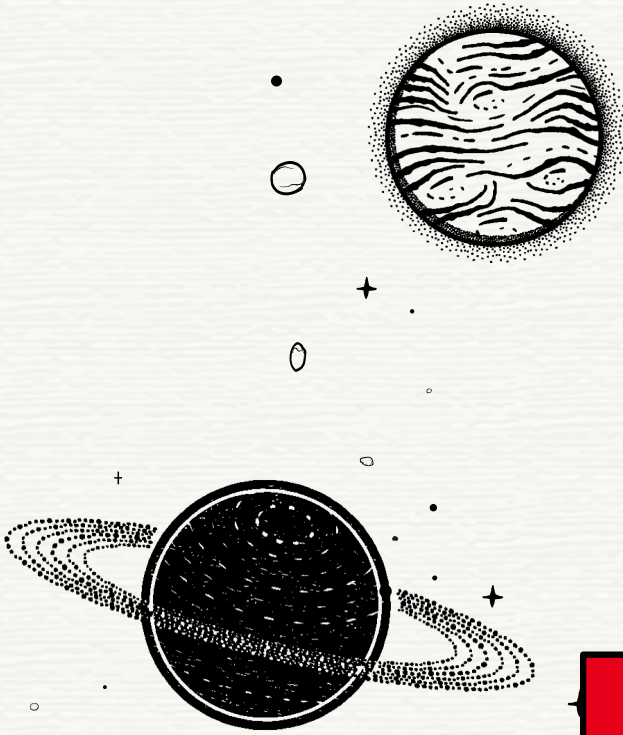
Exposure Time Calculator

This is where the fun begins



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Exposure Time Calculator

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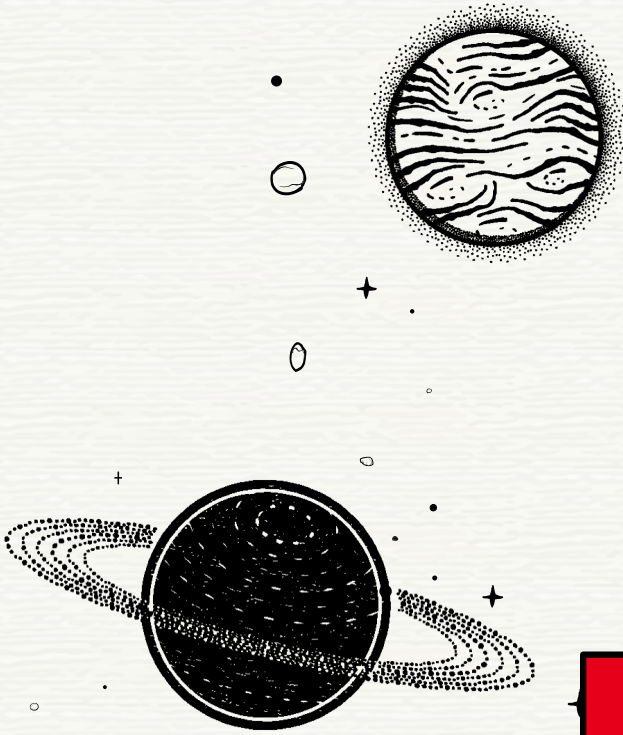

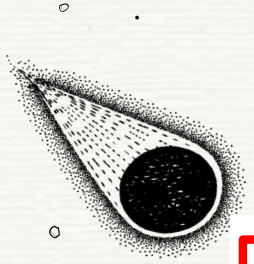

Accuracy of ETC Calculations

This version of the ETC is intended to help users plan observations for General Observer (GO) programs. The ETC approximates our current best knowledge and understanding of the performance of the JWST instruments, based on inflight measurements and calibrations. It has been validated against inflight observations analyzed by the instrument teams. Users should exercise appropriate caution when interpreting results from the ETC. A number of known issues remain, which may affect predicted sensitivities.

See Known Issues for additional details.

The ETC is not intended to be a complete observation simulator, and some higher-order effects are not accounted for, such as field distortion.

