

# PUBLIC SUBMISSION

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Testing, Evaluation, and Approval of Electric Motor-Driven Mine Equipment and Accessories. (PARTS 18 & 74)

**Comment On:** MSHA-2020-0018-0001

Testing, Evaluation, and Approval of Electric Motor-Driven Mine Equipment and Accessories

**Document:** MSHA-2020-0018-0019

Comment from Thomas Harman, National Mining Association

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## Submitter Information

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## General Comment

See attached file(s)

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## Attachments

RIN 1219 AB93



December 21, 2020

1219-AB93 Comm 13

Ms. Roslyn B. Fontaine, Deputy Director  
Office of Standards, Regulations, and Variances  
Mine Safety and Health Administration  
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Comments filed via email: [zzMSHA-comments@dol.gov](mailto:zzMSHA-comments@dol.gov)

Dear Ms. Fontaine:

Re: Testing, Evaluation, and Approval of Electric Motor-Driven Mine Equipment and Accessories, Proposed Rule, RIN 1219-AB93, Docket No. MSHA-2020-0018, Federal Register, Vol. 85, No. 224, November 19, 2020

The National Mining Association (NMA) offers the following comments to the Mine Safety and Health Administration (MSHA) concerning its proposed rule (PR) on “Testing, Evaluation, and Approval of Electric Motor-Driven Mine Equipment and Accessories”, 85 Fed. Reg. 73656, November 19, 2020. This letter details our comments.

NMA has reviewed the comments submitted to this docket by Consol Energy, Inc., Drager, J. H. Fletcher & Co., Komatsu Mining Business Division, and Matrix Design Group, LLC and concurs with the comments from these companies.

### Introduction

The National Mining Association is the national trade association whose members produce most of America’s coal, metals and minerals. NMA’s membership also includes the manufacturers of mining machinery and equipment as well as the independent contractors. NMA’s *members* have a long history of developing and implementing technology that increases miner’s safety and health protections.

NMA agrees with the Mine Safety and Health Administration (MSHA) that the use of voluntary consensus standards (VCS), “will promote the use of innovative and advanced technologies that lead to improvements in mine safety and health,” and that, “the use of VCS may also provide applicants and manufacturers [*for permissible equipment approval and certification*] access to other markets for products and equipment they currently only sell to the U.S. mining industry.” As the PR explains, the current technology approval process prevents the use of technologies approved in other

countries to protect and enhance miner safety and health in underground (UG) gassy<sup>1</sup> mines in the U.S.

### Significance of OMB Circular A-119 in Drafting the Proposed Rule

The PR is consistent with the Office of Management and Budget's (OMB) Circular A-119,<sup>2</sup> which established policy guidance for federal agencies to minimize agency reliance on government-unique standards to decrease the burden of complying with agency regulations and *promote efficiency and economic competition through harmonization of standards [emphasis added]*. In addition, the revised policy directive references Executive Order (E.O.) 12866, ("Regulatory Planning and Review"), EO 13563 ("Improving Regulation and Regulatory Review"), E.O. 13609 ("Promoting International Regulatory Cooperation"), and E.O. 13610 ("Identifying and Reducing Regulatory Burden").

Particularly relevant to the PR here is E.O. 13609, which explicitly directs, "[F]ederal agencies to better coordinate U.S. priorities and positions with respect to international regulatory cooperation efforts across U.S. Federal agencies. This includes promoting good regulatory practices both in the United States and internationally, as appropriate, and considering reforms that address unnecessary differences in regulatory requirements between the United States and its major trading partners."<sup>3</sup> Adopting VCS broadens U.S. technology applications to better protect miners' safety and health and simultaneously expands U.S. manufacturing markets to countries where MSHA's standards do not apply. In adopting Circular A-119, OMB maintains a strong preference for using voluntary consensus standards over government-unique standards in Federal regulation and procurement.<sup>4</sup>

### Additional VCS and VCS Bodies

NMA recommends that MSHA consider adding ATEX<sup>5</sup> to the VCS bodies listed in § 18.102 *Approved voluntary consensus standards*. For use in classifying equipment

