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Naval Facilities Engineering Command

Abstract of an Accident

98-9

ACCIDENT TYPE: Electrical Shock
INJURY: Permanent Disability
TYPE OF WORK: Construct REBAR Cages for Concrete Forms
EQUIPMENT: Hardhat, Steel Toe Boots

DESCRIPTION OF ACCIDENT

An employee was shocked by 38,000 Volts AC when a REBAR tie wire he was holding contacted an overhead high-voltage powerline. Two employees were tasked with constructing REBAR cages for concrete forms. This required making tie wires for tying and securing REBAR cages in the forms from continuous lengths of wire on coils. The process of making the tie wires involved pulling out two strands of tie wire from a coil, straightening and then manually twisting the two strands together, then cutting the lengths into nine-inch sections. The injured employee was standing on the ground below, and approximately fourteen feet forward of a 38,000 Volt AC overhead powerline located thirty-six feet above. The employees were stretching approximately sixty feet of double strand tie wire when it snapped, recoiled upwards, and contacted the powerline. Electricity traveled down the tie wire, in through the injured man's hand, and out his leg.

DIRECT CAUSE

- Lack of situational awareness and deviating from established procedures.

CONTRIBUTING CAUSES

- The Project Safety Plan did not include electrical shock hazard for tying REBAR.
- Job Hazard Risk Analysis for tying REBAR was accomplished for impalement but not for electrical shock hazard.

LESSONS LEARNED

- Standard Operating Procedure (SOP) for tie wire and similar operations should include a check for electrical hazards.
- Each process change should be evaluated - Significant hazards may exist from process changes although no historical data indicates it (a change in the tie wire preparation process resulted in serious electrical shock from whipping hazard).
- Ensure Operational Risk Management (ORM) is used for any process. Applying ORM will: identify all potential hazards, assess the hazards to determine severity and probability, develop and implement risk control options, monitor for change in the process.

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