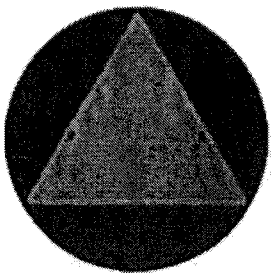
From: Hales, David <dhales@westmoreland.com>
Sent: Thursday, February 16, 2017 5:12 PM
To: zzMSHA-Standards - Comments to Fed Reg Group
Subject: Docket No. MSHA-2014-0019
Attachments: Procimity Detection Comments.pdf; 2017-02388.pdf

Re: RIN 1219-AB78 Proximity Detection Systems for Mobile Machines Underground (Docket No. MSHA-2014-0019
Comments from San Juan Mine 1 - I. D. No. 29-02170



Westmoreland
Coal Company
San Juan Mine 1
P.O. Box 561
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February 13, 2017

Ms. Sheila McConnell
Director, Office of Standards,
Regulations and Variances
Mine Safety & Health Administration
201 12th Street South, Suite 401
Arlington, VA 22202-5450

Re: RIN 1219-AB78 Proximity Detection Systems for Mobile Machines Underground (Docket No. MSHA-2014-0019

Comments from San Juan Mine 1 - I. D. No. 29-02170

Dear Ms. McConnell:

San Juan Mine 1 is pleased to have the opportunity to provide our comments concerning the referenced Proposed Rule for Proximity Detection Systems for Mobile Machines in Underground Mines. San Juan Mine has experience with proximity detection equipment installed on continuous mining machines and also nearly a year of experience with proximity detection systems installed on our fleet of battery-powered coal haulers. The experience with using the equipment on articulated, mobile equipment, in the conditions that exist in our mine has been fraught with challenges and hurdles to overcome. Our experiences, comments and concerns are shared herein.

If you there are comments, questions or a need for additional information, please feel free to contact me at (505) 598- 2153, or Adam Zamora at (505) 598-2131.

Sincerely,

David Hales
Safety Manager
San Juan Coal Company

cc: Chris Roop - Miner's Representative

RIN 1219-AB78 Proximity Detection Systems for Mobile Machines Underground (Docket No. MSHA-2014-0019

Comments from San Juan Mine 1 - I. D. No. 29-02170

After working in partnership with Joy Global and Matrix Design Group, and also with NIOSH on testing and evaluating the equipment in service here at San Juan Mine, we have concluded that it is vital that MSHA spend additional time at mines actually using mobile haulage equipped with proximity detection in real life, day to day conditions.

The reason for this conclusion is that in reality the current systems suffer from regular and ongoing nuisance trips and the technology in the system fails safe more than anticipated. One must understand that such nuisance trips can occur with the wearer of the locator being up to 150 feet away from the haulage equipment. A location that puts that person completely out of danger from the equipment, yet the system is still impacting the mobile equipment performance by either slowing it down or stopping it all together. This test data has been repeated and confirmed by NIOSH testing here at San Juan Mine during the past year.

It is our concern that such nuisance trips will drive the wrong behavior among miners and that their response will be to ignore the system to the extent that they take off, or turn off their locators to eliminate the shutdowns. Those types of behaviors have already been seen in some locations with the proximity detection systems installed on continuous miners.

We have also addressed comments to the specific areas identified by MSHA in the following pages. The MSHA requests are in Bold followed by the San Juan Mine 1 Responses.

MSHA solicits comments on the types of machine movement a proximity detection system should allow for miners to perform necessary maintenance without exposing them to pinning, crushing, or striking hazards. MSHA also solicits comments on miners' and mine operators' experiences with proximity detection systems that allow a miner to conduct maintenance on a machine without activating the stop movement function. MSHA is considering a revision to proposed § 75.1733(b)(1) that would require a proximity detection system to stop a machine from tramming or articulating before contacting a miner except for a miner who (i) is in the on-board operator's compartment, or (ii) performing maintenance with the proximity detection system in maintenance mode.

