17367 - WFC3 IR Grism Flux/Trace Calibration

Cycle: 31, Proposal Category: CAL/WFC3

(Availability Mode: RESTRICTED)

INVESTIGATORS

Name	*Institution*
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VISITS

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
01	(1) GD-153	WFC3/IR	1	10-Aug-2023 09:00:31.0	yes
02	(2) GD-71	WFC3/IR	1	10-Aug-2023 09:00:32.0	yes
03	(3) GRW+70D5824	WFC3/IR	1	10-Aug-2023 09:00:33.0	yes

3 Total Orbits Used

ABSTRACT

This program will observe GD-153, GD-71 and GRW+70 to verify the flux calibration near the center of the field (-20, 0) and a few other positions using the WFC3 IR G102 and G141 grisms. These calibrations will be compared with those derived from previous programs:

17018 (GD-153, GD-71, GRW+70),

16583 (GD-153, GD-71, GRW+70),

16408 (GD-153, GD-71, GRW+70),

15728 (GD-153),

15587 (GD-153),

14994 (GD-153),

14544 (GD-153),
14386 (GD-153),
14024 (GD-71),
13579 (GD-153),
13092 (GD-153),
12702 (GD-71),
12357 (GD-71),
11937 (GD-71)
to check for any time evolution. The data will also be used to calculate wavelength solutions for the grisms and to check for time dependent sensitivity evolution of the G102 and G141 observing modes.

OBSERVING DESCRIPTION

Observations of GD-153 to verify the flux calibration near the center of the field and at a few other previously observed positions using the WFC3 IR G102 and G141 grisms. These calibrations will be compared with those derived from previous programs. The data will also be used to calculate wavelength solutions for the grisms, and will be used to check time dependant sensitivity of G102 and G141 observing modes.
Observations will be taken with postargs of (-20,-0) (-20,+15) (-20,-15)

Observations of GD-71 to verify the flux calibration near the center of the field and at a few other previously observed positions using the WFC3 IR G102 and G141 grisms. These calibrations will be compared with those derived from previous programs. The data will also be used to calculate wavelength solutions for the grisms, and will be used to check time dependant sensitivity of G102 and G141 observing modes.
Observations will be taken with postargs of (-20,-0) (-20,+15) (-20,-15) (-40,+0)
Direct imaging done with only one imaging filter: F098M for G102 and F140W for G141
ORIENT restrictions applied to minimize contamination in this crowded field.

Observations of GRW+70 to verify the flux calibration near the center of the field and at a few other previously observed positions using the WFC3 IR G102 and G141 grisms. These calibrations will be compared with those derived from previous programs. The data will also be used to calculate wavelength solutions for the grisms, and will be used to check time dependant sensitivity of G102 and G141 observing modes.
Observations will be taken with postargs of (-20,-0) (-20,+15) (-20,-15) (-40,+0)
Direct imaging done with only one imaging filter: F098M for G102 and F140W for G141

ORIENT restrictions applied to avoid contamination

The original flux monitor observed GD71 and GD153 at a range of detector positions but was reduced to a single orbit of GD153 based on the stability of the initial calibration. Using a longer time baseline, a decrease in sensitivity of ~0.1% per year has been measured, so GRW+70 was added (and GD71 resumed) to more accurately track these time-dependent losses.

Visit

Proposal 17367, GD153 G102 and G141 (01) Thu Aug 10 13:00:34 GMT 2023

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: BETWEEN 01-MAR-2024:00:00:00 AND 01-JUN-2024:00:00:00

Comments: Visit targetting GD153

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(1)	GD-153	RA: 12 57 2.3225 (194.2596771d)	Proper Motion RA: -38.410 mas/yr	V=13.4	Reference Frame: ICRS
		Dec: +22 01 52.63 (22.03129d)	Proper Motion Dec: -202.953 mas/yr		
		Equinox: J2000	Epoch of Position: 2000		

