



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

SECRETARY OF LABOR,

Complainant,

v.

JACOBS FIELD SERVICES NORTH
AMERICA,

Respondent.

OSHRC Docket No. 10-2659

ON BRIEFS:

Scott Glabman, Senior Appellate Attorney; Charles F. James, Counsel for Appellate Litigation;
Joseph M. Woodward, Associate Solicitor; M. Patricia Smith, Solicitor; U.S. Department of
Labor, Washington, DC
For the Complainant

Darren S. Harrington, Esq.; Key Harrington Barnes, P.C., Dallas, TX
For the Respondent

DECISION

Before: ROGERS, Chairman; ATTWOOD and MACDOUGALL, Commissioners.

BY THE COMMISSION:

Jacobs Field Services North America is a contractor that was engaged to perform maintenance in Conroe, Texas, at a chemical production plant owned and operated by Huntsman Petro-Chemical, LLC. In May 2010, Jacobs and Huntsman were engaged in a process known as a “Test and Inspect turnaround” (“T&I”), which required the shutdown of certain equipment for maintenance purposes. As part of the T&I, a Jacobs crew was assigned to remove eight emergency shutdown devices (“ESDs”) on some chemical lines and replace them with new ESDs. This required that the ESDs first be isolated pursuant to the plant’s energy control procedures.

During the isolation process, a gate valve on a butylene oxide line was found to be leaking and had to be replaced before the ESD work could continue. Huntsman did not assign this particular work to Jacobs and indicated that Huntsman would perform the work itself. Nevertheless, after a Huntsman operator mentioned the job task over the radio, a Jacobs employee offered to assist. Before removing the leaking valve, the Huntsman operator disconnected utility hoses from the butylene oxide line and began to depressurize the line, at which time the Jacobs employee arrived. As the two employees started removing bolts from the top of the leaking valve a flange either separated or broke, and approximately 750 liquid pounds of butylene oxide sprayed into the air in an area where employees were working. A video of the incident shows that the release lasted twelve to fifteen minutes.

Following an inspection of the plant, the Occupational Safety and Health Administration issued Jacobs a five-item serious citation, alleging violations of the lockout/tagout (“LOTO”) standard, 29 C.F.R. § 1910.147, and proposed a penalty of \$7,000 for each item. Administrative Law Judge Sharon D. Calhoun vacated one of the citation items and affirmed the four remaining items as serious, assessing a total penalty of \$13,000. Only the four affirmed items are at issue on review. For the reasons that follow, we vacate all four items.

DISCUSSION

I. Serious Citation 1, Items 1, 3, and 4

To prove that Jacobs violated the LOTO provisions at issue under these citation items,¹ the Secretary must show that the LOTO standard applies, Jacobs failed to comply with the cited LOTO provisions, Jacobs employees had access to the violative conditions, and Jacobs either knew or should have known of these conditions with the exercise of reasonable diligence. *See Astra Pharm. Prods., Inc.*, 9 BNA OSHC 2126, 2129, 1981 CCH OSHD ¶ 25,578, pp. 31,899-900 (No. 78-6247, 1981), *aff’d in pertinent part*, 681 F.2d 69 (1st Cir. 1982). The only issues in dispute on review are whether the LOTO standard applies to the cited conditions and whether Jacobs knew or should have known of those conditions.

¹ The provisions cited under these items are 29 C.F.R. § 1910.147(c)(4)(i) (document, develop, and utilize an energy control procedure), 29 C.F.R. § 1910.147(d)(3) (locate and operate isolation devices), and 29 C.F.R. § 1910.147(d)(4)(i) (affix lockout devices).

Applicability

The LOTO standard “covers the servicing and maintenance of machines and equipment in which the *unexpected* energization or start up of the machines or equipment, or release of stored energy could cause injury to employees.” 29 C.F.R. § 1910.147(a)(1)(i). Here, there is no dispute that the attempted valve replacement was a maintenance activity, and that there was an unexpected release of stored energy resulting in the discharge of a large quantity of butylene oxide. On review, the parties offer differing theories regarding whether this was a “release of stored energy” that “could cause injury to employees.” *Id.* But these theories unnecessarily complicate an issue that is readily resolved by the record before us.

The evidence shows that when the flange failed during the performance of the maintenance activity and butylene oxide discharged from the line, stored energy was released.² This release caused chemical burns and chemical pneumonia to several employees. The butylene oxide produced a burning sensation on the skin of the Jacobs employee until he was able to wash it off in the plant’s safety shower. Likewise, the Huntsman operator testified that after his skin was exposed to the butylene oxide, he felt “like [he] was literally on fire burning” and that the burning sensation lasted until approximately the next day. *See Dayton Tire, Bridgestone/Firestone*, 23 BNA OSHC 1247, 1256, 2009-12 CCH OSHD ¶ 33,098, p. 54,820 (No. 94-1374, 2010) (rejecting infeasibility defense and finding LOTO standard applicable to certain machinery because unexpected release during servicing activity could have caused burns to employees), *aff’d in relevant part*, 671 F.3d 1249 (D.C. Cir. 2012). Further, a Jacobs crane operator, who was working about 65 to 75 feet from the release, breathed in butylene oxide vapors and was taken to the hospital where he was diagnosed with chemical pneumonia.

Jacobs employees were also exposed to fire and explosion hazards as a result of the release. The OSHA mechanical engineer who conducted the inspection of the worksite testified that given the flashpoint and lower explosive limit of butylene oxide, and the concentrations of the chemical in the plant’s environment, “it was very likely” a catastrophic fire or explosion

² Butylene oxide is “[a] clear colorless volatile liquid with an ethereal odor” that is highly reactive and highly flammable. Database of Hazardous Chemicals, CAMEO Chemicals, National Oceanic and Atmospheric Administration, <http://cameochemicals.noaa.gov/chemical/2689>; *see* 29 C.F.R. § 1910.147(b) (broadly defining “energy source” as including “[a]ny source of . . . chemical, thermal, or other energy”).

could have occurred.³ The mechanical engineer further testified that potential ignition sources for an explosion included a running engine, a dropped wrench, or anything else that could cause a spark. Indeed, both the Jacobs employee and the Huntsman operator admitted to being concerned at the time of the accident that the release would result in an explosion. Additionally, immediately following the release, other Huntsman employees “ran around” telling workers to evacuate the area, then turned on a fire monitor and opened a fire water deluge located near the crane’s motor to drown it and eliminate it as an ignition source.⁴

Based on these facts, we conclude that the LOTO standard applies to the valve replacement work at issue under these citation items.⁵ *See* 29 C.F.R. § 1910.147(a)(1)(i) (scope provision).

