



9688 - Methanol and Methane on Icy Bodies: Probing Heritage and Evolution in the Outer Solar System

Cycle: 5, Proposal Category: GO

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OBSERVATIONS

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
Observation Folder				
	1	1997CS29	NIRSpec IFU Spectroscopy	(1) 1997CS29
	2	1999KR16	NIRSpec IFU Spectroscopy	(2) 1999KR16

<i>Folder</i>	<i>Observation</i>	<i>Label</i>	<i>Observing Template</i>	<i>Science Target</i>
	3	1999TC36	NIRSpec IFU Spectroscopy	(3) 1999TC36
	4	2002TC302	NIRSpec IFU Spectroscopy	(4) 2002TC302
	5	2004PF115	NIRSpec IFU Spectroscopy	(5) 2004PF115
	6	2004PG115	NIRSpec IFU Spectroscopy	(6) 2004PG115
	8	2010VZ98	NIRSpec IFU Spectroscopy	(8) 2010VZ98
	9	2005UQ513	NIRSpec IFU Spectroscopy	(9) 2005UQ513

ABSTRACT

This proposal aims to provide a crucial test of the “heritage” (from the ISM or protoplanetary disk) vs. “nurture” (by irradiation and other post-accretion processes) debate in planetary formation by studying methanol-rich trans-Neptunian Objects (TNOs) with JWST. Methanol (CH₃OH) is key in this debate, as it is abundant in both the ISM and TNOs, but its presence alone cannot distinguish between these scenarios. Methane (CH₄), an expected byproduct of CH₃OH irradiation, is the missing molecule needed to elucidate whether mid-sized TNOs retain primordial ices or undergo significant post-formation modification.

We propose cutting-edge medium-resolution NIRSpec observations of methanol-rich TNOs with different orbits to analyze how surface compositions evolve under varying irradiation conditions. We aim at detecting weak and narrow features of CH₄ and other irradiation by-products (e.g., H₂CO) of methanol, and at clarifying the evolutionary pathways of icy outer Solar System objects. JWST's high sensitivity and spectral resolution are critical for detecting and quantifying these molecular species.

The detection of CH₄ can differentiate between three formation mechanisms: (1) primordial CH₄ from the ISM or protoplanetary disk, (2) internal production and exchange with the surface, or (3) surface irradiation of CH₃OH. By analyzing CH₄ spectral parameters relative to other ices, orbital parameters and TNO size, we can favor one of these scenarios.

The outcomes will enhance our understanding of surface chemistry of icy bodies, and will impact the fields of protoplanetary disk and planetary system evolution, with broader implications for exoplanetary studies.

OBSERVING DESCRIPTION

This is a proposal to observe 6 Strong-Methanol-TNOs and 2 Weak-Methanol-TNOs using NIRSpec IFU + G140M and G235M. All targets were previously observed in Cycle 1 (programs 2418 and 1191) using NIRSpec IFU + Prism. The goal is to reach SNR > 50 up to 1.6 μm with grism

JWST Proposal 9688 (Created: Tuesday, May 26, 2026, 6:00:31PM Eastern Standard Time) - Overview

G140M, and SNR > 50 up to 2.5 μm with grism G235M, to detect absorption bands not identified in previous Prism observations, among them methane and formaldehyde.

For each target, the combination of readout mode, number of groups and number of integrations has been optimized to achieve the requested SNR while avoiding saturation, integrations longer than 1500s and data volume excess, and minimized overheads. We have chosen the NRSIRS2RAPID readout mode whenever possible. We will use a 4-POINT-DITHER to be able to correctly remove the background, eliminate artifacts such as bad pixels and cosmic rays, and keep the target within the IFU at all positions.

All targets are TNOs with rate motion far below the non-sidereal tracking limit of 0.075''/sec, and have observability in cycle-5 that avoids the MAZ and the galactic plane.

