Advanced LIGO Engineering Change Request (ECR)

ECR Title: Implement WFS on in-air POP (H1) **DCC No: E1500394-v2**

Date: 3 March 2016

Requester: Daniel Sigg **Impacted Subsystem(s):** **ISC (ASC)**

Description of Proposed Change(s):

Implement a RF WFS on the in-air POP beam on ISCT1, including auto-centering, extending the system to H1.

Reason for Change(s): We would like to add the POP WFS at LHO as well. Even so, this problem occurs far less at LHO, it does every now and then. This tends to result in fairly long down time, since the problem doesn't get recognized immediately. This has proven to work robustly at L1.

This ECR is thus a request to make this design change for H1 as well.

Estimated Cost: No hardware costs. Existing hardware will be used for the implementation.

Schedule Impact Estimate:

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:
- ☐ Future units to be built

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

ISCT1 & IST6 drawings; ISC vertex cabling drawing, D1201331, D1201499, E1100591

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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