



U. S. Chemical Safety and Hazard Investigation Board RECOMMENDATIONS STATUS CHANGE SUMMARY

Report:	Xcel Energy Hydroelectric Plant Penstock Fire
Recommendation Number:	2008-01-I-CO-R12
Date Issued:	August 23, 2010
Recipient:	Xcel Energy, Inc. (Xcel)
New Status:	Closed – Unacceptable Action / No Response Received
Date of Status Change:	March 1, 2017

Recommendation Text:

Revise your confined space entry program and practices. At a minimum:

- a. *Require continuous monitoring for flammable atmospheres at appropriate locations and elevations within a confined space where work activities involve the use of flammables or where flammable atmospheres may be created.*
- b. *Prohibit entry or require evacuation of a confined space if the atmospheric concentration of flammable vapors is 10 percent of the LEL or higher.*
- c. *Ensure that confined spaces such as penstocks be managed as permit-required that are so large or part of a continuous system that they cannot be fully characterized from the entry point. Ensure that such spaces are monitored for hazardous atmospheres both prior to entry and continuously in areas where entrants are working.*
- d. *Ensure that evacuation plans for penstocks that have only one egress point provide for alternative escape routes and/or refuge chambers.*
- e. *Ensure the implementation of a written confined space rescue preplan for each designated permit space. Address staging and methods of rescue for each designated permit space including whether a rescue team is required to standby outside the space. Require that confined space rescue teams be standing by at the permit spaces where the hazards pose an immediate threat to life or health including the hazard of a potential flammable atmosphere.*

Board Status Change Decision:

A. Rationale for Recommendation

On October 2, 2007, five contract workers were killed and three others were injured when a flash fire erupted inside a drained penstock at the Xcel Energy, Inc. Cabin Creek hydroelectric power plant in Georgetown, Colorado. The fire, which trapped the fatally injured workers deep underground, resulted from the ignition of methyl ethyl ketone; a flammable solvent being used by the workers to clean spraying equipment. The spraying equipment was unsuccessfully employed by the workers to apply a protective epoxy coating to the interior walls of the penstock. Attempts made by local volunteer firefighters to rescue the trapped workers were unsuccessful. RPI Coating was the contractor selected by Xcel to perform the coating work inside the penstock. RPI was selected for the job based on its low bid. RPI had a poor safety record, which included injuries, fatalities, and numerous OSHA violations on past jobs performed by the company.

As a part of its investigation, the CSB examined Xcel Energy's contractor procurement and safety oversight policies, incident investigation policies, and confined space entry program. The CSB concluded that Xcel Energy's corporate policies for solicitation and procurement of construction service contractors allowed contractors with poor safety records to compete for contracts. Moreover, Xcel provided insufficient oversight to ensure that the contractor followed safe work practices while conducting the hazardous recoating work within the penstock at the Cabin Creek facility. The CSB issued recommendations to remedy these deficiencies. This status change summary only addresses the recommendation pertaining to Xcel's confined space entry program (2008-01-I-CO-R12).

B. Response to the Recommendation

In response to this recommendation, Xcel Energy, Inc. maintains that it has revised its confined space entry program and procedures to meet or exceed all applicable federal and state OSHA requirements and, while Xcel has carefully considered CSB's recommendation, it will not be revising its program or procedures further to include the best practices listed in it.

C. Board Analysis and Decision

As Xcel Energy, Inc. has declined to revise its Confined and Enclosed Space Entry Program to address the CSB recommendation, the Board voted to change the status of CSB Recommendation No. 2008-01-I-CO-R12 to: "**Closed –Unacceptable Action/No Response Received.**"