



INSTALLATION SPECIFICATION

TITLE

ADJUSTMENT OF OPTICAL LEVER LASER POWER

APPROVALS:		DATE	APPROVALS:		DATE
DRAWN:	Ken Mason	5/9/00	CHECKED:		
CHECKED:	Mike Zucker		CHECKED:		
CHECKED:			DCN NO	APPROVED	DATE
CHECKED:			E000239-00-D		

Instructions on the use of this document:

1) Use this installation procedure as a check list for preparation and during the installation. Note any discrepancies or deviations and augment with any missing definition. File any significant notes or data from the completed procedure in the electronic logbook (such as any deviations); as a minimum note in the electronic logbook that the installation was completed in accordance with this procedure (cite document number and revision).

1 SCOPE

This installation specification covers setting the power levels of the optical lever laser sources to its optimum value to meet class IIIa laser requirements and to maximize life expectancy.

2 APPLICABLE DOCUMENTS

Listed below are all of the applicable and referenced documents for this installation procedure. This list gives the latest revisions of the documents; Within the installation steps, only the document number (and not the revision) is quoted.

Document number	Document Title
D970102-B	10x Light Source Assembly, Optical Lever
D970156-B	30x Light Source Assembly, Optical Lever
D980220-B	ISC Equipment Layout, Hanford Site
D980499-A	ISC Equipment Layout, Livingston Site
E000106-0	Optical Lever Calibration



INSTALLATION SPECIFICATION

TITLE

ADJUSTMENT OF OPTICAL LEVER LASER POWER

3 PRE-REQUISITES

1. .035 Allen Wrench
2. Flat blade mini-screwdriver
3. 635 nm laser power meter
4. Small channel-lock pliers
5. Flashlight
6. 3/16 allen wrench
- 7.

4 PREPARATION

All preparation must be in accordance with the Contamination Control Plan (M990034).

1. A class IIIa, <5mW laser diode emitting a 635nm beam is used for the optical lever light source. The typical 1/4 second blink reflex will protect your eyes from a brief direct or spectral reflection. Direct beam exposures of approximately 10 seconds or longer could cause eye damage.
2. Locate 10x and 30x laser source assemblies per D980220 or D980499.
- 3.
- 4.



INSTALLATION SPECIFICATION

TITLE

ADJUSTMENT OF OPTICAL LEVER LASER POWER

5 INSTALLATION STEPS

All installation must be in accordance with the Contamination Control Plan (M990034).

Sequence: The following steps are in a logical and workable sequence. However some of the steps can be done in parallel and some steps can be done at other points in the sequence.

1. Ensure the laser assembly is powered and operating.
2. Locate laser body and remove .035" set screw at the end of the body where the wires exit.
3. With small channel locks, carefully unscrew the back cover plate making sure not to twist the wires.
4. Slide the cover plate 2-3 " down the wires to gain access to inside the barrel.
5. Remove the cover from the optical lever receiver box.
6. Have a helper place the laser power meter in the path of the laser beam just in front of the detector. The power meter must be set to read 1-6 mW at 635 nM. Note the initial power reading. If properly calibrated, the Sum from the DAQ system may be used in place of the power meter.
7. With the flashlight look up the barrel of the laser and locate the brass screw potentiometer.
8. Adjust the screw with a flat blade miniature screwdriver until the power output reaches the desired setting of 1/3rd the initial power reading, but not less than .1 mW.
9. Take note of the location, power reading, and date. Record these values into the electronic log.
10. Replace the back cover and tighten the .035 set screw. Also remove the power meter from the beam path.
11. Calibrate per LIGO document E000106 (Optical Lever Calibration) if needed.
12. Replace the cover on the light source box assembly.
- 13.
- 14.
- 15.
- 16.
- 17.
- 18.
- 19.
- 20.