NAVFAC
Naval Facilities Engineering Command
NAVFAC NORTHWEST

Electrocution Investigation

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Sequence of Events

- On 08 Jun an unscheduled outage occurred that affected a large portion of the base & PWD Utilities immediately responded to restore power to circuit A3
- On 09 Jun, PWD Utilities located the fault on circuit A3 and pulled new cable & power was restored
- On 10 Jun another unscheduled outage occurred on the same circuit; PWD Utilities reconfigured the distribution system isolating another U/G fault & restored power to as many buildings as possible; however, several barracks had to remain off-line until repairs could be made
- On 10 Jun a decision made to provide temporary power (generators) via the Job Order Contract (JOC) to the barracks until repairs could be made; the JOC subcontractor connected generators directly to the barrack's transformer's secondary side (low-voltage side) that evening
- At 2330 on 12 June repairs to the line were made and line was energized for phasing/testing by PWD Utilities; everything checked out well
- During the morning of 13 June a subcontractor employee was found electrocuted, apparently while disconnecting generators
  - Both cabinets (primary & secondary sides) found open
  - Employee did not have PPE donned and his drill was tangent to a hot line in the transformer's primary side

Contributing Factors

- PWD Utilities morning "Tailboarding" meetings not attended by FEAD or contractor. Ineffective communications between prime contractor , subcontractor and PWD Utilities; work plans not synchronized.

- Rushing to get work accomplished & skipping important steps

- No *project specific* Activity Hazard Analysis or Hazardous Energy Control Plan (HECP) completed prior to work start.

- Each of three transformers were configured differently
  - The suspect transformer had a missing 5-point carriage bolt
  - None of the transformers were LO/TO at the primary side.
  - Poor assumptions were made on what was safe and what was not.

Lessons Learned

- Designate responsible person to *ensure synchronization of work*; attend *"Tailboarding" meetings*.
- Lock-Out/Tag-Out (LO/TO) transformer's primary side cabinet when access is required to the system's secondary side & ensure this is discussed at the "Tailboarding" meetings.
- Test transformer to determine if hot and LO/TO the high voltage component (transformer's line side) prior to working on the secondary, low-voltage side.
- Complete a project specific AHA/HECP and ensure employees understand and follow it, *including donning appropriate PPE. There is a reason we have these documents & it is not a paperwork drill!*
- Understand work requirement and *make no assumptions*.
- Ensure PWD Utilities High Voltage Crewmember (systems owner) is present whenever a contractor is working on a high voltage component, even if the contractor intends to access only the secondary side

Questions