

Variation of the wax deposit properties in radial direction in crude oil pipeline

Kaifeng Fan¹, Si Li¹, and Rongbin Li²

¹Liaoning Shihua University

²Affiliation not available

September 11, 2020

Abstract

The variations of wax deposit properties in radial direction in crude oil pipe were investigated through flow-loop experiments. It was found that the wax content and wax appearance temperature (WAT) of the surface deposit were lower than those at bottom. Ranked from high to low, the mass ratio of wax molecules heavier than the critical carbon number (CCN) is the bottom deposit, surface deposit and crude oil, while in the range lighter than the CCN, the order is just opposite. Microscopic observations indicated larger amount and more rod-like wax crystals existed in the bottom layer. Moreover, the bottom deposit was stronger in structure and presented higher yield stress than the surface deposit. The present work revealed and verified the significant differences in the radial properties of the wax deposits, which should be considered in future studies, especially with regard to the force on the pig.

Hosted file

Manuscript-aiche.docx available at <https://authorea.com/users/358331/articles/480519-variation-of-the-wax-deposit-properties-in-radial-direction-in-crude-oil-pipeline>