

NHA Today

OpEx Article – August 2020

Article Name: OpEx Analysis of LOTO Event Report

Noted American author, Ken Blanchard has stated, “None of us is as smart as all of us.” This sums up the central purpose of the National Hydropower Association’s (NHA) Operational Excellence (OpEx) program by voluntarily sharing information on events that have adversely impacted a hydropower facility, the dam structure, the environment or the safety of its employees or the public. Through sharing of information about these events, all sectors of the hydropower industry can gain an understanding about these events, the cause analysis, and the corrective actions and lessons learned which can prevent a reoccurrence. The incorporation of the lessons learned and corrective actions into an industry participant’s work practices can result in prevention of injuries, maintaining equipment reliability and being responsible stewards of the environment. The scope and focus of the OpEx program include four functional areas: 1) Operations, 2) Maintenance, 3) Safety (employee, public and dam), and 4) Environmental Performance. OpEx does not include policy, legislative or regulatory matters.

NHA’s OpEx program, which is an NHA member benefit, was launched in 2014 and connects all segments of the hydropower industry in a secure environment where information can be shared. The organization which shares information related to a specific event does so confidentially.

As of August 1, 2020, there were 750 registered users and 215 event reports submitted by member utilities, including the federal sector, and equipment manufacturers. The composition of the 215 event reports in the database by percentage is: 54% Maintenance, 13% Operations, 26% Safety, and 7% Environmental Performance. The total number of lessons learned and identified corrective actions in the 215 event reports is 850.

Since safety is of prime importance to all employees in the different sectors of the hydropower industry, this article will highlight safety and those events which involve violations of the Lock-Out Tag-Out (LOTO) procedure. LOTO procedures and systems are designed and implemented to prevent the risk of employees being injured by pressurized, energized or other injury causing equipment or work situations. LOTO systems should be installed and removed by authorized personnel who have completed training. Employees and contractor employees who need to work on these systems shall only do so when authorized by the responsible employee.

The OpEx event report database contains nine reports which document LOTO incidents and the following titles provide a sample:

- Turbine Inspection Outage Lock Out Tag Out (LOTO) Event – *The incident involved four clearance boundary changes without proper documentation and acknowledge all protected employees on the tags before proceeding with boundary changes.*

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- LOTO Error Resulting in Turbine Shutoff Valve Seal Leak – *Contract welders were performing repairs on the needle tips in a draft tube when they noted the increase in water flow from the scroll case drain and immediately exited the draft tube.*
- Lock Out Tag Out (LOTO) Event Unauthorized Trash Compactor Removal – *A hydropower plant's trash compactor had been disconnected electrically from the plant and removed by a contractor without acquiring a LOTO clearance.*

The key observations on the nine reports:

- No personnel injuries resulted from the documented events.
- Six incidents involved utility employees and three were with contractor employees.
- All events except one were noted as Human Performance.

The common causes identified in the reports were:

- Each utility had established LOTO procedures but these events were the result of inappropriate actions and included the following: implemented incorrectly with incomplete documentation, clearance boundaries were incorrectly set initially, or boundary movement after work had begun.

The frequently noted corrective actions were:

- Communicate and reinforce the expectation of compliance with job planning procedures.
- Conduct training LOTO and operating procedures for employees and contractors; provide refresher training on a periodic basis. Contractors should receive training prior to start of a project.
- The clearance boundaries should be verified for each clearance and maintained throughout the project.

OpEx can be utilized as a workforce development resource for both experienced and new hire employees. The lessons learned and corrective actions identified by other hydropower industry participants can be used as a self-check to prevent a similar incident and possible injury.

OpEx is available at: hydroexcellence.org. If you are not presently registered, take 3 minutes to sign up today!