

# 1264 - NIRSpec and MIRI IFS of SMGs

Cycle: 1, Proposal Category: GTO

## **INVESTIGATORS**

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### **OBSERVATIONS**

| Folder | Observation | Label                           | Observing Template                  | Science Target  |  |  |  |  |  |  |  |  |  |
|--------|-------------|---------------------------------|-------------------------------------|-----------------|--|--|--|--|--|--|--|--|--|
| MIRI - | MIRI - GN20 |                                 |                                     |                 |  |  |  |  |  |  |  |  |  |
|        | 1           | GN20-MRS [WRIGHT _0302]         | MIRI Medium Resolution Spectroscopy | (1) GN20-MRS    |  |  |  |  |  |  |  |  |  |
|        | 2           | GN20-Imager [WRIGH T_0301+0305] | MIRI Imaging                        | (2) GN20-IMAGER |  |  |  |  |  |  |  |  |  |
|        | 3           | GNz11-Imager                    | MIRI Imaging                        | (7) GN-Z11      |  |  |  |  |  |  |  |  |  |
| MIRI - | HFLS3       | MIRI - HFLS3                    |                                     |                 |  |  |  |  |  |  |  |  |  |

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| Folder Observation Label   |                    | Label              | Observing Template                  | Science Target          |  |  |
|----------------------------|--------------------|--------------------|-------------------------------------|-------------------------|--|--|
| 6 HFLS3-MRS [WRIGH T_0401] |                    |                    | MIRI Medium Resolution Spectroscopy | (4) HFLS3-MRS           |  |  |
|                            | 7                  | HFLS3-Imager       | MIRI Imaging                        | (5) HFLS3-IMAGER        |  |  |
| MIRI -                     | SPT                |                    |                                     |                         |  |  |
|                            | 9                  | SPT - MRS          | MIRI Medium Resolution Spectroscopy | (6) SPT0311             |  |  |
|                            | 10                 | SPT - Imager       | MIRI Imaging                        | (6) SPT0311             |  |  |
| NIRSpe                     | ec - SMGs          |                    |                                     |                         |  |  |
|                            | 11                 | GN20 - NIRSpec     | NIRSpec IFU Spectroscopy            | (8) GN20-NIRSPEC        |  |  |
|                            | 12 HFLS3 - NIRSpec |                    | NIRSpec IFU Spectroscopy            | (9) HFLS3-NIRSPEC       |  |  |
|                            | 13                 | SPT0311-58 NIRSpec | NIRSpec IFU Spectroscopy            | (10) SPT0311-58-NIRSPEC |  |  |

#### **ABSTRACT**

The observation IDs for the NIRSpec observations are: GN20 FERRUIT\_3049
HFLS3 FERRUIT\_3050

And for MIRI:

GN20 MRS and IMAGER WRIGHT\_0301 to 0308 HFLS3 MRS and IMAGER WRIGHT\_0401 to 0403

This APT is for MIRI and NIRSpec-IFU observations of 3 high-z dusty, infrared luminous galaxies.

The combination of spectral coverage and subarcsec integral field medium resolution spectroscopy (MRS), makes MIRI a unique instrument to peer into the dustenshrouded phase of IRluminous starforming galaxies (DSFG) at high redshifts. MIRI provides the first direct subarcsec view ever at the (restframe) nearinfrared light distribution of the evolved stellar population, ionized and hot molecular gas phase in z~26 massive DSFGs, and therefore will investigate the physical processes of the obscured star formation and black hole growth in massive starforming galaxies (SFR above 100 Msun/yr) in the early universe. MRS spectroscopy of the main near-infrared emission lines (hydrogen Paschen, [FeII], H2, etc) will be obtained for the currently known highest redshift DSFGs (SPT0311-5823 and HFLS3), and for GN20, a DSFG at z~4 located in GOODS-North. Mid-IR

<sup>\*</sup> UPDATE JUNE 2019: The galaxy SPT0311-5823 has been added to the original proposal.

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The NIRSpec-IFU observations are part of the NIRSpec GTO Physics of Galaxy Assembly IFS survey. The goal of this program is to characterize the internal structure of distant galaxies and thereby investigate the primary physical processes driving galaxy evolution across cosmic time. The main specific objectives are to: trace the distribution of star formation, map the resolved properties of the stellar populations, trace the gas kinematics (i.e. velocity fields, velocity dispersion) and hence determine dynamical masses and also identify non-virial motions (outflow and inflows), map metallicity gradients and dust extinction. These quantities will be mapped for the brightest and most extended star-forming galaxies and AGN/QSO hosts up to z>8.

The NIRSpec-IFU observations are performed at R100 and R2700. The specific band for the high-resolution observations is aimed at including the most important emission lines (from ~ H-beta to H-alpha).

#### **OBSERVING DESCRIPTION**

The original version of the proposal submitted in 2017 included the IFS observations with MIRI and NIRSpec for two IR luminous galaxies, GN20 and HFLS3. The revised version of the proposal includes now an additional source, SPT0311-5823.

In the previous submission to STScI, the proposal included MIRI and NIRSpec-IFS observations of targets HFLS3 and GN20, and only MIRI IFS of targets GN20a+b. The present revised June 2019 submission, includes NIRSPec -IFS and MIRI observations of HFLS3, GN20 and SPT0311, while the MIRI IFS observations of GN20a+b are no longer part of the program. The total time needed for this proposal has increased with respect to the previous submission, but the total times for the "MIRI high-z" and "NIRSpec GA-IFS" GTO programs are within the internally approved ranges.

# MIRI IFS and MIRI Imager:

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The purpose of the program is to get a mid-IR spectra of the high-z IR-luminous galaxies GN20, HFLS3 and SPT0311-5823, using 2 MRS configurations with simultaneous Imager observations of nearby fields in two filters (F560W, F1000W). In addition, we request the imaging of the host galaxies and surrounding field at 10 microns (F1000W).

A MIRI F560W image of the z~11 candidate GN-z11 and surrounding area will be taken in the GOODS-N field together with the MRS observations

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of the z~4 DSFG GN20. The MIRIM image of the GN-z11 will take in parallel a NIRCam imaging in two filters of the GN20 host and surrounding area, including GN20a and GN20b. The MIRI and NIRCam images will be combined to explore this region of the GOODS-N field rich in DSFGs. To optimize the overlap region between the MIRI and NIRCam imaging of the GN20 and GN-z11 regions, final adjustments in the position and orientation of the GN-z11 pointing with the MIRI imager by a few arcsec will likely be done once the epoch of the observations is known.

The PAs have been selected to avoid bright stars (which would saturate the detectors) in the MIRI imager fields, and to guarantee low background conditions.

The dithering strategies were selected to optimize the PSF and detector effects for all the MRS channels. HFLS3 have a size of about 1 arcsec, and therefore a point-like dithering strategy is used as most relevant lines are in channels 2 and 3, SPT0311-5823 and GN20 are more extended (sizes of about 1.4 to 2.2 arcsec) and therefore a dithering strategy for extended sources. These strategies could be subject to change without modifying the total charged time.

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NIRSpec-IFU:

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These two sub-millimeter galaxies will be observed using the NIRSpec-IFU as part of the "Physics of Galaxy Assembly IFU survey" program. Observations will be performed with grating/filters PRISM (R100) and G395H/F290LP (R2700). By combining with the MIRI observations, we take advantage of the "smart accounting" option to save slew overheads.

For NIRSpec, the allowed PA range is defined such that contamination in the R100 spectra due to nearby sources leaking through the MSA is minimized. For the emission line high-resolution (R2700) spectra this is not so critical, but still we have checked for very bright sources in the MSA quadrants.

The PA restrictions of PA\_V3 = 300-310 degrees for GN20 is free of bright sources which could contaminate the NIRSpec-IFU observations, and is limited by constrains for the MIRI observations.

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The strict PA\_V3 = 287 degrees for HFLS3 is free of bright sources which could contaminate the NIRSpec-IFU observations, and is limited by two very bright stars at both ends of the FoV for the MIRI observations.

A 4-point dither pattern will be used, were the first 4 points of the "medium" cycling pattern provide a good compromise between an amplitude (~0.5 ") large enough to "jump" the failed open microsutthers and to deal with other sources of background, while keeping a large FoV with complete exposure time (~2.5"x2.5"). This dither pattern also allows a good sub-pixel sampling.

No extra background exposures are included. For R100 it was considered that there will be a relatively large number of spaxels free from galaxy emission to derive the background. For the R2700, in addition, the goal is to study the emission lines and therefore the background should be less relevant.

Even though the contamination by bright targets leaking through the MSA is expected to be small for the PAs selected (see above), we take an extra leakage exposure for R100 in one pointing in order to be able to understand the effects of the surronding field.

