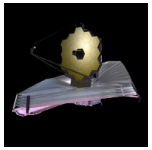

1658 - Pluto's climate system with JWST

Cycle: 1, Proposal Category: GO

INVESTIGATORS

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OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
PLUTO+CHARON				
	1	PLUTO MIRI MRS 340deg (APT 20deg)	MIRI Medium Resolution Spectroscopy	(1) PLUTO
	2	CHARON MIRI LRS 330deg (APT 30deg)	MIRI Low Resolution Spectroscopy	(2) CHARON
	52	CHARON MIRI LRS Repeat	MIRI Low Resolution Spectroscopy	(1) PLUTO
	3	PLUTO MIRI IMAGING: 330deg (APT 30deg)	MIRI Imaging	(1) PLUTO
	4	PLUTO MIRI IMAGING: 270deg (APT 90deg)	MIRI Imaging	(1) PLUTO

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
	5	PLUTO MIRI IMAGING: 210deg (APT 150deg)	MIRI Imaging	(1) PLUTO
	6	PLUTO MIRI IMAGING: 150deg (APT 210deg)	MIRI Imaging	(1) PLUTO
	7	PLUTO MIRI IMAGING: 90deg (APT 270deg)	MIRI Imaging	(1) PLUTO
	8	PLUTO MIRI IMAGING: 30deg (APT 330deg)	MIRI Imaging	(1) PLUTO
	9	PLUTO NIRCAM: 330 deg (APT 30deg)	NIRCam Imaging	(1) PLUTO
	10	PLUTO NIRCAM: 210 deg (APT 150 deg)	NIRCam Imaging	(1) PLUTO
	11	PLUTO NIRCAM: 90deg (APT 270deg)	NIRCam Imaging	(1) PLUTO
	12	PLUTO-MIRI-BACKGROUND-330	MIRI Imaging	(3) PLUTO-BACKGROUND
	13	PLUTO-MIRI-BACKGROUND-270	MIRI Imaging	(3) PLUTO-BACKGROUND
	14	PLUTO-MIRI-BACKGROUND-210	MIRI Imaging	(3) PLUTO-BACKGROUND
	15	PLUTO-MIRI-BACKGROUND-150	MIRI Imaging	(3) PLUTO-BACKGROUND
	16	PLUTO-MIRI-BACKGROUND-90	MIRI Imaging	(3) PLUTO-BACKGROUND
	17	PLUTO-MIRI-BACKGROUND-30	MIRI Imaging	(3) PLUTO-BACKGROUND

ABSTRACT

The New Horizons 2015 encounter with the Pluto system unveiled a remarkably active world, with a highly variegated surface and a chemically-rich atmosphere with extensive haze. It raised new fundamental questions about Pluto's climate evolution, chemistry and energy balance of the atmosphere, and about the thermal and compositional properties of Pluto's and Charon's surfaces. In a highly complementary dataset to New Horizons, we will combine MIRI and NIRCam observations to address these topics. NIRCam filter imaging (3 visits, 4 SW filters) will map the

albedo and methane ice distribution with resolution comparable to HST visible imaging, providing key tests for volatile transport models. MIRI imaging (6 visits, 4 filters) will yield separate thermal lightcurves of Pluto and Charon, determining the surface thermal and energetical properties and further constraining Pluto's distribution of terrains. These data will also provide a definite test of the scenario of haze control of Pluto's atmosphere thermal structure. A deep MIRI/MRS spectrum will give new insights on Pluto's atmosphere composition, including yet undetected species (e.g. C3H8, C4H2), which are expected from photochemical-microphysical models, with additional implications for the atmosphere radiative balance. MIRI/MRS will also reveal the 5-15 micron reflected spectrum of the dark/red units of Pluto, where bands due to hydrocarbon ices and irradiation products are expected; a similar study will be performed on Charon using MIRI/LRS, searching for non-H2O ice signatures. Observational results will be interpreted in the framework of self-consistent and validated atmospheric and climatic models.

