



CATERPILLAR
2045 West Pike Street
Houston, Pennsylvania 15342, USA
Tel. (+1) 724.743.1200 · Fax (+1)
724.743.1201

2011 NOV 28 A 9:38

November 18, 2011

Ms. Roslyn B. Fontaine
Acting Director
Office of Standards, Regulations, and Variances
U. S. Mine Safety and Health Administration
1100 Wilson Blvd., Room 2350
Arlington, Virginia 22209-3939

Submitted electronically at <http://www.regulations.gov>

Subject: Proximity Detection Systems RIN 1219-AB65

Dear Ms. Fontaine,

Caterpillar Inc is writing in response to the recent Proposed Rule published by the Mine Safety and Health Administration (MSHA) which would require underground coal mine operators to equip continuous mining machines (except full-face continuous mining machines) with proximity detection systems.

Caterpillar supports the underlying goal of the Proposed Rule to strengthen the protection of miners by reducing the potential for pinning, crushing or striking accidents in underground coal mines. However, we believe that the timeline set out in the Proposed Rule is likely insufficient to allow for proper training, development and installation of proximity detection systems and formulation of solutions to potentially dangerous electronic interference issues. It is imperative that the hardware, the systems, the operators and MSHA are all capable of achieving the intended results before implementation of new regulations. Requiring proximity detection systems as set forth in the Proposed Rule prior to addressing these issues may result in the introduction of new, unintended hazards to the mine site environment.

I. Proper training is the key to avoiding mine site injuries. Implementation of proximity detection system requirements without sufficient time for proper training could result in additional hazards.

Regardless of whether proximity detection systems are utilized, proper training is the key to avoiding injuries. For many years, continuous mining machine operators and helpers have been trained to stay out of the "Red Zone." Proximity detection systems can be a very important tool by emphasizing the need for the equipment operators to comply with this directive, while also providing some degree of both passive and active protection. If properly installed and configured to provide visual warning prior to inhibiting any movement, proximity detection systems can also allow machine operators some flexibility to deal with special situations, without adversely effecting production. However, the first line of personal protection should be the operator themselves, and proximity detection systems should be considered a backup protective system and operator training tool.

AB65-2COMM-25

The rushed timeline set forth in the Proposed Rule is not sufficient for adequate operator training and education on use and maintenance of new proximity detection systems. In order to ensure safe use and proper maintenance of these systems, it is crucial that mine operators be afforded the time necessary to develop and implement adequate training, which should include a combination of classroom training and hands-on training once the system has been reliably installed on the mining equipment. Otherwise, continuous mining machine operators may be exposed to new hazards created by improper use of the systems (including a false sense of security, inadvertent exposure to dangerous top and coal haulage equipment, increased exposure to dust and noise), negating the increased safety which is the goal of the Proposed Rule.

II. The proposed compliance period timeline is not adequate to ensure safe and effective proximity detection systems.

a. An eighteen month phase-in is not adequate time for all retrofits.

It is unlikely that industry will have the capacity to retrofit the continuous miners currently in operation domestically in the allotted 18 month phase-in period. If we consider that more than 1,000 continuous miners will require retrofit, the Proposed Rule would require that more than 50 machines be retrofit per month. Since, as MSHA states in the Proposed Rule, "*proper functioning of the (system) is directly related to the quality of the installation*", it is strongly recommend the installation be done during rebuild. However, the proposed implementation timeframe for existing equipment would be extremely demanding on the rebuild side, and would have the effect of idling a significant amount of the domestic continuous miner production capacity for the 18 month phase-in period. The demand on the existing approved suppliers to provide aftermarket support (parts, service and training) for existing systems must also be considered.

b. Additional time is needed to adapt continuous mining machines for installation of proximity detection.

The Proposed Rule acknowledges that "*based on MSHA experience with testing of proximity detection systems, proper functioning of a proximity detection system is directly related to the quality of the installation and maintenance of the systems*". While the actual installation of the proximity system hardware can likely be done underground, the preparation of the machine frames to accept the hardware cannot. The very specific positioning of the proximity equipment requires significant modification to the machine frame structure, the hydraulic and electrical systems, and in some cases the face illumination systems.

In lower seam conditions, this becomes not only more difficult, but more critical; the lower the conditions, the more subject the proximity hardware is to damage if not properly recessed in the machine frames and adequately guarded. The design of this recessing is best done during new machine design, but must also be done for rebuilt equipment, and can consume hundreds of man-hours in trial and error fitting. As there are no specific guidelines for the physical characteristics of machine mounted proximity components, each approved system will require custom-fitting to every rebuilt machine to ensure that the proximity detection system will be reliable and endure underground conditions.

MSHA acknowledges in the Proposed Rule that it would take approximately eight months for the manufacturers of the three MSHA-approved proximity detection systems to provide a sufficient number of units to equip approximately 1,150 place-changing continuous mining machines with proximity detection systems. This timeframe does not include any allowance for the required equipment redesign, modification and installation of the proximity systems during the planned continuous miners' rebuild lifecycle. From a machine manufacturer's and re-manufacturer's

perspective, Caterpillar recommends that in order to maximize safety by allowing proper time for quality installation, the Proposed Rule should require that proximity systems be retrofitted as part of the planned rebuild life cycle for each machine, rather than mandating a compliance period for existing equipment which may result in hastily installed systems.

c. Three months is not a sufficient compliance period for new machines.