Proposal 9688 - Targets - Methanol and Methane on Icy Bodies: Probing Heritage and Evolution in the Outer Solar System

#	Name	Level 1	Level 2	Level 3
(1)	1997CS29	TYPE=ASTEROID,A=44.03660673009509,E=0.0141 15567274002,I=2.238343127237575,O=304.25636998 2037,W=214.8669092758812,M=351.4770116102194, EQUINOX=J2000,EPOCH=21-NOV- 2025:00:00:00,EpochTimeScale=TDB		
<i>Comments: Extended=NO</i>				
(2)	1999KR16	TYPE=ASTEROID,A=48.48099236041756,E=0.2999 352773920597,I=24.83438668058336,O=205.6736970 158545,W=58.80612519012235,M=355.36091983590 28,EQUINOX=J2000,EPOCH=21-NOV- 2025:00:00:00,EpochTimeScale=TDB		
<i>Comments: Extended=NO</i>				
(3)	1999TC36	TYPE=ASTEROID,A=39.71922029485328,E=0.2298 112993010541,I=8.40316525640989,O=97.167416125 46163,W=295.8246231343421,M=14.6117253391893 5,EQUINOX=J2000,EPOCH=21-NOV- 2025:00:00:00,EpochTimeScale=TDB		
<i>Comments: Extended=NO</i>				
(4)	2002TC302	TYPE=ASTEROID,A=55.83697796736698,E=0.2995 092052283442,I=35.00794987239702,O=23.82537580 502591,W=86.07040961176349,M=331.72790731850 6,EQUINOX=J2000,EPOCH=21-NOV- 2025:00:00:00,EpochTimeScale=TDB		
<i>Comments: Extended=NO</i>				
(5)	2004PF115	TYPE=ASTEROID,A=38.977268878914,E=0.067184 25677919544,I=13.35818876427892,O=84.742878068 43269,W=82.08261755775486,M=182.384476696221 3,EQUINOX=J2000,EPOCH=21-NOV- 2025:00:00:00,EpochTimeScale=TDB		
<i>Comments: Extended=NO</i>				
(6)	2004PG115	TYPE=ASTEROID,A=90.045076247484,E=0.595207 3018565991,I=16.26521179868756,O=230.535594834 1236,W=75.8437580014639,M=9.46719081295068,E QUINOX=J2000,EPOCH=21-NOV- 2025:00:00:00,EpochTimeScale=TDB		
<i>Comments: Extended=NO</i>				
(8)	2010VZ98	TYPE=ASTEROID,A=159.8368262453952,E=0.7850 562242190009,I=4.506907751297173,O=117.4416097 108768,W=313.7358173570468,M=359.64802986813 04,EQUINOX=J2000,EPOCH=21-NOV- 2025:00:00:00,EpochTimeScale=TDB		
<i>Comments: Extended=NO</i>				
(9)	2005UQ513	TYPE=ASTEROID,A=43.52986518045976,E=0.1452 439610538745,I=25.71753464193943,O=307.8925401 584518,W=219.5719257782892,M=238.76915876053 77,EQUINOX=J2000,EPOCH=21-NOV- 2025:00:00:00,EpochTimeScale=TDB		
<i>Comments: Extended=NO</i>				

Solar System Targets

Proposal 9688 - Observation 1 - Methanol and Methane on Icy Bodies: Probing Heritage and Evolution in the Outer Solar System

Tue May 26 23:00:31 GMT 2026

Observation	Proposal 9688, Observation 1: 1997CS29 Diagnostic Status: Warning Observing Template: NIRSpec IFU Spectroscopy											
	(Visit 1:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (1997CS29 (Obs 1)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.											
Diagnostics												
Solar System Targets	#	Name	Level 1				Level 2				Level 3	
	(1)	1997CS29	TYPE=ASTEROID,A=44.03660673009509,E=0.0141 15567274002,I=2.238343127237575,O=304.25636998 2037,W=214.8669092758812,M=351.4770116102194, EQUINOX=J2000,EPOCH=21-NOV- 2025:00:00:00,EpochTimeScale=TDB Comments: Extended=NO									
Template	TA Method						HFF Readout Mode					
	NONE						false					
Dithers	#	Dither Type		Size		Starting Point		Number of Points		Points		
	1	4-POINT-DITHER										
Spectral Elements	#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Ex p	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
	1	G140M/F100LP	NRSIRS2	20	3	false	true	NONE	4	12	17681.735	
	2	G235M/F170LP	NRSIRS2	20	4	false	true	NONE	4	16	23575.646	
Special Requirements	Between Dates 20-NOV-2026:00:00:00 and 10-DEC-2026:03:55:00 Between Dates 11-DEC-2026:03:50:00 and 04-JAN-2027:23:10:00 Between Dates 05-JAN-2027:16:40:00 and 08-JAN-2027:00:00:00 Between Dates 06-APR-2027:00:00:00 and 28-MAY-2027:00:00:00 DEFAULT WINDOW: ANGULAR RATE 1997CS29 FROM JWST LESS THAN 0.075											

