

Fayette County Health Center  
100 New Salem Road, Room 167  
Uniontown, PA 15401

January 11, 2010

Bureau of Mine Safety

724-439-7469  
Fax 724-439-7324

Mr. Eli Schmader  
Brookville Equipment Corporation  
175 Evans Street  
P. O. Box 130  
Brookville, PA 15825

RE: Brookville Equipment Corporation Model 20T215D 20 Ton Locomotive modification to utilize the Cummins QSB6.7 – 215HP engine utilizing an emissions control system with a DST Management System and an M30 Filter

Dear Mr. Schmader:

The standards and procedures for using diesel-powered equipment in Pennsylvania's underground bituminous coal mines are established by Chapter 4 of the Pennsylvania Bituminous Coal Mine Safety Act (Act). Section 424 of the Act establishes the Technical Advisory Committee on Diesel-Powered Equipment (TAC) whose duties include reviewing requests to use alternative technologies or methods to comply with the requirements of the Act. Any alternative technology or methods recommended by the advisory committee and approved by the Secretary shall not reduce or compromise the level of health and safety protection afforded by the Act.

On June 1, 2009 Brookville Equipment Corp. submitted a request to the Bureau of Mine Safety (BMS) for approval for a Brookville Model 20T215D 20 Ton Locomotive modification to utilize the Cummins QSB6.7 – 215HP engine utilizing an Emissions Control System DST Management System with a M30 Filter. The *Cummins QSB6.7 – 190HP* engine and emissions control package has been previously approved under Section 403 of the Act and assigned a BOTE-DEES NO 7-08. The engine horsepower rating has been changed from 190 hp to 215 hp in this modification request.

On June 16, 2009 the Director of BMS requested the TAC to evaluate the Brookville Equipment Corporation Brookville Model 20T215D 20 Ton Locomotive modification to utilize the Cummins QSB6.7 – 215HP engine utilizing an Emissions Control System DST Management System using a M30 Filter and to advise the Department regarding the TAC's recommendation as to whether the referenced equipment meets requirements of Section 403 of the Act.

The diesel power package includes the following items:

- Cummins QSB6.7 – 215HP @ 2500 RPM diesel engine (MSHA Certification No. 07-ENA060010)(Part 7)
- Emissions Control System DST Management System
  - Syncat Corporation M30-221-02 oxidation catalyst
  - Fleet Guard M30 DPM filter (MSHA efficiency rating 96.9 %)
  - Paas Technologies M90-301-01 heat exchanger

On October 1, 2009 the TAC and DEP traveled to Brookville Equipment Corporation to inspect the equipment and evaluate the engine and exhaust emissions package. The results of the emission tests showed the engine was performing within MSHA's approval specifications.

Monitoring of the exhaust gas temperature produced a high exhaust gas temperature reading of 181° F, which is well below the 302° F allowed by Section 403 (b)(4) of the Act. The maximum surface temperature observed was 230° F on the exhaust manifold after conducting the entire CO testing. However, there was a concern on a surface temperature measurement above 302° F on the waste gate arm. In order to address this concern, Brookville agreed to cover the arm with a heat wrap designed to fit the arm without restricting its movement.

The after-treatment system is fitted with a Fleet Guard M30 DPM filter. The filter is rated by MSHA at a 96.9 % efficiency rating. The engine and filter extrapolations show that the diesel power package will result in an average ambient concentration of .033 mg/m<sup>3</sup> of diesel particulate matter when diluted by 100% of the MSHA approval plate ventilation rate for this engine, which is well below the .12 mg/m<sup>3</sup> requirement of Section 403 (a)(1) the Act.

In addition to the testing that was conducted, our investigation and our observations confirmed that the diesel power package is capable of meeting all the requirements of Section 403 of the Act.

Based upon the information provided and the TAC recommendation, the Department approves the Cummins QSB6.7 – 215HP engine utilizing an Emissions Control System DST Management System with a M30 Filter. This approval is provided with the understanding that the General Specification Sheet (Attachment 1) be strictly adhered to. The Department approves the TAC recommendations because the alternative method will not reduce or compromise the level of health and safety protection afforded by Chapter 4 of the Act. The PA ventilation rate for this engine is 8,500 cfm.

Should you have any questions regarding this approval, contact my office at 724-439-7469.

Sincerely,

Joseph A. Scaffoni  
Director  
Bureau of Mine Safety

cc: Ron Bowersox/TAC  
Paul Borchick/TAC

bcc: S. Gaida  
A. Martin  
M. McCaffrey  
W. Bookshar  
M. Pacconi  
P. Keruskin  
C. Carson  
L. Stowinsky  
W. Gardner  
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JAS/WBB/cd

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