

# APPARATUSES AND METHODS FOR DETERMINING WELLBORE INFLUX CONDITION USING QUALITATIVE INDICATIONS

## ABSTRACT

Apparatuses and methods useable in drilling installations having a mud loop for detecting ongoing or imminent kick events are provided. An apparatus includes a first sensor configured to measure a input mud flow pumped into the well, and a second sensor configured to measure a variation of a return mud flow emerging from the well. The apparatus further includes a controller connected to the first sensor, and to the second sensor. The controller is configured to identify an ongoing or imminent kick event based on monitoring and comparing an evolution of the input mud flow as measured by the first sensor and an evolution of the return mud flow as inferred based on measurements received from the second sensor. Additionally, a third sensor can be included in the apparatus to confirm the conclusion made by the controller before alerting the user that a kick has likely occurred.

Figure 1