San Juan Response: San Juan personnel can envision such a maintenance mode being abused for place changing and other mining activities, especially if the issues around nuisance trips remain as they are today. If a machine is down for maintenance, the system is currently installed with a proximity bypass which could be used for this maintenance mode, if such occasion arises. This bypass mode has certain safeties built in such as having a timer for how long it can be by-passed. Care should be taken to ensure that any additional requirements for such features do not result in over-complicating the system or increasing the nuisance trip problems and delivering the unintended consequence of influencing miners to defeat the systems.

MSHA observed continuous mining machines and mobile machines equipped with proximity detection systems 14 successfully interact during production on working sections where all of the miners had miner-wearable components. MSHA solicits additional information regarding how coal hauling machines using proximity detection systems work with continuous mining machines equipped with proximity detection systems while allowing continuous mining machine operators to remain in a safe location. MSHA is interested in additional information describing the installation and programming of proximity detection systems and examples of related work practices established to assure that the continuous mining machine operator remains outside of the coal hauling machine warning and shutdown zones.

San Juan Response: In order to comply with the current proposed rule, which states that the mobile equipment cannot contact a miner, the battery-powered coal hauler zones have to be configured with its own continuous miner (CM) operator zones, separate from everyone else. The shutdown zone must be smaller to allow the coal hauler to pull alongside of the CM operator for loading. The warning zone has to be active all the time for the CM operator to ensure slow speed so the hauler cannot contact the miner operator. The zones have to be configured this way due to space constraints. In our mine the entry is 18 feet wide, the coal hauler is 12 feet wide, and the average person is 1-2 feet wide. Leaving you only 3-4 feet of room to work with. An additional problem with these zones is that they are accurate in ranges of multiple inches not down to the inch. This leaves little to no room for error or account to other conditions such as slick roads. As a result, there is no way to ensure that you can keep the CM operator out of the no-go zones and meet the content of the proposed rule, which states that the mobile equipment cannot contact the CM operator. An additional challenge is that other components, such as the section power center, power cables, roof and rib mesh installed in the mine have a detrimental effect on the system accuracy, especially within this 3-4 ft. remaining area where the CM Operator must be located. This results in the CM operator needing to move around to find the 'sweet spot' where the system will allow the coal hauler to back in, increasing his chance of slip trips and falls. Another factor that our testing has shown is that this 'sweet spot' is not consistent from one hauler to another nor one entry to another. This has resulted in our seeing multiple nuisance trips for this. Such nuisance trips could drive the wrong behavior among some miners as previously explained.

MSHA may consider such a feature and seeks comment on the availability, use, and appropriateness of a temporary bypass feature. MSHA solicits information regarding how this feature could work with existing proximity detection systems and specific benefits or hazards that could result.

San Juan Response: A temporary bypass could improve the system, also improve users moral with the system, provided it does not become the normal mode of operation, thereby disabling the system and offering no protection. Perhaps it could work off the CM remote, similar to the current bypass feature, utilizing a timer and disabling the shutdown zones on the coal hauler, just for the CM operator. This feature could allow the hauler to back up to the continuous mining machine without the nuisance trips. It would need to be programmed so the hauler stays in the warning zone during this time to slow down the haulers speeds. For example, sometimes the CM operator has to move to the outby side of the hauler, or walk in with the hauler, to allow the hauler to back all the way up to the continuous miner, increasing risks to the miner operator.

A potential method to manage this problem could be to link the mobile equipment proximity systems with the remote controls for the CM. If the CM operator had to initiate the bypass mode by pressing and holding a dead-man switch, only the CM operator could initiate this bypass, reducing the risk of him not being ready or the hauler operator not making visual contact before backing in to the CM.

The downside to this feature would be that a CM operator who had their back turned to a coal hauler, might be crushed between the coal hauler and the CM, even at this slow speed. In studies, behavioral psychologists have seen humans who have been provided with safety equipment or safety features, being more willing to take risks. My concern is that miners would trust that the system would protect them, meaning they no longer need to watch it as carefully, resulting in the unintended consequence of decreasing overall safety.

Another challenge that we have faced with proximity detection installed on such mobile equipment is that each there is no standard system performance for all the coal haulers. We have seen it respond differently from one machine to another and from one entry to another. In other words, the same spot doesn't work for all the haulers and each can perform differently in one entry vs another or one section of the mine vs another.

