



Over-Pressure Protection at Receipt Points

Incident Description

Between 22:00 and 22:30 MST, on 8 December 1998, Westcoast Energy Inc.'s 323.9mm (12 inch) OD Kobes Creek pipeline ruptured at a location identified as MP10.7, which is situated north west of Fort St. John, British Columbia. The pipeline rupture resulted in the release of wet sour gas which subsequently ignited. It has been determined that 16 MMcf of wet sour natural gas with a H₂S content of 2% was released and consumed by fire.

The pipeline, which is 30.4 km in length, was constructed in 1958 and has been in continuous operation since that time. The maximum operating pressure (MOP) of the pipeline is 6895 kPa (1000 psi). At the time of the incident, seven wet sour natural gas production sources were tied into the pipeline along its route, four of which are located at MP 0.0. All valves at MP 0.0 are manually operated and no automatic pressure shut-down features are installed on the Kobes Creek Pipeline at this location. In order to meet the intent of Clause 4.14.1 of the CSA Z662-96, Westcoast Energy Inc. (Westcoast) requires pressure protection equipment to be located on all pipelines that are tied into Westcoast's pipeline that are connected to production sources at higher pressure than the MOP of the Westcoast pipeline.

Prior to the rupture, a pigging operation had been undertaken to remove accumulated liquids in the pipeline. Following the completion of pigging operations Westcoast personnel returned the pipeline valves to their normal positions. However, a valve at MP17.91 which should be open for normal gas flow operations remained in the closed position, while Westcoast personnel believed that it had been returned to the open position. The continued production of gas from one of the production sources at MP 0.0 and the absence of pressure protection equipment at the receipt point permitted pressures in the pipeline to exceed the MOP of the pipeline which eventually led to a rupture.

Cause of the Incident

The incident resulted from the combination of an absence of adequate pressure protection on the Kobes Creek pipeline at MP 0.0 combined with a production source capable of pressurizing the pipeline above its maximum operating pressure.

Another over-pressure incident with a similar cause occurred in 1999 on a oil products pipeline in Ontario but no damage to the pipeline resulted.

Preventive Actions

Pipeline companies should regularly audit and inspect all locations on their systems where they receive product from third parties to ensure that pressure protection equipment on their systems or on the third party's equipment is set at levels which will ensure that their pipeline system cannot be over-pressured.