

Secretary of Labor,
Complainant,

v.

Freeze Technology International, Inc.,

Enerpipe Corporation,
Respondents.

OSHRC Docket Nos.

99-308, 99-309 & 99-310

(Consolidated)

APPEARANCES

David C. Rivela, Esq.
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U. S. Department of Labor
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For Complainant

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Amarillo, Texas
For Respondent

Before: Administrative Law Judge Ken S. Welsch

DECISION AND ORDER

Enerpipe Corporation (Enerpipe) is in the pipeline construction and maintenance business. Freeze Technology International, Inc. (Freeze), a subsidiary of Enerpipe, developed a method which uses liquid nitrogen to freeze water and set ice plugs inside a pipe so that another company can conduct tests or perform maintenance work on the pipeline.

On August 31, 1998, Freeze began its freeze operations at two locations¹ (north and middle freeze sites) approximately four and half miles apart in an underground water pipeline on a ranch north of Springer, Oklahoma. After the ice plugs were set by Freeze at both locations, Enerpipe was to perform hydrostatic testing on the pipeline from two excavation sites adjacent to Freeze's north freeze location.

At Freeze's middle freeze location, two employees who were monitoring the freeze operation during the night shift were found dead the next morning, September 1, 1998, inside the

¹ A third freeze site (south location) was also scheduled (Tr. 203-204). However, it is not involved in this case.

excavation used for the freeze operation. The employees had died from asphyxiation due to an accumulation of nitrogen gas. OSHA investigated the accident and issued serious citations to Freeze and Enerpipe. The citations were timely contested.

The safety citation² issued on January 11, 1999, to Freeze (Docket No. 99-0308) alleges serious violations at the middle freeze site of § 1926.651(j)(1) (item 2) for failing to remove large rocks and clumps of clay from the west wall of the excavation and § 1926.652(a)(1) (item 3) for failing to adequately slope the walls of the excavation. The safety citation proposes a penalty of \$4,500 for each alleged violation.

Freeze also received a health citation³ dated January 11, 1999, (Docket No. 99-0309) which alleges serious violations of § 1910.134(c) (item 1a) for failing to maintain a proper respirator at the middle freeze site; § 1910.134(e)(3) (item 1b) for failing to familiarize employees with written procedures regarding respirator usage; § 1910.1200(h) (item 2) for failing to train and inform all employees engaged in the freezing operations of the hazards associated with liquid nitrogen; § 1926.50(c) (item 4) for failing to have a person on-site who had a valid certificate in first-aid training; and § 1926.651(g)(1)(ii) (item 7) for failing to take adequate precautions to prevent employees' exposure to an oxygen deficient atmosphere. The health citation proposes a penalty of \$4,500 for each alleged violation.

The citation issued on January 12, 1999, to Enerpipe (Docket No. 99-0310) alleges a serious violation of § 1926.21(b)(2) for failing to instruct employees working in close proximity to liquid nitrogen at the north freeze site in the recognition and avoidance of unsafe conditions. The citation proposes a penalty of \$6,300.

A consolidated hearing was held September 27-30, 1999 in Houston, Texas. Freeze and Enerpipe stipulate coverage and jurisdiction (Tr. 5). The parties filed post-hearing briefs.

² The safety citation also alleges a violation of § 1926.21(b)(2) (item 1) which the Secretary withdrew at the hearing on September 27, 1999 (Tr. 7).

³ The health citation also alleged violations of § 1910.1200(h) (item 3), § 1926.55(b) (item 5), § 1926.651(g)(1)(i) (item 6) and § 1926.651(g)(2)(i) (item 8), which the Secretary withdrew during the hearing (Tr. 6, 563-564).

Freeze and Enerpipe deny the alleged violations. For the reasons stated, the citation issued to Enerpipe is vacated. The violations involving Freeze are vacated and affirmed based on the record.

The Accident

Enerpipe, with 400 employees, is in the pipeline construction business (Tr. 12). Freeze, a subsidiary of Enerpipe,⁴ freezes pipelines to form temporary ice plugs inside the pipe so that tests or maintenance work can be performed by another company. Freeze developed the equipment and the method of freezing water inside pipelines with the use of liquid nitrogen (Tr. 21-22, 24). Freeze uses its freezing process for companies in agriculture, petrochemical, fossil fuel, and nuclear power (Tr. 105). Freeze employs less than 30 employees and does not perform pipeline construction work or testing (Tr. 23-24, 108, 183). Freeze and Enerpipe, with their main office in Amarillo, Texas, do not generally work on the same projects (Tr. 152, 184, 724).

In August, 1998, Enerpipe contracted to perform hydrostatic testing on a 12-inch underground water pipeline located on the Lazy S Ranch north of Springer, Oklahoma. The Lazy S Ranch is in a remote area approximately 10 miles from town (Tr. 627). Freeze was contracted to plug the pipeline at three locations in order for Enerpipe to perform the hydrostatic testing (Tr. 25-26, 158, 203, 357). The freezing operation was to take approximately 32 hours (Tr. 56, 161). Both Enerpipe and Freeze were to have a day shift which ended before midnight and a night shift which ended at approximately 7:00 a.m (Tr. 438, 742).

On August 31, 1998, Freeze arrived at the Lazy S Ranch and set up its freeze operation at two locations (north and middle sites), approximately 4 miles apart (Tr. 25). The excavations uncovering the pipeline at the two locations were dug by another contractor prior to Freeze's arrival (Tr. 41-42, 155).