Proposal 9688 - Observation 2 - Methanol and Methane on Icy Bodies: Probing Heritage and Evolution in the Outer Solar System

Tue May 26 23:00:31 GMT 2026

Observation	Proposal 9688, Observation 2: 1999KR16 Diagnostic Status: Warning Observing Template: NIRSpec IFU Spectroscopy											
	(Visit 2:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (1999KR16 (Obs 2)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.											
Solar System Targets	#	Name	Level 1				Level 2				Level 3	
	(2)	1999KR16	TYPE=ASTEROID,A=48.48099236041756,E=0.2999 352773920597,I=24.83438668058336,O=205.6736970 158545,W=58.80612519012235,M=355.36091983590 28,EQUINOX=J2000,EPOCH=21-NOV- 2025:00:00:00,EpochTimeScale=TDB <i>Comments: Extended=NO</i>									
Template	TA Method						HFF Readout Mode					
	NONE						false					
Dithers	#	Dither Type		Size		Starting Point		Number of Points		Points		
	1	4-POINT-DITHER										
Spectral Elements	#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
	1	G140M/F100LP	NRSIRS2	20	2	false	true	NONE	4	8	11787.823	
	2	G235M/F170LP	NRSIRS2	15	2	false	true	NONE	4	8	8870.045	
Special Requirements	Between Dates 18-JUL-2026:00:00:00 and 21-JUL-2026:00:00:00 Between Dates 23-JUL-2026:07:15:00 and 26-JUL-2026:19:55:00 Between Dates 27-JUL-2026:05:55:00 and 10-AUG-2026:19:40:00 Between Dates 11-AUG-2026:06:00:00 and 11-SEP-2026:00:00:00 Between Dates 03-MAR-2027:00:00:00 and 13-MAR-2027:19:35:00 Between Dates 14-MAR-2027:06:00:00 and 17-MAR-2027:11:40:00 Between Dates 17-MAR-2027:22:20:00 and 24-MAR-2027:10:15:00 Between Dates 24-MAR-2027:20:00:00 and 28-MAR-2027:14:25:00 Between Dates 30-MAR-2027:00:00:00 and 16-APR-2027:01:30:00 Between Dates 16-APR-2027:11:05:00 and 21-APR-2027:20:45:00 Between Dates 22-APR-2027:06:30:00 and 26-APR-2027:00:00:00 DEFAULT WINDOW: ANGULAR RATE 1999KR16 FROM JWST LESS THAN 0.075											

Proposal 9688 - Observation 3 - Methanol and Methane on Icy Bodies: Probing Heritage and Evolution in the Outer Solar System

Tue May 26 23:00:31 GMT 2026

Observation	Proposal 9688, Observation 3: 1999TC36 Diagnostic Status: Warning Observing Template: NIRSpec IFU Spectroscopy											
	(Visit 3:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (1999TC36 (Obs 3)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.											
Diagnosics												
Solar System Targets	#	Name	Level 1				Level 2				Level 3	
	(3)	1999TC36	TYPE=ASTEROID,A=39.71922029485328,E=0.2298 112993010541,I=8.40316525640989,O=97.167416125 46163,W=295.8246231343421,M=14.6117253391893 5,EQUINOX=J2000,EPOCH=21-NOV- 2025:00:00:00,EpochTimeScale=TDB									
<i>Comments: Extended=NO</i>												
Template	TA Method						HFF Readout Mode					
	NONE						false					
Dithers	#	Dither Type		Size		Starting Point		Number of Points		Points		
	1	4-POINT-DITHER										
Spectral Elements	#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
	1	G140M/F100LP	NRSIRS2RAPI D	35	1	false	true	NONE	4	4	2100.8	
	2	G235M/F170LP	NRSIRS2RAPI D	45	1	false	true	NONE	4	4	2684.356	
Special Requirements	Between Dates 19-AUG-2026:00:00:00 and 09-OCT-2026:00:00:00 Between Dates 04-JAN-2027:00:00:00 and 09-JAN-2027:17:05:00 Between Dates 09-JAN-2027:21:55:00 and 20-JAN-2027:17:30:00 Between Dates 20-JAN-2027:23:55:00 and 23-FEB-2027:00:00:00											
	DEFAULT WINDOW: ANGULAR RATE 1999TC36 FROM JWST LESS THAN 0.075											

