

## Risk Analysis of Leaks from a Subsea Oil Facility Based on Fuzzy Logic Techniques

**Authors :** Belén Vinaixa Kinnear, Arturo Hidalgo López, Bernardo Elembo Wilasi, Pablo Fernández Pérez, Cecilia Hernández Fuentealba

**Abstract :** The expanded use of risk assessment in legislative and corporate decision-making has increased the role of expert judgement in giving data for security-related decision-making. Expert judgements are required in most steps of risk assessment: danger recognizable proof, hazard estimation, risk evaluation, and examination of choices. This paper presents a fault tree analysis (FTA), which implies a probabilistic failure analysis applied to leakage of oil in a subsea production system. In standard FTA, the failure probabilities of items of a framework are treated as exact values while evaluating the failure probability of the top event. There is continuously insufficiency of data for calculating the failure estimation of components within the drilling industry. Therefore, fuzzy hypothesis can be used as a solution to solve the issue. The aim of this paper is to examine the leaks from the Zafiro West subsea oil facility by using fuzzy fault tree analysis (FFTA). As a result, the research has given theoretical and practical contributions to maritime safety and environmental protection. It has been also an effective strategy used traditionally in identifying hazards in nuclear installations and power industries.

**Keywords :** expert judgment, probability assessment, fault tree analysis, risk analysis, oil pipelines, subsea production system, drilling, quantitative risk analysis, leakage failure, top event, off-shore industry

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