The IRS2RAPID reading mode was selected to maximise S/N and optimise the detection and removal of cosmic rays.

The exposure times used were computed using JWST ETC (v1.1.1). A maximum duration of 3ksec was considered when arranging the number of groups and integrations.

Proposal 1264 - Targets - NIRSpec and MIRI IFS of SMGs

| #                        | Name  | Target Coordinates  | Targ. Coord. Corrections | Miscellaneous |  |  |  |  |  |  |
|--------------------------|---|---|--------------------------|---------------|--|--|--|--|--|--|
| (1)                      | GN20-MRS  | RA: 12 37 11.8885 (189.2995354d)                            |                          |               |  |  |  |  |  |  |
|                          |   | Dec: +62 22 12.10 (62.37003d)                               |                          |               |  |  |  |  |  |  |
|                          |   | Equinox: J2000  |                          |               |  |  |  |  |  |  |
| Comments                 | s: This object was generated b  | y the target selector and retrieved from the NED database.  |                          |               |  |  |  |  |  |  |
| Category=<br>Description | =Galaxy<br>on=[Active galactic nuclei]  |   |                          |               |  |  |  |  |  |  |
| (2)                      | GN20-IMAGER   | RA: 12 37 17.3468 (189.3222783d)                            |                          |               |  |  |  |  |  |  |
|                          |   | Dec: +62 21 44.69 (62.36241d)                               |                          |               |  |  |  |  |  |  |
|                          |   | Equinox: J2000  |                          |               |  |  |  |  |  |  |
| Comments                 | s: This object was generated b  | by the targetselector and retrieved from the NED database.  |                          |               |  |  |  |  |  |  |
| Category=                | =Galaxy<br>on=[Active galactic nuclei, Sta  |   |                          |               |  |  |  |  |  |  |
| (4)                      | HFLS3-MRS   | RA: 17 06 47.8000 (256.6991667d)                            |                          |               |  |  |  |  |  |  |
| (4)                      | HILOS-MIKS  | Dec: +58 46 23.51 (58.77320d)                               |                          |               |  |  |  |  |  |  |
|                          |   | Equinox: J2000  |                          |               |  |  |  |  |  |  |
| Commont                  | s. This object was concreted b  | by the target selector and retrieved from the NED database. |                          |               |  |  |  |  |  |  |
| Category=                | =Galaxy   |   |                          |               |  |  |  |  |  |  |
| Descriptio               | on=[Active galactic nuclei, Hi  | gh-redshift galaxies, Starburst galaxies]                   |                          |               |  |  |  |  |  |  |
| (5)                      | HFLS3-IMAGER  | RA: 17 06 48.5975 (256.7024896d)                            |                          |               |  |  |  |  |  |  |
|                          |   | Dec: +58 46 8.98 (58.76916d)                                |                          |               |  |  |  |  |  |  |
|                          |   | Equinox: J2000  |                          |               |  |  |  |  |  |  |
| Comments                 | Comments: This object was generated by the targetselector and retrieved from the NED database.<br>Category=Galaxy |   |                          |               |  |  |  |  |  |  |
| Description              | on=[Active galactic nuclei]   |   |                          |               |  |  |  |  |  |  |
| (6)                      | SPT0311   | RA: 03 11 33.2000 (47.8883333d)                             |                          |               |  |  |  |  |  |  |
|                          |   | Dec: -58 23 33.40 (-58.39261d)                              |                          |               |  |  |  |  |  |  |
|                          |   | Equinox: J2000  |                          |               |  |  |  |  |  |  |
| Comments                 | s: This object was generated b  | y the targetselector and retrieved from the NED database.   |                          |               |  |  |  |  |  |  |
| Category=                | =Galaxy<br>on=[Hioh-redshift oalaxies In  | ifrared galaxies, Starburst galaxies]                       |                          |               |  |  |  |  |  |  |
| Extended=                | =YES  | y area garanes, sur sur si garanes,                         |                          |               |  |  |  |  |  |  |
| (7)                      | GN-Z11  | RA: 12 36 23.1175 (189.0963229d)                            |                          |               |  |  |  |  |  |  |
|                          |   | Dec: +62 14 53.46 (62.24818d)                               |                          |               |  |  |  |  |  |  |
|                          |   | Equinox: J2000  |                          |               |  |  |  |  |  |  |
| Comments                 |   |   |                          |               |  |  |  |  |  |  |
| Category=                | =Galaxy<br>on=[Active galactic nuclei, Hi   | oh-redshift valaxies l                                      |                          |               |  |  |  |  |  |  |
| Extended=                | =NO   | gr. reasing. garantes                                       |                          |               |  |  |  |  |  |  |
| (8)                      | GN20-NIRSPEC  | RA: 12 37 11.8999 (189.2995829d)                            |                          |               |  |  |  |  |  |  |
|                          |   | Dec: +62 22 12.10 (62.37003d)                               |                          |               |  |  |  |  |  |  |
|                          |   | Equinox: J2000  |                          |               |  |  |  |  |  |  |
| Comments                 |   |   |                          |               |  |  |  |  |  |  |
| Category=<br>Description | =Galaxy<br>on=[High-redshift galaxies St  | tarburst galaxies l   |                          |               |  |  |  |  |  |  |
| Extended=                | -Galaxy<br>on=[High-redshift galaxies, St<br>=YES   |   |                          |               |  |  |  |  |  |  |
|                          |   |   |                          |               |  |  |  |  |  |  |
|                          |   |   |                          |               |  |  |  |  |  |  |
|                          |   |   |                          |               |  |  |  |  |  |  |
|                          |   |   |                          |               |  |  |  |  |  |  |

Proposal 1264 - Targets - NIRSpec and MIRI IFS of SMGs

(9) HFLS3-NIRSPEC RA: 17 06 47.8000 (256.6991667d) Dec: +58 46 23.51 (58.77320d) Equinox: J2000 Comments: Category=Galaxy Description=[High-redshift galaxies, Starburst galaxies] Extended=YES (10)SPT0311-58-NIRSPEC RA: 03 11 33.2600 (47.8885833d)

Dec: -58 23 33.50 (-58.39264d)

Equinox: J2000

Comments: Coordinates from Figure 1 in Marrone+18 adjusting FoV

Category=Galaxy
Description=[High-redshift galaxies, Infrared galaxies, Starburst galaxies]
Extended=YES

| <u>Pro</u>        | posal 126  | 64 - Obser          | vation 1 - I     | VIRSpec           | and MIRI           | IFS of SMC  | es es                |                    |          |                      |                       |                           |                     |
|-------------------|--|---------------------|------------------|-------------------|--------------------|-------------|----------------------|--------------------|----------|----------------------|-----------------------|---------------------------|---------------------|
| on                | Proposal 1264<br>Diagnostic Sta  | , Observation 1:    | : GN20-MRS [V    | VRIGHT_0302       |                    |             |                      |                    |          |                      |                       | Wed Jun 19 2              | 2:00:34 GMT 2019    |
| Diagnostics       | (Visit 1:1) War  | ning (Form): Ov     | erheads are prov | isional until the | e Visit Planner ha | s been run. |                      |                    |          |                      |                       |                           |                     |
| ts                | #  | Name                | 7                | Target Coordi     | nates              |             | Targ. Co             | ord. Correction    | 1S       | M                    | iscellaneous          |                           |                     |
| ge.               | (1)  | GN20-MRS            |                  |                   | 885 (189.2995354   | 1d)         |                      |                    |          |                      |                       |                           |                     |
| Targets           |  |                     |                  |                   | .10 (62.37003d)    |             |                      |                    |          |                      |                       |                           |                     |
| ۱.<br>پو          | a mi   |                     |                  | Equinox: J2000    |                    |             |                      |                    |          |                      |                       |                           |                     |
| Fixed             | Comments: This object was generated by the target selector and retrieved from the NED database.  Category=Galaxy |                     |                  |                   |                    |             |                      |                    |          |                      |                       |                           |                     |
| $\vdash$          | Description=[A   | Active galactic ni  | ıclei]           |                   |                    |             |                      |                    |          |                      |                       |                           |                     |
| l o               | #  |                     |                  |                   |                    |             | Target               |                    |          |                      |                       |                           |                     |
| Acquisition       | 1  |                     |                  |                   |                    |             | NONE                 |                    |          |                      |                       |                           |                     |
| te                | AcqFilter  |                     |                  | Primary           | Channel            |             | Simult               | aneous Imaging     | 3        | Im                   | ager Subarray         |                           |                     |
| pla               | F560W  |                     |                  | ALL               |                    |             | YES                  |                    |          | FU                   | LL                    |                           |                     |
| Template          |  |                     |                  |                   |                    |             |                      |                    |          |                      |                       |                           |                     |
| -                 | #  |                     |                  | Dither T          | Гуре               |             | Optim                | ized For           |          | Dia                  | rection               |                           |                     |
| Dithers           | 1 4-Point  |                     |                  |                   |                    |             |                      | NDED SOURCE        | E        | NE                   | GATIVE                |                           |                     |
| Spectral Elements | #  | Wavelength<br>Range | Detector         | Filter            | Readout<br>Pattern | Groups/Int  | Integrations/E<br>xp | Exposures/Dit<br>h | Dither   | <b>Total Dithers</b> | Total<br>Integrations | Total<br>Exposure<br>Time | ETC<br>Wkbk.Calc ID |
| Le l              | 1  |                     | IMAGER           | F560W             | FAST               | 120         | 6                    | 1                  | Dither 1 | 4                    | 24                    | 7992.115                  |                     |
| Ĭ                 | 1  | MEDIUM(B)           | MRSLONG          |                   | SLOW               | 42          | 2                    | 1                  | Dither 1 | 4                    | 8                     | 8027.013                  |                     |
| <u>la</u>         | 1  | MEDIUM(B)           | MRSSHORT         |                   | SLOW               | 42          | 2                    | 1                  | Dither 1 | 4                    | 8                     | 8027.013                  |                     |
| <u>t</u>          | 2  |                     | IMAGER           | F770W             | FAST               | 120         | 6                    | 1                  | Dither 1 | 4                    | 24                    | 7992.115                  |                     |
| ၂မွ               | 2  | LONG(C)             | MRSLONG          |                   | SLOW               | 42          | 2                    | 1                  | Dither 1 | 4                    | 8                     | 8027.013                  |                     |
| <u> </u>          | 2  | LONG(C)             | MRSSHORT         |                   | SLOW               | 42          | 2                    | 1                  | Dither 1 | 4                    | 8                     | 8027.013                  |                     |

