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Arm Cavity Baffle Fabrication, Installation, and Test Plan

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Michael Smith

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**California Institute of Technology**  
**LIGO Project – MS 18-34**  
**1200 E. California Blvd.**  
**Pasadena, CA 91125**  
Phone (626) 395-2129  
Fax (626) 304-9834  
E-mail: info@ligo.caltech.edu

**Massachusetts Institute of Technology**  
**LIGO Project – NW22-295**  
**185 Albany St**  
**Cambridge, MA 02139**  
Phone (617) 253-4824  
Fax (617) 253-7014  
E-mail: info@ligo.mit.edu

**LIGO Hanford Observatory**  
**P.O. Box 159**  
**Richland WA 99352**  
Phone 509-372-8106  
Fax 509-372-8137

**LIGO Livingston Observatory**  
**P.O. Box 940**  
**Livingston, LA 70754**  
Phone 225-686-3100  
Fax 225-686-7189

<http://www.ligo.caltech.edu/>



**1 Introduction..... 7**

**2 Tests ..... 7**

**2.1 Vendor Tests..... 7**

**2.2 LIGO Tests ..... 7**

    2.2.1 Suspension Blade Balance Test ..... 7

    2.2.2 Photodetector Test ..... 7

    2.2.3 Final Assembly Suspension Test ..... 7



**Abstract**

This document describes the plan for acceptance testing of the Arm Cavity Baffle subassemblies during manufacturing, and for testing the final assembly before installing in the aLIGO chambers.



## **1 Introduction**

This document describes the plan for acceptance testing of the Arm Cavity Baffle subassemblies during manufacturing, and for testing the final assembly before installing in the aLIGO chambers.

## **2 Tests**

### **2.1 Vendor Tests**

The first article Arm Cavity Baffle will be assembled by the vendor and witnessed by LIGO QA personnel.

The vendor shall provide the following reports: 1) Materials certifications, 2) Dimensional and QC inspection reports--this shall include a report showing that parts have been inspected and fall within specified tolerances, and 3) Certificate or statement of compliance with all contract and drawing process restrictions.

### **2.2 LIGO Tests**

#### **2.2.1 Suspension Blade Balance Test**

The Arm Cavity Baffle suspension blade will be tested with dummy weights to determine the balance load for each vertical blade spring.

#### **2.2.2 Photodetector Test**

The photodetectors will be tested to determine the optical responsivity.

#### **2.2.3 Final Assembly Suspension Test**

The Arm Cavity Baffle and suspension assembly will be impulse-tested and a ring-down will be performed to confirm that the quality factor of the suspended Arm Cavity Baffle meets the damping requirements.