OBSERVING DESCRIPTION

NOTE RE. PLUTO CENTRAL MERIDIAN LONGITUDES: APT vs. HORIZONS/JPL

APT APPEARS TO BE USING THE OLD CONVENTION FOR PLUTO'S POLE, SUCH THAT CML INCREASES WITH TIME. THE IAU UPDATED THE POLE DEFINITION SEVERAL YEARS AGO SUCH THAT PLUTO'S ROTATION OBEYS THE RIGHT-HAND RULE (CML DECREASES W/ TIME BECAUSE THE POLE IS BELOW THE ECLIPTIC).

OUR OBSERVING WINDOWS ARE NECESSARILY BASED ON THE APT CONVENTION, WHILE OUR SCIENCE JUSTIFICATION USES THE NEW (CORRECT) POLE DEFINITION. OBSERVATION LABELS INDICATE THE CORRECT LONGITUDES OF OUR OBSERVATIONS, AND INCLUDE THE APT-CONVENTION LONGITUDES FOR CLARITY.

We will use a combination of MIRI and NIRCAM observations to achieve our science goals, as summarized below. Altogether, the science time is 10.23 hr and the charged time 23.35 hr.

1) Name = PLUTO MIRI MRS 90deg. Instrument: MIRI MRS. Target = Pluto. Science time= 29976 sec. Time constraint: Pluto central meridian longitude (CML) between 75 and 105. Grouped (non-interruped) with observations 7 and 11

2) Name = CHARON MIRI LRS 330deg. Instrument:: MIRI LRS. Target = Charon (includes Pluto). Science time = 1112 sec. Time constraint: *Pluto* CML between 315 and 345. Grouped (non-interruped) with observations 3 and 9

3) Name = PLUTO MIRI IMAGING: 330deg. Instrument: MIRI-Imaging: Target=Pluto (includes Charon). Science time = 614 sec . Time constraint: Pluto CML between 315 and 345. Grouped (non-interruped) with observation 2 and 9

4) Name = PLUTO MIRI IMAGING: 270deg. Instrument: MIRI Imaging: Target=Pluto (includes Charon). Science time = 614 sec . Time constraint: Pluto CML between 255 and 285.

5) Name = PLUTO MIRI IMAGING: 210 deg. Instrument: MIRI Imaging: Target=Pluto (includes Charon). Science time = 614 sec . Time constraint: Pluto CML between 195 and 225. Grouped (non-interruped) with observation 10

6) Name = PLUTO MIRI IMAGING: 150deg. Instrument: MIRI Imaging: Target=Pluto (includes Charon). Science time = 614 sec . Time constraint: Pluto CML between 135 and 165.

7) Name = PLUTO MIRI IMAGING: 90deg. Instrument: MIRI Imaging: Target=Pluto (includes Charon). Science time = 614 sec . Time constraint: Pluto CML between 75 and 105. Grouped (non-interruped) with observations 1 and 11

8) Name = PLUTO MIRI IMAGING: 30deg. Instrument: MIRI Imaging: Target=Pluto (includes Charon). Science time = 614 sec . Time constraint: Pluto CML between 15 and 45.

9) Name = PLUTO NIRCAM: 330 deg. Instrument: NIRCAm: Target=Pluto (includes Charon). Science time = 688 sec . Time constraint: Pluto CML between 315 and 345. Grouped (non-interruped) with observation 2 and 3

10) Name = PLUTO NIRCAM: 210 deg. Instrument: NIRCAm: Target=Pluto (includes Charon). Science time = 688 sec . Time constraint: Pluto CML between 195 and 225. Grouped (non-interruped) with observation 5

11) Name = PLUTO NIRCAM: 90 deg. Instrument: NIRCAm: Target=Pluto (includes Charon). Science time = 688 sec . Time constraint: Pluto CML between 75 and 105. Grouped (non-interruped) with observation 1 and 7.

Finally, we request that all of our observations be executed within a 6.4 day period, for reasons explained in the Technical case.

