

**THIS CASE IS NOT A FINAL ORDER OF THE REVIEW COMMISSION
AS IT IS PENDING COMMISSION REVIEW**

United States of America
OCCUPATIONAL SAFETY AND HEALTH REVIEW COMMISSION
1120 20th Street, N.W., Ninth Floor
Washington, D.C. 20036-3457

SECRETARY OF LABOR,

Complainant,

v.

K.E.R. ENTERPRISES, INC., d/b/a
ARMADILLO UNDERGROUND,

Respondent.

OSHR DOCKET NO. 08-1225

Appearances: Tremelle Howard-Fishburne, Esquire
Sharon Calhoun, Esquire
U.S. Department of Labor
Atlanta, Georgia
For the Complainant.

Andrew Gross, Esquire
H B Training & Consulting, LLC
Lawrenceville, Georgia
For the Respondent.

Before: Dennis L. Phillips
Administrative Law Judge

DECISION AND ORDER

This proceeding is before the Occupational Safety and Health Review Commission (Athe Commission®) pursuant to section 10(c) of the Occupational Safety and Health Act of 1970, 29 U.S.C. ' 651 *et seq.* (Athe Act®). On March 31, 2008, the Occupational Safety and Health Administration (AOSHA®) began an inspection of a work site of Respondent, located in Naples, Florida. The inspection came about after an accident at the site on March 28, 2008, that injured four employees. On July 21, 2008, OSHA issued Respondent a two-item serious citation. Respondent contested the citation. The hearing in this matter was held on March 30 and 31, 2009,

in Naples, Florida. Both parties have filed post-hearing briefs. Respondent has also filed a reply brief.

Background

Respondent (ARespondent@ or AArmadillo@) is an underground utility excavation contractor that installs water, drainage and sewer systems. Respondent-s work in Naples was part of a several-year project to install five miles of PVC piping for a water line for Collier County. Collier County was the project owner, and AIM Engineering (AAIM@) was the company hired to inspect the piping after it was installed. On March 28, 2008, Respondent had a crew at Vanderbilt Beach Road and Collier Boulevard in Naples. William Richard Davis was Armadillo-s foreman at the site, and the other crew members were Juan Vicente, Pourcely Phissaint, Esau Lucas, Allen Westberry and an unidentified loader/operator. The crew was in the process of pressure testing a section of 20-inch PVC pipe they had installed. Sean Ware, an AIM inspector, was also there to inspect the pipe and was standing near the edge of the ditch. Mr. Davis noticed a very small leak in between the mechanical joint and the mega lug, at the bottom of the pipe. He instructed Messrs. Vicente and Lucas, the two crew members with him in the ditch, to tighten the T-head bolts on the mega lug. They did so, using hand, and not torque, wrenches. The pipe exploded 30 to 45 seconds after the leak stopped. Messrs. Vicente, Ware and Lucas were hit by pipe fragments and received lacerations. Mr. Davis was struck by the pipe as it exploded. It shoved him back over a rock ledge, causing him to break both legs. Messrs. Vicente, Lucas and Ware were treated and released from the hospital the same day. Their injuries were not serious and they were back at work on April 1, 2008. Mr. Davis had surgery and was hospitalized for two or three weeks. He had further surgery months later. At present, he uses a cane and cannot work as a foreman. (Stipulation of Facts Nos. 1-6, Revised Joint Pre-Trial

Statement, dated March 5, 2009 at pp. 7-8; Tr. 25, 33-36, 56-57, 87-90, 95-103, 107-08, 119-20, 125-30, 133-36, 145, 273, 276; R-D, E, F and G).

Hernaldo Carpio, a safety engineer and compliance officer (ACO@) with OSHA, went to the site on March 31, 2008. He met with someone he described as the general contractor's representative and with Kirk Richmond of Armadillo and held an opening conference. He also requested documents, including Armadillo's safety and health program and the specific procedure used for the pipe installation. Mr. Richmond told him Armadillo used the American Water Works Association (AAWWA@) procedure and that it was in Armadillo's office in Ft. Myers. The CO walked the site with Mr. Richmond and viewed the area where the work had taken place. As the pipe parts had been removed, Mr. Richmond drew him a picture of the ATee@ connection on the pipe at the time of the accident.

On April 1, 2008, the CO went to Armadillo's office. He met with Deborah Richmond, who showed him the connection that was on the pipe and the fragments from the pipe explosion. She also gave him the names of the employees who were injured and described the extent of their injuries. She said she was getting together other information and did not know where the AWWA procedure was in the office. The CO left the office and went to the site to speak to the crew members who had been injured. They were not able to explain to him the procedure they had used, but did explain the work they were doing when the accident occurred. They said the foreman noticed the leak and told them to tighten the bolts on the mechanical joint and that when they did so the pipe exploded. They also said that this had been the first time they had tightened the bolts with the pipe pressurized. (Tr. 23-36, 41-42, 80-81; C-6, C-9).