| <b>Proposa</b> | Proposal 1264 - Observation 1 - NIRSpec and MIRI IFS of SMGs                            |  |  |  |  |  |  |  |  |  |  |  |
|----------------|---|--|--|--|--|--|--|--|--|--|--|--|
| Apertu         | re PA Range 300 to 310 Degrees (V3 300.0 to 310.0)                                      |  |  |  |  |  |  |  |  |  |  |  |
| Group          | re PA Range 300 to 310 Degrees (V3 300.0 to 310.0) Observations 1, 2, Non-interruptible |  |  |  |  |  |  |  |  |  |  |  |
| ire            |   |  |  |  |  |  |  |  |  |  |  |  |
| ng             |   |  |  |  |  |  |  |  |  |  |  |  |
| %              |   |  |  |  |  |  |  |  |  |  |  |  |
| ci al          |   |  |  |  |  |  |  |  |  |  |  |  |
| ) be(          |   |  |  |  |  |  |  |  |  |  |  |  |

| Pro                  | posal 1       | 264 - Observatio                      | on 2 - NIRSp             | ec and MI          | RI IFS of SMC         | 3s              |             |                |               |                |                   |
|----------------------|---------------|---------------------------------------|--------------------------|--------------------|-----------------------|-----------------|-------------|----------------|---------------|----------------|-------------------|
|                      | Proposal 12   | 264, Observation 2: GN20              |                          |                    |                       |                 |             |                |               | Wed Jun 19     | 22:00:34 GMT 2019 |
| ati                  |               | Status: Warning                       |                          |                    |                       |                 |             |                |               |                |                   |
| ĕ                    | Observing 7   | Template: MIRI Imaging                |                          |                    |                       |                 |             |                |               |                |                   |
| Observation          |               |                                       |                          |                    |                       |                 |             |                |               |                |                   |
|                      | (M:-:4-2-1) N | V                                     |                          | :1 41 W:-:4 D1     | 1 1                   |                 |             |                |               |                |                   |
| Diagnostics          | (V1S1t 2:1) V | Warning (Form): Overhead              | is are provisional unt   | ii the Visit Planr | ier nas been run.     |                 |             |                |               |                |                   |
| l So                 |               |                                       |                          |                    |                       |                 |             |                |               |                |                   |
| agr                  |               |                                       |                          |                    |                       |                 |             |                |               |                |                   |
| ă                    |               |                                       |                          |                    |                       |                 |             |                |               |                |                   |
| ţţ                   | #             | Name                                  | Target Co                |                    |                       | Targ. Coo       | ord. Correc | etions         | Miscella      | neous          |                   |
| Targets              | (2)           | GN20-IMAGER                           |                          | 17.3468 (189.32    |                       |                 |             |                |               |                |                   |
| _a<br>□              |               |                                       | Dec: +62 2<br>Equinox: J | 1 44.69 (62.3624   | lld)                  |                 |             |                |               |                |                   |
| Fixed .              | Comments:     | This object was generated             | •                        |                    | rom the NED database. |                 |             |                |               |                |                   |
| Į č̃                 | Category=0    | Galaxy<br>=[Active galactic nuclei, S |                          |                    |                       |                 |             |                |               |                |                   |
| ē                    | Subarray      | =[Active gatacite hactet, 5           | narbarsi gaiaxiesj       |                    |                       |                 |             |                |               |                |                   |
| plai                 | FULL          |                                       |                          |                    |                       |                 |             |                |               |                |                   |
| Template             |               |                                       |                          |                    |                       |                 |             |                |               |                |                   |
|                      |               |                                       |                          |                    |                       |                 |             |                |               |                |                   |
| ers                  | #             | Dither Type                           | Starting Point           | Number<br>5        | of Points Points      | Starting 2      | g Set       | Number of Sets | Optimized For | Direction      | Pattern Size      |
| Dithers              | 1             | 4-Point-Sets                          | 1                        | 3                  |                       | 2               |             | I              | POINT SOURCE  | POSITIVE       | DEFAULT           |
|                      | #             | Filter                                | Readout Pattern          | Groups/Int         | Integrations/Exp      | Exposures/Dith  | Dither      | Total Dith     | ers Total     | Total Exposure | ETC Wkbk.Calc     |
| Spectral Elements    |               |                                       |                          | -                  |                       | Enposures 2 ion |             |                | Integrations  | Time           | ID                |
| e I                  | 1             | F1000W                                | FAST                     | 90                 | 1                     | 1               | Dither 1    | 4              | 4             | 999.014        |                   |
|                      |               |                                       |                          |                    |                       |                 |             |                |               |                |                   |
| <u>ta</u>            |               |                                       |                          |                    |                       |                 |             |                |               |                |                   |
| )<br>Se              |               |                                       |                          |                    |                       |                 |             |                |               |                |                   |
| S                    |               |                                       |                          |                    |                       |                 |             |                |               |                |                   |
| ıts                  | Aperture PA   | A Range 304.449705 to 314             | 4.449705 Degrees (V      | 73 300.0 to 310.0  |                       |                 |             |                |               |                |                   |
| Je l                 | Group Obse    | ervations 1, 2, Non-interrup          | otible                   |                    |                       |                 |             |                |               |                |                   |
| <u>ē</u>             |               |                                       |                          |                    |                       |                 |             |                |               |                |                   |
| n b                  |               |                                       |                          |                    |                       |                 |             |                |               |                |                   |
| 8                    |               |                                       |                          |                    |                       |                 |             |                |               |                |                   |
| ä                    |               |                                       |                          |                    |                       |                 |             |                |               |                |                   |
| Special Requirements |               |                                       |                          |                    |                       |                 |             |                |               |                |                   |
| လ                    |               |                                       |                          |                    |                       |                 |             |                |               |                |                   |