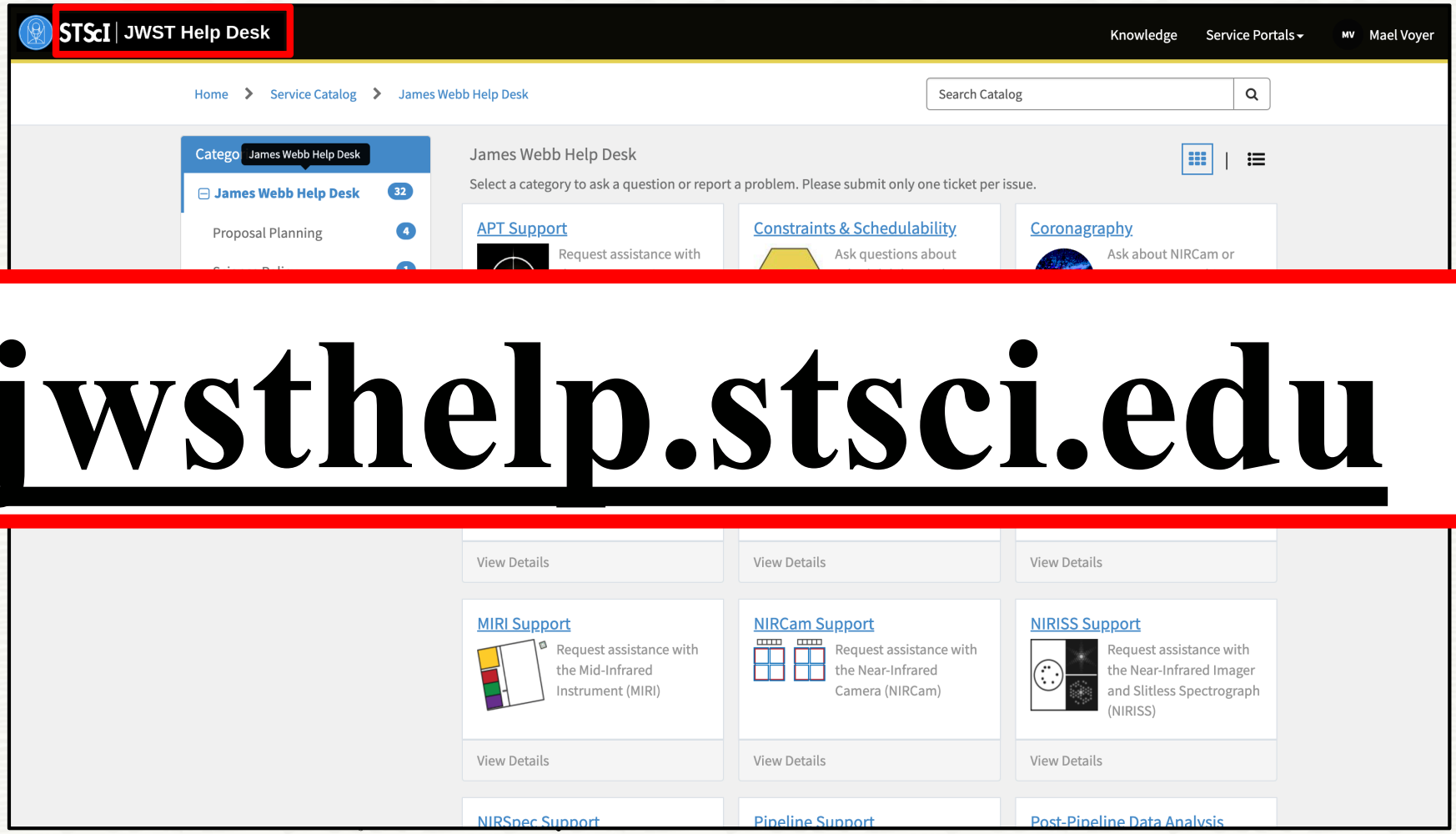

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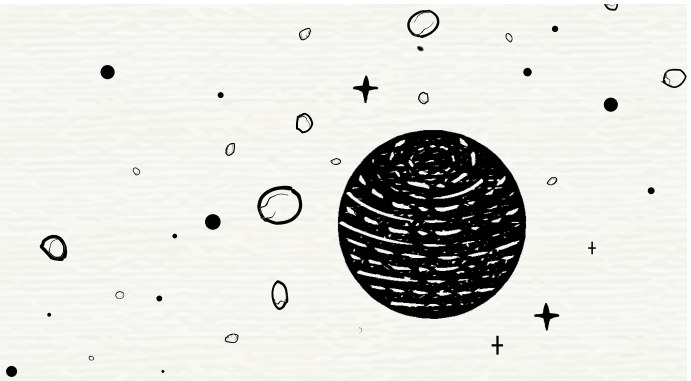
TABLE OF CONTENTS



01 - What is the ETC ?

Exposure Time Calculator

- Main end-product is the **detector configuration** you will use

Choosing the instrument :

- Depends on your science case...
  And the instrument capability (sensitivity, etc)

For example :

- You need 7 – 18 microns spectroscopy
- go to : https://jwst-docs.stsci.edu/ (or remember last presentation)
- MIRI time !

