User Tools for Cycle 1
Phase II: AOR Preparation with SOFIA Spot

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DCS Development Lead

DCS Development Team:
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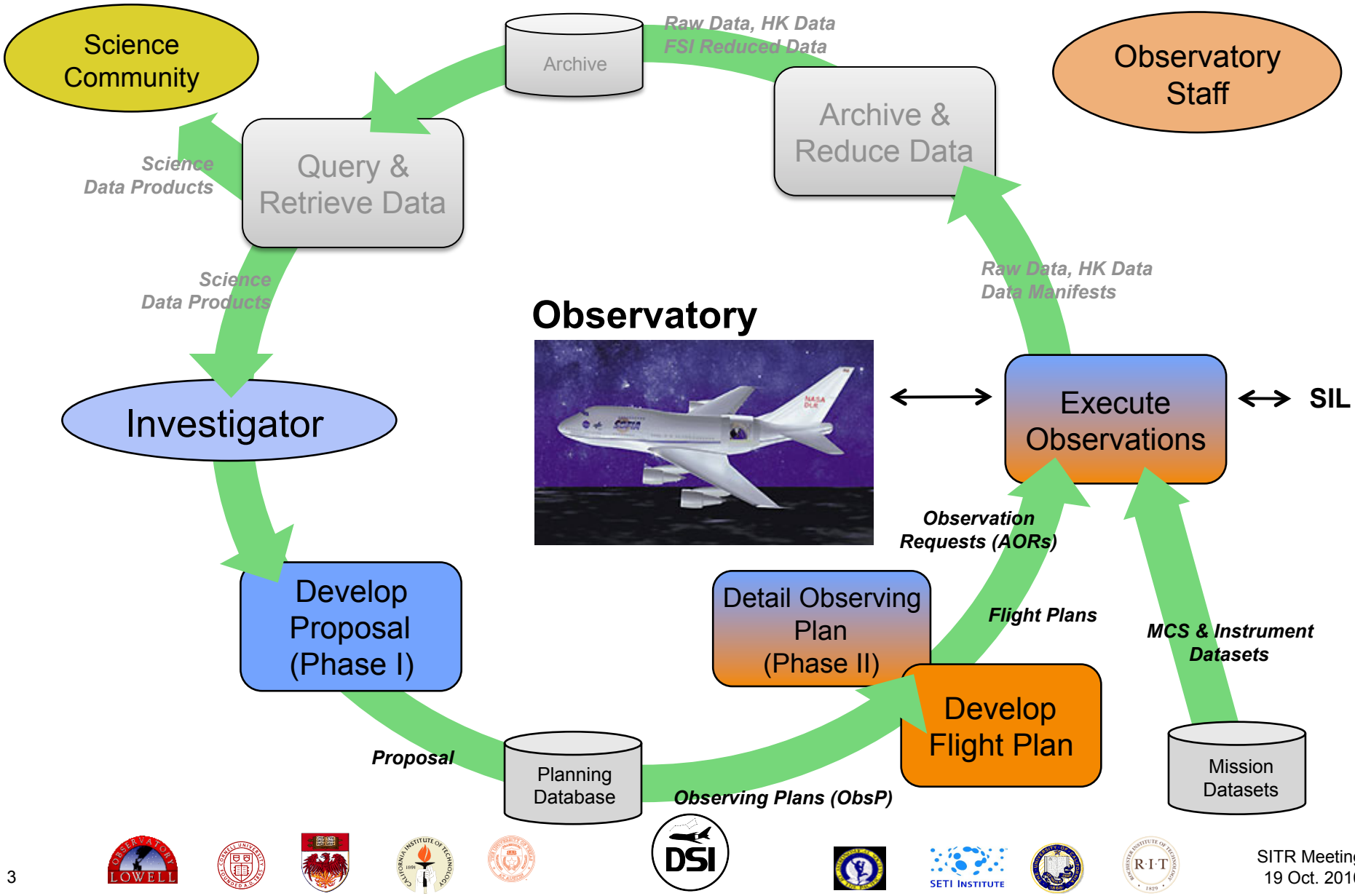
Sean Colgan (*NASA-SOFIA*), Robert Krzaczek (*RIT*)

Sr. Science Advisor: William Vacca (*USRA-SOFIA*)

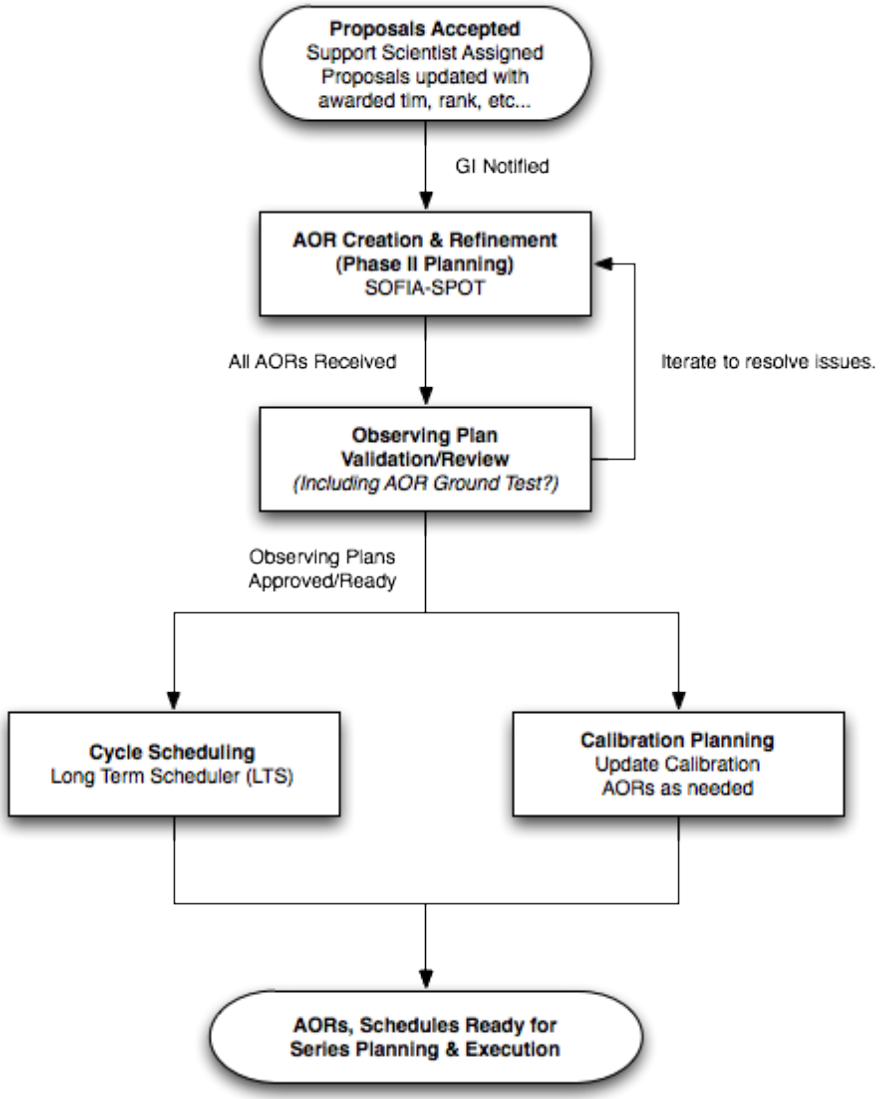
Introduction

- GI Observation planning for SOFIA is composed of two parts:
  - Phase I: Proposal Preparation (SPT, SITE)
  - Phase II: AOR creation/modification
- Early decision was to not force GIs to create AORs as part of the proposal process.
- Trade study of existing Obs Planning tools was conducted in 2001: included SPOT, SEA, OASIS, and the Gemini OT.
- Trade study was reviewed in 2009 and decision was made by SMO director and ISD manager (Sept.) to go ahead with SPOT as the Phase II planning tool for SOFIA.