| Pro               | posal 1264                           | - Observation         | on 3 - NIRSpe           | ec and MIF         | RI IFS      | of SMG     | is      |           |             |                    |                          |                        |                     |
|-------------------|--------------------------------------|-----------------------|-------------------------|--------------------|-------------|------------|---------|-----------|-------------|--------------------|--------------------------|------------------------|---------------------|
| _                 |                                      | bservation 3: GNz1    |                         |                    |             |            |         |           |             |                    |                          | Wed Jun 19             | 22:00:34 GMT 2019   |
| Observation       | Diagnostic Status                    | : Warning             |                         |                    |             |            |         |           |             |                    |                          |                        |                     |
| ľ≚                | Observing Templa                     | te: MIRI Imaging      |                         |                    |             |            |         |           |             |                    |                          |                        |                     |
| Se                | Coordinated Parall                   | el Template(s): NIR   | RCam Imaging            |                    |             |            |         |           |             |                    |                          |                        |                     |
| 8                 |                                      |                       |                         |                    |             |            |         |           |             |                    |                          |                        |                     |
| S                 | (Visit 3:1) Warnin                   | g (Form): Overhead    | s are provisional until | l the Visit Planne | er has beer | n run.     |         |           |             |                    |                          |                        |                     |
| Diagnostics       |                                      |                       | •                       |                    |             |            |         |           |             |                    |                          |                        |                     |
| ۱ë                |                                      |                       |                         |                    |             |            |         |           |             |                    |                          |                        |                     |
| l g               |                                      |                       |                         |                    |             |            |         |           |             |                    |                          |                        |                     |
| ä                 |                                      |                       |                         |                    |             |            |         |           |             |                    |                          |                        |                     |
|                   | # Na                                 | ne                    | Target Coo              | rdinates           |             |            | 7       | Гarg. Coo | rd. Correct | tions              | Miscella                 | neous                  |                     |
| Fixed Targets     | (7) GN                               | -Z11                  | RA: 12 36 2             | 3.1175 (189.096    | 3229d)      |            |         |           |             |                    |                          |                        |                     |
| Ĕ                 |                                      |                       | Dec: +62 14             | 53.46 (62.24818    | 8d)         |            |         |           |             |                    |                          |                        |                     |
| ≝                 |                                      |                       | Equinox: J2             | 000                |             |            |         |           |             |                    |                          |                        |                     |
| B                 | Comments:                            |                       |                         |                    |             |            |         |           |             |                    |                          |                        |                     |
| ΙĚ                | Category=Galaxy<br>Description=[Acti | ve galactic nuclei. H | High-redshift galaxies  | 1                  |             |            |         |           |             |                    |                          |                        |                     |
| <u> </u>          | Extended=NO                          | , ,                   |                         | ,                  |             |            |         |           |             |                    |                          |                        |                     |
| <b>a</b>          | MIRI Imaging                         |                       |                         |                    |             |            |         |           | n Imaging   |                    |                          |                        |                     |
| <u>ë</u>          | Subarray: FULL                       |                       |                         |                    |             |            |         | Module:   |             |                    |                          |                        |                     |
| Template          |                                      |                       |                         |                    |             |            |         | Subarray  | : FULL      |                    |                          |                        |                     |
|                   | #                                    | Dither Type           | Starting Point          | Number o           | f Doints    | Points     |         | Starting  | Cot         | Number of Sets     | Optimized For            | Direction              | Pattern Size        |
| ē                 | 1                                    | 4-Point-Sets          | 1                       | 5                  | 1 Points    | romis      |         | 2         | Set         | 1                  | POINT SOURCE             | POSITIVE               | DEFAULT             |
| Dithers           |                                      | 4-Fome-Sets           | 1                       | 3                  |             |            |         | 2         |             | 1                  | FOINT SOURCE             | FOSITIVE               | DEFAULT             |
| -                 |                                      |                       |                         |                    |             |            |         |           |             |                    |                          |                        |                     |
| Spectral Elements | MIRI Imaging                         | Filter                | Readout Pattern         | Groups/Int         | Integr      | ations/Exp | Exposui | res/Dith  | Dither      | Total Dither       | rs Total<br>Integrations | Total Exposure<br>Time | ETC Wkbk.Calc<br>ID |
| a l               | 1                                    | F560W                 | FAST                    | 81                 | 2           | •          | 1       |           | Dither 1    | 4                  | 8                        | 1798.226               |                     |
| <u></u>           |                                      |                       |                         |                    |             |            |         |           |             |                    |                          |                        |                     |
| I۳                |                                      |                       |                         |                    |             |            |         |           |             |                    |                          |                        |                     |
| it l              |                                      |                       |                         |                    |             |            |         |           |             |                    |                          |                        |                     |
| Ιĕ                |                                      |                       |                         |                    |             |            |         |           |             |                    |                          |                        |                     |
| ß                 |                                      |                       |                         |                    |             |            |         |           |             |                    |                          |                        |                     |
| Spectral Elements | NIRCam Imaging                       | g Short Filter        | Long Filter             | Readout I          | Pattern     | Groups/Int | t       | Integrat  | ions/Exp    | Total Integrations | Total Dithers            | Total Exposure<br>Time | ETC Wkbk.Calc<br>ID |
| Į                 | 1                                    | F115W                 | F277W                   | MEDIUM             | 8           | 4          |         | 1         |             | 4                  | 4                        | 1631.989               |                     |
| 👸                 |                                      |                       |                         |                    |             |            |         |           |             |                    |                          |                        |                     |
| ā                 |                                      |                       |                         |                    |             |            |         |           |             |                    |                          |                        |                     |
| ᅙ                 |                                      |                       |                         |                    |             |            |         |           |             |                    |                          |                        |                     |
| ۱ğ                |                                      |                       |                         |                    |             |            |         |           |             |                    |                          |                        |                     |
| S                 |                                      |                       |                         |                    |             |            |         |           |             |                    |                          |                        |                     |

| <u>P</u> | Proposal 1264 - Observation 3 - NIRSpec and MIRI IFS of SMGs                       |
|----------|--|
|          | Aperture PA Range 304.449705 to 305.449705 Degrees (V3 300.0 to 301.0) No Parallel |
|          |  |
|          |  |
|          | Red niz  |
| 16       | Ō  <br>Ƙ   |
|          |  |
| L        |  |
| Lá       | စို့ပြ   |

| Pro               | posal 126   | 64 - Obser                | vation 6 - N      | VIRSpec           | and MIRI II        | FS of SMG  | S              |                 |          |               |              |                  |                  |
|-------------------|---|---------------------------|-------------------|-------------------|--------------------|------------|----------------|-----------------|----------|---------------|--------------|------------------|------------------|
| Ľ                 | Proposal 1264   | , Observation 6:          | HFLS3-MRS         | WRIGHT_040        | )1]                |            |                |                 |          |               |              | Wed Jun 19 22    | 2:00:34 GMT 2019 |
| Observation       | Diagnostic Sta  | tus: Warning              |                   |                   |                    |            |                |                 |          |               |              |                  |                  |
| I≌                | Observing Tem   | plate: MIRI Med           | dium Resolution   | Spectroscopy      |                    |            |                |                 |          |               |              |                  |                  |
| se                |   |                           |                   |                   |                    |            |                |                 |          |               |              |                  |                  |
| ١g                |   |                           |                   |                   |                    |            |                |                 |          |               |              |                  |                  |
| _                 | (Vicit 6:1) War   | ning (Form): Ov           | erheads are provi | sional until the  | Visit Planner has  | heen run   |                |                 |          |               |              |                  |                  |
| 1;                | (Visit 0.1) Wai   | illing (1 orin). Ov       | erneads are provi | sional until the  | Visit i famici nas | been run.  |                |                 |          |               |              |                  |                  |
| Diagnostics       |   |                           |                   |                   |                    |            |                |                 |          |               |              |                  |                  |
| Пg                |   |                           |                   |                   |                    |            |                |                 |          |               |              |                  |                  |
| Ιë                |   |                           |                   |                   |                    |            |                |                 |          |               |              |                  |                  |
| _                 | #   | Name                      | T                 | arget Coordii     | nates              |            | Targ. Co       | ord. Correction | ıs       | M             | iscellaneous |                  |                  |
| Targets           | (4)   | HFLS3-MRS                 | R                 | A: 17 06 47.80    | 000 (256.6991667   | d)         |                |                 |          |               |              |                  |                  |
| ä                 |   |                           | Ε                 | Dec: +58 46 23.   | 51 (58.77320d)     |            |                |                 |          |               |              |                  |                  |
| ΙĘ                |   |                           | Е                 | Equinox: J2000    |                    |            |                |                 |          |               |              |                  |                  |
| Fixed             | Comments: This object was generated by the target selector and retrieved from the NED database. |                           |                   |                   |                    |            |                |                 |          |               |              |                  |                  |
| 正                 | Category=Gala<br>Description=[A   | axy<br>Active galactic ni | ıclei, High-redsh | ift galaxies, Sta | arburst galaxies]  |            |                |                 |          |               |              |                  |                  |
| Ē                 | #   |                           |                   |                   |                    |            | Target         |                 |          |               |              |                  |                  |
| I∺                | 1   |                           |                   |                   |                    |            | NONE           |                 |          |               |              |                  |                  |
| Acquisition       |   |                           |                   |                   |                    |            |                |                 |          |               |              |                  |                  |
| Ιġ                |   |                           |                   |                   |                    |            |                |                 |          |               |              |                  |                  |
| Ă                 |   |                           |                   |                   |                    |            |                |                 |          |               |              |                  |                  |
| te                | AcqFilter   |                           |                   | Primary           | Channel            |            | Simulta        | Imager Subarray |          |               |              |                  |                  |
| ٦<br>ا            | F560W   |                           |                   | ALL               |                    |            | YES            |                 |          | FU            | LL           |                  |                  |
| Template          |   |                           |                   |                   |                    |            |                |                 |          |               |              |                  |                  |
| Ľ                 |   |                           |                   |                   |                    |            |                |                 |          |               |              |                  |                  |
| เร                | #   |                           |                   | Dither T          | уре                |            | Optimi         | zed For         |          | Di            | rection      |                  |                  |
| he                | 1   |                           |                   | 4-Point           |                    |            | POINT          | SOURCE          |          | PC            | SITIVE       |                  |                  |
| Dithers           |   |                           |                   |                   |                    |            |                |                 |          |               |              |                  |                  |
| S                 | #   | Wavelength                | Detector          | Filter            | Readout            | Groups/Int | Integrations/E | Exposures/Dit   | Dither   | Total Dithers | Total        | Total            | ETC              |
| Spectral Elements |   | Range                     |                   |                   | Pattern            | -          | xp             | h               |          |               | Integrations | Exposure<br>Time | Wkbk.Calc ID     |
| ΙĔ                | 1   |                           | IMAGER            | F560W             | FAST               | 120        | 6              | 1               | Dither 1 | 4             | 24           | 7992.115         |                  |
| I≗                | 1   | MEDIUM(B)                 | MRSLONG           |                   | SLOW               | 42         | 2              | 1               | Dither 1 | 4             | 8            | 8027.013         |                  |
| a                 | 1   | MEDIUM(B)                 | MRSSHORT          |                   | SLOW               | 42         | 2              | 1               | Dither 1 | 4             | 8            | 8027.013         |                  |
| t                 | 2   | - (-)                     | IMAGER            | F1000W            | FAST               | 120        | 6              | 1               | Dither 1 | 4             | 24           | 7992.115         |                  |
| þě                | 2   | LONG(C)                   | MRSLONG           |                   | SLOW               | 42         | 2              | 1               | Dither 1 | 4             | 8            | 8027.013         |                  |
| S                 | 2   | LONG(C)                   | MRSSHORT          |                   | SLOW               | 42         | 2              | 1               | Dither 1 | 4             | 8            | 8027.013         |                  |

