Specially customized system for cementing Glass Reinforced Epoxy (GRE) casings

Development and field trials in a geothermal project
The use of Glass Reinforced Epoxy (GRE) casing has increased significantly during the last decade. Corrosion resistance, reduced thermal conductivity, and extremely smooth inner-pipe surfaces are characteristics which make this material ideal for geothermal applications. However, the reduced collapse resistance compared to steel tubular demands specially customized cement slurries. To ensure zonal isolation and hence well integrity, appropriate adhesion of hardening cement onto the outer-surface of GRE casings is essential. This poster introduces a customized low-weight cement system specially adapted to such tubular and presents its field trials in a geothermal project.

Innovative materials

<table>
<thead>
<tr>
<th>Cement</th>
<th>Composition</th>
<th>p. g/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slurry A</td>
<td>Highly resistant cement, bentonite, retarder, low-weight additive A</td>
<td>1.32</td>
</tr>
<tr>
<td>Slurry B</td>
<td>Highly resistant cement, bentonite, retarder, low-weight additive B</td>
<td>1.32</td>
</tr>
<tr>
<td>Tail slurry</td>
<td>API Class G</td>
<td>1.90</td>
</tr>
</tbody>
</table>

Premium adhesion

![Diagram of test methods for shear and tension strengths]
**Excellent results**

![Graph showing shear strength and tension strength](image)

**Field trials**

<table>
<thead>
<tr>
<th>Well Conditions</th>
<th></th>
<th>Wireline Logs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MD, m</strong></td>
<td>1,690–1,940</td>
<td><strong>GT Blend</strong></td>
</tr>
<tr>
<td><strong>TVD, m</strong></td>
<td>1,630–1,640</td>
<td><strong>Class G</strong></td>
</tr>
<tr>
<td><strong>BHST, °C</strong></td>
<td>64–69</td>
<td><strong>Shear</strong></td>
</tr>
<tr>
<td><strong>BHCT, °C</strong></td>
<td>46–53</td>
<td><strong>Tension</strong></td>
</tr>
</tbody>
</table>

**Fluid** | **p. g/L** | **Vol., m³** | **Rate, L/min**
---|---|---|---
Bentonite Pill | 1.02 | 2 | 600
**GT Blend** | 1.32 | 19–27 | 600
Class G | 1.90 | 1–2 | 600

**Benefits**

- Innovative system specially customized for cementing GRE casings
- State-of-the-art low-weight system for casing collapse control
- Adhesion verified by two separate lab test methods
- Premium cement bonding on GRE and steel tubular
- Enhanced adhesion through the use of washes

**READY FOR SERVICE**

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