

FEDERAL MINE SAFETY AND HEALTH REVIEW COMMISSION

OFFICE OF ADMINISTRATIVE LAW JUDGES
601 New Jersey Avenue, N.W., Suite 9500
Washington, D.C. 20001

December 9, 2009

SECRETARY OF LABOR,	:	EMERGENCY RESPONSE PLAN
MINE SAFETY AND HEALTH	:	DISPUTE PROCEEDING
ADMINISTRATION (MSHA),	:	
Petitioner	:	Docket No. PENN-2010-103-E
	:	Citation No. 7000435; 10/06/2009
v.	:	
	:	
RS&W COAL COMPANY, INC.,	:	Mine ID 36-01818
Respondent	:	RS&W Drift Mine

DECISION

Appearances: Stephen Turow, Esq., Lynne Bowman Dunbar, Esq., U.S. Department of Labor, Office of the Solicitor, Arlington, Virginia, on behalf of Petitioner; Cindy Rothermel, Randy Rothermel, R S & W Coal Company, Inc., Klingerstown, Pennsylvania, for Respondent.

Before: Judge Zielinski

This case is before me on a Referral of an Emergency Response Plan Dispute by the Secretary of Labor pursuant to section 316(b)(2)(G) of the Federal Mine Safety and Health Act of 1977, 30 U.S.C. § 876(b)(2)(G).¹ At issue is a citation issued on November 6, 2009, charging

¹ Section 316(b)(2)(G) of the Act provides a mechanism for expeditiously resolving disputes between operators and the Secretary over the content of Emergency Response Plans.

Plan dispute resolution

(I) In general

Any dispute between the Secretary and an operator with respect to the content of the operator’s plan or any refusal by the Secretary to approve such a plan shall be resolved on an expedited basis.

(ii) Disputes.

In the event of a dispute or a refusal [by the Secretary to approve a provision of an ERP,] the Secretary shall issue a citation which shall be immediately referred to a Commission Administrative Law Judge. The Secretary and the operator shall submit all relevant material regarding the dispute to the Administrative Law Judge within 15 days of the date of the referral. The Administrative Law Judge shall render his or her decision with respect to the plan

the Respondent, RS&W Coal Company, Inc., with a violation of the Act for failing to update its Emergency Response Plan (ERP) to provide for the installation of wireless communications and electronic tracking (C&T) systems at its mine, and failing to state sufficient reasons for not adopting such systems. A hearing was held in Pottsville, Pennsylvania on November 24, 2009, wherein the parties submitted all relevant material regarding the dispute.² For the reasons set forth below, the citation is affirmed.

Findings of Fact – Conclusions of Law

The Statutory and Regulatory Backdrop

In response to a series of tragic accidents in which underground coal miners lost their lives, Congress enacted the Mine Improvement and New Emergency Response Act of 2006 (MINER Act).³ The MINER Act amended section 316 of the Mine Safety and Health Act of 1977, to require, *inter alia*, that each underground coal mine operator develop and adopt a response and preparedness plan, or ERP, and submit it to the Secretary for approval and periodic review. The MINER Act became effective on June 15, 2006, and the initial ERPs were to be adopted and submitted by August 14, 2006. The Act requires that ERPs include several provisions intended to enhance the ability of trapped miners to survive an accident.

The requirements for the installation of post-accident wireless communications and electronic tracking systems are stated in section 316(b)(2)(F)(ii) of the Act:

Post Accident Communications.—

Not later than 3 years after the date of enactment of the Mine Improvement and New Emergency Response Act of 2006, a plan shall, to be approved, provide for post accident communication between underground and surface personnel via a wireless two-way medium, and provide for an electronic tracking system permitting surface personnel to determine the location of any persons trapped underground or set forth within the plan the reasons such

content dispute within 15 days of the receipt of the submission.

30 U.S.C. §876(b)(2)(G).

² Commission Procedural Rule 24 specifies that, “The scope of [a hearing on an ERP dispute] is limited to the disputed plan provision or provisions.” 29 CFR § 2700.24. Respondent has filed a Notice of Contest of the citation under section 105(d) of the Act. *RS&W Coal Company, Inc.*, Docket No. PENN 2010-145-R. Challenges to the citation’s special findings dealing with negligence and gravity, if any, can be litigated in that contest proceeding or in the course of any subsequent civil penalty proceeding.

³ P.L. 109-236 (June 15, 2006).

provisions can not be adopted. Where such plan sets forth the reasons such provisions can not be adopted, the plan shall also set forth the operator's alternative means of compliance. Such alternative shall approximate, as closely as possible, the degree of functional utility and safety protection provided by the wireless two-way medium and tracking system referred to in this subpart.

30 U.S.C. § 876(b)(2)(F)(ii).

The Problem – Technical Discussion

Underground anthracite coal mines produce coal through “conventional methods,” i.e., using explosives detonated by electric detonators. It has long been recognized that devices that emit radio frequency (RF) energy, such as wireless communications systems, can pose a hazard when used in proximity to electric blasting circuits. The wires of a blasting circuit function like antennae, and RF induces an electric current in such circuits which could result in an unintended detonation.⁴

Safety standards for underground coal mines specify numerous requirements addressed to the safe handling of explosives. 30 C.F.R. §§ 75.1300-1328. Those standards require that blasting circuits be protected from sources of stray electric current, and recognize that stray electric current can be induced in blasting circuits by nearby electric powered equipment, cables or batteries. The Secretary’s regulations require that electric cables and equipment be deenergized or removed to at least 50 feet from blasting boreholes before the priming of explosives. § 75.1316(a)(1). Notably, the regulations also actually require the introduction of electric current in blasting circuits in order to test for continuity and resistance prior to blasting.⁵ Section 75.1323(j) requires that:

Immediately prior to firing, all blasting circuits shall be tested for continuity and resistance using a blasting galvanometer or other instrument specifically designed for testing blasting circuits.

