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.

Several steps in this procedure require plumbing expertise; if you don’t have it, DO NOT PROCEED.

Read and follow IR-2 AHA, found at:

http://www.slac.stanford.edu/BFROOT/www/Organization/Babar_Safety/#BUILDING0
Transition Warm Standby to Cold Standby

Name: 

Date: 

Time: 

- Change input to the He regulator on the south wall of the gas shack to air. This will require some Swagelok fittings, 3/8” stainless steel tubing, and plumbing expertise. Cap and label the He line.
- Switch The Forward and Backward Bulkhead flush valves in the neutral gas (636-04) rack to air.
- Close VVM-45 (circulation loop).
- Open VVM_46 (exhaust).
- Open VVM-44.
- Open VVM-36 (He orifice bypass).
- Increase Helium inlet pressure GRADUALLY to 1780 mbar (initially 1600, adjust later).
- Open VVM-88 and VVM-87. Note which is already open _________.
- Set all mass flowmeters to Zero.
- Set circulation flowmeter to 8 lt/min.
- Switch on both compressor regulators. Note which is already on _________.
- Set controller you just turned on to MANUAL, 30%. (adjust later).
- Open Helium hi-flow rotameter one turn (adjust later to > 30 l/min).
- Decrease BPR-1 to minimum (CCW).
- In the Mode panel, activate super user mode.
- In the valve control panel, switch to VME mode, open VVPC–2, VVPC–3, VVPC–4, VVPC-6, VVPC–7, close VVPC-11
- In the valve control panel, pump panel, Start compressors.
- Immediately adjust BPR-2 to keep circulation pressure in range
- Select “output” sample point.
- Slowly increase He Hi flow rotameter and manual compressor regulator until flush flow is ~40 L/min
- Keep an eye on BPR-2 and circulation pressure.

Flush for 3 volume change (8-9 hours) (till oxygen sensor reads >19%).
- Decrease He inlet pressure to 1000 mbar (nominal value).
- Select Rest mode.
- Open VVM 101.
- Close VVM 44.
- Close VVM 87 or 88, whichever you previously opened (see above).
- Open VVM 45.
Switch off compressor regulator you previously turned on (see above).

Close helium high flow rotameter.


Check all mass flowmeters are set to Zero.

Reset BPR 1 and BPR 2 to nominal (if possible).

Push the red “Emergency Off” button on the back of rack 636-02.

Reconnect the input to the He regulator on the south wall of the gas shack to helium. Return the air plumbing to its original configuration.

Disconnect and cap both ends of the Forward Bulkhead, Backward Bulkhead, and Outer Cylinder gas lines at the top rear of rack 636-04. Label the lines.

Disconnect and cap both ends of the He Security line gas line at the top rear of rack 636-06. Label the line.

Close VVM-112 and VVM-114, and open VVM-113, on the back wall of IR-2.

Close VVM-37 and VVM-38, and open VVM-39 in rack 9, on top of the detector.

Remove and plug the inlet line to regulator FPR-1 in rack 9. Label the line.

Install a 2 micron filter on the inlet to FPR-1.

Connect a Polyflo line from the dry air panel ***** to the filter on FPR-1.

Monitor:

Dprt-9, 10 (4-20mA)

Bubbler level switches