³ The preamble to the LOTO standard addresses circumstances similar to those at issue in the instant case. Specifically, in discussing the requirement that employers verify energy control procedures, OSHA provided the following analysis concerning “leakage or drainage of energy or energy containing substances”:

In the case of one of those substances being present in a piping, containment or transport system, a certain amount of leakage may occur without endangering employees. However, if servicing or maintenance must be performed on such a system, the standard requires the employer to continue to verify the isolation of energy sources which may be hazardous, in order to assure that such leakage does not approach a dangerous level. This may involve means such as continuous monitoring for the displacement of oxygen *or the buildup of the concentration of the substance toward the lower explosive limit of the substance*, such as could occur with a hydrogen system.

Control of Hazardous Energy Sources (Lockout/Tagout), 54 Fed. Reg. 36,644, 36,678 (Sept. 1, 1989) (emphasis added).

⁴ Commissioner MacDougall does not join in the decision with regard to the release of the chemical resulting in Jacobs employees’ exposure to fire and explosion hazards. In her opinion, Jacobs employees’ exposure to and inhalation of butylene oxide is a sufficient basis to find a “release of stored energy” that “could cause injury to employees.”

⁵ Jacobs argues on review that the process safety management (“PSM”) standard is more specifically applicable to the cited conditions than the LOTO standard. We do not address this issue because the PSM standard applies to butylene oxide only when it is present in quantities at or above 10,000 pounds, and there is no evidence to establish that the 10,000-pound threshold quantity was present at the Huntsman plant. 29 C.F.R. § 1910.119(a)(1); *Motiva Enters., LLC*, 21 BNA OSHC 1696, 1700, 2004-09 CCH OSHD ¶ 32,849, p. 52,895 (No. 02-2160, 2006) (holding that “given the record in this case, there is simply no way the Commission can determine whether the PSM standard applies”).

Knowledge

To establish knowledge, the Secretary must prove that the employer knew or, with the exercise of reasonable diligence, should have known of the conditions constituting the violation. *Contour Erection & Siding Sys., Inc.*, 22 BNA OSHC 1072, 1073, 2004-09 CCH OSHD ¶ 32,943, p. 53,787 (No. 06-0792, 2007). Reasonable diligence is based on several factors, including an employer's obligation to inspect the work area, anticipate hazards, take measures to prevent violations from occurring, adequately supervise employees, and implement adequate work rules and training programs. *See General Motors Corp.*, 22 BNA OSHC 1019, 1030, 2004-09 CCH OSHD ¶ 32,928, pp. 53,611-12 (No. 91-2834E, 2007) (consolidated); *N. Landing Line Constr. Co.*, 19 BNA OSHC 1465, 1472, 2001 CCH OSHD ¶ 32,391, p. 49,814 (No. 96-0721, 2001).

The actual or constructive knowledge of a supervisor is imputable to the employer. *Rawson Contractors Inc.*, 20 BNA OSHC 1078, 1080-81, 2002-04 CCH OSHD ¶ 32,657, p. 51,326 (No. 99-0018, 2003); *Dover Elevator Co.*, 16 BNA OSHC 1281, 1286, 1993-95 CCH OSHD ¶ 30,148, p. 41,480 (No. 91-862, 1993). Here, the judge concluded that Jacobs had knowledge of the violative conditions through three of its supervisors working at the plant: the Site Safety Manager, who the judge found had actual knowledge, and the General Foreman and another supervisor, who the judge found had constructive knowledge. For the following reasons, we find that the record does not support the judge's findings.

The record does not establish that any of the Jacobs supervisors knew or had reason to know the Jacobs employee would assist the Huntsman operator with replacing the gate valve. The judge concluded that the Site Safety Manager had actual knowledge, finding that he was present when the Jacobs employee checked out a respirator from the plant's safety office and that the employee told the Site Safety Manager at that time that he was going to help the Huntsman operator replace the valve. On review, Jacobs contends that the judge erred in finding that the employee told the Site Safety Manager the specific nature of the tasks he would be performing.

We agree with Jacobs that the judge mischaracterized the testimony. As Jacobs notes, the record shows that the Jacobs employee told the Site Safety Manager simply that he "was getting a respirator to help" the Huntsman operator—he never specified what work he was going to help the Huntsman operator perform. There is nothing in the record to show that the Site Safety Manager knew what task the Huntsman operator was engaged in at that time or even what the

Jacobs employee's duties were that day. In addition, there is no evidence to support the Secretary's assertion that reasonable diligence required that the Site Safety Manager ask the Jacobs employee what work he would be performing.

With regard to the General Foreman and the other Jacobs supervisor, the judge found what she characterized as constructive knowledge of the cited conditions because both supervisors had radios in their possession and all Jacobs maintenance employees used the same radio channel. Therefore, the judge concluded, the supervisors were able to hear a radio conversation in which the Huntsman employee said he intended to replace the valve and the Jacobs employee radioed back to offer his assistance. In reaching this conclusion, the judge relied on testimony from the Huntsman operator, who speculated that "anybody that has a radio" in maintenance, including the two Jacobs supervisors, "would have heard" the conversation he had with the Jacobs employee.

We disagree with the judge's conclusion. There is no evidence that either supervisor actually heard the conversation. The General Foreman, whose testimony is unrebutted, stated that although his radio was on, he was "in [his] office doing some paperwork" and did not hear the conversation. The other supervisor did not testify at all.⁶ Thus, the record does not establish that these supervisors had actual knowledge of the violative conditions, nor does it show that they should have known of those conditions under the circumstances.⁷

We also find no merit to the Secretary's contention on review that the General Foreman should have made further inquiries when the Jacobs employee told him that he was going to get some tools for the Huntsman operator to do some work. We find it was reasonable for the General Foreman to believe, as he testified, that the employee's assistance would be limited to providing the Huntsman operator with tools, particularly after the Huntsman operator told both supervisors that morning that he was going to replace the leaking valve himself. In these

⁶ The Secretary asserts that Jacobs points to no evidence proving that the other supervisor did *not* hear the radio exchange. However, it is the Secretary's burden to prove that the other supervisor *did* hear the exchange, which he failed to do. We also reject the Secretary's request that we uphold the judge's "implicit" credibility determination regarding this testimony, as the judge's determination is contrary to the record evidence and not demeanor-based.

⁷ Although the judge described her knowledge finding based on the radio conversation as constructive knowledge, her conclusion might instead be viewed as a finding of circumstantial evidence of *actual* knowledge. However, this distinction is of no consequence here as we conclude that the record is insufficient to establish either actual or constructive knowledge.

circumstances, we conclude the judge erred in finding that Jacobs had both actual and constructive knowledge of the violative conditions. Accordingly, we vacate Items 1, 3, and 4.