| F  | ro        | posal 1264 - Observation 6 - NIRSpec and MIRI IFS of SMGs    |
|----|-----------|--|
| Γ  | ıts       | Aperture PA Range 287.0 to 287.0 Degrees (V3 287.0 to 287.0) |
|    |           | Group Observations 6, 7, Non-interruptible                   |
| ١. | <u>le</u> |  |
| ı  | μģ        |  |
|    | Ze<br>E   |  |
| ŀ  | cia       |  |
| L  | Spe       |  |

| Pro   | posal 12          | 264 - Observation                   | on 7 - NIRSp           | ec and MI          | RI IFS of SMC         | es :           |             |                                       |               |                |                     |
|---|-------------------|-------------------------------------|------------------------|--------------------|-----------------------|----------------|-------------|---------------------------------------|---------------|----------------|---------------------|
| _   |                   | 64, Observation 7: HFL              |                        |                    |                       |                |             |                                       |               | Wed Jun 19     | 9 22:00:34 GMT 2019 |
| Observation                                   | Diagnostic S      | Status: Warning                     |                        |                    |                       |                |             |                                       |               |                |                     |
| <u>≥</u>                                      | Observing T       | emplate: MIRI Imaging               |                        |                    |                       |                |             |                                       |               |                |                     |
| se  |                   |                                     |                        |                    |                       |                |             |                                       |               |                |                     |
| le  |                   |                                     |                        |                    |                       |                |             |                                       |               |                |                     |
| _   | (Visit 7:1) W     | Varning (Form): Overhead            | ls are provisional unt | il the Visit Plann | er has been run.      |                |             |                                       |               |                |                     |
| ∺   | ( , , , , , , , , |                                     |                        |                    |                       |                |             |                                       |               |                |                     |
| ۱ő  |                   |                                     |                        |                    |                       |                |             |                                       |               |                |                     |
| Ιğ  |                   |                                     |                        |                    |                       |                |             |                                       |               |                |                     |
| Diagnostics                                   |                   |                                     |                        |                    |                       |                |             |                                       |               |                |                     |
| -   | #                 | Name                                | Target Co              | ordinates          |                       | Targ. Co       | ord. Correc | ctions                                | Miscella      | neous          |                     |
| Targets                                       | (5)               | HFLS3-IMAGER                        | RA: 17 06              | 48.5975 (256.70)   | 24896d)               |                |             |                                       |               |                |                     |
| arç   |                   |                                     | Dec: +58 4             | 6 8.98 (58.76916   | ód)                   |                |             |                                       |               |                |                     |
| <b> </b>                                      |                   |                                     | Equinox: J2            | 2000               |                       |                |             |                                       |               |                |                     |
| Ιã  |                   | This object was generated           | by the targetselector  | r and retrieved fr | rom the NED database. |                |             |                                       |               |                |                     |
| Fixed   | Category=G        | falaxy<br>=[Active galactic nuclei] |                        |                    |                       |                |             |                                       |               |                |                     |
| е   | Subarray          | =[Metive gatacite nactet]           |                        |                    |                       |                |             |                                       |               |                |                     |
| <u>a</u>                                      | FULL              |                                     |                        |                    |                       |                |             |                                       |               |                |                     |
| ۱Ĕ  | 1022              |                                     |                        |                    |                       |                |             |                                       |               |                |                     |
| Template                                      |                   |                                     |                        |                    |                       |                |             |                                       |               |                |                     |
|   | #                 | Dither Type                         | Starting Point         | Number             | of Points Points      | Starting       | g Set       | Number of Sets                        | Optimized For | Direction      | Pattern Size        |
| he  | 1                 | 4-Point-Sets                        | 1                      | 5                  |                       | 7              |             | 1                                     | POINT SOURCE  | POSITIVE       | SMALL               |
| Dithers                                       |                   |                                     |                        |                    |                       |                |             |                                       |               |                |                     |
|   | #                 | Filter                              | Readout Pattern        | Groups/Int         | Integrations/Exp      | Exposures/Dith | Dither      | Total Dithe                           | ers Total     | Total Exposure | ETC Wkbk.Calc       |
| Spectral Elements                             |                   |                                     |                        |                    |                       | -              |             | · · · · · · · · · · · · · · · · · · · | Integrations  | Time           | ID                  |
| ΙĚ  | 1                 | F1000W                              | FAST                   | 90                 | 1                     | 1              | Dither 1    | 4                                     | 4             | 999.014        |                     |
| ≝   |                   |                                     |                        |                    |                       |                |             |                                       |               |                |                     |
| <u>ज</u>                                      |                   |                                     |                        |                    |                       |                |             |                                       |               |                |                     |
| lt  |                   |                                     |                        |                    |                       |                |             |                                       |               |                |                     |
| be  |                   |                                     |                        |                    |                       |                |             |                                       |               |                |                     |
|   |                   | D 202.017221                        | 2.0150245              | 22.207.55555       | 207.565510)           |                |             |                                       |               |                |                     |
| Ӗ   | Aperture PA       | Range 292.015224 to 29              | 2.015224 Degrees (V    | '3 287.565519 to   | 287.565519)           |                |             |                                       |               |                |                     |
| l e   | Group Obser       | rvations 6, 7, Non-interrup         | ptible                 |                    |                       |                |             |                                       |               |                |                     |
| ē   |                   |                                     |                        |                    |                       |                |             |                                       |               |                |                     |
| ΙË  |                   |                                     |                        |                    |                       |                |             |                                       |               |                |                     |
| Š   |                   |                                     |                        |                    |                       |                |             |                                       |               |                |                     |
| <u>=</u>                                      |                   |                                     |                        |                    |                       |                |             |                                       |               |                |                     |
| <u>Š</u>                                      |                   |                                     |                        |                    |                       |                |             |                                       |               |                |                     |
| Special Requirements                          |                   |                                     |                        |                    |                       |                |             |                                       |               |                |                     |
| <u>, , , , , , , , , , , , , , , , , , , </u> |                   |                                     |                        |                    |                       |                |             |                                       |               |                |                     |

