

# TOWARDS A VALIDATED PIPELINE DENT INTEGRITY ASSESSMENT MODEL

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## ABSTRACT

Detectable dents in buried pipelines can occur due to a number of potential causes; the pipe resting on rock, third party machinery strike, rock strikes during backfilling. The integrity of a dented pipeline segment is a complex function of a variety of parameters, including pipe geometry, indenter shape, dent depth, indenter support and pressure history at and following indentation. In order to estimate the safe remaining operational life of a dented pipeline, all of these factors must be accounted for in the analysis. The following paper summarizes ongoing efforts to develop a validated pipeline dent integrity assessment model. The model under development makes use of experimental tests to validate a finite element model of the denting and re-rounding process for a variety of dent scenarios (i.e. depths, restraints, indenter sizes). The results of the finite element model are then used in conjunction with the estimated pressure-time history in an integrity assessment procedure to estimate the safe remaining operational life of the pipe segment. The paper presents a discussion of the full scale fatigue tests carried out on dented pipeline segments and the efforts under way to develop and validate a finite element model of the experimental specimens with the goal of estimating the experimental fatigue life.

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