17187 - Observing the Ice Giants with Hubble WFC3 to Enhance Cycle 1 James Webb Space Telescope Data

Cycle: 30, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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Dr. Stefanie N. Milam (CoI)	NASA Goddard Space Flight Center	stefanie.n.milam@nasa.gov
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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) URANUS	WFC3/UVIS	1	22-Oct-2022 12:00:20.0	yes
02	(1) URANUS	WFC3/UVIS	1	22-Oct-2022 12:00:21.0	yes
03	(1) URANUS	WFC3/UVIS	1	22-Oct-2022 12:00:23.0	yes
04	(1) URANUS	WFC3/UVIS	1	22-Oct-2022 12:00:24.0	yes
05	(2) NEPTUNE	WFC3/UVIS	1	22-Oct-2022 12:00:25.0	yes
06	(2) NEPTUNE	WFC3/UVIS	1	22-Oct-2022 12:00:27.0	yes
07	(2) NEPTUNE	WFC3/UVIS	1	22-Oct-2022 12:00:28.0	yes

Visit	*Targets used in Visit*	*Configurations used in Visit*	*Orbits Used*	*Last Orbit Planner Run*	*OP Current with Visit?*
08	(2) NEPTUNE	WFC3/UVIS	1	22-Oct-2022 12:00:29.0	yes
09	(2) NEPTUNE	WFC3/UVIS	1	22-Oct-2022 12:00:31.0	yes
10	(2) NEPTUNE	WFC3/UVIS	1	22-Oct-2022 12:00:32.0	yes
11	(2) NEPTUNE	WFC3/UVIS	1	22-Oct-2022 12:00:34.0	yes
12	(2) NEPTUNE	WFC3/UVIS	1	22-Oct-2022 12:00:35.0	yes

12 Total Orbits Used

ABSTRACT

The JWST will provide exceptional near- and mid-infrared spectral coverage of the Ice Giants via guaranteed time observations in Cycle 1 (Programs 1248 and 1249), capturing new, critical information on their atmospheric temperatures, their chemical structures, and the flow of energy between their cloud-forming weather layer and their middle and upper atmospheres. However, the JWST data cannot be interpreted reliably without context. JWST observations provide only brief snapshots of these two highly dynamic worlds, requiring temporal context to understand how the atmospheres have varied with time, and spatial context to understand the distribution of meteorological features during the JWST observations. The HST campaign offers a critical extension of spectral coverage into the visible that will be capable of detecting important features like dark spots and their bright cloud companions. HST is the only facility capable of the high-resolution at visible- specifically blue- wavelengths. We therefore propose a HST GO campaign using the WFC3 instrument in UVIS observing mode to provide complementary, comparative, and synergistic science alongside the JWST Cycle 1 Guaranteed-Time Observations (GTO) of these distant, cold, and exceptional worlds. From a strategic perspective, as the international planetary community looks ahead to future NASA and ESA missions to the ice giants, this combined Hubble and JWST campaign will pave the way for more robust understanding of these distant worlds.

OBSERVING DESCRIPTION

Four orbits for each visit for each planet. To match the JWST observing windows that occur in Cycle 30, we request 1 visit for Uranus and 2 for Neptune, totaling 12 orbits. With 16 to 17-hr rotation periods, each orbit should be separated by ~4 hours to give global coverage.

The filters were chosen to match these objectives and fit within an orbit. As Uranus and Neptune are small targets, we can use subarrays to minimize the readout time and maximize the number of images. We will exclusively use the C512C subarray, which also minimizes charge transfer losses due

to its proximity to the readout amplifiers. Additionally, these are faint targets and will be dominated by pixel instability, so we will dither the observations to lessen this effect.

Visit

Proposal 17187, URANUS_23V1-A (01), implementation Sat Oct 22 16:00:36 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 22-DEC-2022 AND 08-FEB-2023

Comments: Uranus in window 22-DEC-2022 to 08-FEB-2023 as close as possible to the JWST observations in program 1248.

4 orbits. Visit 4 after visit 1 by between 9 and 11 orbits. All visits spaced out as evenly as possible within the 17 hour 14 minute Uranian day, with ideally 2- or 3-orbit gaps between them (ideal spacing is 4 hours). 1-orbit gaps are too close.

Impingement into SAA is OK if the above timing gaps cannot prevent it. We can tolerate gyro bias updates to ease the contiguous orbit constraints, and will work with our program contacts to fit them in.

3-gyro mode may be necessary as this is a moving target.

Diagnostics

(F763M (01.001)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F845M (01.002)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F657N (01.003)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

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(FQ727N_quadD (01.009)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ727N_quadD (01.009)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

(FQ619N_quadA (01.010)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ619N_quadA (01.010)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(3-4)
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.725 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(9)

Solar System Targets

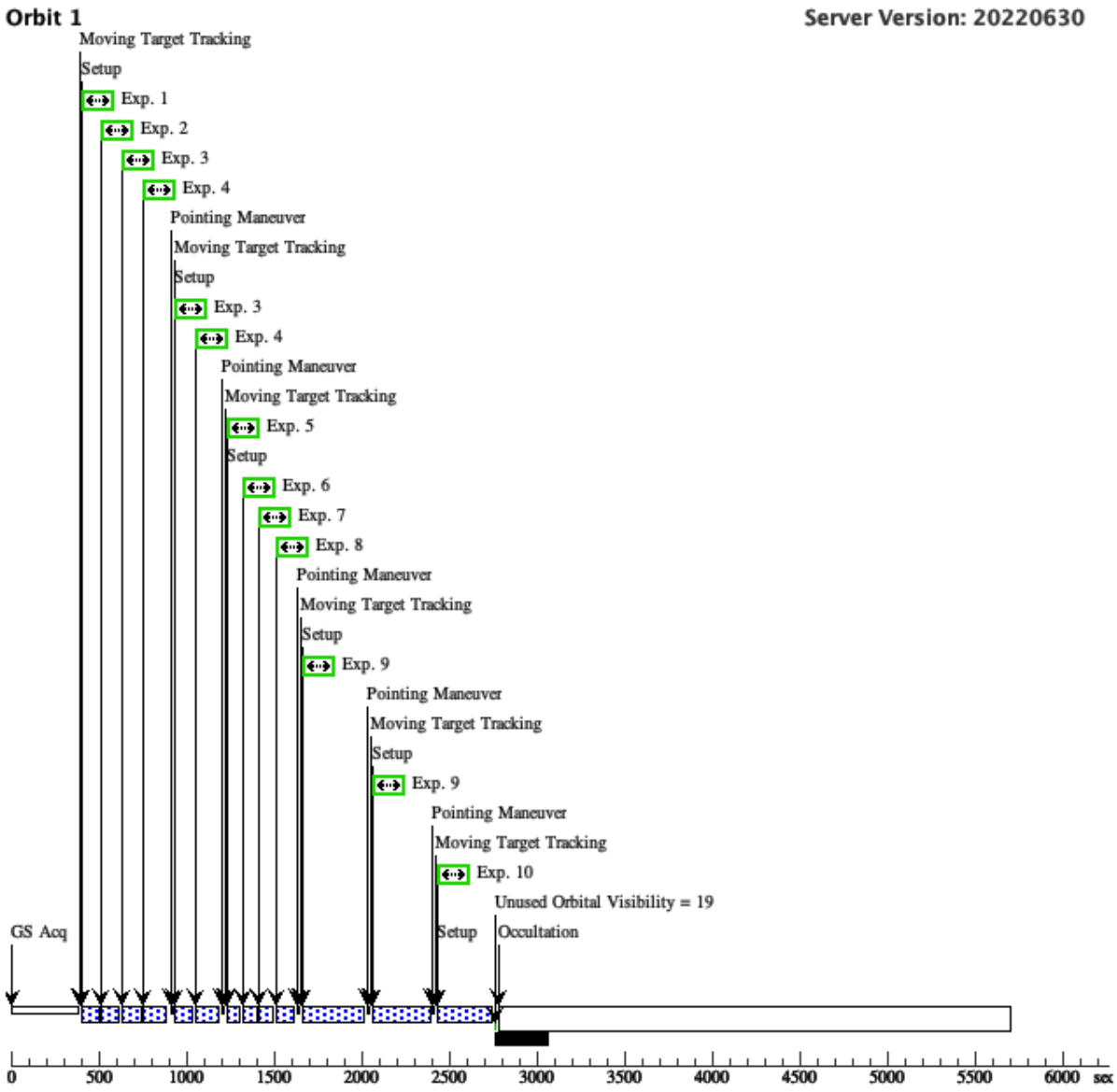
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	URANUS	STD=URANUS				EARTH

Comments: Description=PLANET URANUS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F763M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-A (01)	25 Secs (25 Secs) *[==>]*	 ***[1]***
2	F845M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-A (01)	35 Secs (35 Secs) *[==>]*	 ***[1]***
3	F657N	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F657N	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-A (01) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in URANUS_23V1-A (01) (1)	40 Secs (80 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
4	F487N	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F487N	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-A (01) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in URANUS_23V1-A (01) (1)	60 Secs (120 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
5	F467M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F467M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-A (01)	14 Secs (14 Secs) *[==>]*	 ***[1]***
6	F547M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F547M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-A (01)	6 Secs (6 Secs) *[==>]*	 ***[1]***
7	F763M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-A (01)	25 Secs (25 Secs) *[==>]*	 ***[1]***
8	F845M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-A (01)	35 Secs (35 Secs) *[==>]*	 ***[1]***
9	FQ727N_quadD	(1) URANUS	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ727N	CR-SPLIT=NO	POS TARG -24,+28	Sequence 1-10 Non-Int in URANUS_23V1-A (01) Pattern 2, Exps 9-9 in Sequence 1-10 Non-Int in URANUS_23V1-A (01) (2)	160 Secs (320 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
10	FQ619N_quadA	(1) URANUS	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ619N	CR-SPLIT=NO	POS TARG +19,-23	Sequence 1-10 Non-Int in URANUS_23V1-A (01)	144 Secs (144 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 17187, URANUS_23V1-B (02), implementation Sat Oct 22 16:00:36 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: AFTER 01 BY 1.9 Orbits TO 3.1 Orbits; BETWEEN 22-DEC-2022 AND 08-FEB-2023

Comments: Uranus in window 22-DEC-2022 to 08-FEB-2023 as close as possible to the JWST observations in program 1248.