So either Low-Resolution or Mid-Resolution

- The **higher** the resolution the **more** photons needed

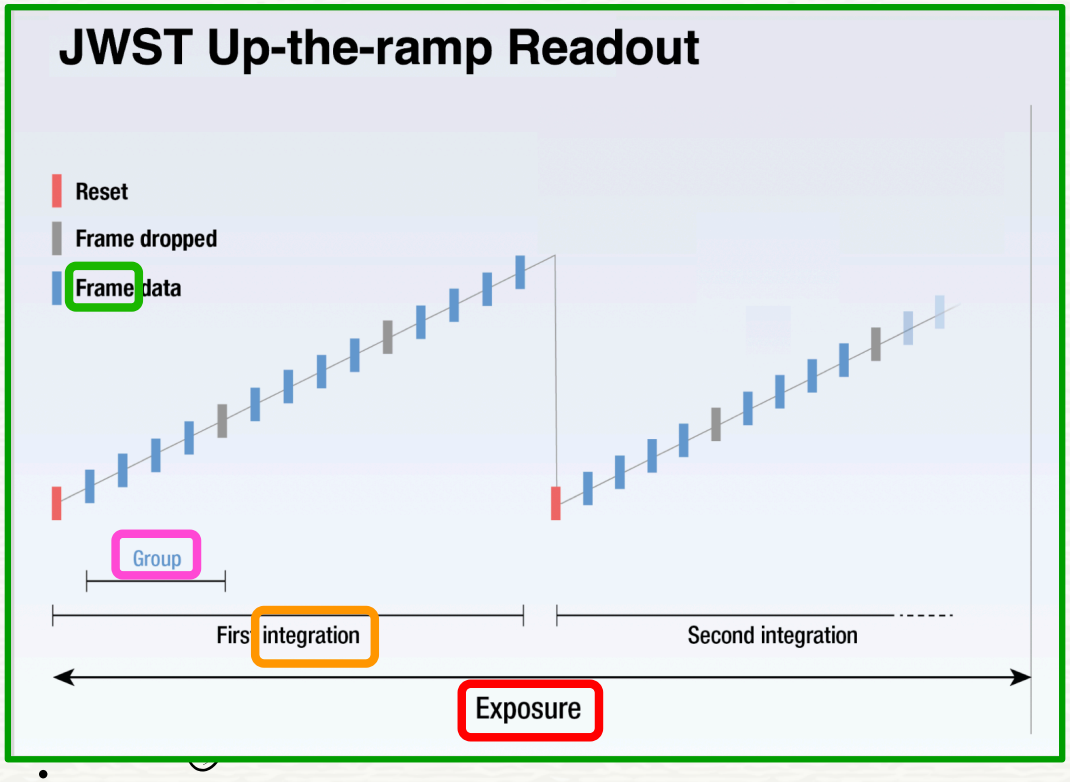
01 - What is the ETC ?

Exposure Time Calculator

- Main end-product is the **detector configuration** you will use

Detector configuration i.e. the number of :

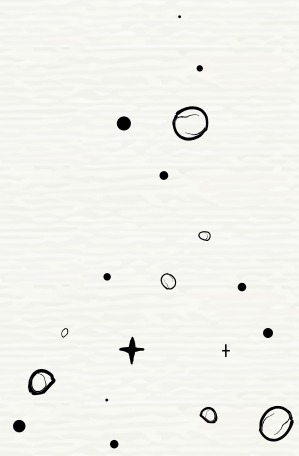
- **Frame** per **group**
- **Groups** per **integration**
- **Integration** per **exposure**
- **Exposures**



01 - What is the ETC ?

Under the hood: The ETC engine

The JWST ETC engine uses a pixel-based 3-dimensional approach to perform calculations on small (typically a few arcseconds) 2-dimensional user-created astronomical scenes. It models both the spatial and the wavelength dimensions, using realistic point spread functions (produced using WebbPSF) for each instrument mode. It natively handles correlated read noise, inter-pixel capacitance, and saturation. Since the signal and noise are modeled for individual detector pixels, the ETC is able to replicate many of the steps that observers will perform when calibrating and reducing their JWST data. This simplifies interpretation of the extracted signal-to-noise ratio (SNR) calculated by the ETC.



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02 - Usefulness?

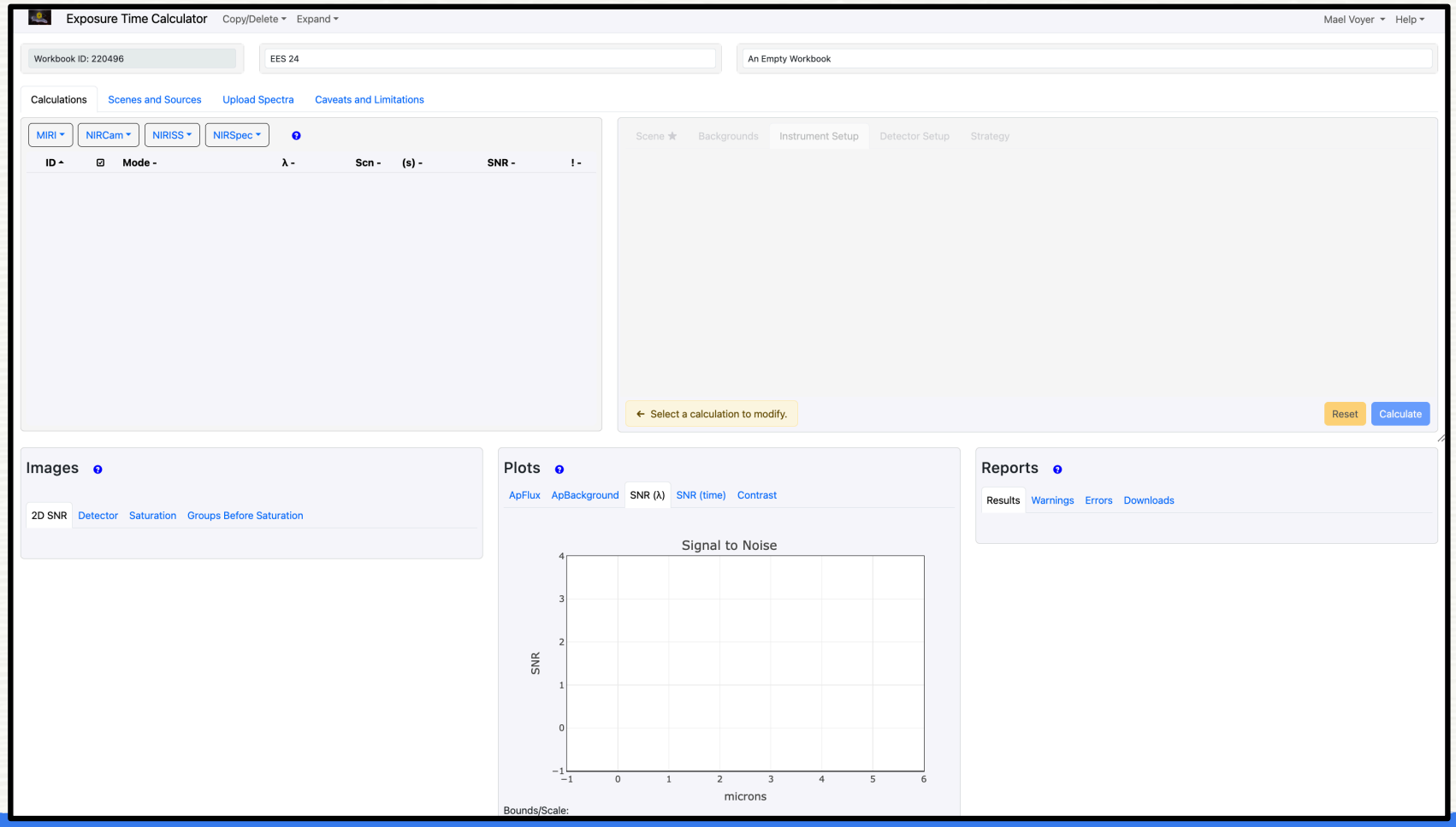
Quick and dirty way to check feasibility & estimate time