CO Carpio attempted to speak to Mr. Davis on April 1, 2008. When he went to the hospital, Mr. Davis told him he was on medication and did not want to talk to him then. On June

24, 2008, the CO spoke to Mr. Davis at Armadillo's office in Ft. Myers. Ms. Richmond was there, as was Armadillo's counsel and Angel Diaz, another CO. Mr. Davis stated that, after installing the pipe, they pumped it up to 165 p.s.i., its operating pressure, over the course of ninety minutes. Mr. Davis said he had been standing in front of the pressurized pipe at the time of the accident. He also said he had the employees tighten the bolts on the mechanical joint that ran parallel to the pipe to stop the leak. The leak stopped, Mr. Ware was summoned, and the pipe exploded. Mr. Davis told the CO that it was a common procedure for 35 years to tighten the bolts when there was a leak. He also told the CO that the bolts in this case had not reached the maximum torque and could be torqued further. According to the CO, Mr. Davis could not describe to him either the AWWA procedure or the manufacturer's specifications. The CO wrote a summary of what Mr. Davis said. (Tr. 36-39, 58-60, 77-78, 99; C-10).

Because he had not received everything he had requested from Armadillo, the CO requested documents from Jim Schuler, AIM's project manager. Mr. Schuler gave him the manufacturer's specifications issued by Sigma Corporation (ASigma®) for the mechanical joint restraining gland that was used. Mr. Schuler also gave him a memorandum issued to AIM inspectors and project managers after the accident by Denis Roza, PE, and Rick Moore, Utility Coordinator, dated April 2, 2008, entitled ASafety Procedures for Pressure Testing Mainlines.® The CO reviewed the employees' statements and documents he had received, including the AWWA procedure for pipe installation. The CO determined that Armadillo had violated the general duty clause because it had failed to follow Sigma's specifications and the AWWA procedure for tightening the bolts on the mechanical joint restraining gland. The CO believed that Armadillo did not follow Sigma's procedure and AWWA's recommendations when installing the bolts. He also determined that the hazard was that of being struck by exploding

pipe fragments, which could cause serious injuries. The CO recommended the issuance of the citation alleging a violation of section 5(a)(1) of the Act, the general duty clause. (Tr. 39-51; C-16, C-17, C-19).

Jurisdiction

Respondent admits in its answer that the Commission has jurisdiction of this matter pursuant to section 10(c) of the Act. Respondent also admits that it is an employer engaged in a business affecting interstate commerce within the meaning of section 3(5) of the Act. I find, therefore, that the Commission has jurisdiction of the parties and the subject matter in this case.

The Alleged Violation and the Secretary's Burden of Proof

The citation alleges a violation of section 5(a)(1) of the Act, the general duty clause. In particular, the citation alleges a violation as follows:

The employer did not furnish to each of his employees employment and a place of employment which were free from recognized hazards that were causing or likely to cause death or serious physical harm to employees in that employees were exposed to struck-by hazard:

On or about 3/28/08, at Vanderbilt Beach Road and Collier Boulevard, in the city of Naples, Florida, employees were exposed to the hazard of being struck by fragments of a water main PVC pipe, whose mechanical joints and restraining glands were not being installed in accordance with the manufacturer's specifications.

Among other methods of abatement, one feasible and acceptable method to correct the hazard is to install the mechanical joints and restraining glands in accordance with the manufacturer and as required by ANSI/AWWA C111/605.

To prove a section 5(a)(1) violation, the Secretary must show that: (1) a condition or activity in the workplace presented a hazard to employees, (2) the employer or its industry recognized the hazard, (3) the hazard was likely to cause death or serious physical harm, and (4)

a feasible means existed to eliminate or materially reduce the hazard. *Nelson Tree Serv., Inc. v. OSHRC*, 60 F.3d 1207, 1209 (6th Cir. 1995) (citations omitted). Further, the evidence must show that the employer knew or with the exercise of reasonable diligence could have known of the hazardous condition. *Danis Shook Joint Venture*, 19 BNA OSHC 1497, 1501 (No. 98-1192), *aff=d*, 319 F.3d 805 (6th Cir. 2003).

The Parties= Positions

The Secretary contends she has met her burden of proof. She asserts the CO=s testimony about his inspection, and the documents he reviewed, including the manufacturer=s specifications for the subject restraining gland and the AWWA procedure for installing such glands, show Armadillo did not follow the proper procedure at the work site. She further asserts that the testimony of her expert supports her position that instead of tightening the bolts on the restraining gland, the pipe should have been depressurized and the joint disassembled, cleaned and reassembled. Secretary=s Brief, pp. 2-7, 10, 13-16. Respondent, however, contends the procedure Armadillo used was proper and that the accident was due to an improbable and unfortunate set of circumstances. It asserts that neither the CO nor the Secretary=s expert had the requisite experience to offer a valid opinion as to whether the work at the site was done properly. It also asserts that the Secretary=s claim that the restraining gland was not installed as required by the manufacturer=s specifications and the AWWA procedure is not supported by the record. Finally, it asserts that the testimony of Mr. Davis, along with that of Kevin Stine, a representative of the restraining gland=s manufacturer, show the procedure Armadillo used at the site was appropriate. Respondent=s Brief, pp. 13-14, 16-28.

