

1.0 PURPOSE

This Standard Test Procedure (STP) is to be used by Mechanical & Engineering Safety Division (M&ESD) investigators to evaluate the structural integrity of explosion-proof components of the intake and exhaust system of a diesel power package.

2.0 SCOPE

This procedure applies to internal static pressure tests conducted by the Mechanical & Engineering Safety Division on diesel power packages to determine compliance with the requirements of 30 CFR 7.104: "Internal Static Pressure Test".

3.0 REFERENCE

30 CFR Part 7, Subpart F, "Diesel Power Packages Intended for Use in Areas of Underground Coal Mines Where Permissible Electric Equipment is Required"

4.0 DEFINITIONS

- 4.1. **Cylindrical Joint** – A joint comprised of two contiguous, concentric, cylindrical surfaces.
- 4.2. **Diesel Power Package** – A diesel engine with an intake system, exhaust system, and a safety shutdown system installed.
- 4.3. **Exhaust System** – A system connected to the outlet of the diesel engine which includes, but is not limited to, the exhaust manifold, the exhaust pipe, the exhaust conditioner, the exhaust flame arrester, and any adapters between the exhaust manifold and exhaust flame arrester.
- 4.4. **Fastening** – A bolt, screw, or stud used to secure adjoining parts to prevent the escape of flame from the diesel power package.

- 4.5. **Flame Arrester** – A device so constructed that flame or sparks from the diesel engine cannot propagate an explosion of a flammable mixture through it.
- 4.6. **Flame Arresting Path (explosion-proof joint)** – Two or more adjoining or adjacent surfaces between which the escape of flame is prevented.
- 4.7. **Intake System** – A system connected to the inlet of the diesel engine which includes, but is not limited to, the intake manifold, the intake flame arrester, the emergency intake air shutoff device, the air cleaner, and all piping and adapters between the intake manifold and air cleaner.
- 4.8. **Plane Joint** – A joint comprised of two adjoining surfaces in parallel planes.
- 4.9. **Step (rabbet) Joint** – A joint comprised of two adjoining surfaces with a change or changes in direction between its inner and outer edges. A step joint may be comprised of a cylindrical portion and a plane portion or of two or more plane portions.
- 4.10. **Threaded Joint** – A joint consisting of a male- and female- threaded member, both of which are the same type and gauge.

5.0 TEST EQUIPMENT

- 5.1. Hydrostatic pressurizing equipment capable of generating pressure up to 150 psig.
- 5.2. Pressure gauge capable of measuring pressure up to 150 psig +/- 5 psig.

6.0 TEST SAMPLES

N/A

7.0 TEST PROCEDURES

- 7.1. Isolate and seal each segment of the intake system or exhaust system to allow pressurization.
- 7.2. Internally pressurize each segment of the intake system or exhaust system to four times the maximum pressure observed in each segment during the tests
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of Sec. 7.100, or 150 psig \pm 5 psig, whichever is less. Maintain the pressure for a minimum of 10 seconds.

7.3. Following the pressure hold, the pressure shall be removed and the pressurizing agent removed from the intake system or exhaust system.

8.0 TEST DATA

N/A

9.0 PASS/FAIL CRITERIA - ACCEPTABLE PERFORMANCE

9.1. The intake system or exhaust system, during pressurization, shall not exhibit –

9.1.1. Leakage through welds and gasketed joints; or

9.1.2. Leakage other than along joints meeting the explosion-proof requirements of [Sec. 7.98\(q\)](#).

9.2. Following removal of the pressurizing agent, the intake system or exhaust system shall not exhibit any –

9.2.1. Changes in fastening torque;

9.2.2. Visible cracks in welds;

9.2.3. Permanent deformation affecting the length or gap of any flame-arresting paths;

9.2.4. Stretched or bent fastenings;

9.2.5. Damaged threads of parts affecting the explosion-proof integrity of the intake system or exhaust system; or

9.2.6. Permanent distortion of any planar surface of the diesel power package exceeding 0.04-inches/linear foot.