**BEFORE THE ALASKA OCCUPATIONAL SAFETY AND HEALTH REVIEW BOARD**

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| STATE OF ALASKA, DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT, DIVISION OF LABOR STANDARDS & SAFETY, OCCUPATIONAL SAFETY & HEALTH SECTION, Complainant, | ) | |
| vs. | ) | |
| SANDSTROM AND SONS INC., Contestant. | ) | Docket No. 11-2256<br>Inspection No. 314283540<br>OAH No. 11-0011-OSH |

**DECISION AND ORDER**

## I. Introduction

On June 29, 2010, Sandstrom and Sons, Inc. (Sandstrom) was operating a crane as part of a pile driving operation during the construction of a bridge over the Chena River. The crane tipped over and fell across the river; the crane operator suffered minor injuries.

The Division of Labor Standards and Safety, Occupational Safety and Health Section (division) investigated and issued two citations consisting of 9 separate items.[1] The parties settled all but one of those items prior to the hearing. The remaining item, citation one, item 2, alleged a violation of the occupational safety and health standard set forth at 29 C.F.R. 1926.550(a)(1).[2] That standard requires employers to "comply with the manufacturer's specifications and limitations applicable to the operation of any and all cranes and derricks." The complaint asserts that the crane was operated beyond the 50 foot radius which was the limit set by the manufacturer for the weight of the load being lifted.

Sandstrom contested the citation and filed an answer to the complaint. A hearing was held before the Alaska Occupational Safety and Health Review Board on February 6, 2012. The division called as witnesses Chief of Enforcement Steve Standley and Safety Enforcement Officer Jeffrey Ellison. Jeffrey Sandstrom, Pat McGhan, and Wade Milton testified on behalf of Sandstrom. Portions of the division's Exhibit 1 were admitted.[3] Sandstrom's exhibits A, C, D,

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[1] These were not all related to the crane. The items covered a variety of work site issues that came to the division's attention when it investigated the crane accident.

[2] This standard has since been redesignated as 29 C.F.R. 1926.1501(a)(1). The bulk of federal occupational and safety standards have been adopted by the division by regulation. 8 AAC 61.1010.

[3] Page numbers AKOSH 018 – 029; 036 – 039; 048 – 059; 100 – 103; 116 – 118.

E, pages 2 and 3 of F, G, I, and J were admitted. The record was left open for two weeks to allow the parties to submit written closing arguments.

After considering the evidence and arguments of the parties, the Board concludes that the accident was caused by unpreventable employee misconduct. This decision sets forth our findings of fact and conclusions of law in the matter, and we issue an order disposing of the case.

## II. Facts

Sandstrom had contracted with the State of Alaska, Department of Transportation to build a bridge across the Chena River in downtown Fairbanks, Alaska. Sandstrom is a general contractor specializing in pile driving and crane operations. On June 29, 2010, Sandstrom had nearly completed the work of driving five piles, or piers, in the river. As they were preparing to work on the middle pier, the crane tipped over.[4]

Mr. Sandstrom described in detail the process of positioning the crane so that it could safely lift the pile driving hammer into place over each pier. His testimony was confirmed by testimony from Pat McGhan and Wade Milton. The first step was to calculate the weight that the crane would have to lift. This consisted of the hammer, blocks, and wire, totaling 58,141 pounds.[5] This weight was then compared to the manufacturer's specifications for this crane. Those specifications show operating radii in five foot increments and corresponding maximum weights. If the crane reached out 55 feet, the maximum weight would be 53,200 pounds.[6] Because this was less than the required weight for this project, Sandstrom used the next lower distance, which was 50 feet. At that radius, the crane could lift a maximum of 60,900 pounds.[7] There was some discussion at the hearing as to whether it was permissible to interpolate[8] between the two weight values to get a maximum radius for the actual weight of 58,141 pounds, but that question need not be resolved for this decision. Instead, Mr. Sandstrom assumed that the maximum safe radius for operating the crane was 50 feet.