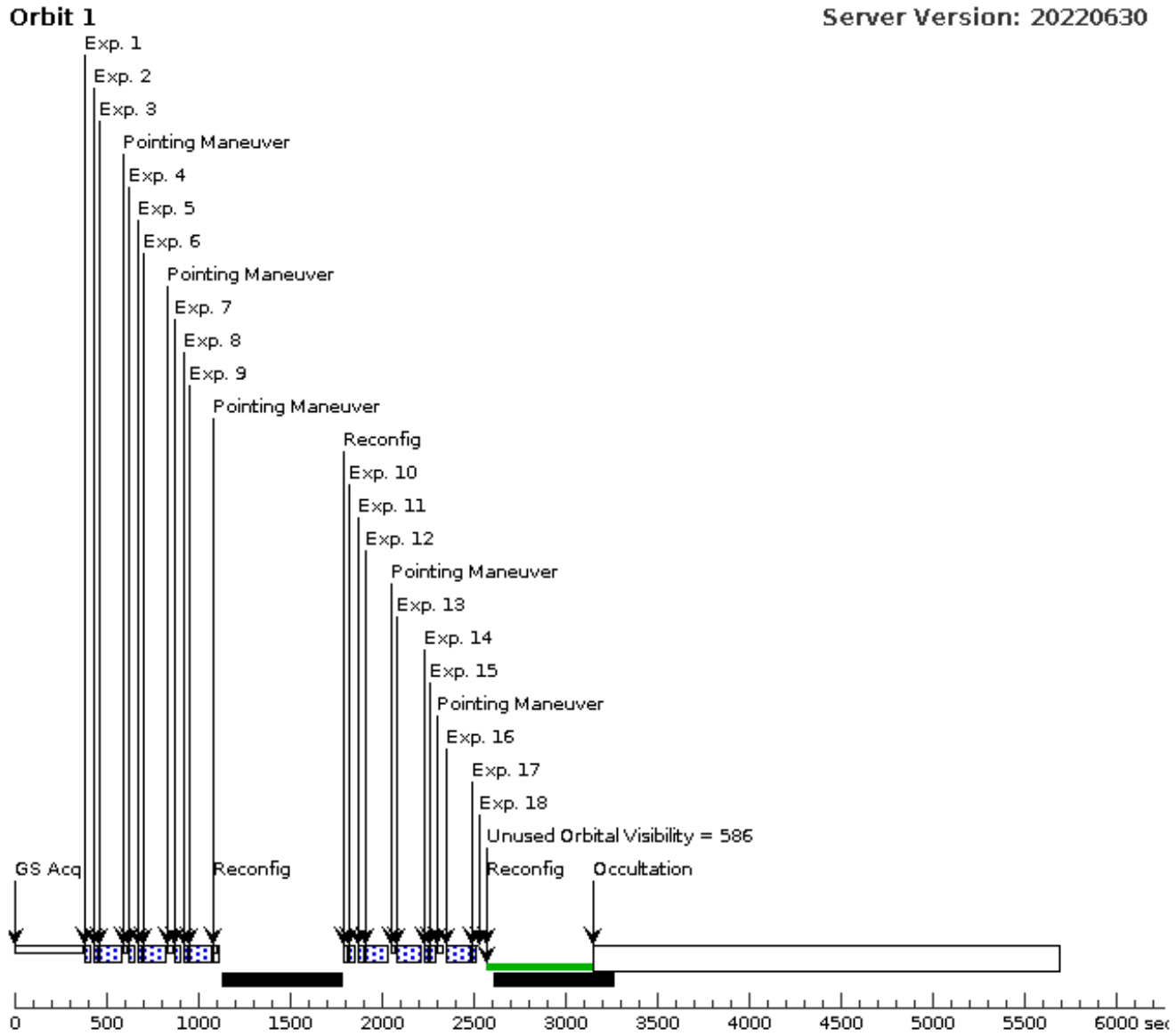
Comments: According to ISR WFC3-2011-05, GD-153 is used as the primary flux calibrator for the WFC3 IR grisms.
Category=STAR
Description=[DA]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	In -20 -0 F098M	(1) GD-153	WFC3/IR, MULTIACCUM, GRISM1024	F098M	SAMP-SEQ=RAPID; NSAMP=2	POS TARG -20,-0	Sequence 1-3 Non-Int in GD153 G102 and G141 (01)	5.864582 Secs (5.865 Secs)	
								[==>]	***[1]***
2	In -20 -0 F105W	(1) GD-153	WFC3/IR, MULTIACCUM, GRISM1024	F105W	SAMP-SEQ=RAPID; NSAMP=1	POS TARG -20,-0	Sequence 1-3 Non-Int in GD153 G102 and G141 (01)	2.932291 Secs (2.932 Secs)	
								[==>]	***[1]***
3	In -20 -0 G102	(1) GD-153	WFC3/IR, MULTIACCUM, GRISM1024	G102	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -20,-0	Sequence 1-3 Non-Int in GD153 G102 and G141 (01)	102.934351 Secs (102.934 Secs)	
								[==>]	***[1]***
4	In -20 +15 F098M	(1) GD-153	WFC3/IR, MULTIACCUM, GRISM1024	F098M	SAMP-SEQ=RAPID; NSAMP=2	POS TARG -20,+15	Sequence 4-6 Non-Int in GD153 G102 and G141 (01)	5.864582 Secs (5.865 Secs)	
								[==>]	***[1]***
5	In -20 +15 F105W	(1) GD-153	WFC3/IR, MULTIACCUM, GRISM1024	F105W	SAMP-SEQ=RAPID; NSAMP=1	POS TARG -20,+15	Sequence 4-6 Non-Int in GD153 G102 and G141 (01)	2.932291 Secs (2.932 Secs)	
								[==>]	***[1]***
6	In -20 +15 G102	(1) GD-153	WFC3/IR, MULTIACCUM, GRISM1024	G102	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -20,+15	Sequence 4-6 Non-Int in GD153 G102 and G141 (01)	102.934351 Secs (102.934 Secs)	
								[==>]	***[1]***
7	In -20 -15 F098M	(1) GD-153	WFC3/IR, MULTIACCUM, GRISM1024	F098M	SAMP-SEQ=RAPID; NSAMP=2	POS TARG -20,-15	Sequence 7-9 Non-Int in GD153 G102 and G141 (01)	5.864582 Secs (5.865 Secs)	
								[==>]	***[1]***
8	In -20 -15 F105W	(1) GD-153	WFC3/IR, MULTIACCUM, GRISM1024	F105W	SAMP-SEQ=RAPID; NSAMP=1	POS TARG -20,-15	Sequence 7-9 Non-Int in GD153 G102 and G141 (01)	2.932291 Secs (2.932 Secs)	