SOFIA Information Systems Mission Lifecycle



Observing Cycle Planning Process



Observing Modes and AOTs

- **SI Observing Mode**: Instrument and telescope configuration combined with methodology/algorithm for how an observation is carried out.
- 1 Observing Mode ≈ 1 AOT
- AOTs are defined in XML.
- AOT *structure* defined in DTD for XML.
- SI can *extend* the structure as needed, then define AOTs for each observing mode available for their instrument
- ***AOT drives the GUI used to create AORs***
- ***SOFIA AOT paradigm designed for maximum flexibility at the cost of some additional interpretation overhead***

AOT Content

- Description: human readable; provides enough info for GI to understand the mode. Can be used for help pages, tool tips, etc…
- Observation: contains all parameters that describe the mode
  - Global Aspects: Obs type, source type, name, approx. duration, etc…
  - Instrument specific: integration times, filter selections, etc…
  - Observatory: parameters for dithering, nodding, chopping, etc…
  - Pipeline: version, default parameters, etc…
- Calibration: all parameters needed to specify any calibration requirements (preliminary design)

AORs for SOFIA

- An AOR is a request for a specific observation with enough info for an SI to carry it out “automatically”.
  - Instantiation of an AOT; i.e. a “filled-out” AOT.
  - defined in XML; structure defined in accompanying DTD.
- AORs will be created/modified using SOFIA-SPOT – graphical tool based on the *Spitzer Planning Observations Tool.*
  - Saved and managed in the DCS Observation Planning database.
  - AORs generated from GIs accepted proposal.
- AORs are then used for manual control, scripted control, or automatic control (e.g. DCS Observation Queue).

AOR Content

- AOR DTD and content dictated by the AOTs.
- Content mirrors AOT
- Additional content:
  - Observing plan details (investigator, SSMOC scientist, etc…)
  - Notes, comments, special instructions
  - ***State*** (new, approved, planned, executed, etc…)
  - View/edit privileges (locking)
- *AOR ID used to associate related data products*.

SI Deliverables

- 1 AOT for each instrument observing *mode* according to DCS-SI ICD with specification in the SI-DCS ICD.
  - DCS team can support.
- AOR translation capability (just rules? Or an actual tool to do the translation?)

AOT Development Coordination

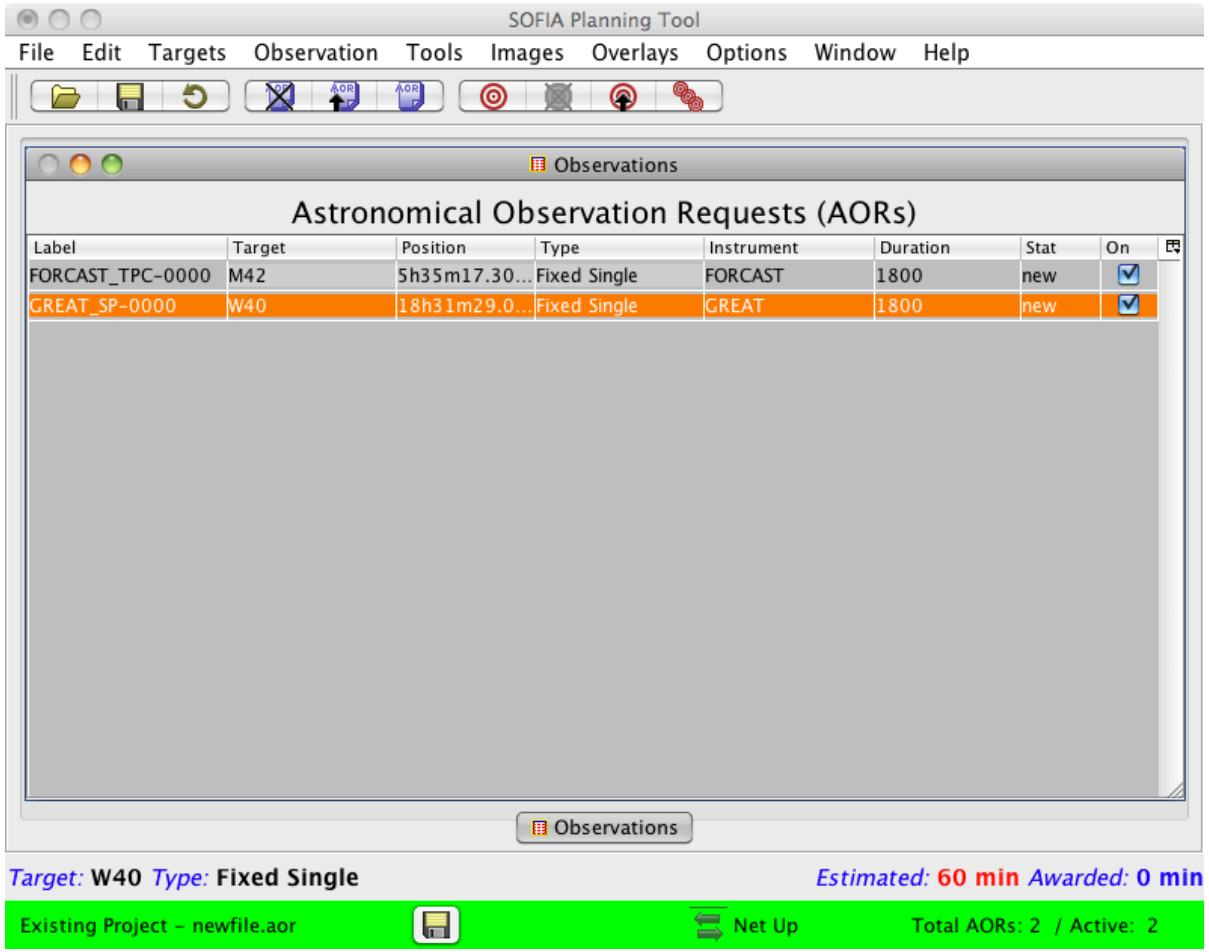
- Specification:
  - AOT development lead (JR) to work directly with USRA SI scientist and DCS lead (RYS); bringing in SI team as necessary.
  - AOT lead & SI scientist update SI-DCS ICD with approval from SI team and submit for NASA review/approval.
- Once specification is mature/complete, AOT can be implemented as XML (by either SI or DCS development team, or combination of both).
- Once XML is complete, AOT handed off to SSPOT application developer for implementation.

Intro to SOFIA Spot

- Standalone Java application
  - User downloads from DCS website, installs on local desktop.
- Built on Spot-Common: codebase developed at IPAC and used by Spitzer and Herschel:
  - 10+ year development/testing legacy at IPAC
  - On-going support from IPAC Spot team in development of SOFIA-Spot
- Integrated with DCS planning database
  - AORs are saved/managed in planning database;
  - AORs created automatically when proposal is accepted.

