



REASSESSMENT OF THE RESPONSE TO PIPELINE SAFETY RECOMMENDATION P94-01- P91H0109

Background

On 9 January 1991, a rupture occurred on Petroleum Transmission Company (PTC) 168.6 millimetre outside diameter pipeline at mile post 534.1 near Broadview, Saskatchewan. Approximately 791 cubic metres of liquid propane leaked from the pipeline and vaporized into the atmosphere. PTC's emergency response team flared the propane cloud to eliminate the possibility of an accidental ignition. There were no injuries.

Prior to the start of operations in 1965, pinhole leaks in the longitudinal electric resistance weld (ERW) were noted during the qualification hydrostatic tests. Between 1965 and 1992, PTC experienced approximately 123 pinhole leaks and six long seam failures during normal operations of its pipeline system. These leaks and failures were attributed to manufacturing defects in the seam welds.

The Transportation Safety Board of Canada (the Board) determined that the occurrence was caused by a fatigue failure at a longitudinal seam weld defect as a result of long-term internal pressure fluctuations. The weld defect had existed since the pipe was manufactured.

The Board concluded its investigation and released report P91H0109 on 9 February 1994.

Board Recommendation P94-01

The PTC occurrence record draws into question the condition of the longitudinal ERW seams of pipelines. Defects which occur during the manufacture of pipe and pipeline components can remain undetected until failure occurs. In view of the potential for substantial collateral damage in the event of a failure, the Board recommends that:

The National Energy Board review the records of manufacturing defects in the electric resistance weld seams of other pipeline companies and assess the inherent risk of leaks or failures.

P94-01

Response to P94-01 (22 July 1994)

The National Energy Board (NEB) indicated its intent to conduct a survey of companies under its jurisdiction that had experienced failures due to manufacturing defects in ERW pipe. The survey would gather information on ERW pipe including hydrotest and service failure history, operating conditions, pipe manufacturing data and failure mechanisms. The NEB indicated that it would take corrective action where there was an unacceptable risk of operational failure.

Board Assessment of Response to P94-01 (26 January 1995)

Since the survey would meet the spirit of the Board's recommendation, the response to Recommendation P94-01 was assessed as "*Satisfactory Intent*".

Board Reassessment of Response to P94-01 (February 2006)

The NEB has confirmed that a survey was done and that the data was used in NEB inspections to increase awareness of ERW-associated problems and to ensure that companies and the NEB dealt with ERW-related problems appropriately. The NEB indicated that no unacceptable or unmitigated risks were identified.

However, since no summary, quantitative analysis or risk assessment was produced, there is no indication that the safety deficiency has been mitigated by either industry or the NEB. The Board has reassessed the response to this recommendation as "*Unsatisfactory*".

Additional Response to P94-01 (January 2011)

The NEB indicated that they have reviewed the records of manufacturing defects in the electric resistance weld seams of other pipeline companies and assessed the inherent risk of leaks or failures. Further, pursuant to CSA Z662, pipeline companies now have in place integrity management programs to identify threats to their systems, such as ERW pipe defects, as well as plans and procedures to mitigate those threats. PTC responded by replacing the pipeline system from Regina to Winnipeg, thus completely eliminating this issue on the PTC system.

Board Reassessment of Response to P94-01 (February 2011)

The NEB has confirmed that a survey was done and that the data was used in NEB inspections to increase awareness of ERW-associated problems and to ensure that companies and the NEB dealt with ERW-related problems appropriately. Implementation of integrity management programs should ensure that companies have identified ERW defects as threats to their systems and have taken appropriate measures to deal with those threats. Therefore, the Board has reassessed the response to this recommendation as "*Fully Satisfactory*".

Next TSB Action

This deficiency file is assigned an "*Inactive*" status.