4 orbits. Visit 4 after visit 1 by between 9 and 11 orbits. All visits spaced out as evenly as possible within the 17 hour 14 minute Uranian day, with ideally 2- or 3-orbit gaps between them (ideal spacing is 4 hours). 1-orbit gaps are too close.

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Diagnostics

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Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(3-4)
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.725 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(9)

Solar System Targets

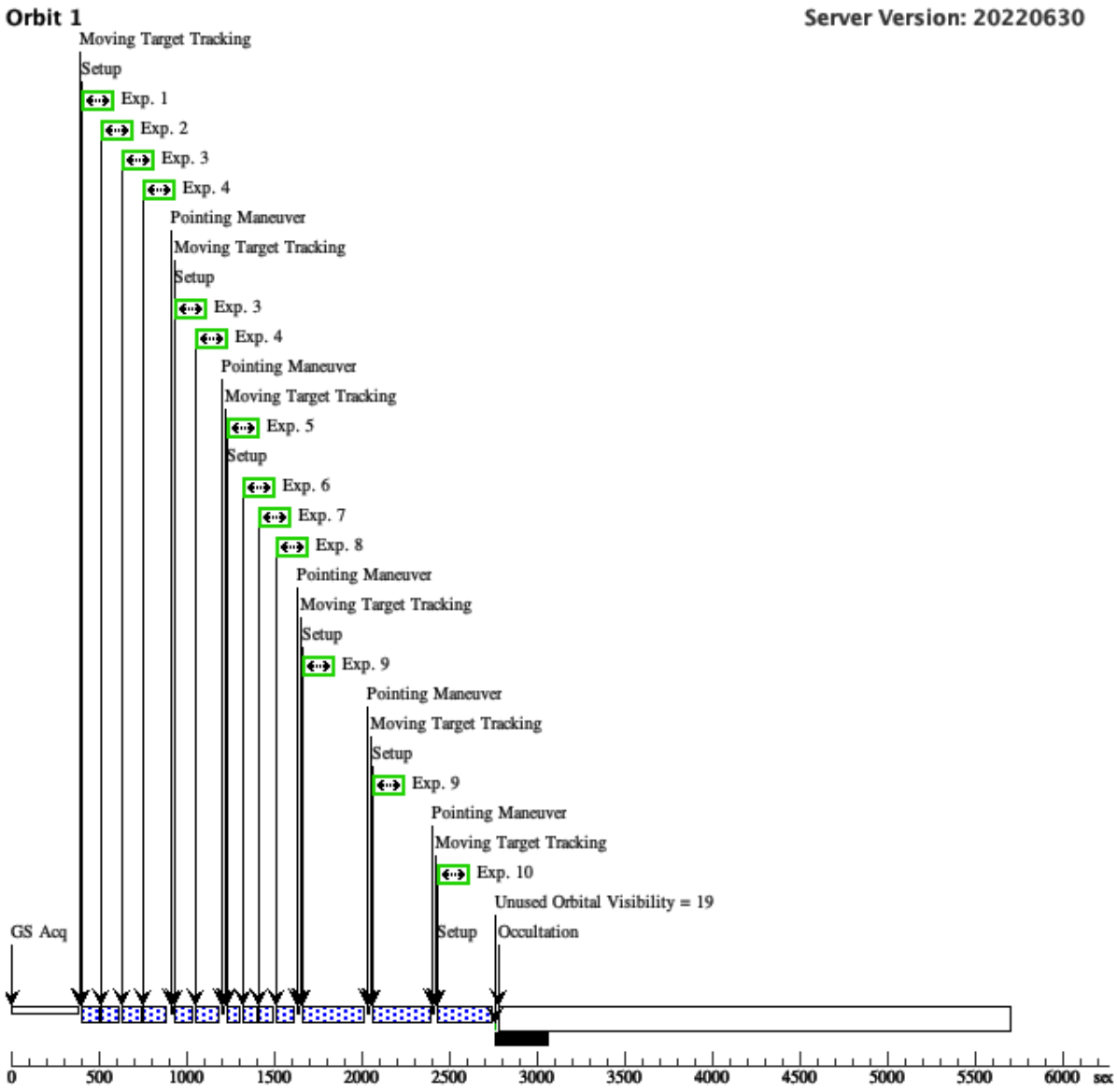
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	URANUS	STD=URANUS				EARTH

Comments: Description=PLANET URANUS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F763M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-B (02)	25 Secs (25 Secs) *[==>]*	 ***[1]***
2	F845M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-B (02)	35 Secs (35 Secs) *[==>]*	 ***[1]***
3	F657N	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F657N	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-B (02) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in URANUS_23V1-B (02) (1)	40 Secs (80 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
4	F487N	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F487N	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-B (02) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in URANUS_23V1-B (02) (1)	60 Secs (120 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
5	F467M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F467M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-B (02)	14 Secs (14 Secs) *[==>]*	 ***[1]***
6	F547M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F547M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-B (02)	6 Secs (6 Secs) *[==>]*	 ***[1]***
7	F763M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-B (02)	25 Secs (25 Secs) *[==>]*	 ***[1]***
8	F845M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-B (02)	35 Secs (35 Secs) *[==>]*	 ***[1]***
9	FQ727N_quadD	(1) URANUS	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ727N	CR-SPLIT=NO	POS TARG -24,+28	Sequence 1-10 Non-Int in URANUS_23V1-B (02) Pattern 2, Exps 9-9 in Sequence 1-10 Non-Int in URANUS_23V1-B (02) (2)	160 Secs (320 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
10	FQ619N_quadA	(1) URANUS	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ619N	CR-SPLIT=NO	POS TARG +19,-23	Sequence 1-10 Non-Int in URANUS_23V1-B (02)	144 Secs (144 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 17187, URANUS_23V1-C (03), implementation Sat Oct 22 16:00:36 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: AFTER 02 BY 1.9 Orbits TO 3.1 Orbits; BETWEEN 22-DEC-2022 AND 08-FEB-2023

Comments: Uranus in window 22-DEC-2022 to 08-FEB-2023 as close as possible to the JWST observations in program 1248.

4 orbits. Visit 4 after visit 1 by between 9 and 11 orbits. All visits spaced out as evenly as possible within the 17 hour 14 minute Uranian day, with ideally 2- or 3-orbit gaps between them (ideal spacing is 4 hours). 1-orbit gaps are too close.

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Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(3-4)
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.725 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(9)

Solar System Targets

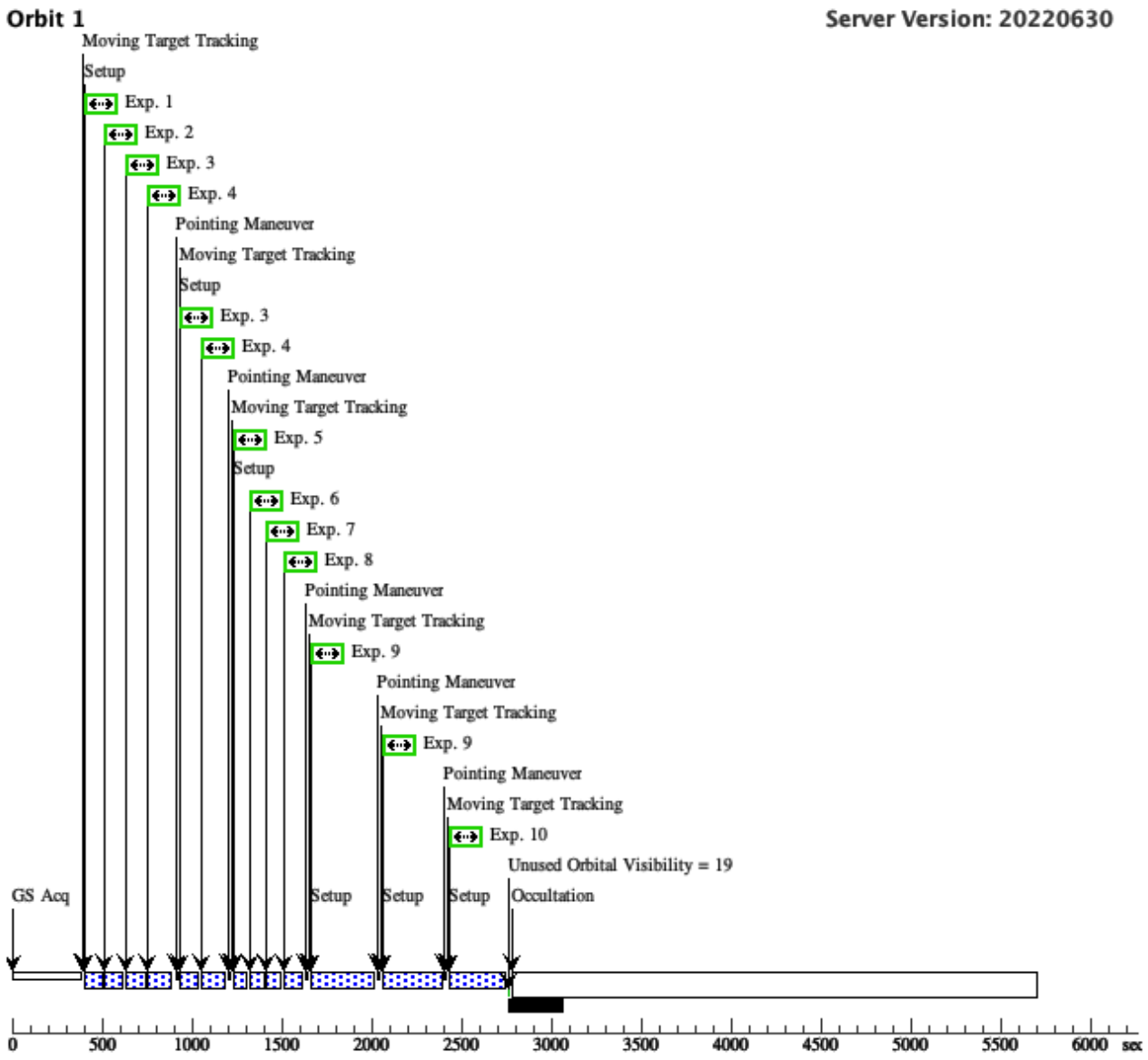
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	URANUS	STD=URANUS				EARTH