II. Serious Citation 1, Item 5

Under this item, the Secretary alleges a violation of 29 C.F.R. § 1910.147(d)(5)(i), which states: “Following the application of lockout or tagout devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, and otherwise rendered safe.” According to the Secretary, stored hazardous energy was not properly relieved on four occasions when different energy control procedures were used to allow Jacobs employees to “engage[] in maintenance and servicing activities.” The judge affirmed the violation as to three of these four alleged instances.⁸

To establish a violation of the cited provision, the Secretary must first show that Jacobs was performing a servicing or maintenance activity covered by the LOTO standard. *See* 29 C.F.R. § 1910.147(a)(1)(i) (scope requirement). The Secretary has failed to meet this burden. As Jacobs argued before the judge, the Secretary has provided no evidence identifying what work tasks were being performed when these energy control procedures allegedly failed to properly relieve stored hazardous energy.⁹ Regarding Instance 1, while it is undisputed that the identified energy control procedure was used to isolate a particular vessel in the plant, there is insufficient evidence to find a covered activity. A Jacobs supervisor stated only that the procedure covered Jacobs’ entry into the vessel to make repairs inside of it—he did not explain, and the Secretary did not ask, what those repairs entailed. Regarding Instances 2 and 3, the record shows nothing more than the energy control procedure in question and the job location; there is no other information regarding the tasks performed by Jacobs.

Without such information, we cannot determine whether any one of the three energy control procedures at issue pertained to covered servicing or maintenance activities.

⁸ The judge vacated the fourth instance, which is not at issue on review.

⁹ On review, the Secretary asserts for the first time that the energy control procedures at issue relate to the Jacobs employee’s work on the leaking gate valve. But as the judge found, the record shows that neither Jacobs nor Huntsman had an energy control procedure for the work performed on the leaking gate valve. Indeed, the Huntsman operator testified that he did not develop an energy control procedure specific to changing this valve until *after* the release had occurred.

Accordingly, we find that the Secretary has failed to establish that the LOTO standard applied in any of the alleged instances and therefore, vacate this citation item.

ORDER

We vacate Serious Citation 1, Items 1, 3, 4, and 5.

SO ORDERED.

/s/

Thomasina V. Rogers
Chairman

/s/

Cynthia L. Attwood
Commissioner

/s/

Heather L. MacDougall
Commissioner

Dated: March 4, 2015

"Some personal identifiers have been redacted for privacy purpose"

United States of America
OCCUPATIONAL SAFETY AND HEALTH REVIEW COMMISSION
1924 Building - Room 2R90, 100 Alabama Street, S.W.
Atlanta, Georgia 30303-3104

Secretary of Labor,
Complainant

v.

Jacobs Field Services North America,
Respondent.

OSHRC Docket No. 10-2659

Appearances:

Tina D. Juarez, Esq., and Elizabeth Kruse, Esq., U. S. Department of Labor,
Office of the Solicitor, Dallas, Texas
For Complainant

Darren Harrington, Esq., Key Harrington Barnes, P.C., Dallas, Texas
For Respondent

Before: Administrative Law Judge Sharon D. Calhoun

DECISION AND ORDER

Jacobs Field Services North America (Jacobs) was a maintenance contractor at a facility owned by Huntsman Petro-Chemical, LLC, in Conroe, Texas. Huntsman produces specialty chemicals. On May 31, 2010, Jacobs employees [redacted] and [redacted] were injured by an accidental release of butylene oxide while [redacted] was assisting a Huntsman employee.

As a result of the butylene oxide release, Occupational Safety and Health Administration (OSHA) representative Richard Hartung conducted an inspection of Huntsman's facility from June 7 to November 29, 2010. On November 30, 2010, the Secretary issued a Citation to Jacobs alleging five serious violations of the lockout/tagout (LOTO) standard, 29 C. F. R. § 1910.147. The Secretary proposed a penalty of \$7,000.00 for each of the five items, for a total penalty of \$35,000.00.

Jacobs timely contested the Citation. A hearing was held in this matter on April 27 and 28, 2011, in Houston, Texas. Jacobs stipulates the Commission has jurisdiction over the proceeding under § 10(c) of the Occupational Safety and Health Act of 1970 (Act), and that it is a covered business under § 3(5) of the Act. The parties have filed post-hearing briefs.

Jacobs argues that LOTO standard does not apply to the cited conditions. The company contends the process safety management of highly hazardous chemicals standard (PSM standard), 29 C. F. R. § 1910.119, is the applicable standard. If the LOTO standard does apply, Jacobs argues the Secretary failed to establish Jacobs violated the terms of the cited sections, or knew of the violative activity. Jacobs also asserts the affirmative defense of employee misconduct, arguing that [redacted] was engaged in an unauthorized activity when the chemical release occurred.

For the reasons discussed below, the undersigned affirms Items 1, 3, 4, and 5 of the Citation, and vacates Item 2. A penalty of \$3,500.00 each is assessed for Items 1, 3, and 4. A penalty of \$2,500.00 is assessed for Item 5.

Background

Jacobs was a maintenance contractor at Huntsman's facility in Conroe, Texas, where Huntsman produces specialty chemicals.¹ To do this, Huntsman processes, among other chemicals, ethylene oxide, propylene oxide, butylene oxide, ammonia, and isopropyl alcohol. The facility consists of several different units. The unit at issue in this case is the G-Kettles Unit (Tr. 348-350).

In May of 2010, Huntsman implemented a Test and Inspect (T & I) turnaround, during which a unit is shut down for maintenance and for inspection to check the mechanical integrity of the unit. It was Jacobs's job to replace eight emergency shutdown device (ESD) valves in the G-Kettles Unit during the turnaround.

On May 25 or 26, 2010, a leak was discovered in one of the valves on the butylene oxide line. (The leaky valve was a gate valve, not one of the eight ESD valves that Jacobs was assigned to replace.) Jacobs postponed its replacement of the ESD valve on the butylene oxide line until Huntsman could replace the faulty valve (Tr. 117-118, 124-126). At the time of the hearing, Huntsman employee [redacted] had worked at the Huntsman facility for 26 years. He was an operator specialist, whose duties included backing up the production supervisor, maintaining the LOTO database, and trouble-shooting (Tr. 190). [redacted] was overseeing the May 2010 turnaround and was acting as the operator liaison for Huntsman (Tr. 191, 293). [redacted] decided to replace the leaking valve himself, and chose to do it on Memorial Day, Monday, May 31, when fewer workers would be in the plant (Tr. 226).

