CASE NO.: 2012-MSA-00001

In the Matter of:

RESOLUTION COPPER MINING,
Petitioner,

v.

MINE SAFETY AND HEALTH ADMINISTRATION (MSHA),
Party Opposing Petition.

Before: Richard M. Clark
Administrative Law Judge

DECISION AND ORDER FOLLOWING REMAND


I held a formal hearing in Denver, Colorado, from May 23 through 24, 2012.1 Laura Beverage and Page Jackson, Attorneys at Law, represented Resolution Copper Mining (“Petitioner”). Jason Grover, Attorney at Law, represented the Department of Labor, MSHA (“Party Opposing Petition”). Following the hearing, I issued a Decision and Order on October 11, 2012, and an Amended Decision and Order on November 7, 2012, that added the notice appeal rights with no other changes (collectively “OALJ D&O”). In the OALJ D&O, I determined that the personnel conveyance at issue was not a bucket within the meaning of the

1 At the hearing, the following exhibits were admitted into evidence: Administrative Law Judge exhibits (“ALJX”) 1 through 3; Petitioner’s exhibits (“PX”) 1 through 22; and Party Opposing Petitioner’s exhibits (“RX”) 1 through 4. Hearing Transcript (“TR”) at 8-12, 20, 251. On August 3, 2011, Petitioner and Party Opposing Petition submitted simultaneous post-hearing briefs, which were marked respectively as ALJX 4 and 5, and closed the record.
regulation, and, because I found the regulation did not apply, I did not reach the second issue of whether the proposed modification of 30 C.F.R. § 57.19076 satisfied the modification standard set forth in 101(c) of the Mine Act, 30 U.S.C. 811(c). The Solicitor appealed the matter.

On May 31, 2013, Joseph A. Main, Assistant Secretary for Mine Safety and Health, issued a Decision and Order remanding the matter “for a determination of whether Resolution’s proposed alternative method satisfies the standard for granting petitions for modification set forth in Section 101(c) of the Act or for other actions consistent with [the ALJ’s] authority under 30 C.F.R. Part 44 and this decision.” In the Matter of Resolution Copper Mining, 2012-MSA-00001, slip op. at 2 (May 31, 2012). The Assistant Secretary, considering on appeal an issue that had not been raised before me, determined that, in petition for modifications, the “DOL ALJs must assume that the standard from which a modification is sought applies and, in that context, determine whether the petitioner has satisfied the standard for granting petitions for modification set forth in Section 101(c).” Id. at 12.

Having considered the remanded issue and for the reasons discussed below, this Decision and Order Following Remand determines that the Petitioner has satisfied the standard for modification, and grants the Petition for Modification.

I. PROCEDURAL HISTORY

On April 12, 2011, Petitioner submitted a Petition for Modification to the Rocky Mountain District of the MSHA requesting a modification from the safety regulation codified at 30 C.F.R. § 57.19076, which sets the maximum speed for hoisting people in buckets at 500 feet per minute. PX 5. Petitioner requested that the MSHA grant a modification allowing the personnel conveyance to proceed at a speed of 1,200 feet per minute in the “unobstructed” portions of the Number 10 mine shaft below the “never sweat” level. PX 5 at 1. Petitioner argued that this modification would “provide at all times the equivalent protections contemplated by the [regulation] and would reduce the time the shaft miners are exposed to the restricting ergonomic impact of shaft travel.” Id. at 2.

On June 14 through 15, 2011, the MSHA conducted a field investigation of Petitioner’s mining facility, and, on July 26, 2011, Thomas Stefansky, Mine Safety and Health Inspector for the Denver Field Office, issued a report with the Administrator for Metal and Non-Metal Mine Safety and Health. PX 13. With respect to the proposed modification, the investigation found two potential safety hazards. Id. at 5. First, it expressed concern over the excessive emergency stopping deceleration rates which could cause the conveyance to “bounce up and down due to the elasticity of the hoist suspension rope” and the “bungee cord effect.” Id. Second, the MSHA expressed concern with the “increased kinetic energy” release associated with a collision at the proposed higher 1,200 feet per minute speed. Id. On the issue of the deceleration rates, the MSHA found the testing conducted by G.L. Tiley and Associates demonstrated that the

2 Following issuance of the OALJ D&O, MSHA issued a citation to Petitioner on November 12, 2012, for a violation of 57.19076 (allowing the personnel conveyance to travel more than 500 feet per minute). On April 19, 2013, a Federal Mine Safety and Health Review Commission ALJ issued a Decision and Order finding that the personnel conveyance was not a bucket and vacated the citation issued to Petitioner. In the Matter of Resolution Copper Mining, 2012-MSA-00001, slip op. at 5 (May 31, 2012). That matter is on appeal. Id. at 6.
emergency deceleration rates did not exceed the maximum rates mandated under 30 C.F.R. § 57.19062, except for two test conditions. *Id.* However, the MSHA noted that “actual deceleration rates experienced by the miners” on the conveyance can be greater than the deceleration rates measured at the hoist drum, due to the elasticity of the suspension rope, and that this effect would be worsened as the shaft deepened due to the “bungee cord effect” of the rope. *Id.* With respect to the greater potential kinetic energy release in the event of a collision, the MSHA noted that travelling at the modified speed of 1,200 feet per minute, as opposed to the regulation speed of 500 feet per minute, would increase the kinetic energy release by a factor of 5.8. *Id.* It feared that given the clearance levels and positioning of the crosshead above the buckets, a swing of more than 7.4 degrees could result in a collision with the mine shaft wall. *Id.* It proposed energy absorbing bumpers and airbags as means of absorbing the increased kinetic energy, but noted that Petitioner found these solutions “impractical.” *Id.*

In the MSHA Order, the MSHA wrote that the personnel conveyance at issue was “not a ‘bucket,’” but held that 30 C.F.R. § 57.19076 and the 500 feet per minute speed limit was applicable to Petitioner’s “personnel conveyance” because the proposed speed modification would “not at all times provide a safe work environment for miners and guarantee no less than the same measure of protection afforded under 30 C.F.R. § 57.19076.” PX 14 at 2. The MSHA opined that Petitioner had not made sufficient efforts to mitigate against the two primary hazards raised by the MSHA investigation team, namely the deceleration rates of the conveyance and the increased potential kinetic energy release, and consequently denied the Petition for Modification. *Id.* at 3. The MSHA did not, however, wait for further deceleration testing in its November 2011 MSHA Order, as was recommended by the field investigation. Further deceleration tests were not conducted by Petitioner until December 2011, with a subsequent report in February 2012.

II. ISSUE

The matter presents the following disputed issue: Does Petitioner’s proposed modification to allow its personnel conveyance to proceed at a speed of 1,200 feet per minute in the portions of the Number 10 mine shaft below the “never sweat” level satisfy the safety standard to at all times guarantee no less than the same measure of protection afforded by the standard, as found in 30 U.S.C. § 811(c) and 30 C.F.R. § 44.4(a)(1)?

III. FACTUAL FINDINGS

The Resolution Copper Mining Project

1. The Resolution Copper Mining Project (“Resolution Mine”) is located three miles east of the town of Superior, Arizona. TR at 41; ALJX 1 at 1. It is a massive, $6 to $8 billion undertaking, with the expectation it will become one of the most productive copper mines in North America, and the deepest mine of its type in the world. TR at 19, 33; PX 13 at 1; ALJX 1 at 3. At the time of its anticipated completion in 2023, Resolution Mine plans to have six active, nearly 7,000 foot deep mine shafts, and to mine at a rate of 110,000 to 120,000 tons a day for the

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3 A second portion of the relevant regulation allows the petition to be granted if “application of the standard will result in a diminution of safety to the miners.” 30 C.F.R. § 44.4(a)(2). Neither party indicated that this prong of the regulation applied to this case, and it is not considered here.
40-year life of the known ore body. TR at 33; ALJX 1 at 2. At the time of the hearing, the mine was in the “pre-feasibility phase,” which involves sinking the new “Number 10 shaft” and rehabilitating the old “Number 9 shaft” of the Magma Copper Company’s old Magma Mine. ALJX 1 at 1-2. The Number 10 shaft is the shaft at issue in this matter. TR at 33. The shaft construction and rehabilitation are currently being performed by Cementation USA (“Cementation”), a shaft-sinking contractor. ALJX 1 at 2. Rio Tinto, the third largest mining company in the world, is the managing partner of the project, and all of the Resolution Mine employees are employed by Rio Tinto. TR at 34. BHP-Billiton is the minority partner in the Resolution Mine. TR at 35. More precisely, Resolution is a limited liability company owned 55% by Resolution Copper Company, which is a subsidiary of Rio Tinto, and 45% by BHP Copper, a subsidiary of BHP-Billiton. ALJX 1 at 1.

2. Thomas Goodell became an employee for Rio Tinto in 2006 and was hired to be the Project Manager for the Number 10 mine shaft for the Resolution Copper project. TR at 30-32. He has since been promoted to General Manager of Underground Development for Rio Tinto, where he is in charge of safety, budget, and schedule compliance for the Number 10 shaft project. TR at 32. Mr. Goodell received his bachelor’s degree in geology from Colorado State University in 1973, and has worked in the mining industry for 39 years where he has extensive experience in mine shaft-sinking and tunneling. TR at 22-32. Although not listed as an expert on the witness list, Petitioner offered Mr. Goodell at hearing as an expert in the development and sinking of mine shafts, and I found him to be an expert over Respondent’s objection. TR at 61-62.

