FALL 2024 PETEROLEUM ENGINEERING SEMINAR SERIES

Class Venue: EN305 | October 2, 2024 | 4:30 - 5:20 p.m.

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Currently a “Jonathan Detwiler Chair” full Professor of The University of Tulsa (TU), Petroleum Engineering Department, and the Director of The University of Tulsa, Drilling Research Projects (TUDRP). He has earned his BSc in 1996 and MSc in 1998 from METU. He earned his PhD degree from The University of Tulsa in 2002. He started working at METU as a full time faculty, and continued working at METU till 2009 August. Since then, he is working for TU. Dr. Ozbayoglu has numerous publications (more than 200 peer reviewed journal papers and conference papers, chapter in SPE Fundamentals of Drilling Engineering, and one of the authors of Drilling Engineering: Advanced Applications and Technology) and participated in several industrial projects on major drilling engineering topics. His research interests include non-Newtonian fluid flow, multiphase fluid flow, underbalanced drilling, hole cleaning, tubular mechanics, horizontal & directional drilling, data analytics, optimization, automation and computational fluid dynamics.

Cutting Transport - Effect of Pipe Rotation

Effect of pipe rotation on cuttings transport is well-observed and reported, but not properly quantified successfully in a practical manner. Majority of the attempts have ended up with empirical correlations based on either CFD results or experimental observations. Few models have been introduced as well, but majority of them are far from being practical, and difficult to apply. In this presentation, a “physics based” approach on identifying the contribution of pipe rotation on cuttings transport in the annulus will be discussed. Energy conservation principles are applied, and a simplified model is introduced to acquire the effect of pipe rotation on “cuttings lift.” The model is compared with a widely used model, which uses empirical correlations to estimate the improvement in cuttings transport due to pipe rotation. The performance of the introduced model is compared both with applicable experimental data acquired from The University of Tulsa – Drilling Research Projects (TUDRP) database. Finally, a machine learning model is also developed, and the results are compared.

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