Intro to SSPOT features/capabilities

- AOR Management
- AOR Specification/ Editing
- Visualization
  - Archive image/catalog integration
  - Focal Plane
  - AOR
- Integration with Planning Database
- Target generation functions



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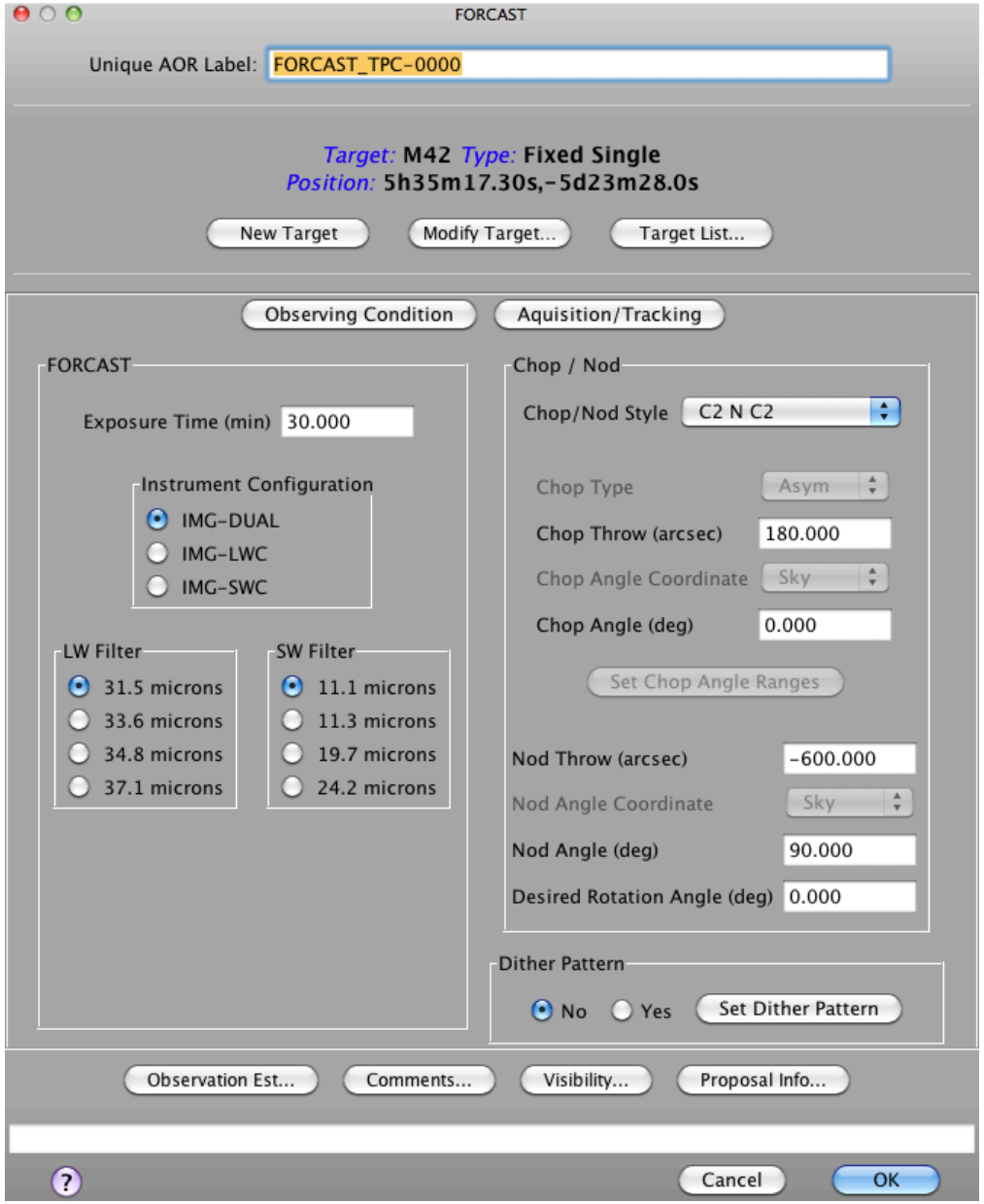

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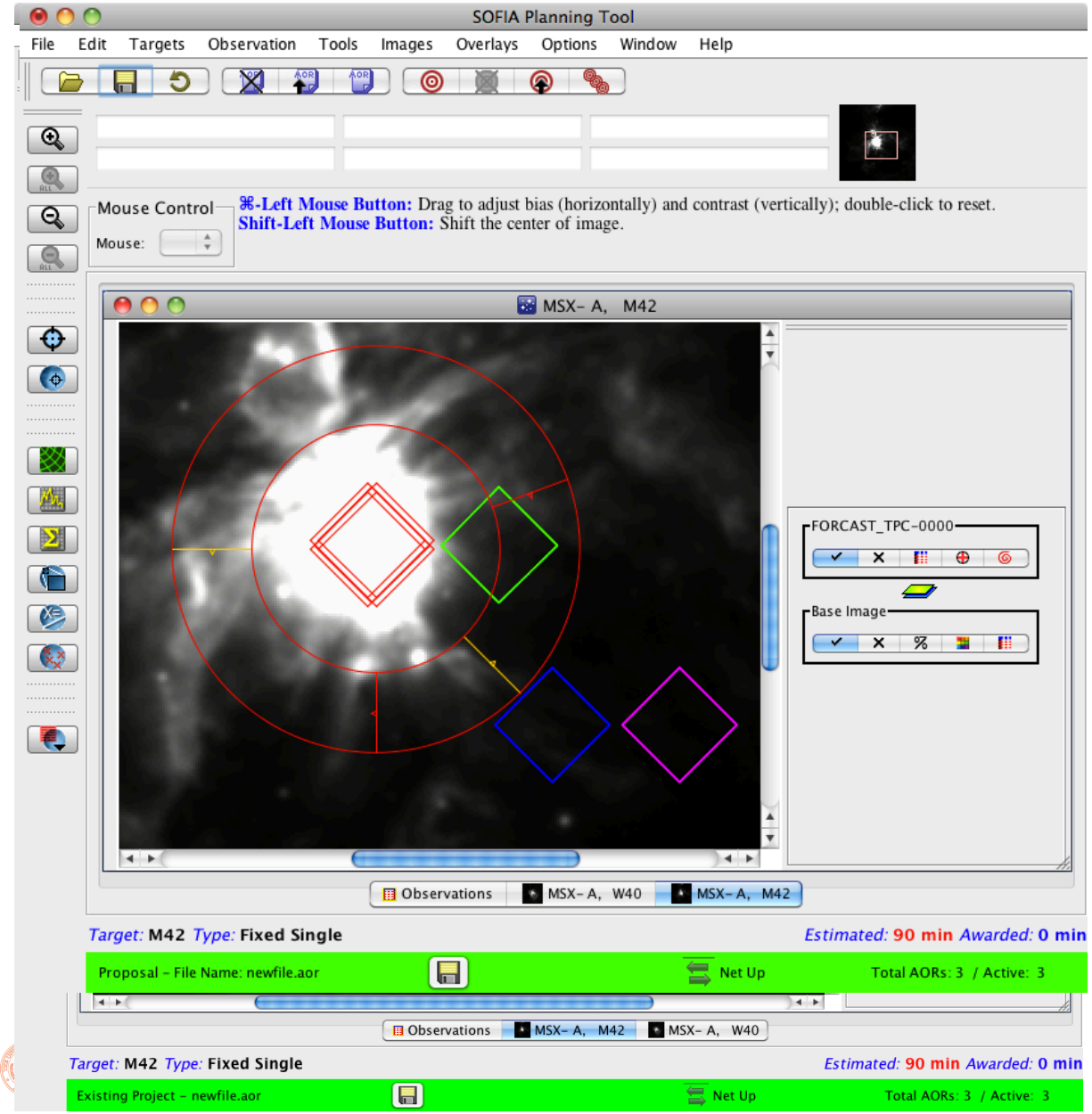