The Number 10 Mine Shaft

3. According to Mr. Goodell, the bids solicited for the sinking of the Number 10 shaft were weighed based 30% on cost and 70% on the technical skill and safety of the company. TR at 30. Bids were received from four qualifying companies, and Cementation was chosen as the contractor to sink, operate, and maintain the Number 10 mine shaft and its hoist system. TR at 32. Cementation USA is a wholly-owned subsidiary of Cementation Canada, and has completed a number of deep shaft projects, including six current projects that are over 4,000 feet deep and several engineering studies of very deep shafts of 7,000-plus feet that have not yet proceeded. TR at 175-76.

4. Ryan Gough has worked for Cementation since 2001, and is the Manager of Project Services for Cementation. As Manager of Project Services, he oversees a technical support group of specialist engineers who provide support to Cementation’s projects in North America, which includes the Resolution Mine. PX 21; TR at 173. The majority of his projects with Cementation involve shaft sinking jobs. Id. He has a bachelor’s of science degree in mechanical engineering from the University of Toronto. TR at 171; PX 21 at 2. Mr. Gough is a licensed professional engineer (PEng) in the province of Ontario, Canada, which requires a degree in engineering, four years of practical experience, and a law and ethics exam, and authorizes him to “stamp” engineering documents as authentic and accurate. TR at 179-80. Mr. Gough also served on the Canadian Standards Association G-4 Committee for the manufacture

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4 Mr. Gough described a professional engineer license in Canada as being comparable to the title of a certified professional engineer in the States. TR at 179.
of shaft mine ropes, the Ontario Mine Contractors’ Safety Association, and the Ontario Mines Legislative Review Committee reviewing mining regulations as they pertain to deep shaft sinking in that province. TR at 176. He has over 20 years of experience in mine construction and engineering, including the installation of hoists, ropes and conveyances. PX 21; TR at 172-73. At Resolution Mine, Mr. Gough and his engineering team have an ongoing role operating, providing maintenance, support, and troubleshooting for the hoist system. TR at 193. In his capacity as a project manager in the United States, he is required to be familiar with U.S. mining regulations. TR at 177. I accepted Mr. Gough as an expert in shaft sinking plant design and operation. TR at 179.

5. When completed, the Number 10 shaft at Resolution Mine will be 6,943 feet deep, with a diameter of 28 feet. TR at 36; PX 5 at 1; PX 13 at 1-2. According to Mr. Gough, that depth classifies Resolution Mine as being on the “extreme end” of a deep shaft project. TR at 176. At the time of the May 23, 2012 hearing, the shaft was 5,520 feet deep. Id. In the actual mine shaft, there are three compartments, the Number 1, 2, and 3 compartments. TR at 56, 77-78. The Number 1 and 2 compartments are for the main conveyances and hoists, which contain the two main conveyances of transport, one on each side, hooked onto a common hoist. TR at 56, 78. As the hoist moves, it will bring one conveyance up, and bring the other down in a mechanical balance. TR at 56, 81. There are three main types of conveyances which can be attached and used in the Number 1 and 2 compartments: the personnel conveyance, which is used primarily to transport people and small tools and only runs in the number 1 compartment of the shaft; the mucking buckets, which transport up to 14 tons of rocky materials extracted from the mine; and the concrete buckets, which transport concrete and “shortcrete.” TR at 78, 91, 198, 248-49; PX 13 at 2; RX 1 (image of concrete conveyance); RX 2 (image of muck bucket); RE 3; PX 1 at 23 (images of personnel conveyance). The third compartment is a fixed guide system for the auxiliary “Maryanne” cage conveyance. TR at 64-65, 78, 139.

6. Inside the Number 10 shaft, there is also a movable, multi-platform work stage called the “Galloway,” which is 60 feet high, 26 feet in diameter, and has 5 active decks, with the potential for a sixth movable deck. TR at 40, 86; ALJX 2. The Galloway weighs 163 tons, and is suspended by four, 40-plus ton bearing ropes. TR at 41. At the top of the shaft, above ground, is a 470-ton, 150 foot high steel head frame. TR at 36, 64; PX 1 at 1. From the top of the head frame, seven thick, steel cable ropes hang, four of which suspend the Galloway, two of which hold the main conveyances, and one of which attaches to the Maryanne. TR at 64-65; PX 1 at 1. The ropes are coiled in an adjacent building depicted to the left of the head frame in PX 1 in large, drum-like structures called hoists and winches. TR at 64; PX 1 at 2. The hoists are for the rope attaching to the conveyances, and the four winches are for the rope suspending the Galloway. TR at 64; PX 1 at 2. Cementation employees, as led by Mr. Gough, operate and maintain the hoist system. TR at 193. All three conveyances are suspended and guided from a crosshead with the same three-chain, triangular formation hooking onto a master link. TR at 137, 237. In other words, the guidance system for the personnel conveyance was the same as it was for the other conveyances, such as mucking buckets.

5 “Muck” refers to all of the loose stone, dirt, and debris collecting inside the shaft after the blasting is completed. ALJX 2.
7. At trial, Petitioner submitted a visual animation guide through the Number 10 mine shaft. PX 2. At the mine’s mouth or surface is what is referred to as the shaft “collar,” which is at zero elevation. TR at 37; PX 19; ALJX 2. At the collar, there is the first set of steel doors and gates in the shaft. TR at 46. These doors can close to prevent people or equipment from falling down the shaft, or open to allow a free path for the conveyances to move down the mine. TR at 45-46. Approximately 90 feet below the surface is the “vent level,” where cold air is pumped through several pipes into the shaft to counteract the hot temperature levels below the surface. TR at 37, 105; PX 1 at 13, 22; PX 5 at 6; PX 19. The vent level contains another set of steel doors and gates. TR at 46. About 800 feet below the surface is the “dump level,” where buckets full of ore and rock unearthed at the mine are dumped. TR at 38-39, 182; PX 5 at 6. There is another set of doors at the dump level, and a vertical structure called a “backsplash” to prevent rocks falling down the shaft if the muck bucket turns upside down. TR at 50, 96. Buckets unload these materials at the dump level, where they are dumped down a 62-degree angle decline “shoot” and descend to the “never sweat level.” TR at 39, 51. A man in a structure called a “crow’s nest,” wearing fall protection gear, monitors the dumping, attaches a “lazy chain” onto the muck buckets, which prevents them from tipping, and ensures that the lazy chain is out of the way after dumping so the bucket is clear to move down the shaft. TR at 51-52, 96; PX 1 at 18(b); see ALJX 2.

8. The visual animation guide showed that below the dump level, at about 1,100 feet below the surface is the “never sweat” level, where the dump materials arrive via the above-mentioned “shoot,” are loaded onto rail cars, and will be taken by a 2-mile never sweat tunnel to Superior, Arizona. TR at 39, 51; PX 1 at 22; PX 5 at 6. Much like the collar, vent level, and dump level, the never sweat level contains a steel door and gate, which can close to prevent the falling of materials or people who exit the personnel conveyance at this level to work. TR at 52-53. Just below the never sweat level is a 60-inch ventilation duct, which runs from the never sweat tunnel into the mine shaft, from which cold air is pumped down the shaft. TR at 52-53, 104; PX 1 at 22. Below the never sweat level, there are no more safety doors, and no obstructions inside the shaft. TR at 52-53. There are two electrical substations, which Mr. Goodell referred to as “doughnut stations,” which contain electrical junction boxes and pressure-reducing valves, but none of these obstructions are within the 28-foot diameter of the shaft. Id.

9. The visual animation guide showed at approximately 4,600 feet below the surface, is the “pump level,” which will eventually connect with the Number 9 shaft, and contain a large pump station to pump out the old mine. TR at 39-40; PX 5 at 6. About 100 feet below the “pump level” is the “transition pump station.” TR at 40. Near the bottom of the shaft is the movable work stage called the “Galloway,” which carries equipment, can be raised and lowered, and is suspended from the head frames on the surface by four, load-bearing ropes. TR at 40-41; ALJX 2. Near the current shaft bottom, around 5,500 feet is the “haulage level,” which will be used to haul ore once the mine is built. TR at 40.

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6 Mr. Gough explained that it is uncommon to have the dump level located below the collar (surface) of the mine, and that it presents a “whole new and unique set of circumstances that we have to protect against.” TR at 182.
The Personnel Conveyance

10. The personnel conveyance was “specifically designed for worker transport” by Cementation to move up to 17 people (or 4,000 pounds), small tools, and supplies through the mine; it is not capable of hauling muck, water, or being tipped upside down to dump materials. PX 5 at 1; TR at 110-12, 192; PX 7 at 3; see PX 1 at 27-28. It is 10 feet tall, and has two main compartments – an upper and lower compartment. TR at 109. Enclosing the lower compartment is a solid, steel door, which is perforated with half-inch circles for visibility and ventilation. TR at 108, 134; PX 1 at 23. The door opens by sliding along a track inside the conveyance, and locks in place using a vertical rod to prevent it from opening while travelling down the shaft. TR at 117; PX 1 at 24. When the door closes, it provides a completely enclosed lower main compartment for moving workers into the mine, and Cementation’s Transportation of Personnel Policy dictates that the conveyance door should be closed and latched before moving persons. TR at 109, 160; PX 16 at 4 (Rule 2.2(5)). The smaller, “top deck” compartment is accessible from the lower compartment by climbing up a ladder, through a hatchway, which remains closed when the conveyance is in motion. TR at 118; PX 1 at 25-26; PX 3 at 6. The hatchway can be closed and locked with a metal latch. TR at 118; PX 1 at 26. Inside the personnel conveyance, there is a wireless shaft signal box that emits a signal through a “leaky feeder” in the shaft to the hoist operator. TR at 115. Mr. Goodell explained that this “leaky feeder” acts as a continuous antenna in the shaft, and allows workers in the shaft to provide bell signals, and to communicate directly by voice communication to the hoist operator. TR at 116.

