

**Fayette County Health Center**  
**100 New Salem Road, Room 167**  
**Uniontown, PA 15401**  
September 11, 2007

**Bureau of Mine Safety**

724-439-7469

Mr. Armit Gosal  
Sandvik Mining & Const. Canada, Inc.  
4445 Fairview Street  
Burlington, Ontario L7L 2A4  
Canada

Mr. Gene Davis  
Sandvik Mining & Const. Canada, Inc.  
1146 Palmer Road  
Adah, PA 15410

Re: **Final Approval** -- Deutz BF4M 1013 FC engine and DCL International Inc. DPM filter engine and emission system

Dear Messrs. Gosal and Davis:

On June 6, 2007, the Department issued a temporary approval to use a Deutz BF4M 1013 FC 157 HP engine and a DCL International, Inc DPM Filter and diesel oxidation catalyst system in an EJC – 935 Non-Permissible Scoop at the Dana Mining Company's 4 West Mine. This letter provides final approval of this equipment and exhaust emission conditioning and control system.

On February 28, 2007, Sandvik Mining and Construction Canada, Inc. submitted a request for evaluation and approval of a Deutz BF4M 1013 FC 157 HP engine and a DCL International, Inc DPM Filter and diesel oxidation catalyst system in a EJC – 935 Non-Permissible Scoop.

Article II-A of the Pennsylvania Bituminous Coal Mine Act requires that an exhaust emissions control and conditioning system may be approved for multiple diesel engine applications through a single series of laboratory tests, known as the ISO 8178-1 test, only if data is provided to the Technical Advisory Committee on Diesel-Powered Equipment (TAC) that reliably verifies that the exhaust emissions control and conditioning system will meet, for each diesel engine, the in-laboratory diesel particulate matter standard established by this subsection. Data provided to satisfy this provision shall include diesel particulate matter production rates for the specified engine as measured during the ISO 8178-1 test, if available. If ISO 8178-1 test data for diesel particulate matter production is not available for a specified engine, comparable data may be provided to the advisory committee that reliably verifies that the exhaust emissions control and conditioning system will meet, for the specified diesel engine, the in-laboratory diesel particulate matter standard established by this subsection. This standard shall only be used for in-laboratory testing for approval of diesel-powered equipment for use underground.

The TAC and members of the PA Bureau of Mine Safety evaluated the equipment and tested the emission system on March 22, April 2, April 9, and May 21, 2007. During these tests and evaluations various approval issues were discovered and rectified. These included areas of concern with the spark arrestor, surface temperatures at various locations, thermal wraps, exhaust gas temperatures, and the location of the exhaust gas temperature sensors. After testing, an NETT Technologies, Inc. Model OF-10034-MN-00000-00000 flame arrestor was added to the system, thus eliminating the need to use the Cordierite filter as the spark arrestor. All changes were addressed, resulting in a diesel-powered unit that meets the requirements of Article II-A.

The MINE-X Catalyzed Sootfilter Cordierite Filter with base-metal catalyst is rated at 85 percent efficient. Diesel emission extrapolations for this engine and exhaust emission control and

conditioning system show that an average ambient concentration of  $0.066 \text{ mg/m}^3$  will be achieved when diluted by 100 percent of the MSHA approval plate ventilation rate. This is well below the  $.12 \text{ mg/m}^3$  requirement of Section 203-A of Article II-A. The MSHA faceplate ventilation rate of 6,500 CFM is required to ensure that  $\text{NO}_2$  compliance is maintained.

Based on the information provided and the TAC recommendation, the Department *approves* the Sandvik Mining and Construction Deutz BF4M1013 FC engine with DCL International, Inc DPM Filter. The General Specification Sheet, as enclosed, must be strictly complied with. A smoke dot test is to be performed during each 100-hour maintenance test and the results recorded in the 100-hour test records. If at any time the result of the smoke dot test is greater than 3, the District Mine Inspector and the TAC are to be notified prior to placing the equipment back into service.

The PA ventilation rate for this engine is 6,500 cfm. The engine and emission system approval number is **BOTE-DEES-126-07**. The ventilation rate and the engine and emission system approval number are to be stamped on a plate attached to the engine in a place that is easily visible for inspection.

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

Sincerely,

Joseph A. Scaffoni  
Director  
Bureau of Mine Safety

Enclosure

cc: Eric Grimm, Dana Mining  
Ron Bowersox/TAC  
Paul Borchick/TAC

bcc: A. Martin  
W. Bookshar  
M. McCaffrey  
S. Gaida  
A. Gaida/TAC file  
P. Keruskin  
S. Strange

JAS/WBB:adg