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SUBJECT: Reissue of P07-18 - Maximum Total Exhaust System
Backpressure Specification Increase for Caterpillar Inc.'s
(Caterpillar's) 3304 PCNA and 3306 PCNA Diesel
Engines

Who needs this information?

This Program Information Bulletin (PIB) is intended for all underground 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 is being issued to inform interested parties of the increase of the maximum total exhaust system backpressure specification for Caterpillar's 3304 PCNA and 3306 PCNA diesel engines used in underground mining.

What is the new maximum total exhaust system backpressure limit for the Caterpillar engine approvals listed?

The maximum total exhaust system backpressure specifications for Caterpillar's 3304 PCNA and 3306 PCNA diesel engines have been updated to allow for a maximum total exhaust backpressure limit of 60 inches of water for each engine. Caterpillar's original exhaust backpressure limit for each engine was 34 inches of water. Caterpillar allows this increase with two stipulations: 1) no warranty claims for valve train components will be accepted for any mining company who adopts this increase in backpressure, and 2) participating mining companies and their subsidiaries should submit a list of serial numbers from affected engines to Caterpillar for warranty tracking purposes. MSHA will not be involved in the warranty stipulations specified by Caterpillar. Warranty is an issue between the mine operator and Caterpillar.

Does the increase in the maximum total exhaust system backpressure limit affect the Checklists for Permissible Diesel Powered Machines?

Permissible machines approved by MSHA must be evaluated using approved permissibility checklists (Machine Checklist and Power System Checklist). MSHA has an addendum to the existing permissibility checklists which addresses the change to Caterpillar's 3304 PCNA and 3306 PCNA maximum total exhaust system backpressure limit engine specification from 34 to 60 inches of water. This checklist addendum details the procedure to be used to check the engine's total exhaust system backpressure and the service indicator gauge installation for the diesel particulate matter (dpm) filter if the higher maximum total exhaust backpressure limit is used. The addendum checklist supersedes the total exhaust system backpressure limit and the dpm filter service indicator gauge installation checks currently listed in the approved permissibility checklists. The addendum is attached to this PIB.

How does this increase in the backpressure limit affect the performance of wet exhaust conditioner systems (scrubbers)?

The increase in maximum total exhaust system backpressure limit to 60 inches of water may affect the performance of gravity feed water make-up tank systems on permissible equipment. The additional backpressure within the scrubber may prevent the gravity feed make-up tank from supplying water to the scrubber, resulting in nuisance engine shutdowns. If a mine chooses to increase the backpressure limit to 60 inches on the subject engines, it is recommended that the gravity feed make-up tank design be changed to a pressure feed make-up tank design.

Where can I find more information?

More information on engine backpressure effects can be obtained by contacting MSHA's Technical Support, Approval and Certification Center (A&CC) at the contact information listed below or your engine manufacturer or distributor. MSHA provides a list of approved engines that specifies their respective maximum total exhaust system backpressure limits at the A&CC's List of Approved Products. This list can be found on

the internet at:

<https://lakegovprod2.msha.gov/ReportView.aspx?ReportCategory=EngineAppNumbers>.

A list of acceptable dpm filters can be found at:

<http://www.msha.gov/01-995/Coal/DPM-FilterEfflist.pdf>

What is the background for this PIB?

Diesel engine manufacturers specify a maximum total exhaust system backpressure limit in their approval documentation. Mine operators requested an increase in the backpressure specifications to allow for increased operating time before changing disposable diesel exhaust particulate filters. Caterpillar agreed to increase the maximum total exhaust system backpressure specification for the two engine models specified in this PIB. MSHA has determined that the increase to 60 inches of water exhaust backpressure limit remains in accordance with the manufacturer specifications for the filters in MSHA's listing of acceptable DPM Control Technologies found on MSHA's website and listed above. MSHA has also determined through laboratory testing that the increase in backpressure does not adversely affect ventilation rates.

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