Blasting galvanometers route electric current through the blasting circuit at an extremely low level that has been determined to pose no threat of activating a detonator, and have been

⁴ A 2001 publication by the Institute of Makers of Explosives (IME), Safety Library Publication No. 20 (SLP-20), entitled “Safety Guide for the Prevention of Radio Frequency Radiation Hazards in the use of Commercial Electric Detonators,” notes that, “To date there have been a few authenticated cases of a detonator being fired accidentally by RF pickup.” Ex. P-13 at 2. Reports of several incidents, most of which involve unintended detonations caused by RF in the last 20 years, were introduced by RS&W. Ex. R-3, R-4, R-5, R-6.

⁵ Continuity and resistance testing assures that the blasting circuit is properly wired, and that all of the one-ohm resistance detonators have been included in the circuit.

used safely in mines for many years. MSHA-approved blasting galvanometers are allowed to introduce electric currents of up to 50 milliamps (mA) and, under some circumstances, up to 160mA. Not surprisingly, extensive testing has been done and studies undertaken to quantify the amount of electrical energy to which blasting circuits and detonators can be safely subjected. Studies by the U.S. Department of Interior's Bureau of Mines in 1973 and 1981, and the IME's SLP-20, published in 2001, have been referenced in this proceeding.⁶ The 50mA permissible limit is reflected in the Secretary's safety standards. Electric equipment and cables located at least 25 feet away from boreholes need not be deenergized or moved if "stray current tests conducted prior to priming the explosives detect stray currents of 0.05 ampere [50mA] or less through a 1-ohm resistor." § 75.1316(a)(2).

There are other generally recognized safe levels of electrical energy to which blasting circuits and detonators can be subjected. The IME and Bureau of Mines publications refer to a "no-fire level" of 0.04 watts (W), or 40 milliwatts (mW), for commercial detonators. Tr. 109-13; ex. P-13 at 14; P-15 at iii. The no-fire level is defined as a 0.1% firing (99.9% no-firing) probability with a 95% confidence level, which equates to an extremely low probability of firing. Chad Huntley, an electrical engineer at MSHA's Technical Support Approval and Certification Center, explained that the 0.1% figure must be considered along with the 95% confidence factor. Tr. 111-13. It *does not* mean that the firing probability is one in one-thousand. Rather the statistical probability of the occurrence of an event with a probability of 0.1% and a 95% confidence level is on the order of one in 909 million.⁷ The 40mW no fire level, which equates to an induced current of 200mA. Tr. 158. It is recognized as a "conservative" limit, because many commercially available detonators manufactured in North America have no fire levels higher than 40mW. Detonators tested in 1973 by the Bureau of Mines were found to have no-fire levels ranging from 77mW to 275mW. Tr. 114-23; ex.P-15 at 4-4. The Coalstar II detonator, which is currently approved for use in underground mines, has a no-fire level of 105mW. Tr. 123-25; ex. P-29. In light of the 200mA current associated with the 40mW no-fire level, the Secretary's 50mA permissible limit for stray currents in blasting circuits is quite conservative. Tr. 158. It should be noted that permissible power and field strength levels are based upon the potential for induced current in one detonator.

⁶ Franklin Institute Research Laboratories, Technical Report, "Evaluation and Determination of Sensitivity and Electromagnetic Interactions of Commercial Blasting Caps," (August 1973), prepared for the Bureau of Mines, U.S. Department of Interior. Ex. P-15; Comsul Ltd., Final Report for Bureau of Mines, "The Implementation of UHF Radio Communications and CCTV Monitoring Systems in a Room and Pillar Metal/Non-Metal Mine," March 1981. Ex. P-16.

⁷ At the hearing, Huntley was qualified as an expert witness in the field of electrical engineering and testified that he did not specifically recall the probability, but believed it was one in nine billion. Tr. 113. The Secretary represented in her post-hearing brief that Huntley had subsequently learned that he had been mistaken, and that the probability was actually one in 909 million. Sec'y Br. at 4, n. 2.

The strength of the electromagnetic field generated by an RF device, and the current it will induce in an electrical circuit, are largely functions of the device's power (generally stated in Watts) and the distance from the device's antenna. Distance from the transmitting antenna is a very significant factor because the strength of the field drops rapidly as the distance increases. At a distance of one wavelength from an RF antenna the available power in the RF field is only one one-hundredth (0.01) of the power at the transmitting antenna.⁸ At a distance of two wavelengths it is four times lower, or one four-hundredth of the power at the transmitting antenna. Each time the distance is doubled, the available power drops by a factor of four. Tr. 127-31; ex. P-15 at 103.

The IME's SLP-20 provides tables of recommended safe separation distances to be maintained between blasting circuits and different types of RF equipment. It primarily addresses higher-powered RF sources used in or found near surface blasting operations, and notes that, "Because of the uncertainties of RF absorption and scattering within mine tunnels, the potential hazard can only be evaluated with the aid of consultants." Ex. P-13 at 4. An August 2008 addendum to SLP-20, intended to be more applicable in underground mines, consists of a "log-log plot" showing acceptable electromagnetic field strength, as a function of radio frequency, "that one ohm electric detonators can be exposed to while minimizing the risk of inadvertent initiation due to RF fields." Tr. 147-49; ex. P-14. The addendum also sets forth a formula for calculating the field strength produced by multiple RF sources.

