

OPERATION OF THE PHENIX-MUID QA GAS SYSTEM IN BUILDING 905

Text Pages 1 through 4
Attachment(s) 1,2

Hand Processed Changes

<u>HPC No.</u>	<u>Date</u>	<u>Page Nos.</u>	<u>Initials</u>

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[Signature]

REVISION CONTROL SHEET

LETTER	DESCRIPTION	DATE	WRITTEN BY	APPROVED BY	CURRENT OVERSIGHT
A	First Issue	4/8/1998	n/a	K. Read, W. McCabe, A. Etkin	n/a
RETIRED	Work described in procedure is completed	3/13/2007	n/a	D.Lynch, P. Giannotti, R. Pisani for PHENIX	R. Pisani

1.0 Purpose and Scope

This procedure provides instruction for starting up and shutting down of the gas in the PHENIX-MUID tube quality assurance(QA) area in building 905. It specifies which procedure can or can not be performed in unattended mode.

2.0 Responsibilities

- 2.1 Operator is responsible for conducting the procedures and logging of the gas operation.
- 2.2 Qualified MUID technicians are responsible for rigging tubes in the north part of the building 905.

3.0 Prerequisites

- 3.1 Operator shall have completed BNL compressed gas and electric safety training.
- 3.2 Operator shall be designated as being cognizant of proper operating practices by the technical supervisor.
- 3.3 The safety bubblers shall be visually inspected before starting gas flow.
- 3.4 Every relief valve in the system shall be certified by S&EP for its proper relief pressure.
- 3.5 Only pre-qualified MUID tubes shall be used in this procedure.
- 3.6 MUID technicians qualified for rigging the tubes shall have completed the current crane and safety awareness training.

4.0 Precautions

- 4.1 All of the high voltage supplies shall be turned off prior to entering the QA area with the sole exception of the circumstances and use of the procedures described in section 5.4 of procedure "Operation of the PHENX-MuID QA HV System in Building 905."

5.0 Procedure

- 5.1 Fill the tubes with CO2 for rough leak test.

Note: Attended mode shall be required for steps 5.1.1-5.1.10.

- 5.1.1 Operator shall close the CO2 side valve on the mixer.
- 5.1.2 Operator shall open the valve on the CO2 bottle #2.
- 5.1.3 Operator shall set the CO2 regulator output gauge to 10 PSI.
- 5.1.4 Operator shall set the source selection valve for the selected set of tubes to pure CO2 supply #2.
- 5.1.5 Operator shall open the input flowmeters for the selected set of tubes.
- 5.1.6 Operator shall set the tube-return valves for the selected set of tubes to manometers.
- 5.1.7 Operator shall open the CO2 needle valve to the set point.
- 5.1.8 Operator shall verify pressure increase on all manometers uniformly.
- 5.1.9 Operator shall take the following steps to pressurize all manometers uniformly when pressure increase is not verified on some of the

manometers.

- 5.1.9.1 Operator shall open the valve on the input flowmeter for the problem chain. If it does not show any flow, operator shall give a tap on the bottom of the flowmeter to let the float show the proper flow rate.
- 5.1.9.2 Operator shall set the tube-return valve for the problem chain to the manometer.
- 5.1.9.3 If both operations do not fix the problem chain, operator shall tighten all connections and repeat the procedure 5.1.9.1 and 5.1.9.2.
- 5.1.10 Once the pressure reaches 30cm H₂O, operator shall close the CO₂ needle valve and all of the input flowmeters.
- 5.1.11 Operator shall allow a hold time of 3 hours to elapse. **Attended mode shall not be required for this particular step 5.1.11.**
- 5.1.12 When the leak test is finished, operator shall set the tube-return valves to vent.
- 5.1.13 Operator shall close the valve on the CO₂ bottle #2.

5.2 Flush the tubes with CO₂ and flow CO₂

Note: Attended mode shall not be required for this procedure.