Proposal 1658 - Targets - Pluto's climate system with JWST

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(1)	PLUTO	STD=PLUTO		
Comments: Extended=NO				
(2)	CHARON	STD=PLUTO	STD=CHARON	
Comments: Extended=NO				
(3)	PLUTO-BACKGROUND	STD=PLUTO	TYPE=POS_ANGLE,RAD=30,ANG=0,REF=NORTH	
Comments: Extended=Unknown				

Observation

Proposal 1658, Observation 1: PLUTO MIRI MRS 340deg (APT 20deg) Fri Mar 17 20:00:28 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Diagnostics

(Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(1)	PLUTO	STD=PLUTO		

Comments: Extended=NO

Acquisition

#	Target
1	NONE

Template

AcqFilter	Primary Channel	Simultaneous Imaging	Imager Subarray
F1500W	ALL	YES	FULL

Dithers

#	Dither Type	Optimized For	Direction
1	4-Point	POINT SOURCE	NEGATIVE

Spectral Elements

#	Wavelength Range	Detector	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1		IMAGER	F560W	FASTR1	8	99	1	Dither 1	4	396	9879.142	
1	SHORT(A)	MRSLONG		SLOWR1	20	5	1	Dither 1	4	20	9938.207	
1	SHORT(A)	MRSSHORT		SLOWR1	20	5	1	Dither 1	4	20	9938.207	
2		IMAGER	F560W	FASTR1	8	99	1	Dither 1	4	396	9879.142	
2	MEDIUM(B)	MRSLONG		SLOWR1	20	5	1	Dither 1	4	20	9938.207	
2	MEDIUM(B)	MRSSHORT		SLOWR1	20	5	1	Dither 1	4	20	9938.207	
3		IMAGER	F560W	FASTR1	8	99	1	Dither 1	4	396	9879.142	
3	LONG(C)	MRSLONG		SLOWR1	20	5	1	Dither 1	4	20	9938.207	
3	LONG(C)	MRSSHORT		SLOWR1	20	5	1	Dither 1	4	20	9938.207	

Special Requirements	DEFAULT WINDOW: ANGULAR RATE PLUTO FROM JWST LESS THAN 0.075 CENTRAL MERIDIAN LONGITUDE OF PLUTO FROM JWST BETWEEN 5 35

Observation

Proposal 1658, Observation 2: CHARON MIRI LRS 330deg (APT 30deg) Fri Mar 17 20:00:28 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Low Resolution Spectroscopy

Diagnostics

(Visit 2:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(2)	CHARON	STD=PLUTO	STD=CHARON	

Comments: Extended=NO

Acquisition

#	Target
1	NONE

Template

AcqFilter	Subarray	Obtain Verification Image?
F560W	FULL	false

Dithers

#	Dither Type	No. Spectral Steps	Spectral Step Offset	No. Spatial Steps	Spatial Step Offset
1	ALONG SLIT NOD				

Spectral Elements

#	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Exposures/Dith	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
1	FASTR1	200	1	2	1	2	1110.016	

Special Requirements	
	Group Observations 2, 3, 9, 12, Non-interruptible DEFAULT WINDOW: ANGULAR RATE CHARON FROM JWST LESS THAN 0.03

Observation

Proposal 1658, Observation 52: CHARON MIRI LRS Repeat Fri Mar 17 20:00:28 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Low Resolution Spectroscopy

Diagnostics

(CHARON MIRI LRS Repeat (Obs 52)) Warning (Form): Groups/Int cannot be 1, Groups/Int = 2 requires permission and Groups/Int of 3-4 is allowed but not recommended.

(CHARON MIRI LRS Repeat (Obs 52)) Warning (Form): Record ETC Wkbk.Calc ID used to verify target acquisition.

(Exposure) Warning (Form): Record ETC Wkbk.Calc ID used to verify target acquisition.