The Relevant Testimony

CO Carpio stated that he has been employed at OSHA for two and a half years. He earned a Bachelor's degree in mechanical engineering in 2005. CO Carpio testified that C-16, Sigma's specification for the restraining gland at issue, contains a range of torque for bolts that have to be followed. He further testified that C-16 also refers to C-19, AWWA Standard C111 (entitled "Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings"). C-19 states on page 25 as follows:

If effective sealing is not attained at the maximum torque indicated, the joint should be disassembled, thoroughly cleaned, and reassembled. Overstressing bolts to compensate for poor installation practice is not acceptable.

The CO indicated his belief that Armadillo should have used a torque wrench to tighten the bolts on installations like the one at the site to ensure the proper torque was achieved. He also testified that Armadillo was not required to use torque wrenches when tightening bolts during the installation of the pipe on March 28, 2008. He agreed the last sentence on page 24 of C-19, which sets out mechanical joint assembly instructions, stated that "[t]he use of a torque-indicating wrench will facilitate this procedure." He also agreed there was no requirement on page 24 to use a torque wrench. He further agreed the sentence noted by an asterisk on page 25 of C-19 indicated a worker could be trained to apply the proper torque range without using a torque wrench. The CO believed it was never appropriate to tighten bolts to stop leaks even within the allowable range of torque and that overstressing bolts was not acceptable. He also believed C-19 was an industry standard. He conceded C-19 was not incorporated into OSHA's regulations and that C-19 itself stated, in the first paragraph of page ii, that the "use of AWWA standards is entirely voluntary." He also conceded that Appendix A of C-19, which contains pages 23 through 25 of C-19, stated on page 23 that it was "for information only" and was "not a

part of [AWWA C111].@ CO Carpio testified that he did not know if anyone checked the bolts on the pipe that exploded to see whether they were overstressed. CO Carpio acknowledged this had been his first investigation of a pipe explosion. (Tr. 23, 48-50, 60-76; C-16, C-19).

Mr. Davis, the site foreman, has worked for Armadillo for four years. He has been in the pipe-installing industry for 35 years. He testified he had received training while with Armadillo relating to excavation and trenching, construction safety and health, crew leader, confined space entry, utility pipe installation, OSHA ten-hour and CPR. He further testified he kept R-K, Armadillo's safety manual, in his work truck and that his crew had access to the manual. Mr. Davis worked with the same crew for at least six months before the accident, installing pipe the entire time. This was the first pressure test they had done. The crew had prior experience, but he trained them in the job. He showed them how to tighten bolts. He also checked their work by watching them and, at times, by using a torque wrench to check bolts they had installed. Mr. Davis said most of the bolts he checked were tight enough, but at times they were not. At no time had he found a bolt to be too tight. He held weekly safety meetings at the site, as shown in R-I, that covered topics provided by the office. He also held daily safety meetings that addressed the work at the site, as shown in R-H. A crew member translated the meetings for Spanish speakers. (Tr. 93-94, 109-19, 142-51).

Mr. Davis described how to install a mechanical joint. He would clean and lubricate the pipe, place the mega lug, or restraining gland, over the pipe, and put the rubber gasket over the pipe. He would then slide the mechanical joint onto the pipe, push the gasket up into the joint, pull the gland up behind it, and put all the T-head bolts (AT-bolts@) in the gland. When the T-bolts are being tightened to a pipe, the mega lug is being pulled down into the mechanical joint where there is rubber between them, pulling down on the rubber. The T-bolts tighten the gland

and pull the gasket into the joint, making a seal. The wedge (or hex-head) bolts tighten down onto the pipe to keep it from pulling out of the joint. Mr. Davis said the bolts he periodically checked with a torque wrench were only the T-bolts, because the wedge bolts have a head on them that is designed to break off when the proper torque is reached. Lug (or wedge) bolts are not tightened to stop leaks and were not tightened by crew members on March 28, 2008. Mr. Davis identified both the T-bolts and the wedge bolts on the first page of C-16, which shows a view of a Sigma One-Lok restraining gland. (Tr. 91-92, 119-24, 152-54; C-16).

Mr. Davis described the leak at the site as between the mechanical joint and the mega lug, or restraining gland, at the bottom of the pipe. It was a very small leak, and he instructed Messrs. Lucas and Vicente to tighten the T-bolts on the gland. He observed them do so and noted they turned the bolts no more than three-quarters of a turn or a full turn. He also observed their body language and facial expressions and noticed they did not seem to be struggling or straining to tighten the T-bolts. Mr. Davis indicated he would have followed the same procedure even if the leak had been larger. If the crew members had looked like they were struggling with the bolts, and the leak did not stop, he would have depressurized the pipe and disassembled the joint to find out what the problem was. Mr. Davis noted the line had been pressurized the night before and the bolts had been tightened up against the rubber gasket. With time, the rubber conforms to the area it is in and loosens up, causing the bolts to be loose, which is the cause of most leaks. He further noted that the normal procedure for correcting the leak was to tighten the bolts. It was what he did at the other companies he worked for. He had never been asked to depressurize the line and disassemble the pipe in such situations. He testified that none of the other companies he worked at provided any alternative procedure for correcting leaks. Mr. Davis

did not feel what he did was unsafe. Based on his experience, anyone in that situation would have done the same thing. (Tr. 88, 126-33, 155-59).

