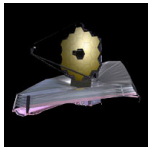

4358 - iCe astrocHemistry at the EdgE of a staR-formIng clOud (CHEERIO): Cha I

Cycle: 2, Proposal Category: GO

INVESTIGATORS

Name	*Institution*
Mr. Zak Luka Smith (PI) (ESA Member)	**Leiden Observatory**
Dr. Jennifer Noble (CoI) (ESA Member) (CoPI) (Contact)	Aix-Marseille University
Dr. Abraham C. Boogert (CoI) (CoPI) (US Admin CoI) (Contact)	University of Hawaii
Dr. Emmanuel Dartois (CoI) (ESA Member)	Université Paris-Saclay
Dr. Angele Taillard (CoI) (ESA Member)	Laboratoire d'Astrophysique de Bordeaux
Dr. Valentine Wakelam (CoI) (ESA Member)	Universite de Bordeaux
Dr. Helen Jane Fraser (CoI) (ESA Member) (Contact)	Open University
Dr. Melissa McClure (CoI) (ESA Member) (Contact)	Universiteit Leiden
Dr. Lars E. Kristensen (CoI) (ESA Member) (Contact)	University of Copenhagen, Niels Bohr Institute
Dr. Danna Nedal Qasim (CoI)	Southwest Research Institute
Prof. Jes K. Jorgensen (CoI) (ESA Member)	University of Copenhagen, Niels Bohr Institute
Dr. Giulia Perotti (CoI) (ESA Member)	Max Planck Institute for Astronomy
Dr. Jessica Sudiye Erkal (CoI)	University of Hawaii
Dr. Gary Melnick (CoI)	Smithsonian Institution Astrophysical Observatory
Prof. Harold Linnartz (CoI) (ESA Member)	Universiteit Leiden
Dr. Sergio Ioppolo (CoI) (ESA Member)	Aarhus University
Dr. Takashi Shimonishi (CoI)	Niigata University
Dr. Nicolas Michael Crouzet (CoI) (ESA Member)	Leiden Observatory
Dr. Yvonne Jean Pendleton (CoI)	University of Central Florida Board of Trustees
Dr. Laurie E Chu (CoI)	Caltech/IPAC
Dr. Thanja Lamberts (CoI) (ESA Member)	Universiteit Leiden
Daniel Harsono (CoI)	National Tsing Hua University
Dr. Izaskun Jimenez-Serra (CoI) (ESA Member)	Centro de Astrobiologia (CSIC/INTA) Inst. Nac. de Tec. Aero.

Name	*Institution*
Dr. Maria Elisabetta Palumbo (CoI) (ESA Member)	INAF, Osservatorio Astrofisico di Catania
Dra. Belen Mate (CoI) (ESA Member)	Instituto de Estructura de la Materia
Prof. Victor Jose Herrero (CoI) (ESA Member)	Consejo Superior de Investigaciones Cientificas
Dr. Eiichi Egami (CoI)	University of Arizona
Dr. Fengwu Sun (CoI)	Harvard University

OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
Cloud Edge Spectra				
	1	CO R Top Cloud	NIRCam Wide Field Slitless Spectroscopy	(1) TOP-CLOUD-EDGE-CO-FILTER-R
	2	CO C Top Cloud	NIRCam Wide Field Slitless Spectroscopy	(2) TOP-CLOUD-EDGE-CO-FILTER-C
	3	H2O C Top Cloud	NIRCam Wide Field Slitless Spectroscopy	(3) TOP-CLOUD-EDGE-H2O-FILTER-R
	4	H2O R Bottom Cloud	NIRCam Wide Field Slitless Spectroscopy	(4) BOTTOM-CLOUD-EDGE-H2O-R
	6	H2O R Bottom Cloud - Duplicate of Obs 4	NIRCam Wide Field Slitless Spectroscopy	(4) BOTTOM-CLOUD-EDGE-H2O-R
	5	H2O C Bottom Cloud	NIRCam Wide Field Slitless Spectroscopy	(5) BOTTOM-CLOUD-EDGE-H2O-FILTER-C

ABSTRACT

CHEERIO is a small-scale JWST programme exploiting the NIRCam-WFSS instrument to generate ice spectra (with complete 2-5 micron spectral coverage) of 2 cloud edge regions in the Chameleon I molecular cloud.