¹ At the time of the hearing, Jacobs no longer had a contract with Huntsman at its Conroe facility (Tr. 595).

Butylene oxide is highly flammable, with a flashpoint of approximately 10 degrees Fahrenheit and a Lower Explosive Limit (LEL) of approximately 1.5 % in the air. It can ignite in liquid or vapor form. Butylene oxide can catch fire or explode when exposed to ignition sources such as running engines or a metal tool falling and creating a spark (Tr. 180-183, 352-353).

[redacted] enlisted the help of Huntsman employees Charles James and Loretta Kelly. James, a chemical operator, and Kelly, a G-Kettle operator, worked together to purge and isolate the butylene oxide line. Kelly hooked up the nitrogen to blow out the line to the tank. It was James's job to place the block at the tank once the line blew through with the nitrogen (Tr. 293-294, 326-328).

Huntsman did not intend for Jacobs to participate in the replacement of the leaky valve. No one from Jacobs walked the line with James and Kelly. James saw no locks or tags belonging to Jacobs on the valves he isolated. Kelly did not follow an emergency control procedure (ECP) for the work she was doing. Neither [redacted] nor James had an ECP for the valve replacement (Tr. 221, 296, 327-328).

The defective valve weighed approximately 25 pounds. [redacted] needed help lifting the line up to pull out the valve without damaging the valve flanges (Tr. 229, 232). All Huntsman and Jacobs maintenance personnel carried radios. [redacted] requested help over the open channel of the radio. Although Jacobs's employees were not supposed to participate in the valve replacement, Jacobs employee [redacted] radioed back to volunteer his assistance (Tr. 227). [redacted] was hoping to obtain a position at Huntsman, and [redacted] had given him "a recommendation to get his foot in the door to at least get him an interview" (Tr. 281).

Before assisting [redacted], [redacted] checked out a respirator from the safety office, telling James Eric Fisher, site safety manager for Jacobs, that he needed it while helping [redacted] with the valve replacement (Tr. 130-132). [redacted] also brought his tools, including wrenches, a gaseous scraper, and channel locks with him (Tr. 135).

When [redacted] arrived at the G-Kettles Unit, [redacted] was in the process of depressurizing the line. [redacted] then disconnected the valve from the pipe by removing the bolts on the down stream side. As [redacted] loosened the bolts, butylene oxide released from the line, spraying both [redacted] and [redacted]. [redacted] and [redacted] were momentarily stunned. [redacted] grabbed [redacted] by the arm and pulled him toward the safety showers so

they could wash off the chemical. [redacted] also used his radio to alert others in the building of the release. (Exh. C-3; Tr. 149-150, 241). [redacted] and [redacted] both felt a burning sensation where they were sprayed with the butylene oxide. They continued to feel the effects the next day (Tr. 246). Emergency care attendants arrived by ambulance, and treated [redacted] and [redacted]. They did not go to the hospital (Tr. 272).

At the time of the release, Jacobs equipment supervisor [redacted] was running a crane approximately 75 feet from the site of the release. As he was sitting in the crane cab filling out his daily paperwork, he smelled something similar to the smell of high octane paint thinner. When he looked around, he saw people rushing out of the G-Kettle unit, and his rigger yelled at him to shut the crane down, to eliminate it as an ignition source (Tr. 171-172). [redacted] shut down the crane, took a deep breath, and climbed down from the crane's cab. [redacted] held his breath for 30 to 40 seconds as he walked approximately 200 feet before he could get another breath. [redacted] showered at the facility. He was taken by ambulance to a hospital, where he was diagnosed with "chemical pneumonia" (Tr. 176-180).

At the time of the release, Kelly was spotting [redacted]. When she saw the butylene oxide spray, she shouted to people in the area to get out, and she triggered the fire monitor. She then doused the motor of an 80-ton crane, using the fire water deluge (Tr. 241-242, 296-298).

It was later determined that James failed to isolate the line at the tank (Tr. 280). The release of the butylene oxide lasted for approximately 12 minutes. Approximately 750 liquid pounds of butylene oxide sprayed out before the release was contained (Exh. C-3; Tr. 347). [redacted] was terminated by Jacobs several days after the May 31 release (Tr. 116). Huntsman terminated [redacted] a few days later (Tr. 548).

Richard Hartung is a mechanical engineer on OSHA's Houston North Office PSM team (Tr. 335). OSHA hired him, based on his specialized knowledge in the chemical industry, to work on process safety management inspections (Tr. 335). Hartung's supervisor asked him to accompany the two OSHA compliance officers originally assigned to do the inspection at Huntsman's facility following the May 31, 2010, incident. Hartung eventually took over the inspection (Tr. 345).

The Citation

The Secretary has the burden of establishing the employer violated the cited standard.

To prove a violation of an OSHA standard, the Secretary must show by a preponderance of the evidence that (1) the cited standard applies; (2) the employer failed to comply with the terms of the cited standard; (3) employees had access to the violative condition; and (4) the cited employer either knew or could have known with the exercise of reasonable diligence of the violative condition.

JPC Group Inc., 22 BNA OSHC 1859, 1861 (No. 05-1907, 2009).

Applicability of the Cited LOTO Standard

The Secretary cited Jacobs under § 1910.147, the LOTO standard. Jacobs argues § 1910.119, the PSM standard, is the correct standard, and the cited LOTO standard does not apply to the cited conditions.

Section 1910.147(a)(i) of the LOTO standard provides (emphasis in original): This standard covers the servicing and maintenance of machines and equipment in which the *unexpected* energization or start up of the machines or equipment, or release of stored energy could cause injury to employees.

The PSM standard at § 1910.119 states:

This section contains requirements for preventing or minimizing the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals. These releases may result in toxic, fire or explosion hazards.

Jacobs points out that the Citation alleges that each of the five charged violations exposed employees to “chemical burns, fire and explosion hazards.” Jacobs contends that these hazards arise from the characteristics of the butylene oxide itself, and are not a function of unexpected energization or stored energy in machines or equipment.

In support of its position, Jacobs quotes from the Preamble to the final rule for § 1910.147:

The identification of “energy sources,” as defined in this proposal, is complicated by three very important considerations: (1) Energy is always present in machinery, equipment or processes; (2) energy is not necessarily dangerous; and (3) danger is only present when energy may be released in quantities or at rates that would harm an employee.

54 Fed. Reg. 36,664 (Sept. 1, 1989).

In quoting this language, Jacobs omits the sentence immediately following it, which is relevant here: “Generally speaking, however, potentially hazardous energy sources are defined

as those that can cause injury to employees working in, on, or around machines or equipment.”
Id.