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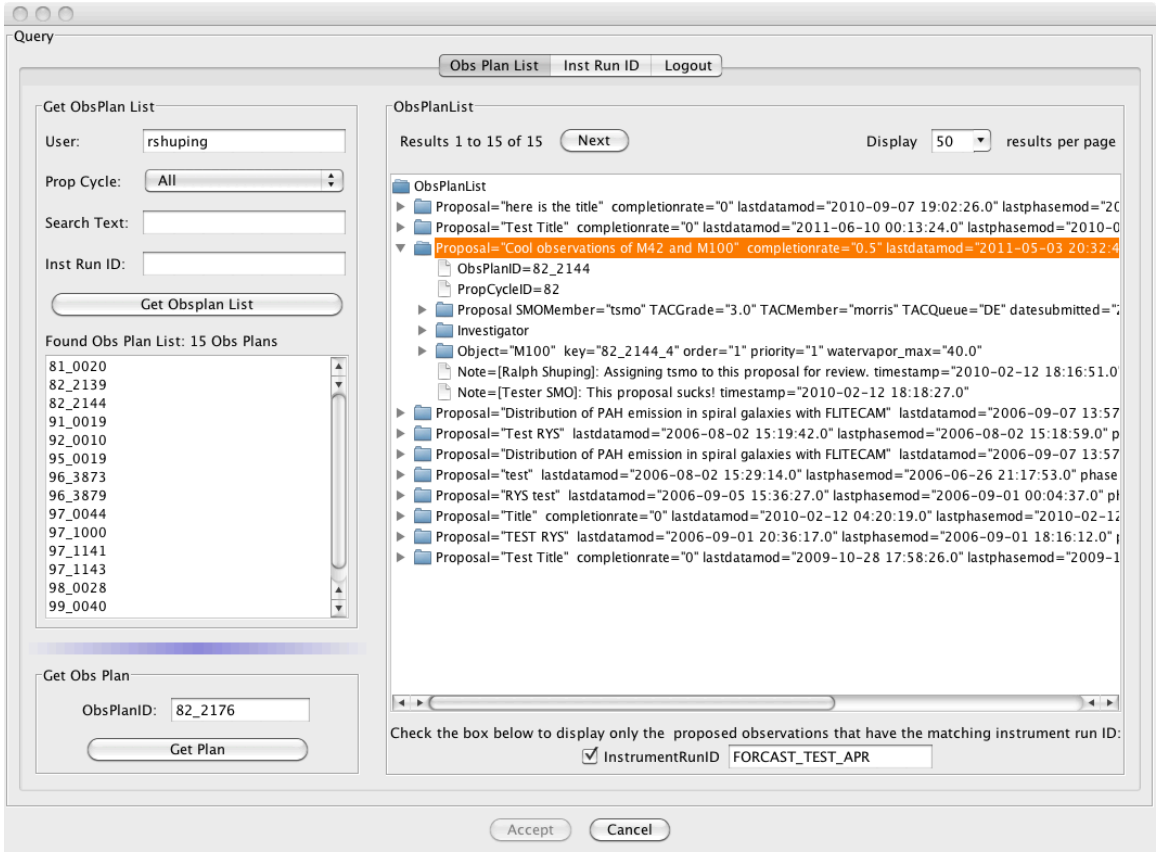

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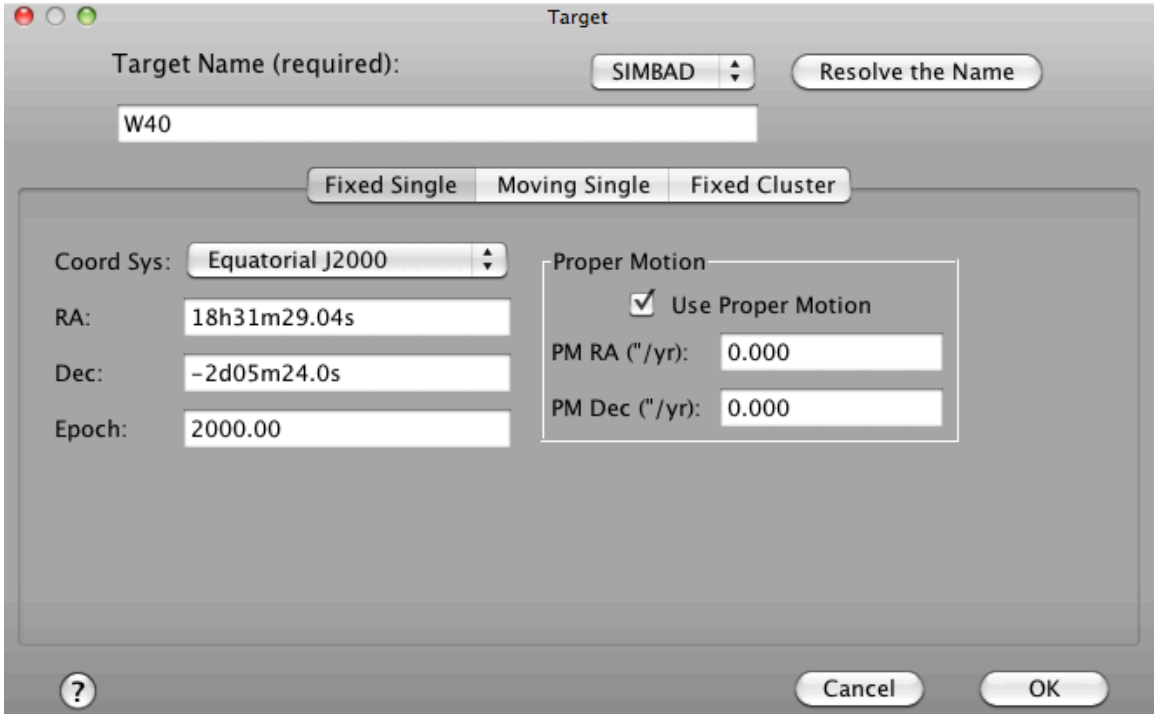
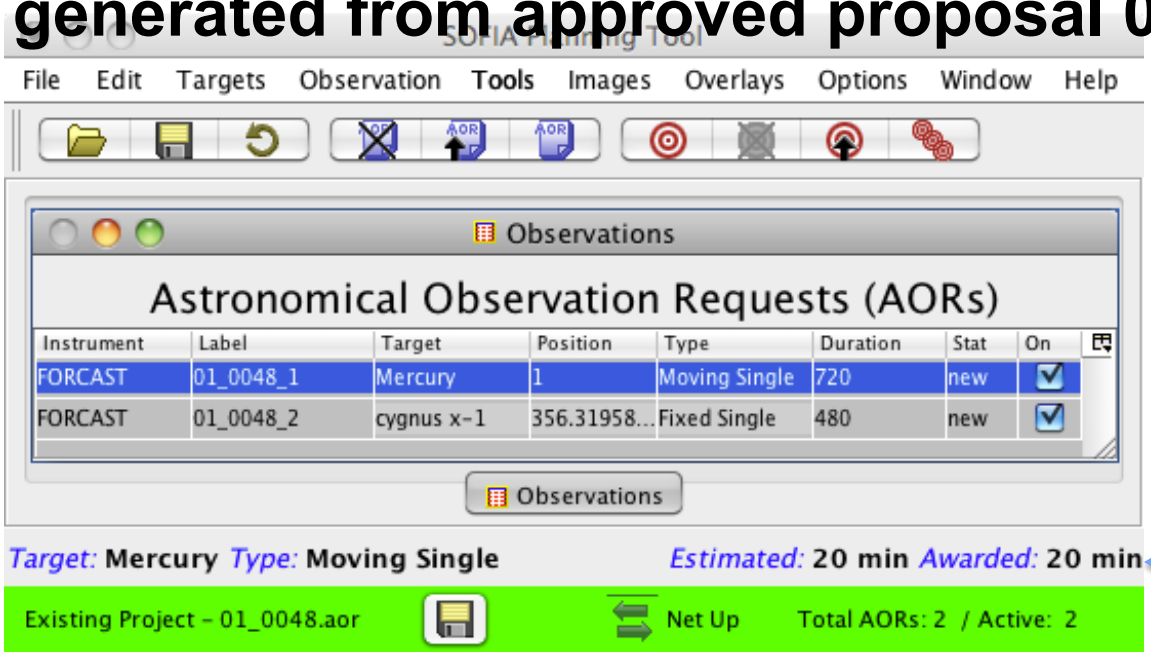