(Visit 52:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(1)	PLUTO	STD=PLUTO		

Comments: Extended=NO

Acquisition

#	Target	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	SAME	F560W	FAST	4	1	1	11.1	

Template

Subarray	Obtain Verification Image?
FULL	true

Dithers

#	Dither Type	No. Spectral Steps	Spectral Step Offset	No. Spatial Steps	Spatial Step Offset
1	ALONG SLIT NOD				

Pointing Verification

#	PV Readout Pattern	PV Groups/Int	PV Integrations/Exp	PV Total Integrations	PV Exposures/Dith	PV Total Dithers	PV Total Exposure Time	PV ETC Wkbk.Calc ID	Filter
1	FASTR1	4	1	1	1	1	11.1		F560W

Spectral Elements

#	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Exposures/Dith	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
1	FASTR1	200	1	2	1	2	1110.016	

Special Requirements

DEFAULT WINDOW: ANGULAR RATE PLUTO FROM JWST LESS THAN 0.075
CENTRAL MERIDIAN LONGITUDE OF PLUTO FROM JWST BETWEEN 150 160

Observation

Proposal 1658, Observation 3: PLUTO MIRI IMAGING: 330deg (APT 30deg) Fri Mar 17 20:00:28 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Comments: The Sequence SR on this and Observations 4, 5, 6, 7, 8 are intended to force

The "Timing - Between Dates SR" on this observation is only appropriate for observations in the Sep - Oct 2022 apparition of Pluto in the FOR. The purpose of this constraint is to execute Obs. 3 at a solar elongation of 103 degrees ± 0.5 degree. We believe that corresponds to a Pluto sub-JWST longitude of ~30 degrees in the new standard for Pluto's pole (CML decreasing with time). APT appears to be using the old convention for Pluto's pole (CML increasing with time).

These observations can also be executed for different apparitions of Pluto, but the "Timing - Between Dates SR" must be adjusted according whether that target is in the leading or trailing direction in the FOR.

Diagnostics

(Visit 3:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(1)	PLUTO	STD=PLUTO		

Comments: Extended=NO

Template

Subarray
FULL

Dithers

#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size
1	2-Point								DEFAULT

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F1500W	FASTR1	20	1	1	Dither 1	2	2	111.002	
2	F1800W	FASTR1	60	1	1	Dither 1	2	2	333.005	
3	F2100W	FASTR1	20	1	1	Dither 1	2	2	111.002	
4	F2550W	FASTR1	10	1	1	Dither 1	2	2	55.501	

Special Requirements	
	Between Dates 05-OCT-2022:12 and 06-OCT-2022:12 Offset 0.0 arcsec, 10.0 arcsec Group Observations 2, 3, 9, 12, Non-interruptible Sequence Observations 3, 4, 5, 6, 7, 8 within 6 Days DEFAULT WINDOW: ANGULAR RATE PLUTO FROM JWST LESS THAN 0.03 CENTRAL MERIDIAN LONGITUDE OF PLUTO FROM JWST BETWEEN 15 45

Observation

Proposal 1658, Observation 4: PLUTO MIRI IMAGING: 270deg (APT 90deg) Fri Mar 17 20:00:28 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Diagnostics

(Visit 4:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(1)	PLUTO	STD=PLUTO		

Comments: Extended=NO

Template

Subarray
FULL

Dithers

#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size
1	2-Point								DEFAULT

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F1500W	FASTR1	20	1	1	Dither 1	2	2	111.002	
2	F1800W	FASTR1	60	1	1	Dither 1	2	2	333.005	
3	F2100W	FASTR1	20	1	1	Dither 1	2	2	111.002	
4	F2550W	FASTR1	10	1	1	Dither 1	2	2	55.501	

Special Requirements

Offset 8.6602 arcsec, 5.0 arcsec

Sequence Observations 3, 4, 5, 6, 7, 8 within 6 Days
Group Observations 4, 13, Non-interruptible

DEFAULT WINDOW: ANGULAR RATE PLUTO FROM JWST LESS THAN 0.03
CENTRAL MERIDIAN LONGITUDE OF PLUTO FROM JWST BETWEEN 75 105

Observation

Proposal 1658, Observation 5: PLUTO MIRI IMAGING: 210deg (APT 150deg) Fri Mar 17 20:00:28 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Diagnostics

(Visit 5:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(1)	PLUTO	STD=PLUTO		

