



*LIGO Laboratory / LIGO Scientific Collaboration*

LIGO-T070256-00-D

*LIGO*

Date: 10/16/2007

---

**Beam Tube and Enclosure Inspection**

---

Allen Sibley

Distribution of this document:  
LIGO Science Collaboration

This is an internal working note  
of the LIGO Project.

**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 – NW17-161**  
**175 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 1970**  
**Mail Stop S9-02**  
**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

Beam tube and enclosure should be inspected inside and outside, including the backside, every three years. Personnel familiar with the beam tubes and enclosure construction should conduct the inspection.

## 2 Inspection

Before inspection provide for the following:

1. Open doors of section to be inspected 24 hrs before entry and ventilate with fans.
2. Inspection team must be properly suited for entry.
3. Provide adequate lighting for safety and ease of inspection.

The following areas should be noted during inspection along with any unusual conditions:

1. Condition and security of the insulation blankets. Is vapor barrier in place?
2. Fixed tube supports, any sign of excessive rust or corrosion?
3. Guide supports, any sign of wire cable abrading or corrosion?
4. Pump port hardware, is the gate valve in good condition and is insect guard in place and hole free? **Do Not Operate Valve!** Is all other hardware in good condition?
5. General condition of the concrete enclosure. Is grout and caulking in good condition?
6. Check electrical ground are connected.

An inspection of the tube surface should be done in several random places by removing the insulation and with good lighting inspect the steel, especially at the weld for any sign of corrosion, rusting or other conditions. Insulation should be replaced and taped as necessary. Any defects or deficiencies are that cannot be repaired during inspection should be noted in a log along with its location relative to the nearest door.