Sandstrom then hired Pat McGhan to construct a pad on the shore for the crane to operate from. Mr. McGhan is a contractor who specializes in stone work and who has worked for

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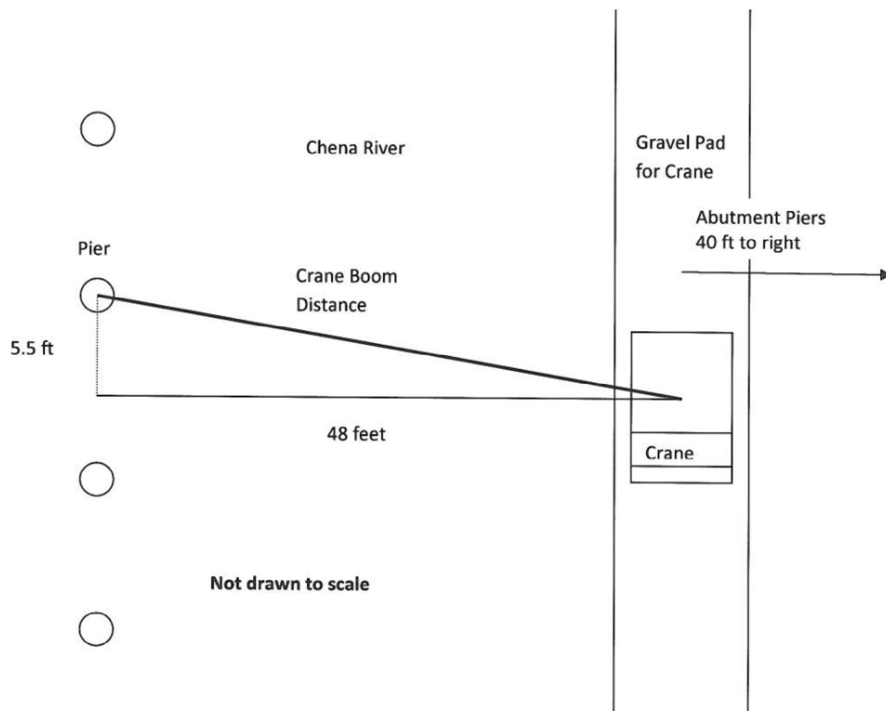
4 Testimony of Mr. Sandstrom.
5 Exhibit E, page 1.
6 Exhibit 1, record page 057.
7 *Id.*
8 Interpolation is a method of deriving a value *between* two known values. Extrapolation is a method of deriving a value *beyond* a series of two or more known values.

Sandstrom doing similar work in the past.[9] Both Mr. Sandstrom and Mr. McGhan testified as to the specifications for this pad. The bridge design specified that the piers in the river had to be 88 feet from abutment piers on shore that were already in place. Mr. McGhan and Mr. Sandstrom, working together, measured 40 feet from the abutment piers. They marked that distance as the center line for the crane, and built the pad accordingly. When completed, they had a pad that extended parallel to the abutment piers and the location in the river where the new piers would be placed. The crane would operate along the center line of that pad. Because the center line was always 40 feet from the abutment piers, the center of the crane would always be 48 feet from the line of piers in the river.




In order to place the river piers correctly, Sandstrom first built a template that was positioned in the river on temporary pilings. This template was a metal and plywood structure with 49-inch holes cut through the horizontal surface where the 48-inch diameter piers would be placed. Sandstrom measured the position of the template with a transit from known hub points to make sure that it was in the proper location.[10] He then measured back from the template to the centerline on the pad to ensure that the distance was no greater than 48 feet.

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9 Testimony of Pat McGhan.

10 Mr. Milton also testified about measuring the placement of the template.

On June 29, Wade Milton was acting as the signalman for the crane operator. The two had discussed the procedure to be followed before starting work on the middle pier. The operator was to bring the pile driving hammer across the water to within one foot of the face of the pier. At that point, Mr. Milton would walk to the front of the crane where they could see each other and also both have a good view of the pier. Only after Mr. Milton was in place would the operator lift the hammer and move it over the center of the pier based on Mr. Milton's directions.

The crane operator moved the hammer into position on the onshore side of the pier, and Mr. Milton started to walk towards the front of the crane. The operator did not wait, and instead started to lift the hammer and move it over the center of the pier. As the hammer came down, it landed on the far side of the pier and started to tilt away from the crane. This started to tip the crane. When the operator saw the problem, he tried to winch the hammer back up. The hammer slipped off the edge of the pier and the crane fell over across the river.

