

Editorial

Safe, Secure and Sustainable Oil and Gas Drilling, Exploitation and Pipeline Transport Offshore

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The Special Issue “Safe, Secure and Sustainable Oil and Gas Drilling, Exploitation and Pipeline Transport Offshore” was focused on regulations, including technical and operational standards, safety technologies, and organizational factors, which can greatly contribute to the occurrence of accidents in the offshore oil and gas sector.

All methods, computational procedures, innovations and technologies which can increase the production rate, safety of pipelines, usability and efficiency were also of interest, as well as all aspects related to the production of oil and gas and drilling, both offshore and onshore, and those related to an increased degree of utilization and efficiency of drilling, all safety aspects, and all aspects of security of supply. Contributions from academia, standardization and regulatory bodies, manufacturers of equipment, service and exploitation companies, and from all other types of industry were welcome.

This Special Issue contains 13 papers:

1. The purpose of [1] is to demonstrate the possibility of using a mathematical model of a k-out-of-n system to support decision-making in the preventive maintenance of an unmanned underwater vehicle to monitor the condition of a subsea pipeline;
2. To improve oil spill detection, combined with underwater image processing technology, an unsupervised detection algorithm for oil spill in underwater pipelines is proposed for the first time in [2];
3. The purpose of [3] is to demonstrate the possibilities of assessing the reliability of oil and gas industry structures with the help of mathematical models of k-out-of-n systems;
4. Tuned Mass Damper could effectively reduce the vibration response of the Top Tensioned Risers, as described in [4], where the modal superposition method is used to calculate the model while current loading in the South China Sea was then applied to the riser;
5. The strength characteristic of blast wall on drillship based on the blast load profile from fire and explosion risk analysis results, as well as the ability of the current design scantling of the blast wall to endure the blast pressure during the well test are examined in [5];
6. To improve the anti-explosion performance of blast wall in offshore platforms, an auxetic re-entrant blast wall is proposed and designed based on the indentation resistance effect of an auxetic structure, as described in [6];
7. The objective of [7] is to reveal the freak wave effects on dynamic behaviours of offshore pipelines for deepwater installations;
8. The aim of [8] is to study the variation in drag force, vertical offset angle, resistance, and attitude for towing operations with a view towards optimizing these operations;
9. In [9], the characteristic of natural convection under yawing motion is studied systematically to clarify the interaction between yawing motion and thermal-dynamic behaviour;



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10. The thermal and hydraulic characteristics of the liquid hold were investigated under different combinations of dimensionless parameters, and the combined effect of rolling and fluid non-Newtonian behavior is investigated in [10];
11. The purpose of [11] is to provide a structural review of the progress made on the detection and localization of leaks in pipelines by using approaches based on the Kalman filter;
12. The “International Electrotechnical Commission System for Certification to Standards Relating to Equipment for Use in Explosive Atmospheres” (IECEX) and European “Atmosphere Explosible” (ATEX) schemes are compared in [12], and a recommendation about their use in offshore oil and gas offshore industry is made;
13. In [13], how technical standards and procedures, which are recognized worldwide by the petroleum industry, can be accepted by various standardization bodies is discussed, as well as how to select the most appropriate technical standards that can increase the overall level of safety and environmental protection whilst avoiding the costs of additional certifications.

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