6-1/8 inch MetalSkin Monobore Open-Hole Clad
- An introduction to the System and its Application

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Questions this presentation will answer

• What is the product type?
• What is its application?
• How does it work?
• What is its development schedule?
What is the Product Type?

The Openhole Solid Expandable Liner Family of Products

- **Openhole Liner**: $D_1 < D_0$
- **MonoBore Liner Extension**: $D_1$
- **MonoBore Well**: $D_1 < D_0$ with reduced ID
- **Openhole Clad**: $D_1 = D_0$; No ID reduction
- **Openhole “Clad-thru-Clad”**: $D_1 = D_0$; No ID reduction
What is the Product Type?

- Expandable liner is **not tied back** to the previous casing string
- Can be run as contingency or as planned installation
- Zonal isolation is achieved by expansion against formation (e.g. elastomers – Conv. or Swellable)
- Hole has to be minimally underreamed for “Clad-thru-Clad” applications
- Typical length is 100’ – 1000’
Pipe & Connection Expansion (22.6% Expansion Ratio)
Expandable Liner Ext. under:

- 9-5/8” Casing in 8-1/2” Hole Section

\[ D_1 = D_0 \]

“Clad-Thru-Clad”

• Expandable Open-Hole Clad to:
  
  - **Eliminate** the Slimming of a Well Profile during Well Construction
    
    - **No Loss of Hole Size**
    
    - **Drill-out with Same size Bit (8-1/2”)**
  
  - **Remediate Well Construction Challenges, such as:**
    
    - Loss Circulation Zones
    
    - Over-Pressured Formations
    
    - Zones with Shallow Flows
    
    - Sloughing Shale Zones
Openhole Cladding - Taftnet

“Formed” Tubulars –

Round tubes are either hydraulically or mechanically formed into shapes that can be “reformed” into a relatively round tube through the use of internal hydraulic pressure and then “rolled” out.

“Kidney” Shaped Casing

“Star” Shaped Casing

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Openhole Clad Applications - PDO

Water shut-off with clad

+ More reliable installation
+ Better seal
+ Larger inner diameter
+ Desaturation logging

- Needs fracture/water detection
- Shut-off non-reversible
- Unable to retrieve
- Needs gauge hole
- How to prove isolation in new wells

SPE 78495
SPE 81489
SPE 88736
Installation of multiple monobore openhole clad liners with “Clad-thru-Clad” capability.
Openhole Clad Applications – Saudi Application
Running Tool Configuration - 1st Run

Isolation Elastomer

Hydraulic Jack

5 -1/2 in. OD expandable casing

Open hole Anchor

5 -7/8 in. OD Cone

7 -1/4 in. underreamed hole

6 -1/8 in. hole
6-1/8” Monobore Openhole Clad – 1st Run

- Run Liner in Hole
- 5-7/8 in. Cone Sets Liner Anchor
- Rig over-pull to expand liner mechanically
- Liner expanded by 20%
Running Tool Configuration – 2nd Run

- 5 7/8in. OD Pre-Expanded Casing
- 6 1/4in. OD Cone
- Open hole Anchor
- 7 1/4 in. underreamed hole
- 6 1/8in. Drift Expanded Casing (OD = 7-1/8"")
- 6 1/8 in. hole
- Isolation Elastomer
6-1/8” Monobore Openhole Clad – 2nd Run

2nd Tool Run Liner in Hole below liner

6-1/4in. cone assembled

Rig overpull to expand liner 8% mechanically

Liner expanded by 28%
## Development & Implementation Timeline

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<th>Date</th>
<th>Task</th>
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<td>Running Tool, Connector &amp; Anchor Design &amp; Testing</td>
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Thank you for your attention

Any questions?