THE WORKOVER RIG BI-OBJECTIVE ROUTING PROBLEM

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ABSTRACT

The Workover Rig Routing Problem (WRRP) aims to find routes for workover rigs that perform maintenance on onshore oil wells. However, these routes are designed to minimize production losses during a certain period of time. When a well requests maintenance, its production is reduced and a rig is sent to fix the problem, restoring its regular production. In this paper, we study the WRRP bi-objective which minimizes the total production loss and the rental costs of rigs. Given the complexity of the problem, we implemented an Adaptive Large Neighborhood Search metaheuristic for this problem which was tested considering instances proposed in the literature as well as new situations proposed in this paper to approach the problem in real-life context. The computational results of this research provide decision-making support to evaluate when it is better to rent more rigs or reduce the fleet, considering the trade-off between total production loss and the rental of rigs.

KEYWORDS. Workover. Adaptive Large Neighborhood Search. Multiobjective optimization.

Main area (OR in Energy, OR in Oil & Gas)