

## **A MILP PLANNING MODEL TO THE SCHEDULING ACTIVITIES OF HEAVY OIL DERIVATIVES IN A REAL-WORLD PIPELINE**

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### **ABSTRACT**

This paper describes a Mixed Integer Linear Programming (MILP) model for the planning of the scheduling activities involved in transporting heavy oil derivatives in a real-world pipeline network located in São Paulo, Brazil. The planning model determines the amount of product to be pumped from one node to another in this network and its results are of great influence in the final solution. The proposed MILP planning model is used as a part of a decomposition strategy to solve the complete network schedule and provides results within an acceptable computational time, also the MILP planning model is an improvement of the model described in Fabro *et al.* (2014), where the decomposition strategy is also described. The current work simplifies the objective function of the last to consider only the capacity violations (avoiding multi-objective optimization) and improves it mainly through including constraints to manipulate different periods, due to tanks swapping and maintenance of tanks and pipelines, and constraints to consider the concept of products group.

**KEYWORDS.** Mixed Integer Linear Programming. Heavy Oil Derivatives. Planning.

**Main area.** P&G (OR in Oil & Gas), L&T (Logistics and Transportation), PM (Mathematical Programming).