11. Mr. Goodell indicated that this was a state of the art conveyance designed exclusively for the movement of workers; in his 39 years of experience, he had never seen a personnel conveyance, and noted that men typically travel down the mine in the open-top mucking buckets. TR at 109. According to him, in its risk assessment, Rio Tinto determined that there was a “particular danger” with people climbing in and out of muck buckets, which can be several feet deep. TR at 110. Therefore, the personnel conveyance was designed “from scratch” to minimize the falling associated with riding in muck buckets. Id. at 110, 115. It was not a converted muck bucket, and Cementation’s Standard Work Procedure does not allow the personnel conveyance to transport anything but people and small hand tools. Id.; PX 16 at 4. According to Mr. Goodell, the miners greatly enjoy riding the personnel conveyance. TR at 111. Mr. Goodell opined that the personnel conveyance did not comport with a traditional bucket for several reasons. First, the personnel conveyance does not have an open top. Id.; PX 3 at 4; see TR at 232. Second, the conveyance was not capable “acting as a bucket, as we define it” because it could not hoist broken rock, haul muck, heavy equipment, or water. TR at 112, 123. Instead, it was designed specifically by Cementation to transport people and small tools. TR at 123-24. Third, the personnel conveyance could not be tipped over like traditional mucking buckets. TR at 112, 125.

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7 Mr. Goodell explained that bell signals or “bells” are a required form of mine communication where a series of bell sounds indicate where the workers wish to move the conveyance, and whether or not the conveyance has people on it. TR at 116-17.
12. The personnel conveyance is guided down the mine shaft by a crosshead that attaches directly above it. The crosshead is a framework that travels on rope guides fixed at the head frame, with four “shoes” or “bushings” that attach to the same two winch ropes that are used to hold the Galloway. TR at 44, 189, 195; PX 1 at 10; PX 5 at 2; PX 8 at 1; ALJX 2. Below the crosshead, a rope attachment structure with a dolly ball, socket, chase block, swivel, and hook with a safety latch attaches to a 6-foot, triangular, three-chain structure and to the hoist rope that hoists the personnel conveyance. TR at 44, 78, 180, 195; PX 1 at 10; PX 5 4; PX 8 at 1. This rope conveyance and guidance system prevents the personnel conveyance from wandering out of its zone of travel. TR at 44; PX 5 at 1. It is powered by a 15-foot diameter, 5,000 horsepower double drum Nordberg hoist that winds the rope at the mine’s surface. TR at 65, 81-82; PX 1 at 12; PX 5 at 1; PX 7 at 3; ALJX 2. The crosshead is “chaired,” or released at the Galloway entrance, so the personnel conveyance may move through the Galloway. TR at 191.

13. The personnel conveyance only rides on the hoist on the Number 1 compartment of the mine shaft. TR at 78, 91, 198. The hoist of the Number 1 compartment of the shaft can also be used for mucking in “mucking mode” with traditional mucking buckets. TR at 111, 198; ALJX 2. Mr. Goodell noted that the mucking buckets and the personnel conveyance attach to the crosshead on the same hook, with the ability to switch out the mucking bucket for the personnel conveyance on the number 1 compartment hoist within three minutes. Id. The personnel conveyance is not operated when mucking is in progress. TR at 197.

14. The speed of the personnel conveyance varies depending on the level of the mine through which it is moving. TR at 46. At the vent level, the personnel conveyance is moving at a rate of 200 feet per minute. TR at 47; PX 2. It is still in acceleration mode, and the speed is reduced to account for the vent door system. Id. After descending past the vent level, the personnel conveyance accelerates up to 500 feet per minute. TR at 48; PX 2. This speed of 500 feet per minute is maintained through the dump level, and continues to the never sweat level. TR at 48, 54. Petitioner does not request that the personnel conveyance travel in excess of 500 feet per minute above the never sweat level, because it described the area above the never sweat level as a “busy” part of the shaft, with several sets of doors. TR at 54, 96.

15. After descending to the never sweat level, Petitioner seeks to run the personnel conveyance at a speed of 1,200 feet per minute. TR at 55; PX 13 at 2. It requests that the modification be granted between the never sweat level and the required “slow down zone” before the Galloway, throughout which there is a minimum clearance of 18 inches from all obstructions. TR at 145. The 1,200 feet per minute requested speed would only apply when workers were riding in the lower, fully enclosed compartment of the personnel conveyance; if any person was riding in the upper compartment observation deck, the speed would be reduced to 500 feet per minute. PX 5 at 2. The personnel conveyance would slow down as it approaches the Galloway based on the applicable deceleration parameters. TR at 58. The slowdown zone is calculated by Programmable Logic Control (“PLC”) that controls the rope hoist and determines how many feet of slow down are necessary to decelerate in anticipation of arrival at the Galloway. TR at 59.

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8 According to the Trial Glossary, when a crosshead is “chaired,” that means that supports called “chairs” at the top of the Galloway are attached to the crosshead when the bucket or conveyance arrives, in order to provide further support. ALJX 2.
When the conveyance arrives at the Galloway, it stops before a worker signals it down using a bell notification system. TR at 60. The personnel conveyance is guided through the Galloway at the slow rate of 60 feet per minute. *Id.* All speeds are controlled by computer, depending on the location of the personnel conveyance in the shaft. TR at 70.

16. Mr. Gough explained that the request to modify the speed of the personnel conveyance to 1,200 feet per minute was derived from the general rule of thumb that personnel conveyances can be operated at half of full speed. TR at 194, 234-35. In a February 24, 2011, report, G.L. Tiley and Associates, an engineering consultant hired to test the hoist at Resolution Mine, determined that the maximum speed the hoist could maintain and still comply with all emergency deceleration speeds was 2,300 feet per minute. PX 6. From that number, and the designed speed of the hoist of 2,400 feet per minute, it was determined that the modification should seek a personnel conveyance speed of 1,200 feet per minute. TR at 194, 234-35. In other words, Petitioner’s arrival at the proposed speed of 1,200 feet per minute for the personnel conveyance was based on a general industry guideline, but there was no precise, scientific reason for arriving at this exact speed. TR at 235.

17. Hector Denogean began work for Cementation on the Resolution Mine project in 2006, and is the head shaft superintendent for the Number 10 shaft at Resolution Mine; he is responsible for day-to-day operations in the Number 10 shaft, communicating with front line supervision the work, working with engineers for upcoming projects in the shaft, and for overall safety and compliance with state and federal mine regulations. TR at 150, 153. He has 27 years of mining experience, primarily in underground mines, and over the course of his career, Mr. Denogean has travelled into the shafts in hoist or fixed conveyances including sinking buckets, small cages, and manned conveyances. TR at 151-53, 161. Mr. Denogean has ridden in both the personnel conveyance and mucking buckets at Resolution Mine, and said the he and several men in his crew preferred riding in the personnel conveyance because it offered a more level platform for standing, an easier means of entry and exit, better ventilation, and less exposure to the vapors of rocky materials than a mucking bucket. TR at 159, 162-64. He explained that in a traditional mucking bucket, one has to climb up a nine foot can of steel to enter and exit, which increases the risk of slip and fall accidents. TR at 163. Mr. Gough also called the personnel conveyance a “much better conveyance to travel men in,” than a traditional, open-top bucket, as it was fully-enclosed and ventilated. TR at 232.

18. Thomas Barkand is employed by the Department of Labor’s MSHA in Pittsburgh, Pennsylvania, where he has worked for 36 years. TR at 244-45. Mr. Barkand graduated with a degree in electrical engineering from the University of Pittsburgh, where he also received his master’s degree in industrial engineering. TR at 245. At the MSHA, he has worked extensively on hoisting systems, including work in the field investigating hoisting accidents, and training MSHA inspectors on hoisting system inspection at the National Mine Health and Safety Academy in West Virginia. TR at 246. Mr. Barkand has authored several publications on proper mine hoist design and elevator control safety in peer-reviewed Institute of Electrical and Electronic Engineers (“I-EEE”) and American Society of Mechanical Engineers (“ASME”) journals. TR at 247. However, he has never designed a shaft sinking plant or programmed a program logic controller for a working hoist. TR at 254. He only recalled investigating one accident related to a rope-guided hoist at the Rodeo vent shaft. TR at 256. Mr. Barkand was
accepted as an expert in hoisting systems. TR at 248. Mr. Barkand was present during the
investigation of Resolution Mine in July 2011 and rode up and down the personnel conveyance
one time. TR at 255; PX 13 at 10.

19. Mr. Barkand noted that, although he was not a regulatory expert, buckets are
described “by their use and attachment,” and stated that a bucket is a device that’s chiefly used in
shaft sinking. TR at 248, 258. According to Mr. Barkand, there were “a lot of similarities”
between Petitioner’s personnel conveyance, mucking bucket, and the concrete bucket including
similarities in appearance, in construction, in shape, and in dimension. TR at 249-50. He also
noted that the personnel conveyance had chain attachments underneath it, which, like the chains
of a mucking bucket, could make it act as “a bail” if attached to a stationary and tilted, although
Mr. Barkand acknowledged that the personnel conveyance was not intended to function as a bail
and that no persons were allowed in the conveyance if it was attached to anything by these chain
links. TR at 250-51, 260-61; see PX 1 at 27. Mr. Barkand agreed that the personnel conveyance
was not intended to be dumped or to carry muck from the shaft, even though it was suspended
from a crosshead in the same manner as the mucking and concrete buckets. Id. He noted some
differences between the personnel conveyance and the other buckets, including the fact that the
personnel conveyance had an enclosed top and a door, rather than the open top seen in the
concrete and mucking buckets. Id. He also agreed that the personnel conveyance was held in
normal travel zone by gravity and that it would typically take an application of external force to
move it. TR at 267.