Proposal 9688 - Observation 4 - Methanol and Methane on Icy Bodies: Probing Heritage and Evolution in the Outer Solar System

Tue May 26 23:00:31 GMT 2026

Observation	Proposal 9688, Observation 4: 2002TC302 Diagnostic Status: Warning Observing Template: NIRSpec IFU Spectroscopy											
Diagnostics	(Visit 4:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (2002TC302 (Obs 4)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.											
Solar System Targets	#	Name	Level 1			Level 2			Level 3			
	(4)	2002TC302	TYPE=ASTEROID,A=55.83697796736698,E=0.2995 092052283442,I=35.00794987239702,O=23.82537580 502591,W=86.07040961176349,M=331.72790731850 6,EQUINOX=J2000,EPOCH=21-NOV- 2025:00:00:00,EpochTimeScale=TDB									
	<i>Comments: Extended=NO</i>											
Template	TA Method						HFF Readout Mode					
	NONE						false					
Dithers	#	Dither Type		Size	Starting Point		Number of Points		Points			
	1	4-POINT-DITHER										
Spectral Elements	#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
	1	G140M/F100LP	NRSIRS2RAPI D	60	1	false	true	NONE	4	4	3559.689	
	2	G235M/F170LP	NRSIRS2RAPI D	80	1	false	true	NONE	4	4	4726.8	
Special Requirements	Between Dates 13-AUG-2026:17:30:00 and 29-AUG-2026:16:55:00 Between Dates 29-AUG-2026:23:35:00 and 02-SEP-2026:17:20:00 Between Dates 03-SEP-2026:01:05:00 and 08-SEP-2026:22:35:00 Between Dates 09-SEP-2026:05:25:00 and 07-OCT-2026:00:00:00 Between Dates 27-DEC-2026:00:00:00 and 30-DEC-2026:18:30:00 Between Dates 31-DEC-2026:00:35:00 and 01-JAN-2027:05:45:00 Between Dates 01-JAN-2027:12:00:00 and 04-JAN-2027:10:25:00 Between Dates 04-JAN-2027:16:40:00 and 16-JAN-2027:02:10:00 Between Dates 16-JAN-2027:09:15:00 and 29-JAN-2027:23:05:00 Between Dates 30-JAN-2027:21:50:00 and 18-FEB-2027:00:00:00 DEFAULT WINDOW: ANGULAR RATE 2002TC302 FROM JWST LESS THAN 0.075											

Proposal 9688 - Observation 5 - Methanol and Methane on Icy Bodies: Probing Heritage and Evolution in the Outer Solar System

