



17265 - Shutter Timing Jitter and FLASH with WFC3 UVIS grism

Cycle: 30, 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	(6) HR-7596	WFC3/UVIS	1	19-Dec-2022 11:00:15.0	yes
02	(3) HR-5501	WFC3/UVIS	1	19-Dec-2022 11:00:18.0	yes

2 Total Orbits Used

ABSTRACT

We use observations of a stable star with the WFC3 UVIS G280 grism in order to measure the following: 1) measure the UVIS shutter's timing jitter, i.e. the non-repeatability of a commanded exposure time due to the vagaries of the mechanical shutter mechanism (current best estimates are 0.004s rms or 0.006s rms); 2) validate if FLASH is important for very bright stellar spectrophotometric time series with G280; and 3) test effects of shutter BLADE (A or B) for the same.

OBSERVING DESCRIPTION

The design of this 1-HST-orbit calibration program is as follows:

Proposal 17265 (STScI Edit Number: 1, Created: Monday, December 19, 2022 at 11:00:19 AM Eastern Standard Time) - Overview
(Note added 12.07.2022: Program 17265's Visit 01 missed the target in the G280 exposures on 11.21.2022 because the POSTARG Y = -50 was omitted, apparently because we had used as a template Program 17082's Visit 05 which failed on 11.23.2022 for the same reason. We have reviewed our error, copied Visit 01 to Visit 02, changed the POSTARG Y to -50 in all G280 exposures, and swapped the target from HR-7596 (V=5.63, A0III) to HR-5501 (V=5.665, B9.5V); the former's availability ended 11/30 and the latter's begins 12/24.)

We observe a bright and stable star with G280 grism in order to spread its light out so we can get good spectrophotometric precision in very short exposures so we can measure the shutter timing jitter, i.e. the non-repeatability of a commanded exposure time due to the vagaries of the mechanical shutter mechanism. We use a subarray to capture the ROI of the +1 and -1 orders of G280 simultaneously. The latter provides approximately 3x dynamic range because the +1 order has ~3x greater throughput than the -1 order; this will allow us to observe the star well into saturation to determine if good spectrophotometry can be obtained even while saturating the spectrum, and bleeding charge.

We select spectrophotometric standard stars from the references below, looking for ones with V=6, type = A0V. If our primary target HR-7596 cannot be used for some reason, we have identified four other similar targets.

We use a custom subarray, centered on the zeroth order of G280 spectrum. The subarray parameters have been tested in GO programs 16086 and others. Here, we choose a smaller but adequate SIZEAXIS2=340 to allow us to buffer dump at the end during Earth occultation.

We test whether FLASH=20 (following the approach adopted in GO 16086 and discussed in the Instrument Science Report WFC3 2021-09) is useful or not with the 2s exposures in the second half of the orbit. The specific value of FLASH=20 is the one recommended by the ETC. The 2s exposure is chosen to optimally expose (but not saturate) the -1 order and also to be long enough that shutter timing jitter will be a small effect.

We needed to use a different filter than in GO 16086 to avoid saturating the ACQ REF direct image.

The first exposure will be with shutter BLADE=A in order to know which shutter BLADE each exposure is: A, B, A, B,

We make all exposures in pairs so we will get BLADE=A and BLADE=B, one after the other, for each and every configuration.

2 ACQ exposures, one with FLASH and the other without FLASH; The second one also assures that each of the following series start with BLADE=A.

Six exposures in series of 0.5s, 0.7s, 1s, and 4s, then twenty exposures (five sets of four 2s exposures), as follows

Proposal 17265 (STScI Edit Number: 1, Created: Monday, December 19, 2022 at 11:00:19 AM Eastern Standard Time) - Overview

do i=1, 5 { 2sA 2sB 2sAFLASH 2sBFLASH }

The 2s exposures are interlaced FLASH, NO FLASH, FLASH, NO FLASH so that any environmental changes, e.g. scattered light will be similar throughout each series.

ETC runs are listed only for the 1s G280 exposure and the 0.5s F280N direct image for ACQ.