10 min time :
- Idea of the spectra
- Some flux estimate

Thorough proposal preparation

Much more time :
- Detailed parameters
- Check and re-check
- Complementary to the APT

03 – Short walkthrough



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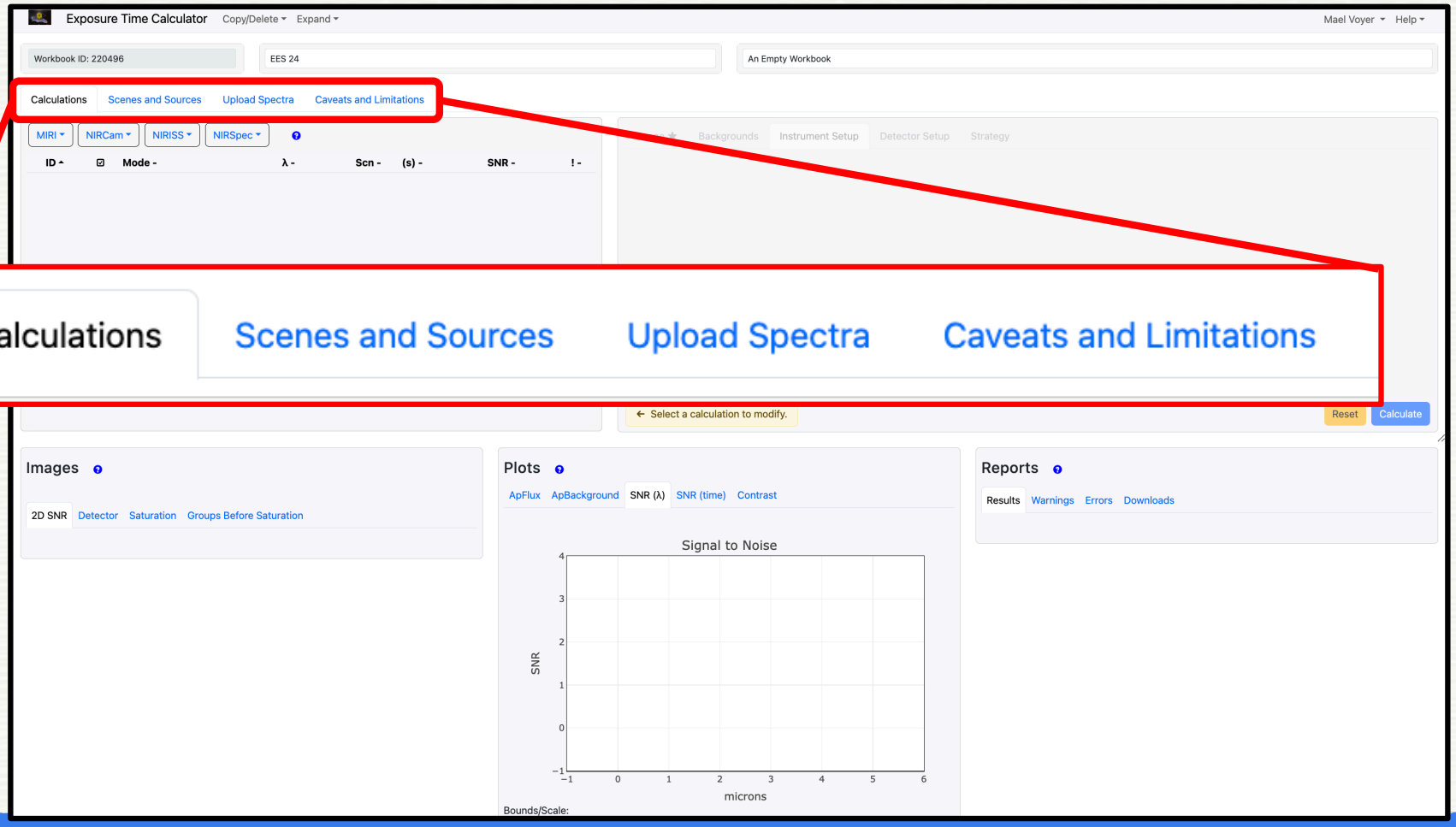