Because of the importance of safe separation distances, MSHA requires that manufacturers of C&T systems specify, and provide justifications for, separation distances for each component of the system, and mine operators "must specify these safe distances in their ERPs . . . and account for the total amount of energy transmitted from all devices and other sources used in the vicinity of blasting circuits." MSHA PPL No. P09-V-13, (October 23, 2009). Ex. P-19. MSHA began certifying separation distances when approving equipment sometime prior to 2008, and some presently approved components do not reflect safe separation distances because they were not required when their approvals were processed. If no safe separation distance has been certified by MSHA, the operator is required to contact the manufacturer and obtain a justification for a proposed separation distance. Failing that, MSHA's Technical Support Approval and Certification Center would be consulted. Tr. 191-99. "MSHA has approved in ERPs a separation distance of up to 50 feet . . . when the mine operator was unable to specify a safe distance based on a manufacturer's recommendation." *Id.* at 2.

Wireless C&T systems typically consist of three components; 1) two-way communications devices, that would be carried by a miner and transmit RF energy only when sending a message; 2) tracking "nodes" hard-wired to surface equipment that continuously transmit when activated and are installed roughly every 200 feet along mine entries; and 3) "tags" worn by miners that continuously transmit and are read by the nodes as the miners pass

⁸ The wavelength of an RF transmission is a function of its frequency. A 400 MHz RF has a wavelength of approximately 2 feet, and a 900 MHz RF has a wavelength of approximately one foot.

by. When transmitting, each of those components is a source of RF energy that produces an electromagnetic field. The Independent Miners and Associates (IMA), an association of anthracite miners, had expressed interest in two MSHA-approved wireless C&T systems for possible installation in anthracite mines, the L-3 Communications' "Wireless Mesh Communication and Tracking System" and the Matrix Design Group, LLC's, "RFID Miner Tracking and Text Messaging System."

The L-3 system operates at 900MHz (one foot wavelength) and is composed of a radio handset, which operates at a power level of 1W (1000mW) and has a specified separation distance of 5 feet; a tracking node, which operates at a power level of 5W (5,000mW) and has a specified separation distance of 7 feet; and a tracking tag which apparently operates at virtually a zero power level and has a specified separation distance of 0 feet. Ex. P-17, P-24; tr. 193-203. The RF field strength generated by the node would be 5,000mW at its antenna, 50mW one foot from the antenna, 12.5mW two feet from the antenna and 3.125mW four feet from the antenna.

The Matrix system operates at 450MHz (two foot wavelength) and is composed of a 2-way text communicator which operates at a power level of 15mW and has a specified separation distance of 5 feet; a tracking node which operates at 10mW and has no specified separation distance; and a tracking tag which operates at a power level of 6mW and has no specified separation distance.⁹ Ex. P-17, P-24; tr. 193-203. The RF field strength generated by the text communicator would be 15mW at its antenna, 0.15mW two feet from the antenna, 0.0375mW four feet from the antenna and 0.009375mW eight feet from the antenna.

Events Leading to the Citation

As specified in the Act, as of June 15, 2009, ERPs were required to provide for post accident communication between underground and surface personnel via a wireless two-way medium, and an electronic tracking system permitting surface personnel to determine the locations of any persons trapped underground. Operators were also permitted to set forth within the plan the reasons such provisions could not be adopted, and to propose alternative means of compliance approximating, as closely as possible, the functional utility of the wireless systems. Because fully wireless C&T systems were not yet technologically feasible, MSHA sought to offer guidance to operators on acceptable alternatives to fully wireless systems in formulating the required revisions to their ERPs. MSHA Program Policy Letter (PPL) No. P09-V-01, issued on January 16, 2009, stated, with respect to communications systems:¹⁰

⁹ Huntley testified that it is likely that a proposed separation distance of five feet would be approved for the lower-powered components of the Matrix system. Tr. 196-97. A justification for a zero separation distance for all components of the system has apparently been prepared. Tr. 199-202; ex. P-18. However, no formal application for separation distances other than those specified in MSHA's approvals, has been made, and the separation distances certified by MSHA in its approvals remain as stated. Tr. 201-02.

¹⁰ Similar characteristics were identified for tracking systems.

General Considerations - An alternative to a fully wireless communications system used to meet the requirements of the MINER Act for post-accident communication either can be a system used for day-to-day operations or a stored system used in the event of an accident. Examples of currently available technologies that may be capable of best approximating a fully wireless communications system include, but are not limited to, leaky feeder, mesh, Wi-Fi and medium frequency systems. Any alternative system generally should:

- a. Have an untethered device that miners can use to communicate with the surface. The untethered device should be readily accessible to each group of miners working or traveling together and to any individual miner working or traveling alone.
- b. Provide communication in the form of two-way voice and/or two-way text messages. If used, pre-programmed text messages should be capable of providing information to the surface necessary to determine the status of miners and the conditions in the mine, as well as providing the necessary emergency response information to miners.
- c. Provide an audible, visual, and/or vibrating alarm that is activated by an incoming signal on each untethered device. The alarm should be distinguishable from the surrounding environment.
- d. Be capable of sending an emergency message to each of the untethered devices.
- e. Be installed to prevent interference with blasting circuits and other electrical systems.

Ex. P-4 at 3.