MSHA solicits additional comments on appropriate warning and stopping zones for each type of machine movement and various mining conditions including any differences in cost for differing conditions or machines.

San Juan Response: The variability in cost for different machines is driven by the variability in mining conditions and the infrastructure that must be installed. For example, if you go from single layer of rib mesh, hanging from the roof to half way down the rib vs needing to use full roof to floor rib mesh. The extra amount of metal installed on the ribs affects the proximity system accuracy and performance, making the system more sensitive. In most cases the System thinks you are closer than you actually are, resulting in nuisance trips or impacts on the system performance. When the machines go from a form an area of single rib mesh into an area utilizing full roof to floor rib mesh, the zones for that machine need to be reconfigured. In our mine you can see both of these support system types, on the same section. The system utilizes a MML (machine mounted locator) that is supposed to automatically adjust for such conditions. At this time the MML can't detect the increases in the amount of surrounding metal. It functions only good enough to detect a no metal environment going into a metal environment. This results in an added operating cost due to having to shut down the section and reconfigure all the machines zones. Once adjusted they must be tested, statically and dynamically, to verify stopping distances. Each haulage machine takes 2 people about 5 hours per machine to adjust all the zones. Continuous miners take about 1-2 hours to adjust zones. This is even after a section has been set up and ready for testing, all cables removed, floor conditions are smooth for peak speeds, and extra people have been removed to eliminate nuisance trips. The systems will require dedicated technicians in order to maintain them in a functional and operational status.

MSHA solicits definitive data, including cost and time estimates, on delays in production caused by proximity detection system alarms due to cross zone interference and nuisance tripping as well as data on the length of time to return to pre-installation production levels. MSHA also seeks information on how to reduce or eliminate production delays when working with mobile machines equipped with proximity detection systems.

San Juan Response: We have been operating our battery-powered, mobile haulage equipment, equipped with proximity detection, full time for nearly 1 year now. Since day one of commissioning the system on this mobile haulage we have never been able to return to pre-installation productivity levels. During development of Gateroad-402 panel, the crews averaged 190.23 feet per day over the whole panel. This was without proximity detection installed. We installed the proximity detection as we neared the end of development for the Gate road 403 panel. Following the installation of the proximity detection systems, our daily averages dropped to 178.05 feet per day. Gate road 404, with proximity detection installed, is currently averaging, 174.55 feet per day.

We have not been able to return to pre-proximity detection productivity levels. This reduction in productivity is due to the trips and stops from the proximity detection system and has reduced our productivity levels by approximately 10 percent per day. We have not been successful in finding the way to reduce or eliminate these production delays with the current technology.

60-70% of our trips occur at the CM operator to hauler interaction location during loading coal. A solution in this area would significantly reduce these delays. What you don't see in these numbers is the increased down time and increased use of spare equipment. The impacts would be greater if such spare equipment was not available. For example, we have only incurred 12 hours of lost production, on 256 production days, due to proximity detection being installed on the continuous miners and the machine could not operate until the proximity detection system was repaired. This would indicate that the proximity detection system on the continuous miner is a robust and reliable system.

That same system, installed on our JOY BH-20 battery coal haulers, has not been as reliable or robust. Prior to installing the proximity detection on this equipment we only used 4 JOY BH-20 battery haulers to produce coal. Since the inception of mobile proximity we have had to increase the numbers of battery coal haulers from 4 to 6 machines in order to attain 92% of our previous

productivity rates. The required increase in machine numbers is necessary due to the failure rate of proximity components and nuisance trips that result in stopping or slowing the coal hauler. This results in the added cost of maintaining this equipment and added manpower requirements for technicians to carry out this maintenance. If this equipment was not available, the impacts on productivity would be even greater, adding additional cost of development.

Proximity Detection System installation has resulted in us assigning one full time person to maintain proximity systems on just one working section. Mobile haulage proximity system failures have been and continue to be an issue. Since inception of the proximity detection systems on this mobile equipment, we find that we average having 1 of our 6 coal haulers is broken down all the time due to proximity detection equipment failures. Because we had spare equipment available, the full effects of this lack of reliability is masked. A mine without that spare equipment, would see even greater impacts on the cost of developing a CM section.