Tue May 26 23:00:31 GMT 2026

Observation	Proposal 9688, Observation 5: 2004PF115 Diagnostic Status: Warning Observing Template: NIRSpec IFU Spectroscopy											
	(Visit 5:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (2004PF115 (Obs 5)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.											
Diagnosics												
Solar System Targets	#	Name	Level 1				Level 2				Level 3	
	(5)	2004PF115	TYPE=ASTEROID,A=38.977268878914,E=0.067184 25677919544,I=13.35818876427892,O=84.742878068 43269,W=82.08261755775486,M=182.384476696221 3,EQUINOX=J2000,EPOCH=21-NOV- 2025:00:00:00,EpochTimeScale=TDB <i>Comments: Extended=NO</i>									
Template	TA Method						HFF Readout Mode					
	NONE						false					
Dithers	#	Dither Type		Size		Starting Point		Number of Points		Points		
	1	4-POINT-DITHER										
Spectral Elements	#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
	1	G140M/F100LP	NRSIRS2RAPI D	60	1	false	true	NONE	4	4	3559.689	
	2	G235M/F170LP	NRSIRS2RAPI D	85	1	false	true	NONE	4	4	5018.578	
Special Requirements	Between Dates 01-JUL-2026:00:00:00 and 25-JUL-2026:00:20:00 Between Dates 25-JUL-2026:06:40:00 and 31-JUL-2026:00:00:00 Between Dates 26-OCT-2026:00:00:00 and 01-NOV-2026:14:40:00 Between Dates 01-NOV-2026:21:10:00 and 06-DEC-2026:10:45:00 Between Dates 06-DEC-2026:19:50:00 and 17-DEC-2026:00:00:00 Between Dates 08-JUN-2027:00:00:00 and 01-JUL-2027:00:00:00 DEFAULT WINDOW: ANGULAR RATE 2004PF115 FROM JWST LESS THAN 0.075											

Proposal 9688 - Observation 6 - Methanol and Methane on Icy Bodies: Probing Heritage and Evolution in the Outer Solar System

Tue May 26 23:00:31 GMT 2026

Observation	Proposal 9688, Observation 6: 2004PG115 Diagnostic Status: Warning Observing Template: NIRSpec IFU Spectroscopy											
	(Visit 6:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (2004PG115 (Obs 6)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.											
Diagnosics												
Solar System Targets	#	Name	Level 1				Level 2				Level 3	
	(6)	2004PG115	TYPE=ASTEROID,A=90.045076247484,E=0.595207 3018565991,I=16.26521179868756,O=230.535594834 1236,W=75.8437580014639,M=9.46719081295068,E QUINOX=J2000,EPOCH=21-NOV- 2025:00:00:00,EpochTimeScale=TDB Comments: Extended=NO									
Template	TA Method						HFF Readout Mode					
	NONE						false					
Dithers	#	Dither Type		Size		Starting Point		Number of Points		Points		
	1	4-POINT-DITHER										
Spectral Elements	#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
	1	G140M/F100LP	NRSIRS2RAPID	100	1	false	true	NONE	4	4	5893.912	
	2	G235M/F170LP	NRSIRS2	15	2	false	true	NONE	4	8	8870.045	
Special Requirements	Between Dates 01-JUL-2026:00:00:00 and 07-JUL-2026:00:10:00 Between Dates 07-JUL-2026:11:00:00 and 27-JUL-2026:20:05:00 Between Dates 28-JUL-2026:04:10:00 and 02-AUG-2026:00:00:00 Between Dates 28-OCT-2026:00:00:00 and 29-OCT-2026:02:55:00 Between Dates 29-OCT-2026:11:10:00 and 04-DEC-2026:20:10:00 Between Dates 05-DEC-2026:06:35:00 and 15-DEC-2026:13:15:00 Between Dates 15-DEC-2026:22:35:00 and 19-DEC-2026:00:00:00 Between Dates 11-JUN-2027:00:00:00 and 01-JUL-2027:00:00:00 DEFAULT WINDOW: ANGULAR RATE 2004PG115 FROM JWST LESS THAN 0.075											

Proposal 9688 - Observation 8 - Methanol and Methane on Icy Bodies: Probing Heritage and Evolution in the Outer Solar System

