

Advanced LIGO Engineering Change Request (ECR)

ECR Title: ECR:

DCC No: E1300419-v1

Add half-wave plate to REFL beam path in HAM1

Date: 5/13/2013

Requester:

Impacted Subsystem(s):

Peter Fritschel

ISC

Description of Proposed Change(s):

Proposed changes:

Add a 1" diameter half-wave plate (1064 nm) in the REFL beam path in HAM1. The wave plate will be installed just after the beam splitter that directs most of the REFL beam light into a beam dump.

Reason for Change(s):

This will rotate the beam polarization to horizontal in HAM1 (after the splitter). This addresses an interface mismatch where IO delivers the REFL beam into HAM1 with vertical polarization, but ISC had been assuming horizontal polarization. We insert the wave plate after the first splitter so that any back-scattered light from the wave plate is minimized. For the first splitter (M14 in D1000313), will be changed to use a 90/10 R/T splitter coated for s-polarization, available from the iLIGO optics stock.

Estimated Cost:

Wave plates: approx. \$2k (4 plates from Precision Photonics, WPZ10H-FY)

Mounts: might have sufficient mount hardware in hand; if not, new hardware estimated at \$1k

Schedule Impact Estimate:

None.

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 2013
- 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.):

D1000313

Advanced LIGO Engineering Change Request (ECR)

Disposition (to be completed by Systems Engineering):

TRB

CCB

Approved

Additional information required. Define:

[Requester re-submits with new information with the same DCC E-number for the ECR but the next version number.]

Concurrence by Project Management: (Acknowledged Electronically in DCC)

Project Systems Engineer: Dennis Coyne

Project Systems Scientist: Peter Fritschel