A minimum of 1 Technician per mining unit can be expected and with larger numbers of machines, working round the clock, 5-7 days per week, it could be anticipated that round-the clock coverage would be required to keep the systems functioning. San Juan Mine has a technician who is working on one of these systems every mining day and that is with some spare coal haulers available. Without the spares, it would require another technician to cover back shifts. This would result in additional cost that has not been considered in the proposed rule. Ongoing labor costs per mine that could exceed $250,000 or more per year depending on the number of machines involved.

We continue to work with equipment manufacturers in trying to figure out why the reliability of the system has been so different compared to its performance on the CM. Some of the possibilities for this could be due to increased speeds of mobile haulage, not having a trailing cable to ground the machine somewhere, and battery voltages changing as the battery discharges during operation. This problem would be even greater on a diesel powered machine where voltage drops would occur as engine rpm changes. At present we have not been able to accurately narrow down the reason for the differences in reliability between continuous mining machines and mobile haulage, another reason to proceed with a measured, cautious implementation on a smaller scale per mine which would allow for further study and technological improvement.

MSHA solicits comments on how miners can place themselves in a safe work position to avoid causing nuisance alarms when one or more machines with proximity detection systems are on the working section. MSHA also solicits comments on miners' and mine operators' 18 experiences when more than one miner may be in close proximity to one or more machines with proximity detection systems.

San Juan Response: Based on our experience in our mine, with our conditions and infrastructure, we have not found this safe place in the section to position yourself in an active mining section, other than being associated to a piece of equipment with proximity installed on it, to avoid trips. We have experienced nuisance trips from locators over 150 feet away from the impacted machine. We have seen trips of haulage equipment dumping at the feeder from locators that were in the face area. All of this affected by the presence of roof and rib mesh, installation of electrical cables and even affected by how the electrical cable is deployed, looped or coiled or stretched out straight as well as affects from other equipment that miners use for communication, health monitoring or analysis.

The current cost to fully install proximity on all mobile equipment used in an active section will reach as high as $85000- $100000 per machine. MSHA is interested in receiving additional information on miners' and mine operators' experiences with the effect that proximity detection systems have on miners' and machine operators' situational awareness and any examples where reliance on proximity detection technology may cause the miner to develop work practices that introduce additional hazards.

We have touched on this subject earlier in our comments regarding how miners will respond to

nuisance trips, nuisance slow-downs and their overall acceptance of this equipment. This impact on human behavior has already been seen within the industry.

An unintended consequence of proximity detection being installed on continuous mining machine is that it has increased some risks by making operators stand excessively far away while tramming out of a cut from one entry to another. When a mining machine is being trammed out of a cut to the next entry and you are dragging loops of cable off the head of the miner. Miner operator has to stand in a location beyond these loops of cable, resulting in them being over 80 feet from the machine, to avoid tripping out the machine. This places the operator excessively far away from the tail of the machine when turning a blind corner and the operator can no longer see around that turn, causing increased risk to people and equipment.

The installation of proximity detection can also influence a CM operator who is cutting a turn step closer to the continuous miner, thereby introducing higher risk due to being closer to the unsupported roof.

We have seen equipment operators demonstrate the assumption because the equipment has proximity detection, it means they don't need to check behind a ventilation curtain prior to driving through it, falsely believing that if something were there their machine would stop. We have experienced machine collisions due to that behavior. We have also seen occasions when equipment that is normally operated outby and is not equipped with proximity detection, enters the working section as part of the normal duty cycle, this has presented additional interaction issues. Everything from certain machines generating nuisance trips to collisions and near miss events between pieces of mobile equipment such as road graders and supply tractors and coal haulers.

MSHA is also interested in miners', mine operators' and proximity detection system manufacturers' experiences with training that could be done to increase miners' and machine operators' situational awareness around machines with proximity detection systems.