Planning an Observation with SSPOT

AOR generated from approved proposal 01_0048

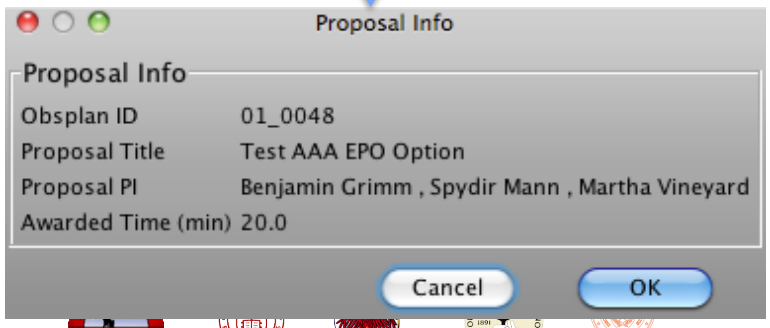
AOR Summary Table

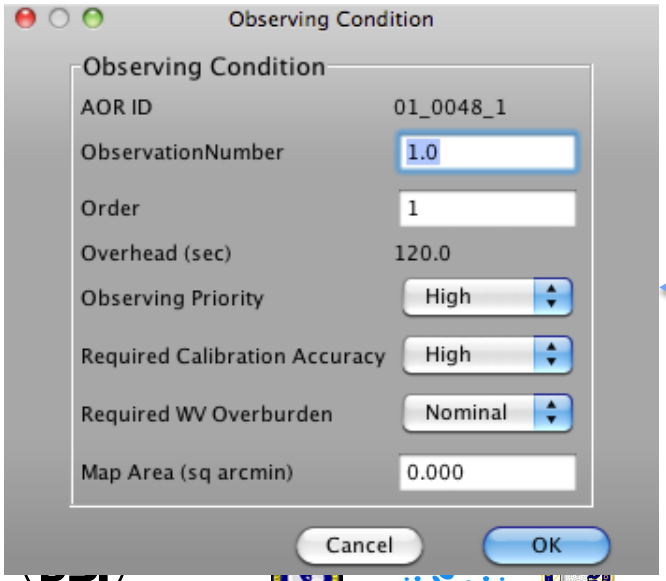


Saved AOR file

Estimated time matches awarded time

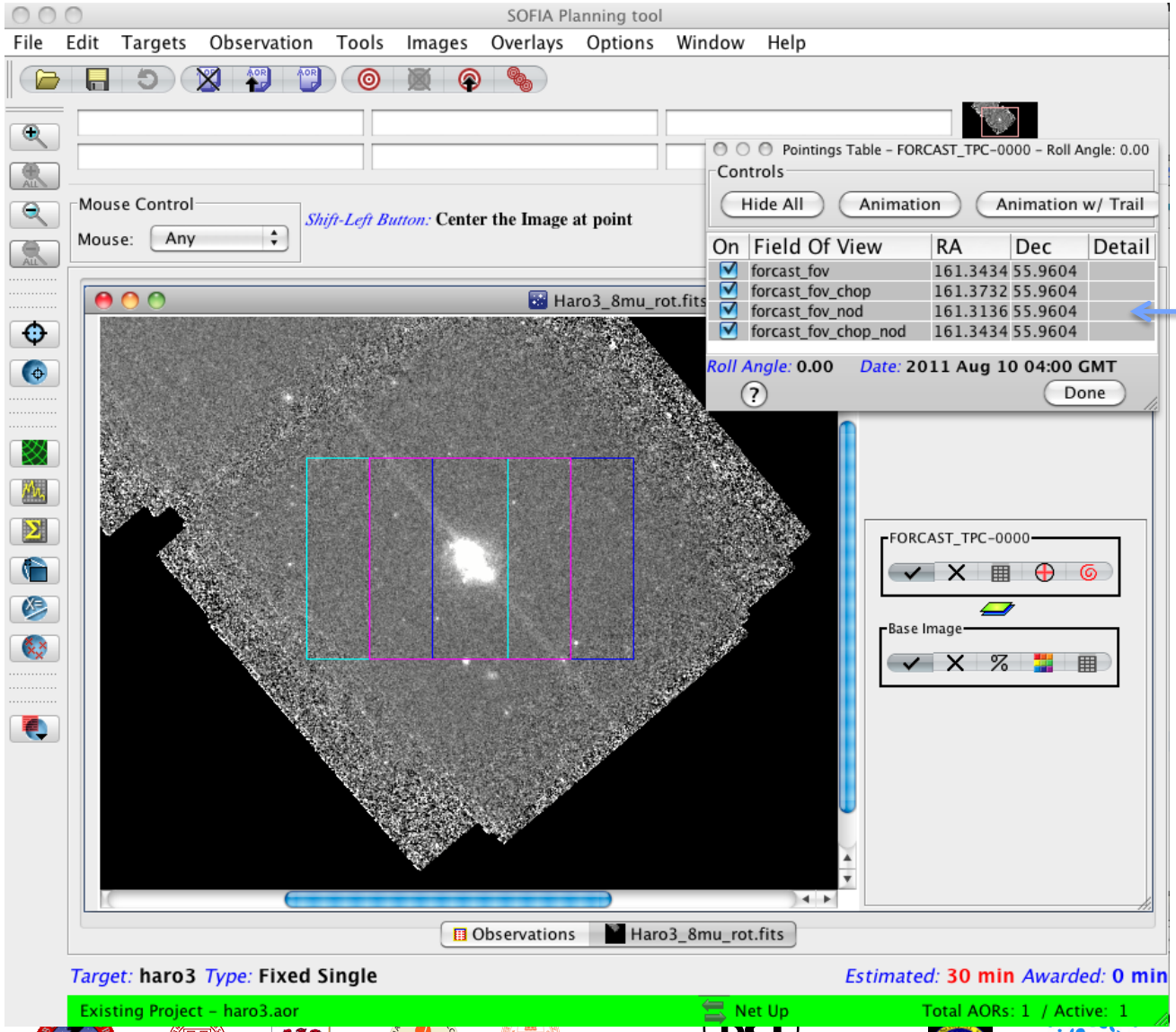
Proposal Info Window





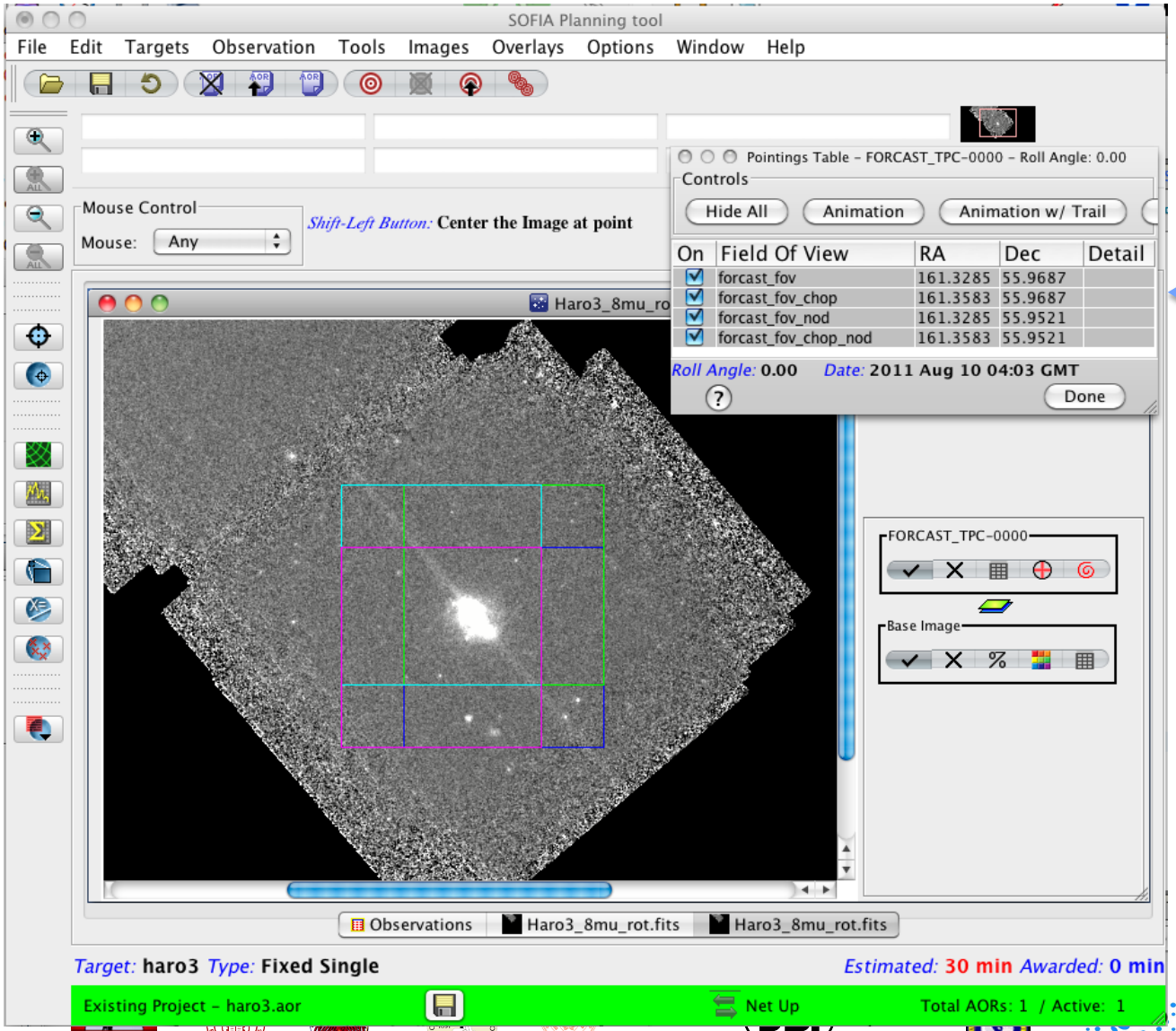