Mine Shaft Safety Measures

20. Mr. Goodell, Mr. Denogean, and Mr. Gough testified for Petitioner about mine
safety at the Resolution Mine. Mr. Barkand testified for Respondent based upon his experience
during the two day inspection conducted by the MSHA in July 2011. TR at 255. However,
during that inspection, Mr. Barkand did not recall specifically talking with any of the miners
about their experiences riding in the personnel conveyance, speaking with anyone about how
maintenance was performed, or reviewing the daily inspection cards from the shaft. TR at 256.

(a) Clearance

21. In both Mr. Gough and Mr. Goodell’s experience in developing and sinking
shafts, the industry standard is that there should be a minimum of 18 inches in clearance between
any bucket in a hoist configuration and potential obstructions to ensure the bucket or conveyance
will not strike another object.9 TR at 128, 194. Mr. Barkand could not recall any specific
MSHA regulations specifying a minimum amount of design clearance for rope-guided hoists like
the one at issue. TR at 257. At all points below the never sweat level in Resolution Mine, the
minimum design clearance between the personnel conveyance and all permanent obstructions
exceeds 18 inches. TR at 57-58. Mr. Goodell explained that at the never sweat and pump
stations, the nearest fixed obstruction to the personnel conveyance is a platform supported by
steel. TR at 127. The nearest horizontal beam supporting this platform is 23 and 5/8 inches or
nearly two feet, from the personnel conveyance. TR at 127, 145; PX 8 at 2. Additionally, from

9 In its Petition for Modification, Petitioner stated that 16 inches, not 18 inches, of clearance was the prudent
engineering practice in the industry. PX 5 at 2.
the never sweat level to the pump level, a distance of nearly 3,500 feet, there is a 60-inch vent tube, which is depicted in Petitioner’s Exhibit 8. TR at 127; PX 8 at 2. Although Mr. Goodell did not specify the clearance between the personnel conveyance and the 60-inch vent tube, the depiction in Petitioner’s Exhibit 8 suggests that the clearance between the personnel conveyance and the 60-inch vent tube exceeds two feet. PX 8 at 2. Starting below the pump level, some 4,578 feet below the surface of the mine, and for the remaining balance of the shaft, the nearest fixed obstruction to the personnel conveyance is a 72-inch vent tube, also depicted in Petitioner’s Exhibit 8. TR at 127; PX 8 at 2. The clearance between the personnel conveyance and the 72-inch vent tube is 21 inches. PX 8 at 2. Mr. Gough agreed with Mr. Goodell’s testimony about the shaft clearances. TR at 184. According to Mr. Gough, the location in the shaft with the least amount of clearance is between the conveyance and the 72-inch vent tube. TR at 222.

22. As the personnel conveyance enters the Galloway, there is a three-inch clearance around the personnel conveyance, which was the “design standard for the [Galloway].” TR at 191, 224. Petitioner is not seeking a petition to modify the speed at the Galloway level, and the conveyance moves through the Galloway at a slow speed of about 60 feet per minute. TR at 191.

(b) Hoist Operator’s Console

23. At the surface level, adjacent to the hoists, is the hoist operator’s console. TR at 67; PX 1 at 3. The hoist operator, with the assistance of four large video monitor displays, monitors the activities of the Number 10 shaft. The four monitors all display different information to the hoist operator. TR at 67. The monitor farthest to the left is a changeable video display, which can be directed by the operator to display live feeds of different cameras throughout the mine. Id.; PX 1 at 4-5. There are about 5 cameras set up throughout the mine, including one of the head frame, wherever there is a door or moving gate, and one of the vent decline.

24. The second monitor from the left is the hoist machine interface, which includes a digital depiction from the Programmable Logic Control of where the conveyances are located within the Number 10 shaft, the speed at which they are travelling, and the condition of obstructions like the doors throughout the mine. TR at 67, 71; PX 1 at 4, 6. It includes a column of information on the right-hand side of the screen alerting the hoist operator to the status of all doors, and the status of the backsplash and lazy chain at the dumping level. TR at 96; PX 1 at 6. The information displayed on the second monitor comes from a signal encoder from the hoist itself, which calculates the position of the conveyance by how many turns of the rope drum have been made; from switches on every shaft door that indicate whether that door is open or closed; and from proximity reflector sensors called a “proving switch” mounted on the top of the crosshead which reflect photo light beams off various places in the mine shaft to verify that the conveyance is where the hoist readers indicate. TR at 67-68, 71, 187; PX 1 at 4, 6, 11. Mr. Goodell described this as a “redundant system” to verify the position of the conveyances; if the signal encoder from the hoist does not match the location from the reflection signal from the “proving switch,” the hoist automatically shuts down. TR at 71, 79-80, 187; PX 5 at 2. According to Mr. Goodell, these reflectors are not required by the MSHA, but Petitioner noted that they have worked successfully on multiple shaft projects in North America. TR at 80; PX 5
The image display to the hoist operator is also a color-coded system, such that if a door closes the status of that door turns red in color, and the entire shaft column in that vicinity turns pink to indicate that there is an obstruction in the shaft. TR at 73; see PX 1 at 6. The color coding helps the hoist operator detect when a door has been closed. TR at 73. The second monitor also includes a simulation of the Galloway, represented by a gray rectangle to the far right of the screen. TR at 72; PX 1 at 6.

The third monitor from the left shows the operations of the hoist itself, including detailed data on the hoist speed and depth, amp current level flowing through the motor, alarms, brakes and brake temperatures, etc. TR at 68; PX 1 at 4, 7. Again, the third monitor is color coded, and designed to have certain objects turn red if something is wrong with the hoist. TR at 74; see PX 1 at 7. If the data in the third monitor does not correspond to the data in the second monitor, the hoist automatically shuts down, which is a safety measure in excess of what is required by the MSHA. TR at 75. The final monitor, much like the first monitor, is a changeable video display, which can be directed by the operator to display the images of different cameras throughout the mine as an “extra layer of safety.” TR at 68, 186; PX 1 at 4.

From the console, the hoist monitor can also run the main hoist for the two conveyances and the four winches that support and move the Galloway by using two “joy sticks.” TR at 68-69; PX 1 at 4. The left joy stick controls the winches for the Galloway, and the right joy stick controls the hoists, but they cannot be operated simultaneously; if one is being operated, the other is shut down. TR at 77. Although the hoist operator can control the movement of the personnel conveyance by these joysticks, he cannot control or override the speed limits set forth above. TR at 70. Furthermore, if a door is closed or there is an obstruction in the mine and hoist operator does not notice, the conveyance will automatically be slowed down by computer and will stop before it reaches the obstruction. TR at 73. According to Mr. Goodell, the MSHA does not require this automated, computerized stopping system. Id.

(c) Obstruction Control System and Programmable Logic Control

The Resolution Mine Obstruction Control System consists of two Programmable Logic Controllers (“PLCs”) and a variety of communication media between the two so that the systems can “handshake” and interact for additional safety. PX 17 at 1. The hoist PLC was supplied and installed by G.L. Tiley Limited, and the shaft sinking PLC was supplied and installed by Cementation. Id. Both are centrally located in the Hoist Room at the surface of Resolution Mine. Id. The PLCs monitor several shaft positions and checkpoints that monitor the shaft and can command the hoist to stop if a problem is detected. Id. at 4-8. The PLCs also control the hoist speed profile and parts of the mucking operation. Id. at 10, 12.

The Obstruction Control System in place at Resolution Mine includes all of the protections put in place to ensure that the conveyances do not collide with any obstructions, including safety doors. TR at 180. The Obstruction Control System was initially developed by Cementation in 2001 and was modified specifically for Resolution Mine’s Number 10 shaft. TR at 180-81. Mr. Gough explained that the PLC is the hardware in which the obstruction control program logic is input and that his group wrote the software and implemented it at the Resolution Mine. TR at 184. The data received from these programs are displayed to the hoist operator, as
described above in the second monitor to the left. TR at 185. Mr. Gough called Resolution Mine’s PLC a “very sophisticated system, designed to eliminate the possibility of our conveyances colliding with our sinking obstructions.” TR at 241.

(d) Oscillation and Stabilizing Jacks

29. Oscillation refers to the potential movement of the ropes from external sources, which can make the ropes move back and forth, similar to how a guitar string would move when plucked. TR at 91. Mr. Gough explained that rope oscillation potential is greatest during the mucking cycle. TR at 92, 197. To minimize oscillation from the Galloway, Petitioner has installed about 12 hydraulic jacks (four on three separate decks of the Galloway) to stabilize the Galloway and hold it rigid against the concrete shaft walls; the hydraulic jacks are not required by the MSHA. TR at 92-93, 158. The stabilizer jacks are primarily used during the mucking cycle, but can be employed whenever the Galloway needs to be stabilized, and according to Mr. Denogean, the crew leader on the Galloway is responsible for monitoring these stabilizer jacks. PX 22; TR at 158, 196. To Mr. Goodell and Mr. Gough’s knowledge, a muck bucket has never struck an object in the Number 10 shaft during mucking during the hoisting of some 26,000 muck buckets up the shaft even at current speeds of up to 2,375 feet per minute.10 TR at 93, 200-01. While in “mucking mode,” both Mr. Gough and Mr. Goodell reiterated that Petitioner never hoists personnel, which, according to Mr. Goodell, is another safety precaution not required by the MSHA. TR at 93, 198.

30. With respect to the oscillation or tilting of the personnel conveyance, Mr. Gough explained that theoretically, the personnel conveyance could act like a pendulum and swing from the dolly ball at the top of the rope attachment down. TR at 199. However, he described the conveyance as “very heavy,” and said it acts as a rigid system such that he has not experienced that type of tilting or swinging movement. Id. Instead, Mr. Gough believed the greater potential for movement would be with the muck buckets during mucking mode, and described the movement as a “hula-like movement,” not a pendulum swing. TR at 199-201. He described any potential movement of the personnel conveyance at 1,200 feet per minute as “far less than the muck buckets” and said “we see very little movement with the manned travel bucket and have no reason to expect that it would ever collide with anything.” TR at 201. He explained that “something catastrophic would have to happen . . . for there to be an obstruction that this conveyance would hit in the [1,200 feet per minute] speed zone” at issue. Id.