At the north site, there were three excavations uncovering the pipeline. Two of the excavations were used by Enerpipe to perform the hydrostatic testing. Enerpipe's employees monitored the testing from inside its on-site trailer (Exhs. R-69, R-72; Tr. 732-733, 739, 755-756). The third excavation was used for the freezing operation. After installing a freeze

⁴ Universal Hydrotesting Company is also a subsidiary of Enerpipe (Tr. 95).

chamber around the pipe, one Freeze employee remained to monitor the freeze from the back of the liquid nitrogen tanker truck placed next to the freeze excavation (Tr. 411, 437-438).

At the middle site,⁵ there was only one excavation dug, which Freeze used for its freezing operation (Tr. 204). Freeze positioned its 18-wheeler tanker truck which contained 5,400 gallons of liquid nitrogen approximately 5 feet from the east side of the excavation and at a 90 degree angle to the excavation (Exh. C-1, C-10; Tr. 43). The excavation was in excess of 37 feet long, 7 feet deep, 14 ½ feet wide across the top and 7 feet wide at the bottom⁶ (Tr. 295, 479-480). After positioning the tanker truck, two employees, including a laborer borrowed from Enerpipe, entered the excavation and installed a freeze chamber around the pipe (Tr. 36, 204-205). A second chamber was also placed on the pipe to keep it cool (Tr. 261).

The freeze chamber was approximately 5 feet long and in two halves. It was bolted around the pipe (Exhs. C-15, C-16; Tr. 133, 198). Two half-inch, braided steel hoses 40-feet long ran from each half of the chamber to the tanker truck (Tr. 159, 260). Valves located at the rear of the tanker truck controlled and monitored the flow of liquid nitrogen to the chamber (Exh. C-14; Tr. 133, 261). As the liquid nitrogen is introduced into the chamber, the temperature inside the pipe is lowered and the water forms an ice plug. After the plug is formed, the temperature is maintained at approximately minus 324 degrees (Tr. 104, 165). As the liquid nitrogen vaporizes, the nitrogen gas is vented through the top of the chamber to avoid a build-up of pressure (Tr. 53, 143).

There is no dispute that liquid nitrogen is a hazardous chemical which is extremely cold and the gas can displace oxygen in confined spaces. It is colorless and odorless (Exh. C-20; Tr. 59, 64, 201-202, 521).

Freeze's freezing operation at the middle freeze site started at 10:00 a.m. (Tr. 163, 207, 210). Within a couple of minutes of opening the liquid nitrogen tank, the Freeze technician observed a leak from around the chamber and entered the excavation to repair the leak. He turned off the nitrogen and used an CO₂ analyzer before entering the excavation. He replaced

⁵ There was also a south excavation site (Tr. 203, 232-234, 244). However, the south site was not the subject of OSHA's inspection and citations.

⁶ The parties differ in the actual measurements of the excavation.

some of the putty around the chamber (Tr. 215-217, 223, 227). According to Freeze's written rule, no one is permitted in the freeze hole (excavation) during the freeze operation (Exh. C-2). The ice plug was formed at approximately 2:45 p.m. (Exh. C-3; Tr 162). During the afternoon another leak developed from around the chamber and was not repaired (Tr. 230).

Freeze's day shift at the middle freeze site was relieved at approximately 10:00 p.m. and Sam Eaves, a Freeze technician, and Jose Mendoza, a laborer borrowed from Enerpipe, assumed the responsibility of monitoring the freeze during the night shift (Tr. 211, 214). Eaves had been employed by Freeze for six months (Tr. 160). There is no evidence that Mendoza had previously worked on a freeze operation.

At approximately 7:30 a.m. on September 1, 1998, George Howard, former president of Freeze, arrived at the middle freeze site (Tr. 174, 799). He found Eaves and Mendoza inside the excavation (Exh. C-8; Tr. 148-149). They had died from asphyxiation due to an accumulation of nitrogen gas in the excavation (Tr. 482). No one witnessed the accident.

OSHA Safety Specialist Ronald Watkins and Industrial Hygienist Carlos Reynolds arrived at the accident site at approximately 1:00 p.m. on September 1, 1998, and initiated a fatality investigation (Tr. 292, 467). The investigation included an opening conference, photographing the site, taking measurements and interviewing employees. They left the accident site at approximately 4:00 p.m. They never went to the north freeze site (Tr. 351). On September 14, 1998, Watkins and Reynolds went to Freeze's Houston, Texas, offices to review records and interview other employees (Tr. 472). Based on the investigation, serious citations were issued to Freeze and Enerpipe.

Discussion

The Secretary has the burden of proving a violation.

In order to establish a violation of an occupational safety or health standard, the Secretary has the burden of proving: (a) the applicability of the cited standard, (b) the employer's noncompliance with the standard's terms, (c) employee access to the violative conditions, and (d) the employer's actual or constructive knowledge of the violation (*i.e.*, the employer either

knew or, with the exercise of reasonable diligence could have known, of the violative conditions).

Atlantic Battery Co., 16 BNA OSHC 2131, 2138 (No. 90-1747, 1994).

The parties agree that four of Enerpipe's laborers, including Salvador Witrago and Jose Mendoza, were borrowed by Freeze to assist its technicians at the freeze site. The laborers' duties included helping to install the freeze chamber on the pipe inside the excavation, keeping gas in the generator, and making sure the technician remains awake during the night shift. They had no responsibility for monitoring or handling the liquid nitrogen in the tanker truck (Tr. 40, 205, 250). Freeze does not hire laborers. It borrows laborers, if needed, for the job (Tr. 109).