References:

https://www2.keck.hawaii.edu/inst/esi/flux_stds.html

https://www2.keck.hawaii.edu/inst/common/stone_stds_hst.html

<https://www.eso.org/sci/observing/tools/standards/spectra/stanlis.html>

Proposal 17265 - UVIS test 1 (01) - Shutter Timing Jitter and FLASH with WFC3 UVIS grism

Mon Dec 19 16:00:19 GMT 2022

Visit	<p>Proposal 17265, UVIS test 1 (01), completed</p> <p>Diagnostic Status: Warning</p> <p>Scientific Instruments: WFC3/UVIS</p> <p>Special Requirements: (none)</p>					
Diagnostics	<p>(Filter ACQ (01.002)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(0.5s (01.003)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(0.7s (01.004)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(1s (01.005)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(4s (01.006)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(2s (01.007)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(2s (01.009)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(2s (01.011)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(2s (01.013)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(2s (01.015)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p>					
Fixed Targets	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	(6)	HR-7596	RA: 19 54 44.8358 (298.6868158d) Dec: +00 16 24.84 (.27357d) Equinox: J2000	Proper Motion RA: 0.002643830135691765 sec of time/yr Proper Motion Dec: -0.013766000051873561 arcsec/yr Epoch of Position: 2015.5	V=5.631	Reference Frame: SIMBAD
	<p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>Category= CALIBRATION</i></p> <p><i>Description= [PHOTOMETRIC]</i></p>					

Proposal 17265 - UVIS test 1 (01) - Shutter Timing Jitter and FLASH with WFC3 UVIS grism

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	Filter ACQ (WFC3UVI S.im.182978 0)	(6) HR-7596	WFC3/UVIS, ACCUM, G280-REF	F280N	SIZEAXIS1=2250; SIZEAXIS2=340; CENTERAXIS1=21 36; CENTERAXIS2=12 16; BLADE=A; FLASH=20	POS TARG null,-50	Sequence 1-16 Non-I nt in UVIS test 1 (01)	0.5 Secs (0.5 Secs) [==>]	[1]
<i>Comments: Two exposures in series: BLADE=A with FLASH and BLADE=B with no FLASH.</i>									
2	Filter ACQ	(6) HR-7596	WFC3/UVIS, ACCUM, G280-REF	F280N	SIZEAXIS1=2250; SIZEAXIS2=340; CENTERAXIS1=21 36; CENTERAXIS2=12 16	POS TARG null,-50	Sequence 1-16 Non-I nt in UVIS test 1 (01)	0.5 Secs (0.5 Secs) [==>]	[1]
3	0.5s	(6) HR-7596	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340		Sequence 1-16 Non-I nt in UVIS test 1 (01)	0.5 Secs X 6 (3 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>									
4	0.7s	(6) HR-7596	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340		Sequence 1-16 Non-I nt in UVIS test 1 (01)	0.7 Secs X 6 (4.2 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>									
5	1s (WFC3UVI S.sp.182977 8)	(6) HR-7596	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340		Sequence 1-16 Non-I nt in UVIS test 1 (01)	1 Secs X 6 (6 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>									