								[==>]	***[1]***
9	In -20 -15 G102	(1) GD-153	WFC3/IR, MULTIACCUM, GRISM1024	G102	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -20,-15	Sequence 7-9 Non-Int in GD153 G102 and G141 (01)	102.934351 Secs (102.934 Secs)	
								[==>]	***[1]***
10	In -20 -0 F160W	(1) GD-153	WFC3/IR, MULTIACCUM, GRISM1024	F160W	SAMP-SEQ=RAPID; NSAMP=2	POS TARG -20,-0	Sequence 10-12 Non-Int in GD153 G102 and G141 (01)	5.864582 Secs (5.865 Secs)	
								[==>]	***[1]***
11	In -20 -0 F140W	(1) GD-153	WFC3/IR, MULTIACCUM, GRISM1024	F140W	SAMP-SEQ=RAPID; NSAMP=1	POS TARG -20,-0	Sequence 10-12 Non-Int in GD153 G102 and G141 (01)	2.932291 Secs (2.932 Secs)	
								[==>]	***[1]***
12	In -20 -0 G141	(1) GD-153	WFC3/IR, MULTIACCUM, GRISM1024	G141	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -20,-0	Sequence 10-12 Non-Int in GD153 G102 and G141 (01)	102.934351 Secs (102.934 Secs)	
								[==>]	***[1]***
13	In -20 +15 G141	(1) GD-153	WFC3/IR, MULTIACCUM, GRISM1024	G141	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -20,+15	Sequence 13-15 Non-Int in GD153 G102 and G141 (01)	102.934351 Secs (102.934 Secs)	
								[==>]	***[1]***
14	In -20 +15 F160W	(1) GD-153	WFC3/IR, MULTIACCUM, GRISM1024	F160W	SAMP-SEQ=RAPID; NSAMP=2	POS TARG -20,+15	Sequence 13-15 Non-Int in GD153 G102 and G141 (01)	5.864582 Secs (5.865 Secs)	
								[==>]	***[1]***
15	In -20 +15 F140W	(1) GD-153	WFC3/IR, MULTIACCUM, GRISM1024	F140W	SAMP-SEQ=RAPID; NSAMP=1	POS TARG -20,+15	Sequence 13-15 Non-Int in GD153 G102 and G141 (01)	2.932291 Secs (2.932 Secs)	
								[==>]	***[1]***
16	In -20 -15 G141	(1) GD-153	WFC3/IR, MULTIACCUM, GRISM1024	G141	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -20,-15	Sequence 16-18 Non-Int in GD153 G102 and G141 (01)	102.934351 Secs (102.934 Secs)	
								[==>]	***[1]***

