PRODUCT OUTLINE

OpenHole Clad

Covering multiple trouble zones, without losing borehole diameter.

Features and Benefits

No shoe drill out
Single trip system eliminates junk in the well and reduces rig time.

Clad thru Clad capability
Unexpanded liner passes through expanded liner enabling isolation of multiple zones.

Top down deployment
Provides for contingency operations unavailable with hydraulic expansion systems.

No pressure is exerted on the ID of expandable liner
Improves reliability.

No "pop-out"
Eliminates surging of fluid pressure on the formation, which can collapse liners.

Coiled tubing or drill pipe deployment
System may be run in either configuration, at the discretion of the operator.

OVERVIEW

OpenHole Clad (OHC) utilizes a self contained running tool which uses pistons to convert hydraulic pressure into mechanical force for tubular expansion. The OHC system is capable of radially expanding tubulars up to 30% in a wellbore of up to 45° per 100' deviation.

OHC was originally developed as an enabling technology for re-entry drilling of sidetracked wells, where unstable formations prevented the drilling of the horizontal section. The expanded tubular provides mechanical stability for the wellbore, allowing the operator to continue drilling into the reservoir.

Operational Procedure of the OpenHole Clad system:

1. Make-up expandable casing and tool.
2. Connect work string and RIH to TD, circulate as required.
3. Apply expansion pressure.
4. Release pressure and lower work string to reset tool.
5. Repeat steps 3-4 until the casing is fully expanded.
6. Pull out of hole.

Mohawk's OHC is a fully integrated system, which includes the expansion tool, jointed pipe, connectors, external seals, and anchors.

APPLICATIONS

Re-entry formation stabilization / Sidetracking

It is common to have sloughing shale above the target formation. The shale is isolated with the openhole clad without reducing wellbore diameter.

Zonal Isolation

During drilling of difficult openhole sections, multiple problem zones can be shut off, allowing the section to be drilled to TD.

Water Shutoff

Faults that allow water ingress into the wellbore in hard formations can be sequentially patched through the well.

SPECIFICATIONS

TUBULAR

Product Number	Expandable Tubular		Minimum Pass-Through Diameter (in)	Expanded Geometry			Internal Yield (psi)	Collapse (psi)
	OD (in)	ID (in)		OD (in)	ID (in)	Drift (in)		
OHC – 312*	3.500	2.992	3.900	4.35	3.83	3.800	2,000	4,800
OHC – 512*	5.500	4.892	6.125	6.77	6.20	6.125	5,000	2,500
OHC – 758**	7.625	6.875	8.500	9.33	8.66	8.5	4,300	2,000

RUNNING TOOL — OHC - 312

- Overall Length — 45 ft
- Maximum Tool Run-in OD — 3.85 in
- Weight — ~1100 lbs
- Total Expansion Stroke — ~4 ft
- Maximum Axial Force — 160,000 lbf
- Maximum Pressure — 10,000 psi

OPERATIONAL PARAMETERS

- Maximum DLS — 45° / 100 ft
- Pressure — 3,500 - 4,000 psi
- Estimated Expansion Time — 3 hrs / 200 ft

PRODUCT OUTLINE

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