As mentioned above in the retrofit comments, a substantial amount of design work will be required in order to properly incorporate a proximity detection system into a new machine design. This work will require hundreds of design hours, not to mention the lead time for the hardware itself, and the time for installation, testing and modification prior to shipment. It is highly unlikely that a three month compliance time will be sufficient for this work, especially considering the uncertainties resulting from the yet unknown language that will be included in the Final Rule. Additionally, the original equipment manufacturers will be required to issue new operating programs for both new and rebuilt equipment. These programs do not currently exist, and will have to be written, tested and installed before the proximity systems can be made safe and operational. Until the final language of regulation is established, it would be very difficult to project a reasonable timeframe for new equipment compliance.

III. Additional time is needed to address electronic interference issues.

It is unlikely that the industry will be able to ensure that existing mine power systems, communications systems, and mine-wide tracking systems are compatible with the proposed proximity detection systems within the time allotted by the Proposed Rule. The Proposed Rule states that *"The mine operator would be required to evaluate the proximity detection system and other electrical systems in the mine and take adequate steps to prevent adverse interference. Steps could include design considerations such as the addition of filters or providing adequate separation between electrical systems"*. Some of these proposed "adequate steps" may not prove feasible in many mining operations, due to size and space constraints. Machine operators have already observed situations where the successful shop testing of a proximity detection equipped continuous miner changed dramatically when the machine was put into operation underground. It has not been determined whether this was due to the loaded operation of the VFD tram drive, the physical proximity of the mine ribs and roof, a combination of the two, or some other factor. This phenomenon will require further research. Requiring the use of proximity detection systems before these potential electronic interference issues are understood and addressed could result in new mine site hazards.

In addition, mine operators will now need to require that all personnel are wearing appropriate devices for both mine-wide tracking and proximity detection. In order to simplify this multiple tagging requirement, and to avoid personnel being lulled into a false sense of security, the industry needs a harmonized system of personnel-worn tags. Currently, there is no required coordination of this effort, except on a voluntary basis by some equipment suppliers. Leadership by MSHA for a "universal tagging device" which is capable of working with various tracking and proximity systems would be a step in this direction. In order to ensure safety, development of a universal tagging device should occur prior to implementation of the proposed proximity detection requirements. The assistance of NIOSH Mining in this effort could be helpful to the entire industry.

IV. MSHA approval and certification may not be realistic within the proposed timeframe.

Given the amount of existing and on-going approval work required of MSHA, it is questionable whether MSHA's Approval and Certification Center is resourced to handle the potential influx of new system, PDA acceptance number and RAMP applications that will result from the Proposed Rule.

We understand that only Approval and Certification can accurately address this concern, but all machine retrofits will require a RAMP, and even if approved machines with the same 2G numbers are lumped together, this will probably result in hundreds of submittals. And while there are currently three approved systems, MSHA should fully expect a flood of system applications by new proximity system suppliers when this regulation is enacted, as was the case with tracking system submittals.

V. Comments regarding specific requirements for proximity detection systems

Caterpillar agrees that the Final Rule should require that proximity detection systems provide an audible or visual warning signal prior to causing a machine to stop movement. As stated in the Proposed Rule, this requirement will help reduce the frequency of machine stops. In addition, such warnings will act as a training aid to improve the machine operator's awareness of their proximity to moving equipment.

It is our belief that machines with inoperative proximity detection systems should be allowed to continue operating so that all or part of the machine is not stranded under unsupported or unstable roof, which might expose maintenance personnel to unnecessary hazards. In the event that a proximity detection system becomes inoperable, the Proposed Rule should allow the machine to continue moving with an audible or visual warning signal only for the time necessary to move the machine to a safe location, and that the inoperative proximity detection system be repaired as soon as practical, but no later than the end of the current production shift.

Finally, the Proposed Rule states that MSHA offers an optional Proximity Detection Acceptance (PDA) program that allows a proximity detection system manufacturer to obtain an MSHA acceptance stating that the system has been evaluated and is suitable for incorporation onto an MSHA-approved machine. However, the Proposed Rule does not require a proximity detection system manufacturer, a machine manufacturer, or a mine operator to obtain a PDA. Instead, the Proposed Rule allows for MSHA to approve a modified machine that includes a complete evaluation of the newly installed proximity detection system (a system that has not already obtained a PDA). In order to avoid confusion and potentially inconsistent application of approval criteria, Caterpillar supports and encourages the use of the PDA program.

In conclusion, Caterpillar supports MSHA's goal of increased safety for underground miners. However, we believe that in order to reduce the risk of introducing increased hazards to the underground environment, the Proposed Rule should be revised to allow more time for proper training, development and installation of proximity detection systems and formulation of solutions to potentially dangerous electronic interference issues.

Thank you for the opportunity to provide these comments.

Sincerely,

Jim Bell
Product Compliance
Caterpillar Global Mining
Tel.: +1 (724) 743-1656
Fax: +1 (724) 743-1201
Mobile: +1 (724) 554-4547
e-mail: jim.bell@cat.com