

Date Mon, 20 Dec 1999 162449 -0700
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Subject: Blue Alert- Skill-of-Craft Issue

Title: Blue Alert-Skill-of-Craft Issue/Jackhammer Operations

Identifier 1999-LA-LANL-ESH7-0018 Date 12/20/99

LESSONS LEARNED- The skill-of-craft concept assumes that workers' experience and training allows them to perform certain tasks safely with minimal instructions and supervision. This assumption should be verified before work is begun to ensure that assigned workers meet the criteria for performing skill-of-craft tasks. Additionally, communication between resident and offsite craftsmen may need to be proceduralized (e.g., check-in requirement) to ensure that facility-specific knowledge is shared.

DISCUSSION A jackhammer operator penetrated a PVC conduit containing a hydraulic line. The operator was not injured and the 1,400 psi hydraulic line was not damaged. A hazard screening had been performed for the work, and an activity hazard analysis had been developed. Personal protective equipment requirements included dielectric gloves and boots for the jackhammer work, which was considered skill of craft. The Laboratory defines skill of craft as "the skill acquired through a craft person's experience and training that permits the craft person to perform a given task without specific instructions or direct supervision." The incident occurred at a facility that is replacing their main access gate. A utility locator crew used ground-penetrating radar and industry standard equipment to measure electrical fields to identify underground utilities in the area around the gate. Although the conduit and the hydraulic line were not identified by either method because they do not contain metal, the crew did identify a trench in the area from changes in soil compaction. An as-built drawing of the hydraulic line indicated the line was parallel to an electrical power line, which was identified at a depth of approximately three feet during the utility surveys. Personnel assumed the hydraulic line in the conduit was buried at the same depth as the electrical line but the hydraulic line was actually buried approximately eight inches deep and covered with a concrete cap that started directly under an asphalt pad. During hand-digging operations, two workers found concrete in a hole they were digging above the electric line. Because the concrete was encountered directly below the asphalt, the workers assumed that it could be removed with the jackhammer. Neither worker was aware that it is standard industry practice to cover utility lines with concrete for protection and as a marker. Shortly after one of the workers began breaking up the concrete with the jackhammer, the worker felt the jackhammer hit something soft and he stopped work. When the broken concrete was removed, the damaged conduit was found. Investigators determined that the workers did not have any experience operating jackhammers, and they had not been trained by their union as was assumed for skill-of-craft work. Consequently, neither worker knew what hazards might be encountered or what should be considered abnormal conditions during jackhammer operations. Other skill-of-craft activities were assessed to determine if similar training weaknesses existed, and none were identified.

RECOMMENDATIONS/ACTIONS Jackhammer operations will no longer be performed as skill-of-craft work. Instead, jackhammer operations will be performed under activity hazard analyses. A hazard analysis requires identification of hazards that may be encountered during the work, mitigating actions to take if hazards are encountered, and review and signature of the analysis by the assigned worker(s). The Laboratory's primary support services subcontractor also developed a briefing on jackhammer operations that includes classroom training, a safety review, and hands-on practice. Additionally, a prejob checklist for jackhammer operations was developed for job foreman to help them identify and address potential hazards associated with jackhammer operations. Inadequate communication between resident craftsmen and the craftsmen assigned to the gate job also contributed to this occurrence. The resident craftsmen were aware that the hydraulic line was located above the electrical line, but no procedure existed to ensure that their facility-specific knowledge was shared with offsite craftsmen. Offsite craftsmen are now required to check in with the area work supervisor and resident crafts staff before starting work at the site. A sign-in procedure was developed as part of this process.

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DOE FUNCTIONAL CATEGORY Work Planning

WORK ACTIVITY Construction

HAZARDS Excavation and trenching

KEYWORDS jackhammer, skill of craft, communication

REFERENCES ALO-LA-LANL-TA55-1999-0035