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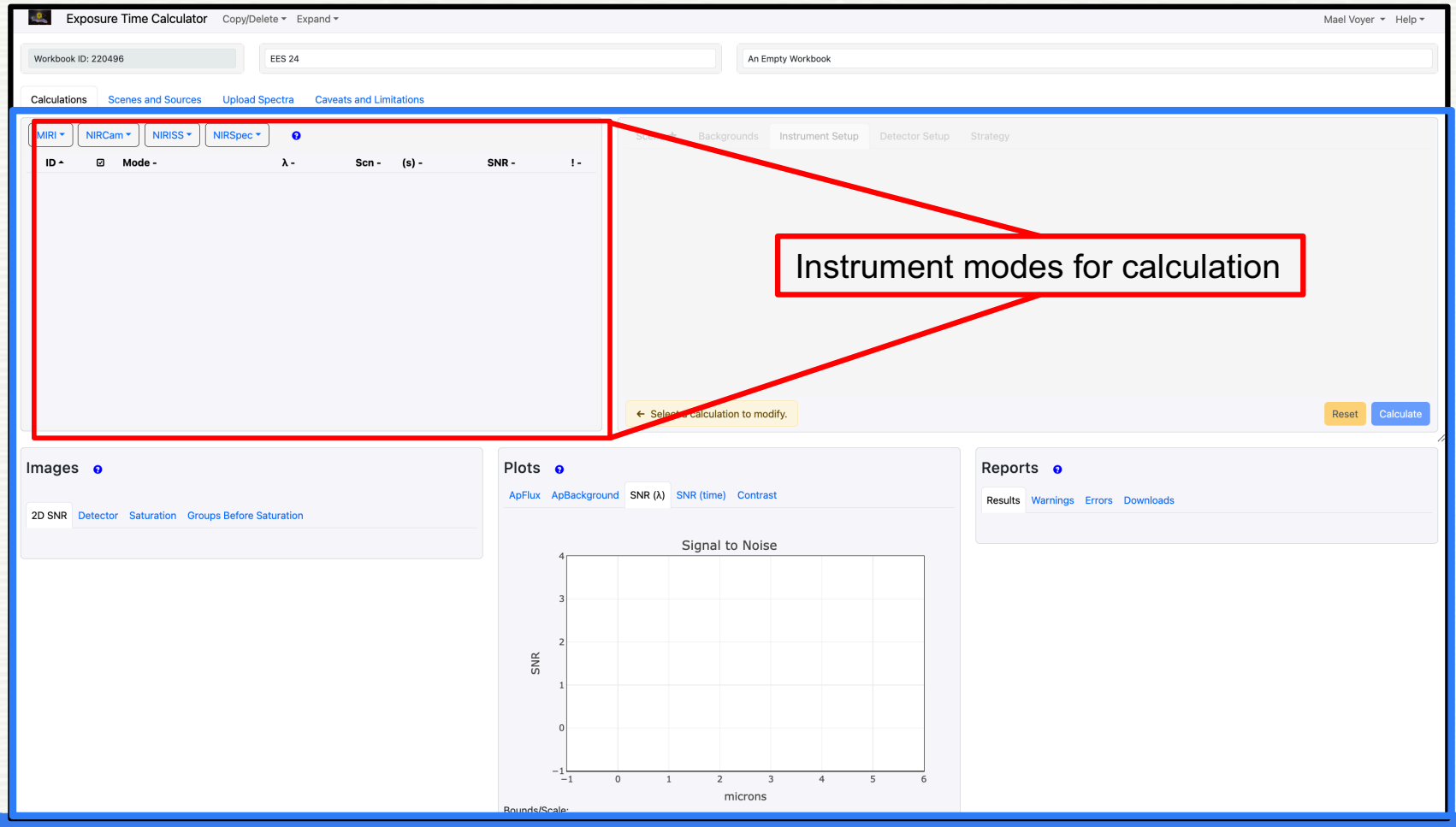