Exposures

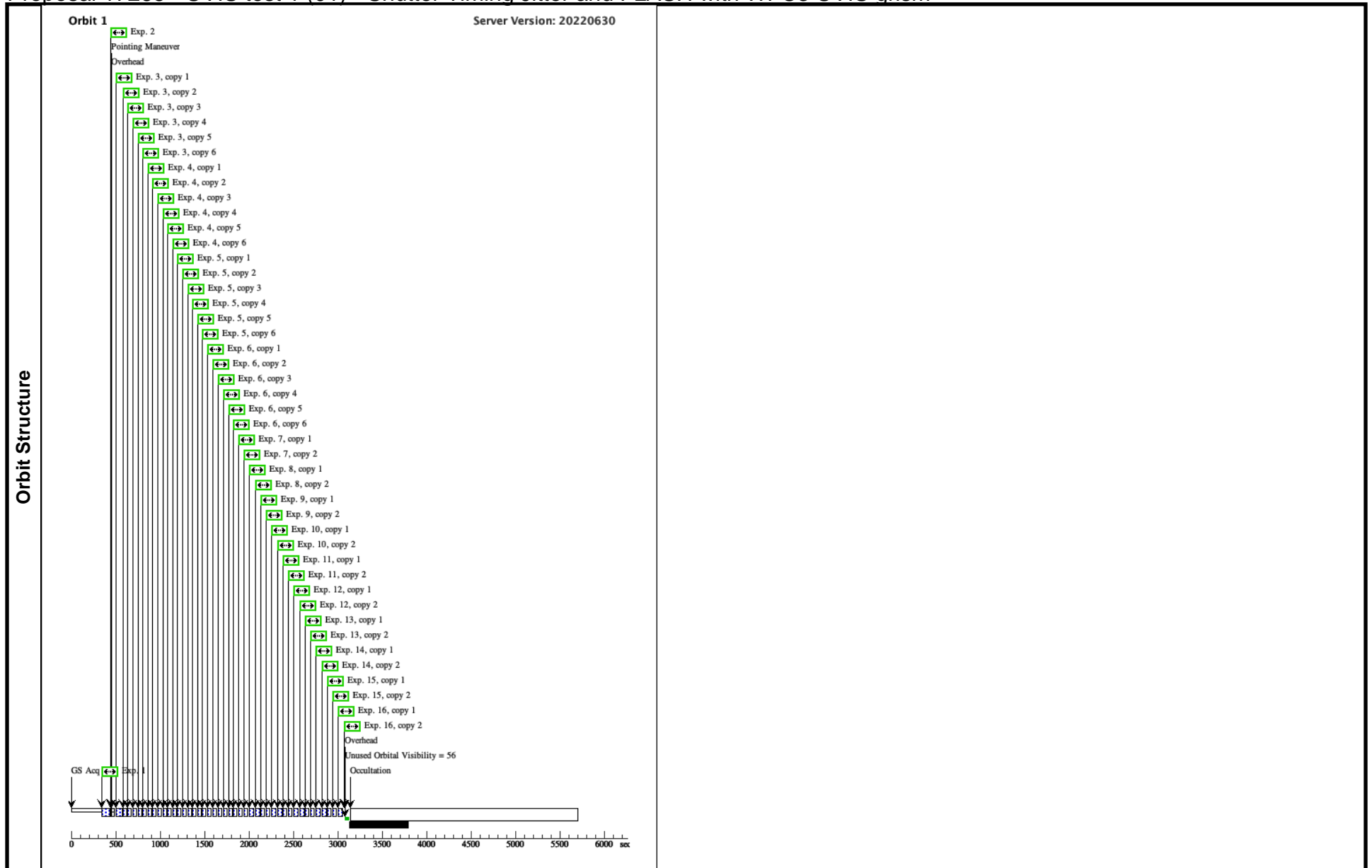
Proposal 17265 - UVIS test 1 (01) - Shutter Timing Jitter and FLASH with WFC3 UVIS grism

6	4s	(6) HR-7596	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340	Sequence 1-16 Non-Int in UVIS test 1 (01)	4 Secs X 6 (24 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								
7	2s	(6) HR-7596	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340	Sequence 1-16 Non-Int in UVIS test 1 (01)	2 Secs X 2 (4 Secs) [==>(Copy 1)] [==>(Copy 2)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								
8	2s FLASH=20	(6) HR-7596	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340; FLASH=20	Sequence 1-16 Non-Int in UVIS test 1 (01)	2 Secs X 2 (4 Secs) [==>(Copy 1)] [==>(Copy 2)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								
9	2s	(6) HR-7596	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340	Sequence 1-16 Non-Int in UVIS test 1 (01)	2 Secs X 2 (4 Secs) [==>(Copy 1)] [==>(Copy 2)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								
10	2s FLASH=20	(6) HR-7596	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340; FLASH=20	Sequence 1-16 Non-Int in UVIS test 1 (01)	2 Secs X 2 (4 Secs) [==>(Copy 1)] [==>(Copy 2)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								
11	2s	(6) HR-7596	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340	Sequence 1-16 Non-Int in UVIS test 1 (01)	2 Secs X 2 (4 Secs) [==>(Copy 1)] [==>(Copy 2)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								

Proposal 17265 - UVIS test 1 (01) - Shutter Timing Jitter and FLASH with WFC3 UVIS grism

12	2s 20	FLASH= (6) HR-7596	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340; FLASH=20	Sequence 1-16 Non-Int in UVIS test 1 (01)	2 Secs X 2 (4 Secs) [==>(Copy 1)] [==>(Copy 2)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								
13	2s	(6) HR-7596	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340	Sequence 1-16 Non-Int in UVIS test 1 (01)	2 Secs X 2 (4 Secs) [==>(Copy 1)] [==>(Copy 2)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								
14	2s 20	FLASH= (6) HR-7596	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340; FLASH=20	Sequence 1-16 Non-Int in UVIS test 1 (01)	2 Secs X 2 (4 Secs) [==>(Copy 1)] [==>(Copy 2)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								
15	2s	(6) HR-7596	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340	Sequence 1-16 Non-Int in UVIS test 1 (01)	2 Secs X 2 (4 Secs) [==>(Copy 1)] [==>(Copy 2)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								
16	2s 20	FLASH= (6) HR-7596	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340; FLASH=20	Sequence 1-16 Non-Int in UVIS test 1 (01)	2 Secs X 2 (4 Secs) [==>(Copy 1)] [==>(Copy 2)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								

