



**Keck Next Generation Adaptive Optics
Laser Guide Star Wavefront Sensor Mini-Design Review
Charge and Review Process**

November 19, 2009

There will be an internal review of the NGAO laser guide star (LGS) wavefront sensor (WFS) subsystem at 10am PST on December 7, 2009. The purpose of the review is to evaluate the proposed system design and confirm that it will meet the requirements of NGAO as well as be a good starting point for continuation into final design phase.

We will use videoconference facilities at COO to connect with participants from UCSC and Keck, but will use the phone line for audio (exclusively). The review committee consists of Don Gavel (UCSC), Chris Lockwood (UCSC), and Thomas Stalcup (Keck).

The review panel is being provided a detailed design document describing the proposed design, and a spreadsheet of the requirements with annotations of the design's compliance. Some supplemental material is available on the web page http://www.oir.caltech.edu/twiki_oir/bin/view/Keck/NGAO/091207_LGS_WFS.

Using this material, the panel is asked to evaluate the proposed architecture for the following:

- Maturity of the LGS WFS subsystem requirements
- Technical feasibility and design completeness:

The optical design should be at a readiness level of Preliminary Design Review
Design choices
Zemax prescription
Manufacturing and alignment degrees of freedom
Mechanisms precision and range

The mechanical design should be at a readiness level of Conceptual Design Review
Layout of the LGS WFS packaging done in CAD drawings
Flexure and alignment tolerance analysis at a rough calculation stage; no finite element analysis.

The optomechanical design satisfies Requirements

The reviewers should judge if the design has considered a low-risk approach. However, this is not intended to be a risk assessment review.

The reviewers should judge if the design has proceeded with an eye towards cost-effectiveness. However, this is not intended to be a cost review.

The following areas are not considered to be in the scope of this review:

- The LGS WFS mounting at Nasmyth and connection (if any) to the relay optical bench
- Enclosure or environment control
- Stray light analysis, including fratricide issues
- Procurement strategy, including assumptions on CCD availability
- Procedural integration and test plan



Review Process and Deadlines

Review materials will be posted by start of business Monday, Nov 23, 2009 at the above TWiki site (note change).

Reviewers are asked to submit written comments on the posted materials by close of business Tuesday, Dec 1, 2009 (via posting or email to Rich Dekany).

The LGS WFS team will post responses to these comments by close of business on Thursday, Dec 3, 2009.

All participants are asked to review all material (including the posted comment responses) prior to the review on Monday, Dec 7, 2009.

Thanks for helping out and participating in this review!

-- Richard Dekany, Viswa Velur, and Alex Delacroix (COO)