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<sup>1</sup> Thrush, Paul W. and the Staff of the Bureau of Mines, *A Dictionary of Mining, Mineral, and Related Terms*, 1968, p 481. A coal mine is rated "gassy" by the U.S. Bureau of Mines if an ignition occurs or if a methane content exceeding 0.25 percent can be detected, and work must be halted if the methane content exceeds 1.5 percent in a return airway. A mine is said to be gassy when it gives off methane or other gas in quantities which must be diluted with pure air to prevent occurrence of explosive mixtures. For underground metal and nonmetal mines, *30 C.F.R. § 57.22003 Mine category or subcategory* places mines into categories and subcategories to protect persons against the hazards of methane and dusts containing volatile matter.

<sup>2</sup> Federal Register, January 17, 2016, p 4673

<sup>3</sup> OMB Circular A-119 (*Revised*), Executive Office of the President, Office of Management and Budget, "Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities," January 17, 2016, p 2

<sup>4</sup> *Ibid*, p 4

<sup>5</sup> ATEX is a voluntary consensus standards body, and it certifies machines and devices for use in hazardous locations, including gassy mines. The guidelines generally follow the International Electrotechnical Commission

operating in potentially hazardous and explosive environments, ATEX directs the free movement of goods throughout the European Union (EU) by harmonizing compliance procedures. The relationship between UL LLC<sup>6</sup> (UL) and ATEX is one wherein UL is accredited to classify both electric and non-electric equipment based on EN 60079 (and others) series for explosion proof testing. ATEX, by comparison, is strictly confined to using certified bodies to classify products for use and movement in the EU. NMA cannot anticipate circumstances in which ATEX acceptance may be required for electrical equipment or its accessories and components, but practices in the EU may necessitate ATEX acceptance, and U.S. manufacturers must be allowed to market products that are certified as safe for use in explosive gas or explosive dust environments if that is the requirement. Adding ATEX to the VCS bodies list ensures that if a member country of the EU requires ATEX acceptance, U.S. manufacturers will have equal opportunities with competitors.

Relatively recent analytical research describes differences between MSHA's standards and VCS developed by the International Electrotechnical Commission (IEC) as well as American National Standards (ANSI) and UL LLC. The independent studies concluded that allowing manufacturers of mining equipment and accessories to use VCS developed by IEC and ANSI will increase the speed of entry of new equipment and technologies into the mining industry.<sup>7</sup> In addition, a key advantage in adopting international standards is that the cost of certification and testing is only borne one time instead of being repeated in every country.<sup>8</sup>

In "Review of Worldwide Intrinsic Safety Rules and Regulations vs MSHA and WV State Rules" (the Review), the authors note the distinctions in requiring "1-fault" and "2-fault" intrinsic safety (IS) protection in various areas of an underground gassy mine. For example, the Review explains a significant difference between MSHA and the IEC and how the difference affects categorization for IS in various parts of an underground mine in the U.S. and countries where IEC VCS are used.<sup>9</sup> (Other countries include Australia, New Zealand, Canada and South Africa). Under MSHA, 2-fault IS must be maintained in all areas of the mine except in intake air regardless of whether the mine is

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(IEC) test protocol as well as the IEC's numerical designations in VCS for general and specific explosive gas and explosive dust atmospheres.

<sup>6</sup> UL LLC is a global safety certification company headquartered in [Northbrook, Illinois](#). It maintains offices in 46 countries. Established in 1894 as the Underwriters' Electrical Bureau (a bureau of the [National Board of Fire Underwriters](#)),<sup>[2]</sup> it was known throughout the 20th century as Underwriters Laboratories and participated in the safety analysis of many of that century's new technologies. UL is one of several companies approved to perform safety testing by the U.S. federal agency, the [Occupational Safety and Health Administration](#) (OSHA).<sup>[4]</sup> OSHA maintains a list of approved testing laboratories, which are known as [Nationally Recognized Testing Laboratories](#). See [https://en.wikipedia.org/wiki/UL\\_\(safety\\_organization\)](https://en.wikipedia.org/wiki/UL_(safety_organization))