The enhanced sensitivity of JWST is uniquely suited to probing the edges of molecular clouds, allowing us to address the puzzling question of how interstellar ice mantles first form in these tenuous transition regions between the dense and diffuse interstellar medium. Many questions remain about the true conditions for the appearance of interstellar ice. With the observation strategy forseen in this proposal, we will detect the main constituents of interstellar ices (H2O, CO, CO2 and CH3OH), extracting their abundance and relative compositions as a function of extinction (Av) - the "blocking" by background starlight by ever denser gas and dust. These observations will provide fierce discriminators to benchmark predictions of ice molecular abundances from astrochemical models. Interstellar molecular clouds assemble via a journey exploring successively, and dynamically, different physical conditions. We predict the ices observed depend on this "pathway", and wil test our astrochemical understanding with these obserations.

OBSERVING DESCRIPTION

The CHEERIO program exploits NIRCam WFSS to generate complete spectral coverage of 2 cloud edge regions in the Chameleon I molecular cloud. The required observing time is 20.07 hours (9.23 science hours). These observations will provide spectra on lines of sight towards of 600+ background sources, the majority of which will include ice absorptions at some SNR (from a few to many 100's) . Covering wavelengths from 2.4-5m at R=1120-1680, this programme surveys the 4 key ice species H2O, CO, CO2 and CH3OH, that are anticipated to form earliest during molecular cloud evolution, at Av values ranging from 0 to 50. In achieving the science goals of this proposal, JWST sensitivity is critical to identifying enough background sources against which we can detect ice spectra that probe low dynamic Av ranges i.e. below 1 to 2. SW and LW NIRCAM imaging (concurrent with NIRCam WFSS) will provide photometry at 1.4, 1.5, 1.87 and 2.5m, directly within the steepest region of each background source's extinction curve. This data is fundamental to describing the SED curve of the background source against which the ice absorption spectra are recorded, and provide vital tethering points to remove the intrinsic photospheric features of the background sources. It is standard to fit ice spectra with a suitable Phoenix stellar model, reddened by an interstellar extinction curve – thereby yielding Av values from the data reduction alongside ice feature detections. The proposal contains no duplicate observations, is fully schedulable in the APT and avoids the micrometeoroid avoidance zone.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	TOP-CLOUD-EDGE-CO-FILTER-R	RA: 11 06 42.0379 (166.6751579d) Dec: -77 20 43.61 (-77.34545d) Equinox: J2000		
Comments: *Category=ISM* *Description=[Interstellar clouds, Molecular clouds]*				
(2)	TOP-CLOUD-EDGE-CO-FILTER-C	RA: 11 06 45.1507 (166.6881279d) Dec: -77 20 56.97 (-77.34916d) Equinox: J2000		
Comments: *Category=ISM* *Description=[Interstellar clouds, Molecular clouds]*				
(3)	TOP-CLOUD-EDGE-H2O-FILTER-R	RA: 11 06 41.6271 (166.6734463d) Dec: -77 20 49.57 (-77.34710d) Equinox: J2000		
Comments: *Category=ISM* *Description=[Interstellar absorption, Interstellar clouds, Interstellar molecules]*				
(4)	BOTTOM-CLOUD-EDGE-H2O-R	RA: 11 05 18.9831 (166.3290963d) Dec: -77 25 5.05 (-77.41807d) Equinox: J2000		
Comments: *Category=ISM* *Description=[Interstellar clouds, Molecular clouds]*				
(5)	BOTTOM-CLOUD-EDGE-H2O-FILTER-C	RA: 11 04 48.6832 (166.2028467d) Dec: -77 24 25.59 (-77.40711d) Equinox: J2000		
Comments: *Category=ISM* *Description=[Interstellar clouds, Molecular clouds]*				

Observation

Proposal 4358, Observation 1: CO R Top Cloud

Mon Sep 09 22:00:13 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam Wide Field Slitless Spectroscopy

Diagnostics

(CO R Top Cloud (Obs 1)) Warning (Form): For Module=ALL the default target location is in the gap between the modules.