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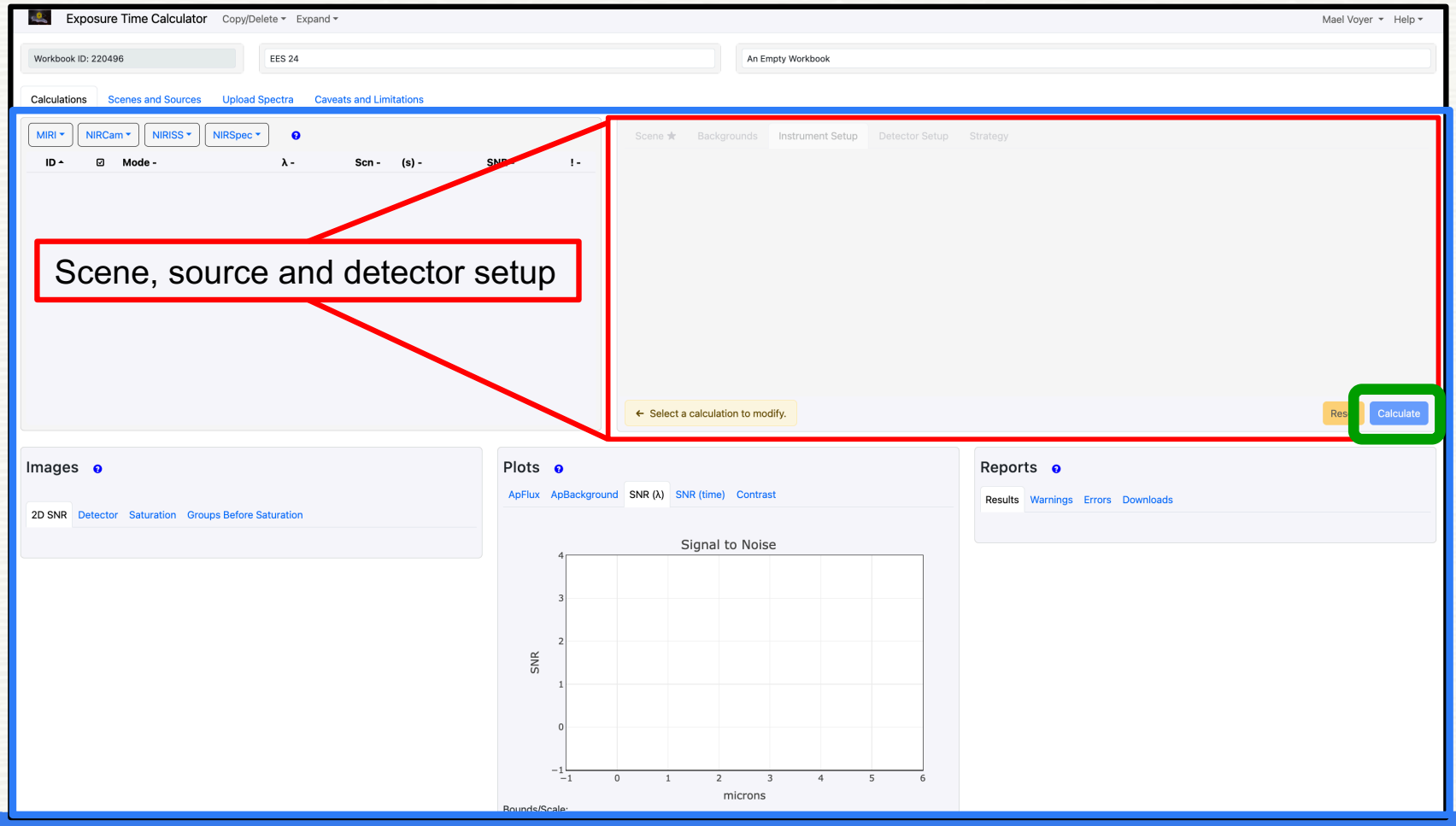