- 5.2.1 Operator shall follow procedure 5.1.1 – 5.1.5 to prepare flowing pure CO₂.
- 5.2.2 Operator shall set the tube-return valves for the selected set of tubes to the vent.
- 5.2.3 Operator shall set the mixer needle valves to the maximum setting. While the valves shall be opened, operator shall keep watching the safety bubbler level. Operator shall stop opening the valve if the safety bubbler is about to bubble. Cause of the clogging shall be investigated and shall be fixed before proceeding.
- 5.2.4 Operator shall set the input flowmeters to the set point and verify the flow at the output bubblers.
- 5.2.5 If a chain does not show flow at the output bubbler, a leak was created in the QA procedure. Operator shall locate the leak with a CO₂ sensitive sniffer and fix the leak .
- 5.2.6 After following steps 5.1-5.3 of procedure “Operation of the PHENIX MuID QA HV System in Building 905” and completing the 5 days of tube conditioning, operator shall close the CO₂ needle valve.
- 5.2.7 Operator shall close the valves on the input flowmeters
- 5.2.8 Operator shall set the source selection valve to “closed position”.
- 5.2.9 Operator shall close the valve on the CO₂ bottle #1.

5.3 MUID tube change procedure

- 5.3.1 Operator shall turn off all the HV and the HV signs according to section 5.3 of procedure "Operation of the PHENIX-MuID QA HV System in Building 905."
- 5.3.2 Operator shall close all the input flowmeters.
- 5.3.3 Operator shall disconnect 6 inlet and 6 outlet tubes from the stack.
- 5.3.4 Operator shall disconnect the Bindi connectors from the stack.
- 5.3.5 Operator shall let a qualified MUID technician rig out the stack of tubes from the QA area.
- 5.3.6 Operator shall let a qualified MUID technician rig in a new stack of tubes.
- 5.3.7 Operator shall connect 6 inlet and 6 outlet tubes to the stack. This stack is ready to go through procedures from 5.1 to 5.2.

5.4 Bottle change procedure

- 5.4.1 Operator shall close the valves on both bottles.
- 5.4.2 Operator shall set all regulator output gauges to zero.
- 5.4.3 Operator shall close input needle valve and the mixer valves.
- 5.4.4 Operator shall set all source selection valves to "close position".
- 5.4.5 In line check valves are installed in both high pressure lines by the gas bottles. Operator shall unscrew the high pressure line at the bottle to be exchanged (empty bottle).
- 5.4.6 Operator shall put the original bottle cap on the empty bottle.
- 5.4.7 Operator shall label the empty bottle "empty".
- 5.4.8 Operator shall carry in a new bottle with a bottle cap on a gas bottle carrier.
- 5.4.9 Operator shall exchange the bottles.
- 5.4.10 Operator shall secure the bottle with a chain on the bottle rack.
- 5.4.11 Operator shall take off the bottle cap from the new bottle and save it.
- 5.4.12 Operator shall screw on the high pressure line to the new bottle.
- 5.4.13 Operator shall open the valve on the bottle slightly and check to see if there is any leak at the high pressure line joint just screwed on with snoop. In case of leak, operator shall fix the leak by tightening the screw.
- 5.4.14 Operator shall close the valve on the new bottle
- 5.4.15 Operator shall label the new bottle "in use".
- 5.4.16 Operator shall carry out the empty bottle on a gas bottle carrier to store it in the empty bottle storage.

5.5 Shutdown procedure

- 5.5.1 Operator shall turn off all the HV and the HV signs according to section 5.3 of procedure "Operation of the PHENIX-MuID QA HV System in Building 905."
- 5.5.2 Operator shall close the valves on both bottles.
- 5.5.3 Operator shall set all regulator output gauges to zero.
- 5.5.4 Operator shall close input needle valve and the mixer valves.

5.5.5 Operator shall set all 5 source selection valves to “close position.”

6.0 Documentation

6.1 Documentation shall be kept in the System Operator’s Logbook in Building 905.

7.0 References

7.1 All the PHENIX MUID construction procedure documents can be found through PHENIX MUID Factory WEB page <http://riksg01.rhic.bnl.gov/muid/>. A hardcopy of those documents are also kept in the specific work areas in building 905.

