



ISSUE DATE: 06/29/2007

PROGRAM INFORMATION BULLETIN NO. P07-17

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SUBJECT: Test Procedure for Evaluating Maximum Total Exhaust System
Backpressure on an Underground Diesel-Powered Machine

Who needs this information?

This Program Information Bulletin (PIB) is intended for underground coal mine and metal and nonmetal mine operators using diesel-powered equipment, manufacturers of diesel-powered underground mining equipment (including manufacturers of exhaust after-treatment control devices and systems), diesel engine manufacturers, miners' representatives, and Mine Safety and Health Administration (MSHA) personnel.

Why is MSHA issuing this PIB?

This PIB describes how MSHA evaluates the maximum total exhaust system backpressure on engines for compliance purposes. MSHA provides a list of approved engines that specifies each engine's respective maximum total exhaust system backpressure limit at Technical Support's "Approval and Certification Center's (A&CC) List of Approved Products." This list can be found on the internet at:

<https://lakegovprod1.msha.gov/ReportView.aspx?ReportCategory=EngineAppNumbers>.

For engines used in Metal and Nonmetal mines that are not MSHA approved, the engine manufacturer provides a specification for the maximum total exhaust system backpressure limit for each engine.

How will MSHA check the maximum total exhaust system backpressure on an underground diesel-powered machine?

Engine manufacturers specify a maximum total exhaust system backpressure limit. MSHA evaluates an engine's maximum total exhaust system backpressure for compliance with the engine manufacturer's specification using the following test procedures:

- 1) The maximum total exhaust system backpressure is measured at a port in the exhaust pipe located near the outlet of the exhaust manifold or turbocharger. The measurement location must be upstream of exhaust devices such as a catalytic converter, muffler, or diesel particulate matter (dpm) filter. For permissible equipment, the procedure in the Power System Checklist is followed.
- 2) A pressure measurement device is used to measure the maximum total exhaust system backpressure.
- 3) For a naturally aspirated engine, the engine is run at high idle, no load speed.
- 4) For turbocharged engines, the engine is run at torque converter stall or hydrostatic transmission load. This operating procedure is the same as that established by the coal mine operator to conduct the undiluted exhaust emissions weekly test required under Title 30 Code of Federal Regulations (30 C.F.R.) § 75.1914(g). For turbocharged engines that are installed in equipment that has a clutch, the engine is run at high idle, no load speed.
- 5) The test is run until the total exhaust backpressure reading is reasonably stable.
- 6) The identification of the machine being tested, the engine's serial number, and the maximum total exhaust system backpressure reading is recorded.

MSHA may also evaluate data collected from an on-board exhaust backpressure monitoring device that continuously measures and records the exhaust backpressure during normal operating conditions.

Where can I find more information?

More information on engine backpressure effects or measurements can be obtained by contacting A&CC at the number below or engine manufacturers or distributors. As stated above, MSHA provides a list of approved engines which specifies their respective maximum total exhaust system backpressure limits. For engines that are not MSHA approved, their specifications are available from the engine manufacturer or distributor.

What is the background for this PIB?

Diesel engine manufacturers specify a maximum total exhaust system backpressure limit in their specifications for each engine model. Monitoring the exhaust backpressure will ensure that the exhaust system has not been compromised by a clogged dpm filter, catalytic converter, or any other device that is installed. MSHA's standards found in 30 C.F.R. Part 7 Subpart E, 30 C.F.R. § 75.1914, and 30 C.F.R. § 57.5066 require that diesel engines be maintained in approved condition or to manufacturer's specifications. This test procedure is used to determine compliance with these requirements.

Who are the contact persons for this PIB?

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What is the authority for this PIB?

The Federal Mine Safety and Health Act of 1977, as amended, 30 U.S.C. § 801 et seq.; 30 C.F.R. part 7 subpart E, 30 C.F.R. part 75 subpart T, and 30 C.F.R. § 57. 5066.

Who will receive this PIB?

Program Policy Manual Holders
Miners' Representatives
Underground Coal Mine Operators
Special Interest Groups
Engine Manufacturers