Realtime Downhole Data System Improves CT Operational Efficiency and Performance

Tom Watkins – ICoTA Canada Roundtable 2015
Agenda:

- Intro
  - Telecoil system review
    - Sizes
    - Sensors
    - Camera
    - Logging tools capability
- Case 1
- Case 2
- New developments
  - TCT
  - Acidizing BHA
- Questions
TeleCoil™ System

- Communication system that provides real-time downhole data

- Technology consists of three parts:
  - Surface Equipment
  - Wire
  - Downhole tools
TeleCoil™ Wire

- 1/8” OD corrosion resistant alloy tube
  - Housing insulated electrical conductor
    - Non-intrusive
    - Passage of activation balls
    - Extremely quick head up (<30 minutes)
    - Compatible with oilfield fluids / slurries
    - No effect on flow rates, friction pressures
    - Minimal weight ($\approx \frac{1}{10}$th of braided cable)
  - Compatible with most single conductor cased hole wireline tools
Downhole Tools

- Available in three sizes:
  - 2-1/8” (54mm),
  - 2-7/8” (73mm),
  - 3-1/2” (89mm)

- Three basic types:
  1. Sensor assembly (internal & external pressure/temperature, CCL)
  2. Logging assembly (connection to logging tools)
  3. TeleView assembly (connection to EV camera)
2-1/8" Tool Configurations

- Main tool is multipurpose (Headup & MHA)
- Designed for smaller completions, higher pressures
2-7/8” Tool Configurations

- Original tool size for initial launch
- Designed for common intervention operations in 4-1/2” to 7” casing
- Experience has allowed it to evolve

1. Integrated Sensor
2. Logging Adapter
3. Headup
4. TeleView Adapter
Applications enhanced so far...

- **Standard CT Interventions**
  - Sand cleanouts
  - Scale removal
  - N2 lifting
  - Milling
  - Fishing
  - WSO
    - Setting plugs
    - Cementing
  - Shifting sleeves
  - Matrix Stimulation

- **Cased Hole Logging**
  - Well integrity evaluation
  - Reservoir and production evaluation
  - Downhole Imaging - Camera

- **Perforating**
  - Abrasive
  - TCP
Downhole Imaging – TeleView™

- Real time images on coil tubing
- No pumping or ball dropping constraints
- Down View Camera with front flushing sleeve
- Down View and Side View Cameras with rear flushing sleeve
- Can be combined with a Caliper
- 125°C (257°F), 15K psi (103.4MPa)
- Well deviation, tool topside and internal temp read-out
Downhole Imaging – TeleView™

- Fishing
- Milling
- Fracturing
- Sand, Scale & Mineral Deposition
- Well Integrity
- Water Management
Cased Hole Logging

- RPM™: Pulsed Neutron Mineralogy / Production
- PLT: PhaseView Production Evaluation
- SBT: Segmented Bond Tool Cement Evaluation
- HRDVRT: High Resolution Vertilog Casing Inspection
- ICL: Imaging Caliper Log Casing Integrity
CH1 - Conveyed Camera Operation

- Objective: identify collapsed casing during a multi-stage fracturing operation in Texas, USA
- Operational time for five unsuccessful runs with wireline, tractor, and camera was 27 hours plus 23 hours of standby
- TeleCoil conveyed camera identified the collapsed casing in 21 hours
Objective: stimulate a Brazilian deepwater well with five previous fractures

2 ⅛-in. sensor assembly and logging adapter were installed on 1 ¾-in. CT; A rotary jetting tool was run on the sensor bha to clean the wellbore of scale/debris, immediately following the clean out run. Logging tools conveyed via CT identified the target depth of the problem areas.

CCL data helped spot the stimulation treatment at the target depth, optimizing the acid volume and efficiency

Pressure data helped monitor the rotary jetting tool’s functionality

Pressure and temperature data helped lower the nitrogen rate and optimize the lifting efficiency
TeleCoil™ can be part of the entire work scope

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<th>TeleCoil BHA</th>
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<td><strong>Fix</strong></td>
<td>Sensor BHA &amp; Logging Adapter</td>
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“On The Horizon”:

- TCT – Tension/Compression/Torque
- Acidizing BHA – Used for efficient and accurate matrix acidizing of carbonate open-hole wells - Better than DTS!
Questions?

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  SilViu Livescu – BHI
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