

Fluid Dynamics Seminar

Speaker:

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Advanced Multiphase Flow Measurement Techniques and CFD Simulations Related Flow Assurance

Abstract:

Flow assurance such as hydrate formation, corrosion build-up, sand production, wax formation are one of the critical environmental threats to offshore oil and gas industry. Natural gas hydrate plugging up a wellbore/pipeline is a significant issue to offshore oil and gas processing facilities. Worldwide this problem causes a loss for petroleum industries in excess of approximately \$1 million each day due to production shut-downs. Moreover, once a hydrate plug has formed, it may take weeks or even months to remove it safely. The operating cost for prevention the hydrate plug by adding glycol based antifreeze agents and methanol is greater than \$500M each day. The antifreeze agents are poisonous, extremely flammable and, if accidentally discharged into the ocean, can pose a toxic threat to stocks and other ocean-based resources. The hydrate plug may result in blowouts, ruptures and damages to the platform/rig itself will cause human death and catastrophic events, resulting in potential loss of life. Thus, a technology development for offshore oil and gas industrial sector focused on hydrate formation and its possible prevention is an utmost important needed to help the petroleum industries. Understanding the performance of multiphase flow through established scaling laws will aid in optimizing the design conditions and will serve as a major tool for future generation flow assurance technology in many industrial applications. In this talk advanced measurement techniques for flow assurance experiments and multiphase CFD model will be discussed.