| <u>Pro</u>        | posal 126                       | 4 - Obser           | <u>vation 9 - I</u> | VIRSpec         | and MIRI           | IFS of SMC       | Gs                   |                    |          |               |                       |                           |                     |
|-------------------|---------------------------------|---------------------|---------------------|-----------------|--------------------|------------------|----------------------|--------------------|----------|---------------|-----------------------|---------------------------|---------------------|
| Ľ                 | Proposal 1264,                  | Observation 9       | : SPT - MRS         |                 |                    |                  |                      |                    |          |               |                       | Wed Jun 19 22             | 2:00:34 GMT 2019    |
| Observation       | Diagnostic Sta                  | tus: Warning        |                     |                 |                    |                  |                      |                    |          |               |                       |                           |                     |
| Ĭ                 | Observing Tem                   | plate: MIRI Med     | dium Resolution     | Spectroscopy    |                    |                  |                      |                    |          |               |                       |                           |                     |
| Se                |                                 |                     |                     |                 |                    |                  |                      |                    |          |               |                       |                           |                     |
| lg                |                                 |                     |                     |                 |                    |                  |                      |                    |          |               |                       |                           |                     |
| Ś                 | (Visit 9:1) War                 | ning (Form): Ov     | erheads are provi   | sional until th | e Visit Planner ha | ıs been run.     |                      |                    |          |               |                       |                           |                     |
| I∺                |                                 |                     | 1                   |                 |                    |                  |                      |                    |          |               |                       |                           |                     |
| Diagnostics       |                                 |                     |                     |                 |                    |                  |                      |                    |          |               |                       |                           |                     |
| <u>ا</u> ق        |                                 |                     |                     |                 |                    |                  |                      |                    |          |               |                       |                           |                     |
| ľä⊓               |                                 |                     |                     |                 |                    |                  |                      |                    |          |               |                       |                           |                     |
| <u></u>           | # 1                             | Name                | 7                   | arget Coordi    | nates              |                  | Targ. Co             | ord. Correction    | ıs       | M             | iscellaneous          |                           |                     |
| Targets           | (6)                             | SPT0311             | F                   | A: 03 11 33.2   | 000 (47.8883333    | d)               |                      |                    |          |               |                       |                           |                     |
| l g               |                                 |                     | Ι                   | Dec: -58 23 33. | 40 (-58.39261d)    |                  |                      |                    |          |               |                       |                           |                     |
|                   |                                 |                     | E                   | Equinox: J2000  | )                  |                  |                      |                    |          |               |                       |                           |                     |
| ed                |                                 |                     | erated by the tar   | getselector and | l retrieved from t | he NED database. |                      |                    |          |               |                       |                           |                     |
| Fixed             | Category=Gala<br>Description=[F |                     | axies, Infrared g   | alaxies. Starbu | rst galaxies l     |                  |                      |                    |          |               |                       |                           |                     |
|                   | Extended=YES                    |                     | antes, my area 80   | wastes, stares  | , or generates,    |                  |                      |                    |          |               |                       |                           |                     |
| ا<br>ا            | #                               |                     |                     |                 |                    |                  | Target               |                    |          |               |                       |                           |                     |
| ΙË                | 1                               |                     |                     |                 |                    |                  | NONE                 |                    |          |               |                       |                           |                     |
| ΙΞ̈́              |                                 |                     |                     |                 |                    |                  |                      |                    |          |               |                       |                           |                     |
| Acquisition       |                                 |                     |                     |                 |                    |                  |                      |                    |          |               |                       |                           |                     |
| _                 |                                 |                     |                     |                 |                    |                  | <b>7.</b> 1.         |                    |          |               | a .                   |                           |                     |
| Template          | AcqFilter                       |                     |                     |                 | Channel            |                  |                      | aneous Imaging     | <u> </u> | •             | ager Subarray         |                           |                     |
| 틸                 |                                 |                     |                     | ALL             |                    |                  | YES                  |                    |          | FU            | JLL                   |                           |                     |
| e.                |                                 |                     |                     |                 |                    |                  |                      |                    |          |               |                       |                           |                     |
|                   | ,,                              |                     |                     | Did 1           | n                  |                  | 0.4                  |                    |          | <b>D</b> :    |                       |                           |                     |
| ers               | #                               |                     |                     | Dither 7        | Туре               |                  |                      | ized For           |          | •             | rection               |                           |                     |
| Dithers           | 1                               |                     |                     | 4-Point         |                    |                  | EXIE                 | NDED SOURCE        |          | NE            | EGATIVE               |                           |                     |
| ഥ                 |                                 |                     |                     |                 |                    |                  |                      |                    |          |               |                       |                           |                     |
| Spectral Elements | #                               | Wavelength<br>Range | Detector            | Filter          | Readout<br>Pattern | Groups/Int       | Integrations/E<br>xp | Exposures/Dit<br>h | Dither   | Total Dithers | Total<br>Integrations | Total<br>Exposure<br>Time | ETC<br>Wkbk.Calc ID |
| I E               | 1                               |                     | IMAGER              | F560W           | FAST               | 120              | 6                    | 1                  | Dither 1 | 4             | 24                    | 7992.115                  |                     |
| Ĭ                 | 1                               | SHORT(A)            | MRSLONG             |                 | SLOW               | 42               | 2                    | 1                  | Dither 1 | 4             | 8                     | 8027.013                  |                     |
| ā                 | 1                               | SHORT(A)            | MRSSHORT            |                 | SLOW               | 42               | 2                    | 1                  | Dither 1 | 4             | 8                     | 8027.013                  |                     |
| 둫                 | 2                               |                     | IMAGER              | F1000W          | FAST               | 120              | 6                    | 1                  | Dither 1 | 4             | 24                    | 7992.115                  |                     |
|                   | 2                               | MEDIUM(B)           | MRSLONG             |                 | SLOW               | 42               | 2                    | 1                  | Dither 1 | 4             | 8                     | 8027.013                  |                     |
| L                 | 2                               | MEDIUM(B)           | MRSSHORT            |                 | SLOW               | 42               | 2                    | 1                  | Dither 1 | 4             | 8                     | 8027.013                  |                     |

| <u>P</u> | Proposal 1264 - Observation 9 - NIRSpec and MIRI IFS of SMGs  |
|----------|---|
| 7        | Aperture PA Range 42.0 to 60.0 Degrees (V3 42.0 to 60.0) Aperture PA Range 200.0 to 358.0 Degrees (V3 200.0 to 358.0) |
|          | Group Observations 9, 10, Non-interruptible   |
|          |   |
|          | Reg   |
|          |   |
|          | သိမ်<br>ရှိ   |

| Pro               | posal 1264 - Observat                                 | ion 10 - NIRS            | pec and M             | IIRI IFS of SM       | lGs            |             |                |                           |                        |                     |
|-------------------|---|--------------------------|-----------------------|----------------------|----------------|-------------|----------------|---------------------------|------------------------|---------------------|
|                   | Proposal 1264, Observation 10: Sl                     |                          |                       |                      |                |             |                |                           | Wed Jun 19             | 22:00:34 GMT 2019   |
| I₩                | Diagnostic Status: Warning                            |                          |                       |                      |                |             |                |                           |                        |                     |
| ≥                 | Observing Template: MIRI Imaging                      |                          |                       |                      |                |             |                |                           |                        |                     |
| Observation       |   |                          |                       |                      |                |             |                |                           |                        |                     |
| l유                |   |                          |                       |                      |                |             |                |                           |                        |                     |
| _                 | (Visit 10:1) Warning (Form): Overh                    | eads are provisional III | ntil the Visit Plan   | ner has been run     |                |             |                |                           |                        |                     |
| Diagnostics       | (Visit 10.1) Walning (Form). Over                     | eads are provisional ar  | till tile visit i ian | mor has been run.    |                |             |                |                           |                        |                     |
| l õ               |   |                          |                       |                      |                |             |                |                           |                        |                     |
| ۱ğ                |   |                          |                       |                      |                |             |                |                           |                        |                     |
| Ιë                |   |                          |                       |                      |                |             |                |                           |                        |                     |
|                   | # Name  | Target Co                | ordinates             |                      | Targ. Co       | ord. Correc | tions          | Miscella                  | neous                  |                     |
| Targets           | (6) SPT0311   |                          | 33.2000 (47.8883      | 3333d)               | <b>g</b>       |             |                |                           |                        |                     |
| Įğ                |   |                          | 3 33.40 (-58.3926     |                      |                |             |                |                           |                        |                     |
| ₽                 |   | Equinox: J               |                       | ,                    |                |             |                |                           |                        |                     |
| Fixed             | Comments: This object was generate                    |                          |                       | om the NED database. |                |             |                |                           |                        |                     |
| ۱×                | Category=Galaxy<br>Description=[High-redshift galaxie |                          |                       |                      |                |             |                |                           |                        |                     |
|                   | Extended=YES  | s, Ingrarea gaiaxies, Si | arbursi gaiaxiesj     |                      |                |             |                |                           |                        |                     |
| ţ                 | Subarray  |                          |                       |                      |                |             |                |                           |                        |                     |
| اچ<br>ع           | FULL  |                          |                       |                      |                |             |                |                           |                        |                     |
| Template          |   |                          |                       |                      |                |             |                |                           |                        |                     |
|                   |   |                          |                       |                      |                |             |                |                           |                        |                     |
| SI                | # Dither Type   | Starting Point           | Number of             | of Points Points     | Startin        | g Set       | Number of Sets | Optimized For             | Direction              | Pattern Size        |
| Dithers           | 1 4-Point-Sets  |                          |                       |                      | 1              |             | 1              | POINT SOURCE              | POSITIVE               | DEFAULT             |
| _                 |   |                          |                       |                      |                |             |                |                           |                        |                     |
| Spectral Elements | # Filter  | Readout Pattern          | Groups/Int            | Integrations/Exp     | Exposures/Dith | Dither      | Total Dith     | ers Total<br>Integrations | Total Exposure<br>Time | ETC Wkbk.Calc<br>ID |
| ΙË                | 1 F1000W  | FAST                     | 90                    | 3                    | 1              | Dither 1    | 4              | 12                        | 2997.043               |                     |
| l e               |   |                          |                       |                      |                |             |                |                           |                        |                     |
| ۱ <u>۳</u>        |   |                          |                       |                      |                |             |                |                           |                        |                     |
| ΙË                |   |                          |                       |                      |                |             |                |                           |                        |                     |
| l ĕ               |   |                          |                       |                      |                |             |                |                           |                        |                     |
| S                 |   |                          |                       |                      |                |             |                |                           |                        |                     |
| ŧ                 | Group Observations 9, 10, Non-inte                    | rruptible                |                       |                      |                |             |                |                           |                        |                     |
| ements            |   |                          |                       |                      |                |             |                |                           |                        |                     |
| e                 |   |                          |                       |                      |                |             |                |                           |                        |                     |
| ⅓                 |   |                          |                       |                      |                |             |                |                           |                        |                     |
| e e               |   |                          |                       |                      |                |             |                |                           |                        |                     |
| 12                |   |                          |                       |                      |                |             |                |                           |                        |                     |
| l ä               |   |                          |                       |                      |                |             |                |                           |                        |                     |
|                   |   |                          |                       |                      |                |             |                |                           |                        |                     |
| Special Requir    |   |                          |                       |                      |                |             |                |                           |                        |                     |

