LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY

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	Beam Tube Module Vent Procedure	

Date: _____ Lead Operator: _____

Tube : _____ Aided By:

Time : _____ _____

_____

The purpose of this procedure is to provide instruction for the safe venting of the LIGO Beam Tube. NOTE: **A work permit is required for this operation.**

The source of vent gas is the class 100 clean air supply. The back to air cart will be used to control the vent gas flow. The vent gas will be admitted into the beam tube through the 1-1/2" all metal valve mounted on the cover of the 10" VAT beam tube isolation valve.

Reference documents: The attached "Field Backfill Sketch."

Responsibilities: This procedure is applicable to all personnel who will be backfilling LIGO vacuum equipment. Since these operations are manual procedures, it is the responsibility of the operator to monitor the progress of the backfill operation at all times. All activities in this procedure relating to the beam tube require approval of the LIGO Vacuum Equipment Manager.

Prerequisites: The pressure difference across a 10" VAT valve must be **less than 10 torr** before the valve can be opened. Therefore pressure on both sides of the VAT valve must be monitored if the valve is going to be opened from a fully closed position.

Completed (check)

a. Verify that the beam tube gate valves are locked out at both ends of the beam tube section to be backfilled. _____

b. Verify that the appropriate 10" VAT valves are open (one for admitting backfill gas through, one for backup pressure monitoring, if needed). NOTE: If necessary, an unused beam tube port (VAT valve open) can be used for backup pressure measurement by installing a Baratron Portable Pressure Gauge (battery operated). _____

c. Verify that the installation of the back to air cart is per the attached sketch. Note the "safety blind cover" used as a simple relief device, installed on one branch of the cross. The "safety blind cover" must remain unclamped without any apparent O-ring sticking. _____

d. Verify that the clean air system and back to air cart are ready for operation. _____

Completed (check)

Procedure: (Refer to the attached sketch)

1. Open the purge valve and admit clean air (use either valve on the back to air cart) into the piping until the air flow is dry (<-60C dewpoint). _____

2. Test the operation of the "safety blind cover" by closing the purge valve slowly and observing that the cover lifts with the pressure. Confirm that pressure at the clean air supply is being regulated at less than 2 psi. _____

3. With the purge valve open, slowly open the 1-1/2" valve. As flow is diverted to the beam tube close the purge valve, being careful to not cause the safety blind cover to lift. _____

4. Once the purge valve is fully closed, the 1-1/2" valve should be fully open. _____

5. Adjust the flow at the back to air cart so that the clean air skid is able to keep up with the flow. This can be determined by observing the duty cycle of the compressors. _____

6. Periodically check the beam tube pressure using the supplied Baratron gauge. _____

   Venting will take between 20 and 50 hours, depending on the rate of flow used. By monitoring the change of pressure rate on the Baratron, you can ensure that someone is present when the tube is returned to atmosphere.

7. When atmospheric pressure is reached (the exact value depends on current barometric conditions), close the 1-1/2" valve. Leave the 10" VAT valve open. _____

   Precautionary Note: Once the venting process has started, the 10" VAT beam tube valve **must not** be closed. The 1-1/2" valve may be closed at any time to stop the vent process and to isolate the beam tube.

Exit Location _____

Exit time: _____

Acknowledge Task
Completion by _____ Date: _____ Time: _____
(Signature/Title)

Beam Tube Module Vent Procedure

Date: _____ Lead Operator: _____

Tube: _____ Aided By:

Time : _____ _____

_____

Comments/Information

Note any unusual conditions and inform appropriate personnel.

_____

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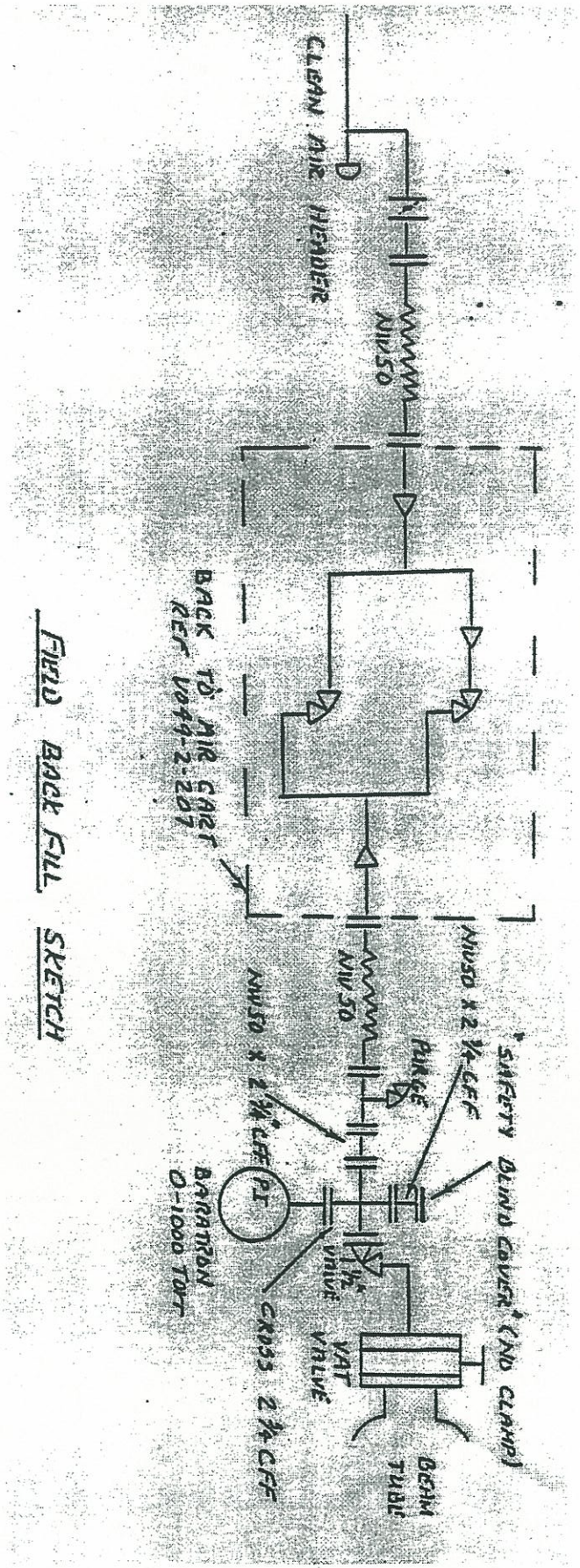

FIELD BACK FILL SKETCH