Mine Safety and Health Admin., Labor

§ 36.46

to determine the volume of air (ventilation) required to dilute the exhaust gas (see §36.45). The engine shall be at temperature equilibrium before exhaust-gas samples are collected or other test data are observed. At all test conditions the intake mixture shall contain 1.5 ± 0.1 percent, by volume, of Pittsburgh natural gas (see footnote 3) in the air. Test observations shall include the rate of fuel consumption, pressures, temperatures, and other data significant in the safe operation of diesel equipment.

(b) Exhaust-gas samples shall be analyzed for carbon dioxide, oxygen, carbon monoxide, hydrogen, methane, nitrogen, oxides of nitrogen, and aldehydes, or any other constituent prescribed by MSHA.

(c) The intake and exhaust systems shall be complete with all component equipment such as air cleaners, flame arresters, and exhaust cooling systems. The performance of component equipment shall be observed to determine whether it functions properly.


§ 36.45 Quantity of ventilating air.

(a) Results of the engine tests shall be used to calculate ventilation (cubic feet of air per minute) that shall be supplied by positive air movement when the permissible mobile diesel-powered transportation equipment is used underground. This quantity shall be stamped on the approval plate. The quantity so determined shall apply when only one machine is operated.

(b) Determination of the ventilation rate shall be based upon dilution of the exhaust gas with normal air. The most undesirable and hazardous condition of engine operation prescribed by MSHA shall be used in the calculations. The concentration of any of the following individual constituents in the diluted mixture shall not exceed:

- 0.25 percent, by volume, of carbon dioxide (CO₂).
- 0.005 percent, by volume, of carbon monoxide (CO).
- 0.00125 percent, by volume, of oxides of nitrogen (calculated as equivalent nitrogen dioxide, NO₂).

The oxygen (O₂) content of the diluted mixture shall be not less than 20 percent, by volume. The maximum quantity of normal air to produce the above dilution shall be designated the ventilation rate.

NOTE: This ventilation rate will provide a factor of safety for exposure of persons to air mixtures containing harmful or objectionable gases and for minor variations in engine performance.

§ 36.46 Explosion tests of intake and exhaust systems.

(a) Explosion tests to determine the strength of the intake and exhaust systems to withstand internal explosions