In a March 2009 meeting, anthracite coal miners raised safety concerns about the installation of wireless C&T systems using radio frequency equipment near blasting components and blasting operations. Tr. 48. The meeting was held at the headquarters of the Independent Miners and Associates, an association of anthracite coal miners in MSHA District 1. John Kuzar, MSHA's district manager for District 1, issued a memorandum on June 4, noting that, in response to the IMA's concerns, MSHA had agreed to participate in "several in-mine demonstrations of communication and tracking technology to jointly evaluate the RF levels emitted." Ex. P-30. Operators of anthracite mines using explosives were not required to submit purchase orders for such systems, but were required to comply with the MINER Act's requirement to submit updated ERPs providing for wireless C&T systems by June 15, 2009.

On June 16, 2009, MSHA received a letter from RS&W, entitled "Addendum to Emergency Response Plan" stating, in its entirety, that, "Any system that is guaranteed in writing and proved safe through extensive testing not to endanger my employees with radio frequency while using electronic detonators will be acceptable." Ex. P-3. On July 1, 2009, Kuzar responded to RS&W stating that "the addendum failed to provide essential details concerning the nature of the communication and tracking system." Ex. P-4. Kuzar instructed RS&W to submit an updated ERP that provided specific details of its wireless two-way communication and

electronic tracking systems by July 16, 2009, and that failure to do so would result in the issuance of a citation. Kuzar also forwarded a copy of PPL P09-V-01, to provide guidance on what was required under the Act.

On July 21, 2009, MSHA's Technical Support Approval and Certification Center conducted extensive testing of the MSHA-approved L-3 C&T system at the Alfred Brown Coal Company's, 7 Ft Slope Mine in Hegins, Pennsylvania.¹¹ The L-3 system was selected because the IMA had expressed interest in it and the similar Matrix system. Tr. 139. The State of Pennsylvania's Bureau of Mine Safety, the IMA and representatives of L-3 and the Alfred Brown mine participated in the testing.

The testing was done in the gangway of the mine. Two components of the L-3 system were installed at the test location; the Access points (nodes), which have a 5W transmit power at 900-930 MHz and a Yagi (directional) antenna; and Mesh Radio Handsets, which have a 1W transmit power at 902-928 MHz and a whip antenna. The node's antenna was placed in nine different positions and orientations in the gangway. An instrument referred to as a "narda meter" was used to measure electromagnetic field strength at various locations in the gangway. At four locations one or two handsets were also transmitting, and the strength of the combined RF fields was measured. The specific equipment locations, antenna orientations, and measurements are presented in the test report. Ex. P-5 at 7-13. The highest measurement of field strength, 11.76 V/m, was recorded at the closest test distance, two feet directly in front of the node's directional antenna – well within the MSHA-approved safe separation distance for the node of seven feet.

In a second phase of the testing, a spectrum analyzer and current probe were used to measure the induced current in various lengths and configurations of simulated blasting circuits, with the node's antenna and/or the whip antenna of the handset transmitting at different locations and orientations. The results, as presented in the report, show that the highest reading, was obtained with 1.5-foot long leg wires shunted together, with the node's antenna 14 feet away and the handset antenna in direct contact with the wires. Ex. P-5 at 13-17. That reading, converted to electrical current, was 23mA.

The test report, entitled "Hazards of Radio Frequency (RF) Communication Equipment Operating Near Blasting Circuits at Anthracite Mines," was issued on August 27, 2009. The results of the test generally established that the equipment could safely be used in typical anthracite mining conditions.

None of the recorded measurements exceeded the Institute of Makers of Explosives (IME) Addendum to SLP-20 "Acceptable Field Strength for a One Ohm Electric Detonator" chart under a variety of conditions, nor did any induced currents, calculated from the recorded measurements, exceed 50mA. The highest

¹¹ Huntley, who testified at the hearing, helped to conduct the tests, and was one of the authors of the test report.

readings of either measuring method were 11.76 V/m . . . and . . . 23mA
These maximum numbers are below the IME acceptable limit of 20 V/m at 900
MHz and the MSHA maximum allowable current of 50mA (ref. 30CFR section
75.1316).

Ex. P-5 at 5.

Following the test, it was agreed that testing of the Matrix system was not needed,
because its components operated at substantially lower power levels. Tr. 62, 74, 159-60. The
highest powered component of the L-3 system is the node, with a power output of 5000mW. In
contrast, the highest powered component of the Matrix system is the 2-way text communicator,
with a power output of 15 mW. Ex. P-24.

On August 28, Kuzar forwarded a copy of the test report to RS&W, advised that the
testing established that the L-3 system components could safely be operated in anthracite mines,
and that RS&W was required to submit a revised ERP that provided for updated C&T
capabilities. On September 10, RS&W submitted an ERP revision addressing post-accident
communications and tracking. Ex. P-8. The ERP specified that no totally wireless
communication or electronic tracking system had yet been developed, that the currently approved
wireless C&T systems emit RFs which could inadvertently detonate explosives in the mine, and
that none of the currently approved wireless C&T systems had been tested in an anthracite mine,
most of which are configured differently than bituminous coal mines. Ex. P-8. RS&W
proposed, as an alternative, enhancements to its existing hardwired intercom system, pledging to
install additional intercoms at 100 foot intervals along the gangway, and a permissible phone
system at 100 foot intervals along the secondary escapeway. RS&W also sought to continue use
of its existing magnetic tracking board, which reflects miners' locations with color-specific
markers on a copy of the mine map, as called in on the intercom system. Ex. P-8.