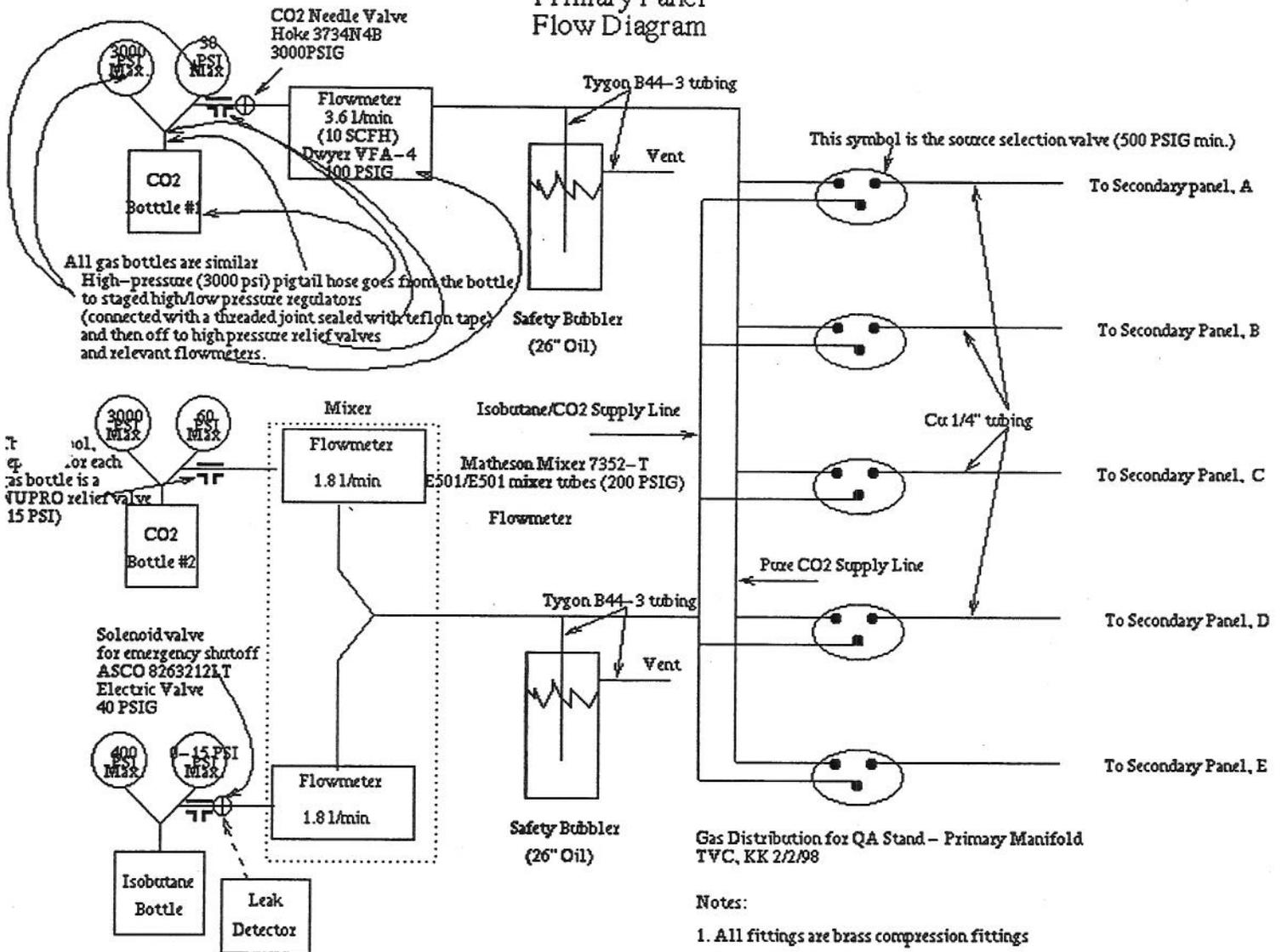
8.0 Attachments

1, MUID QA gas system diagram I

2, MUID QA gas system diagram II

Attachment 1

MUID Factory Tube QA Gas System
Primary Panel
Flow Diagram



Notes:

1. All fittings are brass compression fittings
2. All gas lines are Cu 1/4" unless specified otherwise
3. Tygon is modified PVC

Attachment 2

**MUID Factory Tube QA Gas System
Secondary Panel
Flow Diagram**