Mr. Davis did not use a torque wrench to measure the torque on the bolts. He measured the torque visually. In addition, Messrs. Vicente and Lucas had quite a bit of experience and knew what it felt like when they were tightening. Mr. Davis said the bolts already joined to the pipe were probably not at the proper torque and the leak was because the bolts were too loose. He did not believe a leaking pipe indicated an overstressed joint assembly or that tightening the bolts during the test could have overstressed the bolts. He also did not believe tightening the bolts caused the explosion, but he said it could have been caused by pressure. Mr. Davis stated there was a torque wrench at the site and that Armadillo was one of the few companies he had worked for that allowed use of a torque wrench. He used his own torque judgement at his other companies, where it was normal procedure to tighten T-bolts during pressure tests. He further stated it was not standard industry practice to use a torque wrench. A torque wrench indicates only the amount of torque it has been set for, and torque wrenches can be unreliable if used in wet or sandy conditions. In all his experience, Mr. Davis had never seen over-tightened T-bolts. He had also never heard of a pipe explosion before the one that injured him. None of his employers had ever warned of the potential for pipe explosions. He had heard of an accident at another Armadillo site in December 2006. He had not, however, heard it was a pipe explosion. (Tr. 89-91, 98-105, 124-26, 133-39, 149-52, 156-57).

Mr. Davis was somewhat familiar with the AWWA. He could not explain or define AWWA. He had not reviewed, or been trained in, the AWWA standards. He was not aware of an AWWA procedure to disassemble a pipe if the pipe had not attained an effective seal, and he had no knowledge of AWWA describing a recommended procedure. He was also not aware of a

written pressure test procedure, but he described the unwritten procedure he followed in the field. (Tr. 92, 95-96, 101).

Michael Shea, a safety engineer with OSHA's Atlanta Regional Office, has been with OSHA his entire career of 21 years. He was an OSHA safety engineer CO for nine years. In that position he conducted inspections and accident investigations. He was then promoted to his present position, which involves assisting the area offices in his region with accident investigations. Mr. Shea has a bachelor's degree in mechanical engineering. He is a certified safety professional and a member of the American Society of Safety Engineers. Mr. Shea has testified previously as an expert in OSHA cases. The Court accepted Mr. Shea as an expert at the hearing without an objection. (Tr. 163-72).

Mr. Shea testified that he reviewed the OSHA file in this matter, including C-16, C-19, and witness statements. He said C-19 is an AWWA consensus standard that covers the water industry and that it applied to the work at the site because of its requirements for installing restraining glands on pipelines. Based on his review of the OSHA file, his opinion was that applying further torque to the bolts with the line under pressure was improper. He explained that a water leak is an indication of an ineffective seal and that rather than tightening the bolts the crew should have depressurized the water line, disassembled the joint, and then reassembled it, pursuant to page 25 of C-19. Mr. Shea said that a common sense would tell you to depressurize the water line. He disagreed with Mr. Davis's testimony that tightening the bolts as his crew did was a routine practice. He further disagreed with Mr. Davis's practice of checking with a torque wrench work his employees had done with a hand wrench. He indicated an effective reading could not be obtained unless the torque wrench was used from the beginning. Mr. Shea agreed with the Sigma specification instructions at C-16, page 5, that stated, to install the restraining

gland, AUse of a torque wrench is recommended.@ He also noted that C-16, on page 4, stated that T-bolts should be within the recommended torque value of AWWA C111. Mr. Shea said that while his written report referred to the hex-head bolts as those at issue, rather than the T-bolts, his opinion was the same. (Tr. 170-81).

Mr. Shea further testified that, in forming his opinion, he did not speak to any pipe or gland manufacturers, or to any utility contractors. He said he did not have any field experience installing pipes. He also said that he had never conducted inspections dealing with water pipe explosions or installations of mechanical joint assemblies for water pipes. He agreed C-16 did not require the use of a torque wrench and that using a hand wrench to tighten the bolts would be acceptable if the people doing so were experienced and properly trained. He also agreed that C-19 was not a specification, that its use was Aentirely voluntary,@ and that compliance with the AWWA standards is not required. He further agreed that Appendix A to ANSI C111 stated on its title page that it was Afor information only@ and Appendix A was Anot part of [ANSI C111].@ Mr. Shea repeated that his report should have referred to the T-bolts, instead of the hex-head bolts and that his misunderstanding was from the information in the OSHA file. He said that fact did not change his opinion because common sense would tell anyone that they should depressurize a pipe before further tightening bolts. He then agreed that the Acommon sense@ he meant would be that of an engineer or someone experienced in such work. He acknowledged he had not spoken to anyone in the industry about this case. Mr. Shea also agreed that the AWWA guidance at page 25 to disassemble, clean and reassemble the joint applied only when an effective seal was not obtained at maximum torque. He also further agreed that a workman operating within the proper torque range could increase the torque on the bolts and still be in compliance with the AWAA installation procedure. Mr. Shea admitted he had no evidence the T-