Comments: Extended=NO

Template

Subarray
FULL

Dithers

#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size
1	2-Point								DEFAULT

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F1500W	FASTR1	20	1	1	Dither 1	2	2	111.002	
2	F1800W	FASTR1	60	1	1	Dither 1	2	2	333.005	
3	F2100W	FASTR1	20	1	1	Dither 1	2	2	111.002	
4	F2550W	FASTR1	10	1	1	Dither 1	2	2	55.501	

Special Requirements

Offset 8.6602 arcsec, -5.0 arcsec

Sequence Observations 3, 4, 5, 6, 7, 8 within 6 Days
Group Observations 5, 10, 14, Non-interruptible

DEFAULT WINDOW: ANGULAR RATE PLUTO FROM JWST LESS THAN 0.03
CENTRAL MERIDIAN LONGITUDE OF PLUTO FROM JWST BETWEEN 135 165

Observation

Proposal 1658, Observation 6: PLUTO MIRI IMAGING: 150deg (APT 210deg) Fri Mar 17 20:00:28 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Diagnostics

(Visit 6:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(1)	PLUTO	STD=PLUTO		

Comments: Extended=NO

Template

Subarray
FULL

Dithers

#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size
1	2-Point								DEFAULT

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F1500W	FASTR1	20	1	1	Dither 1	2	2	111.002	
2	F1800W	FASTR1	60	1	1	Dither 1	2	2	333.005	
3	F2100W	FASTR1	20	1	1	Dither 1	2	2	111.002	
4	F2550W	FASTR1	10	1	1	Dither 1	2	2	55.501	

Special Requirements

Offset 0.0 arcsec, -10.0 arcsec

Sequence Observations 3, 4, 5, 6, 7, 8 within 6 Days
Group Observations 6, 15, Non-interruptible

DEFAULT WINDOW: ANGULAR RATE PLUTO FROM JWST LESS THAN 0.03
CENTRAL MERIDIAN LONGITUDE OF PLUTO FROM JWST BETWEEN 195 225

Observation

Proposal 1658, Observation 7: PLUTO MIRI IMAGING: 90deg (APT 270deg) Fri Mar 17 20:00:28 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Diagnostics

(Visit 7:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(1)	PLUTO	STD=PLUTO		

Comments: Extended=NO

Template

Subarray
FULL

Dithers

#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size
1	2-Point								DEFAULT

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F1500W	FASTR1	20	1	1	Dither 1	2	2	111.002	
2	F1800W	FASTR1	60	1	1	Dither 1	2	2	333.005	
3	F2100W	FASTR1	20	1	1	Dither 1	2	2	111.002	
4	F2550W	FASTR1	10	1	1	Dither 1	2	2	55.501	

Special Requirements

Offset -8.6602 arcsec, -5.0 arcsec

Sequence Observations 3, 4, 5, 6, 7, 8 within 6 Days
Group Observations 7, 11, 16, Non-interruptible

DEFAULT WINDOW: ANGULAR RATE PLUTO FROM JWST LESS THAN 0.03
CENTRAL MERIDIAN LONGITUDE OF PLUTO FROM JWST BETWEEN 255 285

Observation

Proposal 1658, Observation 8: PLUTO MIRI IMAGING: 30deg (APT 330deg) Fri Mar 17 20:00:28 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Diagnostics

(Visit 8:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(1)	PLUTO	STD=PLUTO		

Comments: Extended=NO

Template

Subarray
FULL

Dithers

#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size
1	2-Point								DEFAULT

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F1500W	FASTR1	20	1	1	Dither 1	2	2	111.002	
2	F1800W	FASTR1	60	1	1	Dither 1	2	2	333.005	
3	F2100W	FASTR1	20	1	1	Dither 1	2	2	111.002	
4	F2550W	FASTR1	10	1	1	Dither 1	2	2	55.501	

Special Requirements

Offset -8.6602 arcsec, 5.0 arcsec

Sequence Observations 3, 4, 5, 6, 7, 8 within 6 Days
Group Observations 8, 17, Non-interruptible