On October 5, 2009, Kuzar sent RS&W written notification that its current C&T
provisions did not provide the level of protection mandated under the Act, and therefore, he
would not approve the revised ERP. Ex. P-9.¹² Kuzar acknowledged that although totally

¹² Section 316(b)(2)(C) of the Act provides that, in reviewing and approving ERPs, the
Secretary is required to:

take into consideration all comments submitted by miners or their representatives,
Approved plans shall –

- (I) afford miners a level of safety protection at least consistent
with the existing standards, including standards mandated by law
and regulation;
- (ii) reflect the most recent credible scientific research;
- (iii) be technologically feasible, make use of currently
commercially available technology and account for the specific
physical characteristics of the mine; and

wireless communication and/or electronic tracking systems had yet to be developed, there were several agency-approved “communication systems that closely approximate the degree of functional utility and safety protection provided by a wireless two-way communications system . . . Thus, operators may not rely on traditional, hard-wired intercom systems in lieu of more advanced systems that provide greater miner protection . . . ” Ex. P-9. Kuzar went on to point out that MSHA believed that updated C&T systems could be used safely in anthracite mines, provided that sufficient separation distances were specified. He ordered RS&W to either specifically identify limitations with particular communication and tracking systems that would prohibit use in its mine, or update its ERP to include such systems no later than October 28, 2009.

On October 27, 2009, RS&W’s President, Randy Rothermel, responded to Kuzar’s October 5 letter stating that he was unable to find a system safe enough for its mine, and requested that Kuzar issue a citation for RS&W’s failure to provide approved C&T systems. Ex. P-10. Consequently, MSHA issued Citation No. 7000435 on November 6, 2009, alleging a violation of Section 316(b) of the Act for RS&W’s failure to develop, adopt, and submit an updated ERP that provided for wireless communications and electronic tracking systems and failed to state sufficient reasons for not adopting such systems. Ex. P-11. On November 10, 2009, pursuant to the Act, and Commission Procedural Rule 24, 29 C.F.R. § 2700.24, the Secretary referred the plan content dispute to the Commission. The referral prays that the citation be affirmed and that Respondent be ordered to submit a compliant revised ERP within 10 days of issuance of an order affirming the citation. Respondent prays that the citation be vacated and that the Secretary be directed to approve alternate C&T systems until such time that wireless C&T systems have been thoroughly tested and deemed safe for use in anthracite coal mines with a “100% confidence level.” Resp. St. for Hearing Req. at 1.

(iv) reflect the improvement in mine safety gained from experience under this Act and other worker safety and health laws.

30 U.S.C. §876(b)(2)(c).

Conclusions of Law - Further Factual Findings

The Applicable Law

The framework for resolution of Emergency Response Plan Disputes under the MINER Act was established by the Commission in its initial decision involving MSHA's refusal to approve an ERP provision. *Emerald Coal Res. LP*, 29 FMSHRC 956, 965 (Dec. 2007); *see also Twentymile Coal Co.*, 30 FMSHRC 736, 747 (Aug. 2008).

One of the cornerstone principles with regard to plan formulation under the Mine Act is that MSHA and the affected operator must negotiate in good faith for a reasonable period concerning a disputed plan provision. *Carbon County Coal Co.*, 7 FMSHRC 1367, 1371 (Sept. 1985). The Commission has noted, "Two key elements of good faith consultation are giving notice of a party's position and adequate discussion of disputed provisions." *C.W. Mining Co.*, 18 FMSHRC 1740, 1747 (Oct. 1996).

While the contents of a plan are based on consultations between the Secretary and the operators, the Commission has recognized that "the Secretary is [not] in the same position as a private party conducting arm's length negotiations in a free market." *Id.* at 1746. As one court has noted, "the Secretary must independently exercise [her] judgment with respect to the content of ... plans in connection with [her] final approval of the plan." *UMWA v. Dole*, 870 F.2d 662, 669 n.10 (D.C. Cir. 1989), *quoting* S. Rep. No. 181, 95th Cong., 25 (1977), reprinted in Senate Subcom. on Labor, Com. on Human Res., 95th Cong., Legislative History of the Federal Mine Safety and Health Act of 1977, at 613 (1978). Ultimately, the plan approval process involves an element of judgment on the Secretary's part. *Peabody Coal Co.*, 18 FMSHRC 686, 692 (May 1996) ("Peabody II"). "[A]bsent bad faith or arbitrary action, the Secretary retains the discretion to insist upon the inclusion of specific provisions as a condition of the plan's approval." *C.W. Mining*, 18 FMSHRC at 1746; *see also Monterey Coal Co.*, 5 FMSHRC 1010, 1019 (June 1983) (withdrawal of approval of water impoundment plan was not arbitrary or capricious where MSHA's conduct throughout the process was reasonable).

Emerald, 29 FMSHRC at 966.

The Commission went on to hold that the appropriate standard of review in ERP dispute proceedings is whether the Secretary's refusal to approve a proposed ERP provision was arbitrary and capricious.

The standard involves a review of the record to determine whether the Secretary properly exercised her discretion and judgment in the plan approval process. In

this regard, the Commission's decision in *Monterey Coal* is instructive. In affirming a citation for failing to supply data relating to impoundment pond construction, the Commission applied the “arbitrary and capricious” standard in reviewing MSHA's withdrawal of its approval of an impoundment plan:

We cannot conclude that MSHA's use of the Table [of recommended minimum design storm criteria] or its act of withdrawing the plan approval was arbitrary and capricious.... [P]rior to issuance of the citation *Monterey* was given unequivocal notice of and a reasonable opportunity to comply with MSHA's interpretation and use of the Table. In sum, we find the course of action taken by MSHA to have been a reasonable approach, and not arbitrary or capricious.