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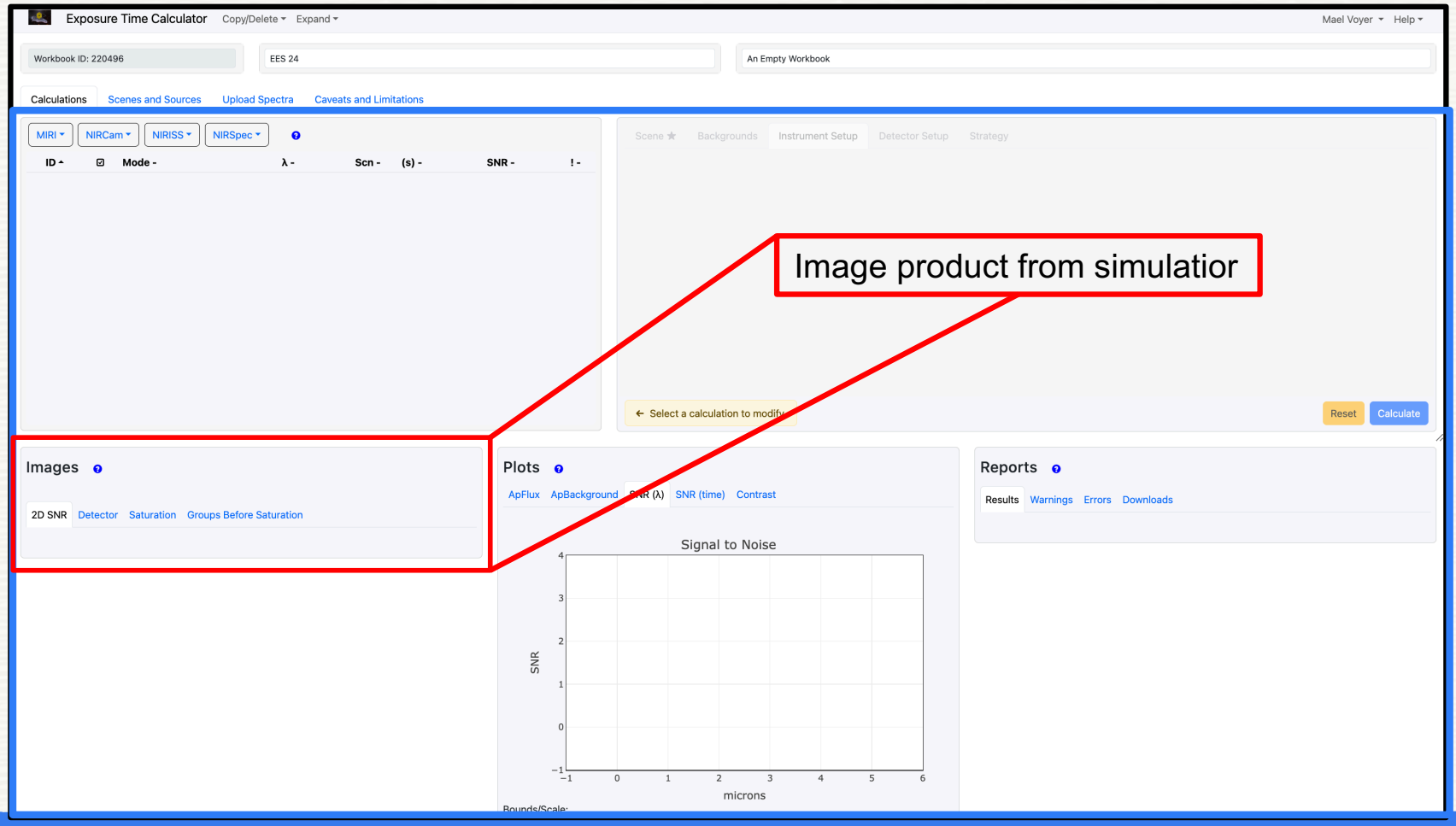

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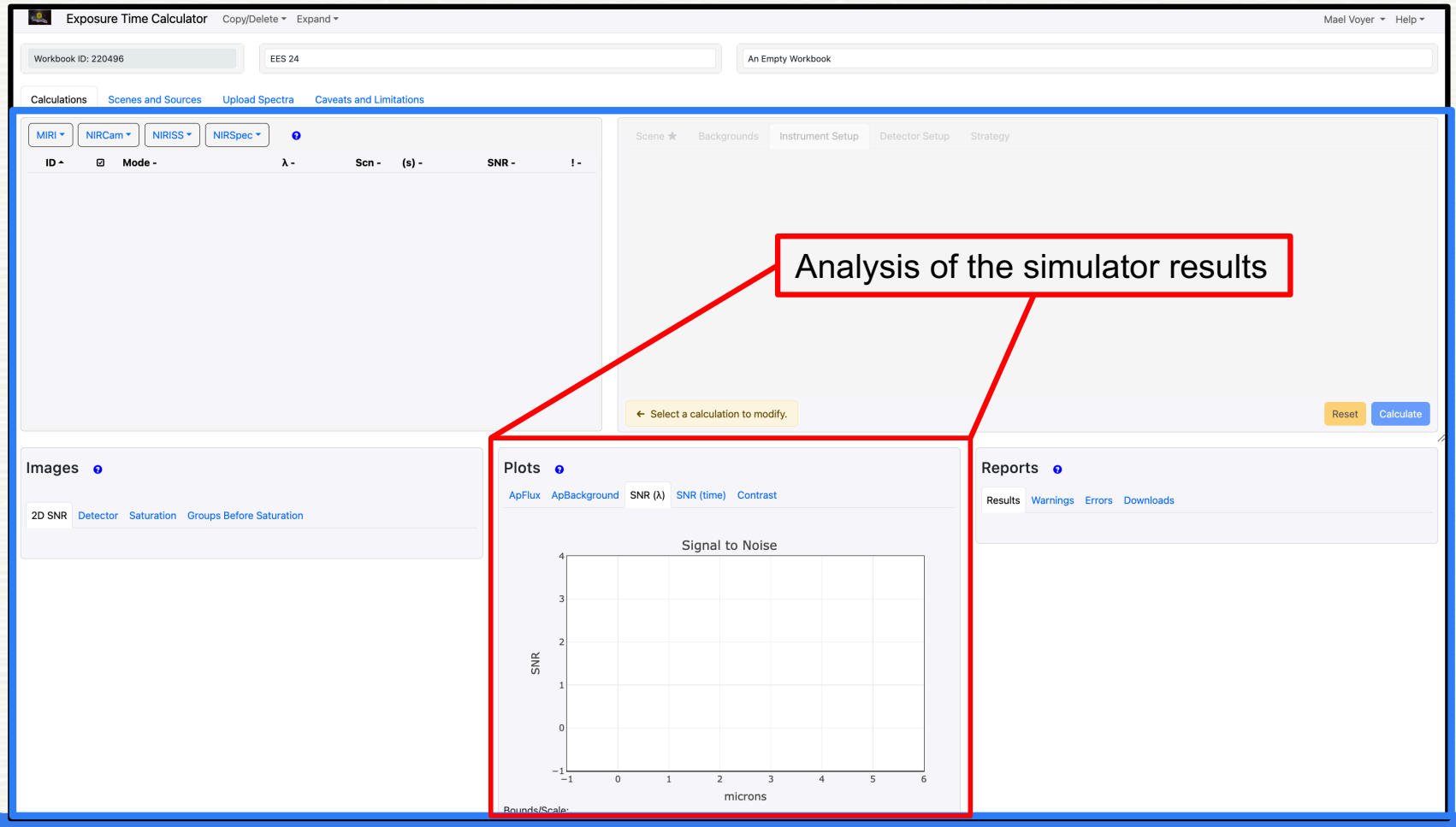