Freeze acknowledges that the borrowed employees from Enerpipe were its employees while working at the freeze sites. The laborers assisted and were supervised by Freeze's technicians (Tr. 40, 250). During the two days on the freeze operation, the laborers were on Freeze's payroll and Freeze filed a W-2 Wage and Tax Statement form (Exh. R-22; Tr. 167). George Howard, former Freeze president, considered the borrowed employees as Freeze's employees (Tr. 34-35). Howard was responsible for obtaining the laborers (Tr. 36).

The violations are alleged as serious. A violation is serious under § 17(k) of the Act (29 U.S.C. § 666(k)), if it creates a substantial probability of death or serious physical harm and the employer knew or should have known of the violative condition. In determining whether a violation is serious, the issue is not whether an accident is likely to occur; it is rather, whether the result would likely be death or serious harm if an accident should occur. *Whiting-Turner Contracting Co.*, 13 BNA OSHC 2155, 2157 (No. 87-1238, 1989).

The use of liquid nitrogen in an excavation was open and known. There were no barricades or other warnings around the excavations. There is no dispute that liquid nitrogen is a hazardous chemical, and the excavation was in excess of 7 feet deep.

Alleged Violations

Freeze's Safety Citation - Docket No. 99-0308

Item 2 - § 1926.651(j)(1)

The citation alleges that two employees at the middle freeze site were exposed to large rocks and clumps of clay on the west face of the excavation. Section 1926.651(j)(1) provides:

Adequate protection shall be provided to protect employees from loose rock or soil that could pose a hazard by falling or rolling from an excavation face. Such protection shall consist of scaling to remove loose material; installation of protective barricades at intervals as necessary on the face to stop and contain falling material; or other means that provide equivalent protection.

There is no dispute that Steven Johnes, Freeze technician, and Salvador Witrigo, a laborer borrowed from Enerpipe, entered the excavation at the middle freeze site to install the freeze chamber (Tr. 205, 207). Johnes re-entered the excavation to repair a leak shortly after starting the freeze (Tr. 215, 217). Further, the employees were expected to enter the excavation after the freeze to remove the chamber (Tr. 180). The excavation was in excess of 7 feet deep.

OSHA safety specialist Watkins⁷ described the west wall (same side as the spoil pile) of the excavation as having large rocks and clumps of clay ranging in size from 6 inches to one foot (Exhs. C-15, C-18; Tr. 301, 483). He also saw rocks in the bottom of the excavation which he assumed had fallen into the excavation (Tr. 301).

The record fails to support a violation. There is no evidence that any rocks or clay struck an employee or fell into the excavation during the investigation. Freeze president Howard testified that he did not observe any loose rocks or clumps of clay when he inspected the excavation (Tr. 136). OSHA's photographs of the excavation showing the west wall do show some rocks and clay clumps (Exhs. C-15, C-18). However, the photographs do not show that any rocks or clumps posed a hazard to employees. Watkins identified three rocks or clay clumps along the west wall, which was approximately 37 feet long (Exh. C-18). The

⁷ Freeze challenges the credibility of Watkins. The insurance carrier investigator testified that he observed Watkins walk to the bottom of the excavation (Tr. 652-653). Freeze's safety director testified that he also saw Watkins at the bottom of the excavation (Tr. 694). Watkins at first denied going into the excavation (Tr. 362). However, a video shows him on the earth ramp in the excavation at a depth of 3 to 4 feet (Exh. R-41; Tr. 652). The video does not show him at the bottom of the excavation. Watkins testified that he had forgotten about the ramp, however, he continued to deny going to the bottom of the excavation (Tr. 923, 927). The court accepts Watkins' explanation, which was supported by IH Reynolds (Tr. 918). If he did go to the bottom of an improperly sloped excavation, it shows poor judgment and is a matter for OSHA to handle. However, it is not shown to bear on his credibility as to the alleged violations.

photographs also fail to show that the rocks and clay clumps were loose. Other photographs of the excavation showing rocks and clumps are of the east wall, which is not the subject of the alleged violation (Exhs. C-7, C-8, C-9, C-10, C-11; Tr. 481).

The west wall was not vertical; there was some slope. The rock or clump would not fall into the excavation. It is speculative that if a rock or clump became loose it would even slide or roll to the bottom of the excavation. The excavation was approximately 7 feet wide at the bottom. There was no employees or equipment working along the west wall which might loosen any rocks or clumps. Also, employees were in the excavation for a short duration where they were installing or dismantling the freeze chamber. James Knorpp, Freeze's expert and former OSHA area director, testified that based on his observations of the excavation, the west wall did not pose a hazard (Tr. 839).

A violation of § 1926.651(j)(1) is vacated.

Item 3 - § 1926.652(a)(1)

The citation alleges that two employees were in an excavation which was not adequately sloped or shored. Section 1926.652(a)(1) provides:

Each employee in an excavation shall be protected from cave-ins by an adequate protective system designed in accordance with paragraph (b) or (c) of this section

Paragraph (b)⁸ describes the sloping requirements for excavations. Generally, the acceptable slope of an excavation's walls depends upon the classification of the soil (Appendix A to § 1926.652). The maximum allowable slope of excavations less than 20 feet deep is located in Table B-1, Appendix B to § 1926.652.