In the present case, the release of the butylene oxide did cause injuries to [redacted], [redacted], and [redacted]. [redacted] and [redacted] were working on the butylene oxide line, and [redacted] was working around it. The LOTO includes chemicals as potentially hazardous energy sources in its definitions. Section 1910.147(b) defines “energy sources” as:

Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

It is undisputed that the release of butylene oxide was unexpected. Exhibit C-3 is a video of the May 31, 2010, incident. The butylene oxide spews from the line suddenly, momentarily stunning [redacted] and [redacted]. A total of 750 liquid pounds of the chemical was released. The chemical energy of the butylene oxide was released in a quantity that harmed the exposed employees.

The Secretary has established that she cited the correct standard. The LOTO standard applies to the cited conditions.

Item 1: Alleged Serious Violation of § 1910.147(c)(4)(i)

The Citation alleges:

G-Kettles unit; a procedure for controlling the hazardous energy in the 1-2 Butylene Oxide² line was not developed and utilized where employees were exposed to the unexpected release of the chemicals while engaged in the removal of a valve. This condition exposed employees to chemical burns, fire and explosion hazards.

Section 1910.147(c)(4)(i) provides:

Procedures shall be developed, documented and utilized for the control of potentially hazardous energy when employees are engaged in the activities covered by this subsection.

Noncompliance with the Terms of the Standard

[redacted] was engaged in assisting [redacted] replace a valve on the butylene oxide line, a maintenance activity. This activity is covered by § 1910.147(c), which requires energy control procedures to be implemented “before any employee performs any servicing or maintenance on a

² Butylene oxide and 1-2 Butylene Oxide are the same chemical. 1-2 Butylene Oxide is a trade name (Tr. 366).

machine or equipment where the unexpected energizing, start up or release of stored energy could occur and cause injury.”

Huntsman and Jacobs had developed a system implementing energy control procedures as required by §1910.147(c)(4). When assigning a project to Jacobs that required isolation of valves or pipes, Huntsman created an emergency control procedure (ECP). Jacobs would verify the ECP, meaning Jacobs would physically check to see that Huntsman’s locks were in place and that Jacobs’s locks had been installed (Tr. 120).

The ECP has tag numbers so that the tag in the field can be matched directly to the ECP (Exh. C-1; Tr. 206). The ECP is dated and it lists the unit location and the number of printings. For example, in ECP tag GKET05-22-2010-00003-24, “GKET” stands for the G-Kettles unit, “05-22-2010” is May 22, 2010, “00003” is the third printing of the tag, and “24” indicates it is tag 24 (Tr. 206-208). With this information, an employee can verify he or she is in the correct place and has the correct LOTO procedure for the project.

Neither Huntsman nor Jacobs created an ECP for replacing the valve on the butylene oxide line (Tr. 291, 296, 327-328). [redacted], who made the decision to replace the valve, testified he did not create an ECP before he began replacing the leaky valve (Tr. 221). After the incident, another Huntsman operator “reminded” [redacted] that an ECP was required for the valve replacement. [redacted] printed up and approved, *post hoc*, an ECP (Tr. 247-248).

Jacobs does not dispute the failure to create an ECP, but argues that Jacobs did not have “authorized employees” on the job under the LOTO standard, but only “affected employees.”

Section 1910.147(b) defines the relevant categories:

Affected employee. An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

Authorized employee. A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee’s duties include performing servicing or maintenance covered under this section.

Jacobs contends that because it “only had ‘affected employees’ and had no ‘authorized employees’ on this particular job, each and every citation item should be vacated” (Jacobs’s brief, p. 11). This argument is rejected. [redacted] volunteered to assist [redacted] in replacing

the leaking valve. Jacobs's supervisors knew he was assisting [redacted], and tacitly consented to his assumption of this duty (as analyzed in the "Knowledge" section below). Replacing a defective valve is maintenance covered by § 1910.147. Once [redacted] assumed the duty of assisting [redacted] with maintenance of the butylene oxide line, his status changed to that of an authorized employee. ("An affected employee becomes an authorized employee when that employee's duties include performing service or maintenance covered under this section.")

Jacobs failed to create an ECP for replacing the leaky valve. The Secretary has established Jacobs violated the terms of § 1910.147(c)(4)(i)

Employee Access to the Violative Condition

[redacted] and [redacted] were exposed to two different hazards created by the release of the butylene oxide. The chemical sprayed on [redacted] in liquid form, causing burning and irritation to his skin (Tr. 149). [redacted] testified the butylene oxide on his skin "felt like I was literally on fire burning" (Tr. 241). [redacted] inhaled butylene oxide in vapor form, and suffered from chemical pneumonia (Tr. 179-180). In addition to [redacted] and [redacted], there were approximately four other Jacobs employees in the G-Kettles unit. The employees were also exposed to an explosion hazard. Butylene oxide vapors are highly flammable, and they were working in an area that contained several ignition sources (Tr. 143, 241). The Secretary has established Jacobs's employees had access to the unexpected release of butylene oxide.

Knowledge

Jacobs contends it had neither actual nor constructive knowledge that [redacted] was assisting [redacted] replace the leaky valve on the butylene oxide line. The record, however, establishes that two of Jacobs's supervisors had constructive knowledge of [redacted] activity, and one supervisor had actual knowledge. Their knowledge is imputed to Jacobs. *Dover Elevator Co.*, 16 BNA OSHC 1281, 1286 (No. 91-862, 1993) ("[W]hen a supervisory employer has actual or constructive knowledge of the violative conditions, that knowledge is imputed to the employer, and the Secretary satisfies [her] burden of proof without having to demonstrate any inadequacy or defect in the employer's safety program.")

Jose Garcia was Jacobs's maintenance general foreman on May 31, 2010 (he no longer worked for Jacobs at the time of the hearing) (Tr. 555). Garcia testified he was not aware [redacted] was planning to assist [redacted]. Garcia stated [redacted] told him "he was going to get some tools for [redacted] to do some work. . . . To me I understood he was going to take

some tools to [redacted] to do work. That's all" (Tr. 571). Garcia was in his office completing paperwork during the time [redacted] was assisting [redacted] (Tr. 572). He testified he had his radio with him that day, stating, "I always try to keep my radio on" (Tr. 583).

G. W. McBride was also a supervisor for Jacobs, and Jacobs's liaison with Huntsman for the turnaround.³ McBride was also listening to the open radio channel during the time [redacted] and [redacted] were communicating over it. [redacted] testified regarding his communications with [redacted]:

Q. At any point did you have anybody help you with that process for changing out the valve?

[redacted]: [redacted] volunteered to give me hand.