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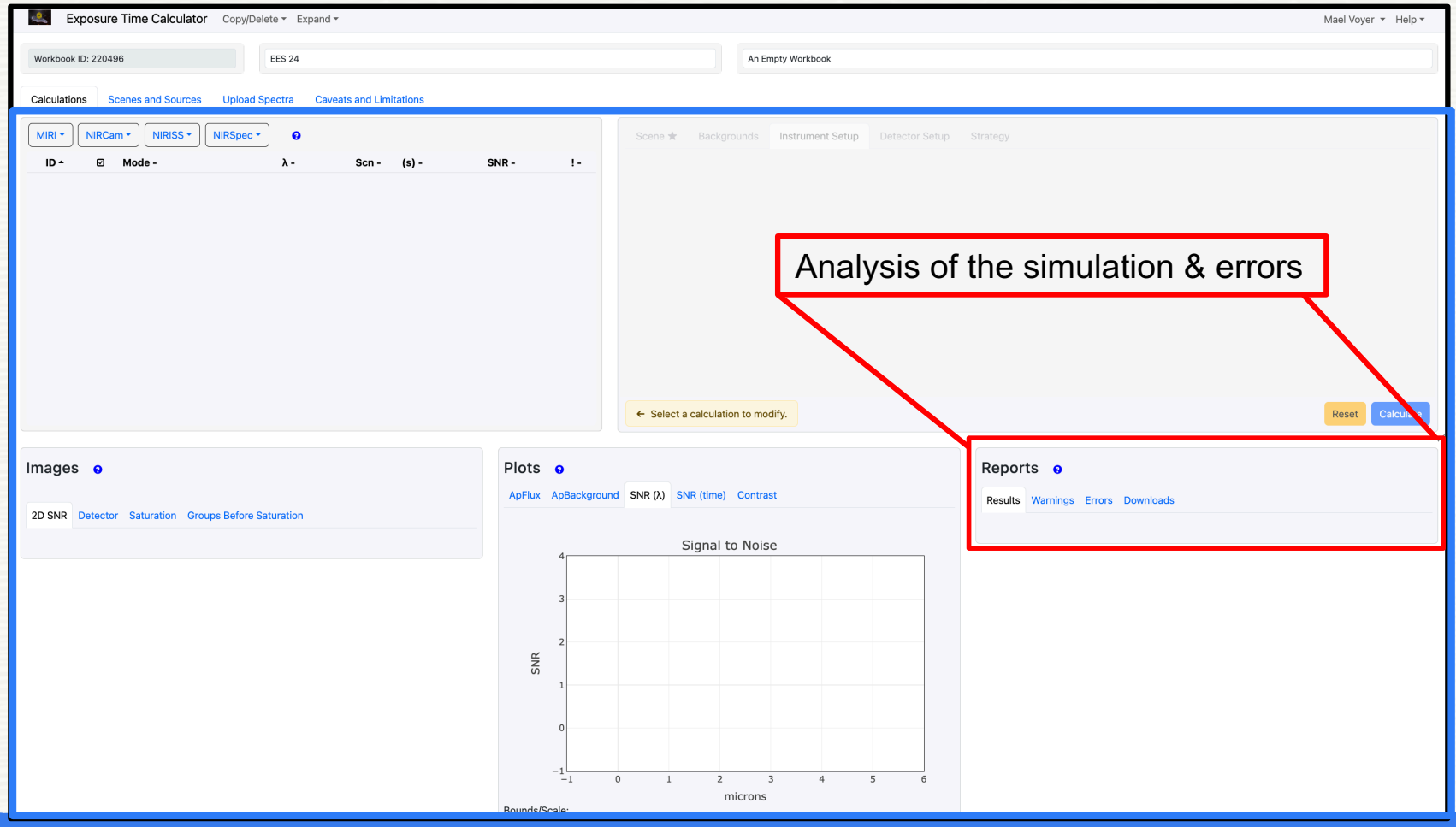

Thank you