bolts at issue were at Amaximum torque,@ He also admitted that he did not know what torque the T-bolts were at when Mr. Davis ordered them to be tightened. He conceded that the statement on page 25 of C-19 regarding pipe disassembly and cleaning was true only if the bolts were at Amaximum torque.@ He further conceded that, because the torque range for the bolts at issue was from 75 to 90 pounds, tightening them up to 90 was acceptable. Mr. Shea stated that some industry practices, like the one Mr. Davis described calling for bolts to be tightened when a leak occurred in a pressurized pipe, were not always correct. (Tr. 182-202).

Kevin Stine, a district sales manager with Sigma, is responsible for sales of Sigma products in Florida. He calls on customers, manages a warehouse, and assists contractors who have questions about Sigma products. Mr. Stine testified he generally makes about six visits a year to job sites where a contractor needs help installing a product. He made one such visit to an Armadillo site about two years ago. Mr. Richmond had been there with a superintendent and crew. Mr. Stine showed them how to install a joint. Mr. Stine then demonstrated, at the hearing, how to install a joint. He identified R-Q as a piece of PVC pipe, R-R as a standard mechanical joint gasket, R-S as a ductile-iron T fitting, and R-T as a Sigma One-Lok SLC restraining gland. He also identified R-U as the T-head nuts and bolts, R-V as a field wrench, and R-W as a ratchet with a socket to fit the T-head nut. Mr. Stine assembled the items at the hearing and tightened the T-head nuts and bolts first by hand and then with R-V. He said the T-head nuts and bolts are the most important component as far as actually sealing the joint. They need to be tightened in a star pattern so the gland is evenly drawn up. The contractor will go around in the star pattern two to four times to get the required torque range for the T-bolts, which is 75 to 90 pounds. Mr. Stine next tightened the wedge, or hex-head, bolts on the gland. He said the wedge bolts can be tightened with R-V or R-W and that the wedge bolt heads are designed to break off when the

proper torque has been reached. He also said that every gland sent out to the field has a tag on it with installation instructions, as shown in R-J. (Tr. 226-42).

Mr. Stine further testified that after assembly, the installation is ready for a pressure test. The pressure test involves putting water into the pipeline until the line is filled; air is released to avoid air entrapment, the water pressure is typically at 150 p.s.i., and the installation has to hold that pressure for at least two hours with only a certain amount of leakage allowed. Mr. Stine stated that he is familiar with three types of leaks: weeping, hissing and major. A weeping leak drips similarly to drops seen from faucets. Hissing leaks are little streams the size of pencil lead or a needle. A major leak is the size of a child's crayon, or bigger, with a massive amount of water shooting out. He said most leaks he has seen in the field are small hissing leaks around the gland. In his experience, if the leak is small, like a weeping or hissing leak, the contractor will use a field wrench to tighten the gland's T-bolts, usually those in the area of the leak. The most likely cause of leaks is the T-bolts are not tight enough. He also said that if tightening the bolts does not work, the contractor must depressurize the line, disassemble the joint, and check for debris in the joint or other problems with the gasket. Mr. Stine noted he has gone into the field to check the torque on T-bolts on Sigma One-Lok restraining glands. When he does, he uses a torque wrench. He stated that the T-head bolts and nuts had to be tightened to a range between 75 to 90 pounds per foot to seal the gasket per the AWWA standard. In his experience, tightening the T-bolts almost always solved problems with leaks. Mr. Stine stated he had seen contractors in the field tighten T-bolts both with and without the line being under pressure. He further stated that Sigma has had no reported failures in the more than four million One-Lok units sold since their use began in the mid-nineties. (Tr. 247-59, 263-69).

Mr. Stine described the AWWA as a standards committee consisting of water works entities, engineers and products manufacturers. He agreed that, for most products, Sigma references AWWA standards, as well as its own. He said the One-Lok gland is not covered by the AWWA standards. He also agreed that when Sigma references AWWA standards, it is recommending that those products be installed to the minimum standards of AWWA. He further agreed that while the Sigma One-Lok instructions and AWWA C111 recommend a torque wrench for gland installation, AWWA C111 also mentions using a wrench like R-W. Mr. Stine said the advantage of a torque wrench is that the user will know the specific torque level. He also said a leak means an ineffective seal. If an effective seal is not attained at maximum torque, then disassembly and reassembly is required. Mr. Stine repeated that, in his experience, most contractors would just tighten one to three T-bolts with a field wrench to stop a small leak. He stated he had never seen a pipe explosion in the field. There are various factors that could cause one, but, from his experience and his knowledge of Sigma's testing of products, the biggest factor is air entrapment in the line. He further stated that about three and a half years ago, he had visited a site in southern Florida because the contractor had notified him the One-Lok gland was Abottoming out@ against the fitting. Mr. Stine checked the torque on the T-bolts and found they were all over-torqued. He learned an impact wrench had been used. Mr. Stine noted that impact or hydraulic wrenches are more common now as larger diameter pipes are being used and there are many T-bolts to tighten. Contractors generally use the impact wrenches to reach a certain level of torque and then do the final tightening of the T-bolts with a field wrench. (Tr. 260-71).

