Keck Next Generation Adaptive Optics
Motion Control Architecture Mini-Review
Charge and Review Process

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The Next Generation Adaptive Optics (NGAO) Project will provide a Preliminary Design Review (PDR) of the project in the second quarter of calendar year 2010. As part of the PDR, the team will present the motion control architecture for the Keck NGAO System. Motion control includes all devices that require some form of commanding to more from one position to another. These devices include shutters, non-tracking mounts, and tracking mounts. Because of the complexity of the NGAO system, we concluded that the architecture will consist of both centralized controls and distributed controls architecture. This review does not cover devices required for real-time wavefront correction, such as the deformable mirrors and tip/tilt stages.

This mini-review is being held in preparation for the PDR. The purpose of the review is to evaluate the proposed control electronics architecture to confirm that they will meet the NGAO requirements. This review is not intended to review requirements that have been previously agreed upon by NGAO System Engineering. However, the team may propose changes to the requirements to ensure the success of the NGAO system. A successful review will ensure the planned architecture can move forward towards PDR.

The review panel will be provided documents describing the proposed control electronics architecture. Other supplemental material including this document and the requirements will also be available in support of the review. Using this material and those presented at the review, the panel is asked to evaluate the proposed designs and answer the following questions:

- Are the requirements understood?
- Does the proposed architecture satisfy the requirements?
- Is the architecture
    - Complete?
    - Technically feasible?
    - Cost effective?
- Is the architecture sufficiently matured enough that it can be developed to the PDR level by the 2nd Qtr of 2010?

The following items will not be covered in this review; but will be included in the overall PDR:

- Overall architecture of the NGAO control system or the top-level design of the NGAO control system
- Software controls
- Effort Estimates
- Budget
- Schedule

The review will take place on Thursday, Mar 11, 2010, at 8:00AM HST. The PolyCom Video System will be used to connect with participants from CalTech and UCSC. The review committee consists of the following experts:

- Don Gavel (UCO), Chair
- Alex Delacroix (CalTech)
- Tomas Krasuski (WMKO)

The Control Electronics team consists of the following personnel from WMKO:

- Ed Wetherell (ewetherell@keck.hawaii.edu)
- Kevin Tsubota (ktsubota@keck.hawaii.edu)

The agenda for the review is as follows (all times are HST):

- 8:00 AM: Welcome and introductions
- 8:15 AM: Presentations
- 9:15 AM: Break
- 9:30 AM: Review committee comments discussion and questions
- 10:30 AM: Review committee closed session
- 11:00 AM: Review committee feedback to team

Based on the review material, reviewers may submit written questions to the Control Electronics team on areas or issues they would like to see covered during the review. Questions received by COB on Mon Mar 8, 2010, will be addressed with a written response during, or prior to, the review presentations. We will make every attempt to provide formal written responses to questions received after the 8th however, we may only be able to provide verbal responses during the review, depending on the circumstances.

At the conclusion of the review, the committee is asked to provide the NGAO Project Manager and the Motion Control team with verbal feedback as to their recommendations and concerns. A final report of findings, recommendations and comments is requested within one week of the review from the committee chair. The written report should be addressed to the NGAO Project Manager.

Thank you for your participation in the review process and for helping to ensure the success of the NGAO Motion Control Architecture.