San Juan Response: As discussed previously, from a human psychology perspective, the installation of proximity detection is likely to drive very unsafe behaviors as miners lose their respect for this equipment, being willing to rely on the machine to protect them vs making safe choices to protect themselves. In that regard, installation of proximity detection could be viewed as a tremendous step backwards, because of the unsafe choices that miners make. In my experience I observed miners who, rather than shut the machine down before approaching it, would deliberately walk into the no go zones around a CM and "make the machine shut down". This was very disturbing to me after spending much of the last 42 years teaching miners to avoid entering those no go zones because of the possibility of an equipment failure or operator error, resulting in loss of control on the machine, potentially placing someone in danger. One could also describe this behavior as familiarity breeding contempt or lack of respect. The other behavioral aspect that these systems have impacted here at San Juan Mine is the frustration for miners. Because of the false/nuisance alarms the frustration level is very high. We know that frustration distracts miners and can contribute to injuries occurring because frustration has distracted them. Miners must be able to maintain their continual situational assessment capacity and frustration can rob them of that ability. Miners functioning in a state of 'road rage' because of these nuisance trips is very detrimental to miner safety.

Proposed § 75.1733(b)(5) would require a mine operator to install a proximity detection system to prevent interference that adversely affects performance of any electrical system. MSHA clarifies that proposed § 75.1733(b)(5) would require mine operators to prevent electromagnetic interference from affecting the operation of the proximity detection system or any other electrical system. MSHA intends that the system would be installed, maintained and operated in such a way that no electrical systems would be adversely affected due to interference. This would require periodic post-installation evaluation of all new potential

sources of electromagnetic interference. To clarify this intent, MSHA is considering a revision to proposed § 75.1733(b)(5) that would require proximity detection systems to be both installed and operated in a manner that prevents interferences that adversely affect the performance of any electrical system, including the proximity detection system. The operation of other electrical systems and equipment must not interfere with the performance of the proximity detection system, and the proximity detection system must not interfere with the performance of other electrical systems.

MSHA has found that one type of common interference can be identified when electrical devices are placed within several inches of the miner-wearable component of the proximity detection system. Electromagnetic interference between these two systems can be mitigated by maintaining a minimum distance between a miner-wearable component and electrical devices. MSHA's technical staff estimated that each mine would require an average of 20 hours for a mining engineer to identify sources of electromagnetic interference and the minimum distance needed to mitigate the interference. Mining engineers will test the compatibility between electrical devices and proximity detection system components. Tests will be based on equipment use and mining conditions. MSHA anticipates that mining engineers will conduct physical tests for compatibility, review equipment user manuals, and consult with the original equipment manufacturers and the proximity detection system manufacturer. Based on MSHA's mine visits, the Agency estimated that mine operators are likely, on average, to introduce new electrical equipment twice per year. This would require a mining engineer two hours to identify and mitigate adverse interference from the new electrical equipment. Holding all other variables of the preliminary regulatory economic analysis constant, MSHA estimated that, on average, it would cost each mine operator $3,500 over ten years to comply with proposed §75.1733(b)(5). MSHA seeks comments on the cost drivers for compatibility testing and the Agency's cost estimate for proposed §75.1733(b)(5).

MSHA solicits comments on the methods and practices mine operators have used or could use to identify sources of electromagnetic interference. MSHA is also interested in receiving information on the actions an operator has taken or could take to prevent such interference and how electromagnetic interference can be mitigated in instances where a miner needs to wear multiple miner-wearable components because different proximity detection system models are operating on a working section. Please also describe procedures that were successful and those that were not successful in identifying interferences, as well as solutions to prevent adverse interference

San Juan Mine Response: The cost to test for interference with the system would be considerably greater than $3,500 over ten years. To properly test for interference, you would need to remove all power from the area you wish to test, meaning all energy sources would need to be de-energized, except for the machine you are testing, to ensure you don't pick up electrical interference from anything else. You would also need to test both the mobile haulage and continuous mining machines, because in our experience, we have seen different amounts of interference between the 2 systems. This testing would require that you stop production or even support work on a down shift or maintenance work in the area in order to complete these tests, resulting in the loss of those productive employee hours and the increased cost this would create.