The Secretary classified the soil at the Freeze accident site as Type B, which is defined, in part, as cohesive soil with an unconfined compressive strength greater than 0.5 tons per square foot (tsf) but less than 1.5 tsf or previously disturbed soils. The type of soil is described as

⁸ Paragraph (c) describes the requirements for shoring. There is no dispute that the excavation was provided with shoring.

granular cohesion-less soils, such as angular gravel, silt, silt loam, and sandy loam. Type B soils require sloping at an angle not greater than one horizontal to one vertical (45 degrees).

Freeze argues that the soil classification was Type A, which is defined as cohesive soils with an unconfined compressive strength of 1.5 tsf or greater and includes soils such as clay, silty clay, sandy clay and clay loam. Type A soils require sloping at an angle not greater than three-quarter horizontal to one vertical (53 degrees).

There is no dispute that the excavation was dug by another contractor prior to Freeze's arrival at the site (Tr. 41-42, 155-156). Freeze, however, inspected the excavation which was dug to allow Freeze's employees access to the pipeline to install the freeze chamber (Tr. 42, 136). The employees needed to enter the excavation to install and remove the freeze chamber (Tr. 180).

Freeze does not dispute that the excavation standards at § 1926.652 applied to its excavation; its employees were exposed to the condition of the excavation; and, it was aware of the excavation. The issue in dispute is whether the excavation violated the standard by not being properly sloped. Freeze asserts that the excavation was properly sloped for Type A soil. The parties dispute the soil classification and the measurements of the excavation.

OSHA safety specialist Watkins classified the soil as Type B based on observations and the presence of an existing pipeline indicating previously disturbed soil. He also performed a pocket penetrometer test (Tr. 305, 490-492). The soil samples taken from the site were lost and not analyzed (Tr. 361-362). Watkins measured the excavation at 37 feet long, 8 feet deep, 14 ½ feet wide across the top and 8 feet wide at the bottom (Tr. 295, 479-480). If his measurements are accurate and the soil was properly classified as Type B, the width of the excavation should have been 24 feet across the top as opposed to 14 ½ feet (Tr. 306). However, even if it was Type A soil, which requires a slope of three-quarter to one, the excavation should have been 20 feet wide across the top (Tr. 306-307).

Freeze, however, disputes Watkins' soil classification and measurements. Adam Farquhar, Freeze technician who saw the excavation the day after the accident, classified the soil as Class A based on his observation and a thumb test (Tr. 386, 392). James Knorpp, former OSHA area director and presently a consultant hired by the insurance carrier, also classified the

soil as Type A. He testified that the soil was very hard, dry soil consisting of sandy clay. He estimated 62 % clay. He saw no fissures. He also testified that it was dug in virgin, undisturbed soil because the excavation was larger than needed to lay the existing pipeline (Tr. 842-843, 846-847).

Knorpp measured the excavation as 7 feet deep, 7 to 8 feet wide across the bottom and 14 ½ to 15 ½ across the top (Exh. R-76; Tr. 835, 847, 851). He also testified that there was a 3 ½ foot vertical wall at the bottom of the excavation (Tr. 841, 852). He concluded that above the 3 ½ foot vertical wall, the east wall had a slope of approximately one to one. The west wall had a slope of approximately three-quarters to one (Tr. 853-855). He surmised that the citation should have been other than serious or de minimus (Tr. 856).

Also, with regard to the size of the excavation, Veracity Research Company, private investigators for the insurance carrier, measured the excavation at 43 feet 10 inches long, 7 feet 2 inches deep and 15 feet wide across the top at the widest part (Exh. R-30; Tr. 639, 675). Veracity Research did not classify the soil.

Having considered the record, the weight of evidence suggests Type B soil because of the previously disturbed soil from the existing pipeline. It is speculation by Freeze as to the original size of the excavation needed to lay the existing pipeline. Also, there is no evidence as to the age of the existing pipeline. Freeze's safety director John Evans agreed with OSHA and also classified the soil as Type B, based on his observations at the site (Tr. 727). As Type B soil, the slope was inadequate.

Both Watkins and Knorpp agree generally about the width of the excavation. They disagree on the depth. However, the slope of the excavation was inadequate if it was 8 feet deep or 7 feet deep, as measured by Knorpp. Knorpp also describes a 3 ½ foot vertical wall at the bottom of the excavation. Knorpp's account of the excavation does not affect the sloping requirements. His observations were made two days after the accident (Tr. 808, 876). It was not established that the excavation had not changed since the accident. There was no equipment on site (Tr. 876). Also, the photographs of the excavation appear to show a vertical 3 ½ foot wall. However, it was not throughout the excavation. It appears to have existed in a limited portion of the excavation (Exhs. C-22, R-11, R-14).

The violation is affirmed as serious.

Freeze's Health Citation - Docket No. 99-0309

Item 1a - § 1910.134(c)

The citation alleges that employees engaged in nitrogen freezing operations were improperly provided a Draeger 5-minute escape respirator. Section 1910.134(c)⁹ provides:

Proper selection of respirators shall be made according to the guidance of American National Standard Practices for Respiratory Protection Z88.2-1969.

ANSI directs that the selection of a proper respirator for any given situation requires consideration of the nature of the hazard; the extent of the hazard; work requirements and conditions; and the characteristics and limitations of available respirators.

There is no dispute that Freeze had one Draeger 5-minute escape respirator at the accident excavation site (Tr. 78, 237, 529-530). The respirator was not worn by employees. It was stored in the bottom of the tanker trailer (Tr. 622). Although company rules prohibited employees from entering the excavation during freeze operations, employees worked within 5 feet of the excavation and next to the tanker containing 5,400 gallons of liquid nitrogen. There was a potential for exposure. Also, despite the company rule, senior technician Johnes entered the excavation to repair a leak soon after starting the freeze (Tr. 215-216). Further, Howard, former president, started to enter the excavation to attempt rescue of the two employees (Tr. 149).

