



**Fayette County Health Center**  
**100 New Salem Road, Room 167**  
**Uniontown, PA 15401**  
October 30, 2007

**Bureau of Mine Safety**

724-439-7469

**TO:** Pennsylvania Bituminous Mining Operations and Diesel Equipment Manufacturers

**RE:** Informational Bulletin on Diesel-Powered Equipment  
**Diesel Exhaust Gas Temperature Sensor Installation and Evaluation**

The Bureau of Mine Safety is issuing the following *informational bulletin* for guidance concerning the installation of diesel exhaust gas temperature sensors for the automatic engine shutdown system as required in Sections 203-A (b)(5) and 203-A(c) of the Pennsylvania Bituminous Coal Mine Act.

Section 203-A(c) of the Act requires the use of on-board engine performance and maintenance diagnostic systems that continuously monitor and provide readouts to the operator. The diagnostic system shall identify levels that exceed the engine and/or component manufacturer's recommendation or Bureau requirements as to several operating parameters, including monitoring the "cooled exhaust gas temperature" [Section 203-A(c)(5)].

The on-board engine performance and maintenance diagnostic system typically monitors the "cooled exhaust gas temperature" by using a temperature probe installed near the end of the engine exhaust pipe. This probe is hard wired to a temperature gage located in the operator's compartment and warns the operator if the "cooled exhaust gas temperature" exceeds 302° F. Proper installation and calibration of the temperature gage and probe is important to insure that the reading on the gage accurately represents the actual "cooled exhaust gas temperature".

On a recent equipment inspection, a potential problem was observed when the accuracy of the temperature reading in the operator's compartment varied significantly from the actual exhaust gas temperature. The actual measurement differed from the temperature shown on the gage in the operator's compartment by as much as 45° F -- a 15 percent difference. This difference is outside the acceptable accuracy limit for the measurement, so a more detailed inspection was conducted. The temperature gage and the probe were changed with no improvement. Upon further investigation, it was determined that the temperature probe was installed in a protective bushing in such a manner that the probe was not directly in the exhaust gas stream. The bushing seemed to be insulating the probe from the exhaust gas and, thus, was causing lower readings on the gage. Upon removal of the protective bushing and placing the probe in the exhaust gas stream, the accuracy of the gage in the operator's compartment was now within 20° F of expectations. This difference of 7 percent was within reasonable tolerances. Since the engine



shut down was set around 280° F, the accuracy of the temperature gage will still provide the protection as required by Section 203-A (b)(5) of the Act.

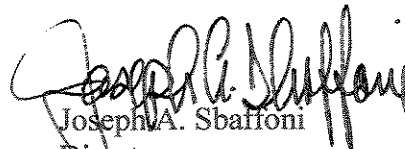
During another equipment approval at a mine site, another piece of equipment was observed that was equipped with a similar protective bushing that may shield the exhaust gas temperature probe. This raises a concern that there may be other diesel equipment operating in Pennsylvania that are not adequately protected due to inaccurate readings on the “cooled exhaust gas temperature” indicator in the operator’s compartment.

Based upon these findings, *the Department recommends that the accuracy of the temperature gage readings be verified by comparing the gage reading in the operator’s compartment to the actual exhaust gas temperature as measured at the end of the exhaust pipe. New equipment shall be checked during the approval process.*

Corrections should be made as necessary to insure compliance with the Act.

If you have any questions concerning this bulletin, please contact me at [jsbaffoni@state.pa.us](mailto:jsbaffoni@state.pa.us) or the above phone number.

Sincerely,

  
Joseph A. Sbaffoni  
Director  
Bureau of Mine Safety

cc: TAC Members