|                   | posai izot obsciva  | <u> </u>            | Ropec an            | <u>d MIRI IFS c</u> | <u> Sivig</u> s |              |             |                      |                       |                        |                     |
|-------------------|---|---------------------|---------------------|---------------------|-----------------|--------------|-------------|----------------------|-----------------------|------------------------|---------------------|
|                   | Proposal 1264, Observation 11: 0                                      |                     |                     |                     |                 |              |             |                      |                       | Wed Jun 19 22          | ::00:34 GMT 2019    |
| ă.                | Diagnostic Status: Warning  |                     |                     |                     |                 |              |             |                      |                       |                        |                     |
| Įξ                | Observing Template: NIRSpec IFU                                       | Spectroscopy        |                     |                     |                 |              |             |                      |                       |                        |                     |
| Observation       |   |                     |                     |                     |                 |              |             |                      |                       |                        |                     |
| ō                 |   |                     |                     |                     |                 |              |             |                      |                       |                        |                     |
| cs                | (Visit 11:1) Warning (Form): Over                                     | heads are provisio  | nal until the Visit | Planner has been ru | ın.             |              |             |                      |                       |                        |                     |
| Diagnostics       |   |                     |                     |                     |                 |              |             |                      |                       |                        |                     |
| <u> </u>          |   |                     |                     |                     |                 |              |             |                      |                       |                        |                     |
| iag               |   |                     |                     |                     |                 |              |             |                      |                       |                        |                     |
| ഥ                 |   |                     |                     |                     |                 |              |             |                      |                       |                        |                     |
| Ŋ                 | # Name  |                     | et Coordinates      |                     |                 | Targ. Coord. | Corrections |                      | Miscellaneous         |                        |                     |
| Targets           | (8) GN20-NIRSPEC  |                     | 2 37 11.8999 (18    |                     |                 |              |             |                      |                       |                        |                     |
| ā                 |   |                     | +62 22 12.10 (62    | .37003d)            |                 |              |             |                      |                       |                        |                     |
| ٦Ę                | Community   | Equin               | ox: J2000           |                     |                 |              |             |                      |                       |                        |                     |
| Fixed             | Comments:<br>Category=Galaxy  |                     |                     |                     |                 |              |             |                      |                       |                        |                     |
| "                 | Category=Galaxy<br>Description=[High-redshift galaxid<br>Extended=YES | es, Starburst galax | ries]               |                     |                 |              |             |                      |                       |                        |                     |
|                   | TA Method   |                     |                     |                     |                 |              |             |                      |                       |                        |                     |
| <u> a</u>         | NONE  |                     |                     |                     |                 |              |             |                      |                       |                        |                     |
| Template          |   |                     |                     |                     |                 |              |             |                      |                       |                        |                     |
| Ţ                 |   |                     |                     |                     |                 |              |             |                      |                       |                        |                     |
| SI                | #   | Dither Type         |                     | Size                |                 | Starting Poi | int         | Number of Poin       | nts                   | Points                 |                     |
| Dithers           | 1   | CYCLING             |                     | MEDIUM              |                 | 1            |             | 4                    |                       |                        |                     |
| ٥                 |   |                     |                     |                     |                 |              |             |                      |                       |                        |                     |
| Spectral Elements | # Grating/Filter  | Readout<br>Pattern  | Groups/Int          | Integrations/Ex     | Leakcal         | Dither       | Autocal     | <b>Total Dithers</b> | Total<br>Integrations | Total Exposure<br>Time | ETC<br>Wkbk.Calc ID |
| ٦<br>آ            | 1 G395H/F290LP  | NRSIRS2RAPI         | 125                 | 1                   | false           | true         | NONE        | 4                    | 4                     | 7352.801               |                     |
| I₩                | A DDIGMICLEAD   | D                   | 60                  | 1                   | C 1             |              | NONE        | 4                    | 4                     | 2550 600               |                     |
| ā                 | 2 PRISM/CLEAR   | NRSIRS2RAPI<br>D    | 60                  | 1                   | false           | true         | NONE        | 4                    | 4                     | 3559.689               |                     |
| <del>ថ្</del> ង   | 3 PRISM/CLEAR   | NRSIRS2RAPI         | 60                  | 1                   | true            | false        | NONE        | 1                    | 1                     | 889.922                |                     |
| ١ğ                |   | D                   |                     |                     |                 |              |             |                      |                       |                        |                     |
| _                 | Aportura DA Danga 79 902075 to 9                                      | 9 902075 Doggan     | (V/2 200 0 to 21/   | ) (1)               |                 |              |             |                      |                       |                        |                     |
| ĬŽ.               | Aperture FA Kange 76.692973 to 6                                      | 6.692973 Degrees    | ( \$ 3 300.0 to 310 | J.O)                |                 |              |             |                      |                       |                        |                     |
| ΙĔ                |   |                     |                     |                     |                 |              |             |                      |                       |                        |                     |
|                   |   |                     |                     |                     |                 |              |             |                      |                       |                        |                     |
|                   |   |                     |                     |                     |                 |              |             |                      |                       |                        |                     |
|                   |   |                     |                     |                     |                 |              |             |                      |                       |                        |                     |
|                   |   |                     |                     |                     |                 |              |             |                      |                       |                        |                     |
|                   |   |                     |                     |                     |                 |              |             |                      |                       |                        |                     |
| Special Require   |   |                     |                     |                     |                 |              |             |                      |                       |                        |                     |
| ements            | Aperture PA Range 78.892975 to 8                                      | 8.892975 Degrees    | (V3 300.0 to 310    | ).0)                |                 |              |             |                      |                       |                        |                     |