Comments: Description=PLANET URANUS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F763M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-C (03)	25 Secs (25 Secs) *[==>]*	 ***[1]***
2	F845M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-C (03)	35 Secs (35 Secs) *[==>]*	 ***[1]***
3	F657N	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F657N	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-C (03) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in URANUS_23V1-C (03) (1)	40 Secs (80 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
4	F487N	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F487N	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-C (03) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in URANUS_23V1-C (03) (1)	60 Secs (120 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
5	F467M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F467M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-C (03)	14 Secs (14 Secs) *[==>]*	 ***[1]***
6	F547M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F547M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-C (03)	6 Secs (6 Secs) *[==>]*	 ***[1]***
7	F763M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-C (03)	25 Secs (25 Secs) *[==>]*	 ***[1]***
8	F845M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-C (03)	35 Secs (35 Secs) *[==>]*	 ***[1]***
9	FQ727N_quadD	(1) URANUS	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ727N	CR-SPLIT=NO	POS TARG -24,+28	Sequence 1-10 Non-Int in URANUS_23V1-C (03) Pattern 2, Exps 9-9 in Sequence 1-10 Non-Int in URANUS_23V1-C (03) (2)	160 Secs (320 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
10	FQ619N_quadA	(1) URANUS	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ619N	CR-SPLIT=NO	POS TARG +19,-23	Sequence 1-10 Non-Int in URANUS_23V1-C (03)	144 Secs (144 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 17187, URANUS_23V1-D (04), implementation Sat Oct 22 16:00:36 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: AFTER 03 BY 1.9 Orbits TO 3.1 Orbits; BETWEEN 22-DEC-2022 AND 08-FEB-2023

Comments: Uranus in window 22-DEC-2022 to 08-FEB-2023 as close as possible to the JWST observations in program 1248.

4 orbits. Visit 4 after visit 1 by between 9 and 11 orbits. All visits spaced out as evenly as possible within the 17 hour 14 minute Uranian day, with ideally 2- or 3-orbit gaps between them (ideal spacing is 4 hours). 1-orbit gaps are too close.

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3-gyro mode may be necessary as this is a moving target.

Diagnostics

(F763M (04.001)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F845M (04.002)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F657N (04.003)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F487N (04.004)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F467M (04.005)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F547M (04.006)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F763M (04.007)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F845M (04.008)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ727N_quadD (04.009)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ727N_quadD (04.009)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

(FQ619N_quadA (04.010)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ619N_quadA (04.010)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(3-4)
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.725 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(9)

Solar System Targets

#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(1)	URANUS	STD=URANUS				EARTH

Comments: Description=PLANET URANUS

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F763M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-D (04)	25 Secs (25 Secs) *[==>]*	 ***[1]***
2	F845M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-D (04)	35 Secs (35 Secs) *[==>]*	 ***[1]***
3	F657N	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F657N	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-D (04) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in URANUS_23V1-D (04) (1)	40 Secs (80 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
4	F487N	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F487N	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-D (04) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in URANUS_23V1-D (04) (1)	60 Secs (120 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
5	F467M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F467M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-D (04)	14 Secs (14 Secs) *[==>]*	 ***[1]***
6	F547M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F547M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-D (04)	6 Secs (6 Secs) *[==>]*	 ***[1]***
7	F763M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-D (04)	25 Secs (25 Secs) *[==>]*	 ***[1]***
8	F845M	(1) URANUS	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in URANUS_23V1-D (04)	35 Secs (35 Secs) *[==>]*	 ***[1]***
9	FQ727N_quadD	(1) URANUS	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ727N	CR-SPLIT=NO	POS TARG -24,+28	Sequence 1-10 Non-Int in URANUS_23V1-D (04) Pattern 2, Exps 9-9 in Sequence 1-10 Non-Int in URANUS_23V1-D (04) (2)	160 Secs (320 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
10	FQ619N_quadA	(1) URANUS	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ619N	CR-SPLIT=NO	POS TARG +19,-23	Sequence 1-10 Non-Int in URANUS_23V1-D (04)	144 Secs (144 Secs) *[==>]*	 ***[1]***

Orbit Structure

Visit

Proposal 17187, NEPTUNE_23V1-A (05), implementation Sat Oct 22 16:00:36 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 01-JAN-2023:00:00:00 AND 15-FEB-2023:00:00:00

Comments: Neptune in first window 01-NOV-2022 to 19-DEC-2022 (very flexible due to JWST observations not being sceduled in this window, just needs to be separated in time as much as possible from both the 2022 OPAL Neptune and window 2 in 2023).

4 orbits. Visit 4 after visit 1 by between 9 and 11 orbits. All visits spaced out as evenly as possible within the 16 hour 6 minute Neptunian day, with ideally 2- or 3-orbit gaps between them (ideal spacing is 4 hours). 1-orbit gaps are too close.

Impingement into SAA is OK if the above timing gaps cannot prevent it. We can tolerate gyro bias updates to ease the contiguous orbit constraints, and will work with our program contacts to fit them in. 3-gyro mode may be necessary as this is a moving target.

Diagnostics

(F763M (05.001)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F845M (05.002)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F467M (05.003)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F487N (05.004)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F547M (05.005)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F657N (05.006)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F763M (05.007)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F845M (05.008)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ727N_quadD (05.009)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ727N_quadD (05.009)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

(FQ619N_quadA (05.010)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ619N_quadA (05.010)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(3-4)
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.725 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(9)

Solar System Targets

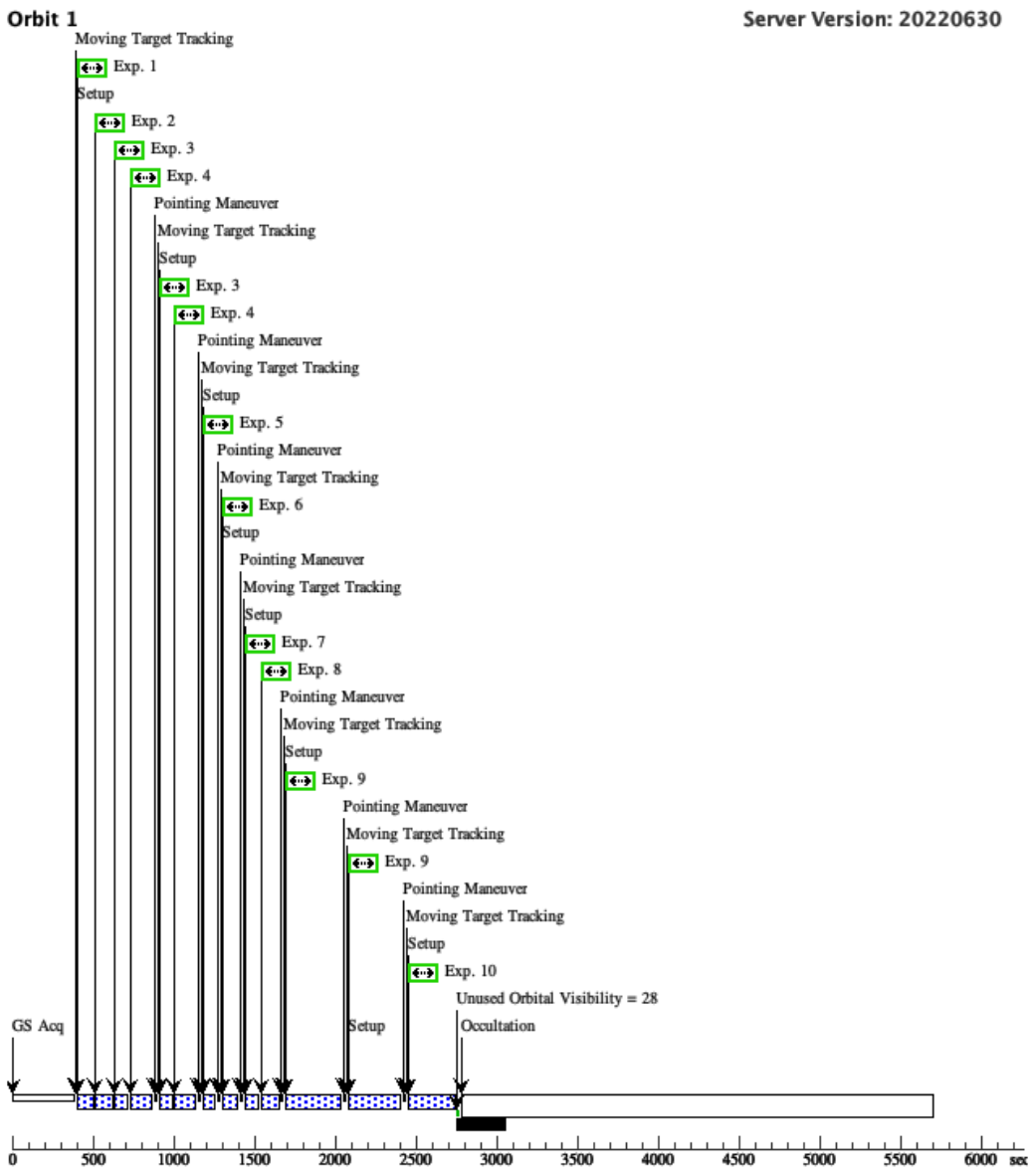
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(2)	NEPTUNE	STD=NEPTUNE				EARTH