DEFAULT WINDOW: ANGULAR RATE PLUTO FROM JWST LESS THAN 0.03
CENTRAL MERIDIAN LONGITUDE OF PLUTO FROM JWST BETWEEN 315 345

Observation

Proposal 1658, Observation 9: PLUTO NIRCAM: 330deg (APT 30deg) Fri Mar 17 20:00:28 GMT 2023

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

Diagnostics

(Visit 9:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(1)	PLUTO	STD=PLUTO		

Comments: Extended=NO

Template

Module	Subarray	Target Placement
B	SUB320	Module Gap

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	INTRASCA	2	STANDARD	8" (SMALL)	1

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
1	F070W	F335M	RAPID	10	8	16	2	188.479	
2	F090W	F410M	RAPID	10	8	16	2	188.479	
3	F115W	F430M	RAPID	10	8	16	2	188.479	
4	F140M	F480M	RAPID	10	8	16	2	188.479	

Special Requirements

Offset 6.5 arcsec, 6.5 arcsec

Group Observations 2, 3, 9, 12, Non-interruptible

DEFAULT WINDOW: ANGULAR RATE PLUTO FROM JWST LESS THAN 0.03

Observation

Proposal 1658, Observation 10: PLUTO NIRCAM: 210deg (APT 150 deg) Fri Mar 17 20:00:28 GMT 2023

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

Diagnostics

(Visit 10:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(1)	PLUTO	STD=PLUTO		

Comments: Extended=NO

Template

Module	Subarray	Target Placement
B	SUB320	Module Gap

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	INTRASCA	2	STANDARD	8" (SMALL)	1

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
1	F070W	F335M	RAPID	10	8	16	2	188.479	
2	F090W	F410M	RAPID	10	8	16	2	188.479	
3	F115W	F430M	RAPID	10	8	16	2	188.479	
4	F140M	F480M	RAPID	10	8	16	2	188.479	

Special Requirements

Offset 6.5 arcsec, 6.5 arcsec

Group Observations 5, 10, 14, Non-interruptible

DEFAULT WINDOW: ANGULAR RATE PLUTO FROM JWST LESS THAN 0.03

Observation

Proposal 1658, Observation 11: PLUTO NIRCAM: 90deg (APT 270deg) Fri Mar 17 20:00:28 GMT 2023

Diagnostic Status: Warning

Observing Template: NIRCam Imaging

Diagnostics

(Visit 11:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(1)	PLUTO	STD=PLUTO		

Comments: Extended=NO

Template

Module	Subarray	Target Placement
B	SUB320	Module Gap

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Dither Type	Dither Size	Subpixel Positions
1	INTRASCA	2	STANDARD	8" (SMALL)	1

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Dithers	Total Exposure Time	ETC Wkbk.Calc ID
1	F070W	F335M	RAPID	10	8	16	2	188.479	
2	F090W	F410M	RAPID	10	8	16	2	188.479	
3	F115W	F430M	RAPID	10	8	16	2	188.479	
4	F140M	F480M	RAPID	10	8	16	2	188.479	

Special Requirements

Offset 6.5 arcsec, 6.5 arcsec

Group Observations 7, 11, 16, Non-interruptible

DEFAULT WINDOW: ANGULAR RATE PLUTO FROM JWST LESS THAN 0.03

Observation

Proposal 1658, Observation 12: PLUTO-MIRI-BACKGROUND-330

Fri Mar 17 20:00:28 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Diagnostics

(Visit 12:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(3)	PLUTO-BACKGROUND	STD=PLUTO	TYPE=POS_ANGLE,RAD=30,ANG=0,REF=NORTH	

Comments: Extended=Unknown

Template

Subarray
FULL

Dithers

#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size
1	2-Point								DEFAULT

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F2550W	FASTR1	10	1	1	Dither 1	2	2	55.501	

Special Requirements

Group Observations 2, 3, 9, 12, Non-interruptible

DEFAULT WINDOW: ANGULAR RATE PLUTO-BACKGROUND FROM JWST LESS THAN 0.03

Observation

Proposal 1658, Observation 13: PLUTO-MIRI-BACKGROUND-270 Fri Mar 17 20:00:28 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Diagnostics

