Nitrified Acid over balance TCP perforation in Carbonate Formation is really beneficial for Long Production Performance and Negative Skin Reservoir

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Why???????
Objective

- Test A/R “G” Dolomite formation.
- Provide the optimum solution to avoid perforation damage effect (Sp).
- Produce well and achieve best possible production rate.
Background

• Well # 2 has been drilled in January 1995.
• Deep Formation “Alamein Dolomite” was tested formation water.
• The well was abandoned by 3 EZSV and 2 cement plugs.
Challenges

• **Time Frame Test:**
  – 40 days only before concession release.
  – Contracting, programming, implementation.

• **Resources:**
  – 6 technical employees.
  – Part time staff.
  – Contracted company.

• **Data and Information:**
  – Correlation using near by fields.
  – Review history of the existing wells.
  – Risk
Optimum Perforating Design

• Perforate 4 intervals of 119 ft gross with 66 ft net of A/R “G” Dolomite zones in underbalanced condition.

• Install Hydraulic Firing Head as back up to the mechanical one.

• Select deep penetration gun due to unknown damage radius data. 4 5/8”, 6 SPF, 32 gm, TCP, STU.

• Shot and drop was selected to avoid killing.
• RIH with TCP. Set Packer, drop detonating bar.

• SOP had been applied (fish the bar, check Till tale).

• RIH to drop gun 3 times.

• RIH with CTU, circulate and pump acid.
Acid Injection

Well #2 Injection Pressure

Pumping Pressure (psi)

Time (min)

MENAPS 13-13
### Production Test Result

<table>
<thead>
<tr>
<th>Production Choke</th>
<th>Prod. Rate BFPD</th>
<th>WHP</th>
<th>Time HRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>½”</td>
<td>766</td>
<td>110</td>
<td>6</td>
</tr>
<tr>
<td>1”</td>
<td>982</td>
<td>104</td>
<td>6</td>
</tr>
<tr>
<td>1 ½”</td>
<td>1200</td>
<td>102</td>
<td>6</td>
</tr>
<tr>
<td>2”</td>
<td>1460</td>
<td>98</td>
<td>6</td>
</tr>
</tbody>
</table>

• PBU was carried out after the multi rate test and showed:
• Reservoir Pressure = 3252 psi
• Productivity Index = 2.47 BPD/psi
• Permeability = 65 md
• Skin = -3.5
Results – Reservoir Pressure Performance

Reservoir Pressure

- 3400
- 3350
- 3300
- 3250
- 3200
- 3150
- 3100
- 3050

Summary

• Challenges does not mean end of your conventional believe.
• Money is not the vital against technical.
• Right decision on spot is rarely available nowadays.
• Nitrified acid is very useful in carbonates along with perforation.
• Perforation with acid comes SOP for A/R “G” dolomite in BURAPETCO operations.
This presentation is to the sole of the owner of the Egyptian local exploration company.
Questions?

Thank You