Monterey Coal, 5 FMSHRC at 1019 (citation and footnote omitted); *accord Peabody II*, 18 FMSHRC at 692 n.6 (in reviewing the Secretary's refusal to approve a ventilation plan provision, Commission noted that the plan approval process involves an element of judgment on the part of the Secretary that is reviewed under an arbitrary and capricious standard). This standard appropriately respects the Secretary's judgment while allowing review for abuse of discretion, errors of law, and review of the record under the substantial evidence test. *See Energy West Mining Co.*, 18 FMSHRC 565, 569 (Apr. 1996) (“abuse of discretion” has been found when “there is no evidence to support the decision or if the decision is based on an improper understanding of the law”) (citations omitted). We therefore affirm the judge's application of the arbitrary and capricious standard to the plan review. (footnote omitted).

Emerald, 29 FMSHRC at 966.

Whether MSHA’s Decision was Arbitrary, Capricious, or an Abuse of Discretion

As evidenced by the numerous communications from MSHA’s district manager, RS&W was repeatedly requested to provide information regarding its evaluation of specific wireless C&T systems and problems or difficulties such systems would pose if operated in its mine. In response to RS&W’s initial cursory “Addendum” to its ERP, Kuzar promptly advised on July 1, 2009, that because virtually no “essential details” had been provided, evaluation of the plan was impossible, and provided copies of PPL P09-V-01 and a list of Questions and Answers specific to the wireless C&T system ERP requirement. That letter advised RS&W that if an updated ERP was not received by July 16, 2009, a citation would be issued. However, no citation was issued. Rather, in conjunction with representatives of an association of anthracite miners and the State of Pennsylvania, MSHA conducted the July 21 test of the approved L-3 wireless C&T system in the Alfred Brown Anthracite Mine. The testing established that the system could be safely operated in anthracite mines, provided that separation distances could be maintained and administrative

controls could be developed to address situations where miners could not maintain such separations. The test report, which was issued on August 27, was forwarded to RS&W the following day. The forwarding letter noted that the requirement for submission of a revised ERP had been delayed to allow completion of the testing, and instructed that an updated ERP must be submitted no later than September 11, 2009. Ex. P-6. On September 4, Kuzar forwarded a second copy of PPL P09-V-01 and an ERP checklist to assist RS&W in developing its plan.

On September 11, RS&W submitted updated ERP provisions for post-accident communications and tracking, however, no wireless C&T system was included. RS&W asserted that no “safe distance tables” could be accurately proposed by MSHA or the manufacturers, and that installation of the systems would be impossible due to the “small narrow entries in our mine,” which would threaten the safety of miners by subjecting them to premature detonation of explosives. Alternative plans were presented that enhanced existing hard-wired C&T systems. On October 5, Kuzar responded, advising RS&W that its submission did not provide the level of protection mandated by the Act, and could not be approved. Each of RS&W’s asserted concerns was addressed. RS&W was referred to lists of MSHA-approved semi-wireless C&T systems that were commercially available. The test results were cited as establishing the safety of MSHA-approved systems, provided that sufficient separation distances were maintained “when tracking/communication components are operating (i.e., turned on or active) in the proximity of explosives and detonators,” and proper procedures were established for situations when required separation distances must be breached to work with explosives.

Kuzar specifically requested that, to the extent that RS&W continued to contend that it was not feasible to safely conduct mining operations with any available wireless C&T system, it needed to provide the following information:

- (1) specifically identify MSHA approved systems that you have considered;
- (2) specify the separation distances that are needed to safely use such systems in the proximity of explosive devices;
- (3) detail each of the anthracite mining tasks that cannot be performed given these separation distances; and
- (4) explain why procedures cannot be adopted (e.g., leaving the tracking/communication component at the minimum separation distance) that would allow miners to safely perform these tasks.

Ex. P-9 at 3.

With respect to RS&W’s protest that no testing had been done to determine whether approved systems would work in anthracite mines that “twist/turn and pitch upward towards the surface and contain severe undulations within the coal seams,” Kuzar requested that RS&W specify limitations that were determined to exist with respect to existing systems in light of RS&W’s particular mine features and/or conditions. Ex. P-9 at 4. On October 27, RS&W responded by requesting that a citation be issued, asserting that no system could be found that was “safe enough” for the RS&W mine. Ex. P-10.

It is apparent, from the above, that MSHA fulfilled its obligation to negotiate in good faith over the disputed ERP provisions. It clearly stated its position on RS&W's submissions, provided or referred to extensive relevant materials, and requested specific information to evaluate RS&W's claim that no approved wireless C&T system could safely function in its mine. MSHA attempted to engage in a dialogue with RS&W, similar to the dialogue that it apparently was engaged in with other anthracite miners as of the time of the hearing.¹³ However, it was rebuffed by RS&W, which clearly indicated that it would not include post-accident wireless C&T systems in its ERP.

In contrast, RS&W provided only cursory information about its safety concerns, and did not describe any specific problems posed for its operations by the subject C&T systems. Nor did it attempt to explain how the testing that had been done in the Alfred Brown mine could not be related to its mine. MSHA no doubt anticipated some of RS&W's objections because it had considerable knowledge of RS&W's operations and was engaged in discussions with other anthracite miners.¹⁴ The task of attempting to maintain a crucial safe separation distance when traveling through a four, five or even a 10-foot wide entry that a blasting circuit also runs through poses obvious difficulties. Such difficulties might not be insurmountable, however, if proper administrative controls could be developed that took into account that C&T equipment may not emit RF energy when not activated,¹⁵ that separation from blasting circuits need be maintained only when they are wired to detonators, and how such factors interfaced with RS&W's specific

¹³ Respondent introduced as an exhibit portions of an approved ERP for the UAE Coal Corp. Associates' Harmony Mine, an underground anthracite mine. Ex. R-7. That plan specifies safe separation distances of 50 feet for wireless C&T system components. The Harmony mine is somewhat unique in that it is relatively flat and most coal extraction is done with mechanized equipment. Head testified that it had been represented to him that the UAE ERP was the only MSHA- approved anthracite mine ERP.