Mr. Sandstrom testified as an expert on crane operations, and provided his opinion as to how the accident occurred. He based his opinion on interviews with those who witnessed the accident, and a subsequent inspection of the crane that did not reveal any defect or malfunction. Mr. Sandstrom expressed his opinion that when the crane operator centered the hammer over the pier, he left the crane in "boom down" mode instead of the neutral position. This would cause the boom to continue to slowly move down, and the hammer to slowly move further away – beyond the 48 foot distance. When the hammer touched the outside of the pier, the operator started to winch the hammer up instead of lifting the boom up. This caused the hammer to lift off the pier and swing even further away because the boom was still in boom down mode. At this greater distance, the weight of the hammer pulled the crane over.

## III. Discussion

### A. A violation was proven

The division has the burden of proving the allegations in the citations by a preponderance of the evidence.[11] The relevant portion of the citation states:

> A Manitowoc 3900T, Series-2 crane with a 140 foot boom overturned when the Delmag D62-22 pile driving hammer weighing 56,200 pounds, including leads, block and whip line ball, operating at a radius of 50 feet, touched down on the outer edge of the 4 foot diameter pile it was attempting to drive and leaned out

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[11] 8 AAC 61.205(i). Any affirmative defense must be proven by the employer by a preponderance of the evidence. *Id.*

> further over the river exceeding the manufacturers [sic] liftcrane capacities (load charts) at the 50 foot radius. As the crane began to overturn the hammer slipped off the pile and swung out over the river pulling the crane over on its side.[12]

The preponderance of the evidence in this case was that the crane was operating at a radius of 48.3 feet when the hammer was placed at the center of each piling. The additional 0.3 feet is due to the fact that the crane was positioned 48 feet from the line of piers, in the middle of two piers. The piers were 11 feet apart, so the mid-point between the piers was 5.5 feet from each of the two piers. The positioning of the piers and the crane formed a right angle with one side measuring 5.5 feet, another side measuring 48 feet, and the side opposite the right angle measuring 48.3 feet.[13]

It is undisputed, however, that just before the accident the hammer was placed on the outside edge of pier. Because the piers were four feet in diameter, the outside edge was two feet from the center, or a total of approximately 50.3 feet from the crane. This was outside the 50 foot radius for the safe operation of the crane.

## B. Unavoidable employee misconduct

### *1. The unavoidable employee misconduct rule*

Although a violation occurred, Sandstrom is relieved of responsibility for that violation if it can show that the violation occurred due to unavoidable employee misconduct.[14] This is an affirmative defense for which Sandstrom has the burden of proof.[15] To prevail on this defense, Sandstrom must satisfy four requirements: 1) the employer must have a rule[16] that addresses the safety concern raised by the violation; 2) the rule must have been adequately communicated to the employee; 3) the employer must take reasonable steps to discover the violation; and 4) the employer must show that it enforced the rule when violations occurred.[17]

#### a. <u>Sandstrom had a rule addressing the relevant safety concern</u>

The uncontradicted testimony at the hearing establishes that Sandstrom did have a rule against operating the crane beyond the 50 foot safe radius. The division argues that this should have been a written rule.[18] We decline to rule that all safety rules must be in writing before an

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[12] Exhibit 1, Record 0023.

[13] This distance is calculated using the Pythagorean Theorem: $A^2$ plus $B^2 = C^2$.

[14] *In re Alcan Electric Engineering, Inc.*, OAH No. 07-0079-OSH (OSHRB 2008), page 3.

[15] *Alcan Electric*, pages 3 – 4.

[16] *Alcan Electric* discusses a written rule, but in a subsequent decision we noted that the requirement that the rule be written was *dictum*. *In re Kiewit Cornerstone JV*, OAH No. 08-0640-OSH (OSHRB 2010), page 7, n. 37.

[17] *Alcan Electric,* page 4.

[18] The division states that Sandstrom has "arguably" not met this element of the test.

employer can avail itself of the unavoidable employee misconduct defense. While there could be situations where a written rule is mandated, this is not such a situation. The lack of a written rule could be determinative of whether the rule was adequately communicated, but is not determinative of whether an employer could raise this defense.

b. The rule was adequately communicated

The division also argues that "arguably" Sandstrom had not adequately communicated this rule to the crane operator. In support, the division notes that the record does not contain any acknowledgment by the operator that he understood this rule. The focus on this factor is whether the employer's overall safety program, specific instructions, and hazard warnings adequately communicated the applicable safety rule to its employees.[19] There was testimony at the hearing of the careful measurements made to ensure that the crane did not have to operate beyond its safe radius, and the signalman, Mr. Milton, testified about his discussions with the crane operator as to how they would operate the crane to avoid over-extending the boom. There was testimony that, prior to the accident, the crane operator had asked three different people for permission to operate beyond the 50 foot radius limit. He was refused permission each time. The operator must have been aware of this safety rule or he would not have felt the need to ask for permission to circumvent it. There was only one crane operator and only one signalman on the job site. Both were aware of this safety rule. The evidence shows that the safety rule was adequately communicated.

