



DARK ENERGY
SURVEY

Pre-Director's Review Findings & Recommendations

	Recommendation	Manager	Status
9	Update BOE for AIN boards	Shaw	Done
10	Establish the budget profile ASAP	Flaugher	Done
11	Create clear criteria for each stage of board development	Shaw	In progress
12	Add design reviews for PCBs and other major components	Shaw	Will be done
13	Mitigate risk of circuit board damage from operator errors	Shaw	Will have keying
14	Scrub cost & schedule for consistency w/ supporting BOE documentation	Thaler, Honscheid	In progress
15	Establish a fallback plan for labor shortfall in the SISPI area	Thaler, Honscheid	Done



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- **Finding**
 - The documentation supporting the number of AIN boards to be fabricated, and the number of associated connectors to be procured, did not clearly indicate how the quantities were calculated.
- **Comment**
 - These quantities will need to be established prior to the CD-2/3a review.
- **Recommendation #9**
 - Re-check these calculations and update the justification in the BOE.
- **Tom Diehl will document our need to produce 200 boards in WBS section 1.2. I have updated the BOE to explain our board and connectors quantities based upon the board count.**



- **Finding**
 - The Front End Electronics subproject currently has 27 tasks within 4 weeks of the critical path.
- **Comment**
 - The critical path for the entire project is in flux due to the varying budget profile scenarios that are being considered. The members of the Front End Electronics subproject seemed surprised to learn that their tasks were now appearing near the critical path.
- **Recommendation #10**
 - Establish the budget profile as soon as possible in order to take subsequent steps in the subprojects to reallocate resources and reduce the number of items near the critical path.
- **I will work on the project file to reduce as many critical path items as feasible. Funding guidance has been received and the smoothing of the profile is in progress.**



- **Finding**
 - Recommendation 16 from the July, 2006 Director’s CD1 Review called for the subproject members to “Create a clear set of acceptance testing criteria for each stage of board development, which includes all components to be included. Design reviews between steps should include comparisons of results with these criteria and provide branch points such as eliminating design iterations or implementing fallback solutions.”
- **Comment**
 - This recommendation has not yet been implemented though the subproject members are considering how the criteria should be developed.
- **Recommendation #11**
 - The subproject should follow through on implementing this recommendation.
- **Our initial set of acceptance criteria for the DECam Monsoon boards has been to implement them into a CCD readout system, measure the noise and accept the board if the noise does not increase from our standard NOAO board group. After this initial test, we will measure the noise present on all clocks and biases through a Monsoon analog channel and establish a maximum acceptable noise threshold.**



- **Finding**
 - The schedule called for a Multi-CCD Readout Review that was held on September 17, 2007. The next review that appears in the schedule for Front End Electronics is for a Production Electronics Review to be held on January 14, 2009.
- **Comment**
 - Design reviews help ensure that components being developed will meet their requirements.
- **Recommendation #12**
 - Design reviews should be added for the printed circuit boards and for other major components being developed for the subproject.
- **We will add these in the project file. Board reviews at the schematic and layout level are planned before manufacture of the next set of Monsoon Electronics.**



- **Finding**
 - Multiple circuit board designs are being implemented in the same form-factor, with the same style of backplane connectors, for main modules and transition boards.
- **Comment**
 - Circuit boards of the same form-factor, with the same connectors, can easily be inserted into a backplane slot that may not have a compatible companion module (main module or transition board) located in the same slot on the other side of the backplane.
- **Recommendation #13**
 - The members of the subproject should determine whether damage can occur to circuit boards if a circuit board is inserted on the front of the backplane while a board that is not meant to be its companion is located on the back side of the backplane. If damage could result, steps should be taken to preclude this from happening. The production circuit boards may need to have a keying system implemented to prevent this from occurring at the telescope.
- **Connectors J4 and J5 are for user-defined signals. Some incompatibilities exist between the usage of the pins of these connectors between the Clock and 12-Channel Board. We will provide keying of both the front and rear slots of the Monsoon readout crate.**