Q. Okay. How did that come about?

[redacted]: I mentioned on the radio, I think it was channel 8 at the time. I'm not sure if it is to this day. I talked to him via radio and told him that this—that before we removed this exchange overhead, which is EG44, I wanted to replace that valve first. So he said, "Okay."

...

Q. Now, when you had that conversation with Mr. [redacted] over the radio, who else uses that channel that you were talking with him on?

[redacted]: Anybody that's been issued a radio in maintenance. So that'd be G. W. [McBride]. He would have heard it. Joe Garcia and anybody that has a radio.

Q. Okay. And from that conversation that you had with Mr. [redacted] on the radio, did you understand he was going to give you a hand with changing out the valve?

[redacted]: He was going to assist me. As for as actually changing out the valve himself, no.

Q. What does that mean to you that he was going to assist you? What—what did you think he was going to help you with?

³ Jacobs disputes McBride's status as a supervisor, claiming he was a leadman without supervisory authority. Brian Redmond, Jacobs's area safety manager, stated McBride was a leadman (Tr. 647). He admitted, however, that his boss, Nick Anagnostou (Jacobs's regional health and safety director) unequivocally identified McBride as a supervisor in an email sent to OSHA representative Richard Hartung: "GW [McBride] is currently a supervisor and was a supervisor at the time of the incident" (Exh. C-21). Garcia also identified McBride as a fellow supervisor (Tr. 575).

[redacted]: With that valve and the line sitting on there, I knew I was going to need some help lifting that line up to be able to pull that valve out because you don't want to mess up the valve flange on the line side upstream or downstream, the flange surface.

...

When I went up there I told [redacted] on the radio that I'm getting ready to go in and replace that valve. He said that—"just a minute." He's going to go get a full face respirator. I said, "Okay." I told him I still had to get mine.

(Tr. 227-230).

In addition to the conversation broadcast over the radio, [redacted] personally told James Eric Fisher, Jacobs's site safety manager, that he was going to assist [redacted]. [redacted] went to the safety office to check out a respirator. In order to check out a respirator, an employee must sign a checkout sheet listing the number of the respirator and verify he or she has a fit card. Fisher was in the safety office, sitting at his desk and doing paperwork when [redacted] went in. [redacted] told Fisher he "was getting a respirator to help [redacted]" (Tr. 133). Fisher did not ask [redacted] any questions about his statement (Tr. 133).

Despite Jacobs's protestations that it was not aware [redacted] was assisting [redacted] with the valve replacement, the evidence establishes that the conversation between [redacted] and [redacted] was broadcast over the open channel of the maintenance radios, which maintenance personnel kept on at all times. Furthermore, [redacted] actually told Fisher that he was going to help [redacted]. The Secretary has established knowledge.

Employee Misconduct Defense

"To establish the unpreventable employee misconduct defense, an employer must show that it established a work rule to prevent the violation; adequately communicated the rule to its employees, including supervisors; took reasonable steps to discover violations of the rule; and effectively enforced the rule."

Schuler-Haas Electric Corp., 21 BNA OSHC 1489, 1494 (No. 03-0322, 2006).

In addition, the employer has the burden of showing "that the violative conduct of the employee was idiosyncratic and unforeseeable." *L. E. Myers Co.*, 16 BNA OSHC 1037, 1040 (No. 90-945, 1993). Jacobs had established work rules covering LOTO procedures (Exh. C-13). The company communicated the LOTO rules to its employees. There was some evidence of [redacted]'s safety training (Exh. R-9; Tr. 175). Jacobs has failed, however to establish that it took reasonable steps to discover violations of the LOTO rules or effectively enforced the rules, and that [redacted]'s assistance to [redacted] was idiosyncratic or unforeseeable.

Jacobs's safety program requires it to receive a "start work permit" for jobs at Huntsman's facility. Jacobs is not supposed to engage in certain kinds of work without a permit (Tr. 565).⁴ Garcia admitted that it had been Jacobs's practice to sign work permits in advance, verifying that isolation had been done, and only later check to see if isolation had been completed (Tr. 579-581). Exh. C-19 is a copy of a start work permit to remove an ESD, dated May 28, 2010, and signed by McBride, [redacted], and two other Jacobs employees. The employees have checked off the boxes verifying the isolation was completed for that job. Garcia testified, "There was no work done on this job. So the ESD was never removed. They never worked on this system"(Tr. 580). When asked if the Jacobs's procedure was to sign off on permits before verifying the isolation, Garcia replied, "Yeah. At that time, yes" (Tr. 581). If the permits verifying isolation cannot be relied upon as accurate, Jacobs's ability to take steps to discover violations is compromised.

[redacted] testified he had assisted Huntsman operators without getting a permit, and knew of other Jacobs employees doing the same thing. Jacobs never reprimanded [redacted] for working without a required permit (Tr. 163). [redacted] testified numerous Jacobs employees had assisted him without a permit. When asked who helped him, [redacted] stated, "[redacted] has helped me before. G. W. McBride, [Jacobs supervisor] Bobby Joe Franklin, Donald Salters, . . . Martin Taylor. There's another guy named B[redacted] and I can't remember his last name" (Tr. 288).

None of the supervisors who knew or should have known that [redacted] was assisting [redacted] intervened. Fisher allowed [redacted] to walk out of his office with a respirator after he told Fisher he was getting ready to help [redacted]. Jacobs's enforcement of its safety program was lax. It was commonplace, and not unforeseeable, that a Jacobs employee would assist a Huntsman employee without obtaining the required ECP or permit. It was part of the companies' shared culture to bypass paperwork when a quick hand was needed. [redacted] admitted to manufacturing the ECP for the leaky valve replacement after the butylene oxide release occurred. As [redacted] testified, "[Jacobs employees] don't mind helping me and I don't mind helping them. We—we—we work together. That was my idea of—of what Huntsman was preaching. Working together" (Tr. 289).

The company has failed to establish [redacted] engaged in employee misconduct.

⁴ A start work permit was not required for minor clean-ups or working around the ponds (Tr. 640).

Item 2: Alleged Serious Violation of § 1910.147(c)(4)(ii)

The Citation alleges:

G-Kettles unit; the energy control procedures written for activities including, but not limited to, the change out of emergency shut down valves did not include specific steps for employees to follow in shutting down and isolating the process equipment. This condition exposed employees to chemical burns, fire, and explosion hazards.

Section 1910.147(c)(4)(ii) provides:

The procedures shall clearly and specifically outline the scope, purpose, authorization, rules, and techniques to be utilized for the control of hazardous energy, and the means to enforce compliance[.]

