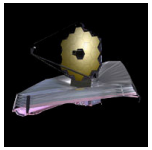

7538 - Giants in the making: the composition of circumplanetary disks with JWST MIRI-MRS

Cycle: 4, Proposal Category: GO

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OBSERVATIONS

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
FU Tau				
	1	FU Tau B - MRS	MIRI Medium Resolution Spectroscopy	(2) V-FU-Tau-B
	6		MIRI Medium Resolution Spectroscopy	(1) V-FU-Tau

Folder	*Observation*	*Label*	*Observing Template*	*Science Target*
DH Tau				
	2	DH Tau B - MRS	MIRI Medium Resolution Spectroscopy	(4) V-DH-Tau-B
GSC 6214				
	3	GSC 6214 b B - MRS	MIRI Medium Resolution Spectroscopy	(6) GSC-06214-00210B
2M J0359				
	4	2M J0359b B - MRS	MIRI Medium Resolution Spectroscopy	(10) 2MASS-J03590986+2009361-B
YSES 1 b				
	5	YSES 1 b - MRS	MIRI Medium Resolution Spectroscopy	(8) TYC-8998-760-1B

ABSTRACT

JWST's Medium Resolution Spectrometer (MRS) is redefining our understanding of protoplanetary disk chemistry and physics. By targeting a range of stellar and substellar hosts, programs in Cycles 1–3 are revealing the diversity in disk composition while also allowing us to make fundamental strides in our understanding of disk chemistry and its link to evolution.

After demonstrating that JWST can capture the complex interplay of gas and dust in protoplanetary disks, we propose to expand these groundbreaking studies to a new class of targets: circumplanetary disks (CPDs) surrounding planetary-mass companions (Mp < 20 MJup). Our proposed observations will leverage MRS's spectral and spatial resolution to obtain high quality spectra of 5 CPDs to unravel their gas chemistry, dust properties, and disk structure. These targets will complete the known sample of CPDs that are characterizable with MRS, and all of our sources are vetted to have robust signatures of infrared excess and ongoing accretion and have complementary data to study the planetary atmospheres. This investigation will reveal whether the CPD chemistry is consistent with trends seen for isolated low-mass hosts.

At the intersection between the fields of disk chemistry, direct imaging, planet atmospheres, and planetary formation and evolution, these data will serve as a benchmark for understanding the final assembly stages of gas giants, bridging the gap between young disks and mature planets, while also giving unique insight into the ingredients available for satellite formation.

OBSERVING DESCRIPTION

We plan to observe 5 circumplanetary disks (CPDs) with MIRI/MRS to detect spectral features associated with molecular gas and dust.

For all targets, we do Target Acquisition on the main star and we then shift to the companions. We will use 4 point dithering treating the scene as a point source and not an extended source. For 2 targets the primary star is far away enough that it will not contaminate the field of view (hence the CPD appears as a point source). For the other 3 targets, the main star will be visible in the image. However, previous datasets and experience

demonstrated that the point source dither strategy provides the most stable PSF essential to model and remove the stellar contribution and reveal the companion.

When the stellar PSF contaminates the image we include a PA constraint to minimize the contribution and lower the stellar photon noise at the location of the CPD.

Because of the long exposure times necessary to detect molecular features, we opted to use the SLOW readout mode which averages the detector data every 10 groups. This way we can integrate long enough without issues related to data volume. We always maintain integrations shorter than 1000s to limit the negative impact of cosmic rays.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	V-FU-Tau	RA: 04 23 35.3912 (65.8974633d) Dec: +25 03 2.75 (25.05076d) Equinox: J2000	Proper Motion RA: 6.901000000000001 mas/yr Proper Motion Dec: -21.251999942251132 mas/yr Parallax: 0.0078354" Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=Star
Description=[M stars]
Extended=NO

(2)	V-FU-Tau-B	RA: 04 23 35.7463 (65.8989429d) Dec: +25 02 59.64 (25.04990d) Equinox: J2000	Proper Motion RA: 1.488 mas/yr Proper Motion Dec: -24.204000033023476 mas/yr Parallax: 0.007475" Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=Star
Description=[Brown dwarfs]
Extended=NO

(3)	V-DH-Tau	RA: 04 29 41.5525 (67.4231354d) Dec: +26 32 58.13 (26.54948d) Equinox: J2000	Proper Motion RA: 6.603 mas/yr Proper Motion Dec: -20.871000083388935 mas/yr Parallax: 0.0074936" Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=Star
Description=[M stars, Protoplanetary disks]
Extended=NO

(4)	V-DH-Tau-B	RA: 04 29 41.6600 (67.4235833d) Dec: +26 32 56.50 (26.54903d) Equinox: J2000	Proper Motion RA: 6.603 mas/yr Proper Motion Dec: -20.871000083388935 mas/yr Parallax: 0.0074936" Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Star
Description=[Brown dwarfs]
Extended=NO

