

# LIGO-T1100443: H1 HAM6 vent plan for cleaning eLIGO OMC

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## 1 **Tools etc.**

1. Clean Q-tips (Many)
2. Alpha 10 wipes (1 pack)
3. Methanol in class B dropper bottle (1)
4. Isopropanol bottle (1)
5. Fiber bundle with light source (1)
6. Class B Allen keys (Assortment)
7. Class B dog clamps (many)
8. Class B sliver 1/4-20 screws (many)
9. Class B OMC riser blocks (3)
10. Stinger flash light (1)
11. Digital Camera (1)
12. Viewer and viewer card
13. Ionizing nitrogen gas apparatus

## 2 **Raising OMC**

1. Enter from the east door and lock down ISI.
2. Register the position of at least two edge of TT2 footprint using at least 3 dog clamps.
3. Remove TT2 out of the way. Remove the cable if necessary.
4. Clamp the intermediate mass and the blade springs of OMC suspension using EQ stop screws.
5. Evaluate if the OMC mirrors can be accessed without moving the OMC suspension cage. If it can be without significant difficulty (assuming that OMC is raised), proceed to 11. Otherwise proceed to 6.
6. Evaluate if the OMC can be raised without removing mirrors and beam dumps. If it is, proceed to 11. Otherwise proceed to 7.
7. Clamp the OMC breadboard itself using EQ stops.
8. Register the position of the OMC suspension cage footprint dog clamps. Only do this for the west edge plus either north or south. Don't do this for the east edge. Slide the OMC cage toward the east edge of the table.
9. Remove the beam dumps and steering mirrors inside and around the OMC cage as needed. Record the screw hole position so they can go back to approximately the same position later.
10. Unclamp the OMC breadboard.
11. Remove the top EQ stop plate for the OMC breadboard. Also remove the horizontal bar that holds the EQ top stop plate if necessary.
12. Raise the OMC breadboard. Insert OMC riser(s) so the breadboard can rest on them.

### **3 Initial inspection**

1. Inspect OMC mirrors. Use bright light sources as needed.
2. Take pictures.

### **4 Cleaning**

1. First blow ionizing nitrogen gas to all 4 OMC mirrors.
2. Use the clean Q-tip. A drop or two of methanol and gently wipe the mirrors accessing through the holes in the so-called tomb stones.
3. Inspect repeatedly while cleaning.

### **5 Putting things back**

1. Install the EQ stop plate back.
2. If OMC cage was moved and/or the beam dumps etc. were removed, clamp the OMC breadboard.
3. Move the OMC cage back to the original position as needed.
4. Put the steering mirrors and beam dumps to the original position as needed.
5. Unclamp the OMC breadboard.
6. Unclamp the OMC suspension upper structures.
7. Put the TT2 back to the original position.

### **6 Alignment on the table**

If the OMC cage was moved and/or if the steering mirrors and beam dumps were moved, we need to confirm the table alignment for OMC refl path using a low power beam from the MC. For OMC trans path, it should be good enough for the steering mirrors and beam dumps to be approximately the same position and angle as before.

1. Turn the SOHO integrator off for MMT2 and SM
2. Lock MC with 50mW.
3. Align MMTs so the beam comes to approximately the same position on ISCT4 as before.
4. Align steering mirrors on HAM6 so the OMC refl beam hits QPD1 and QPD2.

### **7 Closing out**

1. Don't leave anything in HAM6. If there's anything left from the previous incursions, take it out with you. Try HARD to find anything.
2. Unlock ISI.