

Date: Wed, 27 Sep 2000 17:31:17 -0600
From: Meredith Brown <racer@lanl.gov>
Subject: Blue Alert: Minimum Clearance from Energized Line Violated

The following Bechtel Jacobs Company, LLC Lesson Learned is distributed for utilization by other DOE sites and facilities. Please direct any questions to Joanne Schutt at schuttj@pwtor.com or (865)483-0554, extension 133.

TITLE: Blue Alert: Minimum Clearance from Energized Line Violated

IDENTIFIER: Y-2000-OR-BJCX10-0901 DATE: September 15, 2000

LESSON LEARNED STATEMENT: Project personnel and subcontractors working on projects requiring the use of heavy equipment should be familiar with the minimum safe distances for operation near energized lines. OSHA minimum safe distances from high voltage power lines for equipment movement are established to minimize hazards from contact with energized power lines and from induced currents and arcing. Violating those distances places personnel and equipment at serious risk. Care should be given to judging the distance between equipment and energized lines. Code of Federal Regulation 29 CFR 1910.333 (c)(3)(iii)(A), requires that "any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines shall be operated so that a clearance of 10 feet is maintained." The minimum clearance increases for higher voltage power lines.

DISCUSSION OF ACTIVITIES: While performing site characterization of the 3505 Metal Recovery Facility at ORNL, Bechtel Jacobs Company ORNL Project personnel utilized a JLG manlift to access the roof. The JLG was positioned near an energized 480-volt power line. Prior to the work, the field crew, including the subcontractor's Site Environmental, Safety and Health (ES&H) Manager, Site Manager and Operator discussed the proximity of the energized power line and judged that they were outside the 10-foot minimum clearance from the energized line. As operations were being completed the DOE Facility Representative questioned the position of the JLG in relation to the energized line, therefore, physical measurements were taken after the JLG had been removed away from the power line. The back of the JLG, where the pivot point of the boom is located, was the closest to the power line and the work only required the boom to be extended away from the power line. As the boom on the JLG was extended to lift personnel to the roof, operation of the equipment violated Code of Federal Regulation 29 CFR 1910.333 (c)(3)(iii)(A), which requires "any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines shall be operated so that a clearance of 10 feet is maintained."

ANALYSIS: The direct cause of this event was Inattention to Detail. The field crew failed to pay enough attention to the details of the work by not observing that beginning elevated work with the JLG would violate the 10-foot minimum clearance for the 480-volt power line. The regulatory four-foot minimum clearance of the JLG movement (with boom down) under the energized line was never a problem. However, since the JLG was located approximately 7 to 9 feet below the line, the moment the JLG was put in operation (lifting the boom), an immediate violation of the minimum 10-foot clearance from the energized line occurred. To eliminate the

possibility of recurrence, a review of the regulatory requirements for minimum clearance with energized power lines should be made with all field crew personnel who use heavy equipment. The root cause of the event was Work Organization/Planning Deficiency. The planning conducted for the Activity Hazard Analysis (AHA) included electrical shock, by stating "Contact ES&H if any work is within 20 ft of an electrical source." The subcontractor's ES&H representative was present during the event and judged visually with the input of the subcontractor Site Manager and Operator that they were outside the 10 feet limit required by OSHA. This safety planning was inadequate. A revision of the AHA should be made to address the identification of an overhead electrical hazard and the necessary controls to prevent the violation of the minimum clearance from the energized source.

RECOMMENDED ACTIONS:

1. The Subcontract Technical Representative will conduct and document a pre-job brief with the field crew to inform them of the details of the write-up of this event and the lesson learned developed.
2. The AHA for the Metal Recovery Facility work will be revised to clarify the recognition of overhead electrical hazards and the controls necessary to mitigate this hazard.
3. Recommend to the Subcontractor that, in the event of other questionable judgement call situation, that a qualified impartial person be requested to make final decision.

PRIORITY DESCRIPTOR: Blue/Information

FUNCTIONAL CATEGORY (S) (DOE): Safety; Occupational Safety & Health

BJC TREND CODE (S) (USER-DEFINED): SH - Occupational Safety & Health; PC -Planning & Controls

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KEYWORDS: power lines; electrical hazard; electrical shock; JLG

REFERENCES: Occurrence Report ORO-BJC-X10ENVRES-2000-0017

HAZARDS: Elevated Work, Electrical/NEC

WORK ACTIVITY: Heavy Equipment

ISMS CODE: Analyze Hazards; Identification of Safety Standards & Requirements

FOLLOW-UP ACTION: Information in this report is accurate to the best of our knowledge. As means of measuring the effectiveness of this report please notify Joanne E. Schutt at (865) 483-0554, e-mail at schuttj@pwtor.com of any action taken as a result of this report or of any technical inaccuracies you find. Your feedback is important and appreciated.