2600SEG210
BREATHABLE COMPRESSED AIR STANDARD

1.0 PURPOSE

At the Panama Canal Authority (ACP) compressed air is used to provide breathing air to personnel who carry out various operations, such as working in confined spaces, diving, and working with hazardous toxic substances. Insufficient or deficient air may cause harm or chronic injury to lungs. The safety and health requirements for employees involved with the above-mentioned operations at the Panama Canal Authority are listed below.

2.0 BACKGROUND

This Standard replaces the safety policy and procedures contained in Appendix J of the Panama Canal Commission Personnel Manual (PCPM), Chapter 790.

3.0 SCOPE

This Standard applies to all Panama Canal Authority personnel, contractors, and third parties that are located within the facilities, industrial shops, and areas under ACP responsibility.

4.0 LEGAL FOUNDATION

This Standard is established pursuant to Agreement No. 12 of the Board of Directors of the Panama Canal Authority (ACP), Risk Control and Occupational Health Regulations, Chapter I, Articles 8 and 16.

5.0 DEFINITIONS

5.1 SCUBA: *Self Contained Underwater Breathing Apparatus.*

5.2 SCBA: *Self Contained Breathing Apparatus.*

6.0 GENERAL

6.1 EQUIPMENT REQUIREMENTS

6.1.1 Acquisition

6.1.1.1 Unit managers are responsible for coordinating with the Warehousing Section (FAAL) and the Safety and Industrial Hygiene unit (RHSH) to ensure that purchased equipment adjusts to this policy.

6.1.2 Compressors

6.1.2.1 The compressor air intake should be at an appropriate distance from contaminating areas.

6.1.2.2 When air line breathers, or a volume receiving tank is used, it must be installed with sufficient capacity to allow the user of the breather to escape from a contaminated area in case of compressor failure.

6.1.2.3 Volume tanks must be certified for meeting the requirements of the American Society of Mechanical Engineers (ASME) for Boilers and Containers and they must include the following: an intake check valve, a manometer, a discharge valve, and a drainage valve.

6.1.2.4 The certification that the volume tanks meet ASME Code requirements must be made upon receipt of the tank and after each repair, modification or alteration. To obtain this service, call the Engineering Division Mechanical and Electrical Engineering Section (IAIM).

6.1.2.5 Functional alarms must be installed to warn against compressor failure and overheating.

6.1.2.6 If an oil-lubricated compressor is being used, it must have a carbon monoxide alarm. Also, the oil must meet symbol 2190-TEP. ACP has oils for S/N 075-4870 compressors that meet these specifications for breathing air. A high-temperature alarm shall be installed to the compressor if it does not have a carbon monoxide alarm, as required in item 6.1.2.5

6.1.3 Breathing Air Supply Hoses/ Pipe Systems

6.1.3.1 Breathing air hoses, distribution pipes, and control devices connected beyond the filtering system shall not be used for any other purpose and shall be labeled “FOR BREATHING AIR ONLY”.

6.1.3.2 Breathing Air supply hoses must have:

6.1.3.2.1 A working pressure at least equal to the maximum working pressure of the breathing air system.

6.1.3.2.2 A burst pressure four times higher than its maximum working pressure.

6.1.3.3 In-line air-purifying absorbent beds and filters must:

6.1.3.3.1 Be installed in such a way to ensure good breathing air quality.

6.1.3.3.2 Have the open ends covered with adhesive tape, caps or seals, while not in service.

6.1.3.4 Couplings for supply hoses must:

6.1.3.4.1 Be corrosion-proof.

6.1.3.4.2 Resist accidental disconnection.

6.1.3.4.3 Have a working pressure of at least the maximum working pressure of the hose that it is coupled to.

6.1.3.4.4 Be physically impossible to match with the outlets of other non-breathing air gas systems, or oxygen systems.

6.1.3.5 Hoses and umbilicals must be removed from service after 5 years.

6.1.3.6 If volume tank requirements cannot be met, emergency escape provisions must be made when installing the breathing air system. (five-minute single breathing-air emergency units or double units).

6.1.3.7 When a breathing air compressor is used for diving, it must meet the requirements of ACP's Safe Diving Manual.

6.2 SELF-CONTAINED BREATHING APPARATUS

6.2.1 The following procedure must be followed for the supply, maintenance and use of SCBA and SCUBA:

6.2.1.1 The equipment acquired must meet ASME standards.

6.2.1.2 The storeroom must be in a well-ventilated area.

6.2.1.3 The equipment must be protected from excess heat.

6.2.1.4 It must be placed, banded, or strapped in such a way to avoid falling.

6.2.1.5 The valves must be inlaid in the cylinder or protected with a cap except when they are in use or distributed.

6.2.1.6 The user must inspect the equipment before and after each use according to the manufacturer's instructions.

6.2.1.7 The responsible supervisor must inspect the equipment when it is not in use at least once a month or according to the manufacturer's instructions.

6.2.2 The Industrial Diving and Salvage Services Unit of the Fleet and Equipment Maintenance Division (OPMI) shall provide SCUBA inspection and maintenance services.

6.2.3 The Protection and Emergencies Response Division (OPP) will carry out the inspection and minor repairs and provide maintenance services for SCBA.

6.3 AIR QUALITY

6.3.1 The compressed breathing air must not contain:

6.3.1.1 A carbon monoxide level (CO) greater than 10 ppm.

6.3.1.2 A carbon dioxide level (CO2) greater than 1000 ppm.

6.3.1.3 An oil vapor level greater than 5 milligrams per cubic meter.

6.3.1.4 A hydrocarbon level greater than 25 ppm (includes methane and all the other measured hydrocarbons such as methane).

6.3.1.5 A harmful or pronounced odor.

6.3.2 The quality of the product of breathing air compressor systems must be tested every six months through samples taken at the distribution system coupling, except that the compressors that are not oil-lubricated do not have to be tested for oil vapors. This service is provided by RHSH.

6.4 FILE MAINTENANCE AND DATA ACCESS

6.4.1 The responsible units must maintain an equipment or systems records log of the following:

6.4.1.1 Hydrostatic tests.

6.4.1.2 Pneumatic tests.

6.4.1.3 Air quality tests.

6.4.1.4 Repairs, maintenance, and equipment modifications.

6.4.1.5 Equipment inspections.

6.4.1.6 Equipment put in or out of service.

6.4.2 Records may be made available to ACP employees according to applicable ACP regulations.

6.5 ASSISTANCE FROM INDUSTRIAL HYGIENE

6.5.1 Questions about the application of this Standard must be referred to an Industrial Hygienist.

7.0 RESPONSIBILITIES

The responsibilities for ensuring compliance with this Standard are described in the Occupational Health and Safety Management Standard 2600SEG101.

8.0 INQUIRIES

Any information or clarifications on the contents or application of these standards must be requested in writing to RHSH.

9.0 EXCEPTIONS

Deviations or temporary exceptions regarding compliance with this Standard must be requested in writing to RHSH.

10.0 TERM

This Standard shall remain in force until amended or revised.

11.0 REFERENCES

11.1 ACP Safe Diving Instructions Manual.

11.2 File Retention Tables, File Management Section, ACP.

11.3 ASME, American Society of Mechanical Engineers, Boiler and Pressure Vessel Code (Section Vll).

11.4 Compressed Gas Association, CGA-7.1, 1997 version.