



## 9288 - NIRCcam PIL Images for Monitoring the Primary Mirror

Cycle: 4, Proposal Category: CAL/OTE

### INVESTIGATORS

<i>Name</i>	<i>Institution</i>
<b>Dr. Tracy Beck (PI)</b>	<b>Space Telescope Science Institute</b>
Dr. Marcio Melendez (CoI)	Space Telescope Science Institute
Dr. Nicolas Flagey (CoI)	Space Telescope Science Institute
Mr. Matthew D. Lallo (CoI)	Space Telescope Science Institute
Randal Telfer (CoI)	Space Telescope Science Institute

### OBSERVATIONS

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
Epoch 1 NRC PIL Image - Primary Mirror Monitoring				
	1		NIRCcam PIL Imaging	(1) 2MASS-05562621-6359103
Epoch 2 NRC PIL Image - Primary Mirror Monitoring				
	2		NIRCcam PIL Imaging	(2) 2MASS-19590854+7313564
Epoch 3 NRC PIL Image - Primary Mirror Monitoring				
	3		NIRCcam PIL Imaging	(4) 2MASS-12494253+5132129
Epoch 4 NRC PIL Image - Primary Mirror Monitoring				
	4		NIRCcam PIL Imaging	(3) 2MASS-17505832+6914281

### ABSTRACT

Quarterly NIRCcam PIL images are requested to monitor the state of the primary mirror. PIL images will be inspected to identify and characterize features due to micro-meteoroid degradation, both those previously identified in WFE maps from phase retrieval and those for which the damage from individual micro-meteoroid are below the detection threshold in phase retrieval but are readily identifiable in PIL images. The features will be analyzed with detailed physical optical models in an effort to gain further knowledge of the shape and magnitude of the damage, both in WFE and

reflectivity, beyond what can be derived from phase retrieval. The goal is to use the results to accumulate statistical knowledge of the distribution of degradation, for the purpose of characterizing and monitoring observatory throughput and WFE and perhaps informing operations in strategies to minimize future degradation.

### **OBSERVING DESCRIPTION**

Four Epochs of Primary Mirror monitoring observations using the NIRCcam PIL template with the F140M and F210M filters on a K=7th magnitude star (taken from the pool of targets for the Routine WFS&C program).

2 Extra targets have been included in this program (and are not used at first) as backups in case any of the selected targets turns out to be an unknown binary.

Proposal 9288 - Targets - NIRCcam PIL Images for Monitoring the Primary Mirror

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	2MASS-05562621-6359103	RA: 05 56 26.1833 (89.1090971d) Dec: -63 59 10.34 (-63.98621d) Equinox: J2000	Proper Motion RA: -1.579730909 mas/yr Proper Motion Dec: 4.980070582 mas/yr Epoch of Position: 2015.5	
<i>Comments: K-magnitude = 7.05, Jmag = 8.229</i> <i>Category=Calibration</i> <i>Description=[Focus test]</i>				
(2)	2MASS-19590854+7313564	RA: 19 59 8.5425 (299.7855937d) Dec: +73 13 56.50 (73.23236d) Equinox: J2000	Proper Motion RA: 0.53906769 mas/yr Proper Motion Dec: -5.622224296 mas/yr Epoch of Position: 2015.5	
<i>Comments: K-magnitude = 7.004, Jmag = 7.990</i> <i>Category=Calibration</i> <i>Description=[Focus test]</i>				
(3)	2MASS-17505832+6914281	RA: 17 50 58.3019 (267.7429246d) Dec: +69 14 28.14 (69.24115d) Equinox: J2000	Proper Motion RA: -12.11369631 mas/yr Proper Motion Dec: 0.454306278 mas/yr Epoch of Position: 2015.5	
<i>Comments: K-magnitude = 6.935, Jmag = 7.621</i> <i>Category=Calibration</i> <i>Description=[Focus test]</i>				
(4)	2MASS-12494253+5132129	RA: 12 49 42.4856 (192.4270233d) Dec: +51 32 13.19 (51.53700d) Equinox: J2000	Proper Motion RA: -26.47648216 mas/yr Proper Motion Dec: 16.71649291 mas/yr Epoch of Position: 2015.5	
<i>Comments: K-magnitude = 7.007, Jmag = 7.610</i> <i>Category=Calibration</i> <i>Description=[Focus test]</i>				