(e) Critical Components

31. According to Mr. Goodell, a “critical component” is any mechanism that, if it fails, could cause an injury or fatality. TR at 100. Petitioner requires all critical components to be engineered by a qualified, licensed engineer. Id. One example given by Mr. Goodell of a critical component were the brackets which hold the water line, air-line, and ventilation piping, which he explained are designed to hold the weight of the pipe plus an adequate safety factor. TR at 99-101; PX 1 at 21b. These brackets secure the pipes or tubing to the wall every 20 feet. TR at 102.

10 The speed of the muck buckets is not at issue here.
(f) MSHA Safety Recommendations

32. After its June 2011 inspection of the Resolution Mine, the MSHA made seven specific recommendations to Petitioner. Mr. Barkand described these recommendations as “general discussions to improve safety” that were not specifically related to the modification at issue. TR at 266. First, the MSHA recommended that Petitioner extend the bell cord in the personnel conveyance from the top compartment to the lower, enclosed compartment where most people ride. Although Mr. Goodell expressed concerns about the conveyance spinning independent of the crosshead and jamming this cord, he noted that Petitioner addressed this issue by incorporating a radio in the lower compartment that used the same bell system. TR at 130; see PX 1 at 23; F.F. ¶ 10. Second, the MSHA recommended that a radio be installed inside the personnel conveyance to provide voice communications with the hoist operator. TR at 131. Mr. Goodell stated that this radio had been installed in the personnel conveyance. TR at 131; see PX 1 at 23; F.F. ¶ 10. Third, the MSHA suggested that the hinged door on top of the personnel conveyance be counterbalanced to prevent it from falling on the miners, or replaced with a horizontal sliding door. TR at 131. Petitioner reviewed this recommendation, but according to Mr. Goodell, it was not enacted because Petitioner did not see any danger of the door hitting any person and because of concerns over the proposed sliding door failing to work or being bent by people standing on it. Id. Fourth, the MSHA recommended that Petitioner remove the chain slings installed at the bottom of the personnel conveyance when hoisting personnel to prevent the possibility of these chains catching on a fixed structure and dumping the bucket. Id. Mr. Goodell noted that, as a matter of policy, there are no chains under the personnel conveyance when people are inside, although he did state that it would be possible to attach chains to the bottom of the personnel conveyance by attaching a clevis to the metal stiffener for slinging. TR at 113-14, 131. Furthermore, Mr. Goodell explained that the three double chain links on the bottom of the personnel conveyance do not protrude outside the circular form of the conveyance, and therefore do not present an obstruction issue. TR at 132; PX 1 at 27; see TR at 112. Fifth, the MSHA suggested that to prevent miners from climbing or moving outside the conveyance when it was in motion, Petitioner install an electrical switch in the personnel conveyance to monitor the side and top door positions and to stop the hoist if either door is not closed and locked during operation. TR at 132. Mr. Goodell explained that Petitioner considered this recommendation, but ultimately did not implement it because these signal devices “frequently fail and would cause an inadvertent [emergency]-stop on the hoist, which upsets the miners quite a bit.” Id. Petitioner did not find this measure necessary, particularly because it perforated the steel door, allowing the miners contained within to see what was happening outside the conveyance. Id. Mr. Goodell explained that excessive emergency stops can be “very unsettling” for the miners, and even though it is a safety measure, he did not want to implement these measures unless they were “necessary.” TR at 133. Sixth, the MSHA recommended that Petitioner install a bottom guide attachment or electric tilt monitoring switch to prevent or detect bucket swing which could cause a collision. Id. With respect to this comment, Mr. Goodell stated that Cementation had not experienced a fatal accident using a bottom guide attachment frame on the crosshead to prevent bucket swing. Id. Instead, the victim looked over the top of the open bucket and caused an accident. Id. He noted that the personnel conveyance was not that type of bucket, did not have that type of guidance, and that Petitioner had not observed any

11 This was confirmed by Mr. Denogean and Cementation’s Transportation of Personnel policy, Rule 2.2(4): “Check for slings underslung from the conveyance. Slings are to be removed before transporting personnel.” PX 16 at 4.
bucket swing “whatsoever at any speed in any of [its] buckets,” including the personnel conveyance. *Id.* Mr. Goodell indicated that rather than install this attachment or switch, he would rather rely on the riders themselves, who, if they sensed danger, could stop the hoist using the bell signals or using the emergency brake button inside the conveyance. TR at 134. Seventh, the MSHA recommended that Petitioner construct the side sliding door of the personnel conveyance out of expanded metal rather than solid metal to improve visibility and ventilation for the miners, and to discourage miners from opening the door while the conveyance was moving. *Id.* Mr. Goodell noted that Petitioner essentially agreed to this change, and while it did not modify the door using expanded metal because of fears it would not be strong enough, it did perforate the steel door to allow greater visibility and ventilation. *Id.; PX 1 at 23.*

33. Although the MSHA proposed energy absorbing bumpers and airbags as means of absorbing the increased kinetic energy release associated with speeds of 1,200 feet per minute, PX 13 at 5, according to Mr. Gough, Petitioner did not implement any additional safety measures such as airbags, seatbelts, bumpers, etc. because they were not practical as applied to shaft sinking. TR at 239, 241. Petitioner’s philosophy, instead, was to take engineering and maintenance steps to minimize the chance of any collision in the first place. TR at 240. As Mr. Gough explained, because there will always be men at the bottom of the shaft, any collision would be “completely intolerable” and all collisions must be eliminated. TR at 240-41.

(g) Mine Maintenance and Safety Checks

34. Mr. Denogean oversees maintenance in the shaft, including daily brake checks and examinations of the bucket attachments at the collar; weekly shutdowns to grease the parts and physically check the hook, safety latch, nuts, and crosshead; bi-weekly examinations of the ropes; a monthly wear check on the rope strength; quarterly greasing of the ropes; and bi-annual sonogram, x-ray, and rope cut testing for destruction of the ropes. TR at 154-55. At least twice a day, Mr. Denogean personally examines the shaft, shaft attachments like piping and electric lines, shaft collar, and Galloway by riding down in the personnel conveyance. TR at 155.

35. Mr. Denogean described the daily safety process. Cementation has a Standard Work Procedure handbook for shaft conveyance and sinking buckets. PX 16. It uses a five-point “stop and correct” safety card to examine the work place on a shift-by-shift basis and to document these inspections. TR at 156; PX 15. The card is two-sided; the front includes a list of yes or no questions for which corrective action must be taken if the answer is no, and the back includes a “personal risk assessment” of the tasks being done and the potential corrective actions necessary. TR at 157; PX 15. According to Mr. Denogean, and as set forth by Cementation’s Standard Work Procedure handbook, employees from every “work place” fill these cards out, and workplaces include the Galloway, the never sweat level, the haulage crew level, the bottom the shaft, the surface, the collar, etc. TR at 157; PX 16 at 2. Mr. Gough, who oversees Cementation’s work at Resolution Mine, agreed that maintenance is conducted “daily” to spot problems in the mine shaft. TR at 227-228.
36. According to Mr. Goodell, maintenance activities performed on the hoist itself are recorded in “Ontario books.” TR at 119; PX 1 at 29-37. The images in the record show that there is a “Hoisting Machinery Record Book,” and a “Hoist Operators Log Book,” and Mr. Goodell suggested that there is also a book documenting electrical, mechanical, rope, and shaft inspections. TR at 120. These Ontario Books are used to record daily inspections of the hoist rope, brakes, clutch, interlocks, etc.

(h) Emergency Stops and the Bungee Cord Effect

37. As recommended in the MSHA’s inspection of the Resolution Mine, G.L. Tiley and Associates conducted a series of deceleration tests on the personnel conveyances in December 2011. G.L. Tiley is a specialist mine hoist engineering company that worked directly for Petitioner on hoist control and safety, and also worked closely with Cementation. TR at 206-07. According to the MSHA, these tests were originally conducted at the hoist drum during an emergency stop about 1,000 feet below the shaft collar. PX 13 at 5. The MSHA expressed concern that “[a]ctual deceleration rates experienced by the riders in the bucket can be greater than the drum decelerations due to the elasticity in the suspension ropes” and that “as the shaft deepens the ‘bungee cord effect’ will create a greater hazard to personnel riding in the bucket.” Id. However, Mr. Gough had never seen deceleration rates calculated at the conveyance itself, because, in his experience, they are typically measured at the hoist drum. TR at 203, 205-06. He stated that the hoist drum is the “only place” the deceleration rates can be accurately measured, because from that location the testers can control the brakes, whereas any measurements at the conveyance would vary based on a number of factors Mr. Gough felt could not be specifically controlled, such as the load of the conveyance and the rope parameters. TR at 205-06. Mr. Gough elaborated, explaining that the goal as expressed by the United Kingdom’s National Coal Board Specification for Safe Manned Riding in Shafts is that the deceleration felt by people in the conveyance is less than one “G.” Id.; see PX 10 at 10. Because there is an approximate relationship between the deceleration rate at the hoist and deceleration rate at the conveyance of one to two, Mr. Gough explained that his team must keep the deceleration rate at the hoist to less than half of a “G” to comply with the applicable regulations. TR at 203-04; PX 10 at 10. A “G” is expressed as 16 feet per second squared, which is the maximum deceleration rate that the MSHA allows for emergency braking under 30 C.F.R. § 57.19062. TR at 204; PX 10 at 10.

