

Advanced LIGO Engineering Change Request (ECR)

ECR Title:	DCC No: E1300132-v2
Reworks to OMCS Parts	Date: 03 May 2013
Requester:	Impacted Subsystem(s):
Derek Bridges	SUS, ISC

Description of Proposed Change(s):

The proposed changes are primarily changes to assembly drawings of the OMCS to reflect the redesigns done for Advanced LIGO (which were not yet documented) and the reworked parts described below. There are also changes to assembly drawings (D0900295-v4, D060502-v3, D060502-v4, D060537-v4, D070145-v3) to document changes to assemblies that were made during assembly. Finally, there are changes to part drawings (D060491-v2, D070250-v4) to document reworks that were found to be necessary during the assembly process.

Reason for Change(s):

These changes to the assembly drawings are necessary because they are the designs for the Advanced LIGO OMCS. The rework to D060491-v2 is necessary to have a sufficient number of threads in the tapped holes of the part. The rework to D070250-v4 is necessary for the Lower Wire Jig to produce a wire of the correct length.

Estimated Cost:

None (all new-design parts have already been received, and reworks to parts are already complete)

Schedule Impact Estimate:

None (all new-design parts have already been received, and reworks to parts are already complete)

<p>Nature of Change (check all that apply):</p> <p><input type="checkbox"/> Safety</p> <p><input type="checkbox"/> Correct Hardware</p> <p><input type="checkbox"/> Correct Documentation</p>	<p><input checked="" type="checkbox"/> Improve Hardware</p> <p><input checked="" type="checkbox"/> Improve/Clarify Documentation</p> <p><input type="checkbox"/> Change Interface</p> <p><input type="checkbox"/> Change Requirement</p>
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<p>Importance:</p> <p><input type="checkbox"/> Desirable for ease of use, maintenance, safety</p> <p><input type="checkbox"/> Desirable for improved performance, reliability</p> <p><input checked="" type="checkbox"/> Essential for performance, reliability</p> <p><input checked="" type="checkbox"/> Essential for function</p> <p><input type="checkbox"/> Essential for safety</p>	<p>Urgency:</p> <p><input type="checkbox"/> No urgency</p> <p><input type="checkbox"/> Desirable by date/event: _____</p> <p><input type="checkbox"/> Essential by date/event: _____</p> <p><input checked="" type="checkbox"/> Immediately (ASAP)</p>
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<p>Impacted Hardware (select all that apply):</p> <p><input checked="" type="checkbox"/> Repair/Modify. List part & SNs: D060491-v1 (SN 001-003) D070250-v2 (SN 011, 012)</p> <p><input type="checkbox"/> Scrap & Replace. List part & SNs: _____</p> <p><input type="checkbox"/> Installed units? List IFO, part & SNs: _____</p> <p><input checked="" type="checkbox"/> Future units to be built</p>	<p>Impacted Documentation (list all dwgs, design reports, test reports, specifications, etc.):</p> <p><u>D0900295-v3 (OMCS Overall Assembly):</u> Incorporates new designs for Lower Wire Assembly, Metal Bench Assembly, Earthquake Stop Assembly, and Bracket and Preamp Assembly. Includes as-built versions of some parts reworked during assembly.</p> <p><u>D0900295-v4 (OMCS Overall Assembly):</u> Replaced washers for SHCS holding Coil Holder Assembly to structure with Nitronic 60 washers to allow for smoother adjustment.</p>
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D0900655-v3 (Structural Weldment Assembly, OMCS): Added missing helicoils to model.

D1201212-v2 (Suspended Mass Assembly, OMCS): Replaced Upper Mass (D060502), Lower Wire (D060537), and Metal Bench (D070035) with latest versions.

D060502-v3 (Upper Mass Assembly, OMCS): Changed screw lengths to match as-built configurations.

D060502-v4 (Upper Mass Assembly, OMCS): Changed screw lengths to match as-built configurations.

D060491-v2 (Main Section, Upper Mass): 1/4-20 holes on centerline to be drilled and tapped further.

D060537-v4 (Lower Wire Assembly, OMCS): Changed wire diameter from 0.008" to 0.0079" to reflect as-built configuration.

D070035-v4 (Metal Bench Assembly, OMCS): Changed number and arrangement of additional masses to be close to that of the glass bench.

D070145-v3 (Top Blade Guard Assembly, OMCS): Corrected blade stop from 1/4-20 to #8-32. Added missing helicoils to Blade Guard Risers.

D070250-v4 (Base Plate, Lower Wire Jig): Removed holes for incorrect length Lower Wire and corrected 1/4-20 holes to #8-32.

D1300367-v1 (Transport Handle Assembly): Created assembly drawing (not previously documented) for Transport Handle from previously designed parts.

T080117 (OMCS Assembly Procedure): To be updated to include revised pictures and instructions relating to new assemblies.

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.

Advanced LIGO Engineering Change Request (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