

HPIP 4.51.3  
AIR LINE RESPIRATORY EQUIPMENT



*Wisconsin  
Electric  
Power Company*

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1.0 PURPOSE

The purpose of this procedure is to provide instructional guidance for inspection, testing, maintenance and repair of the air line respiratory equipment at PBNP.

2.0 DISCUSSION

None

3.0 RESPONSIBILITIES

3.1 Health Physics Technologist/Trainee

It is the responsibility of the Health Physics technologist/trainee to implement the requirements of this procedure when assigned by the Radiation Protection supervisor.

3.2 Radiation Protection Supervisor

It is the responsibility of the Radiation Protection supervisor assigned to the Radiation Protection station to ensure implementation of this procedure.

4.0 PROCEDURE TEXT

4.1 Air Line Manifold Set Up

- 4.1.1 Ensure good condition of manifold air supply hose and Bullard supply hose, if going to be used.
- 4.1.2 Ensure good condition of manifold, that pressure gauge is in calibration, and the filters have been changed in the last year.
- 4.1.3 Check Bullard filter has been changed in the last year, if going to be used.
- 4.1.4 Perform connection suitability test in accordance with HPIP 4.56, at the service air connection that is going to be used.
- 4.1.5 Perform contamination test at the same service air connection in accordance with HPIP 4.56.
- 4.1.6 Hook up the Bullard supply hose to the service air connection and the Bullard air filter, if going to be used.
- 4.1.7 Hook up manifold supply hose to the manifold and either service air connection or the Bullard filter.

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- 4.1.8 Open air supply valve to the Bullard filter, if used, or the air supply manifold.
- 4.1.9 Check all equipment for leakage. If leakage is found, fix the leak(s).
- 4.1.10 Set regulator on manifold to maintain 20 to 28 psig on manifold gauge.
- 4.2 Monthly Inspection (when in service)
  - NOTE: Replace any hose that shows evidence of deterioration or other physical damage.
  - 4.2.1 Check the Chicago fitting of the blue supply air hose for tightness and serviceability (if so equipped); check the quick release fitting(s) of the blue supply air hose for serviceability and proper fit to hose.
  - 4.2.2 Check the entire length of the blue supply air hose for evidence of deterioration.
  - 4.2.3 Check all fittings on the manifold assembly for tightness and serviceability. Ensure that the MSA manifold's moisture separator is free of water.
  - 4.2.4 Check the manifold's regulator valve for general condition.
  - 4.2.5 Check the quick release fittings on the Bullard airline filter for tightness. Ensure the filter head bolts are tight, and the moisture is drained out of filter.
  - 4.2.6 Check the connections at the regulated air hose ends for tightness and check the entire length of the hose for evidence of deterioration.
  - 4.2.7 Document all satisfactory and unsatisfactory results on PBF-4077d for MSA manifolds, and PBF-4077e for Bullard airline filter.
- 4.3 Semiannual Functional Testing
  - 4.3.1 As required, test the supplied air system in accordance with HPIP 4.56, Requirements to Ensure Breathing Air Standards for Air-Line Respiratory Equipment, prior to hookup of an air supply hose to the air source.
    - NOTE: All supplied air manifolds in service are equipped with a Schrader Bellows quick connect coupling.
  - 4.3.2 Assemble supplied air components and connect to breathing air supply.
  - 4.3.3 Operate components for a period of time to verify proper operation of valves and components.

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- 4.3.4 Disassemble and properly store components, as applicable.
- 4.3.5 Document all satisfactory and unsatisfactory results on PBF-4077d for MSA manifolds, and PBF-4077e for Bullard airline filter.

4.4 Annual Maintenance

**NOTE:** Use only manufacturer's approved replacement parts.

- 4.4.1 Replace the two charcoal (Part No. 46727) (Lot No. 915-0184) and one air particulate (Part No. 79030) (Lot No. 912-0297) filters in the MSA manifold inlet filter assembly whenever an abnormal odor is detected and on an annual frequency as a minimum.
- 4.4.2 Inspect the O-rings and gaskets used in the inlet filter assembly when replacing the filters and replace if wear or deterioration is observed.
- 4.4.3 Post the date of the filter change on the filter cover.
- 4.4.4 Change out the filter on the Bullard airline filter (Part No. 41-AF) (Lot No. 915-2808). The head bolts on the filter are to be tightened to 60 ft/lbs.
- 4.4.5 The filter on the Bullard airline filter should also be changed when user smells or tastes contaminants in the air, or a large pressure drop is noted across the filter.
- 4.4.6 Post the date of the filter change on the Bullard airline filter housing.
- 4.4.7 Document the results on PBF-4077d for MSA manifolds, and PBF-4077e for Bullard airline filter.