	17	In -20 -15 F 160W	(1) GD-153	WFC3/IR, MULTIACCUM, GRISM1024	F160W	SAMP-SEQ=RAPID POS TARG -20,-15 ; NSAMP=2	Sequence 16-18 Non-Int in GD153 G102 and G141 (01)	5.864582 Secs (5.865 Secs) *[==>]*	 ***[1]***
	18	In -20 -15 F 140W	(1) GD-153	WFC3/IR, MULTIACCUM, GRISM1024	F140W	SAMP-SEQ=RAPID POS TARG -20,-15 ; NSAMP=1	Sequence 16-18 Non-Int in GD153 G102 and G141 (01)	2.932291 Secs (2.932 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 17367, GD71 G102 and G141 (02) Thu Aug 10 13:00:34 GMT 2023

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 135D TO 154 D; ORIENT 197D TO 225 D; ORIENT 280D TO 310 D; ORIENT 26D TO 30 D; ORIENT 43D TO 55 D; BETWEEN 15-DEC-2023:00:00:00 AND 15-MAR-2024:00:00:00

Comments: Visit targetting GD71

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(2)	GD-71	RA: 05 52 27.6197 (88.1150821d)	Proper Motion RA: 76.841 mas/yr	V=13.06	Reference Frame: ICRS
		Dec: +15 53 13.23 (15.88701d)	Proper Motion Dec: -172.944 mas/yr		
		Equinox: J2000	Parallax: 0.019245"		
			Epoch of Position: 2000		

