The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces through safety and health research

Soldier Electrocuted While Installing Communication Wire in Georgia

FACE 85-46

Introduction:

The National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR) is currently conducting the Fatal Accident Circumstances and Epidemiology (FACE) Project, which is focusing primarily upon selected electrical-related and confined space-related fatalities. By scientifically collecting data from a sample of fatal accidents, it will be possible to identify and rank factors that influence the risk of fatal injuries for selected employees.

On August 24, 1985, a 23-year-old soldier was stringing WD-1 communication wire across a gravel road on a military firing range when he was electrocuted. He apparently decided to suspend the wire over the road by throwing it over 440 volt power lines that diagonally crossed the road. He stripped one foot of insulation off the WD-1 wire, wrapped the malleable metal wire securely around a rock, and successfully threw the rock over the power line. The soldier, unaware that contact with the 440-volt power line had energized the WD-1 communication wire, crossed the road and was electrocuted when he picked up the rock.

Contacts/Activities:

Officials of the Health Department for the State of Georgia notified DSR concerning this fatality and requested technical assistance. This case has been included in the FACE Project. On September 17-18, 1985, the DSR research investigator (a mechanical engineer) conducted an epidemiologic evaluation, met with military representatives, interviewed comparison soldiers, interviewed the victim's best friend (a fellow soldier at the base), discussed the incident with civilian and military personnel who were in the vicinity of the accident, and photographed the accident site.

Overview of Employer's Safety Program:

This incident occurred at a major military installation. This installation has 6 full-time safety professionals who implement a comprehensive safety program. These safety professionals are responsible for training soldiers to perform their duties in a safe manner, to make sure weapons and equipment are functioning properly, to disseminate field manuals that instruct soldiers on safe and efficient techniques for performing their duties, and to observe maneuvers in the field to ensure that soldiers are executing their orders safely. The safety staff is also responsible for post safety and has initiated post-wide safety regulations, such as a mandatory requirement that all personnel on base wear their seat belts.

Synopsis of Events:

On the day of the incident, a staff sergeant and his men were to install a ground wire telephone communications system on a tank firing range. When the staff sergeant and two communications specialists arrived at the range, they realized that two other communications specialists had not yet arrived. The sergeant ordered one of the men to go pick up the other communications specialists and he instructed the victim to wait until the rest of the team arrived before "laying" any communication lines. The sergeant then climbed to the top of the range tower to check the quality of radio communications.

The victim was described as a soldier who performed his duties enthusiastically and would often take the initiative to complete a mission without specific orders. Unknown to the sergeant and without his expressed order, the victim began laying wire from the site of a temporary field motor pool towards the range tower. Just short of the range tower, the victim had to cross a gravel road with the communication wire. He apparently chose to suspend the wire over the road by throwing it over power lines that diagonally crossed the road. The victim accomplished this by stripping a one foot section of insulation off of the WD-1 communication line, wrapped this section of wire securely around a rock, and apparently threw the rock over the 440 volt power line. Proper procedure for this task would have required burying the line under the road, thus eliminating the hazard posed by the power lines. He then walked over to where the rock had landed unaware that the wire had become energized. When he picked up the rock wrapped with the exposed wire, he was electrocuted.

Shortly thereafter the sergeant went out on the cat-walk of the tower to request that the victim bring up a volt/amp meter. When the sergeant looked down, he observed the victim laying on the ground with smoke coming from his hands and boots; he immediately ran to where the victim was laying. The sergeant observed a rock with a stripped section of WD-1 communication wire tied to it in the victim's hand. The victim was also entangled in the wire. The sergeant looked for a stick to remove the wire, but could not find one. He then grabbed the insulated part of the wire, pulled the wire away from the victim, and immediately began resuscitation procedures.

Less than two minutes after the accident a medical evacuation unit and Company's medics were summoned. CPR revival procedures were continued by military personnel until relieved by medical personnel on a medical evacuation helicopter, which arrived approximately 20 minutes after the accident. At that time medical personnel were able to detect a faint pulse after the administration of adrenaline. The victim was then transported to the hospital, where he died one and a half hours later.

Recommendations/Discussion:

Recommendation #1: Power lines should not be used to support communications lines.

Discussion: When using electrical distribution poles to support communication wire, the communication line should be below the lowest power line and there should be a minimum clearance of four feet between the lines. When communication lines are not supported by poles, these lines should be buried when required to cross roads, etc. (see the Department of the Army's Field Manual: Field Wire and Field Cable Techniques). The written policies were adequate for the safe completion of this task; however, the victim did not comply with these policies (i.e., the communications line should have been buried under the road).

Recommendation #2: Training for all communications specialists should address the potential hazards to which they may be exposed while performing their duties.

Discussion: The victim apparently did not realize that the communication wire would become energized as a result of contact with the overhead power line. The tasks performed by communication specialists should be evaluated, hazards identified, and these hazards addressed by training programs for these specialists.

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