Comments: Description=PLANET NEPTUNE

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F763M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-A (05)	20 Secs (20 Secs) *[==>]*	 ***[1]***
2	F845M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-A (05)	40 Secs (40 Secs) *[==>]*	 ***[1]***
3	F467M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F467M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-A (05) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in NEPTUNE_23V1-A (05) (1)	15 Secs (30 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
4	F487N	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F487N	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-A (05) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in NEPTUNE_23V1-A (05) (1)	60 Secs (120 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
5	F547M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F547M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-A (05)	6 Secs (6 Secs) *[==>]*	 ***[1]***
6	F657N	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F657N	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-A (05)	30 Secs (30 Secs) *[==>]*	 ***[1]***
7	F763M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-A (05)	20 Secs (20 Secs) *[==>]*	 ***[1]***
8	F845M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-A (05)	40 Secs (40 Secs) *[==>]*	 ***[1]***
9	FQ727N_quadD	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ727N	CR-SPLIT=NO	POS TARG -25,+28	Sequence 1-10 Non-Int in NEPTUNE_23V1-A (05) Pattern 2, Exps 9-9 in Sequence 1-10 Non-Int in NEPTUNE_23V1-A (05) (2)	150 Secs (300 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
10	FQ619N_quadA	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ619N	CR-SPLIT=NO	POS TARG +20,-24	Sequence 1-10 Non-Int in NEPTUNE_23V1-A (05)	120 Secs (120 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 17187, NEPTUNE_23V1-B (06), implementation Sat Oct 22 16:00:36 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: AFTER 05 BY 1.9 Orbits TO 3.1 Orbits; BETWEEN 01-JAN-2023:00:00:00 AND 15-FEB-2023:00:00:00

Comments: Neptune in first window 01-NOV-2022 to 19-DEC-2022 (very flexible due to JWST observations not being sceduled in this window, just needs to be separated in time as much as possible from both the 2022 OPAL Neptune and window 2 in 2023).

4 orbits. Visit 4 after visit 1 by between 9 and 11 orbits. All visits spaced out as evenly as possible within the 16 hour 6 minute Neptunian day, with ideally 2- or 3-orbit gaps between them (ideal spacing is 4 hours). 1-orbit gaps are too close.

Impingement into SAA is OK if the above timing gaps cannot prevent it. We can tolerate gyro bias updates to ease the contiguous orbit constraints, and will work with our program contacts to fit them in. 3-gyro mode may be necessary as this is a moving target.

Diagnostics

(F763M (06.001)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F845M (06.002)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F467M (06.003)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F487N (06.004)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F547M (06.005)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F657N (06.006)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F763M (06.007)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F845M (06.008)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ727N_quadD (06.009)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ727N_quadD (06.009)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

(FQ619N_quadA (06.010)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ619N_quadA (06.010)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(3-4)
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.725 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(9)

Solar System Targets

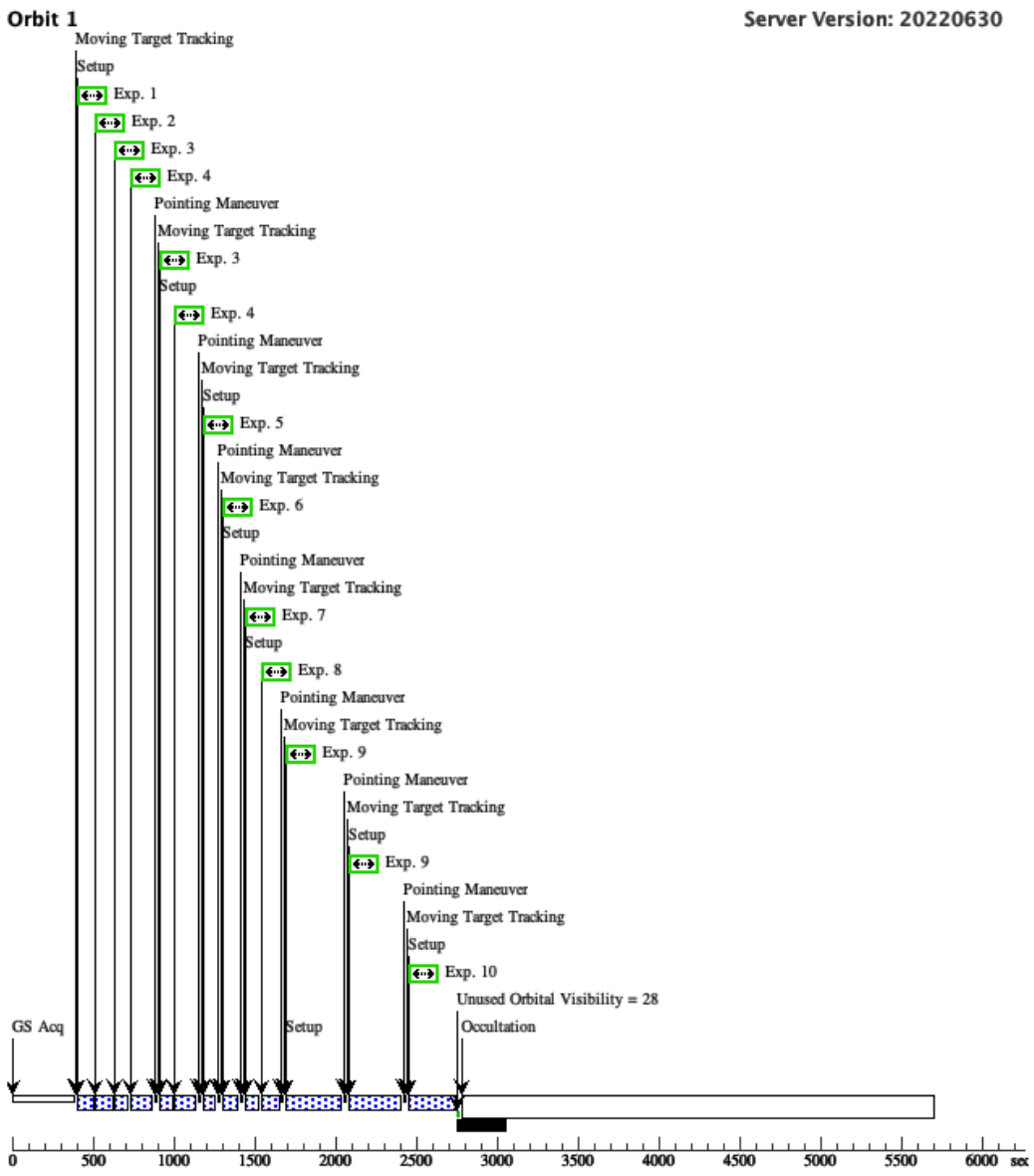
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(2)	NEPTUNE	STD=NEPTUNE				EARTH

Comments: Description=PLANET NEPTUNE

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F763M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-B (06)	20 Secs (20 Secs) *[==>]*	 ***[1]***
2	F845M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-B (06)	40 Secs (40 Secs) *[==>]*	 ***[1]***
3	F467M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F467M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-B (06) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in NEPTUNE_23V1-B (06) (1)	15 Secs (30 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
4	F487N	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F487N	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-B (06) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in NEPTUNE_23V1-B (06) (1)	60 Secs (120 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
5	F547M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F547M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-B (06)	6 Secs (6 Secs) *[==>]*	 ***[1]***
6	F657N	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F657N	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-B (06)	30 Secs (30 Secs) *[==>]*	 ***[1]***
7	F763M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-B (06)	20 Secs (20 Secs) *[==>]*	 ***[1]***
8	F845M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-B (06)	40 Secs (40 Secs) *[==>]*	 ***[1]***
9	FQ727N_quadD	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ727N	CR-SPLIT=NO	POS TARG -25,+28	Sequence 1-10 Non-Int in NEPTUNE_23V1-B (06) Pattern 2, Exps 9-9 in Sequence 1-10 Non-Int in NEPTUNE_23V1-B (06) (2)	150 Secs (300 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
10	FQ619N_quadA	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ619N	CR-SPLIT=NO	POS TARG +20,-24	Sequence 1-10 Non-Int in NEPTUNE_23V1-B (06)	120 Secs (120 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 17187, NEPTUNE_23V1-C (07), implementation Sat Oct 22 16:00:36 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: AFTER 06 BY 1.9 Orbits TO 3.1 Orbits; BETWEEN 01-JAN-2023:00:00:00 AND 15-FEB-2023:00:00:00

Comments: Neptune in first window 01-NOV-2022 to 19-DEC-2022 (very flexible due to JWST observations not being sceduled in this window, just needs to be separated in time as much as possible from both the 2022 OPAL Neptune and window 2 in 2023).