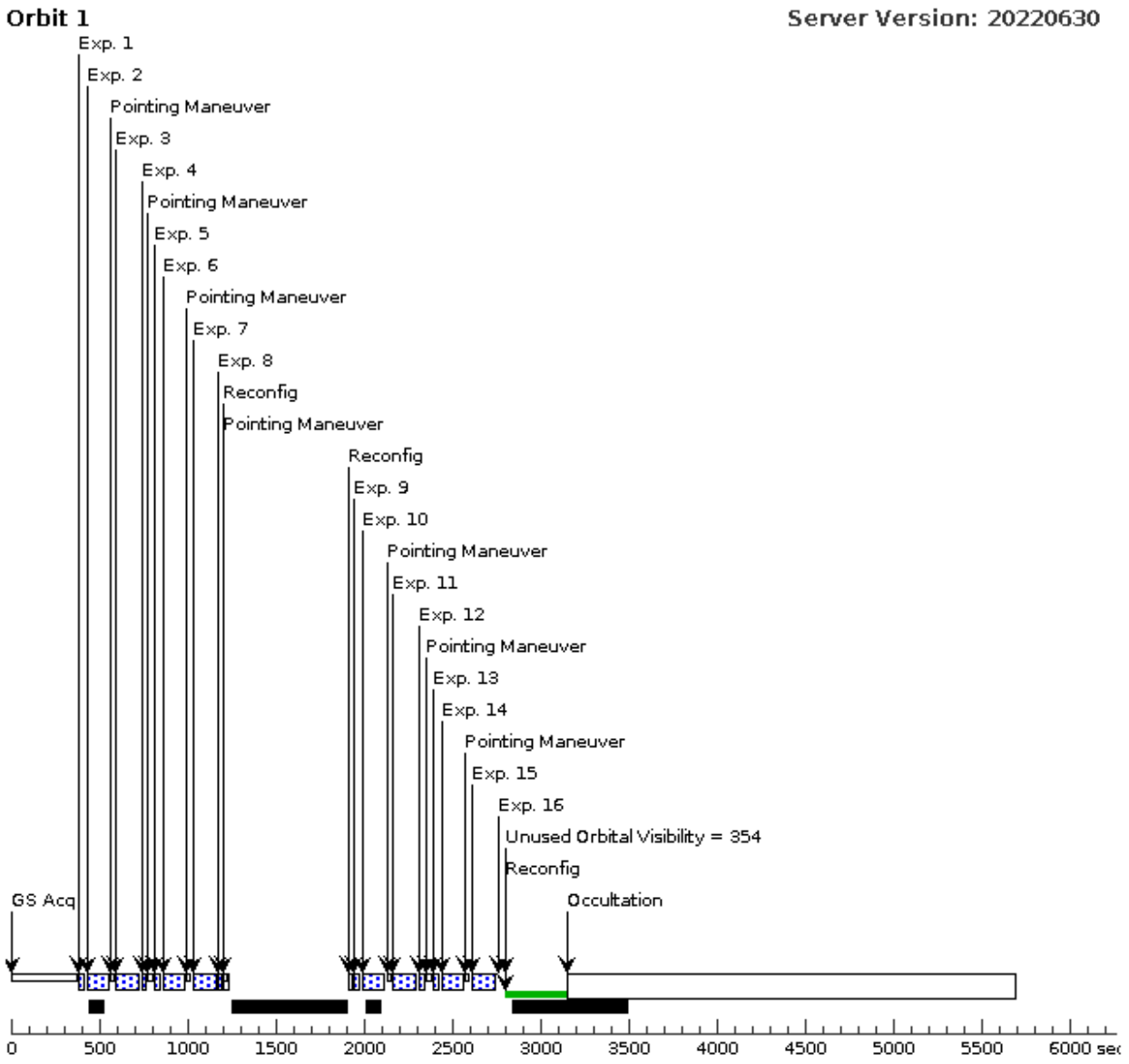
Comments: GD-71 is a primary HST flux standard that has been used in the past to calibrate the NICMOS and ACS grism modes, which provides us with the ability to cross-calibrate between instruments. GD-71 is specifically chosen for the WFC3 IR grism calibration because it will provide an aditional flux calibration target (GD-153 is used in SMOV for the IR grism calibration), so that the calibration is not based on a single target. An additional calibration target also minimizes the potential for problems from other nearby sources in the field.