(5)	GSC-06214-00210	RA: 16 21 54.6677 (245.4777821d) Dec: -20 43 9.14 (-20.71921d) Equinox: J2000	Proper Motion RA: -19.542 mas/yr Proper Motion Dec: -31.14399996775319 mas/yr Parallax: 0.009192299999999999" Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=Star
Description=[K stars]
Extended=NO

(6)	GSC-06214-00210B	RA: 16 21 54.6780 (245.4778250d)	Proper Motion RA: -19.379 mas/yr
		Dec: -20 43 11.33 (-20.71981d)	Proper Motion Dec: -31.248000027517264 mas/yr
		Equinox: J2000	Parallax: 0.009188"
			Epoch of Position: 2000

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=Star
Description=[Brown dwarfs]
Extended=NO

(7)	TYC-8998-760-1	RA: 13 25 12.1263 (201.3005262d)	Proper Motion RA: -40.996 mas/yr
		Dec: -64 56 20.69 (-64.93908d)	Proper Motion Dec: -17.733999970914738 mas/yr
		Equinox: J2000	Parallax: 0.0106124"
			Epoch of Position: 2000

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=Star
Description=[K stars]
Extended=NO

(8)	TYC-8998-760-1B	RA: 13 25 11.9835 (201.2999312d)	Proper Motion RA: -40.996 mas/yr
		Dec: -64 56 22.14 (-64.93948d)	Proper Motion Dec: -17.733999970914738 mas/yr
		Equinox: J2000	Epoch of Position: 2000

Comments: These coordinates are the midpoint location between both planets Tyc 8998-760-1 b and c. By targeting this location with the MRS, both planets will be within the field of view.
Category=Star
Description=[Brown dwarfs]
Extended=NO

(9)	2MASS-J03590986+2009361	RA: 03 59 9.8587 (59.7910779d)	Proper Motion RA: 5.331 mas/yr
		Dec: +20 09 36.13 (20.16004d)	Proper Motion Dec: -14.048999992155586 mas/yr
		Equinox: J2000	Parallax: 0.0081519"
			Epoch of Position: 2000

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=Star
Description=[M stars]
Extended=NO

(10)	2MASS-J03590986+2009361-B	RA: 03 59 9.5290 (59.7897042d)	Proper Motion RA: 5.331 mas/yr
		Dec: +20 09 35.64 (20.15990d)	Proper Motion Dec: -14.048999992155586 mas/yr
		Equinox: J2000	Epoch of Position: 2000

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=Star
Description=[Brown dwarfs]
Extended=NO

Observation

Proposal 7538, Observation 1: FU Tau B - MRS Mon Dec 22 22:00:14 GMT 2025

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.

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(2)	V-FU-Tau-B	RA: 04 23 35.7463 (65.8989429d)	Proper Motion RA: 1.488 mas/yr	
		Dec: +25 02 59.64 (25.04990d)	Proper Motion Dec: -24.204000033023476 mas/yr	
		Equinox: J2000	Parallax: 0.007475"	
			Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=Star
Description=[Brown dwarfs]
Extended=NO

Acquisition

#	Target	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
1	1 V-FU-Tau	FND	FAST	10	1	1	27.75	213747.10

Template

Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
All MRS	YES	FULL	Allow Auto Reorder

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	Optional ETC ID
1		IMAGER	F560W	FASTR1	50	1	1	Dither 1	4	4	555.008	
1	SHORT(A)	MRSLONG		FASTR1	150	1	1	Dither 1	4	4	1665.024	
1	SHORT(A)	MRSSHORT		FASTR1	150	1	1	Dither 1	4	4	1665.024	
2		IMAGER	F770W	FASTR1	50	1	1	Dither 1	4	4	555.008	
2	MEDIUM(B)	MRSLONG		FASTR1	170	1	1	Dither 1	4	4	1887.027	
2	MEDIUM(B)	MRSSHORT		FASTR1	170	1	1	Dither 1	4	4	1887.027	
3		IMAGER	F1000W	FASTR1	50	1	1	Dither 1	4	4	555.008	
3	LONG(C)	MRSLONG		FASTR1	200	1	1	Dither 1	4	4	2220.032	
3	LONG(C)	MRSSHORT		FASTR1	200	1	1	Dither 1	4	4	2220.032	

Special Requirements	Group Observations 1, 6, Non-interruptible

Observation

Proposal 7538, Observation 6

Mon Dec 22 22:00:14 GMT 2025

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Diagnostics

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

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(1)	V-FU-Tau	RA: 04 23 35.3912 (65.8974633d)	Proper Motion RA: 6.901000000000001 mas/yr	
		Dec: +25 03 2.75 (25.05076d)	Proper Motion Dec: -21.251999942251132 mas/yr	
		Equinox: J2000	Parallax: 0.0078354"	
			Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=Star
Description=[M stars]
Extended=NO