Kirk Richmond is the president and CEO of Armadillo, which has been in business since the early eighties. At the time of the accident, he was acting as a field superintendent at the subject site. He testified that he has safety certifications similar to those of Mr. Davis and has

received specialized training through trade associations. He said he sits on the boards of two such entities, that is, the State of Florida and the Southwest Florida Underground Utility Contractors Associations. He also said he is very familiar with the field practices of other utility contractors due to his attending meetings of the boards he is on and his networking with those contractors. (Tr. 272-75).

Mr. Richmond further testified that his crews go through orientation and other training before working in the field. He said Armadillo keeps up with modifications to parts and installations through manufacturers' instructions. He also said that a project's owner gives Armadillo the job specifications, which Armadillo provides to a supply house. The supply house then selects the materials for the job. Mr. Richmond explained how Armadillo checks up on its jobs. The foreman ensures the work is done properly. The job superintendent visits the site almost daily to review the work and learn of any problems. Mr. Richmond further explained that, as a superintendent, he inspects installations daily to make sure glands are installed properly on fittings. He looks for the distance and evenness between the gland and the fitting and checks to see if the gland is tightened unevenly. He stated that unevenly tightened glands cause leaks. He checks the torque on T-bolts about monthly with a torque wrench. When he does, the torque is usually correct. He stated that Collier County had previously directed Armadillo to tighten bolts to a minimum torque of 90 foot pounds. Collier County directed their inspectors to check bolts using a torque wrench to a tightness of 90 foot pounds. Collier County then stopped using torque wrenches to inspect to a 90-foot pound tightness. (Tr. 272-79).

Mr. Richmond discussed the accident that occurred in 2006. An employee was tapping into a 24-inch water main under pressure with the wrong tool, which caused the pipe to burst, even though the day before, the supervisor had gone over the work with the employee and

provided the tools to use. The employee was ultimately terminated, and, while OSHA cited Armadillo after the accident, the citation was vacated for lack of evidence.

Mr. Richmond also discussed the fact that, after the March 28, 2008 accident, the only change that Collier County made was to increase pipe thickness and the pipe rating from 165 p.s.i. to 235 p.s.i. Mr. Richmond agreed that C-17, a memorandum dated April 2, 2008, entitled "Safety Procedures for Pressure Testing Mainlines," stated as follows:

Recent incident was likely caused by improper torque applied to mega lug. It is imperative that mega bolts be tightened in rotation with equal torque to all bolts.

He noted, however, that he was never given this information and that he had never seen C-17 until after it was produced to Armadillo's counsel. (Tr. 279-84; C-17).

Deborah Richmond is Armadillo's CFO and safety coordinator. She testified that her safety responsibilities include updating Armadillo's safety manual, arranging training, holding orientation for new employees, and maintaining OSHA logs. She identified R-K as the safety manual. She noted that the orientation includes going over the manual, which addresses the safety matters relevant to Armadillo's work. The orientation also includes showing movies addressing various safety issues. For Spanish-speaking employees, the orientation is held in Spanish. She also noted that there is more training in the field. Supervisors hold weekly safety meetings with their crews that cover the safety topics she sends out from the office. These address matters such as wearing protective equipment. Supervisors also hold daily safety meetings that cover issues about the work being done at the site. Ms. Richmond stated that Armadillo's senior managers inspect job sites. Armadillo also has safety consultants inspect its sites, and reports from these inspections are discussed in meetings with all managers. She further

stated that company-wide safety training is held from time to time, when all Armadillo employees must report to the office to attend the training. (Tr. 208-18).

Discussion

The Secretary contends she has met her burden of proof, based upon the testimony of CO Carpio and Mr. Shea. I disagree. While I found both witnesses to be sincere, the record shows that their testimony did not rise to the level necessary to satisfy the Complainant's burden in this case. The CO testified this was the first pipe explosion he had investigated. Mr. Shea testified he had not had any inspections dealing with water pipe explosions or water pipe mechanical joint assemblies. Mr. Shea also had no experience in field work involving utility installations. In forming his opinion, he did not speak to any pipe or gland manufacturers, or to any utility contractors. (Tr. 75-76, 182-85). Mr. Shea's opinion was undermined by the fact that his written report incorrectly addresses the tightening of hex-head or wedge bolts on the gland, rather than the T-bolts, due to the misinformation in the OSHA file. Consequently, the weight accorded Mr. Shea's expert report was reduced by this misidentification. Evidently, Mr. Shea also failed to consider the availability of an acceptable alternative means of achieving the objective of stopping small leaks in pressurized pipes, *i.e.*, by tightening T-bolts. Mr. Shea's reliance on what he referred to as "common sense" to support his opinion that Armadillo should have known that it was required to depressurize the pipe before tightening T-bolts in order to correct a small leak was also misplaced. (Tr. 180-81, 192-97). The Court finds that Mr. Shea's expert opinion in this regard is simply not controlling. See *Con Agra Flour Milling Co.*, 16 BNA OSHC 1137, 1141 (No. 88-1250, 1993) (the testimony of an expert is not necessarily controlling even if it is unrebutted.).