Noncompliance with the Terms of the Standard

Item 1 of the Citation addressed Jacobs's failure to have *any* ECP for the replacement of the leaky valve. Item 2 addresses alleged deficiencies in various ECPs that did exist for the turnaround being performed in May 2010. Item 2 is, therefore, not duplicative of Item 1, as Jacobs claims.

Exhibit C-1 is a copy of ECP GKET 05-22-2010-00003. The Secretary contends this is the ECP issued for the replacement of the eight ESD valves. Hartung testified he based this information on interviews he conducted with Huntsman personnel following the incident.

Jacobs argues the Exhibit C-1 ECP was not issued for the ESD valves. [redacted], [redacted], and Garcia were consistent and straightforward in insisting that Exhibit C-1 is not an ECP for the May turnaround ESD valve replacement. [redacted] testified Exhibit C-1 had “nothing to do” with either the ESD valves or the leaking gate valve (Tr. 124-125). [redacted] stated that Exhibit C-1 was not intended to cover the eight ESD valves, but rather was for the FG reactor. [redacted] actually completed the ECP (Tr. 210, 270). Garcia testified Exhibit C-1 was “for tank entry to do some repairs inside the tank” (Tr. 557).

Hartung's testimony on this point was less certain:

Hartung: [W]e were told that this [Exhibit C-1] ECP was also used to do some of the—the ESDs that were actually replaced.

Q. Who told you that?

Hartung: We were told that by the production supervisor. We were also told—Heather Braren and then the operations manager I think was Patrick Fleming told us—and—and the S&H manager, Bill Swain, told us this was it.

And we pursued that several times because we were told by different employees this isn't the ECP that was used, but they insisted that it was the one that was used.

(Tr. 380-381).

On its face, Exhibit C-1 appears to cover the FG51 reactor. [redacted], [redacted], and Garcia were matter-of-fact and assured when they stated the ECP did not relate to the replacement of the ESDs. They were the witnesses who were in the best position to know what Exhibit C-1 covered. There is no obvious reason why [redacted] and [redacted], who were both terminated over the May incident, would mislead the court on this issue. The Huntsman personnel whom Hartung spoke with were not signatories on the ECP, and were not assigned the task of completing it. Their statements to Hartung are not as reliable as the sworn testimony of [redacted], [redacted], and Garcia. It is determined Exhibit C-1 is not an ECP for the ESD valve replacement, and is, therefore, not evidence supporting the Secretary's proof of noncompliance.

Although the alleged violation description refers to "emergency shutdown valves" in the plural, Hartung acknowledged Item 2 actually deals only with the one ESD located near the leaking gate valve involved in the May 31 incident (Tr. 477, 479). The Secretary in her post-hearing brief points to other ECPs (Exhs. C-7, C-9, and C-11) that are purportedly deficient. Hartung, however, had trouble recalling which ESDs these ECPs referred to, or whether they even referred to ESDs or to some other pieces of equipment (Tr. 476).

The Secretary has failed to establish Jacobs was in noncompliance with the terms of the standard. She failed to adduce an ECP directly related to the replacement of a specific ESD valve. Item 2 is vacated.

Item 3: Alleged Serious Violation of § 1910.147(d)(3)

The Citation alleges:

G-Kettles unit; the employer did not ensure that each isolation device was located and operated to isolate the process equipment prior to employees removing a leaking valve in the 1-2 Butylene Oxide line. This condition exposed employees to fire and explosion hazards.

Section 1910.147(d)(3) provides:

All energy isolating devices that are needed to control the energy to the machine or equipment shall be physically located and operated in such a manner as to isolate the machine or equipment from the energy source(s).

Noncompliance with the Terms of the Standard

[redacted] did not physically locate all of the energy isolating devices that were required to be locked or blocked in order to replace the valve (Tr. 131, 414). [redacted] testified he did not “walk the line.” He stated “walking the line” means, “[Y]ou start from where you’re working at and follow the line back to make sure you point tags into it to see if it’s locked out or tagged out or no other chemicals can get to you” (Tr. 131-132). [redacted] stated he failed to perform this step (Tr. 131). [redacted] testified that when a Jacobs employee was assigned a maintenance job, it was Huntsman’s policy to take the employee out and show him or her how the isolation points are set up. The Jacobs employee then signs off on a form, “saying they agree with the isolation” (Tr. 252). When asked if he followed this procedure with [redacted] on May 31, [redacted] replied, “No, he trusted me” (Tr. 247).

The Secretary has established Jacobs failed to comply with § 1910.147(d)(3).

Employee Access to the Violative Condition

As discussed above, [redacted], [redacted], and the other Jacobs employees located in the G-Kettles unit were exposed to the hazards created by the violative condition, which included chemical burns, lung damage caused by inhaling chemical vapors, and explosions. The Secretary has established employee access to the violation of § 1910.147(d)(3).

Knowledge

It has been established [redacted]’s supervisors knew [redacted] was assisting [redacted] in replacing the leaky valve. Garcia testified he would have walked the line himself if he had received a start work permit and an ECP for the replacement. Garcia did not do so (Tr. 573). With reasonable diligence, Garcia would have followed up on [redacted]’s statement that he was going to assist [redacted]. Garcia’s constructive knowledge is imputed to Jacobs.

The Secretary has established a violation of § 1910.147(d)(3).

Item 4: Alleged Serious Violation of § 1910.147(d)(4)(i)

The Citation alleges:

G-Kettles unit; a lockout device was not affixed to the isolation devices to isolate process equipment including, but not limited to, the 1-2 Butylene Oxide line where employees were removing a leaking valve. This condition exposed employees to chemical burns, fire, and explosion hazards.

Section 1910.147(d)(4)(i) provides:

Lockout or tagout devices shall be affixed to each energy isolating device by authorized employees.

Noncompliance with the Terms of the Standard

It has been established that neither [redacted] nor Garcia placed any locks on the isolation points for the replacement of the leaking gate valve (Tr. 132). Jacobs was required to lock out the devices even if Huntsman had already done so (Tr. 420).

Jacobs also failed to lock out another device. As previously noted, Exhibit C-1 is an ECP for the FG51 reactor. Under this ECP, Jacobs was required to lock out the valve identified by tag number 16. Jacobs failed to do so. Garcia told Hartung that he had placed a lock on another butylene oxide line. Hartung speculated Garcia may have mistakenly put the lock on the wrong line (Tr. 424).

The valve tagged with number 16 was the leaky valve at issue in this case. Hartung explained that if plans to lock out a valve change due to circumstances, then the ECP should reflect that change:

[T]heir energy control procedure defined that valve as part of the energy control plan for FG51. And so therefore I would expect to see a lock on—on all of these devices that were on the energy control procedure. [If a valve cannot be isolated], there is a mechanism and it would be to—to not do any work until it was properly isolated, blocked in, etc. The other option could have been to change the energy control procedure to go back further where there wasn't a—a leaking valve, to block it there.

