ACARP Project C4033

Stimulation of Gas Make from Horizontal In-Seam Drain Holes by Hydraulic Fracturing

Completed December 1999
Method of placing hydraulic fractures in horizontal holes
Trial site at Central Colliery LW 307.
## Stresses measured in DD 316

<table>
<thead>
<tr>
<th>Depth (meters)</th>
<th>Description</th>
<th>$\sigma_h^3$ (MPa)</th>
<th>$\sigma_h^1$ (MPa)</th>
<th>$\sigma_v$ (MPa)</th>
<th>Orient. $\sigma_h^1$</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>269.38-270.09</td>
<td>Test S3 sandstone</td>
<td>6.0</td>
<td>11.1</td>
<td>6.5</td>
<td>N18E grid</td>
<td>Vertical fracture.</td>
</tr>
<tr>
<td>275.5-278.0</td>
<td>German Cr. coal seam</td>
<td>2.5-3.0</td>
<td>--</td>
<td>6.6</td>
<td>--</td>
<td>Extension pressure 3.5 MPa</td>
</tr>
<tr>
<td>280.51-281.22</td>
<td>Test S2 siltstone</td>
<td>7.7</td>
<td>12.8</td>
<td>6.7</td>
<td>N22E grid</td>
<td>Inclined sub-vertical fracture with horiz branches.</td>
</tr>
<tr>
<td>282.21-282.92</td>
<td>Test S1 siltstone/claystone</td>
<td>--</td>
<td>--</td>
<td>6.8</td>
<td>--</td>
<td>Horizontal fracture (coal parting) at packer.</td>
</tr>
</tbody>
</table>
Injection well test in DD 316
Piezometer data and calculated gas content

DD 316, Piezometer
Central Colliery

26/6/96

Pressure (kPa)

Gas Content, DAF (m³/tonne)

Days since 16:00 10/12/95

calculated gas content
Sigma = 3 x SH - 1 x Sv
= 4 to 5.5 MPa

An axial fracture will start when the borehole (packer) pressure is 4 to 5.5 MPa
Pressure, injection rate and packer pressure during injection at 117 m in horizontal drain hole.
Water jetting of radial slot.

cement

Plastic casing
Conclusions

• A packer seal was not obtained in the horizontal holes and no fracture growth was achieved.
• A seam with more competent coal would allow placement of propped or unpropped fractures.
• A downhole packer inflation tool should be used.
• Other hole completion and fracture placement methods should be tried.