The original flux monitor observed GD71 and GD153 at a range of detector positions but was reduced to a single orbit of GD153 based on the stability of the initial calibration. Using a longer time baseline, a decrease in sensitivity of ~0.1% per year has been measured, so GRW+70 was added (and GD71 resumed) to more accurately track these time-dependent losses.
Category=STAR
Description=[DA]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	In -20 -0 F098M	(2) GD-71	WFC3/IR, MULTIACCUM, GRISM1024	F098M	SAMP-SEQ=RAPID; NSAMP=2	POS TARG -20,-0	Sequence 1-2 Non-Int in GD71 G102 and G141 (02)	5.864582 Secs (5.865 Secs)	
								[==>]	***[1]***
2	In -20 -0 G102	(2) GD-71	WFC3/IR, MULTIACCUM, GRISM1024	G102	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -20,-0	Sequence 1-2 Non-Int in GD71 G102 and G141 (02)	102.934351 Secs (102.934 Secs)	
								[==>]	***[1]***
3	In -20 +15 G102	(2) GD-71	WFC3/IR, MULTIACCUM, GRISM1024	G102	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -20,+15	Sequence 3-4 Non-Int in GD71 G102 and G141 (02)	102.934351 Secs (102.934 Secs)	
								[==>]	***[1]***
4	In -20 +15 F098M	(2) GD-71	WFC3/IR, MULTIACCUM, GRISM1024	F098M	SAMP-SEQ=RAPID; NSAMP=2	POS TARG -20,+15	Sequence 3-4 Non-Int in GD71 G102 and G141 (02)	5.864582 Secs (5.865 Secs)	
								[==>]	***[1]***
5	In -20 -15 F098M	(2) GD-71	WFC3/IR, MULTIACCUM, GRISM1024	F098M	SAMP-SEQ=RAPID; NSAMP=2	POS TARG -20,-15	Sequence 5-6 Non-Int in GD71 G102 and G141 (02)	5.864582 Secs (5.865 Secs)	
								[==>]	***[1]***
6	In -20 -15 G102	(2) GD-71	WFC3/IR, MULTIACCUM, GRISM1024	G102	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -20,-15	Sequence 5-6 Non-Int in GD71 G102 and G141 (02)	102.934351 Secs (102.934 Secs)	
								[==>]	***[1]***
7	In -40 +0 G102	(2) GD-71	WFC3/IR, MULTIACCUM, GRISM1024	G102	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -40,+0	Sequence 7-8 Non-Int in GD71 G102 and G141 (02)	102.934351 Secs (102.934 Secs)	
								[==>]	***[1]***
8	In -40 +0 F098M	(2) GD-71	WFC3/IR, MULTIACCUM, GRISM1024	F098M	SAMP-SEQ=RAPID; NSAMP=2	POS TARG -40,+0	Sequence 7-8 Non-Int in GD71 G102 and G141 (02)	5.864582 Secs (5.865 Secs)	
								[==>]	***[1]***
9	In -20 -0 F140W	(2) GD-71	WFC3/IR, MULTIACCUM, GRISM1024	F140W	SAMP-SEQ=RAPID; NSAMP=2	POS TARG -20,-0	Sequence 9-10 Non-Int in GD71 G102 and G141 (02)	5.864582 Secs (5.865 Secs)	
								[==>]	***[1]***
10	In -20 -0 G141	(2) GD-71	WFC3/IR, MULTIACCUM, GRISM1024	G141	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -20,-0	Sequence 9-10 Non-Int in GD71 G102 and G141 (02)	102.934351 Secs (102.934 Secs)	
								[==>]	***[1]***
11	In -20 +15 G141	(2) GD-71	WFC3/IR, MULTIACCUM, GRISM1024	G141	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -20,+15	Sequence 11-12 Non-Int in GD71 G102 and G141 (02)	102.934351 Secs (102.934 Secs)	
								[==>]	***[1]***
12	In -20 +15 F140W	(2) GD-71	WFC3/IR, MULTIACCUM, GRISM1024	F140W	SAMP-SEQ=RAPID; NSAMP=2	POS TARG -20,+15	Sequence 11-12 Non-Int in GD71 G102 and G141 (02)	5.864582 Secs (5.865 Secs)	
								[==>]	***[1]***
13	In -20 -15 F140W	(2) GD-71	WFC3/IR, MULTIACCUM, GRISM1024	F140W	SAMP-SEQ=RAPID; NSAMP=2	POS TARG -20,-15	Sequence 13-14 Non-Int in GD71 G102 and G141 (02)	5.864582 Secs (5.865 Secs)	
								[==>]	***[1]***
14	In -20 -15 G141	(2) GD-71	WFC3/IR, MULTIACCUM, GRISM1024	G141	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -20,-15	Sequence 13-14 Non-Int in GD71 G102 and G141 (02)	102.934351 Secs (102.934 Secs)	
								[==>]	***[1]***
15	In -40 +0 G141	(2) GD-71	WFC3/IR, MULTIACCUM, GRISM1024	G141	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -40,+0	Sequence 15-16 Non-Int in GD71 G102 and G141 (02)	102.934351 Secs (102.934 Secs)	
								[==>]	***[1]***
16	In -40 +0 F140W	(2) GD-71	WFC3/IR, MULTIACCUM, GRISM1024	F140W	SAMP-SEQ=RAPID; NSAMP=2	POS TARG -40,+0	Sequence 15-16 Non-Int in GD71 G102 and G141 (02)	5.864582 Secs (5.865 Secs)	
								[==>]	***[1]***

