

Internal Corrosion Rupture of a 6-in Gas Line Pipe

Authors : Fadwa Jewilli

Abstract : A sudden leak of a 6-inch gas line pipe after being in service for one year was observed. The pipe had been designed to transport dry gas. The failure had taken place in 6 o'clock position at the stage discharge of the flow process. Laboratory investigations were conducted to find out the cause of the pipe rupture. Visual and metallographic observations confirmed that the pipe split was due to a crack initiated in circumferential and then turned into longitudinal direction. Severe wall thickness reduction was noticed on the internal pipe surface. Scanning electron microscopy observations at the fracture surface revealed features of ductile fracture mode. Corrosion product analysis showed the traces of iron carbonate and iron sulphate. The laboratory analysis resulted in the conclusion that the pipe failed due to the effect of wet fluid (condensate) caused severe wall thickness dissolution resulting in pipe could not stand the continuation at in-service working condition.

Keywords : gas line pipe, corrosion prediction ductile fracture, ductile fracture, failure analysis

Conference Title : ICCPC 2023 : International Conference on Corrosion Prevention and Control

Conference Location : Cairo, Egypt

Conference Dates : December 18-19, 2023