Acquisition

#	Target	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
1	SAME	FND	FAST	10	1	1	27.75	213747.10

Template

Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
All MRS	YES	FULL	Allow Auto Reorder

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	Optional ETC ID
1		IMAGER	F560W	FASTR1	30	1	1	Dither 1	4	4	333.005	
1	SHORT(A)	MRSLONG		FASTR1	30	1	1	Dither 1	4	4	333.005	
1	SHORT(A)	MRSSHORT		FASTR1	30	1	1	Dither 1	4	4	333.005	
2		IMAGER	F770W	FASTR1	30	1	1	Dither 1	4	4	333.005	
2	MEDIUM(B)	MRSLONG		FASTR1	30	1	1	Dither 1	4	4	333.005	
2	MEDIUM(B)	MRSSHORT		FASTR1	30	1	1	Dither 1	4	4	333.005	
3		IMAGER	F1000W	FASTR1	30	1	1	Dither 1	4	4	333.005	
3	LONG(C)	MRSLONG		FASTR1	30	1	1	Dither 1	4	4	333.005	
3	LONG(C)	MRSSHORT		FASTR1	30	1	1	Dither 1	4	4	333.005	

Special Requirements	Group Observations 1, 6, Non-interruptible

Observation

Proposal 7538, Observation 2: DH Tau B - MRS Mon Dec 22 22:00:14 GMT 2025

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Diagnostics

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

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(4)	V-DH-Tau-B	RA: 04 29 41.6600 (67.4235833d) Dec: +26 32 56.50 (26.54903d) Equinox: J2000	Proper Motion RA: 6.603 mas/yr Proper Motion Dec: -20.871000083388935 mas/yr Parallax: 0.0074936" Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.
Category=Star
Description=[Brown dwarfs]
Extended=NO

Acquisition

#	Target	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
1	3 V-DH-Tau	FND	FAST	10	1	1	27.75	215479.10

Template

Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
All MRS	YES	FULL	Allow Auto Reorder

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	Optional ETC ID
1		IMAGER	F1000W	FASTR1	50	1	1	Dither 1	4	4	555.008	
1	LONG(C)	MRSLONG		SLOWR1	30	5	1	Dither 1	4	20	14716.191	
1	LONG(C)	MRSSHORT		SLOWR1	30	5	1	Dither 1	4	20	14716.191	
2		IMAGER	F770W	FASTR1	50	1	1	Dither 1	4	4	555.008	
2	MEDIUM(B)	MRSLONG		SLOWR1	30	4	1	Dither 1	4	16	11753.841	
2	MEDIUM(B)	MRSSHORT		SLOWR1	30	4	1	Dither 1	4	16	11753.841	
3		IMAGER	F560W	FASTR1	50	1	1	Dither 1	4	4	555.008	
3	SHORT(A)	MRSLONG		SLOWR1	30	4	1	Dither 1	4	16	11753.841	
3	SHORT(A)	MRSSHORT		SLOWR1	30	4	1	Dither 1	4	16	11753.841	

Special Requirements	Aperture PA Range 88.0 to 100.0 Degrees (V3 88.0 to 100.0)

Observation

Proposal 7538, Observation 3: GSC 6214 b B - MRS

Mon Dec 22 22:00:14 GMT 2025

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Diagnostics

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

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(6)	GSC-06214-00210B	RA: 16 21 54.6780 (245.4778250d)	Proper Motion RA: -19.379 mas/yr	
		Dec: -20 43 11.33 (-20.71981d)	Proper Motion Dec: -31.248000027517264 mas/yr	
		Equinox: J2000	Parallax: 0.009188"	
			Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=Star
Description=[Brown dwarfs]
Extended=NO

Acquisition

#	Target	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
1	5 GSC-06214-00210	FND	FAST	10	1	1	27.75	215482.10

Template

Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
All MRS	YES	FULL	Allow Auto Reorder

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	Optional ETC ID
1		IMAGER	F560W	FASTR1	50	1	1	Dither 1	4	4	555.008	
1	SHORT(A)	MRSLONG		SLOWR1	30	4	1	Dither 1	4	16	11753.841	
1	SHORT(A)	MRSSHORT		SLOWR1	30	4	1	Dither 1	4	16	11753.841	
2		IMAGER	F770W	FASTR1	50	1	1	Dither 1	4	4	555.008	
2	MEDIUM(B)	MRSLONG		SLOWR1	30	4	1	Dither 1	4	16	11753.841	
2	MEDIUM(B)	MRSSHORT		SLOWR1	30	4	1	Dither 1	4	16	11753.841	
3		IMAGER	F1000W	FASTR1	50	1	1	Dither 1	4	4	555.008	
3	LONG(C)	MRSLONG		SLOWR1	30	5	1	Dither 1	4	20	14716.191	
3	LONG(C)	MRSSHORT		SLOWR1	30	5	1	Dither 1	4	20	14716.191	