c. Reasonable steps to avoid the violation

Sandstrom took reasonable steps to avoid operating the crane outside of the 50 foot radius. In addition to carefully locating the crane so that unsafe operation would not be necessary, Sandstrom communicated the rule to the operator and used a signalman to direct the operations in a safe manner.

d. Failure to enforce the rule when prior violations have occurred

An employer who ignores a violation is, in effect, telling workers that the rule need not be followed. This encourages future violations, so when violations are ignored an employer is not entitled to be relieved of the responsibility for an employee's misconduct.

[19] *Kiewit Cornerstone*, page 8.

The division argues that Sandstrom ignored a prior violation of the safe operating radius. The crane operator had asked for permission to operate beyond the 50 foot radius, and Sandstrom refused to grant permission. The division notes that the operator was not disciplined.

There is an important difference between asking for permission to operate in a particular manner, and actually violating a rule. The crane operator apparently believed that he could operate safely at a greater distance. Rather than simply acting on his belief, he asked permission to violate – or modify – his employer's rule. Permission was denied, and the crane operator continued to operate in accordance with the safety rule. To discipline an employee for simply asking a question would tend to encourage employees to act on their own, violate rules, and then subsequently ask for forgiveness when caught.

There is no evidence of a violation prior to the accident that gave rise to the citation at issue here. Thus, there was never an opportunity for Sandstrom to fail to enforce the 50 foot operating radius rule.

e. Insufficient instructions

The division also argues that the unavoidable employee misconduct defense is not available when the instructions issued by the employer were insufficient to eliminate the hazard even if the instructions had been followed. We do not need to decide whether the defense is not available in this situation because the record does not support a finding that the instructions were inadequate.[20] The division argues that the instructions were inadequate because of the placement of the signalman just before the accident. During an earlier stage of construction, the signalman was standing on the template next to the pier, where he would have a good view of the hammer and ensure that it was centered. On the day of the accident, however, the template had been removed so that the pier could be driven the rest of the way into the ground. Accordingly, the plan was to have the signalman stand on shore in front of the crane.

According to the division,

> Thus, even if the crane operator had followed Sandstrom's instructions and attempted to work with the signal man to center the load over the piling, the signal man was not in a position (perpendicular to the direction of load movement) to accurately center the load.[21]

There was no evidence in the record to support the division's assertion that a signalman would not have been in a position to correctly center the hammer over the pier. Instead, Mr. Milton

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20 Nor do we need to decide which party would have the burden of proof.

21 Complainant's Final Argument and Post-Hearing Brief, pages 5 – 6.

testified that he was moving towards a position in front of the crane where he would be able to adequately determine whether the hammer was properly centered. Mr. Milton has over 20 years of experience in the pile driver's union, and can reasonably be expected to know where to stand in order to properly direct the crane operator's placement of the hammer.

*2. Sandstrom is not responsible for the violation*

Sandstrom has met its burden of proving this affirmative defense. Sandstrom took all reasonable steps to ensure that the crane would be operated safely. Unfortunately, the crane operator decided to place the hammer on the pile without waiting for his signalman. When he misjudged the distance, the crane hammer landed on the outside edge of the pier, and then slipped off. The accident was caused by unpreventable employee misconduct.

## IV. Order

The employer has established that the accident was caused by unpreventable employee misconduct. Accordingly, it is not responsible for the accident and citation one, item 2 is VACATED. The parties' partial settlement agreement as to the other alleged violations is accepted.

By: Alaska Occupational Safety and Health Review Board

3/7/12 *Signed*
Date Thomas A. Trosvig, Member

3/27/12 *Signed*
Date James Montgomery, Jr., Member

Timothy O. Sharp, Chair, not participating

**This is the final decision of the Alaska Occupational Safety and Health Review Board. Judicial review of this decision may be obtained by filing an appeal in the Alaska Superior Court in accordance with Rule 602 of the Alaska Rules of Appellate Procedure within 30 days after the date of distribution of this decision.**

[This document has been modified to conform to the technical standards for publication.]