Advanced LIGO Engineering Change Request (ECR)

ECR Title: Move HAM6 BDV2 and corresponding V-beam dump to the upstream of QPD sled and beam splitter.

DCC No: E1500272-v1

Date: Jun 24 2015

Requester: Keita Kawabe

Impacted Subsystem(s):
HAM6 ISC and SEI

Description of Proposed Change(s): This is both for L1 and H1.

HAM6 beam diverter 2 (BDV2) for OMC REFL, which is currently positioned downstream of the QPD sled, is moved between M10 (2" steering mirror with picomotors in OMCR path) and its neighboring trim mass, and the beam dump for BDV2 is moved on the QPD sled.

At LLO, M10, M11 (2" 50% splitter on a right-handed Siskiyou mount, just upstream of the sled) and the beam splitter between M10 and M11 need to be moved in +X direction by 3 to 4 inches. Exact amount of this move is not important for O1 observation run as there's no plan to use QPD sled in the near future. At LHO, these mirrors might already be placed such that BDV2 can be accommodated without moving them.

One V-shaped beam dump that receives the rejected beam from the beam splitter between M10 and M11 might also have to be moved in +Y direction.

There's no balance mass that is rearranged due to this.

Existing beam diverter cable should be long enough to allow this move.

Reason for Change(s):

QPD sled is not used at all for now, and it is just a source of scattering. By implementing this change, we can close this path completely in science mode for O1. This change is highly desirable for O1 but is not absolutely necessary.

Estimated Cost: No new equipment purchase is necessary.

Schedule Impact Estimate:

One day in HAM6 before or after OMC shroud is installed.

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: June/July 2015 HAM6 vent**
- ☐ **Essential by date/event: _____**
- ☐ **Immediately (ASAP)**

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Impacted Hardware (select all that apply):

☐ **Repair/Modify. List part & SNs: _____**

☐ **Scrap & Replace. List part & SNs:_____**

☐ **Installed units? List IFO, part & SNs: _____**

☐ **Future units to be built**

Impacted Documentation (list all dwgs, design reports, test reports, specifications, etc.):D1300122, D1000342, D0901811, D0901822

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