4 orbits. Visit 4 after visit 1 by between 9 and 11 orbits. All visits spaced out as evenly as possible within the 16 hour 6 minute Neptunian day, with ideally 2- or 3-orbit gaps between them (ideal spacing is 4 hours). 1-orbit gaps are too close.

Impingement into SAA is OK if the above timing gaps cannot prevent it. We can tolerate gyro bias updates to ease the contiguous orbit constraints, and will work with our program contacts to fit them in. 3-gyro mode may be necessary as this is a moving target.

Diagnostics

(F763M (07.001)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F845M (07.002)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F467M (07.003)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F487N (07.004)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F547M (07.005)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F657N (07.006)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F763M (07.007)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F845M (07.008)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ727N_quadD (07.009)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ727N_quadD (07.009)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

(FQ619N_quadA (07.010)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ619N_quadA (07.010)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(3-4)
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.725 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(9)

Solar System Targets

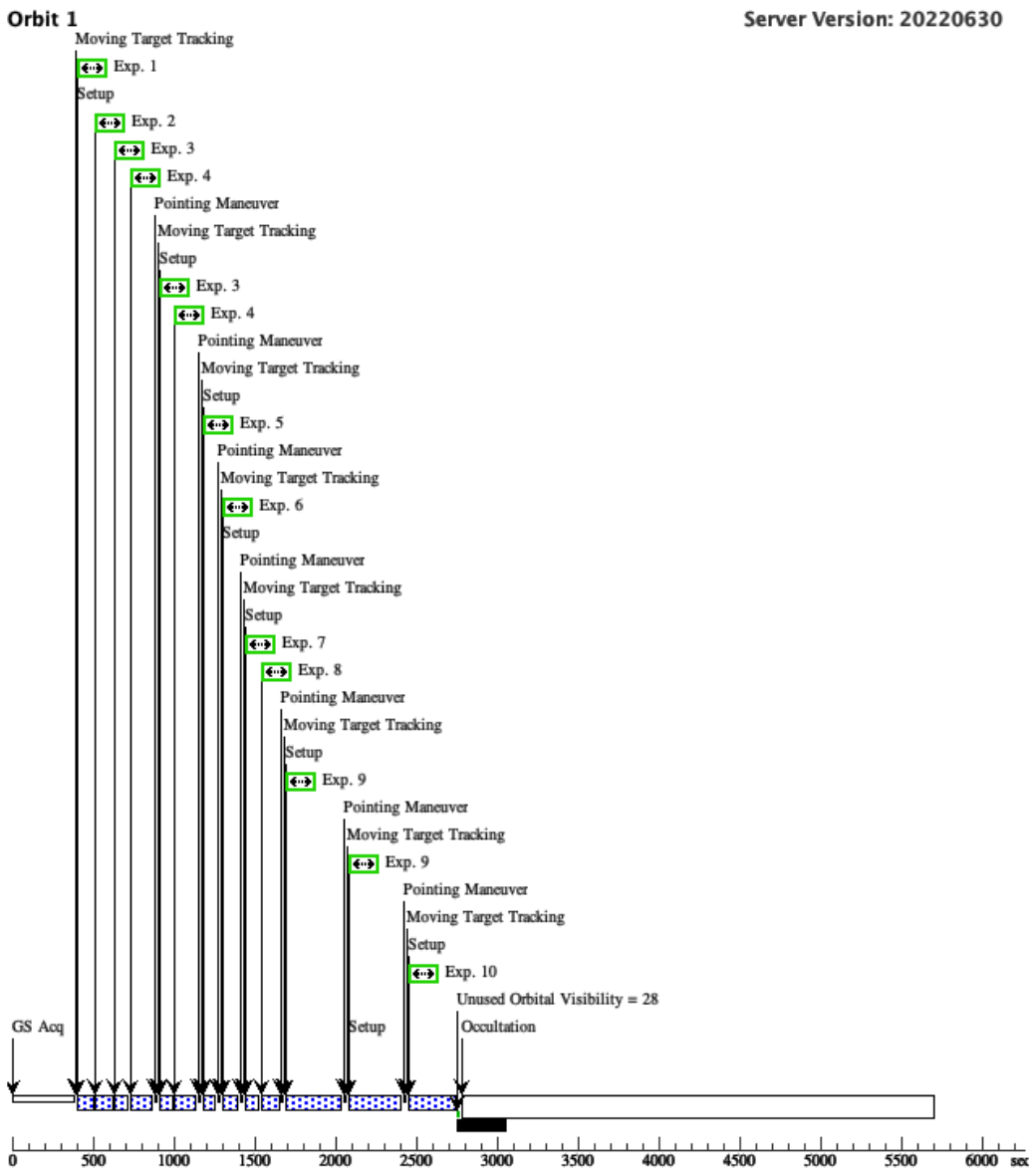
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(2)	NEPTUNE	STD=NEPTUNE				EARTH

Comments: Description=PLANET NEPTUNE

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F763M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-C (07)	20 Secs (20 Secs) *[==>]*	 ***[1]***
2	F845M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-C (07)	40 Secs (40 Secs) *[==>]*	 ***[1]***
3	F467M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F467M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-C (07) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in NEPTUNE_23V1-C (07) (1)	15 Secs (30 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
4	F487N	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F487N	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-C (07) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in NEPTUNE_23V1-C (07) (1)	60 Secs (120 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
5	F547M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F547M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-C (07)	6 Secs (6 Secs) *[==>]*	 ***[1]***
6	F657N	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F657N	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-C (07)	30 Secs (30 Secs) *[==>]*	 ***[1]***
7	F763M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-C (07)	20 Secs (20 Secs) *[==>]*	 ***[1]***
8	F845M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-C (07)	40 Secs (40 Secs) *[==>]*	 ***[1]***
9	FQ727N_quadD	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ727N	CR-SPLIT=NO	POS TARG -25,+28	Sequence 1-10 Non-Int in NEPTUNE_23V1-C (07) Pattern 2, Exps 9-9 in Sequence 1-10 Non-Int in NEPTUNE_23V1-C (07) (2)	150 Secs (300 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
10	FQ619N_quadA	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ619N	CR-SPLIT=NO	POS TARG +20,-24	Sequence 1-10 Non-Int in NEPTUNE_23V1-C (07)	120 Secs (120 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 17187, NEPTUNE_23V1-D (08), implementation Sat Oct 22 16:00:37 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: AFTER 07 BY 1.9 Orbits TO 3.1 Orbits; BETWEEN 01-JAN-2023:00:00:00 AND 15-FEB-2023:00:00:00

Comments: Neptune in first window 01-NOV-2022 to 19-DEC-2022 (very flexible due to JWST observations not being sceduled in this window, just needs to be separated in time as much as possible from both the 2022 OPAL Neptune and window 2 in 2023).

4 orbits. Visit 4 after visit 1 by between 9 and 11 orbits. All visits spaced out as evenly as possible within the 16 hour 6 minute Neptunian day, with ideally 2- or 3-orbit gaps between them (ideal spacing is 4 hours). 1-orbit gaps are too close.

Impingement into SAA is OK if the above timing gaps cannot prevent it. We can tolerate gyro bias updates to ease the contiguous orbit constraints, and will work with our program contacts to fit them in. 3-gyro mode may be necessary as this is a moving target.