(CO R Top Cloud (Obs 1)) Warning (Form): This observation is split across multiple visits using multiple filters. Not selecting the sequence option may result in execution of the visits in a non-numerical order and is not recommended.

(CO R Top Cloud (Obs 1)) Warning (Form): Use of only one of GRISMR or GRISMC may result in spectral overlap from multiple sources that can't be corrected. Users should address this issue in their proposal text.

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

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

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	TOP-CLOUD-EDGE-CO-FILTER-R	RA: 11 06 42.0379 (166.6751579d) Dec: -77 20 43.61 (-77.34545d) Equinox: J2000		

Comments:
Category=ISM
Description=[Interstellar clouds, Molecular clouds]

Template

Module	Subarray	Grism (Long Wavelength)
ALL	FULL	GRISMR

Mosaic

Rows	Columns	Row Overlap %	Column Overlap %	Row shift (deg)	Column shift (deg)	Tile Order
1	2	10.0	87.0	0.0	0.0	DEFAULT

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Positions
1	INTRAMODULEBOX	3	4-Point

Direct Image

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F200W	F430M	SHALLOW2	2	1	1	75.157	144263	GRISMR	Direct Image	1

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F182M	F444W	SHALLOW4	5	1	12	3092.19	144263	GRISMR	Grism (Long Wavelength)	12
2	F200W	F430M	SHALLOW2	2	1	2	150.315	144263		Out of Field	2

Special Requirements	
	Between Dates 01-JUN-2023:00:00:00 and 30-JUN-2024:00:00:00 Group Visits within 53.0 Days Aperture PA Range 20.0 to 60.0 Degrees (V3 20.0 to 60.0) Visits Same PA Offset -110.0 arcsec, 0.0 arcsec

Observation

Proposal 4358, Observation 2: CO C Top Cloud Mon Sep 09 22:00:13 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam Wide Field Slitless Spectroscopy

Diagnostics

(CO C Top Cloud (Obs 2)) Warning (Form): For Module=ALL the default target location is in the gap between the modules.

(CO C Top Cloud (Obs 2)) Warning (Form): This observation is split across multiple visits using multiple filters. Not selecting the sequence option may result in execution of the visits in a non-numerical order and is not recommended.

(CO C Top Cloud (Obs 2)) Warning (Form): Use of only one of GRISMR or GRISMC may result in spectral overlap from multiple sources that can't be corrected. Users should address this issue in their proposal text.

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

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

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(2)	TOP-CLOUD-EDGE-CO-FILTER-C	RA: 11 06 45.1507 (166.6881279d) Dec: -77 20 56.97 (-77.34916d) Equinox: J2000		

Comments:
Category=ISM
Description=[Interstellar clouds, Molecular clouds]

Template

Module	Subarray	Grism (Long Wavelength)
ALL	FULL	GRISMC

Mosaic

Rows	Columns	Row Overlap %	Column Overlap %	Row shift (deg)	Column shift (deg)	Tile Order
2	1	70.0	10.0	0.0	0.0	DEFAULT

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Positions
1	INTRAMODULEBOX	3	4-Point

Direct Image

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F200W	F430M	SHALLOW2	2	1	1	75.157	144263	GRISMC	Direct Image	1

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F182M	F444W	SHALLOW4	5	1	12	3092.19	144263	GRISMC	Grism (Long Wavelength)	12
2	F200W	F430M	SHALLOW2	2	1	2	150.315	144263		Out of Field	2

Special Requirements	
	Between Dates 01-JUN-2023:00:00:00 and 30-JUN-2024:00:00:00 Group Visits within 53.0 Days Aperture PA Range 20.0 to 47.0 Degrees (V3 20.0 to 47.0) Visits Same PA Offset -90.0 arcsec, -30.0 arcsec

Observation

Proposal 4358, Observation 3: H2O C Top Cloud Mon Sep 09 22:00:13 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam Wide Field Slitless Spectroscopy

Diagnostics

(H2O C Top Cloud (Obs 3)) Warning (Form): For Module=ALL the default target location is in the gap between the modules.

(H2O C Top Cloud (Obs 3)) Warning (Form): This observation is split across multiple visits using multiple filters. Not selecting the sequence option may result in execution of the visits in a non-numerical order and is not recommended.

