

Abstract

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Assessment of ped object risk on corroded subsea pipeline

The rapid increase in offshore to onshore hydrocarbon transportation has prompted the expansion of subsea pipeline networks to meet energy demands. In offshore platform, unexpected accidents such as fractional dents fractures may occur in proximity of subsea pipelines due to transverse loading external forces during operation and installation. Partial damage may cause leaks and oil spills, and in serious cases, the sequence may lead to fire and severe explosions. Meticulous safety measures should consider safety issues and mitigate different extent of risk to the life, environment and assets. To avoid these undesirable events, this study presents a probabilistic and numerical modelling analysis of accidental scenarios to verify the safety of subsea pipelines under different conditions. An impact analysis of transverse loading on a subsea pipeline is performed using scenario sampling and finite element analysis to assess safety measures and mitigate damage by evaluating the effects of impacts in different possible accidental scenarios.