The estimated cost MSHA has published seems to be making the assumption that this survey and testing would be a one-time occurrence and that is completely false. This type of testing and confirmation would be necessary on an ongoing basis, driven in part by the potential introduction of new equipment, new system components, etc. We have already seen this happen with the fast-track approval of the current versions of the CPDM. The first versions of this CPDM equipment had been

tested and confirmed to not be a significant source of interference for the PD systems. Because of the fast-track approval, we've been told this new version did not receive this same scrutiny. The end result being the production and introduction of an electromagnetic interference problem for proximity detection systems that has not been fully resolved to date.

Additionally, the testing and confirmation process is not something that could be carried out by an operator as part of a pre-operational check because it requires special equipment and access to the manufacturer's software or network in order to carry it out. All of that will contribute to an ongoing elevation in cost.

Based on our experience and considerable testing done here at San Juan Mine, in conjunction with the equipment manufacturers and NIOSH, the bigger concern around electromagnetic interference testing is the fact that with current technology, existing sources of this interference distorts the data being received by the components onboard the mobile equipment, to the point that our testing showed that you could actually run over a locator. This problem is much greater on mobile equipment as compared to the continuous miner. It appears the differences are driven by the much greater speeds that the mobile equipment is capable of, the greater range of motion and the range of zone configurations that are required for the mobile equipment.

This interference sources have been identified and quantified. The sources are equipment that miners must wear. The only solution we have found thus far is to manage the distance from the device to the proximity locator as best we can. We conducted extensive testing of various electronic devices and have shared the results of our testing with MSHA, District 9. CDPM dust pumps and computers are the worst offenders we have found so far, requiring a separation distance of at least 12 inches.

MSHA has observed that wire mesh and metallic equipment can affect the proximity detection systems' warning and stopping zones. MSHA has also received reports of some pyrite deposits within coal seams affecting the use of the proximity detection system, but has not observed this effect first-hand. MSHA solicits information and data from mine operators and proximity detection system 26 manufacturers on best practices to minimize the effects of these non-electrical interferences.

San Juan Mine Response: In our experience the presence of metal does indeed have a significant effect on proximity systems. The system can be calibrated to perform with a constant surrounding of wire mesh. Where it becomes a big problem is if the quantities of wire mesh in the surroundings changes. If more mesh becomes present, the system becomes more sensitive. If less wire mesh is present, it becomes less sensitive. In this mine we have two different areas of the mine with different amounts of wire mesh installed for rib control. The mine utilizes roof mesh in all areas. If you move the mining equipment from one section to the other for mining, the system nuisance trips increase by 33% to as much as double the nuisance trips experienced in an area with less wire mesh. The only solution to these trips that we have identified is to not install the mesh. That is obviously not a viable option since the mesh is necessary for roof and rib control We have not yet come up with another solution to reduce these nuisance trips in either area. Another reason for a measured and cautious approach on expanding the use of these systems.

Since the record closed, MSHA became aware of a proximity detection system design feature on a miner wearable component that determines if the magnetic field sensing coils have been affected by electromagnetic interference and can no longer detect the magnetic field generated by the machine-mounted components. This feature provides a distinct audible and visible alarm on the miner wearable component to alert miners when it is not functioning properly due to electromagnetic interference. MSHA is considering requiring this design feature for all miner-wearable components. MSHA solicits comments on the cost and

availability of, and experience with, any proximity detection system feature or other technology that automatically alerts the miner or machine operator when the miner-wearable component or proximity detection system is not functioning properly due to electromagnetic interference.

San Juan Mine Response: In our experience with the Matrix/Joy system being used here, we have not seen or heard of such system components having the described capability nor any information about the associated cost.