(Visit 13:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(3)	PLUTO-BACKGROUND	STD=PLUTO	TYPE=POS_ANGLE,RAD=30,ANG=0,REF=NORTH	

Comments: Extended=Unknown

Template

Subarray
FULL

Dithers

#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size
1	2-Point								DEFAULT

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F2550W	FASTR1	10	1	1	Dither 1	2	2	55.501	

Special Requirements

Group Observations 4, 13, Non-interruptible

DEFAULT WINDOW: ANGULAR RATE PLUTO-BACKGROUND FROM JWST LESS THAN 0.03

Observation

Proposal 1658, Observation 14: PLUTO-MIRI-BACKGROUND-210

Fri Mar 17 20:00:28 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Diagnostics

(Visit 14:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(3)	PLUTO-BACKGROUND	STD=PLUTO	TYPE=POS_ANGLE,RAD=30,ANG=0,REF=NORTH	

Comments: Extended=Unknown

Template

Subarray
FULL

Dithers

#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size
1	2-Point								DEFAULT

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F2550W	FASTR1	10	1	1	Dither 1	2	2	55.501	

Special Requirements

Group Observations 5, 10, 14, Non-interruptible

DEFAULT WINDOW: ANGULAR RATE PLUTO-BACKGROUND FROM JWST LESS THAN 0.03

Observation

Proposal 1658, Observation 15: PLUTO-MIRI-BACKGROUND-150 Fri Mar 17 20:00:28 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Diagnostics

(Visit 15:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(3)	PLUTO-BACKGROUND	STD=PLUTO	TYPE=POS_ANGLE,RAD=30,ANG=0,REF=NORTH	

Comments: Extended=Unknown

Template

Subarray
FULL

Dithers

#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size
1	2-Point								DEFAULT

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F2550W	FASTR1	10	1	1	Dither 1	2	2	55.501	

Special Requirements

Group Observations 6, 15, Non-interruptible

DEFAULT WINDOW: ANGULAR RATE PLUTO-BACKGROUND FROM JWST LESS THAN 0.03

Observation

Proposal 1658, Observation 16: PLUTO-MIRI-BACKGROUND-90 Fri Mar 17 20:00:28 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Diagnostics

(Visit 16:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(3)	PLUTO-BACKGROUND	STD=PLUTO	TYPE=POS_ANGLE,RAD=30,ANG=0,REF=NORTH	

Comments: Extended=Unknown

Template

Subarray
FULL

Dithers

#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size
1	2-Point								DEFAULT

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F2550W	FASTR1	10	1	1	Dither 1	2	2	55.501	

Special Requirements

Group Observations 7, 11, 16, Non-interruptible

DEFAULT WINDOW: ANGULAR RATE PLUTO-BACKGROUND FROM JWST LESS THAN 0.03

Observation

Proposal 1658, Observation 17: PLUTO-MIRI-BACKGROUND-30 Fri Mar 17 20:00:28 GMT 2023

Diagnostic Status: Warning

Observing Template: MIRI Imaging

Diagnostics

(Visit 17:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Solar System Targets

#	Name	Level 1	Level 2	Level 3
(3)	PLUTO-BACKGROUND	STD=PLUTO	TYPE=POS_ANGLE,RAD=30,ANG=0,REF=NORTH	

Comments: Extended=Unknown

Template

Subarray
FULL

Dithers

#	Dither Type	Starting Point	Number of Points	Points	Starting Set	Number of Sets	Optimized For	Direction	Pattern Size
1	2-Point								DEFAULT

Spectral Elements

#	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Exposures/Dith	Dither	Total Dithers	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID
1	F2550W	FASTR1	10	1	1	Dither 1	2	2	55.501	

Special Requirements

Group Observations 8, 17, Non-interruptible

DEFAULT WINDOW: ANGULAR RATE PLUTO-BACKGROUND FROM JWST LESS THAN 0.03