Orbit Structure



Visit

Proposal 17367, GRW+70 G102 and G141 (03) Thu Aug 10 13:00:34 GMT 2023

Diagnostic Status: No Diagnostics

Scientific Instruments: WFC3/IR

Special Requirements: ORIENT 160D TO 315 D; ORIENT 340D TO 130 D; BETWEEN 15-DEC-2023:00:00:00 AND 15-MAR-2024:00:00:00

Comments: Visit targetting GRW+70

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Fluxes	Miscellaneous
(3)	GRW+70D5824	RA: 13 38 50.4781 (204.7103254d)	Proper Motion RA: -402.093 mas/yr	V=12.773	Reference Frame: ICRS
	Alt Name1: HIP-66578	Dec: +70 17 7.64 (70.28546d)	Proper Motion Dec: -24.608 mas/yr	J = 13.25	
		Equinox: J2000	Parallax: 0.03771"		
			Epoch of Position: 2000		

Comments: GRW+70 is specifically chosen for the WFC3 IR grism calibration because it will provide an aditional flux calibration target (GD-153 is used in SMOV for the IR grism calibration), so that the calibration is not based on a single target. An additional calibration target also minimizes the potential for problems from other nearby sources in the field.

The original flux monitor observed GD71 and GD153 at a range of detector positions but was reduced to a single orbit of GD153 based on the stability of the initial calibration. Using a longer time baseline, a decrease in sensitivity of ~0.1% per year has been measured, so GRW+70 was added (and GD71 resumed) to more accurately track these time-dependent losses.
Category=CALIBRATION
Description=[PHOTOMETRIC]

