

Gas Kick Early Detection

Research Themes

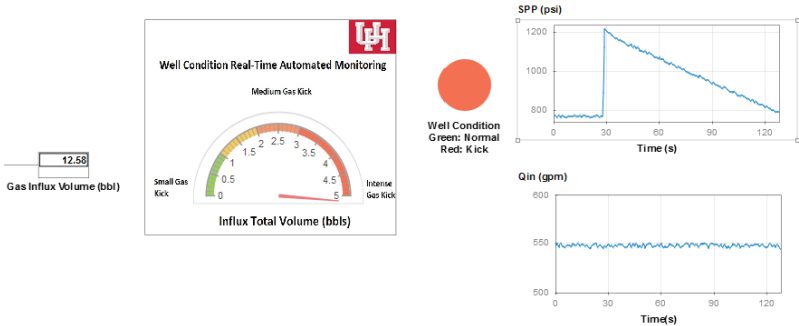
Using data-driven modeling for drilling system condition-monitoring. Real-time sensors' sampled data is analyzed and processed to determine the well condition and early detect gas influxes. In addition to kick prediction, real-time downhole gas volume can be determined allowing then the adjustment of the control strategy. A multiphase flow transient model is developed and used to estimate the gas flowrate using the sampled data. Key Words: Blowout Preventer, Multiphase Flow Modeling, Gas Influx Early Detection, Influx Control, Numerical Modeling

Recent Accomplishments

- 2016 Deepwater Intervention Forum Award on early gas kick detection model based novel solution
- 2016 Technical Competition Award: Subsea Engineering Category (ASME/Petroleum Division)
- 2015 Technical Competition Award: Subsea Engineering Category (ASME/Petroleum Division)

Issues

- Multiphase flow modeling
- Dynamic systems linear and non-linear control
- Dynamic systems identification



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