<sup>7</sup> Nutter, Roy S. Jr., Kebede, Kenneth A., "Review of Worldwide Intrinsic Safety Rules and Regulations VS MSHA and WV State Rules, Lane Department of Computer Science and Electrical Engineering, West Virginia University, Morgantown, WV, December 31, 2012, p. 5

<sup>8</sup> Ibid., p. 5

<sup>9</sup> Ibid., p. 6

advancing (“driving”) or production is inactive or for some other reason in idled status. However, IEC distinguishes between driving and “non-driving” (inactive) status and requires 2-fault IS protection at the production face and in the return air course and requires 1-fault protection in all areas of a mine that are “non-driving.”<sup>10</sup> In the final recommendation, the authors state that the United States should move toward recognition of international standards for intrinsic safety, and doing so should raise the safety level of coal mines in the U.S. by requiring 2-fault international intrinsic safety in the critical areas of a mine and moving to 1-fault international intrinsic safety even in some underground mine areas.<sup>11</sup>

The purpose of “An Evaluation of the Relative Safety of U.S. Mining Explosion-Protected Equipment Approval Requirements versus Those of International Standards,”<sup>12</sup> (the Evaluation) was to provide an overall assessment of the ANSI/ISA 60079-11<sup>13</sup> standard on 2-fault intrinsic safety and the MSHA ACRI2001<sup>14</sup> acceptance criteria, and to determine if the ANSI document could be an alternative to ACRI2001 while maintaining an equivalent or better level of safety for miners. Noting the rigorous oversight that ANSI employs by bringing intrinsic safety experts from all interested countries together via the IEC, the Evaluation reached a conclusion that additional benefits [*from VCS, particularly ANSI/ISA 60079-11*] to be derived from Nationally Recognized Testing Laboratories (NRTL) quality control, as well as the potential for increasing the equipment available for use in the mines and reducing approval time, suggest that the overall level of protection afforded to the miner will not be reduced, and may be improved, by accepting ANSI/ISA 60079-11 standard for portable equipment, as an alternative to ACRI2001. This supervision also keeps the document current as well as maintains the integrity of an open process with requisite attributes that include openness, balance of interest, due process, an appeals process, and consensus.<sup>15</sup>

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<sup>10</sup> Ibid., p. 12

<sup>11</sup> Ibid., p. 13

<sup>12</sup> Calder, William, Snyder, David, Burr, John F., “An Evaluation of the Relative Safety of U.S., Mining Explosion-Protected Equipment Approval Requirements versus Those of International Standards, Calder Enterprises, NIOSH Mining,” [https://www.cdc.gov/niosh/mining/UserFiles/works/pdfs/Snyder-EvalRelativeSafety-SME\\_final\\_submit1-508.pdf](https://www.cdc.gov/niosh/mining/UserFiles/works/pdfs/Snyder-EvalRelativeSafety-SME_final_submit1-508.pdf)

<sup>13</sup> ISA Subcommittee 12.2, “Explosive Atmospheres – Part 25: Intrinsically safe electrical systems, Approved 2 December 2011, ISA, 27 Alexander Drive, Research Triangle Park, North Carolina, USA, See <https://docviewer.ansi.org/?5cdqaXSIQeAod38W4WnxjckX5aM1L8SII98TWkuaZ5wqrmkIL8DUcApe720dtPi2o|vlos8klkZXcmSkeCe2iUIW11xMIXS7NtXpGUCZDLda8ZULHZyeYGelFCUFHPrI85qHg|||w==&>

<sup>14</sup> U.S. Department of Labor, Mine Safety and Health Administration, Approval & Certification Center, Electrical Safety Division, “Criteria for the Evaluation and Test of Intrinsically Safe Apparatus and Associated Apparatus (ACRI2001), November 4, 2008, (Third Edition)