Diagnostics

(F763M (08.001)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F845M (08.002)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F467M (08.003)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F487N (08.004)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F547M (08.005)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F657N (08.006)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F763M (08.007)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F845M (08.008)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ727N_quadD (08.009)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ727N_quadD (08.009)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

(FQ619N_quadA (08.010)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ619N_quadA (08.010)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(3-4)
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.725 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(9)

Solar System Targets

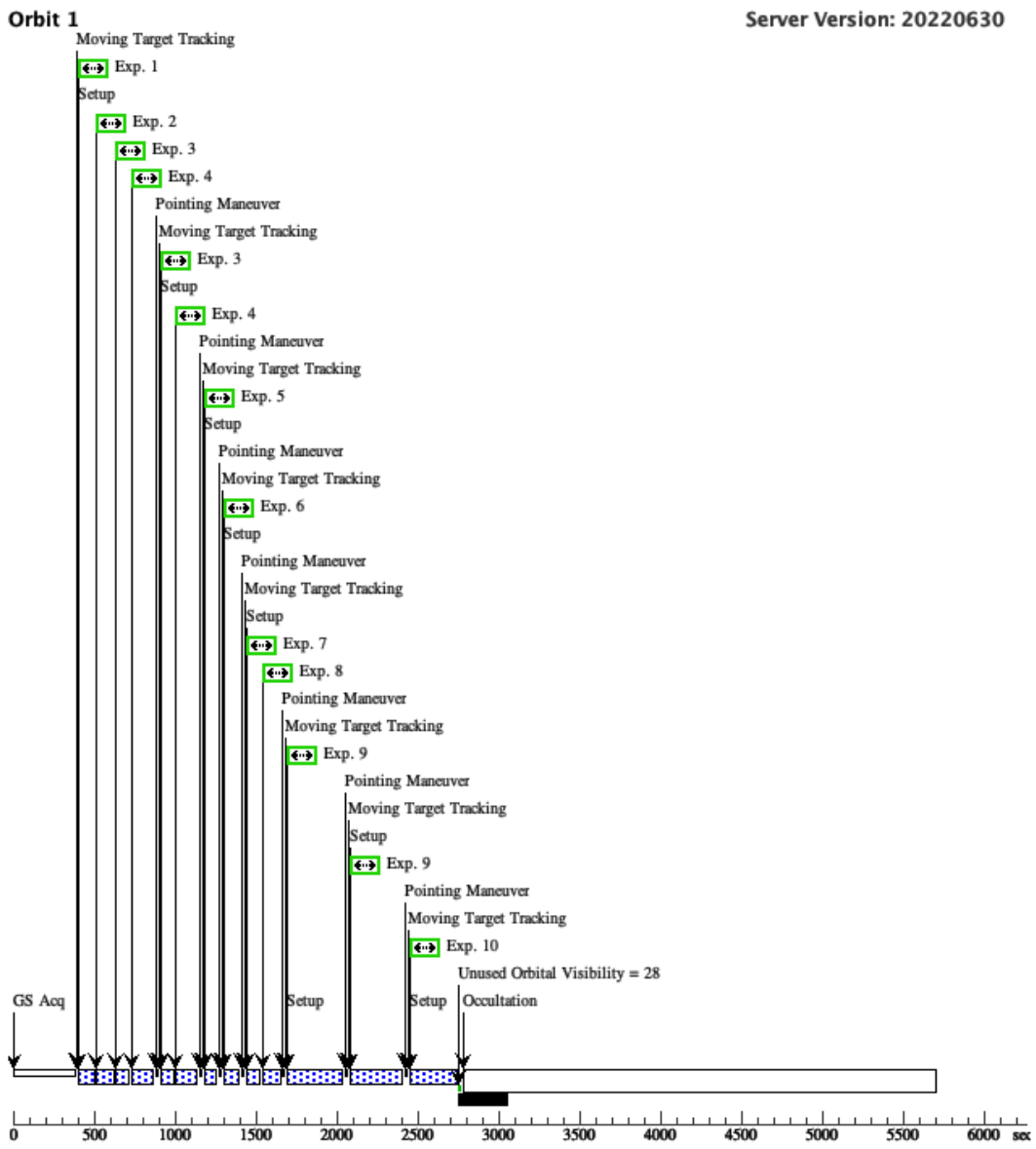
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(2)	NEPTUNE	STD=NEPTUNE				EARTH

Comments: Description=PLANET NEPTUNE

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F763M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-D (08)	20 Secs (20 Secs) *[==>]*	 ***[1]***
2	F845M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-D (08)	40 Secs (40 Secs) *[==>]*	 ***[1]***
3	F467M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F467M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-D (08) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in NEPTUNE_23V1-D (08) (1)	15 Secs (30 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
4	F487N	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F487N	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-D (08) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in NEPTUNE_23V1-D (08) (1)	60 Secs (120 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
5	F547M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F547M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-D (08)	6 Secs (6 Secs) *[==>]*	 ***[1]***
6	F657N	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F657N	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-D (08)	30 Secs (30 Secs) *[==>]*	 ***[1]***
7	F763M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-D (08)	20 Secs (20 Secs) *[==>]*	 ***[1]***
8	F845M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V1-D (08)	40 Secs (40 Secs) *[==>]*	 ***[1]***
9	FQ727N_quadD	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ727N	CR-SPLIT=NO	POS TARG -25,+28	Sequence 1-10 Non-Int in NEPTUNE_23V1-D (08) Pattern 2, Exps 9-9 in Sequence 1-10 Non-Int in NEPTUNE_23V1-D (08) (2)	150 Secs (300 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
10	FQ619N_quadA	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ619N	CR-SPLIT=NO	POS TARG +20,-24	Sequence 1-10 Non-Int in NEPTUNE_23V1-D (08)	120 Secs (120 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 17187, NEPTUNE_23V2-A (09), implementation Sat Oct 22 16:00:37 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: BETWEEN 13-JUN-2023 AND 26-JUN-2023

Comments: Neptune in first window 13-JUN-2023 to 26-JUN-2023 - as close as possible to the JWST observations in program 1249.

4 orbits. Visit 4 after visit 1 by between 9 and 11 orbits. All visits spaced out as evenly as possible within the 16 hour 6 minute Neptunian day, with ideally 2- or 3-orbit gaps between them (ideal spacing is 4 hours). 1-orbit gaps are too close.

Impingement into SAA is OK if the above timing gaps cannot prevent it. We can tolerate gyro bias updates to ease the contiguous orbit constraints, and will work with our program contacts to fit them in. 3-gyro mode may be necessary as this is a moving target.

Diagnostics

(F763M (09.001)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F845M (09.002)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F467M (09.003)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F487N (09.004)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F547M (09.005)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F657N (09.006)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F763M (09.007)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F845M (09.008)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ727N_quadD (09.009)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ727N_quadD (09.009)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

(FQ619N_quadA (09.010)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ619N_quadA (09.010)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(3-4)
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.725 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(9)

Solar System Targets

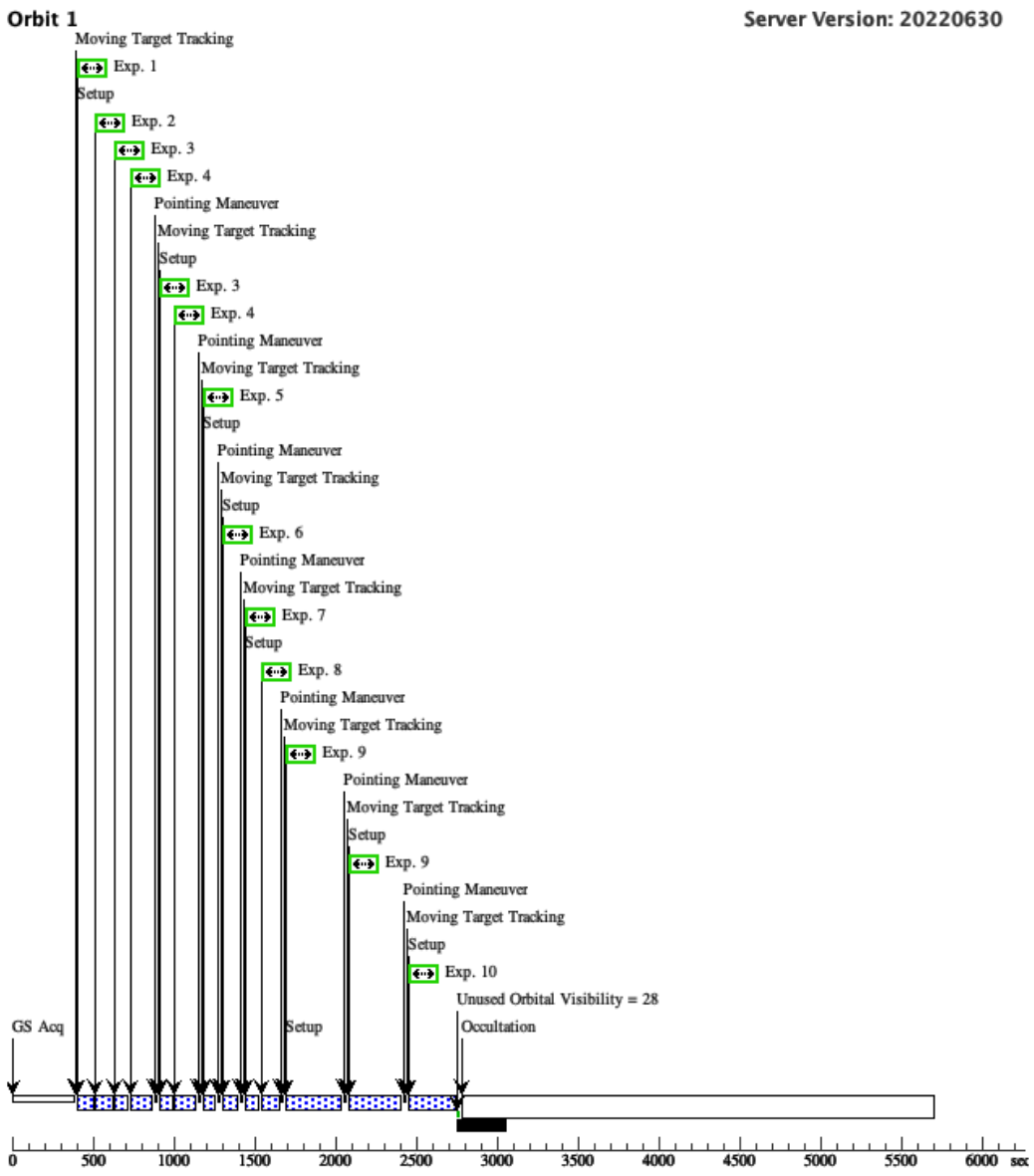
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(2)	NEPTUNE	STD=NEPTUNE				EARTH