(H2O C Top Cloud (Obs 3)) Warning (Form): Use of only one of GRISMR or GRISMC may result in spectral overlap from multiple sources that can't be corrected. Users should address this issue in their proposal text.

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

(Visit 3:2) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(3)	TOP-CLOUD-EDGE-H2O-FILTER-R	RA: 11 06 41.6271 (166.6734463d) Dec: -77 20 49.57 (-77.34710d) Equinox: J2000		

Comments:
Category=ISM
Description=[Interstellar absorption, Interstellar clouds, Interstellar molecules]

Template

Module	Subarray	Grism (Long Wavelength)
ALL	FULL	GRISMC

Mosaic

Rows	Columns	Row Overlap %	Column Overlap %	Row shift (deg)	Column shift (deg)	Tile Order
2	1	85.0	10.0	0.0	0.0	DEFAULT

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Positions
1	INTRAMODULEBOX	3	4-Point

Direct Image

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F210M	F250M	SHALLOW2	2	1	1	75.157	144263	GRISMC	Direct Image	1

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F140M	F322W2	SHALLOW4	5	1	12	3092.19	144263	GRISMC	Grism (Long Wavelength)	12
2	F210M	F250M	SHALLOW2	2	1	2	150.315	144263		Out of Field	2

Special Requirements	
	Between Dates 01-JUN-2023:00:00:00 and 30-JUN-2024:00:00:00 Group Visits within 53.0 Days Aperture PA Range 145.0 to 190.0 Degrees (V3 145.0 to 190.0) Visits Same PA Offset -90.0 arcsec, 45.0 arcsec

Observation

Proposal 4358, Observation 4: H2O R Bottom Cloud Mon Sep 09 22:00:13 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam Wide Field Slitless Spectroscopy

Comments: Covers Off cloud CO/CO2 full coverage region

Diagnostics

(H2O R Bottom Cloud (Obs 4)) Warning (Form): For Module=ALL the default target location is in the gap between the modules.

(H2O R Bottom Cloud (Obs 4)) Warning (Form): This observation is split across multiple visits using multiple filters. Not selecting the sequence option may result in execution of the visits in a non-numerical order and is not recommended.

(H2O R Bottom Cloud (Obs 4)) Warning (Form): Use of only one of GRISMR or GRISMC may result in spectral overlap from multiple sources that can't be corrected. Users should address this issue in their proposal text.

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

(Visit 4:2) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(4)	BOTTOM-CLOUD-EDGE-H2O-R	RA: 11 05 18.9831 (166.3290963d) Dec: -77 25 5.05 (-77.41807d) Equinox: J2000		

Comments:
Category=ISM
Description=[Interstellar clouds, Molecular clouds]

Template

Module	Subarray	Grism (Long Wavelength)
ALL	FULL	GRISMR

Mosaic

Rows	Columns	Row Overlap %	Column Overlap %	Row shift (deg)	Column shift (deg)	Tile Order
1	2	10.0	87.0	0.0	0.0	DEFAULT

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Positions
1	INTRAMODULEBOX	3	4-Point

Direct Image

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F150W	F410M	SHALLOW2	2	1	1	75.157	144263	GRISMR	Direct Image	1

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F140M	F322W2	SHALLOW4	5	1	12	3092.19	144263	GRISMR	Grism (Long Wavelength)	12
2	F150W	F410M	SHALLOW2	2	1	2	150.315	144263		Out of Field	2

Special Requirements	
	Group Visits within 53.0 Days Aperture PA Range 160.0 to 178.0 Degrees (V3 160.0 to 178.0) Visits Same PA

Observation

Proposal 4358, Observation 6: H2O R Bottom Cloud - Duplicate of Obs 4 Mon Sep 09 22:00:13 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam Wide Field Slitless Spectroscopy

Comments: Covers Off cloud CO/CO2 full coverage region

Diagnostics

(H2O R Bottom Cloud - Duplicate of Obs 4 (Obs 6)) Warning (Form): For Module=ALL the default target location is in the gap between the modules.

(H2O R Bottom Cloud - Duplicate of Obs 4 (Obs 6)) Warning (Form): This observation is split across multiple visits using multiple filters. Not selecting the sequence option may result in execution of the visits in a non-numerical order and is not recommended.

