ATLANTIC DIVISION,
NAVAL FACILITIES ENGINEERING COMMAND

ACCIDENT ABSTRACT

Accident Type: Near miss electrocution
Injury: N/A
Type of work: High Voltage electrical
Equipment: Hand operated cable cutter

Description of the Accident:

A certified high voltage cable splicer mistakenly cut an energized high voltage cable in preparation of cable splice work causing an arc which fortunately did not result in property damage or personnel injury. An electrical system outage procedure was followed which included an advanced outage coordination meeting with station utilities to review the work, outage procedures, and contractor hazardous energy control methods. When the cable splicer entered the underground manhole to perform the work he found that the cables were not identified. He then contacted the station utility electrician to assist in assuring the proper cable was deenergized. After performing visual tracing of the cable to be worked on from a nearby manhole, and using two separate electrical test instruments, both showing that the circuit was not energized, the cable splicer cut the cable. The cable was hot. The cable arced for 30 minutes until arrival of the utility electrician who isolated the hot circuit.

Direct Cause:

1) **The cable splicer failed to adequately identify that the circuit was still hot.**

Contributing Causes:

1) **There are limits to the ability of electrical test equipment to adequately identify the presence of electrical energy. This is largely based on the amount of cable insulation (%) for the cable type. The tests were performed without identifying the energy because the instrument could not test through 133% cable insulation.**
2) **The cable was not cut using a remote non-conductive hydraulic cutter as required in the new 01525-guide specification. The contract was written prior to the existence of the new guide specification.**
3) **The outage should have been cancelled when it was found that the cables were not identified. Although the utility electrician came to the site and looked into the manhole he did not perform cable identification for the contractor.**

Lessons Learned:

1) **Certified high voltage cable splicers must review manufactures instructions of electrical energy detection equipment to correctly understand equipment limitations. A Process Action Team (PAT) has been organized tasked with providing recommendations for test equipment types and procedures. The PAT team is a cooperation of station utility, safety, and construction professionals. Recommendations will follow.**
2) **Cable identification procedures are being formulated by the PAT, which will be incorporated into 01525-guide specification. These procedures will include requiring contractor investigation of cable identification prior to acceptance of any outage request. Additionally, unlabeled cables are to be identified by station utility personnel prior to the requested outage.**
3) **Cutting of high voltage cable is to be performed remotely. This requirement has been incorporated into the 1997 01525-guide specification. The guide specification requirement should be incorporated into existing contracts and included in the next version of USACE EM 385-1-1.**

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