38. Jason Boilard of G.L. Tiley, who conducted the deceleration tests, agreed with Mr. Gough that deceleration testing is typically conducted at the hoist, not at the conveyance itself. PX 11 at 4. He recalled one instance in its four decades of hoisting consultation in which G.L. Tiley conducted deceleration values at the conveyance itself. Id. These tests occurred in a deep (5,000-foot) zinc mine in Manitoba, where riders complained of hard stops during hoist emergency stops, where, following some adjustment to the braking profile, deceleration was reduced from 24 feet per second squared to 12 feet per second squared at a speed of 1,760 feet per minute. Id.

39. In spite of Mr. Gough’s belief that the most accurate deceleration measurements are taken at the hoist, Petitioner, through G.L. Tiley, used a three-axis decelerometer to measure and record the deceleration at the conveyance, as was recommended by the MSHA in their July 2011 inspection. TR at 206; PX 11 at 2; PX 13 at 7 (recommendation by MSHA); see PX 18
Mr. Gough explained that the purpose of testing the deceleration speed at the conveyance itself was to measure the “bungee [cord] effect” about which the MSHA expressed concern. TR at 215. These tests were conducted in December 2011 by Mr. Boilard, and Mr. Gough was present at the tests. TR at 214. The tests were conducted by mounting the decelerometer on the center of the conveyance roof to record vertical deceleration, while this speed was simultaneously recorded at the hoist. PX 11 at 2. Prior to the testing, the hoist brake settings were adjusted to reduce deceleration to about 7 feet per second squared from its original setting of about 11 feet per second squared.\(^\text{12}\) Id.; TR at 215-16. The conveyance was filled with bags of “shortcrete” weighing 2,400 pounds to approximate a load of 14 men in the manned conveyance. PX 11 at 2; TR at 221. The deceleration tests were recorded during three shaft runs from the mine collar to the bottom of Number 10 shaft and back, at speeds of 500, 1,200, and 2,375 feet per minute. PX 11 at 2. Emergency stops were made at 1,000-foot increments during shaft travel, from depths of 1,000 to 4,000 feet, in both directions. \textit{Id.} A report with the results of this testing was prepared by Mr. Boilard and reviewed by Professional Engineer G.F. Haufek of G.L. Tiley in February 2012. PX 11.

40. G.L. Tiley’s report revealed that “while deceleration [was] steady at the hoist . . . significant oscillation [was] experienced at the [conveyance].” PX 11 at 2. Mr. Boilard and Mr. Gough noted that conveyances “are known to bounce in emergency stops due to rope elasticity,” which can affect rider comfort, and which “no doubt has been taken into account by the various authorities . . . in establishing acceptable deceleration rates.” \textit{Id.} at 4; TR at 220. According to the report, at the conveyance, there was an added oscillating component from the hoist rope bounce such that the conveyance continued “bouncing for several seconds” after the hoist stopped. PX 11 at 2. The oscillation was measured in a chart under a metric called “cage bounce.”\(^\text{13}\) Testing revealed that while “cage bounce” was as high as 3-4 feet at a speed of 500 feet per minute, it was “much less” at 1,200 feet per minute. \textit{Id.} at 3 (table). Cage bounce did increase as the conveyance was deeper in the mine, “due to the longer rope, lower spring constant and higher suspended mass.”\(^\text{14}\) \textit{Id.} In short, with respect to cage bounce, there was less bounce experienced when the conveyance was moving at the higher 1,200 feet per minute speed, and cage bounce increased slightly as the position of the conveyance was deeper in the mine. TR at 220-221; PX 11 at 3. At a speed of 1,200 feet per minute, cage bounce never exceeded 2.23 feet at any depth. PX 11 at 3.

41. Cage deceleration varied less by the depth of the conveyance in the shaft, and the maximum deceleration observed was 20 feet per second squared when the conveyance was moving down at a depth of 1,000 feet travelling at a speed of 500 feet per minute. \textit{Id.} However, much like the cage bounce, the deceleration rates were lower when the conveyance was travelling at 1,200 feet per minute, as compared to when travelling at 500 feet per minute. \textit{Id.} at 4; TR at 220. At 1,200 feet per minute, the deceleration rates were most commonly between 12 to 16 feet per second squared. PX 11 at 3-4. The report noted that “[a]t the speeds tested above

\(^{12}\) Mr. Gough explained that the hoist brake settings can be controlled by adjusting the brake air pressure through the automated PLC settings. TR at 216.

\(^{13}\) The report refers to the personnel conveyance as a “cage,” but Mr. Gough clarified that by “cage” the report was referring to the personnel conveyance. TR at 218.

\(^{14}\) At a speed of 1,200 feet per minute, “cage bounce” was 2.23 feet as the conveyance was moving up at a depth of 4,000 feet, but less than a foot for depths of 1,000 and 2,000 feet in both directions. PX 11 at 3.
500 [feet per minute], deceleration at the cage was held to 16 [feet per second squared] or less,” making the argument about where this speed limit should apply “moot.” *Id.* at 4. The report concluded that man-travel could be safely conducted at 1,200 feet per minute in the personnel conveyance, using the brake settings developed during the testing. *Id.* In a February 24, 2011, report signed prepared by G.L. Tiley, Mr. Haufek noted that “[i]n all cases full code compliance was established with MSHA man travel requirements, 16 [feet per second squared] maximum deceleration.” PX 6. In its Proposed Decision and Order, the MSHA did not appear to consider these new deceleration tests taken at the conveyance. *See* PX 14.

42. Mr. Denogean noted that he had experienced about 8 to 10 emergency stops in muck buckets, and a similar number or slightly fewer in the personnel conveyance at Resolution Mine. TR at 165-66. He described a minor “sensation of weightlessness” and a feeling of up and down movement in the knees that miners feel during an emergency stop. TR at 166. However, he opined that he didn’t feel much difference between emergency stops at 500 feet per minute and the ones at higher speeds he had experienced in other mines that he had worked. TR at 168. He said an “emergency stop is an emergency stop . . . you move up and down, the rope absorbs the shock and you go.” *Id.*

**Testimony on Mine Collisions and Speed of Travel**

43. Mr. Goodell said that in his 39 years of mining experience, he had never heard of a collision between any kind of bucket and obstruction in a hoist configuration similar to that of the Number 10 mine shaft. TR at 134-35. Although Mr. Goodell characterized any collision as “unacceptable” from Petitioner’s point of view, he admitted that he could not rule out the possibility of a collision in the Number 10 shaft because, “[a]ccidents happen sometimes.” TR at 138, 145. He acknowledged that there was an accident that occurred in October 2011 involving a concrete bucket in the Number 2 compartment of Number 10 mine shaft, when the concrete bucket struck a brad that had come loose on the Galloway. TR at 138, 142. As a result of that accident, a piece of material was dislodged, fell down the shaft 53 feet, and struck a miner, shattering his hip. TR at 138, 142-43. Mr. Goodell explained that this accident did not occur at a portion of the mine shaft for which Petitioner is requesting a speed modification, and that speed was not a contributing factor to the accident, as the concrete bucket was inside the bucket well on the Galloway stage of the Number 2 compartment of the shaft, which was meant to move at less than 60 feet per minute. TR at 142. Instead, he explained that the brattice door was damaged by some mechanism and some wires were dislodged and protruded into the Number 2 shaft, and when the concrete bucket was ascending, it probably caught those wires and lifted the brads up, dislodging them and causing them to fall down the shaft. TR at 146-47. Mr. Barkand also agreed that this accident occurred due to a collision in the Galloway, at a reduced speed, where the clearances are only three inches, and was not caused by a collision with the shaft itself or speeds in excess of the MSHA’s regulations. TR at 261-62. The injured miner was evacuated by using a “stokes basket,” which immobilizes the body, which was loaded inside the personnel conveyance. TR at 143. Mr. Goodell noted that evacuating injured persons using the personnel conveyance is considerably easier than loading the injured miner into a traditional muck bucket. TR at 144.
44. Mr. Goodell opined that increased speed does not add to the likelihood of a collision. TR at 135. Although he noted that aerodynamics on the conveyance could cause it to move with increased speed, he stressed that Petitioner had not experienced any movement by the conveyance outside its normal zone of travel at any speed, in part because of its “fairly symmetrical” design. Id. He explained that the increased speed proposed by Petitioner “doesn’t increase the potential of hitting something,” but admitted that if the conveyance were to hit something at the increased speed of 1,200 feet per minute, there would be a larger kinetic energy release. TR at 140. In other words, Mr. Goodell believed that the likelihood of a collision at 1,200 feet per minute was the same as the likelihood of a collision at 500 per minute, but that the kinetic energy released at 500 feet per minute would be less than the kinetic energy release at 1,200 feet per minute because “that’s just physics.” TR at 140-41.

45. Mr. Gough agreed that at the faster 1,200 feet per minute speed, more kinetic energy would be released with a collision. TR at 226, 234. However, he noted that in a rope-guide conveyance system like the one at Resolution Mine, with the personnel conveyance’s tapered, thicker top and bottom design, the collision would likely be a glancing blow, which would diminish the potential kinetic energy release, particularly when compared to a fixed-guide conveyance system. TR at 230. Like Mr. Goodell, he had never experienced any circumstance in a rope-guided conveyance system where a bucket had collided with an obstruction in the full speed zone of the shaft, even in other jurisdictions at speeds in excess of current United States regulations. TR at 229. He did not feel that a collision in the high speed zone of Resolution Mine was a “reasonable risk” or was “realistically possible” without “some catastrophic failure of some other kind.” TR at 232. Mr. Gough’s position was that the increase in speed would “not increase the risk of any kind of a collision,” making the manned conveyance at a speed of 1,200 feet per minute “every bit as safe” as if it were travelling at 500 feet per minute because of the efforts made to minimize the risk of a collision, and the fact that the tested deceleration rates were slightly lower at 1,200 feet per minute. TR at 232-33; see PX 13 at 3. In short, Mr. Gough said “we’ve eliminated the possibility [of collision] through good engineering practice. We’ve done everything that’s reasonable to eliminate the possibility of a collision. In fact, we have greater clearances here than our standards.” TR at 231. He did admit that he could not completely rule out the possibility of a collision, but felt that it would be “very, very, very unlikely.” TR at 239.

