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# Mechanism of Failure of Pipeline Steels in Sour Environment

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**Abstract :** X70 pipeline steel was electrochemically charged with hydrogen for different durations in order to find crack nucleation and propagation sites. After 3 hours charging, suitable regions for crack initiation and propagation were found. These regions were studied by OM, SEM, EDS and later Vicker hardness test was done. The results brought out that HIC cracks nucleated from regions rich of inclusions and further propagated through the segregation area of some elements, such as manganese, carbon, silicon and sulfur. It is worth-mentioning that all these potential sites for crack nucleation and propagation appeared at the centre of cross section of the specimens. Additionally, cracked area has harder phase than the non-cracked area which was confirmed by hardness test.

**Keywords :** X70 steel, morphology of inclusions, SEM/EDS/OM, simulation, statistical data
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