OSHA asserts that an escape respirator on site was not appropriate for emergency rescue. Johnes agreed that the escape pack was not a self-containing breathing apparatus (Tr. 237-238). Also, company written policy required emergency air packs for freeze sites (Exhs. C-2, C-13).

Freeze argues that § 1910.134 was amended and modified on January 8, 1998 (65 Fed. Reg. 1152, became effective April 8, 1998). Under the amendments, a self-contained breathing apparatus is defined as:

⁹ 29 C.F.R. § 1910.134 was amended in 1998. The start-up date of OSHA's revised respirator was October 5, 1998. The condition cited in this case occurred on August 31, 1998. Therefore, the prior standard as shown in this decision applies.

an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

The Draeger 5-minute escape respirator meets the definition of a self-contained breathing apparatus (SCBA) (Tr. 576, 579-580).

The issue, however, is not whether the 5-minute escape pack is a SCBA, but whether the 5-minute pack was appropriate for Freeze's work on site and whether it was properly used. The SCBA recommended by the Secretary holds 30-minutes of air and is designed to allow time for rescue or maintenance work in a hazardous atmosphere (Tr. 529). The MSDS for liquid nitrogen requires that a SCBA "be available for emergency use" (Exh. C-20; Tr. 581). The 5-minute pack is strictly for escape and is meant to be worn by employees so that they can leave an area in an emergency (Tr. 575, 580, 620). James Knorpp, former OSHA area director and expert for Freeze, agreed that the Draeger escape respirator was not approved for rescue work; it was only for self-rescue (escape) (Tr. 894). Knorpp testified that the Draeger 5-minute pack was designed to be carried by the employee on a strap and approved by NIOSH for escape by an individual from an atmosphere that may be hazardous (Tr. 894-895). The employees at the freeze site did not wear the Draeger escape pack and a 30-minute rescue respirator was not available. Knorpp agreed that it was a violation (Tr. 864).

The serious violation is affirmed.

Item 1b - § 1910.134(e)(3)

The citation alleges that the borrowed employees engaged in the nitrogen freezing operation were not familiar with written procedures regarding respirator usage. Section 1910.134(e)(3) provides:

Written procedures shall be prepared covering safe use of respirators in dangerous atmospheres that might be encountered in normal operations or in emergencies. Personnel shall be familiar with these procedures and the available respirators.

There is no dispute that Freeze has a written respirator program. The Secretary agrees that it is adequate (Exh. C-2; Tr. 626). The parties also agree that liquid nitrogen is a hazardous

chemical (Exh. C-20). The vented nitrogen gas displaces oxygen in confined spaces such as an excavation. The nitrogen gas is heavier than air.

At the freeze site, employees worked next to a trailer truck with 5,300 gallons of liquid nitrogen and within 5 feet of an excavation where nitrogen gas was vented (Tr. 43). The employees entered the excavation to install the freeze chamber and to remove it (Tr. 180). The issue is whether employees, particularly the borrowed employees, were familiar with Freeze's written respirator procedures.

Salvador Witrago, a laborer borrowed from Enerpipe to assist in the freeze operation, stated to OSHA that he had not been trained on respirators (Tr. 538). Freeze's training records do not show that Witrago or Jose Mendoza (another borrowed employee who died in the accident) received respirator training (Exh. C-19; Tr. 541-542, 545). The laborers, although not handling the liquid nitrogen, worked next to the tanker and in the excavation installing the freeze chamber around the pipe. It is reasonable to expect all employees, including borrowed employees who are assisting at a remote location using hazardous chemicals, be familiar with all emergency procedures and equipment, including the use of respirators at the site. Although not the appropriate respirator, Freeze recognized the need for a respirator by having one in the truck on site.

Freeze acknowledges that the laborers were not provided a copy of Freeze's safety manual, the black book which included its respirator program (Exh. C-2; Tr. 60). Howard, former president, testified that laborers were not provided any training. They were only instructed to stay away from the excavation during freezing operations (Tr. 75, 85-86, 125). Howard, however, recognizes that the exposure of the laborer and Freeze's technician were the same (Tr. 65). There is no showing that the laborers were even shown the location of the Draeger 5-minute escape respirator in the bottom of the tanker trailer (Tr. 622).

Steven Johnes, the Freeze technician responsible for setting up the freeze site and providing any instruction, testified that he instructed Witrago not to enter the excavation because oxygen was depleted (Tr. 85, 218). He gave Witrago no written material (Tr. 219). Johnes admitted that he did not explain to the laborers what they were to do if someone fell into the excavation (Tr. 276).

The instruction given to the borrowed laborers to stay away during freezing operations was inadequate and did not address the hazards and respirator usage. There is no showing that the laborers received any respirator training at Enerpipe. An employer is required to train borrowed employees who are potentially exposed to a hazardous atmosphere as to respirator usage like its own employees, particularly if located at a remote site working a night or day shift. The borrowed laborers were not familiar with Freeze's written procedures.

A serious violation is affirmed.

Item 2 - § 1910.1200(h)

The citation alleges that training was not given to the borrowed laborers who were potentially exposed to liquid nitrogen during the freezing operation. Section 1910.1200(h) provides:

Employers shall provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new physical or health hazard the employees have not previously been trained about is introduced into their work area. Chemical-specific information must always be available through labels and material safety data sheets.