46. If there were any collision, Mr. Goodell and Mr. Gough opined that the most likely obstruction would be the 60-inch and 72-inch vent tubes. TR at 145, 223. Mr. Goodell explained that both the 60-inch and 72-inch vent tubes were made out of 18-gauge metal, and built in 10-foot sections, and that if they were struck by any conveyance, it would likely be a glancing blow in which the conveyance would “bounce off,” “put a dent in the 18-gauge and . . . do no damage to the conveyance.” TR at 102, 146. Mr. Gough agreed, explaining that “in all likelihood . . . [the collision] would be a glancing blow,” because if the bucket swung out that far, it would be moving on an angle, and the top and bottom of the conveyances were tapered, so it would “bounce up” against the vent tube rather than digging into it. TR at 223-24. Mr. Gough also noted that the personnel conveyance had a quarter-inch plate wall, which made it “substantially stronger” than the thin metal wall of the vent tubing, and able to withstand any potential blow. TR at 223.
47. Mr. Barkand opposed the positions of Mr. Goodell and Mr. Gough. Mr. Barkand defined kinetic energy as the “energy inherent in an object moving,” and explained that when an object moves at a certain speed, it has a kinetic energy associated with that speed that is proportional to the square of the speed. TR at 252. If the moving object strikes another object, the kinetic energy is released and transferred to the other object. TR at 253. In this case, Mr. Barkand stated that the proposed modification in speed from 500 to 1,200 feet per minute is associated with an increase in kinetic energy by a multiple of 5.8. TR at 253. Although he admitted that a glancing blow could result in a lesser kinetic energy release, Mr. Barkand still clarified that a glancing blow at 500 feet per minute would release less kinetic energy than a glancing blow at the proposed modification speed of 1,200 feet per minute. TR at 265, 269. He was not sure if increased speed increased the potential for a collision, or if the chance of collision remained the same. TR at 266.

48. Mr. Barkand thought that other than putting controls in place to try to prevent a collision in the first place, Petitioner had done nothing to mitigate the hazard of the increased kinetic energy release if the personnel conveyance actually struck an obstruction in the shaft. TR at 254. He also noted that collisions by their nature are “unexpected and unpredictable,” and could result from the conveyance moving outside of its normal travel zone or by some obstruction moving into its travel zone. TR at 267-68, 70. Although he acknowledged that Petitioner had taken safety precautions, and placed a radio and bell signaling system inside the personnel conveyance, Mr. Barkand noted that these communication measures may not prevent a collision if there was no advanced warning of a collision. Id. However, Mr. Barkand could not recall during his work with the MSHA an incident in which any bucket collided with any utilities or with another bucket in a shaft sinking operation. TR at 263.

Current Regulatory Framework and Summary

49. Although Mr. Barkand was not a lawyer and stated he was “not a regulatory expert,” he testified briefly on the MSHA’s current 500 feet per minute limit on the speed of buckets when they were hoisting people. TR at 263. Mr. Barkand described the regulation as setting a “speed limit, a safe speed for operating buckets.” Id.

50. In comparing Ontario’s regulatory regime with the MSHA’s here in the States, Mr. Goodell described the Ontario regulations as “far more comprehensive and prescriptive,” and as regulations that were continuously being updated to reflect current practices and technology. TR at 178. In his 20 years of experience as an engineer engaged in shaft sinking, Mr. Gough agreed that there had been technological advances in the shaft sinking process. TR at 178-79.

IV. ANALYSIS

Under 30 C.F.R. § 44.22(a), the administrative law judge (“ALJ”) presiding over a hearing “shall have all powers necessary or appropriate to conduct a fair, full, and impartial hearing,” and to make decisions in accordance with the Federal Mine Safety and Health Act. The ALJ’s authority extends to “findings of fact and conclusions of law, with reasons therefor, upon each material issue of fact, law, or discretion presented on the record.” Id. § 44.32(a)(1).
As set forth below, the following conclusions of law are based upon analysis of the entire record; arguments of the parties; and applicable statutes, regulations, and cases. *Id.* § 44.32(b).

As currently codified, Title 30, Part 57 of the Code of Federal Regulations “sets forth mandatory safety and health standards for each underground metal or non-metal mine, including related surface operations, subject to the Federal Mine Safety and Health Act of 1977.” *30 C.F.R.* § 57.1. The purpose of these standards is “the protection of life, the promotion of health and safety, and the prevention of accidents.” *Id.*

Respondent argued that the proposed standard is not as safe as the proposed modification because it cannot guarantee at all times the same measure of protection because the increased kinetic energy and the absence of any mitigation efforts. ALJX 5 at 4-5. Respondent asserted that the potential kinetic energy released from the personnel conveyance traveling at 1200 feet per minute compared to 500 feet per minute is increased by factor of 5.8 with an increase in hoist traveling speeds from 500 to 1200 feet per minute. ALJX 5 at 5. Respondent argued that the likelihood of a collision remains constant, so the critical question relates to the impact of effect of any collision were one to occur. ALJX 5 at 6. Respondent also expressed concern about deceleration of the cord and the bungee cord effect. PX 13. According to Respondent, the proposed modification would allow the conveyance to move at more than double the speed, with an increase in harm, but no mitigation to offset the risk of harm, and, therefore, the proposed modification cannot be as safe as the standard. ALJX 5 at 5, 8.

Petitioner argued that the petition for modification should be granted because of the significant increase in safety due to technology and the personnel conveyance utilized in the mine. The increase in speed does not increase the likelihood of collisions, and due to the structure of the conveyance itself, if a collision were to occur, the nature would be a glancing hit as opposed to a direct impact hit. In sum, engineering practices and years of design experience, has made a collision not realistically possible. ALJX 4 at 11. Petitioner argued that Respondent assumes that the personnel conveyance could strike or be struck by something releasing any form of kinetic energy, but ignores the multiple safeguards that have been implemented to eliminate the remote chance that a collision might occur. ALJX4 at 20.

A. Petitioner’s Modification Request

Petitioner’s modification request seeks to allow the personnel conveyance to proceed at a speed of 1,200 feet per minute in the portions of the Number 10 mine shaft below the never sweat level. A Petition for Modification may be granted upon a determination that a method of achieving the result of the standard exists that will at all times guarantee no less than the same measure of protection afforded by the standard. *30 U.S.C.* § 811(c) and *30 C.F.R.* § 44.4(a).

The standard at issue is found at *30 C.F.R.* § 57.19076 and states, “[w]hen persons are hoisted in buckets, speeds shall not exceed 500 feet per minute and shall not exceed 200 feet per minute when within 100 feet of the intended station.” Where *30 C.F.R.* § 57.19076 does not apply, the more general *30 C.F.R.* § 57.19061 applies, which dictates that “[t]he safe speed for hoisting persons shall be determined for each shaft, and this speed shall not be exceeded. Persons shall not be hoisted at a speed faster than 2,500 feet per minute, except in an emergency.” (emphasis added).
For the following reasons, I find that Petitioner has established that the personnel conveyance at all times guarantees no less than the same measure of protection afforded by the standard.

1. Background of Act, Regulation


In 1977, the Federal Mine Safety and Health Act consolidated the Metal Act and the Coal Act and the underlying regulations into one single statutory scheme to be regulated by the Department of Labor. The once-advisory standard codified at 30 C.F.R. 57.19-76 was “made mandatory and revised to read as follows: 57.19-76 Mandatory. When men are hoisted in buckets, speeds shall not exceed 500 feet per minute and shall not exceed 200 feet per minute when within 100 feet of the intended station.” 42 Fed. Reg. at 29,423 (emphasis in original).

The regulation at issue was re-codified in 1985, with the minor revision that the gender-neutral word “persons” was substituted for the word “men.” Recodification of Safety and Health Standards for Metal and Non-Metal Mines, 50 Fed. Reg. 4,048, 4,082 (Jan. 29, 1985) (“When persons are hoisted in buckets, speeds shall not exceed 500 feet per minute and shall not exceed 200 feet per minute when within 100 feet of the intended station.”) (emphasis added). The regulation remains unaltered to the present day.

2. Personnel Conveyance Designed for Safety

The personnel conveyance was specifically designed for worker transportation and the nature of the capsule makes it safer for miners to ride than traditional buckets. It is completely enclosed rather than open-top like a traditional bucket, and when the perforated steel door is latched closed, the personnel conveyance provides a fully-enclosed compartment for moving persons down the mine. F.F. ¶ 10-11. The perforated door offers better ventilation, is easier for the miners to enter and exit than a traditional bucket, and offers a more level platform for the miners to stand during transport. F.F. ¶¶ 11, 17. From a functional standpoint, the personnel conveyance was not designed to act as a bucket, and cannot hoist broken rock, muck, heavy equipment, or water because the water and loose muck would seep out of the personnel conveyance’s perforated steel door; the personnel carrier can only transport the small supplies and equipment of workers. See F.F. ¶¶ 10-11, 19. Further, broken rock could not be easily
loaded into the personnel conveyance because it does not have a large, open-top design. Even Mr. Barkand conceded that the conveyance at issue was not intended to haul muck from the bottom of the shaft. F.F. ¶ 19. In fact, there is no mucking permitted at the Resolution Mine when the personnel conveyance is in use, which is an added safety feature not required by the MSHA. F.F. ¶ 29. The personnel conveyance was not meant to act as a “bail” and to be tipped over and unloaded like traditional mucking buckets. F.F. ¶¶ 11, 19. Although Mr. Barkand and Mr. Goodell noted that the personnel conveyance could theoretically act as a bail if attached to a stationary and tilted because of three chain link inserts on the bottom of the conveyance, Mr. Barkand conceded that it was not designed or meant to function in this manner. F.F. ¶¶ 19, 32. Furthermore, as a matter of Cementation policy, no people are allowed in the conveyance when it is attached to anything by these chain links. F.F. ¶ 32.

