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PREDICTION OF PIPELINE CORROSION WEAR BASED ON INSPECTION IN A LIMITED AREA

Background

Corrosion of underground pipelines occurs both on the internal and external pipe surfaces. The external corrosion is caused by the contact with groundwater when the isolating coating is worn out; the cause of internal corrosion is the interaction with the pumped medium that contains corrosive impurities and water. Distribution and growth of corrosion defects are governed by the laws of random numbers, which can be identified only by processing results of inspections. However, in many cases inspections (for example, of field pipelines) are possible only in limited areas like test pits. The paper presents methods of processing results of inspections that allow prediction of defect development and assessment of remained service life of a pipeline, based on specified safety criteria.

Aims and Objectives

To develop a simple method of probabilistic assessment of remaining safe life of a pipeline using specified criteria and results of inspection in a limited area.

Methods

Methods based on the propositions of the theory of probability and mathematical statistics are used in the paper.

Results

An algorithm is offered for the pipeline remaining life assessment by the results of inspection in a limited area. The algorithm uses a probabilistic approach to the analysis of remaining life and allows correlation between the basic safety criteria and remaining safe life.

Key words: underground pipeline, corrosion defects, random variables, distribution functions, prediction, remaining life

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