Comments: Description=PLANET NEPTUNE

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F763M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-A (09)	20 Secs (20 Secs) *[==>]*	 ***[1]***
2	F845M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-A (09)	40 Secs (40 Secs) *[==>]*	 ***[1]***
3	F467M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F467M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-A (09) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in NEPTUNE_23V2-A (09) (1)	15 Secs (30 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
4	F487N	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F487N	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-A (09) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in NEPTUNE_23V2-A (09) (1)	60 Secs (120 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
5	F547M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F547M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-A (09)	6 Secs (6 Secs) *[==>]*	 ***[1]***
6	F657N	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F657N	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-A (09)	30 Secs (30 Secs) *[==>]*	 ***[1]***
7	F763M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-A (09)	20 Secs (20 Secs) *[==>]*	 ***[1]***
8	F845M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-A (09)	40 Secs (40 Secs) *[==>]*	 ***[1]***
9	FQ727N_quadD	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ727N	CR-SPLIT=NO	POS TARG -25,+28	Sequence 1-10 Non-Int in NEPTUNE_23V2-A (09) Pattern 2, Exps 9-9 in Sequence 1-10 Non-Int in NEPTUNE_23V2-A (09) (2)	150 Secs (300 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
10	FQ619N_quadA	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ619N	CR-SPLIT=NO	POS TARG +20,-24	Sequence 1-10 Non-Int in NEPTUNE_23V2-A (09)	120 Secs (120 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 17187, NEPTUNE_23V2-B (10), implementation Sat Oct 22 16:00:37 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: AFTER 09 BY 1.9 Orbits TO 3.1 Orbits; BETWEEN 13-JUN-2023 AND 26-JUN-2023

Comments: Neptune in first window 13-JUN-2023 to 26-JUN-2023 - as close as possible to the JWST observations in program 1249.

4 orbits. Visit 4 after visit 1 by between 9 and 11 orbits. All visits spaced out as evenly as possible within the 16 hour 6 minute Neptunian day, with ideally 2- or 3-orbit gaps between them (ideal spacing is 4 hours). 1-orbit gaps are too close.

Impingement into SAA is OK if the above timing gaps cannot prevent it. We can tolerate gyro bias updates to ease the contiguous orbit constraints, and will work with our program contacts to fit them in. 3-gyro mode may be necessary as this is a moving target.

Diagnostics

(F763M (10.001)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F845M (10.002)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F467M (10.003)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F487N (10.004)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F547M (10.005)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F657N (10.006)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F763M (10.007)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F845M (10.008)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ727N_quadD (10.009)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ727N_quadD (10.009)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

(FQ619N_quadA (10.010)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ619N_quadA (10.010)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(3-4)
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.725 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(9)

Solar System Targets

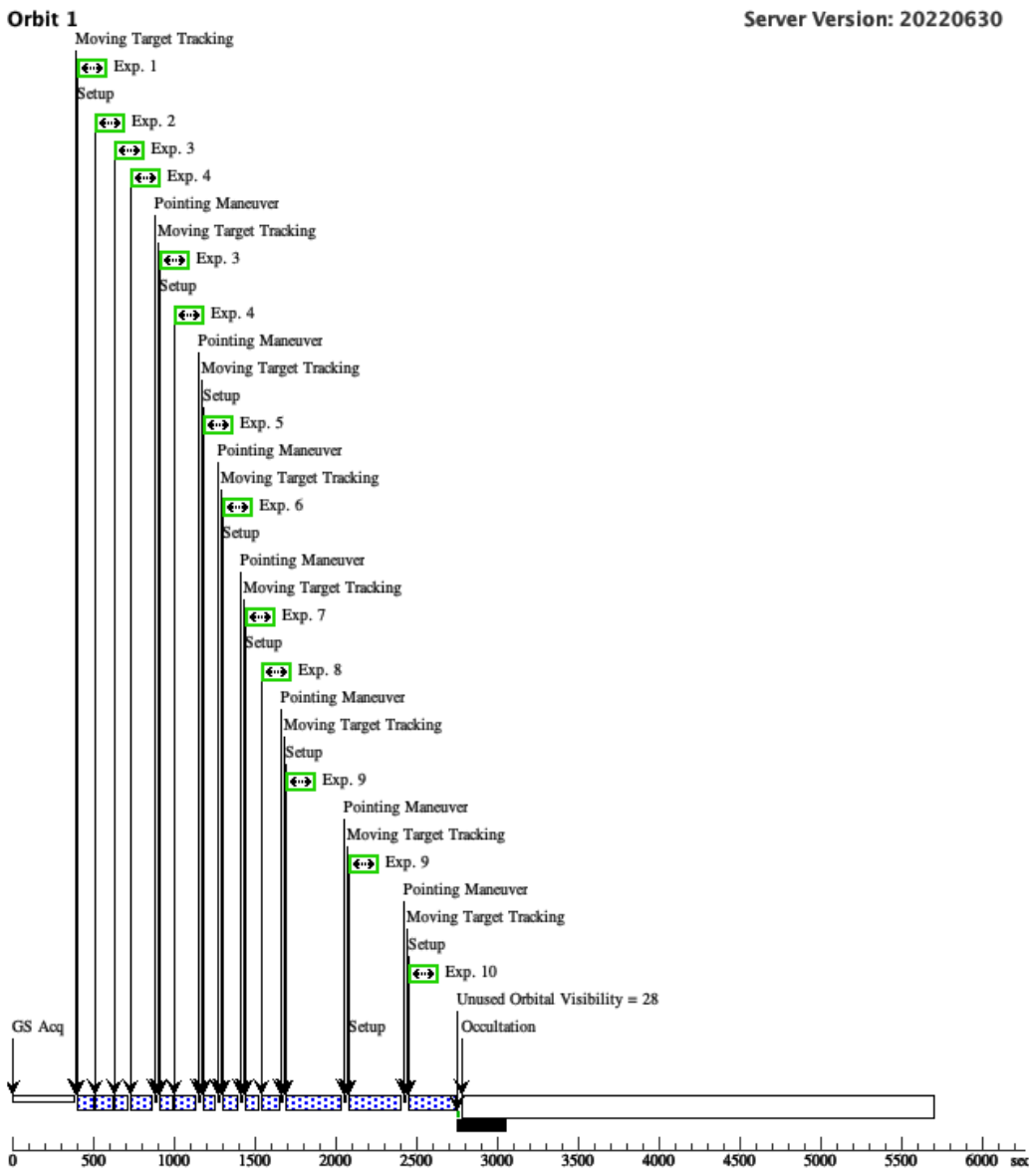
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(2)	NEPTUNE	STD=NEPTUNE				EARTH

Comments: Description=PLANET NEPTUNE

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F763M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-B (10)	20 Secs (20 Secs) *[==>]*	***[1]***
2	F845M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-B (10)	40 Secs (40 Secs) *[==>]*	***[1]***
3	F467M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F467M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-B (10) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in NEPTUNE_23V2-B (10) (1)	15 Secs (30 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	***[1]***
4	F487N	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F487N	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-B (10) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in NEPTUNE_23V2-B (10) (1)	60 Secs (120 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	***[1]***
5	F547M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F547M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-B (10)	6 Secs (6 Secs) *[==>]*	***[1]***
6	F657N	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F657N	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-B (10)	30 Secs (30 Secs) *[==>]*	***[1]***
7	F763M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-B (10)	20 Secs (20 Secs) *[==>]*	***[1]***
8	F845M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-B (10)	40 Secs (40 Secs) *[==>]*	***[1]***
9	FQ727N_quadD	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ727N	CR-SPLIT=NO	POS TARG -25,+28	Sequence 1-10 Non-Int in NEPTUNE_23V2-B (10) Pattern 2, Exps 9-9 in Sequence 1-10 Non-Int in NEPTUNE_23V2-B (10) (2)	150 Secs (300 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	***[1]***
10	FQ619N_quadA	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ619N	CR-SPLIT=NO	POS TARG +20,-24	Sequence 1-10 Non-Int in NEPTUNE_23V2-B (10)	120 Secs (120 Secs) *[==>]*	***[1]***

Orbit Structure



Visit

Proposal 17187, NEPTUNE_23V2-C (11), implementation Sat Oct 22 16:00:37 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: AFTER 10 BY 1.9 Orbits TO 3.1 Orbits; BETWEEN 13-JUN-2023 AND 26-JUN-2023

Comments: Neptune in first window 13-JUN-2023 to 26-JUN-2023 - as close as possible to the JWST observations in program 1249.

4 orbits. Visit 4 after visit 1 by between 9 and 11 orbits. All visits spaced out as evenly as possible within the 16 hour 6 minute Neptunian day, with ideally 2- or 3-orbit gaps between them (ideal spacing is 4 hours). 1-orbit gaps are too close.

Impingement into SAA is OK if the above timing gaps cannot prevent it. We can tolerate gyro bias updates to ease the contiguous orbit constraints, and will work with our program contacts to fit them in. 3-gyro mode may be necessary as this is a moving target.

