



REASSESSMENT OF THE RESPONSE TO PIPELINE SAFETY RECOMMENDATION P97-01 - P95H0036

Background

On 29 July 1995, a rupture and fire occurred on the TransCanada PipeLines Limited (TCPL) 42-inch natural gas pipeline near Rapid City, Manitoba. A second rupture and fire subsequently occurred on TCPL's 36-inch natural gas pipeline adjacent to the first rupture location. There were no injuries.

The force of the explosion eliminated all communication elements to and from the station. Thus, the regional operations controller (ROC) had no control over the emergency shutdown (ESD) system due to the collateral damage to the plant's telecommunication equipment.

The Transportation Safety Board of Canada (the Board) determined that the initial rupture was caused by a ductile overload fracture as a result of external stress corrosion cracking and that the secondary rupture was the result of heat overload from the initial fire and the delay in shutting down the 42-inch line.

The Board concluded its investigation and released report P95H0036 on 10 June 1997.

Board Recommendation P97-01

From a design perspective, the Board believes that ESD systems should be hardened against the explosive forces and fire associated with this type of system failure. Indeed, to be fail-safe, the ESD feature should be capable of automatically isolating the flow of product to an accident site, overriding other commands if necessary, until it has been verified that it is safe to reactivate normal operations. Therefore, the Board recommended that:

The National Energy Board reassess the design provisions for "emergency shut-down" anywhere in the pipeline system with a view to ensuring the rapid isolation from the flow of product in the event of a ruptured line.

P97-01

Response to P97-01 (7 November 1997)

The National Energy Board (NEB) accepted the recommendation and prepared an information request for companies under its jurisdiction regarding their ESD systems and procedures.

Board Assessment of Response to P97-01 (30 January 1998)

Since the NEB accepted the recommendation and indicated that it was in the process of gathering information from pipeline companies under its jurisdiction regarding the status of existing ESD procedures and systems, the response to Recommendation P97-01 was assessed as "*Satisfactory Intent*".

Board Reassessment of Response to P97-01 (February 2006)

The NEB indicated that the information was evaluated both individually and collectively and that it uses the information to assess new facilities and to increase awareness of ESD issues when evaluating existing facilities. The NEB also indicated that no unacceptable or unmitigated risks were identified. However, since the NEB has not produced a documented summary or quantitative analysis, the Board has reassessed the response to this recommendation as "*Unsatisfactory*".

Board Reassessment of Response to P97-01 (January 2011)

The NEB indicated that companies now conduct risk assessments during the pipeline design stage to ensure that ESD devices are located so that they can function as intended. In addition, ESD technology has improved since 1997 so that pipeline systems can be better monitored during emergency situations. Recent changes to the CSA Z662 require companies to conduct risk assessments of the pipeline system to ensure that ESD devices are located so that they can function as intended. The NEB indicated that pursuant to the NEB Regulations, pipeline companies now have in place safety programs to anticipate, prevent, manage and mitigate potentially dangerous situations, such as the effectiveness of ESD systems, during emergency activities. Furthermore, the NEB conducts compliance monitoring, comprising inspections, audits and incident investigations, to verify that the safety programs are functioning as intended.

Board Reassessment of Response to P97-01 (February 2011)

Improvements in ESD technology combined with implementation and compliance monitoring of the safety programs should ensure that ESD systems are effective during emergency situations. Therefore, the Board has reassessed the response to this recommendation as "*Fully Satisfactory*".

Next TSB Action

This deficiency file is assigned an *“Inactive”* status.