<sup>15</sup> Federal Register, Vol. 85, No. 224, “Testing, Evaluation, and Approval of Electric Motor-Driven Mine Equipment and Accessories,” Thursday, November 19, 2020, p. 73661

## Allowance for Approval Extensions and Accessories/Components with VCS Approvals<sup>16</sup>

For mining equipment and machinery that are relatively complex, such as roof bolters, high-voltage longwall mining systems,<sup>17</sup> high-voltage continuous mining systems,<sup>18</sup> and remote operator control stations, changes to be added as technology progresses, such as area lights that employ light-emitting diode (LED) devices, and which have an approval from a VCS body, promote better mining systems without compromising miner safety and health. Indeed, these types of technology changes promote safety and health protections for miners and the mining environment. Consequently, when an accessory, such as an LED light, has a VCS approval, MSHA has the ability to quickly approve and certify for use the component if the additional drawings, specifications and information required in proposed § 18.15 *Changes after approval or certification* are submitted. NMA recommends that the agency include a time element in § 18.15 (c), to read as follows: “. . . MSHA will issue a formal extension of approval or certification ‘*within 30 days from the date of receipt by MSHA of the extension request*’ to a completely assembled electrical machine or accessory, if each component of such electrical machine or accessory. . . .”

## Powered Air-Purifying Respirators

Powered air-purifying respirators (PAPR) are fully assembled machines that may be approved using only VCS requirements.<sup>19</sup> NMA appreciates that the agency will accept PAPR approved for use in other countries and supports MSHA in streamlining the process for certifying these life-saving protective devices as permissible for miners to wear in gassy mines. NMA is aware of three manufacturers of PAPR that have been approved through VCS; NMA is not endorsing any device. The list is not intended to be inclusive of all such devices manufactured and sold for use.

1. The 3M™ Versaflo™ Powered Air Purifying Respirator<sup>20</sup> TR-800 Motor/Blower, with the 3M™ Battery Pack TR-830 attached, has been tested and classified for intrinsic safety in Hazardous Locations (Exia) by Underwriters Laboratory (UL) for the following: Exia Division 1: Class I, II, III; Division 1(Includes Division 2), Groups C, D, E, F, G, T4 Ex ia I Ma Class I, Zone 0, AEx ia IIB, T4 Class I, Zone

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<sup>16</sup>A roof bolting machine may have the following explosion proof and intrinsically safe components and accessories. The list is not all inclusive: electric motors, electrical enclosure for the starter box, cable reel, trailing and machine cables, trailing cable strain clamps, reflectors, gland entrances, visible disconnect boxes, connection boxes, start/stop switches, junction boxes, headlight switches, headlights, area lights, solenoids, pressure transducers, spoolers and cable rollers, float switches, methane monitors, and radio remote controls.

<sup>17</sup> [30 C.F.R. § 18.53 High-voltage longwall mining systems](#)

<sup>18</sup> [30 C.F.R. § 18.54 High-voltage continuous mining machines](#)

<sup>19</sup> Federal Register, Vol. 85, No. 224, “Testing, Evaluation, and Approval of Electric Motor-Driven Mine Equipment and Accessories,” Thursday, November 19, 2020, p. 73661

<sup>20</sup> See [https://www.3m.com/3M/en\\_US/company-us/all-3m-products/~/All-3M-Products/Safety/Personal-Safety/Personal-Protective-Equipment/Powered-Supplied-Air-Respirators/Powered-Air-Systems/3M-Versaflo-TR-300-Series-Powered-Air-Purifying-Respirators/?N=5002385+8709322+8711017+8711405+8720539+8720547+8720780+8753949+3294857497&rt=r3](https://www.3m.com/3M/en_US/company-us/all-3m-products/~/All-3M-Products/Safety/Personal-Safety/Personal-Protective-Equipment/Powered-Supplied-Air-Respirators/Powered-Air-Systems/3M-Versaflo-TR-300-Series-Powered-Air-Purifying-Respirators/?N=5002385+8709322+8711017+8711405+8720539+8720547+8720780+8753949+3294857497&rt=r3)