Further, CO Carpio and Mr. Shea essentially conceded that the documents they relied upon did not actually support their opinions. Both believed a torque wrench should have been used on the T-bolts and that, when the leak occurred, the crew should have depressurized the water pipe and disassembled, cleaned and reassembled the joint. (Tr. 49-50, 63-67, 173-80, 187-92). However, the CO and Mr. Shea admitted that C-19, the AWWA procedure, did not require the use of a torque wrench to tighten the bolts, and Mr. Shea admitted that C-16, the Sigma specifications, also did not require using a torque wrench. (Tr. 63-67, 187-92). The CO and Mr. Shea conceded C-19 was not a specification and was not incorporated into OSHA's standards and that C-19 itself stated its use was entirely voluntary. To Mr. Shea, entirely voluntary meant that a contractor did not have to comply with the AWWA standard. They also conceded Appendix A to C-19 stated it was for information only and was not part of AWWA C111. (Tr. 71-73, 173, 177-80, 187-92). Mr. Shea further conceded the statement on page 25 of C-19 regarding pipe disassembly and cleaning was true only if the bolts were at maximum torque. He admitted he had no evidence the T-bolts were at maximum torque, and he agreed that, as the torque range for those bolts was from 75 to 90 pounds, tightening them up to 90 was acceptable. (Tr. 189-90, 197-201; C-19 at p. 25).

Mr. Shea also did not allege in his testimony or expert report that the T-bolts were overstressed. At the hearing, he testified as follows:

Q If a leak B what about a leak tells you that you're at the maximum torque?

A It doesn't.

Q It doesn't, exactly. So how do you make a connection between observing a leak and the conclusion that these bolts were at the maximum torque?

A I don't know what torque they were at.

Q Then how do you know that the bolts were overstressed?

A That's not what I'm alleging in my report.

(Tr. 200). Based on this record, the Court finds that AWWA C111 indicated that mechanical joints should only be disassembled, thoroughly cleaned and reassembled when there is no effective seal only at maximum torque. The Court also finds that a leaking mechanical joint is not conclusive evidence of overstressed T-bolts.

In addition to the above, I found the testimony of Messrs. Davis and Stine to be credible and convincing on the matters at issue, based on my observing their demeanor at the hearing and on their many years of experience in the industry. As noted *supra*, Mr. Davis has been in the pipe installation business for 35 years and has worked as a foreman in the industry for more than 20 years. Mr. Stine, although he has not worked as a pipe installer, has assisted utility contractors with pipe installation problems in the field for 17 years. (Tr. 87, 109-13, 140-42, 226-68, 258-60). Mr. Davis testified he had worked with the same crew for over six months before the accident. He trained the crew, including in tightening bolts. He checked their work by watching them and by using a torque wrench at times to check bolts they had tightened.

The Court finds that the Secretary's contention that the restraining glands were not being installed in accordance with the manufacturer's specifications required by AWWA is contrary to the evidence in this case. Mr. Davis described how to install a joint. He was clearly familiar with the Sigma One-Lok restraining gland. He was also clear about the procedure he followed when a leak occurred during a pressure test of a joint installation, *i.e.*, he tightened the T-bolts on the restraining gland. Mr. Davis convincingly testified that this was the procedure he had always followed for small leaks, that such leaks are usually caused by the bolts not being tight enough,

and that he had never seen an over-tightened bolt in his entire career. Mr. Davis's courtroom testimony was consistent with his June 24, 2008 statement to the CO that the T-bolts had not reached maximum torque at the time of the discovery of the small leak. He felt he had done nothing unsafe and that anyone in his situation would have done the same thing. Mr. Davis watched the crew members as they tightened the bolts and noted they turned them only three-quarters of a turn or a full turn and did not seem to be struggling with the bolts. If they had been, and if the leak had not stopped, he would have depressurized the pipe and disassembled the installation and checked it for any problems. Mr. Davis said it was not standard industry practice to use torque wrenches. They indicate only the amount of torque they have been set for and can be unreliable in wet or sandy conditions. He also said that he had never heard of a prior pipe explosion and that none of his employers had ever warned about the potential for pipe explosions. (Tr. 91-92, 99-102, 105, 109, 114-16, 119-21, 124-39, 149, 156-58).