4.5 Annual Calibration of MSA Manifold Pressure Gauges

Send each pressure gauge to I & C for calibration on an annual basis.

4.6 Repair

- 4.6.1 Repairs are to be made only by personnel trained to repair the equipment.
- 4.6.2 Use only manufacturer's approved replacement parts for the repair of Bullard airline filter, supplied-air hoses, and manifolds. If any reasonable doubt exists regarding the integrity of a supplied air hose, remove it from service.
- 4.6.3 The regulator in the MSA manifold assembly will be sent to the manufacturer for repair whenever repair is required.

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4.7 Air Supply Hood Respirator Inspection

**NOTE:** Air supply hood respirators must be inspected prior to use.

4.7.1 Inspect all air supply respirator hoods for material softness, clarity, cracks, and seam strength.

4.7.2 Ensure that the complete assembly consists of hood and cape, air distribution unit with supply air hose, and belt assembly prior to issue. Make sure that the air distribution unit is snapped securely into place.

**NOTE:** A shelf life of three (3) years is recommended as a safety precaution; however, this is not mandatory if a visual inspection of all components is made in accordance with Step 4.6.1 and found to be satisfactory prior to putting the respirators in service.

4.7.3 Hoses should be inspected for tears and cracks, excessive wear and material memory.

4.8 Supply Air Hose and Extension Hose Assembly

4.8.1 Guidance for assembly of air supply hose:

- a. Obtain approximately 25' of 3/4" ID blue hose (Lot No. 915-1844).
- b. Attach to the 3/4" ID blue hose at one end a standard 3/4" barbed Chicago fitting. Use two hose clamps and secure the fitting.
- c. At the other end of the 3/4" ID blue hose, attach a Gates coupling or equivalent (PBNP No. 915-1839). Use two hose clamps and secure the fitting.
- d. To the threaded end of the Gates coupling, install a Schrader Bellows quick connect coupling check unit (Lot No. 915-1841).

**NOTE:** Air supply respirator systems are normally used with approximate 25 foot length of air supply hose but may be used with extension hoses as approved by RP management personnel.

4.8.2 Guidance for assembly of air supply extension hose:

- a. Obtain approximately 25' of 3/4" ID blue hose (Lot No. 915-1844).
- b. At both ends of the 3/4" ID blue hose, attach a Gates coupling or equivalent (Lot No. 915-1839). Secure each coupling with two hose clamps.

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- c. To the threaded end of one of the Gates coupling, install a Schrader Belows quick connect coupling check unit (Lot No. 915-1841).
- d. To the threaded end of the other Gates coupling, install a Schrader Belows quick connect couplings adapter (Lot No. 915-1843).

4.9 Bullard Airline Filter Assembly

Replace the filter (Lot No. 915-2808)

- 4.9.1 Shut off air supply and check that there is no moisture in filter if filter is being used, and disconnect the filter.
- 4.9.2 Separate the filter head from housing by removing the fasteners.
- 4.9.3 Remove the filter cartridge, clean the inside of filter housing.
- 4.9.4 Insert new filter (Part No. 41-A F) (Lot No. 915-2808) into the housing, and put on filter head.
- 4.9.5 Tighten the fasteners that hold the head to the housing across from each other to approximately 60 ft/lbs. In order to prevent warping of the filter head, do not tighten in a circular sequence.

5.0 REFERENCES

- 5.1 MSA Manifold Instruction Sheet
- 5.2 PBF-4077d, Respiratory Protection Equipment Inspection and Maintenance Record, Supplied Air Manifold (MSA)
- 5.3 PBF-4077e, Respiratory Protection Equipment Inspection and Maintenance Record, Bullard Airline Filter Assembly
- 5.4 Bullard Model 41A Airline Filter User Instruction Sheet
- 5.5 HPIP 4.56, Requirements to Ensure Breathing Air Standards for Air-Line Respiratory Equipment

6.0 BASES

None