|                   |   |                     | rtopoo arr          | <u>d MIRI IFS c</u> | <u> </u> |              |             |                      |               |                |                 |
|-------------------|---|---------------------|---------------------|---------------------|----------|--------------|-------------|----------------------|---------------|----------------|-----------------|
| I a               | Proposal 1264, Observation 12: H                                      |                     |                     |                     |          |              |             |                      |               | Wed Jun 19 22  | :00:34 GMT 2019 |
| atic              | Diagnostic Status: Warning  |                     |                     |                     |          |              |             |                      |               |                |                 |
| Ιž                | Observing Template: NIRSpec IFU                                       | Spectroscopy        |                     |                     |          |              |             |                      |               |                |                 |
| Observation       |   |                     |                     |                     |          |              |             |                      |               |                |                 |
| ŏ                 |   |                     |                     |                     |          |              |             |                      |               |                |                 |
| SS                | (Visit 12:1) Warning (Form): Over                                     | heads are provision | nal until the Visit | Planner has been ru | ın.      |              |             |                      |               |                |                 |
| Diagnostics       |   |                     |                     |                     |          |              |             |                      |               |                |                 |
| l ë               |   |                     |                     |                     |          |              |             |                      |               |                |                 |
| ag                |   |                     |                     |                     |          |              |             |                      |               |                |                 |
| Δ                 |   |                     |                     |                     |          |              |             |                      |               |                |                 |
| (c)               | # Name  | Targe               | et Coordinates      |                     |          | Targ. Coord. | Corrections |                      | Miscellaneous |                |                 |
| Targets           | (9) HFLS3-NIRSPEC   | RA: 1               | 7 06 47.8000 (25    | 6.6991667d)         |          |              |             |                      |               |                |                 |
| arc               |   | Dec: -              | +58 46 23.51 (58.   | 77320d)             |          |              |             |                      |               |                |                 |
| ΙËΙ               |   | Equin               | ox: J2000           |                     |          |              |             |                      |               |                |                 |
| Fixed             | Comments:<br>Category=Galaxy  |                     |                     |                     |          |              |             |                      |               |                |                 |
| 谊                 | Category=Galaxy<br>Description=[High-redshift galaxid<br>Extended=YES | es, Starburst galax | ies]                |                     |          |              |             |                      |               |                |                 |
|                   |   |                     |                     |                     |          |              |             |                      |               |                |                 |
| ate               | TA Method   |                     |                     |                     |          |              |             |                      |               |                |                 |
| Ιď                | NONE  |                     |                     |                     |          |              |             |                      |               |                |                 |
| Template          |   |                     |                     |                     |          |              |             |                      |               |                |                 |
| -                 | #   | Dither Type         |                     | Size                |          | Starting Poi | int         | Number of Poir       | nts           | Points         |                 |
| Je.               | 1   | CYCLING             |                     | MEDIUM              |          | 1            |             | 4                    |               |                |                 |
| Dithers           |   |                     |                     |                     |          |              |             |                      |               |                |                 |
|                   | # Grating/Filter  | Readout             | Groups/Int          | Integrations/Ex     | Leakcal  | Dither       | Autocal     | <b>Total Dithers</b> | Total         | Total Exposure | ETC             |
| en                |   | Pattern             |                     | <u>p</u>            |          |              |             |                      | Integrations  | Time           | Wkbk.Calc ID    |
| en                | G395H/F290LP  | NRSIRS2RAPI<br>D    | 125                 | 1                   | false    | true         | NONE        | 4                    | 4             | 7352.801       |                 |
|                   | 2 PRISM/CLEAR   | NRSIRS2RAPI         | 60                  | 1                   | false    | true         | NONE        | 4                    | 4             | 3559.689       |                 |
| <u>ra</u>         |   | D                   |                     |                     |          |              |             |                      |               |                |                 |
| ec l              | 3 PRISM/CLEAR   | NRSIRS2RAPI<br>D    | 60                  | 1                   | true     | false        | NONE        | 1                    | 1             | 889.922        |                 |
| Spectral Elements |   | D                   |                     |                     |          |              |             |                      |               |                |                 |
| -                 | Aperture PA Range 65.892975 to 6                                      | 5.892975 Degrees    | (V3 287.0 to 287    | '.0)                |          |              |             |                      |               |                |                 |
| ements            | 1   |                     | (                   | ,                   |          |              |             |                      |               |                |                 |
| Ĭ Ĕ               |   |                     |                     |                     |          |              |             |                      |               |                |                 |
|                   |   |                     |                     |                     |          |              |             |                      |               |                |                 |
| l be              |   |                     |                     |                     |          |              |             |                      |               |                |                 |
| Ř                 |   |                     |                     |                     |          |              |             |                      |               |                |                 |
| <u> </u>          |   |                     |                     |                     |          |              |             |                      |               |                |                 |
|                   |   |                     |                     |                     |          |              |             |                      |               |                |                 |
| Secia             |   |                     |                     |                     |          |              |             |                      |               |                |                 |
| Special Require   |   |                     |                     |                     |          |              |             |                      |               |                |                 |

| -  |   |  |                     | <u>d MIRI IFS c</u> | <u> </u> |              |             |               |               |                |                 |
|--|---|--|---------------------|---------------------|----------|--------------|-------------|---------------|---------------|----------------|-----------------|
|  | Proposal 1264, Observation 13: S                                      |  |                     |                     |          |              |             |               |               | Wed Jun 19 22  | :00:34 GMT 2019 |
| a ظظ                                       | Diagnostic Status: Warning  |  |                     |                     |          |              |             |               |               |                |                 |
| <u>                                   </u> | Observing Template: NIRSpec IFU                                       | Spectroscopy   |                     |                     |          |              |             |               |               |                |                 |
| Observation                                |   |  |                     |                     |          |              |             |               |               |                |                 |
| ŏ  |   |  |                     |                     |          |              |             |               |               |                |                 |
| SS (                                       | Visit 13:1) Warning (Form): Overl                                     | neads are provision  | nal until the Visit | Planner has been ru | ın.      |              |             |               |               |                |                 |
| Diagnostics                                |   |  |                     |                     |          |              |             |               |               |                |                 |
| 2  |   |  |                     |                     |          |              |             |               |               |                |                 |
| iag  |   |  |                     |                     |          |              |             |               |               |                |                 |
| ٥  |   |  |                     |                     |          |              |             |               |               |                |                 |
| <u>#</u>                                   | 1 101110  | Targe  | et Coordinates      |                     |          | Targ. Coord. | Corrections |               | Miscellaneous |                |                 |
| Targets                                    | 10) SPT0311-58-NIRSP  |  | 3 11 33.2600 (47    |                     |          |              |             |               |               |                |                 |
| arc  |   |  | -58 23 33.50 (-58   | .39264d)            |          |              |             |               |               |                |                 |
| <u> </u>                                   |   | •  | ox: J2000           |                     |          |              |             |               |               |                |                 |
|  | Comments: Coordinates from Figur<br>Category=Galaxy                   |  |                     |                     |          |              |             |               |               |                |                 |
|  | Category=Galaxy<br>Description=[High-redshift galaxie<br>Extended=YES | es, Infrared galaxi  | es, Starburst gala  | ixies]              |          |              |             |               |               |                |                 |
|  | Extended=YES  (A Method   |  |                     |                     |          |              |             |               |               |                |                 |
| at   1                                     | NONE  |  |                     |                     |          |              |             |               |               |                |                 |
| d   `                                      | NOINE   |  |                     |                     |          |              |             |               |               |                |                 |
| Template                                   |   |  |                     |                     |          |              |             |               |               |                |                 |
|  | !   | Dither Type  |                     | Size                |          | Starting Poi | int         | Number of Poi | nts           | Points         |                 |
| <u>a</u>                                   |   | CYCLING  |                     | MEDIUM              |          | 1            |             | 4             |               |                |                 |
| Dithers 1                                  |   |  |                     |                     |          |              |             |               |               |                |                 |
|  | Grating/Filter  | Readout  | Groups/Int          | Integrations/Ex     | Leakcal  | Dither       | Autocal     | Total Dithers | Total         | Total Exposure | ETC             |
| Spectral Elements                          | GAS ELL TRASSE D  | Pattern  |                     | <b>p</b>            |          |              |             |               | Integrations  | Time           | Wkbk.Calc ID    |
| e l  | G395H/F290LP  | NRSIRS2RAPI<br>D   | 125                 | 1                   | false    | true         | NONE        | 4             | 4             | 7352.801       |                 |
|  | PRISM/CLEAR   | NRSIRS2RAPI  | 60                  | 1                   | false    | true         | NONE        | 4             | 4             | 3559.689       |                 |
| tra  |   | D  |                     |                     |          |              |             |               |               |                |                 |
| S   3                                      | PRISM/CLEAR   | NRSIRS2RAPI<br>D   | 60                  | 1                   | true     | false        | NONE        | 1             | 1             | 889.922        |                 |
| Sp   |   | D  |                     |                     |          |              |             |               |               |                |                 |
| -  | Aperture PA Range 353.892975 to                                       | 14.892975 Degree   | es (V3 215.0 to 23  | 36.0)               |          |              |             |               |               |                |                 |
| ements                                     |   | , and the second | `                   | ,                   |          |              |             |               |               |                |                 |
| E  |   |  |                     |                     |          |              |             |               |               |                |                 |
|  |   |  |                     |                     |          |              |             |               |               |                |                 |
|  |   |  |                     |                     |          |              |             |               |               |                |                 |
| <u> </u>                                   |   |  |                     |                     |          |              |             |               |               |                |                 |
| 1  |   |  |                     |                     |          |              |             |               |               |                |                 |
| <u>ä</u> .                                 |   |  |                     |                     |          |              |             |               |               |                |                 |
| Special Requir                             |   |  |                     |                     |          |              |             |               |               |                |                 |