LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY

LIGO-T1000493-v1 *LIGO* 8/23/10

Initial Alignment of PR3, ITM, and ETM prior to 1st Light Down the Arms

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1 Introduction

This note describes a procedure for aligning the PR3, ITM, and ETM mirrors prior to achieving 1st light down the arms.

2 Installation Procedure

This alignment procedure will take place after the IFO equipment has been installed and the Initial Alignment Procedure has been completed.

2.1 Ancillary Alignment Equipment

- Vacuum Cleanliness class B CCD Camera placed on the arm cavity beam centerline between the ITM HR surface and the Arm Cavity Baffle.
- Vacuum Cleanliness class B CCD Camera placed on the arm cavity beam centerline between the ETM HR surface and the Arm Cavity Baffle.

3 Alignment Procedure

1. Install the CCD camera near the ITM HR.
2. Scan the ALS Green Beam from the TMS telescope by means of the TMS pitch and yaw controls until the beam is centered on the CCD camera at the ITM.
3. Align the ETM HR surface perpendicular to the ALS Green Beam by means of the ALS QPD sensors.
4. Align the ITM by scanning in pitch and yaw until the ALS Green Beam retro-reflects back to the ALS QPD.
5. Remove the CCD camera at the ITM
6. Install the CCD camera near the ETM HR.
7. Turn on the PSL Beam and scan PR3 in pitch and yaw to center the IR beam at the ETM CCD.
8. Remove the CCD cameras.
9. Pump down.
10. Scan PR3 in pitch and yaw to detect first resonance flashes of the arm cavity