Observation

Proposal 7538, Observation 4: 2M J0359b B - MRS

Mon Dec 22 22:00:14 GMT 2025

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Diagnostics

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

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(10)	2MASS-J03590986+2009361-B	RA: 03 59 9.5290 (59.7897042d)	Proper Motion RA: 5.331 mas/yr	
		Dec: +20 09 35.64 (20.15990d)	Proper Motion Dec: -14.048999992155586 mas/yr	
		Equinox: J2000	Epoch of Position: 2000	

Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.

SIMBAD listed proper motion for this target. When retrieving targets with PM from SIMBAD, APT requests the coordinates be calculated with an epoch of the year 2000. Do not modify this epoch. Always review coordinates using the Target Confirmation tool, which graphically displays the PM.
Category=Star
Description=[Brown dwarfs]
Extended=NO

Acquisition

#	Target	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
1	9 2MASS-J03590986+2009361	F1000W	FAST	10	1	1	27.75	217767.10

Template

Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
All MRS	YES	FULL	Allow Auto Reorder

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	Optional ETC ID
1		IMAGER	F560W	FASTR1	50	1	1	Dither 1	4	4	555.008	
1	SHORT(A)	MRSLONG		SLOWR1	30	5	1	Dither 1	4	20	14716.191	
1	SHORT(A)	MRSSHORT		SLOWR1	30	5	1	Dither 1	4	20	14716.191	
2		IMAGER	F770W	FASTR1	50	1	1	Dither 1	4	4	555.008	
2	MEDIUM(B)	MRSLONG		SLOWR1	30	5	1	Dither 1	4	20	14716.191	
2	MEDIUM(B)	MRSSHORT		SLOWR1	30	5	1	Dither 1	4	20	14716.191	
3		IMAGER	F1000W	FASTR1	50	1	1	Dither 1	4	4	555.008	
3	LONG(C)	MRSLONG		SLOWR1	30	5	1	Dither 1	4	20	14716.191	
3	LONG(C)	MRSSHORT		SLOWR1	30	5	1	Dither 1	4	20	14716.191	

Observation

Proposal 7538, Observation 5: YSES 1 b - MRS Mon Dec 22 22:00:14 GMT 2025

Diagnostic Status: Warning

Observing Template: MIRI Medium Resolution Spectroscopy

Diagnostics

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

Fixed Targets

#	Name	Target Coordinates	Targ. Coord. Corrections	Miscellaneous
(8)	TYC-8998-760-1B	RA: 13 25 11.9835 (201.2999312d)	Proper Motion RA: -40.996 mas/yr	
		Dec: -64 56 22.14 (-64.93948d)	Proper Motion Dec: -17.733999970914738 mas/yr	
		Equinox: J2000	Epoch of Position: 2000	

Comments: These coordinates are the midpoint location between both planets Tyc 8998-760-1 b and c. By targeting this location with the MRS, both planets will be within the field of view.
Category=Star
Description=[Brown dwarfs]
Extended=NO

Acquisition

#	Target	Filter	Readout Pattern	Groups/Int	Integrations/Exp	Total Integrations	Total Exposure Time	Optional ETC ID
1	7 TYC-8998-760-1	FND	FAST	10	1	1	27.75	215820.10

Template

Primary Channel	Simultaneous Imaging	Imager Subarray	Grating Wheel Direction
All MRS	YES	FULL	Allow Auto Reorder

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	Optional ETC ID
1		IMAGER	F560W	FASTR1	50	1	1	Dither 1	4	4	555.008	
1	SHORT(A)	MRSLONG		SLOWR1	30	3	1	Dither 1	4	12	8791.491	
1	SHORT(A)	MRSSHORT		SLOWR1	30	3	1	Dither 1	4	12	8791.491	
2		IMAGER	F770W	FASTR1	50	1	1	Dither 1	4	4	555.008	
2	MEDIUM(B)	MRSLONG		SLOWR1	30	4	1	Dither 1	4	16	11753.841	
2	MEDIUM(B)	MRSSHORT		SLOWR1	30	4	1	Dither 1	4	16	11753.841	
3		IMAGER	F1000W	FASTR1	50	1	1	Dither 1	4	4	555.008	
3	LONG(C)	MRSLONG		SLOWR1	30	5	1	Dither 1	4	20	14716.191	
3	LONG(C)	MRSSHORT		SLOWR1	30	5	1	Dither 1	4	20	14716.191	

Special Requirements	Aperture PA Range 53.0 to 65.0 Degrees (V3 53.0 to 65.0) Offset 0.0 arcsec, 0.6 arcsec