Abstract

The Vehicle Routing Problem (VRP) consists of minimizing the cost of supplying a set of customers by a fleet of vehicles operating from a central depot. Several versions of the VRP have been studied in the literature modeling practical applications that present specific objectives and constraints. One of these versions does not oblige that all customers are visited, i.e., only a subset of them may be supplied. Another class of VRP, called Period Vehicle Routing Problem (PVRP) deals with the problem of designing the visits to the customers for each day of a given period. This work presents a model for a real application found in the Northeastern part of Brazil concerning the exploitation of oil in onshore oil wells by joining the constraints found in these two problems. The proposed model called The Period Bump Mobile Units Routing Problem (PBMURP) differs from the well-known PVRP in several aspects. One major difference between them, responsible for increasing the complexity of the problem, is that, in the PBMURP, the number of visits required by a customer during the period is not previously determined. In this work, are proposed a mathematical formulation describing the PBMURP as an linear programming problem and GRASP heuristics including pure and hybrid versions.