

Development of Multipurpose Drilling Fluid Additive to Tackle Borehole Problems in Totality

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As the drilling industry has moved from drilling vertical, through deviated to horizontal wells and ERD wells, particular attention has to be given in following area.

- Hole cleaning
- Hole stability
- Suspension of cuttings
- Prevention of cutting bed formation
- No damage to pay zones
- Lost circulation

Continuous improvement in drilling fluid formulations and design is being made to mitigate aforesaid problems. Application of shear thinning polymer (XCP) for hole cleaning, suspension of cuttings and prevention of cutting bed formation; KCl-PHPA/ or KCl-PHPA-Polyol/ or Amine-PHPA systems for hole stability, Non damaging drilling fluid for mitigation of pay zone damage and combination of different LCMs for combating lost circulation are being made to meet the desired objective. Here it is pertinent to point that a single formulation can not address all of the above problems.

This idea was not lost to Mud Industry world wide and sincere attempts were made in search of an additive with adequate performance simultaneously in all areas as mentioned above. **Cationics provided the much needed solution.**

The present work has been able to develop Cationics from indigenous sources which conforms to objective of IDT in respect of adaptation of proven mud system through indigenization. Few properties of developed Cationics system were studied. Cationics formulation was found to be shear thinning having good transport as well as cutting suspension capabilities. It also provides inhibition and does not require KCl and Polymer encapsulator in the system. Cationics system maintains excellent HTHP fluid loss and lubricity. The composition of the system is very simple requiring Bentonite, Cationics, Fluid loss reducer, pH controlling agent and weighing agent thus making it extremely cost effective.

The Cationics system may bring good results in drilling directional/ horizontal/ ERD wells.