¹⁴ At the hearing, the Secretary objected to evidence concerning information as to RS&W's mining operations. Tr. 212-15. She maintains that argument in her brief, contending that information that was not available to an administrative decision-maker should not be considered in evaluating the administrator's decision. Sec'y Br. at 22-24. I have no difficulty with the argument, as a proposition of law. However, MSHA's District 1 conducts inspections of the RS&W mine, and undoubtedly has detailed knowledge of its mining operations. Thomas Garcia, supervisory safety and health specialist at MSHA's District 1, testified that he was "familiar with the mining methods at the RS&W drift mine." Tr. 29. He also described entry dimensions in some detail, stated the number of miners, explained what they typically did, and discussed the various blasting operations. Tr. 32-44. In response to the Secretary's objection to information regarding the number of detonators used at RS&W's mine, Randy Rothermel, RS&W's president, explained that MSHA examines the records when it inspects the mine, and is "as aware as we are" of the numbers of detonators used. Tr. 214.

¹⁵ PPL P09-V-1 states that the communication system "can be a system used for day-to-day operations or a stored system used in the event of an accident." Ex. P-4 at 3.

blasting procedures. Only by making a good faith effort to design wireless C&T systems, could it be demonstrated whether or not such systems could be used in the mine consistent with the Act's mandate. RS&W's intimate knowledge of its operations was essential to development of wireless C&T ERP provisions, and it was RS&W's statutory obligation to do so, or to "set forth within the plan the reasons such provisions can not be adopted."

RS&W's concerns about the hazards posed by introducing RF sources into the mine's blasting environment were, and are, understandable and well-founded. Cindy Rothermel, RS&W's representative and wife of its president, represented at the hearing, that her father was killed by a premature detonation likely due to stray current in a blasting circuit. RS&W's concerns were understandably heightened by the manner in which some of the technical information has been stated. A "no-fire" level, expressed as a 0.1% chance of firing, with a confidence level of 95%, suggests that there is a one in one thousand chance of a detonation, as RS&W appears to have understood it.¹⁶ The fact that the actual statistical probability of firing is several orders of magnitude lower, does not completely dispel that understanding. Moreover, statements in authoritative technical literature, such as SLP-20, to the effect that the "probability of an accidental firing from RF energy is practically nil," or "extremely remote," could easily not be very reassuring to a miner who has to connect detonator leg wires in close proximity to high explosives.

The fact that negotiations concerning C&T provisions apparently continue with other anthracite miners, is evidence that MSHA is sensitive to such concerns. Garcia acknowledged that such concerns were legitimate, and stated that MSHA was intent on working with operators of anthracite mines to satisfy their concerns. He explained that, in requesting specific information from operators, as in Kuzar's October 5 letter, MSHA was looking for explanations of tasks that could not be performed because of the C&T equipment, and why procedures could not be adopted to address such problems.¹⁷ "If they were uncomfortable with the system . . . are there other administrative controls that they could possibly take to assure that it's – instead of 100 percent sure, it would be 150 percent [sure that] nothing could happen?" Tr. 64. He later

¹⁶ Cindy Rothermel's opening statement included the following, "My son works at the mine, and yes, I am fearful of the one in one thousand chance that a detonator may explode." Tr. 25.

¹⁷ H. John Head, an expert in the field of mining engineering called as a witness by RS&W, was concerned about whether separation distances could be maintained from a practical operational standpoint. While the main blasting circuit that runs to within 75 feet of the portal is used only to blast the gangway face – typically once per day, individual shots may be fired at the chute to clear the screen 100 or more times per day. A miner might be able to maintain a separation distance of 5 feet in the gangway, but he could not do so in the monkey or coal workings. Head believed that separation distances of under 7 feet fell into a "gray area," and that the issue was one of management – "Can we keep the miners consistently a safe distance from that entire blasting circuit every time we energize it or every time we hook it up? And I suggest to you that it's almost impossible to do from a practical standpoint." Tr. 260.

added, “if they’re reluctant to use the system, they felt that they were in danger because of these radio frequency waves, I’m sure there’s something that could be worked out that would be appropriate – justified for both sides.” Tr. 85-86. The give and take process described by Garcia never occurred, because RS&W did not fulfill its obligation under the Act to design systems for its mine, or submit a detailed statement of reasons why such systems could not be used, as Kuzar had requested.

MSHA was left with virtually no choice but to issue the citation that RS&W invited.¹⁸ It believed that wireless systems provide a more effective means of post-accident communication and tracking than conventional hardwired systems, and that Congress’ mandate for such systems was well-directed. RS&W apparently has no quarrel with that assessment. Head agreed that “radios are the preferred means of communication if they can be used safely.” Tr. 261. MSHA’s testing in an anthracite drift mine had demonstrated that approved wireless C&T systems could be operated in that environment within safety parameters recognized within the blasting community and MSHA’s own long-standing safety standards, provided that appropriate safe separation distances were maintained and appropriate administrative controls could be developed and implemented. RS&W did not submit sufficient reasons why such systems could not be used in its mine.

