BUCKLE PROPAGATION IN SUBMARINE PIPELINES

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Abstract

The main interest in this thesis has been directed towards the predication of the buckle propagation pressure (P_P) in submarine pipelines. Several empirical formulae for P_P has been derived by various researchers in the past; however, the few who analysed the problem have treated the buckling of the pipe as a problem concerning the collapse of a ring, thus neglecting the longitudinal stretching effects. The present work clearly distinguishes the longitudinal stretching effects from cumferential bending effects. A satisfactory way of incorporating the mechanical properties if the material, without actually measuring them, has been presented. A simple theoretical model, based on a ‘plastic beam on a plastic foundation’ has been developed, and a definite method for the prediction of the buckle propagation pressure has been suggested.