Proximity Detection System Checks. Proposed § 75.1733(c)(1) would require that a mine operator designate a person to perform a check of machine-mounted components of the proximity detection system to verify that components are intact and the system is functioning 27 properly, and to take action to correct defects. MSHA clarifies that under proposed paragraph (c)(1), the check would include verification that the warning and shutdown zones are set for the established proximity detection field distances and to meet the performance requirements under proposed § 75.1733(b)(1) and (b)(2). Under proposed § 75.1733(c)(1), the person designated to perform the check would verify that the machine-mounted components are intact and correctly mounted and the system is operating properly to identify a miner-wearable component and stop the machine. The check assures that the warning and shutdown zones around the perimeter of the machine are set according to a mine operator's specifications. In MSHA's experience, proximity detection system manufacturers have determined the type of checks that should be conducted to assure that their system is functioning properly. Mine operators are expected to follow the check procedures suggested by the manufacturers. MSHA has observed that a check of the warning and shutdown zones can be made by a miner walking around the machine with a miner-wearable component to confirm proper zone range. MSHA has also observed checking the machine shutdown function of the proximity detection system. This check involves placing a miner wearable component inside the shutdown zone and then attempting to 28 initiate machine movements such as tramming. If the proximity detection system prevents machine movement, the system is functioning properly. The check would also include an examination of the machine-mounted components to assure that the field generators, antennas, cabling, and other components are undamaged and correctly mounted. The check would also assure that appropriate audible and visual warning signals are working as required. MSHA solicits comments on how the warning and shutdown zones can be checked, or tested, without putting machine operators at risk. With the clarification in this notice, MSHA estimates that the average time required for a check, which includes a verification that the warning and shutdown zones are set to meet the performance requirements under proposed § 75.1733(b)(1) and (b)(2), would increase from 20 seconds to 6 minutes. MSHA's revised estimate of 6 minutes reflects the time needed to: (1) verify that the machine mounted components are intact and correctly mounted and the system is operating properly to identify a miner-wearable component and stop the machine, and (2) test and validate that the warning and stopping zones meet performance requirements. MSHA substituted the 6 minutes into the calculations of the proposed rule, held all other variables constant, and calculated that the average 10-year cost per mine increase would be $182,000. Many other assumptions and data values will be updated in a final regulatory analysis. MSHA seeks comments on the Agency's revisions to its proposed time estimate to comply with § 75.1733(c)(1).

San Juan Mine Response: In our experience we have found that additional tests are needed in order to test these operating zones dynamically as well. We have experience with an instance where 1 of our mobile haulage machines would initially pass the test described above. Later we found that as the brakes were used, resulting in wear, it resulted in causing the stopping distances to increase by 3-4 feet on every zone. After replacing the brakes, the stopping distances returned back

to normal. If this proposal continues into the final rule phase, the operating parameters around machine braking performance will need to be adjusted accordingly to maintain compliance with what has been proposed. In light of the fact that consistent stopping distance is a proposed requirement of the standard, in order to prevent contacting a miner wearable device, equipment brakes will have to be held to a higher performance and testing standard than they are currently delivering, resulting in another cost that at this point, has not been considered by the Agency.

Anticipated cost will be also higher than the estimated $182,000 because it will require a spare locator to be hung in the entry to perform this dynamic testing and will increase preoperational check time required, another cost not considered by the Agency.

MSHA initially estimated that the proposed rule would cost mine operators, over ten years, approximately $536,000 per mine. MSHA has revised estimates for two provisions to reflect the Agency's clarification on the proposed requirements. These cost estimates are considerably lower than actuals seen by those mines that have attempted to implement this technology in advance of the rule.

San Juan Mine urges the Mine Safety and Health Administration to closely evaluate the information that has been compiled by Tech Support, NIOSH, equipment manufacturers and mine operators with regard to the performance of currently installed proximity detection equipment on mobile equipment. That data clearly shows that the current technology is not a one-size fixes all system.

It has performed well in certain applications and some mines. It has not performed well in others. In some examples, as we have seen in our testing here at San Juan Mine, a battery-powered coal hauler was capable of running over a functioning locator, due to electromagnetic interference defeating the system. Mass expansion of that risk would not be an advisable step.

We firmly believe that requiring such a massive expansion of the use for this equipment, at this time, is premature and will not be effective in improving safety for miners. We urge MSHA to take a very measured, cautious approach to this subject and work more to encourage further in-mine testing which can assist manufacturers with development of systems that are capable of dealing with the presence of power cables, power centers, roof and rib mesh and is not affected by other devices that miners are currently required to wear.

San Juan Mine appreciates the opportunity to provide these comments and look forward to having this information entered into the rulemaking record.