Advanced LIGO Engineering Change Request (ECR)

ECR Title: ECR: Remove Laser Diode Power Monitors from the Optical Lever System Design

DCC No: E1500155-v1

Date: 27 Feb 2015

Requester: Vern Sandberg

Impacted Subsystem(s): AOS/Optical Levers

Description of Proposed Change(s): Remove laser diode power monitoring from the optical lever system.

Reason for Change(s): All optical levers have the ability to readout out laser diode power monitors. Readout channels for these monitors were an intended part of the Optical Lever design, so that we could assess (and perhaps alarm on) the health of the optical lever lasers. As of Feb-2015 neither observatory has laid the necessary cabling for this system, nor are their channels built into in the SUSAUX front-end code expecting them.

However we can continue to perform these functions using the QPD sum channel (as was done in iLIGO). This approach relies upon the OptLev and optic to be aligned. During intentional mis-alignments of an optic the QPD sum channel can't be used for monitoring the OptLev laser diode, but these are non-normal operational modes and of short duration. The two detector group leads opined that the benefit did not warrant the effort to add these monitor channels. Decision made to not implement (change the baseline design) as resolution to integration issue #1017:

https://services.ligo-wa.caltech.edu/integrationissues/show_bug.cgi?id=1017

Estimated Cost: no cost

Schedule Impact Estimate: no schedule impact

Nature of Change (check all that apply):
- ☐ **Safety**
- ☐ **Correct Hardware**
- ☒ **Correct Documentation**
- ☐ **Improve Hardware**
- ☐ **Improve/Clarify Documentation**
- ☐ **Change Interface**
- ☐ **Change Requirement**

Importance:
- ☐ **Desirable for ease of use, maintenance, safety**
- ☐ **Desirable for improved performance, reliability**
- ☐ **Essential for performance, reliability**
- ☐ **Essential for function**
- ☐ **Essential for safety**

Urgency:
- ☒ **No urgency**
- ☐ **Desirable by date/event: _____**
- ☐ **Essential by date/event: _____**
- ☐ **Immediately (ASAP)**

Impacted Hardware (select all that apply):
- ☐ **Repair/Modify. List part & SNs: _____**
- ☐ **Scrap & Replace. List part & SNs:_____**
- ☒ **Installed units? List IFO, part & SNs: ___All_____**
- ☐ **Future units to be built**

Impacted Documentation (list all dwgs, design reports, test reports, specifications, etc.):

HAM Table and Optics levers: D1002740, pg 16

ITMS and BS: D1100022, pg 21

ETMs: D1002741, pg 16

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Disposition of the proposed change(s):

The disposition of this proposed engineering change request is to be completed by Systems Engineering and indicated in the "Notes and Changes" metadata field in the DCC entry for this ECR. The typical dispositions are as follows:

- **Additional Information Required**: in which case the additional information requested is defined. The ECR requester then re-submits the ECR with the new information using the same DCC number for the ECR but with the next version number.
- **Rejected**: in which case the reason(s) for the rejection are to be given
- **Approved**
- **Approved with Caveat(s)**: in which case the caveat(s) are listed
- **TRB**: the ECR is referred to an ad-hoc Technical Review Board for further evaluation and recommendation. It is the System Engineer's (or designee's) responsibility to organize the TRB. The System Engineer (or designee) then makes a technical decision based on the TRB's recommendation. Links to the TRB's documentation (charge, memos, final report, etc.) are to be added to the "Related Documents" field for this ECR.
- **CCB**: a change request for approval of additional funds or schedule impact is to be submitted to the Configuration Control Board. Links to the CCB's documentation (CR, etc.) are to be added to the "Related Documents" field for this ECR.

Concurrence by Project Management:

Acknowledgement/acceptance/approval of the disposition is to be indicated by the electronic "signature" feature in the DCC entry for this ECR, by one the following personnel:

- Systems Scientist
- Systems Engineer
- Deputy Systems Engineer