Proposal 17265 - UVIS test 1 (01) - Shutter Timing Jitter and FLASH with WFC3 UVIS grism



Proposal 17265 - UVIS test 2 (02) - Shutter Timing Jitter and FLASH with WFC3 UVIS grism

Mon Dec 19 16:00:19 GMT 2022

Visit	<p>Proposal 17265, UVIS test 2 (02), implementation</p> <p>Diagnostic Status: Warning</p> <p>Scientific Instruments: WFC3/UVIS</p> <p>Special Requirements: BEFORE 31-JAN-2023:00:00:00</p>										
	<p>Diagnosics</p> <p>(Filter ACQ (02.002)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(0.5s (02.003)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(0.7s (02.004)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(1s (02.005)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(4s (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>(2s (02.007)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(2s (02.009)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(2s (02.011)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(2s (02.013)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p> <p>(2s (02.015)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser</p>										
Fixed Targets	<table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Target Coordinates</th> <th>Targ. Coord. Corrections</th> <th>Fluxes</th> <th>Miscellaneous</th> </tr> </thead> </table>					#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
	#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous					
<table border="1"> <tbody> <tr> <td data-bbox="136 576 241 839">(3)</td> <td data-bbox="241 576 472 839">HR-5501</td> <td data-bbox="472 576 892 839"> RA: 14 45 30.1643 (221.375684d) Dec: +00 43 2.05 (.71724d) Equinox: J2000 </td> <td data-bbox="892 576 1312 839"> Proper Motion RA: -0.0025940032426080024 sec of time/yr Proper Motion Dec: -0.008231000060732185 arcsec/yr Epoch of Position: 2015.5 </td> <td data-bbox="1312 576 1606 839">V=5.665</td> <td data-bbox="1606 576 2001 839">Reference Frame: SIMBAD</td> </tr> </tbody> </table> <p><i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i></p> <p><i>Picked it from the following list, looking for a star close to type A0 and B=6 mag.</i> https://www.eso.org/sci/observing/tools/standards/spectra/stanlis.html Category= CALIBRATION Description=[PHOTOMETRIC]</p>					(3)	HR-5501	RA: 14 45 30.1643 (221.375684d) Dec: +00 43 2.05 (.71724d) Equinox: J2000	Proper Motion RA: -0.0025940032426080024 sec of time/yr Proper Motion Dec: -0.008231000060732185 arcsec/yr Epoch of Position: 2015.5	V=5.665	Reference Frame: SIMBAD	
(3)	HR-5501	RA: 14 45 30.1643 (221.375684d) Dec: +00 43 2.05 (.71724d) Equinox: J2000	Proper Motion RA: -0.0025940032426080024 sec of time/yr Proper Motion Dec: -0.008231000060732185 arcsec/yr Epoch of Position: 2015.5	V=5.665	Reference Frame: SIMBAD						

Proposal 17265 - UVIS test 2 (02) - Shutter Timing Jitter and FLASH with WFC3 UVIS grism

#	Label (ETC Run)	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit	
Exposures	1	Filter ACQ (WFC3UVI S.im.182978 0)	(3) HR-5501	WFC3/UVIS, ACCUM, G280-REF	F280N	SIZEAXIS1=2250; SIZEAXIS2=340; CENTERAXIS1=2136; CENTERAXIS2=1216; BLADE=A; FLASH=20	POS TARG null,-50	Sequence 1-16 Non-Int in UVIS test 2 (02)	0.5 Secs (0.5 Secs) [==>]	[1]
	<i>Comments: Two exposures in series: BLADE=A with FLASH and BLADE=B with no FLASH.</i>									
	2	Filter ACQ	(3) HR-5501	WFC3/UVIS, ACCUM, G280-REF	F280N	SIZEAXIS1=2250; SIZEAXIS2=340; CENTERAXIS1=2136; CENTERAXIS2=1216	POS TARG null,-50	Sequence 1-16 Non-Int in UVIS test 2 (02)	0.5 Secs (0.5 Secs) [==>]	[1]
	3	0.5s	(3) HR-5501	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=2250; SIZEAXIS2=340	POS TARG null,-50	Sequence 1-16 Non-Int in UVIS test 2 (02)	0.5 Secs X 6 (3 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)]	[1]
	<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>									
4	0.7s	(3) HR-5501	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=2250; SIZEAXIS2=340	POS TARG null,-50	Sequence 1-16 Non-Int in UVIS test 2 (02)	0.7 Secs X 6 (4.2 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)]	[1]	
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>										
5	1s (WFC3UVI S.sp.182977 8)	(3) HR-5501	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=2136; CENTERAXIS2=1216; SIZEAXIS1=2250; SIZEAXIS2=340	POS TARG null,-50	Sequence 1-16 Non-Int in UVIS test 2 (02)	1 Secs X 6 (6 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)]	[1]	
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>										