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	In -20 -0 F098M	(3) GRW+70D5824	WFC3/IR, MULTIACCUM, GRISM1024	F098M	SAMP-SEQ=RAPID; NSAMP=2	POS TARG -20,-0	Sequence 1-2 Non-Int in GRW+70 G102 and G141 (03)	5.864582 Secs (5.865 Secs) *[==>]*	***[1]***
2	In -20 -0 G102	(3) GRW+70D5824	WFC3/IR, MULTIACCUM, GRISM1024	G102	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -20,-0	Sequence 1-2 Non-Int in GRW+70 G102 and G141 (03)	102.934351 Secs (102.934 Secs) *[==>]*	***[1]***
3	In -20 +15 G102	(3) GRW+70D5824	WFC3/IR, MULTIACCUM, GRISM1024	G102	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -20,+15	Sequence 3-4 Non-Int in GRW+70 G102 and G141 (03)	102.934351 Secs (102.934 Secs) *[==>]*	***[1]***
4	In -20 +15 F098M	(3) GRW+70D5824	WFC3/IR, MULTIACCUM, GRISM1024	F098M	SAMP-SEQ=RAPID; NSAMP=2	POS TARG -20,+15	Sequence 3-4 Non-Int in GRW+70 G102 and G141 (03)	5.864582 Secs (5.865 Secs) *[==>]*	***[1]***
5	In -20 -15 F098M	(3) GRW+70D5824	WFC3/IR, MULTIACCUM, GRISM1024	F098M	SAMP-SEQ=RAPID; NSAMP=2	POS TARG -20,-15	Sequence 5-6 Non-Int in GRW+70 G102 and G141 (03)	5.864582 Secs (5.865 Secs) *[==>]*	***[1]***
6	In -20 -15 G102	(3) GRW+70D5824	WFC3/IR, MULTIACCUM, GRISM1024	G102	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -20,-15	Sequence 5-6 Non-Int in GRW+70 G102 and G141 (03)	102.934351 Secs (102.934 Secs) *[==>]*	***[1]***
7	In -40 +0 G102	(3) GRW+70D5824	WFC3/IR, MULTIACCUM, GRISM1024	G102	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -40,+0	Sequence 7-8 Non-Int in GRW+70 G102 and G141 (03)	102.934351 Secs (102.934 Secs) *[==>]*	***[1]***
8	In -40 +0 F098M	(3) GRW+70D5824	WFC3/IR, MULTIACCUM, GRISM1024	F098M	SAMP-SEQ=RAPID; NSAMP=2	POS TARG -40,+0	Sequence 7-8 Non-Int in GRW+70 G102 and G141 (03)	5.864582 Secs (5.865 Secs) *[==>]*	***[1]***
9	In -20 -0 F140W	(3) GRW+70D5824	WFC3/IR, MULTIACCUM, GRISM1024	F140W	SAMP-SEQ=RAPID; NSAMP=2	POS TARG -20,-0	Sequence 9-10 Non-Int in GRW+70 G102 and G141 (03)	5.864582 Secs (5.865 Secs) *[==>]*	***[1]***
10	In -20 -0 G141	(3) GRW+70D5824	WFC3/IR, MULTIACCUM, GRISM1024	G141	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -20,-0	Sequence 9-10 Non-Int in GRW+70 G102 and G141 (03)	102.934351 Secs (102.934 Secs) *[==>]*	***[1]***
11	In -20 +15 G141	(3) GRW+70D5824	WFC3/IR, MULTIACCUM, GRISM1024	G141	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -20,+15	Sequence 11-12 Non-Int in GRW+70 G102 and G141 (03)	102.934351 Secs (102.934 Secs) *[==>]*	***[1]***
12	In -20 +15 F140W	(3) GRW+70D5824	WFC3/IR, MULTIACCUM, GRISM1024	F140W	SAMP-SEQ=RAPID; NSAMP=2	POS TARG -20,+15	Sequence 11-12 Non-Int in GRW+70 G102 and G141 (03)	5.864582 Secs (5.865 Secs) *[==>]*	***[1]***
13	In -20 -15 F140W	(3) GRW+70D5824	WFC3/IR, MULTIACCUM, GRISM1024	F140W	SAMP-SEQ=RAPID; NSAMP=2	POS TARG -20,-15	Sequence 13-14 Non-Int in GRW+70 G102 and G141 (03)	5.864582 Secs (5.865 Secs) *[==>]*	***[1]***
14	In -20 -15 G141	(3) GRW+70D5824	WFC3/IR, MULTIACCUM, GRISM1024	G141	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -20,-15	Sequence 13-14 Non-Int in GRW+70 G102 and G141 (03)	102.934351 Secs (102.934 Secs) *[==>]*	***[1]***
15	In -40 +0 G141	(3) GRW+70D5824	WFC3/IR, MULTIACCUM, GRISM1024	G141	SAMP-SEQ=SPARS25; NSAMP=5	POS TARG -40,+0	Sequence 15-16 Non-Int in GRW+70 G102 and G141 (03)	102.934351 Secs (102.934 Secs) *[==>]*	***[1]***
16	In -40 +0 F140W	(3) GRW+70D5824	WFC3/IR, MULTIACCUM, GRISM1024	F140W	SAMP-SEQ=RAPID; NSAMP=2	POS TARG -40,+0	Sequence 15-16 Non-Int in GRW+70 G102 and G141 (03)	5.864582 Secs (5.865 Secs) *[==>]*	***[1]***

Orbit Structure