(Tr. 425).

The Secretary has established Jacobs was in noncompliance with § 1910.147(d)(4)(i).

Employee Access to the Violative Condition

Jacobs's employees located in the G-Kettles unit were exposed to the hazards created by the violative conditions, which included chemical burns, lung damage caused by inhaling chemical vapors, and explosions. The Secretary has established employee access to the violation of § 1910.147(d)(4)(i).

Knowledge

Garcia had constructive knowledge the isolation devices with which [redacted] was working were not locked out, and he had actual knowledge of his failure to lock out the valve identified by tag 16. Garcia's knowledge is imputed to Jacobs.

The Secretary has established a violation of § 1910.147(d)(4)(i).

Item 5: Alleged Serious Violation of § 1910.147(d)(5)(i)

The Citation alleges:

In the following instances stored energy was not relieved, disconnected, restrained or otherwise rendered safe potential hazardous energy while employees were engaged in maintenance and servicing activities. The conditions exposed employees to chemical burns, fire and explosion hazards:

1. Energy Control Procedure GKET-05-22-2010-00003, the energy was not relieved between HVG274 (Solenoid Valve) and the block valve item #16
2. Energy Control Procedure GKET-05-21-2010-00007, the energy was not relieved between XVG93 (Solenoid Valve) and the block valve item #1
3. Energy Control Procedure GKET-05-22-2010-00001, the energy was not relieved between HVG273 (Solenoid Valve) and the block valve item # 15
4. Energy Control Procedure JAU-06-26-2010-00001, the energy was not relieved inside E-G-56 resulting in exposure to maintenance employees while opening equipment.

Section 1910.147(d)(5)(i) provides:

Following the application of lockout or tagout devices to energy isolating devices, all potentially hazardous stored or restricted energy shall be relieved, disconnected, restrained, and otherwise rendered safe.

Noncompliance with the Terms of the Standard

Instance 1—Exhibit C-6 is a copy of a drawing referred to as a “P&ID,” which shows the G-Kettles unit. A highlighted segment marked “1” shows the area of the butylene oxide line referred to in Instance 1. Jacobs did not ensure the segment of the line between the solenoid valve (tag 16) and the ESD was relieved. The ESD valve was fail closed, which means when the power to the system is shut down, the ESD valve would go into a closed position as its safe position. There is no bleed valve that would allow that portion of the line to be bled. If a chemical substance was left in the line, there would be no way to flush the material. If the ESD valve were opened, employees in the area could be exposed to an unexpected hazardous release (Tr. 285, 430-435).

Instance 2—Highlighted segment “2” of Exhibit C-6 shows the area between the blocked valve and another ESD valve that would fail close. Jacobs did not ensure this segment was relieved (Tr. 285, 430-435).

Instance 3—Highlighted segment “3” of Exhibit C-6 shows the area of the line between the blocked valve and the ESD valve, as well as the portion of the line between the control valve and a second block valve. Jacobs did not ensure this segment was relieved (435-437).

The Secretary has established Jacobs failed to comply with § 1910.147(d)(5)(i) with respect to Instances 1 through 3 of Item 5.

Instance 4—This instance refers to an incident that occurred on June 26, 2010. Exhibit C-15 is a copy of a P&ID where Jacobs was performing work on an exchanger. Jacobs’s employees believed the highlighted line had been isolated and started to open the line. When they opened the flanges between the exchanger (EG56) and the connecting pipe, the material inside sprayed out with pressure (Tr. 451-452). The Secretary contends Jacobs failed to fully relieve the line.

Garcia testified that neither he nor Huntsman missed any isolation points when he verified the ECP (Exh. C-14). Garcia stated, “Everything was isolated, locked out, and tagged out. I had my safety men and myself. We walked it out. My guy, before he started to work, he walked it out. And then we did the work. We barricaded the area where we worked” (Tr. 566). It is Garcia’s theory that the release was due to a plug in the line. Although Huntsman purged and flushed the line, the plug prevented all of the material from bleeding out. Hartung testified that he was not certain that Garcia missed an isolation point (Tr. 544).

With respect to Instance 4, the Secretary has failed to establish Jacobs failed to comply with the cited standard. The evidence is insufficient to establish Jacobs missed an isolation point or points.

Employee Access to the Violative Condition

Jacobs’s employees located in the G-Kettles unit were exposed to the hazards created by the violative conditions, which included chemical burns, lung damage caused by inhaling chemical vapors, and explosions. The Secretary has established employee access to the violation of § 1910.147(d)(5)(i).

Knowledge

Garcia testified he reviewed the ECPs and walked the lines. With reasonable diligence, he could have detected the deficiencies in the lines. Garcia's knowledge is imputed to Jacobs.

The Secretary has established a violation of § 1910.147(d)(4)(i).

Penalty Determination

The Commission is the final arbiter of penalties in all contested cases. "In assessing penalties, section 17(j) of the OSH Act, 29 U. S. C. § 666(j), requires the Commission to give due consideration to the gravity of the violation and the employer's size, history of violation, and good faith." *Burkes Mechanical Inc.*, 21 BNA OSHC 2136, 2142 (No. 04-0475, 2007). "Gravity is a principal factor in a penalty determination and is based on the number of employees exposed, duration of exposure, likelihood of injury, and precautions taken against injury." *Siemens Energy and Automation, Inc.*, 20 BNA OSHC 2196, 2201 (No. 00-1052, 2005).

Jacobs employs approximately 30,000 people worldwide. It had been cited for OSHA violations within the three years previous to the May 31, 2010, incident. Jacobs demonstrated good faith during this proceeding (Tr. 369-370).

The gravity of the violations affirmed in Items 1, 2, 4, and 5 is high. At least six Jacobs employees were exposed to hazards of skin irritation, lung damage, and explosions. The May 31, 2010, incident resulted in injuries to three employees. The toll could have been much worse had it not been for the combined efforts of Huntsman and Jacob employees in sounding the alarm for employees to evacuate and in dousing the ignition points. The gravity is somewhat mitigated by the conscientious use of personal protective equipment worn by the employees. Jacobs employees are required to wear fire retardant clothing at work. [redacted] and [redacted] were both wearing gloves and were using respirators. Significantly, they suffered no lung damage even though they were at ground zero for the butylene oxide release.

It is determined that a penalty of \$3,500.00 is appropriate for each of Items 1, 3, and 4. A penalty of \$2,500.00 is appropriate for Item 5.

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.