Observing Condition Window

FORCAST Nod Match Chop on haro3



Overlay Position table

FORCAST Nod Perpendicular to Chop on haro3

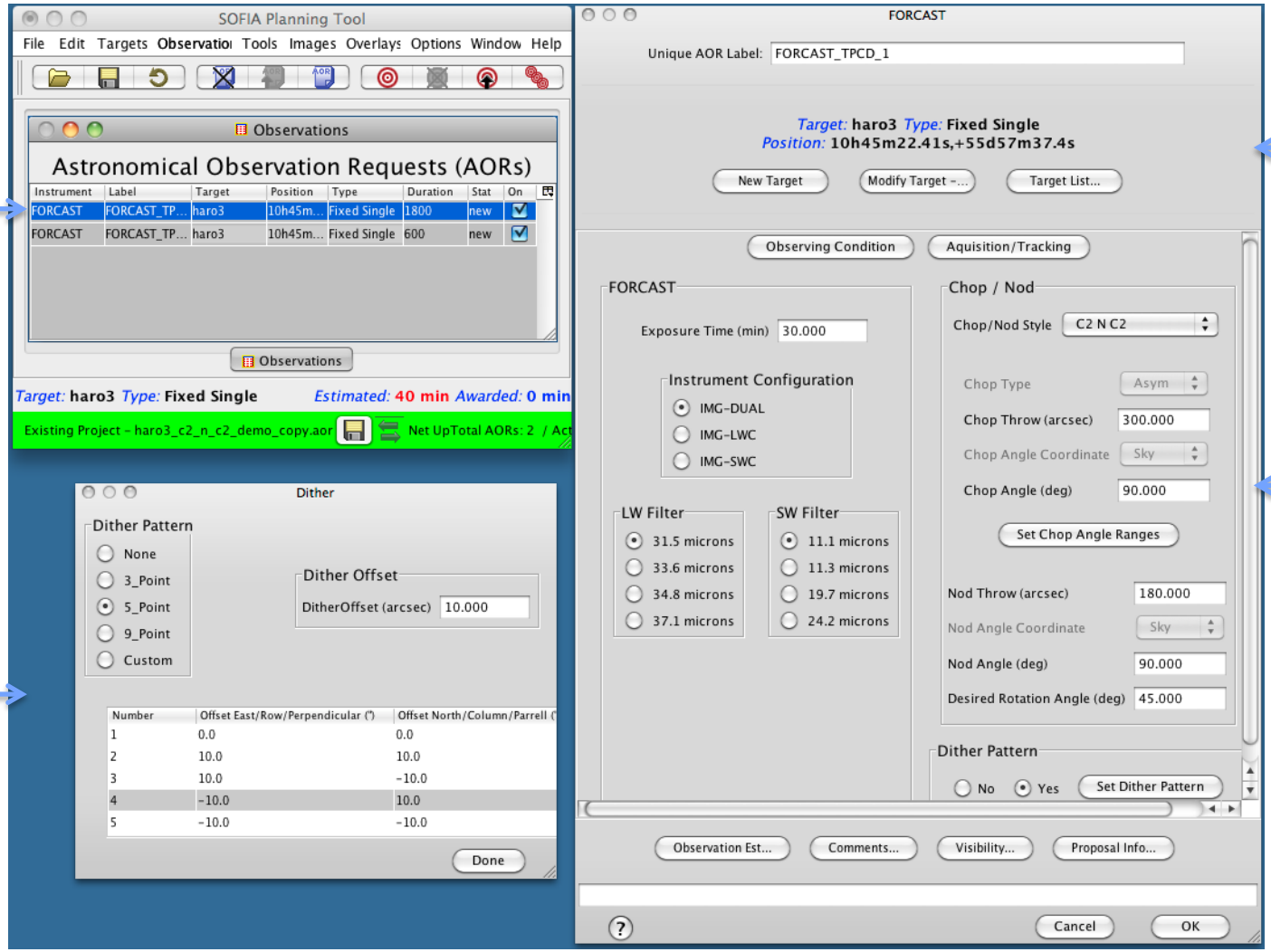


Overlay Position table

FORCAST C2_N_C2 on haro3

AOR Summary Table

Dither Definition Dialog



Target Definition Panel

AOR Definition Dialog

