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Development and Experimental Analysis of GRASP Metaheuristics for a Workover Rigs Scheduling Problem

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On the onshore fields there are two kinds of wells: those that have enough pressure to make its oil reach the surface and those that don't, and so they need special equipment to perform artificial lift methods. The second kind is the focus of this work. Those equipments need maintenance services such as cleaning, reinstatement, stimulation and others that are performed by workover rigs, avaliable on a limited number. This work approaches the scheduling workover rigs problem (SWRP) for onshore oil production, that has as its objective find the best schedule for the available workover rigs, minimizing the production loss associated with the wells that are waiting for service. This is a real problem that can be found on northeast area of Brazil and it can be seen as a variant of multi depot vehicle routing problems (MDVRP). To solve this problem it is proposed: a mathematic formulation, describing the SWRP as a linear programming problem, in addition to GRASP heuristics, including adaptative versions, Path Relinking and filter mothods.