0, Ex ia IIB, T4 Zone 20, AEx ia IIIC, T135°C Zone 20, Ex ia IIIC, T135°C -20°C ≤ Ta ≤ 55°C

2. The Gentex PureFlo<sup>21</sup> has these approvals: IP Rating/Class: IP54Cat2;IP44; ATEX Certificate: CML; 18ATEX2404X; IECEx Certificate: IECEx CML 18.0213X; ATEX Classification: II 3 GD; GasCode: Ex ic IIC T4 Gc; Dust Code: Ex ic IIIC T135° Dc; Ambient Temperature Range: -5°C ≤ Ta ≤ +40°C
3. CleanSpace<sup>22</sup> PAPR have these approvals: EN 12942:1998+A2:2008 TM3 (Europe); SANS 10338: 2009 (NRCS/8072/0090) (South Africa); AS/NZS1716:2012 PAPR-P2 (Australia/NZ); ISO 9001 (Quality Management System); IECEx: IEC 60079-0:2011 Ex ia I Ma; IECEx: IEC 60079-11:2011 Ex ib IIB T4 Gb; IIECEX Quality Assurance: IEC 80079-34:2011; ATEX/EN EX: ATEX/EN EX: EN 60079-11:2012  II 2 G Ex ib IIB T4 Gb EN60079-0:2012  I M1 Ex ia I Ma; ATEX Quality Assurance: Annex IV of Directive 94/9/EC (ATEX); EMC Standard: CISPR 11: 2010: Group 1 Class B

## Summary

Accepting VCS as a substitute, where appropriate, to MSHA's approval and certification process outlined in 30 CFR 18, Subpart B – E makes miners safer sooner and provides U. S. manufacturers with broader access to markets world-wide for mining equipment used in gassy mines. Australia, New Zealand, Canada and South Africa<sup>23</sup> have mines with electrical equipment that has been evaluated and approved using the IEC's VCS, and these countries allow miners and mine operators to use devices and equipment not currently approved in the U.S. but are evaluated as safe in underground gassy mines. The oversight provided by VCS bodies ensures an open process guided by experts who reach consensus, and as new technology is developed, VCS are revised accordingly. It is likely that devices manufactured to be intrinsically safe under both MSHA and VCS such as those approved by IEC would incur additional costs because the manufacturing process would have to accommodate both designs. These costs would be avoided if a common standard were used.<sup>24</sup> Finally, miners working at operations world-wide (except in the U.S.) are currently using PAPR evaluated under VCS from IEC, ANSI, UL LLC and ATEX, and MSHA should accept IEC VCS so that U.S. miners may use these life-saving devices as well.

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<sup>21</sup> See <https://www.gentexcorp.com/pureflo-country-selector/pureflo-us/>

<sup>22</sup> See <https://cleanspacetechnology.com/>

<sup>23</sup> Nutter, Roy S. Jr., Kebede, Kenneth A., "Review of Worldwide Intrinsic Safety Rules and Regulations vs MSHA and WV State Rules, Lane Department of Computer Science and Electrical Engineering, West Virginia University, Morgantown, WV, December 31, 2012, p. 7

<sup>24</sup> Calder, William, Snyder, David, Burr, John F., "An Evaluation of the Relative Safety of U.S., Mining Explosion-Protected Equipment Approval Requirements versus Those of International Standards, Calder Enterprises, NIOSH Mining," p. 10 See [https://www.cdc.gov/niosh/mining/UserFiles/works/pdfs/Snyder-EvalRelativeSafety-SME\\_final\\_submit1-508.pdf](https://www.cdc.gov/niosh/mining/UserFiles/works/pdfs/Snyder-EvalRelativeSafety-SME_final_submit1-508.pdf)

Please do not hesitate to contact me at [tharman@nma.org](mailto:tharman@nma.org) or call 202-463-2600 if you have questions.

Thank you,

A handwritten signature in black ink that reads "Thomas Harman". The signature is written in a cursive style with a horizontal line at the end.

Thomas Harman  
National Mining Association