

H1 ETMx Realignment After SmCo Magnet Re-installation

APPROVALS	DATE	REV	DCN NO.	BY	CHECK	DCC	DATE
AUTHOR: B. Bland							
CHECKED: D. Cook							
CHECKED: M. Landry							
APPROVED: M. Zucker							
DCC RELEASE							

1 SCOPE

Fix the misalignment of H1 ETMx which was induced during SmCo magnet swap reinstallation of LOS tower. Do not use auxiliary optical lever - during pump down/vent, the optical lever sees a ~0.2mm shift when the pier tilts. This is within range to still be on the OL, so no auxiliary is needed. We will use the optical lever medm to align to.

Estimated Time Line and Task Leaders

Week of April 28th-May 2nd 2008 – Reduce bias resistors and align optic to optical lever. Open gate valves for a peek down the arm to see if this alignment gets close to the center of the ITMx optic. Record biases:

ETMx IFO Bias (pitch, yaw)

+7.50, -0.637

ETMx SUS Bias (pitch, yaw)

-0.405, 0.000

Monday May 5th 2008 - Vent and Pull BSC 9 door.

Inspect Optic and take pictures

PAM adjust the optic pointing to recover alignment to Optical Lever

Let sit over night to watch for drift

Tuesday May 6th 2008 – Check alignment trends. If they look good, close BSC 9 and pump down.

Time estimate: 2 days

2 APPLICABLE DOCUMENTS

Listed below are the applicable documents and references for this procedure.

LIGO E000062	BSC Installation document Note: Update E000062 to include OSEM/PAM iterations and better contamination controls.
LIGO M990034	LHO Contamination Control Plan
LIGO M020131	LHO Laser Safety Plan
LIGO M020130	LHO 10 Watt Laser SOP
LIGO M980133	Vent Isolatable Volume
LIGO M980101	Procedure For Isolatable Volume Pump Down
LIGO M980136	HAM Chamber Access Door Removal
LIGO M980132	O-Ring Installation and Flange Assembly Procedure for HAM and BSC Doors
LIGO E000065	Chamber Entry and Exit Lists



H1 ETMx Realignment After SmCo Magnet Re-installation

3 Pre-Requisites

1. File work permits and get approval
2. Stage installation EQ at end stations
3. Clean end stations (damp mop, wipe down chambers)
4. Prep Optics Lab balancing bench (ensure level)
5. Set up autocollimator assy on bench in optics lab
6. Ensure cranes are parked nominally
7. Ensure clean room is over BSC9 is in working order
8. Setup mobile dust monitors at end stations, just below door flanges
9. Ensure CDS computer is working at end stations

4 TASK STEPS

10. Put a freeze on any 4K IFO work effecting this operation
11. Close gate valves
12. Slow vent (~1 hr to minimize static build up on SOS optics) per M980133.
 - a. Turn off RGA and 4K ETMx SUS controller high voltages.
13. Break bolts on BSC9 E door – leave all but 4
14. Pull BSC9 E door
15. Turn on SUS controllers

16. Setup computer to monitor optical lever readout on medm
17. Restore biases listed above and record optical lever values:

0.118 pitch, 0.112 yaw

18. Remove bias
19. Adjust PAM screws to recover pointing to the optical lever values recorded above.
20. Record PAM gaps.
21. Exit chamber
22. Let sit over night to record any drift

Negligible drift ~ 0.347 units of bias estimated to compensate for drift seen after exiting chamber

23. If negligible drift, replace BSC9 door
24. Turn High Voltages off
25. Pumpdown