(H2O R Bottom Cloud - Duplicate of Obs 4 (Obs 6)) Warning (Form): Use of only one of GRISMR or GRISMC may result in spectral overlap from multiple sources that can't be corrected. Users should address this issue in their proposal text.

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

(Visit 6:2) Warning (Form): Overheads are provisional until the Visit Planner has been run.

(Visit 6:1) Informational (Form): Visit schedulable, but most scheduling windows are when JWST is pointed in direction of greatest micrometeoroid impact risk. This is likely due to scheduling special requirements.

(Visit 6:2) Informational (Form): Visit schedulable, but most scheduling windows are when JWST is pointed in direction of greatest micrometeoroid impact risk. This is likely due to scheduling special requirements.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(4)	BOTTOM-CLOUD-EDGE-H2O-R	RA: 11 05 18.9831 (166.3290963d) Dec: -77 25 5.05 (-77.41807d) Equinox: J2000		

Comments:
Category=ISM
Description=[Interstellar clouds, Molecular clouds]

Template

Module	Subarray	Grism (Long Wavelength)
ALL	FULL	GRISMR

Mosaic

Rows	Columns	Row Overlap %	Column Overlap %	Row shift (deg)	Column shift (deg)	Tile Order
1	2	10.0	87.0	0.0	0.0	DEFAULT

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Positions
1	INTRAMODULEBOX	3	4-Point

Direct Image

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F150W	F410M	SHALLOW2	4	1	1	182.525	144263	GRISMR	Direct Image	1

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F140M	F322W2	SHALLOW4	5	1	12	3092.19	144263	GRISMR	Grism (Long Wavelength)	12
2	F150W	F410M	SHALLOW2	4	1	2	365.05	144263		Out of Field	2

Special Requirements	
	Group Visits within 53.0 Days Aperture PA Range 340.0 to 5.0 Degrees (V3 340.0 to 5.0) Visits Same PA

Observation

Proposal 4358, Observation 5: H2O C Bottom Cloud Mon Sep 09 22:00:13 GMT 2024

Diagnostic Status: Warning

Observing Template: NIRCam Wide Field Slitless Spectroscopy

Comments: Covers Off cloud CO/CO2 full coverage region

Diagnostics

(H2O C Bottom Cloud (Obs 5)) Warning (Form): For Module=ALL the default target location is in the gap between the modules.

(H2O C Bottom Cloud (Obs 5)) Warning (Form): This observation is split across multiple visits using multiple filters. Not selecting the sequence option may result in execution of the visits in a non-numerical order and is not recommended.

(H2O C Bottom Cloud (Obs 5)) Warning (Form): Use of only one of GRISMR or GRISMC may result in spectral overlap from multiple sources that can't be corrected. Users should address this issue in their proposal text.

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

(Visit 5:2) Warning (Form): Overheads are provisional until the Visit Planner has been run.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(5)	BOTTOM-CLOUD-EDGE-H2O-FILTER-C	RA: 11 04 48.6832 (166.2028467d) Dec: -77 24 25.59 (-77.40711d) Equinox: J2000		

Comments:
Category=ISM
Description=[Interstellar clouds, Molecular clouds]

Template

Module	Subarray	Grism (Long Wavelength)
ALL	FULL	GRISMC

Mosaic

Rows	Columns	Row Overlap %	Column Overlap %	Row shift (deg)	Column shift (deg)	Tile Order
2	1	82.0	10.0	0.0	0.0	DEFAULT

Dithers

#	Primary Dither Type	Primary Dithers	Subpixel Positions
1	INTRAMODULEBOX	3	4-Point

Direct Image

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F150W	F410M	SHALLOW2	2	1	1	75.157	144263	GRISMC	Direct Image	1

Spectral Elements

#	Short Filter	Long Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	ETC Wkbk.Calc ID	Grism (Long Wavelength)	Exposure Type	Total Dithers
1	F140M	F322W2	SHALLOW4	5	1	12	3092.19	144263	GRISMC	Grism (Long Wavelength)	12
2	F150W	F410M	SHALLOW2	2	1	2	150.315	144263		Out of Field	2

Special Requirements	
	Group Visits within 53.0 Days Aperture PA Range 167.0 to 167.0 Degrees (V3 167.0 to 167.0) Visits Same PA