AOR Overlay Next slide

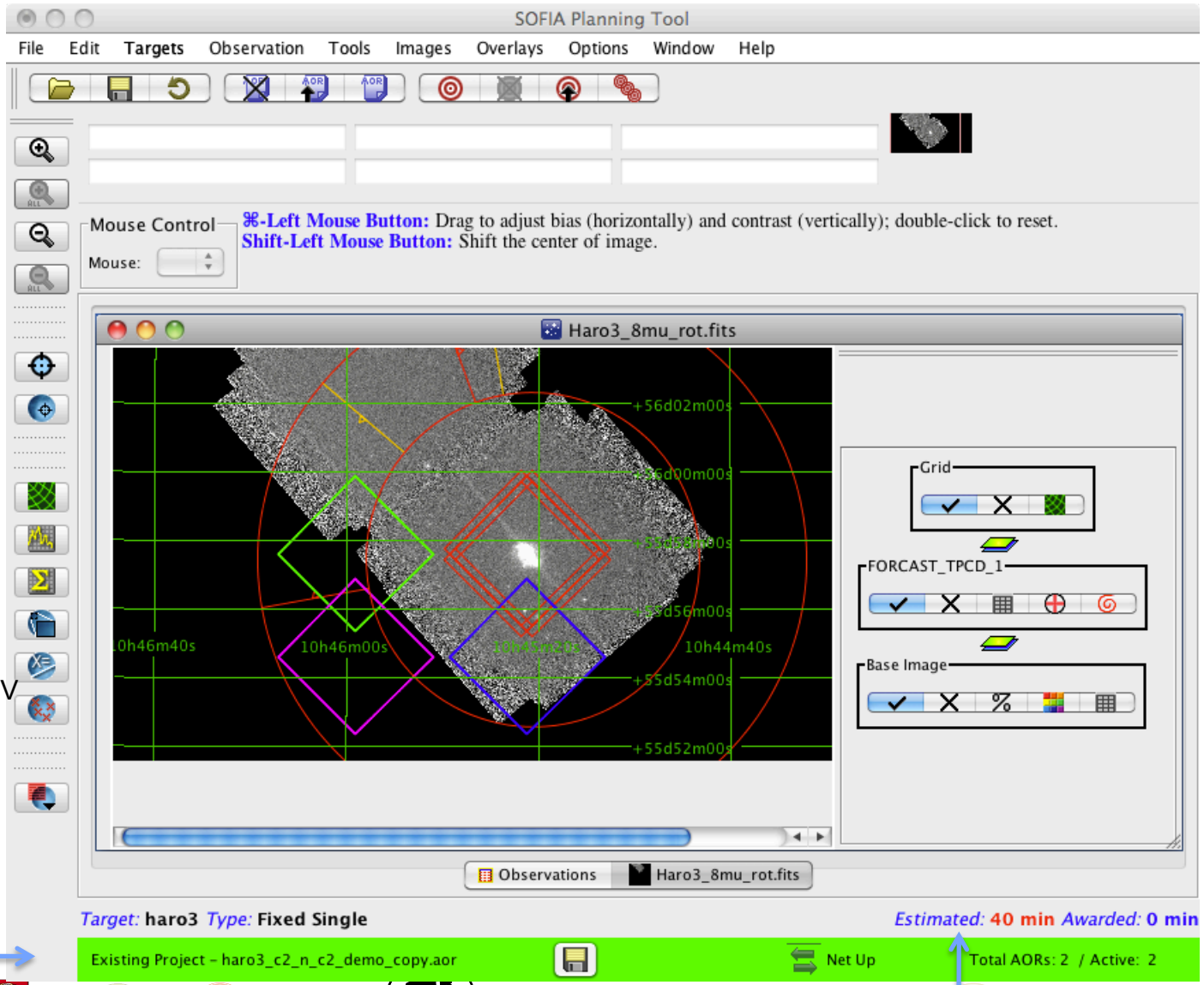
FORCAST C2_N_C2 on haro3

FOV:

- Beam A dither 5 Point
- Beam B Chop
- Beam A Nod
- Beam B Chop after Nod

Chop Angle
Range Limited
By Telescope:

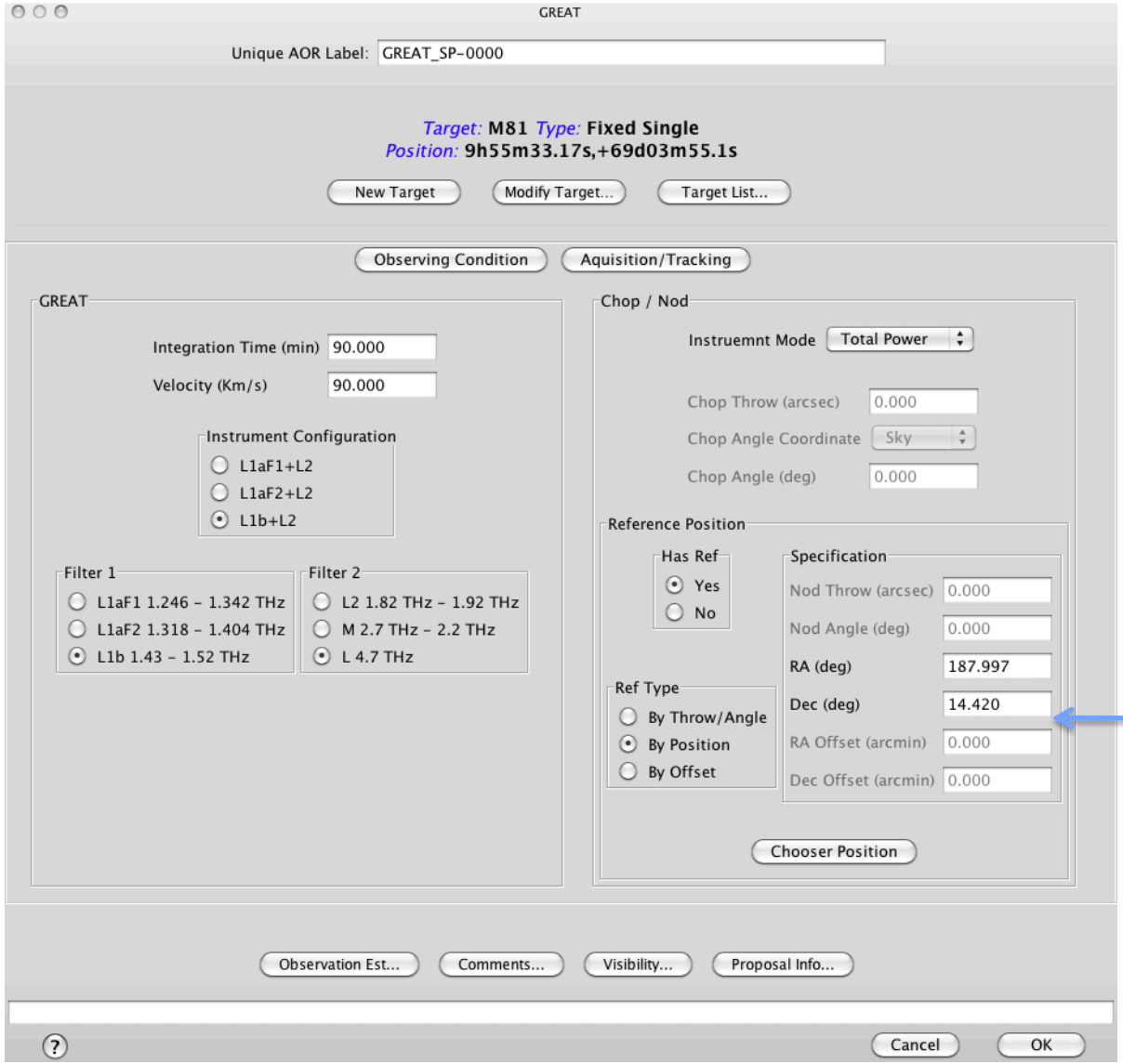
- FORCAST 292 arcsec FOV
- FORCAST 8 arcmin FOV
- Chop Angle min
- Chop Angle max