Proposal 17265 - UVIS test 2 (02) - Shutter Timing Jitter and FLASH with WFC3 UVIS grism

6	4s	(3) HR-5501	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340	POS TARG null,-50 Sequence 1-16 Non-I nt in UVIS test 2 (02)	4 Secs X 6 (24 Secs) [==>(Copy 1)] [==>(Copy 2)] [==>(Copy 3)] [==>(Copy 4)] [==>(Copy 5)] [==>(Copy 6)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								
7	2s	(3) HR-5501	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340	POS TARG null,-50 Sequence 1-16 Non-I nt in UVIS test 2 (02)	2 Secs X 2 (4 Secs) [==>(Copy 1)] [==>(Copy 2)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								
8	2s FLASH= 20	(3) HR-5501	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340; FLASH=20	POS TARG null,-50 Sequence 1-16 Non-I nt in UVIS test 2 (02)	2 Secs X 2 (4 Secs) [==>(Copy 1)] [==>(Copy 2)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								
9	2s	(3) HR-5501	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340	POS TARG null,-50 Sequence 1-16 Non-I nt in UVIS test 2 (02)	2 Secs X 2 (4 Secs) [==>(Copy 1)] [==>(Copy 2)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								
10	2s FLASH= 20	(3) HR-5501	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340; FLASH=20	POS TARG null,-50 Sequence 1-16 Non-I nt in UVIS test 2 (02)	2 Secs X 2 (4 Secs) [==>(Copy 1)] [==>(Copy 2)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								
11	2s	(3) HR-5501	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340	POS TARG null,-50 Sequence 1-16 Non-I nt in UVIS test 2 (02)	2 Secs X 2 (4 Secs) [==>(Copy 1)] [==>(Copy 2)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								

Proposal 17265 - UVIS test 2 (02) - Shutter Timing Jitter and FLASH with WFC3 UVIS grism

12	2s 20	FLASH= (3) HR-5501	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340; FLASH=20	POS TARG null,-50 Sequence 1-16 Non-I nt in UVIS test 2 (02)	2 Secs X 2 (4 Secs) [==>(Copy 1)] [==>(Copy 2)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								
13	2s	(3) HR-5501	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340	POS TARG null,-50 Sequence 1-16 Non-I nt in UVIS test 2 (02)	2 Secs X 2 (4 Secs) [==>(Copy 1)] [==>(Copy 2)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								
14	2s 20	FLASH= (3) HR-5501	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340; FLASH=20	POS TARG null,-50 Sequence 1-16 Non-I nt in UVIS test 2 (02)	2 Secs X 2 (4 Secs) [==>(Copy 1)] [==>(Copy 2)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								
15	2s	(3) HR-5501	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340	POS TARG null,-50 Sequence 1-16 Non-I nt in UVIS test 2 (02)	2 Secs X 2 (4 Secs) [==>(Copy 1)] [==>(Copy 2)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								
16	2s 20	FLASH= (3) HR-5501	WFC3/UVIS, ACCUM, UVIS	G280	CENTERAXIS1=21 36; CENTERAXIS2=12 16; SIZEAXIS1=2250; SIZEAXIS2=340; FLASH=20	POS TARG null,-50 Sequence 1-16 Non-I nt in UVIS test 2 (02)	2 Secs X 2 (4 Secs) [==>(Copy 1)] [==>(Copy 2)]	[1]
<i>Comments: Detector chip 2. We include FLASH=20, as we anticipate < 1 e- of background per science exposure, in order to ensure maximum CTE.</i>								

Proposal 17265 - UVIS test 2 (02) - Shutter Timing Jitter and FLASH with WFC3 UVIS grism