There is no dispute that Freeze uses large quantities of liquid nitrogen to accomplish its freezing operation. Liquid nitrogen is a hazardous chemical. The MSDS for liquid nitrogen contains emergency and first aid information (Exh. C-20).

Howard, former president, knew that Freeze did not go through the MSDS with the laborers (Tr. 86). Freeze's training records fail to show that Witrago and Mendoza, laborers borrowed from Enerpipe, were provided any training about liquid nitrogen (Exh. C-19; Tr. 560-561). Johnes, senior technician, testified that he instructed Witrago not to enter the excavation once the freeze started because the oxygen is depleted (Tr. 218).

Freeze believes that because the laborers were temporary and not handling the nitrogen, Freeze was not required to provide them information and training on a hazardous chemical in the work area (Tr. 60, 75). Freeze argues that the excavation is the work area and the laborers were instructed not to go into the excavation during freeze operations (Tr. 597).

As noted by Freeze, work area is defined as a smaller area than a workplace. However, in this case, the work area included the excavation and the tanker truck containing 5,400 gallons of liquid nitrogen which was positioned 5-feet from the excavation. Also, the standard is not limited to those hazardous chemicals being worked with, but includes all hazardous chemicals in the work area.

The importance of training in emergency procedures is shown by Howard's action upon discovering the bodies of Eaves and Mendoza. He entered the excavation without a respirator or using an CO₂ analyzer to test the atmosphere (Exh. C-12; Tr. 148-149). Knowing the hazards associated with nitrogen, Howard should have been knowledgeable of the correct emergency response. Howard knew that there had been four other fatalities involving nitrogen (Exh. C-12; Tr. 176-177).

Additionally, there is some evidence that Mendoza and Witrago were Spanish speaking and not able to fully understand English. According to technician Garcia, Mendoza did not speak English (Tr. 433, 435). An interpreter was provided when OSHA interviewed the Spanish speaking employees, including Witrago (Tr. 339, 478). However, Johnes, who did not speak Spanish, testified that he had no problem conversing with Witrago (Tr. 241). Freeze's signs and training materials on site were only in English (Tr. 99, 171).

Regardless of a possible language problem, Freeze provided the laborers no training on the hazards associated with liquid nitrogen. A work rule instructing employees to stay away from the freeze hole is not sufficient. Such a work rule is not a defense to a citation alleging a lack of training on the hazards in the work area. *Power Plant Div., Brown & Root, Inc.*, 10 BNA OSHC 1837, 1840 (No 77-2553, 1982). The work rule does not tell the employee the nature of the hazard (colorless, odorless), the potential health affects (burning from cold and asphyxiation), or the employee's response to an emergency and first aid. As the temporary employer of the laborers, Freeze had a responsibility to inform them of the hazards associated with liquid nitrogen. The laborers were in an isolated and remote area of a large ranch throughout the day and night with only the Freeze technician. They worked within 5 feet of the freeze excavation and next to the tanker truck full of liquid nitrogen.

The violation is affirmed as serious.

Item 4 - § 1926.50(c)

The citation alleges that employees engaged in the freeze operations did not have a person available who had a valid certificate in first aid. Section 1926.50(c) provides:

In the absence of an infirmary, clinic, hospital, or physician that is reasonably accessible in terms of time and distance to the worksite, which is available for the treatment of injured employees, a person who has a valid certificate in first-aid training from the U.S. Bureau of Mines, the American Red Cross, or equivalent training that can be verified by documentary evidence, shall be available at the worksite to render first aid.

After discovering Eaves and Mendoza, George Howard, president of Freeze, telephoned the client to contact an emergency team (Tr. 799). He then drove from the excavation site to the ranch gate to escort the emergency team to the excavation site. The drive took approximately 10 minutes. The emergency team arrived shortly after Howard got to the gate (Tr. 799-800). Presumably, it took another 10 minutes for the emergency team to arrive at the accident site. Emergency assistance, therefore, took at the minimum of 20 minutes to arrive and initiate first aid at the accident site. The record shows that a hospital or health clinic was greater than 10 miles (Tr. 566, 628).

The ranch is in a rural area and the excavation site is in a remote location (Tr. 566). Once on the ranch, there is no obvious road from the paved road to the accident site. Travel is over a rough terrain (Tr. 628-629).

The record establishes that emergency assistance was not reasonably accessible. IH Carlos Reynolds testified that OSHA guidelines required rescue within 15 minutes (Tr. 605). However, the Review Commission has found that a minimum of ten minutes response time for medical treatment is too long. *Love Box Co.*, 4 BNA OSHC 1138, 1142 (No. 6286, 1976). Also see *CMC Electric, Inc.* (No. 96-169, April 26, 1999).

If emergency assistance is not accessible, the standard requires an employer to have a person available who has a certificate in first aid training. The Secretary agrees that Sam Eaves, accident victim, held a certificate in first aid (Exh. R-8; Tr. 567, 629). The Secretary found no other employees with certificates in first aid (Tr. 567, 569)

In addition to Eaves, the record, however, also shows that Richard Brewster, Enerpipe equipment operator and mechanic, who worked the day shift at the test site, held a Fire Fighter I certificate which included first aid (Exh. R-33; Tr. 740-742). The two excavation sites were less than 5 miles apart and employees communicated between sites by radio (Tr. 25, 425). The Secretary fails to show that Eaves and Brewster were not available to render first aid at the worksite as required by the standard.