File name, local mode

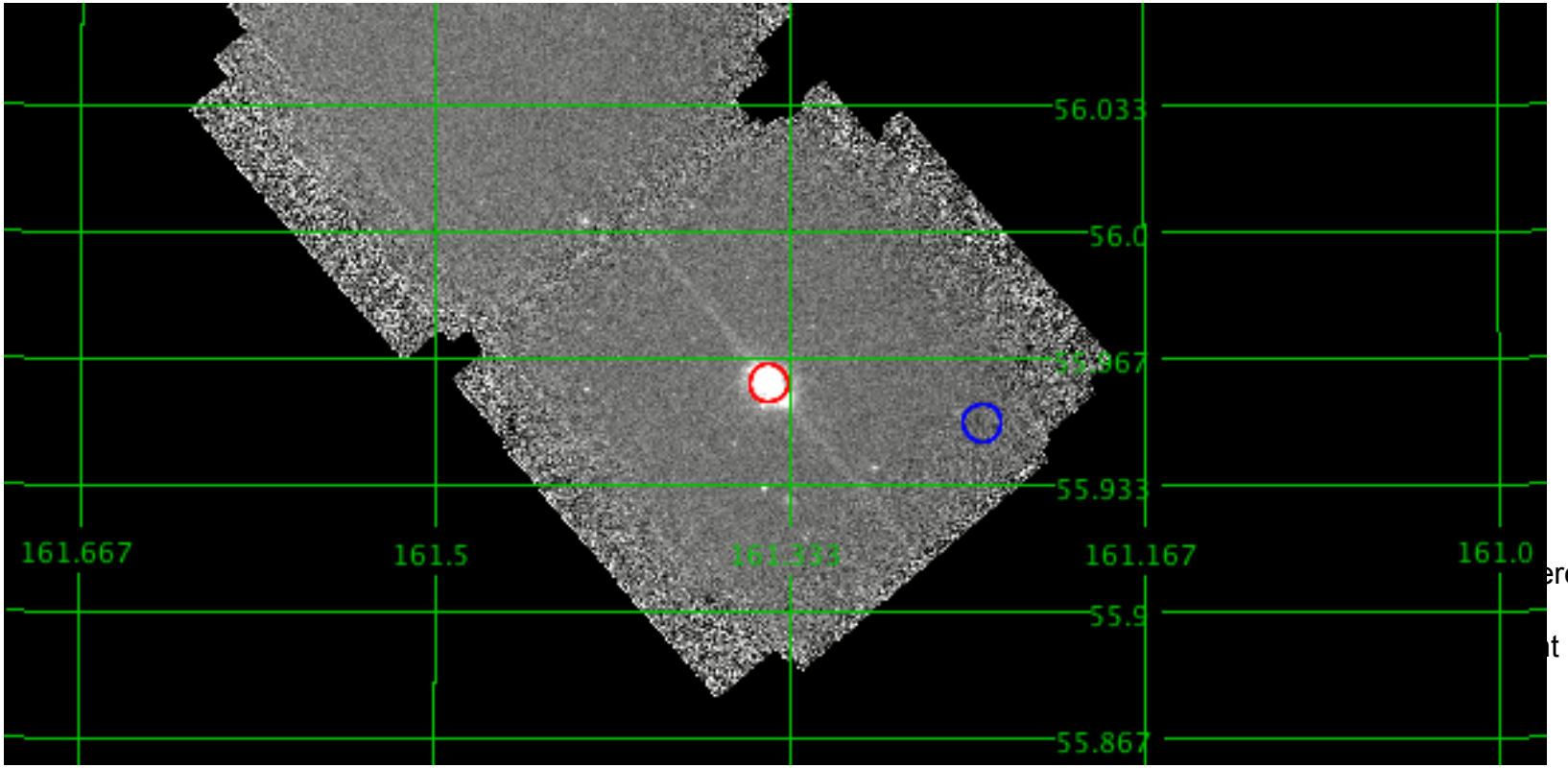
Local mode

GREAT Single Point Total Power

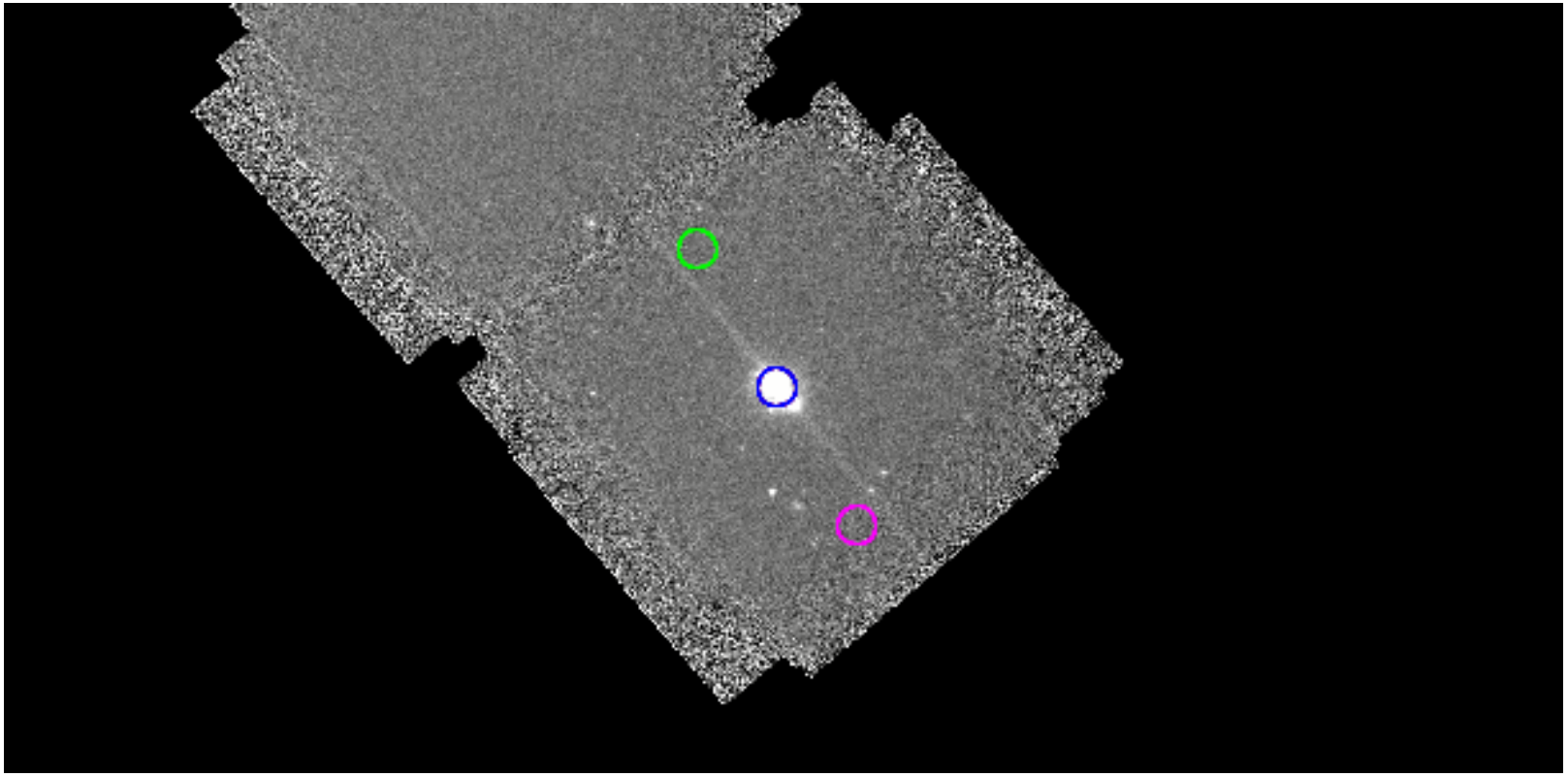


Reference Point

GREAT Single Point Total Power



GREAT Single Point Beam Switch



SSPOT for Cycle 1

- SSPOT will be available for GIs to use in Phase II planning for Cycle 1 for the following SIs:
  - FORCAST
  - FLITECAM
  - GREAT
- Detailed instructions for Phase II planning and SSPOT to be available on the SOFIA website (Info for Researchers).
- SSPOT will be available for download from the DCS in the Spring of 2012.

If you are interested in assisting the SOFIA Science Center with SSPOT beta testing, please email Ravi Sankrit and/or Ralph Shuping:

(rsankrit@sofia.usra.edu | rshuping@sofia.usra.edu)

The SOFIA Data Cycle System

http://dcs.sofia.usra.edu

DCS Help Resources

- https://dcstest.sofia.usra.edu/userSupport/dcsUserGuide.jsp

SOFIA Help-Desk:

- *sofia_help@sofia.usra.edu*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