Mr. Stine testified he made a field visit to an Armadillo site about two years ago to show Mr. Richmond, a superintendent and a crew how to install a joint and a Sigma One-Lok restraining gland. Mr. Stine then demonstrated at the hearing how to perform such an installation. He said the T-head nuts and bolts are the most important component as far as actually sealing the joint. He also said that once the installation is completed it is ready for a pressure test. He described a pressure test as filling the pipe with water until the required pressure is reached. Air is then released from the pipe to avoid air entrapment, and the installation must hold the water for at least two hours with only a certain amount of leakage. Most leaks Mr. Stine has seen are in the gland. In his experience, if the leak is small, the contractor will use a field wrench to tighten the T-bolts. The most likely cause of such a leak is the T-bolts not being tight enough. Leaks, including major leaks, that cannot be sealed by

tightening T-bolts may require that the mechanical joints be disassembled and reassembled once the maximum torque has been achieved. Mr. Stine has seen contractors in the field tighten T-bolts, both with and without the line being under pressure. (Tr. 228-43, 247-59, 266-68).

Mr. Stine further testified that while Sigma references AWWA standards for most products, the Sigma One-Lok gland is not covered by them. He said the One-Lok instructions and AWWA C111 recommend a torque wrench for gland installation. AWWA C111 also mentions using a socket wrench. He also said a leak means an ineffective seal. If an effective seal is not attained at maximum torque, then disassembly and reassembly is required. About three years ago, Mr. Stine visited a site after the contractor told him the One-Lok gland was Abottoming out@ against the fitting. Mr. Stine checked the torque on the T-bolts and found they were all over-torqued. He learned an impact wrench had been used. Despite the over-torquing, the joint was sealed and was not leaking. Mr. Stine noted that impact or hydraulic wrenches are more common now as larger diameter pipes are used and there are many T-bolts to tighten. Contractors generally use the impact wrenches to reach a certain level of torque. They then do the final tightening of the T-bolts with a field wrench. He also noted he had never seen a pipe explosion in the field. There are various factors that could cause one. In his experience, the biggest factor is air entrapment in the line. (Tr. 260-71).

To prevail, the Secretary must show that Armadillo knew, or with the exercise of reasonable diligence could have known, of the violative conditions. Otis Elevator Co., 21 BNA OSHC 2204, 2206-07 (No. 03-1344, 2007); Tampa Shipyards, Inc., 15 BNA OSHC 1533, 1535 (Nos. 86-360, 86-469, 1992). A hazard is

only deemed recognized when the potential danger of a condition or activity is either actually known to the particular employer or generally known in the industry. *Pepperidge Farm, Inc.*, 17 BNA OSHC 1993, 2003 (No. 89-0265, 1997).

Based on the foregoing, I find the Secretary has not met her burden of proof in this case. There is insufficient evidence to connect the pipe explosion to the cited hazard. Specifically, she has not shown the cited condition presented a hazard or that Armadillo or its industry recognized the hazard. The Secretary did not present adequate and persuasive evidence that tightening the T-bolts under the circumstances created a hazardous condition, or that it is never appropriate under the manufacturer's instructions and industry standards to tighten the T-bolts while the water line is pressurized. There is insufficient evidence to support any assertion that the industry, Armadillo, or Mr. Davis recognized that it was a hazard to tighten T-bolts to stop a small leak without first depressurizing the pipe. To the contrary, the above testimony of Mr. Davis and Mr. Stine, which I have credited, is persuasive evidence that Armadillo's actions at the site on the day of the accident were proper and in accordance with industry practice. The evidence shows that it was common practice within the utility industry to tighten T-bolts with wrenches without first depressurizing the pipe. Mr. Shea's "common sense" argument to the contrary is not persuasive. There is no evidence that subsequent to the pipe explosion the utility industry, the

project owner, or Armadillo affirmed or instituted a new practice that called for pipes to be depressurized before T-bolts were tightened to stop a small water leak.

In addition, I have considered the evidence in the record indicating that Armadillo takes safety very seriously. In particular, I have noted Mr. Davis's testimony about the safety meetings he holds

in the field and the safety training and certifications he has received while working for Armadillo. (Tr. 93-94, 113-14, 117-19, 142-49). I have also noted the testimony of Kirk and Deborah Richmond regarding the safety orientation and training employees receive, the safety meetings held in the field, and the site inspections conducted by Armadillo's management and outside safety consultants. (Tr. 208-18, 275-78).

The accident in this case was very unfortunate and caused serious injury to Mr. Davis. Regardless, the Secretary has simply not met her burden of proving the alleged violation in this matter. For this reason, and all of those set out above, Item 1 of Serious Citation 1 is VACATED.

FINDINGS OF FACT AND

CONCLUSIONS OF LAW

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

ORDER

Based upon the foregoing findings of fact and conclusions of law, it is ordered that:

1. Item 1 of Serious Citation 1, alleging a violation of section 5(a)(1) of the Act, is VACATED in its entirety.

2. Item 2 of Serious Citation 1, alleging a violation of 29 C.F.R. ' 1926.20(b)(1), is VACATED in its entirety.

//S//
The Honorable Dennis L. Phillips
U.S. OSHRC Judge

Date: 14 DEC 2009
Washington, D.C.

Mr. Vicente was the Atail man@ or Aheel man@ who normally stays outside of the ditch collecting needed tools and picking up pipe. Mr. Lucas was the Apipe layer@ or Alead laborer@ who knows the most about the pipe and directs the tail man. Mr. Westberry was the backhoe operator. (Tr. 103, 107-08).