The personnel conveyance uses a rope-guided system, and it maintains its location in the zone of travel due to gravity. F.F. ¶¶ 11, 19. In order for the conveyance to move from its normal travel path, an external force would likely have to be applied to the conveyance. F.F. ¶¶ 11-12, 19. Further, for added safety, the personnel conveyance is only utilized in one shaft of the mine during operation, and would only operate at the faster speed when the personnel are in the lower compartment of the conveyance. F.F. ¶¶ 13, 15. As explained by Mr. Denogean, the personnel conveyance is safer and preferred as a method of transportation by him and other miners. F.F. ¶ 17.

Because the personnel conveyance is safer for miners than a traditional muck bucket, I find that its use results in additional protection to the miners that do not exist when traditional buckets are used to transport miners. Petitioner has demonstrated that the design of the personnel conveyance offers much more protection for miners and warrants the ability to transport the miners in and out of the mine at faster speeds.

3. Advanced Technology Makes the Personnel Conveyance Safer

Petitioner has offered persuasive evidence that advanced technology currently in use at Resolution Mine offers significant protections that were not available when the standard was developed in 1969. The Obstruction Control System (“OCS”) was implemented to ensure that the conveyances in the mine do not collide with obstructions in the mine. F.F. ¶¶ 23-26. The OCS includes the programmable logic control and hoist operator’s console. F.F. ¶¶ 27-28. The OCS applies to all conveyances and not just to the personnel conveyance, and provides a real-time video feed to a hoist operator to view the conveyances in the mine, and, while not required by MSHA, offers mitigation to reduce the potential of a collision (and the release of any kinetic energy). Id. The OCS also includes reflectors mounted on the cross-head that react with light sensitive devices in the shaft that verify the location of the personnel conveyance, which helps prevent collision. F.F. ¶¶ 25-26. The OCS will automatically stop the conveyance if the location data is inconsistent with any of the other data and suggests an obstruction, or if the information indicates the conveyance is not where the system thinks it should be. F.F. ¶¶ 24, 27. The hoist operator’s console has video monitors of the entire shaft, a camera trained on the conveyance, built in protections to continually monitor the shaft for any obstructions and to make sure doors are closed, and sensors to automatically stop the conveyance if an obstruction is detected that is not otherwise seen by the hoist control operator. F.F. ¶¶ 11, 23-24. It is a redundant system that
verifies data, and each portion of the system shares data with the other. F.F. ¶ 24. The elaborate and sophisticated computer system is not required by the MSHA. F.F. ¶ 27.

The actual set up of the personnel conveyance and its attachment to the cross-head beam make it safer for use in the mine. There is greater than 18 inches of clearance between the conveyance and potential obstructions in the high speed zone at all times, even though clearance is not addressed by the MSHA regulations; 18 inches of clearance is the industry standard. F.F. ¶¶ 20-22. Further, the personnel conveyance is rigid and does not exhibit pendulum swing, but instead is more hula or oscillating, and it exhibits very little movement at 1200 feet per minute, unlike mucking mode which travels at 2375 feet per minute and has maximum deviation. F.F. ¶ 19-30. The movement of the personnel conveyance is far less than a traditional mucking bucket. F.F. ¶ 28. Petitioner also installed hydraulic jacks to stabilize the Galloway against the shaft walls if necessary, and engineered the mine’s critical components, such as the brackets that hold the water lines, air-lines, and ventilation piping to the mine wall every 20 feet, using qualified and licensed engineers, which serve as added protection in the mine. F.F. ¶¶ 29, 31. The operation at all times is controlled by a computer, which slows the conveyance if an obstruction is detected. F.F. ¶ 11.

Petitioner has an extensive maintenance and safety check schedule to ensure safety compliance in the mine. F.F. ¶¶ 34-36. The maintenance activities are logged regularly, and certain tasks are performed daily. F.F. ¶¶ 34-35. Mr. Denogean said he rides the personnel conveyance twice a day to inspect the shaft and its attachments, and Mr. Gough confirmed that daily spot checks occur in the mine to look for problems. F.F. ¶¶ 34, 35.

Petitioner addressed each of the seven concerns and recommendations to address safety raised by Respondent during the June 2011 inspection. See F.F. ¶ 32. Petitioner incorporated a radio into the lower compartment of the personnel conveyance that used the same bell system that operates in the mine, as well as a radio to provide voice communication to the hoist operator. F.F. ¶¶ 32-33. Petitioner removed the chain slings at the bottom of the personnel conveyance as suggested, even though they are not present when personnel are hoisted. F.F. ¶ 32. Petitioner also modified the door to the personnel conveyance by perforating the door to allow greater visibility and ventilation. F.F. ¶ 32. While Petitioner did not implement all of the suggestions from Respondent, it explained in detail at trial why it believed the recommendations were not needed or why the suggestions did not enhance safety. F.F. ¶¶ 32-33. For example, Petitioner considered installing airbags seatbelts, and bumpers as recommended by Respondent, but ultimately concluded they were not practical for shaft sinking operations, and the engineering and safety practices at the mine already minimized the likelihood of an accident. F.F. ¶ 33.

Petitioner addressed Respondent’s concerns about the potential for the release of more kinetic energy if a collision occurred at faster speeds. Respondent’s concerns about the release of kinetic energy, while based upon physics, did not adequately consider the significant technology used in the mine, the advanced design used for the personnel conveyance, and the safety protocols and policies in place in the mine that exceed the requirements of the MSHA. F.F. ¶¶ 43-48. The evidence established that, in the unlikely event of a collision below the never sweat level where the conveyance would be utilized at faster speeds, the likely collision would be a glancing blow with the resulting release of less kinetic energy. F.F. ¶ 45. Petitioner also
established that there were no obstructions to create the likelihood of a collision in the never sweat level of the mine, and something catastrophic would have to occur for a collision to occur. F.F. ¶ 45. The use of the technology in the mine outweighs the potential risk for release of kinetic energy if a collision occurs, and that use of the advancements in mine safety actually help to minimize the risk of harm from the faster speed.

Petitioner also ran additional tests at the personnel conveyance for emergency stops and the bungee cord effect as suggested by Respondent, even though it explained than the industry standard was to run those tests at the hoist. F.F. ¶¶ 37-42. Even though Respondent asked for the additional testing, it did not wait to review the test results before denying the modification petition. F.F. ¶ 41; see PX 14. The tests revealed less cage bounce when the personnel conveyance was traveling at the faster 1200 feet per minute than at 500 feet per minute, and cage bounce increased slightly as the conveyance went deeper in the mine, though it never exceeded 2.23 feet at any depth. F.F. ¶ 40. Cage deceleration results concluded that the conveyance could safely travel at 1200 feet per minute using the brake settings developed during testing, and that during all tests, the conveyance met the MSHA man travel requirements during maximum deceleration. F.F. ¶ 41.

Based upon its engineering practices, years of design experience, safety maintenance and checks, as well as testing and consideration of Respondent’s concerns, Petitioner has carried its burden that its proposed modification will at all times guarantee no less than the same measure of protection afforded by the standard. The protections in place at the mine minimize the risk of a collision, and there was no evidence that going at a faster rate of speed increased the likelihood of a collision. F.F. ¶¶ 43-48. Petitioner addressed Respondent’s concerns about the personnel carrier, implemented some of the changes requested and provided sound and reasoned explanations for the suggestions it did not implement. At 1200 feet per minute, I find that Petitioner’s personnel conveyance offers the equivalent or greater degree of protection than afforded miners traveling at 500 feet per minute in a muck bucket. While physics shows that more kinetic energy would be released in the event of a collision at a faster speed, Petitioner has mitigated the effects for collision in the mine and has used advancements in technology and engineering to enhance mine safety, which were not available 40 years ago when the standard was developed. The evidence overwhelmingly established that the requested modification should be granted.

V. ORDER

1. Petitioner has demonstrated that the proposed modification will at all times guarantee no less than the same measure of protection afforded by the standard.
2. Accordingly, Petitioner’s modification request to allow the personnel conveyance to proceed at a speed of 1,200 feet per minute in the portions of the Number 10 mine shaft below the never sweat level is granted.

RICHARD M. CLARK
Administrative Law Judge

NOTICE OF APPEAL RIGHTS: To appeal, you must file a Notice of Appeal (“Notice”) with the Assistant Secretary of Labor for Mine Safety and Health within thirty (30) days after service of the “Initial Decision” of the Administrative Law Judge. See 30 C.F.R. § 44.33(a). The Assistant Secretary's address is: Assistant Secretary for Mine Safety and Health, U.S. Department of Labor, Room 2322 TT#2, 200 Constitution Avenue, NW, Washington, DC 20210. Once an appeal is filed, all inquiries and correspondence should be directed to the Assistant Secretary.

At the time you file the Notice with the Assistant Secretary, you must serve it on all parties. See 30 C.F.R. §§ 44.6 and 44.33(a). If a party is represented by an attorney, then service must be made on the attorney. See 30 C.F.R. § 44.6(c).

If no Notice is timely filed, then the administrative law judge’s “Initial Decision” becomes the final decision of the Secretary of Labor. See 30 C.F.R. § 44.32(a).