The violation is vacated.

Item 7 - § 1926.651(g)(1)(ii)

The citation alleges that employees engaged in the freezing operation within the excavation were exposed to an oxygen deficient atmosphere. Section 1926.651(g)(1)(ii) provides:

Adequate precautions shall be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen and other hazardous atmospheres. These precautions include providing proper respiratory protection or ventilation in accordance with subparts D and E of this part respectively.

There is no dispute that vented nitrogen gas accumulates in the bottom of an excavation or a confined space. The nitrogen gas displaces the oxygen (Tr. 53, 201-292, 521-522). Asphyxiation is the main health risk from exposure to nitrogen (Exh. C-20). There is no evidence that nitrogen gas is an asphyxiant hazard outside the excavation or confined space because it is absorbed by the atmosphere.

According to George Howard, it took approximately 350 gallons of liquid nitrogen to develop the ice plug and 100 gallons an hour to maintain the plug at the accident site (Tr. 54). Each gallon of liquid nitrogen produces approximately 800 cubic feet of nitrogen gas (Tr. 53, 92). The nitrogen gas is eventually absorbed into the atmosphere, which is approximately 74 percent nitrogen (Tr. 93-94, 131).

Because nitrogen is heavier than air, Freeze requires a minimum of 10 feet between excavations (Tr. 49). Also, Freeze has a written rule prohibiting employees from entering the freeze hole after the freeze operation begins. Employees enter the excavation to install and

remove the freeze chamber from the pipeline. When the chamber is installed on the pipeline, liquid nitrogen is not flowing to the chamber. When the chamber is removed, Freeze's procedure requires that the nitrogen is turned off, blowers are used to clear the excavation, and the employee tests the atmosphere with a CO₂ analyzer before entering the excavation. During the freeze operation, the employees are supposed to remain by the tanker truck to monitor the freeze.

However, Eaves and Mendoza, the two accident victims, entered the excavation during the freeze operation. It is not known whether they entered the excavation for a reason (repairing a leak) or by accident (falling into the excavation).

Also, the record shows that Steven Johnes, senior technician, entered the freeze hole to repair a leak after turning on the liquid nitrogen (Tr. 215-216). Although it was immediately after turning on the liquid nitrogen, the freeze had started and nitrogen gas was present because he was able to observe the leak. This deviation from Freeze's rule by a senior technician indicates a disregard and lack of understanding of the potential hazards. Johnes' activity shows that Freeze's rule prohibiting entry has exceptions and is not strictly enforced. Johnes' was not disciplined. As a supervisor, Johnes' knowledge is imputed to Freeze. *Dover Elevator Co.*, 16 BNA OSHC 1281, 1286 (No. 91-862, 1993).

Also, no other precautions were taken at the site. No caution tape was used to warn employees of the excavation (Tr. 80-81). The blowers were not used to reduce the accumulation of nitrogen gas inside the excavation.

The serious violation is affirmed.

Enerpipe Citation - Docket No. 99-0310

Item 1 - § 1926.21(b)(2)

The citation alleges that six employees of Enerpipe were not trained in the recognition and avoidance of hazards while working in close proximity to liquid nitrogen. Section 1926.21(b)(2) provides:

The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury.

Section § 1926.21(b)(2) is a general standard and is identified as the “*Employer responsibility.*” To prove a violation of § 1926.21(b)(2), the Secretary must show that the cited employer failed to instruct employees on “(1) how to recognize and avoid the unsafe conditions which they may encounter on the job, and (2) the regulations applicable to those hazardous conditions.” *Superior Custom Cabinet Co.*, 18 BNA OSHC 1019, 1020 (No 94-200, 1997), *aff’d. without published opinion*, 158 F.3d 583 (5th Cir. 1998). An employer’s instructions must be “specific enough to advise employees of the hazards associated with their work and the ways to avoid them” and modeled on the applicable OSHA requirements. *El Paso Crane and Rigging Co.*, 16 BNA OSHC 1419, 1425, nn. 6 & 7 (No. 90-1106, 1993). The instructions must address matters specific to the worksite about which a reasonably prudent employer would have instructed its employees. *Pressure Concrete Constr. Co.*, 15 BNA OSHC 2011, 2016 (No. 90-2668, 1992). The instruction may be formal or informal, a verbal or on-the-job instruction. *Better Bilt Products*, 15 BNA OSHC 1167, 1171 (No. 89-2028, 1991). However, training by a former employer does not fulfil this requirement. *Supermason Enterprises Inc.*, 16 BNA OSHC 1446, 1448 (No. 92-2235, 1993). An employer must ensure satisfactory training even if the employees are experienced. *Ford Development Corp.*, 15 BNA OSHC 2003, 2009-10 (No. 90-1505, 1992). Also, the occurrence of an accident does not establish a violation of the standard. *El Paso Crane and Rigging Co., Inc.*, 16 BNA OSHC 1419 (No. 90-1106, 1993).

The issue is whether Enerpipe breached its duty to provide reasonable instruction to employees at its test site. Enerpipe’s two excavations used for hydrostatic testing were adjacent to Freeze’s north freeze operation which used liquid nitrogen. Enerpipe employees were not involved in the freeze operation. They did not work with or handle the liquid nitrogen. Enerpipe employees, other than the borrowed laborers, were not responsible for nor assisted in the freeze operation (Tr. 498).

