



Oil Well Cement Slurries

In the continuing search for hydrocarbons, oil wells are being drilled up to depths of 30,000 ft. Cementing such wells requires material satisfying performance specifications that are quite different from those encountered in conventional concrete construction. The cement slurries have to have particularly low viscosity, so that they can be pumped into great depths. The high temperatures and pressures encountered downhole impose severe requirements on the setting behavior of the cements. Premature setting can have disastrous consequences, whereas too long setting times can cause financial losses due to excessive “wait-for-cement” times.

This research project has several objectives:

- to reinforce the cement slurry with an appropriate type of fiber to improve the fracture behavior and energy absorption capacity of the finished cement sheath;
- to improve existing set-control technology;
- to develop novel cementitious materials with greatly improved performance characteristics;
- to simulate mathematically the flow properties of fiber-reinforced cement slurries.

Because of the special performance requirements, mineral fibers were considered until now to be the fiber of choice. However, the fibers tested so far proved to be very brittle, which diminishes their usefulness. The research is still in progress and proceeds in close cooperation with the sponsor.

Research Sponsor

- Halliburton Energy Services, Duncan, OK