Real-time Drilling Fluid Rheology Measurement – Guidelines for equipment placement, installation and measurements

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Proposal

• Develop a guideline to support the advancement of mechanized, automated or constant measurement rig-site rheometers
  – Help identify reasons for use
  – Placement at well site (inc. installation, safety considerations, etc.)
  – Measurement procedures
  – Frequency of measurement
  – Data transfer of data
Why?

• Current drivers for using this technology differs across the industry
  – Reduce POB
  – Improve decision making via increased sampling/testing rate
  – Centralized performance monitoring (inc. transparency)
  – Build data wealth for AI decision making in future
• Technology is in its infancy
• Still learning about sample taking locations/handling
• Test validity of 70+ year old testing technology in API RPs
  – Maurice Couette invented the rotary viscometer in 1890
Equipment Types – 2 paths

• **Historical Continuity**
  
  – Couette style measurements
  – Report in PV, YP, etc.
  – API RP 13B-1/2 congruent
  – Sample every 1 to 3 hours

• **Constant Measurement**
  
  – Tube or plate flow measurements
  – Report $G'$, $G''$ (can approximate to PV, YP, etc.)
  – Sample almost instantaneous
Table of Contents...

- Notional ‘table of contents’ could include the following...
  - Pros/cons for using different types
  - Placement on the rig (inc. pros/cons of pipe different OD)
  - Sampling points (pros/cons)
  - Sample handling and processing
  - Style / method of measurement (testing)
  - Data output format
  - Data transfers
  - Direct value vs. trend analysis
  - KPIs, calibration and error identification

- Probably more scope to beef up zoning requirements across rigs