V=22.0	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=13			*[==>]*	***[1]***
2	Short	(1) 47TUC	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 10; NSAMP=10			*[==>]*	***[1]***
3	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 50; NSAMP=15			*[==>]*	***[1]***
4	Long	(1) 47TUC	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 25; NSAMP=15			*[==>]*	***[1]***
Comments: Designed to just saturate V=20 stars.									
5	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 50; NSAMP=15			*[==>]*	***[1]***
6	Short	(1) 47TUC	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 10; NSAMP=10			*[==>]*	***[1]***
7	Dark	DARK	WFC3/IR, MULTIACCUM, IR-FIX	BLANK	SAMP-SEQ=SPARS 10; NSAMP=10			*[==>]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20100505
Reconfig
Exp. 6
Reconfig
Exp. 2
Unused Visibility = 589
Reconfig
Reconfig
Reconfig
Reconfig
GS Acq
Exp. 1
Exp. 3
Exp. 4
Exp. 5
Exp. 7
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 12352, Visit 24 Thu Oct 07 01:38:20 GMT 2010

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

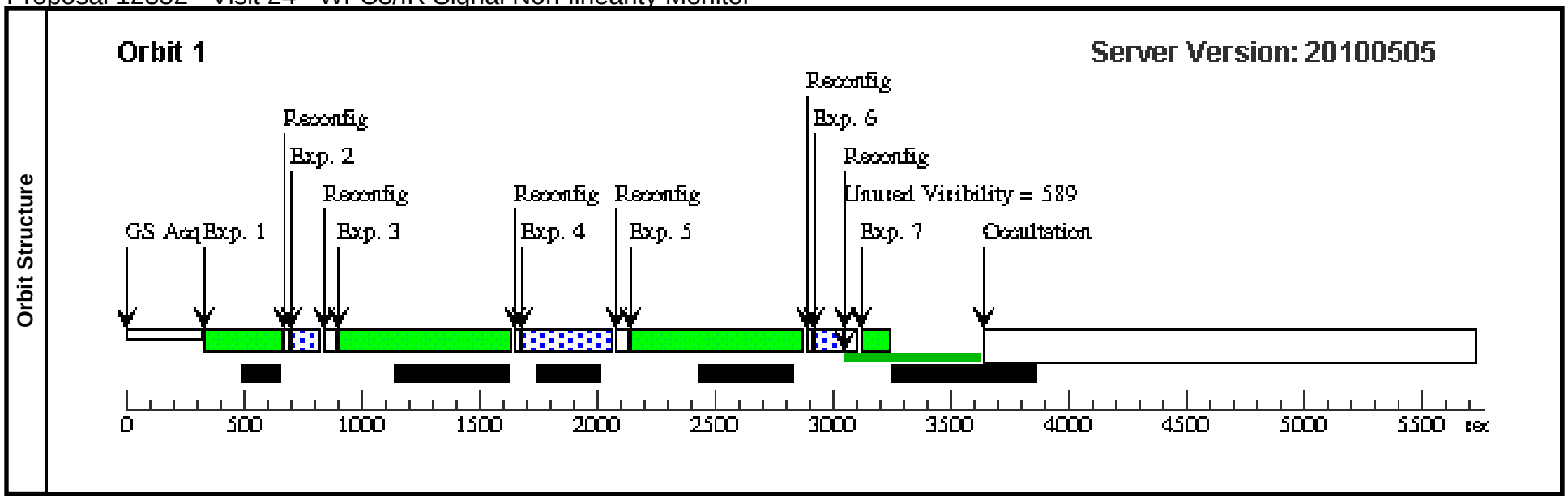
Special Requirements: AFTER 18 BY 0 D TO 15 D

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	47TUC Alt Name1: NGC104	RA: 00 22 27.8446 (5.6160192d) Dec: -72 04 4.75 (-72.06799d) Equinox: J2000		V=22.0	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 25; NSAMP=13			*[==>]*	***[1]***
2	Short	(1) 47TUC	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 10; NSAMP=10	POS TARG -0.65,-0.65		*[==>]*	***[1]***
3	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 50; NSAMP=15			*[==>]*	***[1]***
4	Long	(1) 47TUC	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 25; NSAMP=15	POS TARG -0.65,-0.65		*[==>]*	***[1]***
Comments: Designed to just saturate V=20 stars.									
5	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS 50; NSAMP=15			*[==>]*	***[1]***
6	Short	(1) 47TUC	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS 10; NSAMP=10	POS TARG -0.65,-0.65		*[==>]*	***[1]***
7	Dark	DARK	WFC3/IR, MULTIACCUM, IR-FIX	BLANK	SAMP-SEQ=SPARS 10; NSAMP=10			*[==>]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20100505
GS Acq
Exp. 1
Reconfig
Exp. 2
Reconfig
Exp. 3
Reconfig
Exp. 4
Reconfig
Exp. 5
Reconfig
Exp. 6
Reconfig
Unused Visibility = 589
Exp. 7
Occultation
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec

Visit

Proposal 12352, Visit 25 Thu Oct 07 01:38:20 GMT 2010

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

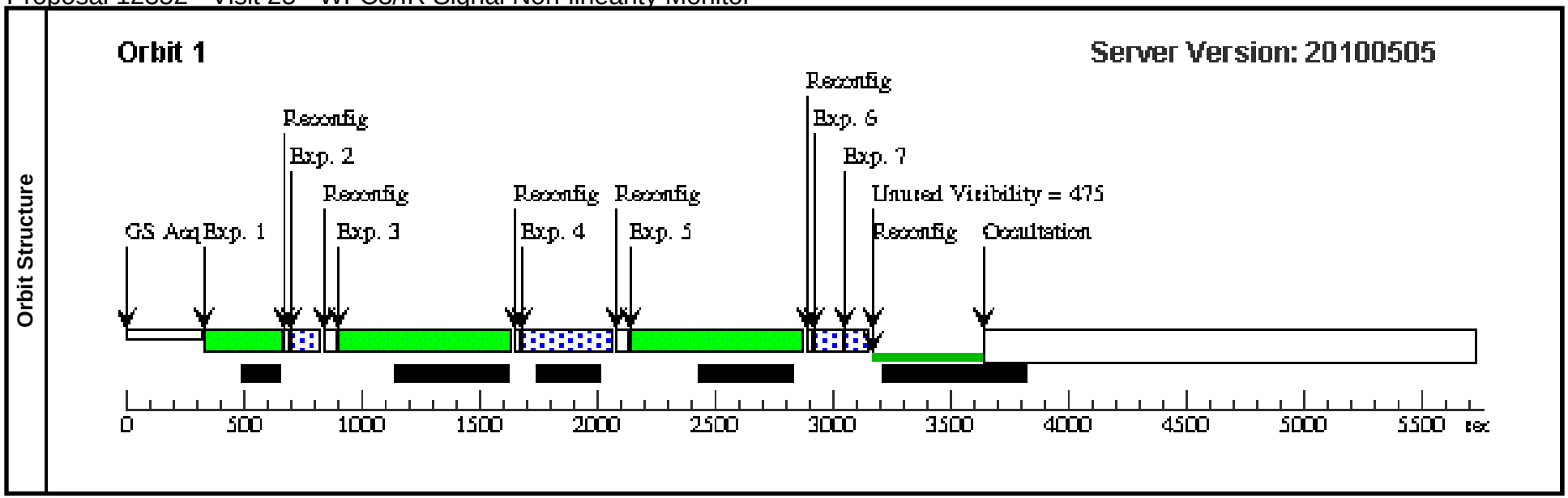
Special Requirements: AFTER 18 BY 0 D TO 15 D

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	47TUC Alt Name1: NGC104	RA: 00 22 27.8446 (5.6160192d) Dec: -72 04 4.75 (-72.06799d) Equinox: J2000		V=22.0	Reference Frame: ICRS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
1	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS25; NSAMP=13			*[==>]*	***[1]***
2	Short	(1) 47TUC	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS10; NSAMP=10	POS TARG 0.65,0.65		*[==>]*	***[1]***
3	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS50; NSAMP=15			*[==>]*	***[1]***
4	Long	(1) 47TUC	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS25; NSAMP=15	POS TARG 0.65,0.65		*[==>]*	***[1]***
Comments: Designed to just saturate V=20 stars.									
5	Dark	DARK	WFC3/IR, MULTIACCUM, IR	BLANK	SAMP-SEQ=SPARS50; NSAMP=15			*[==>]*	***[1]***
6	Short	(1) 47TUC	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS10; NSAMP=10	POS TARG 0.65,0.65		*[==>]*	***[1]***
7	Short	(1) 47TUC	WFC3/IR, MULTIACCUM, IR-FIX	F160W	SAMP-SEQ=SPARS10; NSAMP=10	POS TARG 0.65,0.65		*[==>]*	***[1]***


Orbit Structure
Orbit 1
Server Version: 20100505
Reconfig
Exp. 2
Reconfig
Exp. 3
Reconfig
Exp. 4
Reconfig
Exp. 5
Reconfig
Exp. 6
Exp. 7
Unused Visibility = 475
Reconfig
Occultation
GS Acq
Exp. 1
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
sec