

## Hazards associated with the gas system and how to mitigate them

Do not enter the gas shack if the rotating red light at the entrance is on. This warns of an oxygen deficiency.

### **In General the Gas Mixing shack can be a hazardous place – BE AWARE OF YOUR ENVIRONMENT..**

There are hazardous gas detectors that will cut off any gas flow at 10% of the lower explosive limit and oxygen deficiency monitors that will alarm if there is a less than 19% oxygen level.

### **Gas bottles are a hazard to move. Breaking the stem on a gas bottle can cause flying debris**

Never move a bottle without the cap fastened. Always earthquake brace bottles at two points in the place they are to be used or stored. Always keep control of the bottle with two hands while moving.

### **The gases used in the calibration routine present a cryogenic hazard.**

Be certain that the bottle is plumbed into the correct gas circuit and the fittings are tight before opening. When removing a bottle be certain to valve off the gas; At the bottle first, at the gas panel second. Slowly bleed the lines before disconnecting.

### **There is a marked step up both on to the gas pad and into the gas shack.**

Be aware. It easy to trip while making a step into empty space when coming out of either one.

### **Side of racks must be removed.**

To access some of the valves the side of the rack should be removed. This can fall rapidly and cause alarm or an injury. The rack side panel should be supported by one hand while turning the locking screw. Two hands should be used to lift and carry the side panel out of the way.

## Calibration of HAD Sensors in Racks 9 and 10

Name: \_\_\_\_\_

Date \_\_\_\_\_

*This procedure requires access to the DCH bulkhead HAD sensors in racks B620D-09 on the top of the detector, which are labeled HAD9 and HAD10 in the gas hut alarm system.*

- Inform BaBar shift leader of planned activity.
- Record current readings:

<b><i>Initial Reading</i></b>	Reading on HAD (%LEL)	Reading on DPM (%LEL)
HAD9 (front bulkhead flush)		
HAD10 (rear bulkhead flush)		

- Bypass gas hut SIAM 3 inputs 4 and 5, corresponding to HAD 9 and 10.
- Record current values of bulkhead flows, Front: \_\_\_\_\_ Rear: \_\_\_\_\_
- Set bulkhead flows to zero.
- Remove HAD9 and HAD10 from bulkhead flush lines.
- Cover holes in lines with aluminum foil.
- Disconnect sensors, and replace sensors with calibrated units obtained from Ron Badger at the EFD electronics shop, Bldg. 104, X 2757.
- *Check zero of HAD sensors:*
- Expose the new HADs to air for at least 2 minutes, record the values below.
- Adjust the zero of the sensor or DPM ONLY if the magnitude of the reading is greater than 2% of LEL.

<b><i>“Zero” Reading</i></b>	Reading on HAD	Zero Adjusted ?	Reading on DPM	Zero Adjusted ?
HAD9 (front bulkhead flush)				
HAD10 (rear bulkhead flush)				

- Record hardware tracking numbers of new and old sensors:

	Tracking # (new)	Tracking # (old)
HAD9 (front bulkhead flush)		
HAD10 (rear bulkhead flush)		

- Install HAD9 and HAD10 into bulkhead flush lines using new o-rings.
- Return bulkhead flows to previous values.
- Enable gas hut SIAM 3 inputs 4 and 5, corresponding to HAD 9 and 10
- Inform shift leader that work is complete.
- File this checklist in the calibration section of the drift chamber binder in the gas hut.
- Enter HAD data in the BaBar Hardware Tracking Database

