



Verification and Operation Plan-Outline **Phil Hinz**

- I. System Integration and Verification
- II. On-Telescope Verification of Nulling
- III. Concept of Operations
- IV. Data Volume





System Integration and Verification

Laboratory Setups:

- **Visible Laser Alignment of Optics.**
- **Infrared Laser Alignment and Null.**
- **Broadband Light Null.**
- **2 micron Fiber Illumination.**

What's Tested

Optics Alignment, warm and cold
Vibrations, Mechanical Stability
Broadband suppression, 2 micron
phase control
Prepare system for telescope
alignment

-----CONCLUSION OF IMPLEMENTATION PHASE-----



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Risk Reduction at the Telescope

If the LBT is not ready at the end of the implementation phase, three levels of testing can be carried out at the LBT prior to full use of the facilities:

Test Telescope Setup. After installation at the LBT and prior to commissioning, The setup will use 0.5 m test telescopes and the tertiaries to illuminate the LBTI with starlight and allow a full system test.

2 micron Fibers Test. The LBT secondaries will be illuminated with the 2 micron fibers to test the complete system with the adaptive secondaries.

One Arm Test. The LBTI will be tested for alignment of a single arm to test stability and flexure of the whole system.

If the LBT is ready at the end of the implementation phase these tasks will be carried out only to the extent they enable efficient integration of the system with the LBT.





On-Telescope Testing of Nulling

Nights required

Task

7	interface and align LBTI with the LBT and AO system
5	characterize beam combiner alignment and phasing versus elevation
2	alignment of NIL and NOMIC (verify alignment procedure, check for flexure)
5	test chopping techniques, duty cycle, and additional noise sources
7	testing and calibration of the NIL phase sensor (closing the loop, flagging bad data)
4	sensitivity and nulling depth verification (actual observations)

30 total nights required for development



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LBT Interferometer Review

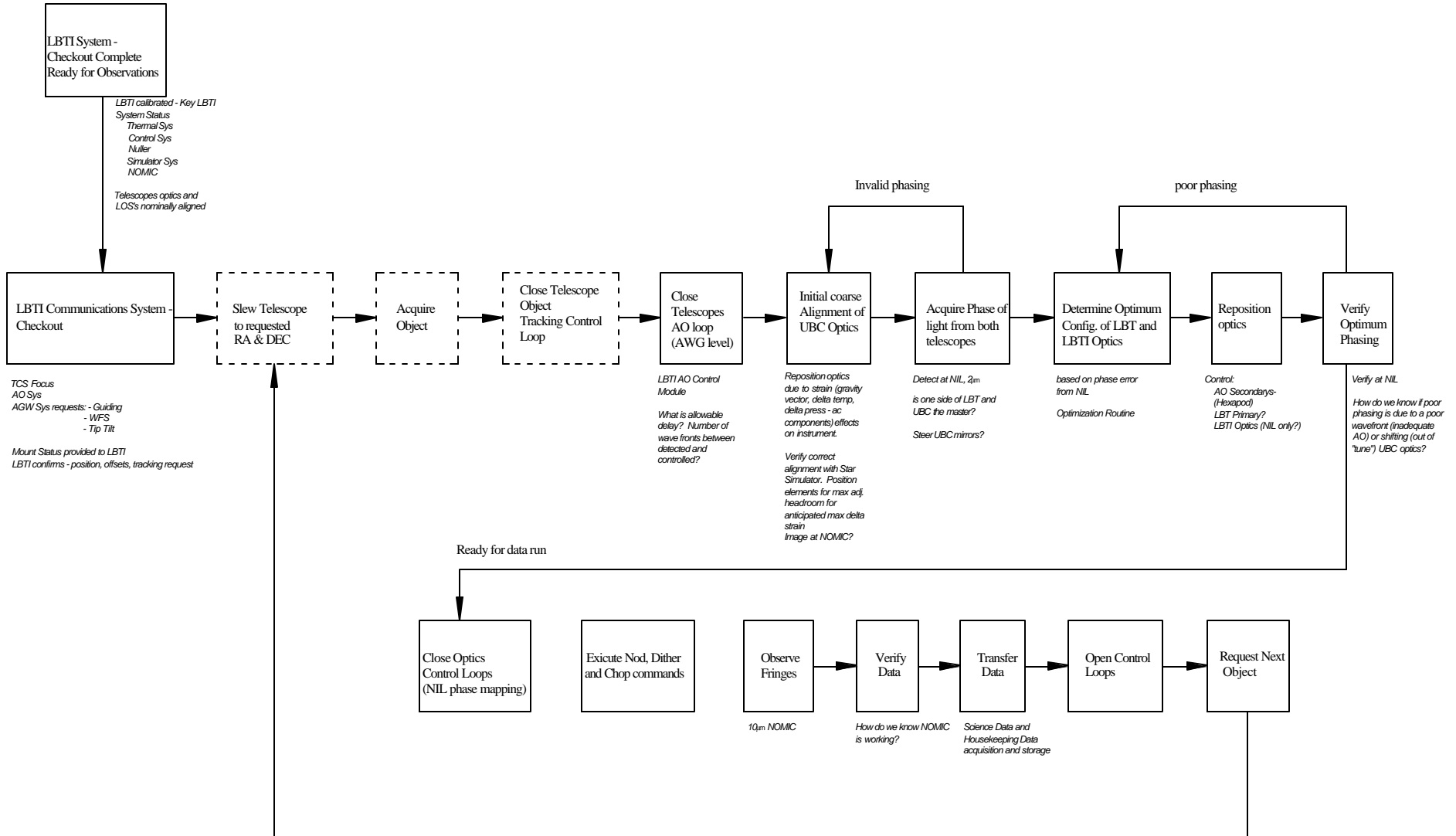
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Concept of Operations





Data Volume: Typical Night of Observation

- Approximately two targets per night for NIREST. Targets are interspersed to get a range of position angles.
- Raw data will be generated at a rate of approximately 4 frames per minute (total size:1 MB) consisting of a standard chop-nod pair.
- Data can be coadded for each 10 degree interval in position angle. Typical range of position angle for an object: 130 deg.
- Expected total raw data per night: 500 MB (2000 frames)
- Expected reduced data per night: 10 MB (40 frames)