Fixed Targets

Proposal 9288 - Observation 1 - NIRCcam PIL Images for Monitoring the Primary Mirror

Mon Apr 28 18:01:05 GMT 2025

<b>Observation</b>	<p><b>Proposal 9288, Observation 1</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRCcam PIL Imaging</p>						
<b>Diagnostics</b>	<p>(Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>						
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>		<b>Miscellaneous</b>	
	(1)	2MASS-05562621-6359103	RA: 05 56 26.1833 (89.1090971d) Dec: -63 59 10.34 (-63.98621d) Equinox: J2000	Proper Motion RA: -1.579730909 mas/yr Proper Motion Dec: 4.980070582 mas/yr Epoch of Position: 2015.5			
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<b>Template</b>	<p><b>Module</b></p> <p>B</p>						
<b>Spectral Elements</b>	<b>#</b>	<b>Short Filter</b>	<b>Readout Pattern</b>	<b>Groups/Int</b>	<b>Integrations/Exp</b>	<b>Total Integrations</b>	<b>Total Exposure Time</b> <b>ETC Wkbk.Calc ID</b>
	1	F140M	BRIGHT2	7	2	2	311.366
	2	F210M	BRIGHT2	7	2	2	311.366
<b>Special Requirements</b>	<p>Between Dates 31-JUL-2025:00:00:00 and 01-SEP-2025:00:00:00</p> <p>No Parallel Attachments</p>						

Proposal 9288 - Observation 2 - NIRCcam PIL Images for Monitoring the Primary Mirror

Mon Apr 28 18:01:05 GMT 2025

<b>Observation</b>	<p><b>Proposal 9288, Observation 2</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRCcam PIL Imaging</p>						
<b>Diagnostics</b>	(Visit 2:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.						
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>		<b>Miscellaneous</b>	
	(2)	2MASS-19590854+7313564	RA: 19 59 8.5425 (299.7855937d) Dec: +73 13 56.50 (73.23236d) Equinox: J2000	Proper Motion RA: 0.53906769 mas/yr Proper Motion Dec: -5.622224296 mas/yr Epoch of Position: 2015.5			
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<b>Spectral Elements</b>	<b>#</b>	<b>Short Filter</b>	<b>Readout Pattern</b>	<b>Groups/Int</b>	<b>Integrations/Exp</b>	<b>Total Integrations</b>	<b>Total Exposure Time</b> <b>ETC Wkbk.Calc ID</b>
	1	F140M	BRIGHT2	7	2	2	311.366
	2	F210M	BRIGHT2	7	2	2	311.366
<b>Special Requirements</b>	<p>Between Dates 31-OCT-2025:00:00:00 and 01-DEC-2025:00:00:00</p> <p>No Parallel Attachments</p>						

Proposal 9288 - Observation 3 - NIRCcam PIL Images for Monitoring the Primary Mirror

Mon Apr 28 18:01:05 GMT 2025

<b>Observation</b>	<p><b>Proposal 9288, Observation 3</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRCcam PIL Imaging</p>																														
<b>Diagnostics</b>	<p>(Visit 3:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p>																														
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<b>Special Requirements</b>	<p>Between Dates 31-JAN-2026:00:00:00 and 01-MAR-2026:00:00:00</p> <p>No Parallel Attachments</p>																														

Proposal 9288 - Observation 4 - NIRCcam PIL Images for Monitoring the Primary Mirror

Mon Apr 28 18:01:05 GMT 2025

<b>Observation</b>	<p><b>Proposal 9288, Observation 4</b></p> <p><b>Diagnostic Status: Warning</b></p> <p>Observing Template: NIRCcam PIL Imaging</p>						
<b>Diagnostics</b>	(Visit 4:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.						
<b>Fixed Targets</b>	<b>#</b>	<b>Name</b>	<b>Target Coordinates</b>	<b>Targ. Coord. Corrections</b>		<b>Miscellaneous</b>	
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	1	F140M	BRIGHT2	7	2	2	311.366
	2	F210M	BRIGHT2	7	2	2	311.366
<b>Special Requirements</b>	<p>Between Dates 30-APR-2026:00:00:00 and 01-JUN-2026:00:00:00</p> <p>No Parallel Attachments</p>						