RS&W argues that the MINER Act requires that approved ERPs must “afford miners a level of safety consistent with existing standards, including standards mandated by law and regulation,” and that requiring the introduction of RF sources into its mine would violate that provision. 30 U.S.C. 376(b)(2)(C)(ii). There is no question that requiring RF sources in its mine would create hazards that did not exist under RS&W’s currently approved plan. MSHA’s October 23, 2009, PPL P09-V-13, confirms that, “Communications and electronic tracking systems are sources of RF energy that can interfere with blasting circuits,” and that “RF fields from tags and other electronic devices may or may not pose a threat to the detonator and its circuit.” Ex. P-19 at 2. However, those hazards must be balanced against improvements to miner safety provided by enhanced post-accident communication and tracking systems. That critical evaluation can be made only by considering the details of ERP provisions specifying precisely how such systems would be used in RS&W’s mine.

The Secretary argues that it has been conclusively demonstrated that currently approved systems can be used safely in RS&W’s mine.¹⁹ Whether or not the additional hazards posed by

¹⁸ Under other circumstances, Kuzar may have exercised discretion to defer enforcement action against RS&W pending the outcome of the discussion of similar issues with the other anthracite miners. However, the MINER Act requires that disputes over ERP provisions be resolved on an expedited basis, by issuance of a citation and immediate referral to the Commission.

¹⁹ To demonstrate that the systems are safe even if the safe separation distance were to be breached, the Secretary introduced a calculation of the cumulative RF field strength of multiple Matrix system components; six tags, six two-way text communicators and two tracking

those systems' RF components can be maintained within acceptable limits is only one factor to be considered. One of the administrative controls recognized as necessary to protect blasting circuits from RF sources is to require that the devices be deactivated and/or removed a safe distance away. Development of specific plan provisions would clarify how often such devices would have to be "shelved," and could identify other procedures necessary to accommodate mining operations that would detract from the effectiveness of such systems.²⁰ Another factor that could impact the systems' effectiveness would be any measures necessary to minimize the effect of inadvertent non-compliance with administrative controls.²¹ Head was very concerned about the management issues associated with trying to use such systems safely, and observed that if, because of safe separation or other requirements, miners were disconnected from the system more often than not – "what's to be gained." Tr. 261-62. Another critical factor in the balancing exercise is the consideration that the hazards posed to miners by the introduction of RF sources will exist on a day-to-day basis, whereas, the enhancements to safety provided by wireless C&T systems would be realized only following an accident.

I find that the Secretary has carried her burden of proving that MSHA's refusal to approve RS&W's revised ERP provisions addressing updated C&T systems, which did not

nodes, and demonstrated that in the unlikely event that the components were all transmitting at the same time, the resultant field strength at two meters' distance would be less than the recognized 40mW no-fire limit. Tr. 164-79; ex. P-23. While two meters is a generous separation distance, considering the layout of RS&W's mine, it should be noted that there is no separation distance specified in MSHA's approval of the Matrix tracking node and tag. Ex. P-17. Pursuant to Kuzar's instruction in the October 5 letter, RS&W would be required to use the "default" 50-foot separation distance for those components. Ex. P-9 at 3. How the required separation distances would be maintained, and what impact required administrative controls would have on the effectiveness of the systems and mine operations, are questions that have yet to be answered. Parenthetically, I note that the Secretary made no attempt to demonstrate that Kuzar was aware of the calculation when he made his decision.

²⁰ As Randy Rothermel and Alfred Brown explained, because the blasting circuits run virtually the entire length of the gangway, any C&T component that required a continuous 50-foot separation distance would "have to be checked at the portal," and would provide no post-accident enhancement to miner safety. Tr. 219, 237.

²¹ In evaluating the need to provide guarding for mining machinery, the Commission has instructed that the evaluation of the magnitude of the hazard must be considered in light of "inadvertent stumbling or falling, momentary inattention, or ordinary human carelessness," i.e., "the vagaries of human conduct." See, e.g., *Thompson Bros. Coal Co.*, 6 FMSHRC 2094, 2097 (Sept. 1984). In other words, it must be presumed that miners will make mistakes. Garcia and Brown raised concerns about miners responding to emergency situations, and whether they could be expected to maintain safe separation distances for RF equipment under such circumstances. Tr. 61, 236-37. As Garcia acknowledged, it is difficult to predict how miners will respond to emergencies and it must be assumed that miners will make mistakes. Tr. 61, 78-80.

include such systems in its plan or state sufficient reasons why such provisions could not be included, was not arbitrary and capricious.

ORDER

I find that RS&W violated the MINER Act as alleged in Citation No. 7000435. Respondent is directed to submit to MSHA on or before January 15, 2010, proposed revisions to its Emergency Response Plan that comply with the MINER Act's mandate. Included in its submission must be provisions for MSHA-approved wireless communications and tracking systems for use in its mine, complying with all MSHA instructions on the contents of such provisions, including separation distances for system components and specific administrative controls to assure safe operation of the systems. RS&W may also include reasons why such provisions can not be adopted, and propose alternative means of compliance. RS&W is further directed to engage in good faith negotiations with MSHA over the content of any disputed plan provisions.

The time specified for submission recognizes that development of comprehensive ERP provisions will not be a simple task, and that Respondent may need to secure from manufacturers any needed justifications for separation distances that are not specified in MSHA approvals. Ongoing discussions between MSHA and anthracite coal mine operators, hopefully, including RS&W, may result in reevaluation by either or both parties of the hazards posed by the introduction of RF devices in such mines and/or the enhancements to safety provided by wireless systems over alternative measures.

Michael E. Zielinski
Senior Administrative Law Judge

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