Can We Assure Curing Mud Losses in Rubble Zones or Alike?

Presentation for DEA Q3 Technology Forum
September 29th, 2011

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Subterranean Unknown Openings

Unknown Sizes and Shapes
Multiple

Dolomite Vugs

Large Natural Fractures

Rubble Pores
Dilemma for a Typical Conventional Particulate Pill

- Too small – no sealing
- Too large – block the entrance
WEDGE-SET – A Foam Extended Squeeze System

1. foam wedges

WEDGE-SET Concept

2. conventional high fluid loss powder

3. a carrier fluid (water or oil)

Also refer to
AADE-11-NTCE-25
**WEDGE-SET Plug Formation Assurance**

**Extenders – One Size Fits Many**

**Filter Plugs - High Flow Resistance**

**How it works:**

**Step 1**
Component 1, Permeable Foam Wedges, Forming a Filtration Bridge in Openings

**Step 2**
Filter Plug Formed by Component 2, Fine Particles, in Slurry Losing its Carrying Fluid on the Foam Wedges

**Step 3**
Long and Tight Plug Achieved by Squeeze Pressure

Matrix permeability not required
Link to demo on youtube:
http://www.youtube.com/watch?v=x0aVBVuhvu8
Rubble Zone Test Cell Concept
Simulated Rubble Zone Squeeze

Squeeze against a Gravel Pack with WEDGE-SET Slurry

Time, min

Pressure, psi
Pumped in Volume, ml
Volume Leaked off, ml
Plug Formed and Held High Pressure

- Then pumped to increase pressure to 1600 psi and held for 2 hrs
- Plug is impermeable to whole mud
- Higher rates may generate deeper invasion
- Most of other LCM failed the test
Summary

- WEDGE-SET is a foam extended squeeze system designed to be “one size fits many” unknown subterranean openings in a rubble zone or alike.
- Lab tests show plugs can form even in severe conditions.
- Pumping fast to get through BHA and into subterranean openings.
- Pumping slow and hesitation squeeze to achieve sealing.