There is no evidence that Enerpipe employees came within 10 feet of the freeze excavation (Tr. 415, 499). Gregory Hunter, Enerpipe employee at the test site, testified that employees did not get within 40 feet of the freeze excavation (Exh. R-75; Tr. 775). He recalled that the employees were told not to go near the freeze excavation (Tr. 777). This instruction was also recalled by Enerpipe employees Richard Brewster and Mark Boyce (Tr. 749, 785). Brewster

testified that the test trailer where the Enerpipe employees performed most of their monitoring activities was approximately 40 feet from the freeze excavation (Exh. R-72; Tr. 756). Also, Arnold Garcia, Freeze technician at the north site, testified that red hazard tape was placed around the freeze excavation (Tr. 415, 420).

The record fails to show that Enerpipe employees were exposed to the liquid nitrogen or nitrogen gas at its north excavations. Enerpipe performed only the hydrostatic testing and its employees were not shown to be within 10 of the freeze excavation. Many of Enerpipe's employees had previously worked for Freeze and were familiar with the hazards associated with liquid nitrogen. The MSDS for liquid nitrogen hung in Enerpipe's test trailer (Tr. 739, 750, 773, 786). The OSHA inspectors did not investigate the north test site or take measurements of the excavations or locations of equipment (Tr. 348-349, 351). Without showing a potential for exposure, the Secretary fails to show the need for Enerpipe to provide training in the hazards associated with liquid nitrogen. On most jobs, Enerpipe does not work with Freeze.

As discussed, the laborers borrowed by Freeze who were not trained in the hazards of working near liquid nitrogen were employees of Freeze at the time. OSHA cited Freeze for failing to train the borrowed laborers. During the freeze operations, the laborers were on Freeze's payroll and supervised by Freeze technicians. The Secretary fails to show that Enerpipe also had a responsibility to train the laborers in the hazards of liquid nitrogen.

The violation is vacated.

Penalty Consideration for Citations

The Commission is the final arbiter of penalties in all contested cases. In determining an appropriate penalty, consideration must be given to the size of the employer's business, history of previous violations, the employer's good faith, and the gravity of the violation. These factors are not necessarily given equal weight; gravity is generally the principal factor.

Enerpipe employs in excess of 400 employees. Freeze employs approximately 26 employees (Tr. 183, 487). OSHA considered both Enerpipe and Freeze as a large employer.

However, Freeze is a separate company and, for the purposes of penalty, is considered a small employer. Neither Freeze nor Enerpipe have a history of previous OSHA citations (Tr. 487).

A penalty of \$2,200 is assessed for violation of § 1926.652(a)(1) (item 3 in Docket No. 99-0308). Two employees were exposed. However, the employees had limited exposure of a short duration in the excavation while installing and removing the chamber. When installing the chamber, the nitrogen is not flowing. Also, the walls were partially sloped, although not adequately.

A penalty of \$2,200 is reasonable for violation of § 1910.134(c) and § 1910.134(e)(3) (items 1a and 1b in Docket No. 99-0309). Freeze only had one escape respirator on site. The laborer was not trained in any respirator usage. The escape respirator was not properly used and was inadequate for emergency or rescue use.

A penalty of \$2,200 is reasonable for violation of § 1910.1200(h) (item 2 in Docket No. 99-0309). The Spanish speaking laborers were not instructed in the hazards of liquid nitrogen. Freeze's instruction not to enter the freeze hole during freeze operations is inadequate. The laborers needed to know the hazards associated with nitrogen and the precautions to take.

A penalty of \$2,200 is reasonable for violation of § 1926.651(g)(1)(ii) (item 7 in Docket No. 99-0309). There were no precautions taken to prevent employees from entering the excavation after the freeze operation began. Johnes, senior technician, ignored the written rule and entered the excavation to repair a leak. The two night shift employees entered the excavation and died.

FINDINGS OF FACT AND CONCLUSIONS OF LAW

The foregoing decision constitutes the findings of fact and conclusions of law in accordance with Rule 52(a) of the Federal Rules of Civil Procedure.

ORDER

Based upon the foregoing decision, it is ORDERED that:

Freeze Citation - Docket No. 99-0308

1. Item 1, alleged violation of § 1926.21(b)(2), is withdrawn by the Secretary.
2. Item 2, alleged violation of § 1926.651(j)(1), is vacated.
3. Item 3, alleged violation of § 1926.652(a)(1), is affirmed as serious and a penalty of \$2,200 is assessed.

Freeze Citation - Docket No. 99-0309

1. Item 1a, alleged violation of § 1910.134(c), and Item 1b, alleged violation of § 1910.134(e)(3), are affirmed as serious and a penalty of \$2,200 is assessed.
2. Item 2, alleged violation of § 1910.1200(h), is affirmed as serious and a penalty of \$2,200 is assessed.
3. Item 3, alleged violation of § 1910.1200(h), is withdrawn by the Secretary.
4. Item 4, alleged violation of § 1926.50(c), is vacated.
5. Item 5, alleged violation of § 1926.55(b), is withdrawn by the Secretary.
6. Item 6, alleged violation of § 1926.651(g)(1)(i), is withdrawn by the Secretary.
7. Item 7, alleged violation of § 1926.651(g)(1)(ii), is affirmed as serious and a penalty of \$2,200 is assessed.
8. Item 8, alleged violation of § 1926.651(g)(2)(i), is withdrawn by the Secretary.

Enerpipe Citation - Docket No. 99-0310

1. Item 1, alleged violation of § 1926.21(b)(2), is vacated.

_____/s/
KEN S. WELSCH
Judge

Date: May 15, 2000