Diagnostics

(F763M (11.001)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F845M (11.002)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F467M (11.003)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F487N (11.004)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F547M (11.005)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F657N (11.006)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F763M (11.007)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F845M (11.008)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ727N_quadD (11.009)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ727N_quadD (11.009)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

(FQ619N_quadA (11.010)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ619N_quadA (11.010)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(3-4)
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.725 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(9)

Solar System Targets

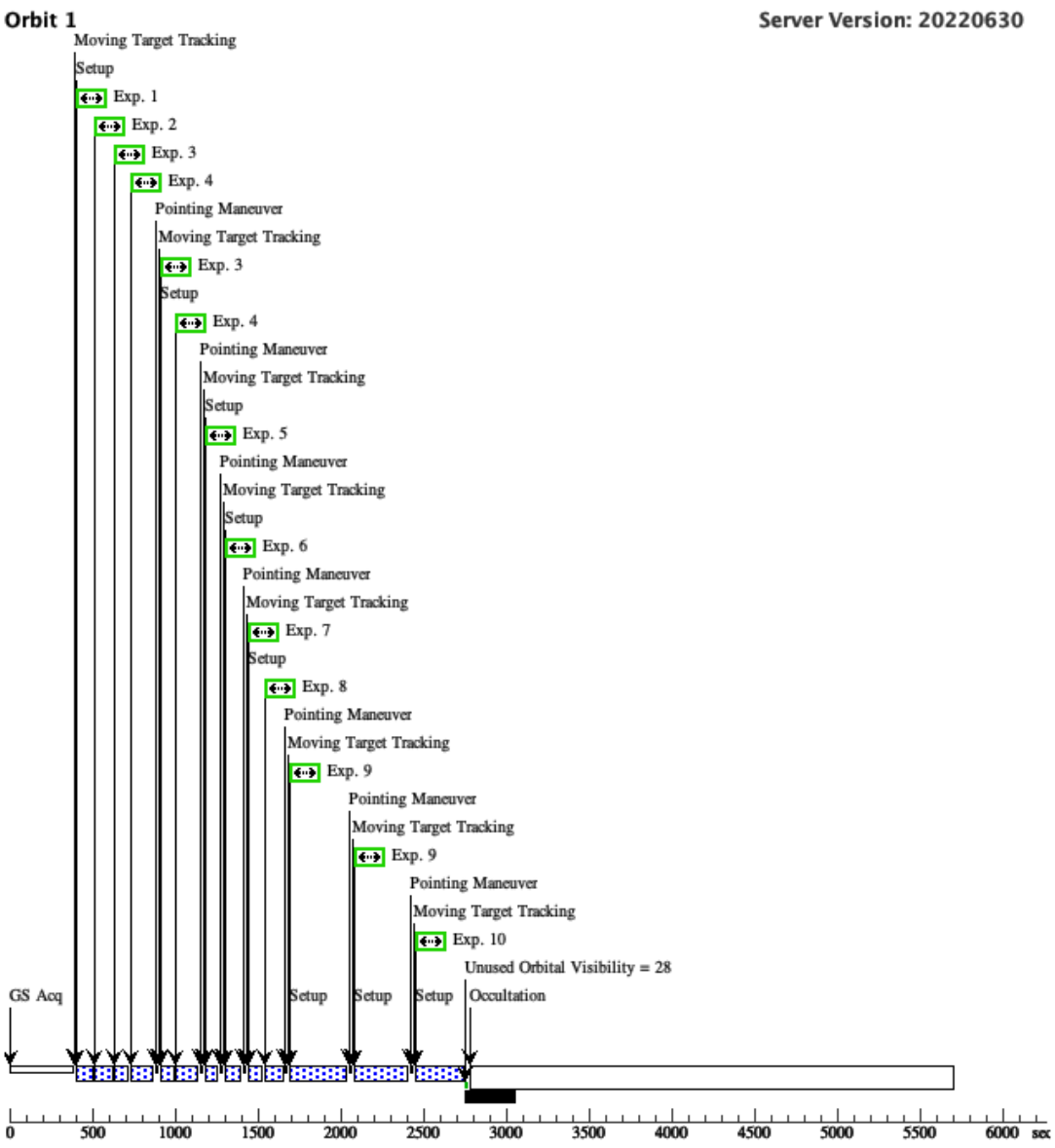
#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(2)	NEPTUNE	STD=NEPTUNE				EARTH

Comments: Description=PLANET NEPTUNE

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F763M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-C (11)	20 Secs (20 Secs) *[==>]*	 ***[1]***
2	F845M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-C (11)	40 Secs (40 Secs) *[==>]*	 ***[1]***
3	F467M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F467M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-C (11) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in NEPTUNE_23V2-C (11) (1)	15 Secs (30 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
4	F487N	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F487N	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-C (11) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in NEPTUNE_23V2-C (11) (1)	60 Secs (120 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
5	F547M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F547M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-C (11)	6 Secs (6 Secs) *[==>]*	 ***[1]***
6	F657N	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F657N	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-C (11)	30 Secs (30 Secs) *[==>]*	 ***[1]***
7	F763M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-C (11)	20 Secs (20 Secs) *[==>]*	 ***[1]***
8	F845M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-C (11)	40 Secs (40 Secs) *[==>]*	 ***[1]***
9	FQ727N_quadD	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ727N	CR-SPLIT=NO	POS TARG -25,+28	Sequence 1-10 Non-Int in NEPTUNE_23V2-C (11) Pattern 2, Exps 9-9 in Sequence 1-10 Non-Int in NEPTUNE_23V2-C (11) (2)	150 Secs (300 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
10	FQ619N_quadA	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ619N	CR-SPLIT=NO	POS TARG +20,-24	Sequence 1-10 Non-Int in NEPTUNE_23V2-C (11)	120 Secs (120 Secs) *[==>]*	 ***[1]***

Orbit Structure



Visit

Proposal 17187, NEPTUNE_23V2-D (12), implementation Sat Oct 22 16:00:37 GMT 2022

Diagnostic Status: Warning

Scientific Instruments: WFC3/UVIS

Special Requirements: AFTER 11 BY 1.9 Orbits TO 3.1 Orbits; BETWEEN 13-JUN-2023 AND 26-JUN-2023

Comments: Neptune in first window 13-JUN-2023 to 26-JUN-2023 - as close as possible to the JWST observations in program 1249.

4 orbits. Visit 4 after visit 1 by between 9 and 11 orbits. All visits spaced out as evenly as possible within the 16 hour 6 minute Neptunian day, with ideally 2- or 3-orbit gaps between them (ideal spacing is 4 hours). 1-orbit gaps are too close.

Impingement into SAA is OK if the above timing gaps cannot prevent it. We can tolerate gyro bias updates to ease the contiguous orbit constraints, and will work with our program contacts to fit them in. 3-gyro mode may be necessary as this is a moving target.

Diagnostics

(F763M (12.001)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F845M (12.002)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F467M (12.003)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F487N (12.004)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F547M (12.005)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F657N (12.006)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F763M (12.007)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(F845M (12.008)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ727N_quadD (12.009)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ727N_quadD (12.009)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

(FQ619N_quadA (12.010)) Warning (Form): FLASH level may be too low for this exposure or a short subexposure. See extended explanation in the diagnostic browser

(FQ619N_quadA (12.010)) Warning (Form): POS TARG & PATTERN should be used carefully with WFC3 quad filters to avoid placing the target on the vignetted part of the field of view or moving it to another quadrant.

Patterns

#	Primary Pattern		Secondary Pattern	Exposures
(1)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(3-4)
(2)	Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.725 Line Spacing=	Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(9)

Solar System Targets

#	Name	Level 1	Level 2	Level 3	Window	Ephem Center
(2)	NEPTUNE	STD=NEPTUNE				EARTH

Comments: Description=PLANET NEPTUNE

Exposures

#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time (Total)/[Actual Dur.]	Orbit
1	F763M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-D (12)	20 Secs (20 Secs) *[==>]*	 ***[1]***
2	F845M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-D (12)	40 Secs (40 Secs) *[==>]*	 ***[1]***
3	F467M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F467M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-D (12) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in NEPTUNE_23V2-D (12) (1)	15 Secs (30 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
4	F487N	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F487N	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-D (12) Pattern 1, Exps 3-4 in Sequence 1-10 Non-Int in NEPTUNE_23V2-D (12) (1)	60 Secs (120 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
5	F547M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F547M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-D (12)	6 Secs (6 Secs) *[==>]*	 ***[1]***
6	F657N	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-C512C-SUB	F657N	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-D (12)	30 Secs (30 Secs) *[==>]*	 ***[1]***
7	F763M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F763M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-D (12)	20 Secs (20 Secs) *[==>]*	 ***[1]***
8	F845M	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS2-M512C-SUB	F845M	CR-SPLIT=NO		Sequence 1-10 Non-Int in NEPTUNE_23V2-D (12)	40 Secs (40 Secs) *[==>]*	 ***[1]***
9	FQ727N_quadD	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ727N	CR-SPLIT=NO	POS TARG -25,+28	Sequence 1-10 Non-Int in NEPTUNE_23V2-D (12) Pattern 2, Exps 9-9 in Sequence 1-10 Non-Int in NEPTUNE_23V2-D (12) (2)	150 Secs (300 Secs) *[==>(Pattern 1)]* *[==>(Pattern 2)]*	 ***[1]***
10	FQ619N_quadA	(2) NEPTUNE	WFC3/UVIS, ACCUM, UVIS-QUAD-SUB	FQ619N	CR-SPLIT=NO	POS TARG +20,-24	Sequence 1-10 Non-Int in NEPTUNE_23V2-D (12)	120 Secs (120 Secs) *[==>]*	 ***[1]***

Orbit Structure