Tue May 26 23:00:31 GMT 2026

Observation	<p>Proposal 9688, Observation 8: 2010VZ98</p> <p>Diagnostic Status: Warning</p> <p>Observing Template: NIRSpec IFU Spectroscopy</p>											
Diagnostics	<p>(Visit 8:1) Warning (Form): Overheads are provisional until the Visit Planner has been run.</p> <p>(2010VZ98 (Obs 8)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.</p>											
Solar System Targets	#	Name	Level 1				Level 2				Level 3	
	(8)	2010VZ98	TYPE=ASTEROID,A=159.8368262453952,E=0.7850 562242190009,I=4.506907751297173,O=117.4416097 108768,W=313.7358173570468,M=359.64802986813 04,EQUINOX=J2000,EPOCH=21-NOV- 2025:00:00:00,EpochTimeScale=TDB									
	<i>Comments: Extended=NO</i>											
Template	TA Method						HFF Readout Mode					
	NONE						false					
Dithers	#	Dither Type		Size		Starting Point		Number of Points		Points		
	1	4-POINT-DITHER										
Spectral Elements	#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
	1	G140M/F100LP	NRSIRS2RAPI D	45	1	false	true	NONE	4	4	2684.356	
	2	G235M/F170LP	NRSIRS2RAPI D	60	1	false	true	NONE	4	4	3559.689	
Special Requirements	<p>Between Dates 29-AUG-2026:00:00:00 and 12-OCT-2026:21:05:00</p> <p>Between Dates 13-OCT-2026:03:15:00 and 18-OCT-2026:00:00:00</p> <p>Between Dates 14-JAN-2027:00:00:00 and 10-FEB-2027:10:55:00</p> <p>Between Dates 10-FEB-2027:21:50:00 and 05-MAR-2027:00:00:00</p>											
	<p>DEFAULT WINDOW: ANGULAR RATE 2010VZ98 FROM JWST LESS THAN 0.075</p>											

Proposal 9688 - Observation 9 - Methanol and Methane on Icy Bodies: Probing Heritage and Evolution in the Outer Solar System

Tue May 26 23:00:31 GMT 2026

Observation	Proposal 9688, Observation 9: 2005UQ513 Diagnostic Status: Warning Observing Template: NIRSpec IFU Spectroscopy											
	(Visit 9:1) Warning (Form): Overheads are provisional until the Visit Planner has been run. (2005UQ513 (Obs 9)) Informational (Form): The Visit Planner and Spike may produce different schedulability results.											
Diagnosics												
Solar System Targets	#	Name	Level 1				Level 2				Level 3	
	(9)	2005UQ513	TYPE=ASTEROID,A=43.52986518045976,E=0.1452 439610538745,I=25.71753464193943,O=307.8925401 584518,W=219.5719257782892,M=238.76915876053 77,EQUINOX=J2000,EPOCH=21-NOV- 2025:00:00:00,EpochTimeScale=TDB <i>Comments: Extended=NO</i>									
Template	TA Method						HFF Readout Mode					
	NONE						false					
Dithers	#	Dither Type		Size	Starting Point			Number of Points		Points		
	1	4-POINT-DITHER										
Spectral Elements	#	Grating/Filter	Readout Pattern	Groups/Int	Integrations/Exp	Leakcal	Dither	Autocal	Total Dithers	Total Integrations	Total Exposure Time	Optional ETC ID
	1	G140M/F100LP	NRSIRS2RAPID	80	1	false	true	NONE	4	4	4726.8	
	2	G235M/F170LP	NRSIRS2	20	1	false	true	NONE	4	4	5893.912	

Proposal 9688 - Observation 9 - Methanol and Methane on Icy Bodies: Probing Heritage and Evolution in the Outer Solar System

Special Requirements	Between Dates 23-JUL-2026:00:00:00 and 06-AUG-2026:15:50:00 Between Dates 06-AUG-2026:23:20:00 and 20-AUG-2026:10:10:00 Between Dates 20-AUG-2026:18:15:00 and 14-SEP-2026:04:35:00 Between Dates 14-SEP-2026:11:25:00 and 17-SEP-2026:05:20:00 Between Dates 17-SEP-2026:12:10:00 and 19-SEP-2026:05:20:00 Between Dates 04-DEC-2026:00:00:00 and 29-DEC-2026:01:00:00 Between Dates 29-DEC-2026:09:10:00 and 01-JAN-2027:15:35:00 Between Dates 01-JAN-2027:23:10:00 and 07-JAN-2027:20:40:00 Between Dates 08-JAN-2027:04:00:00 and 13-JAN-2027:17:25:00 Between Dates 14-JAN-2027:01:20:00 and 22-JAN-2027:09:30:00 Between Dates 22-JAN-2027:17:00:00 and 25-JAN-2027:15:20:00 Between Dates 25-JAN-2027:22:50:00 and 27-JAN-2027:17:15:00 Between Dates 28-JAN-2027:01:35:00 and 30-JAN-2027:00:00:00 DEFAULT WINDOW: ANGULAR RATE 2005UQ513 FROM JWST LESS THAN 0.075
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