

## Bulletin 2013-08

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### Use of Cellulosic Welding Consumables on ERCB-Licensed Pipelines

In light of findings from a recent pipeline incident, the Energy Resources Conservation Board (ERCB) reminds pipeline licensees that using cellulosic welding consumables or a combination of cellulosic and low-hydrogen consumables on pipelines containing flowing liquid or gas may cause hydrogen-induced cracking on fillet welds, branch connection welds, or direct deposition welds.

Hydrogen-induced cracking may occur due to higher levels of hydrogen produced by cellulosic welding consumables, tensile stresses from rapid cooling, and the hardening of microstructures in the weld and heat-affected zone. The issue appears to be confined to only larger diameter pipelines and therefore impacts a limited number of pipelines operated in Alberta.

Potential hydrogen-induced cracking is specifically addressed in the *Alberta Pipeline Regulation* and the Canadian Standards Association's *CSA Z662-11: Oil and Gas Pipeline Systems*, Clause 7.17: Welding on In-Service Piping. These requirements are designed to prevent hydrogen-induced cracking. Further, *ERCB Directive 077: Pipelines—Requirements and Reference Tools* mandates the use by all ERCB pipeline licensees of *CSA Z662-11*, Annex N: Guidelines for Pipeline System Integrity Management Programs. As a result, ERCB pipeline licensees are required to include procedures to identify potential hydrogen-induced cracking in their pipeline integrity management programs to ensure safe, environmentally responsible, and reliable pipeline service.

The ERCB interprets the above requirements as requiring licensees to take proactive and ongoing steps to

- determine whether cellulosic welding consumables have been used for welding on pipelines containing flowing liquid or gas;
- assess the risk of failures if such welds exist; and
- develop, implement, and communicate appropriate measures to prevent potential failures.

Failure by licensees to perform these measures as part of their ongoing pipeline system integrity management programs may result in a finding of high risk noncompliance by the ERCB and may result in the issuance of an enforcement action against the licensee.

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