P&A- Whats Next?

Leveraging rig-less

17/5/2022

DNS Decom Week

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DID YOU KNOW

CARELESS MANAGEMENT OF CHANGE CAN CRIPPLE YOU.

Many HSE incidents–and business financial losses–are directly related to the uncontrolled or poor management of a minor or major workplace change.

What constitutes a workplace change that may well require a Management of Change (MOC) directive? It's changes to, or the introduction of, different *chemicals, equipment, critical suppliers, facilities, products, processes, and operations. Even new key personnel.*

If you see change, don't ignore it. Managing any size change–and doing it right–is the smart, safe thing to do.

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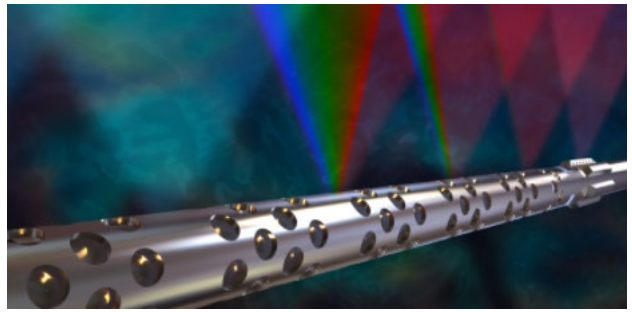
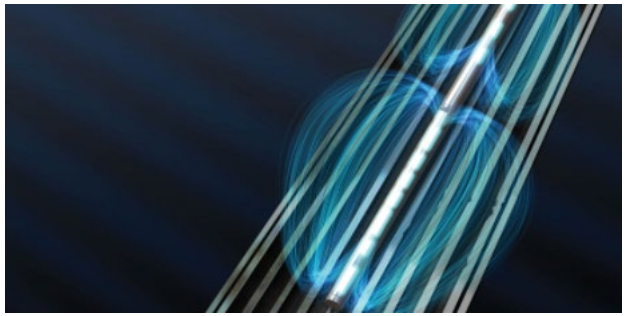
Diagnostics

Understand well conditions, challenges, and integrity concerns to optimize well abandonment solutions.



Acoustic Conformance Xaminer®

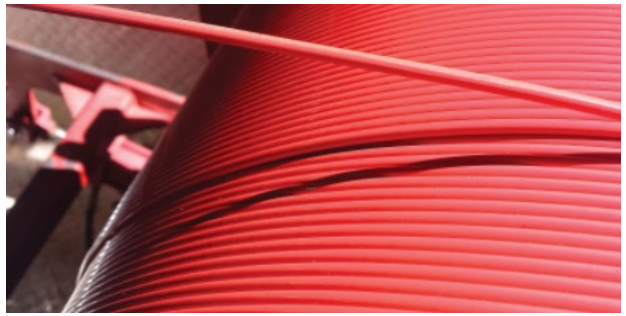
InnerVue™ Wellsuite Diagnostic Service



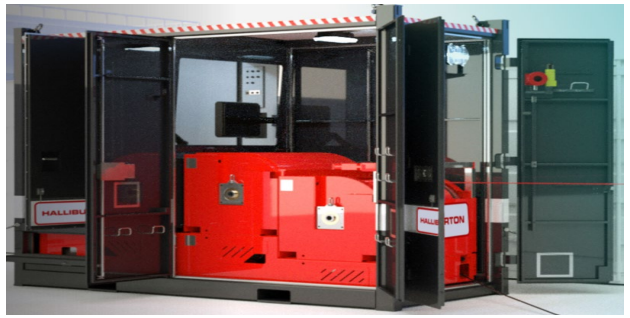
Electromagentic Pipe Xaminer ® V Tool

Conveyance

Integrating the conveyance method with the in-well solutions and aligning with the well locations is key to reducing the abandonment project cost.



Relay™ Digital Slickline improves intervention efficiency



Slickline & Electricline

Coiled Tubing Equipment and Services

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Explosive Cutting Solutions

Abandonment and decommissioning operations have the need for removal of pipe, Halliburton has a range of cutting products.

Jet Cutters

- These are explosive shape charges designed to give a 360˚ cut by the use of a jet that is formed from the shape charge. Jet cutters have a short-assembly length, which is most useful when rig height is limited.

Other Specialized Solutions

- Halliburton has a specialized group that designs, builds, and executes customized explosive and nonexplosive solutions to meet your challenges.

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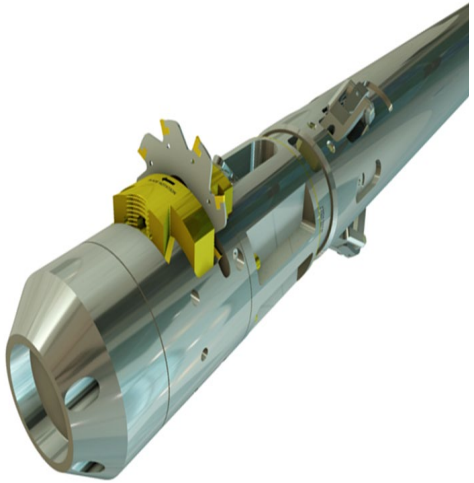
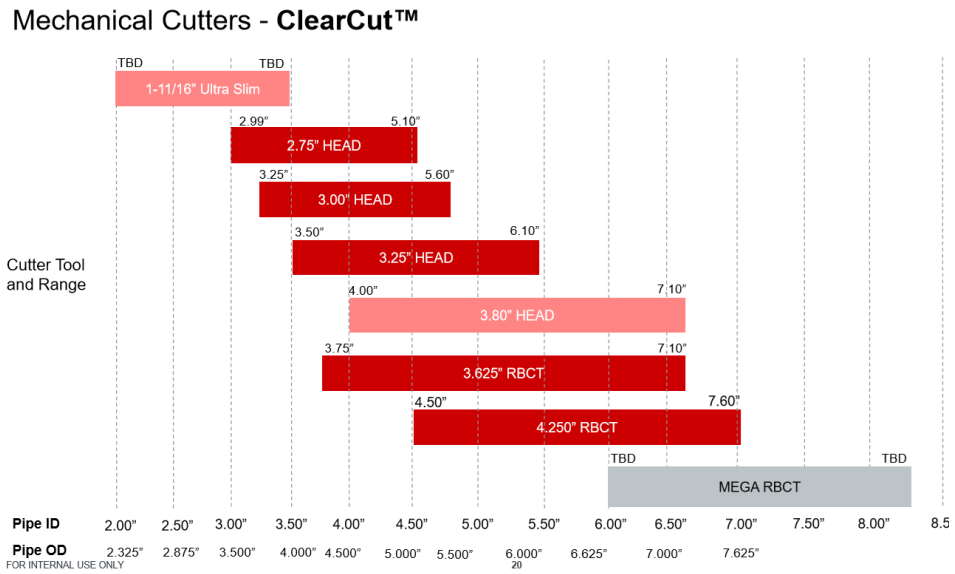
Mechanical Cutters – ClearCut™

- Single run with multi-cut capability
- Typical cut time less than 2 minutes from tubing contact
- Three-point centralizing and anchoring system
  - Centralizes close to cutting head
  - Reduces vibration





- Combinable with Halliburton Free point tool
- Ultra slim development

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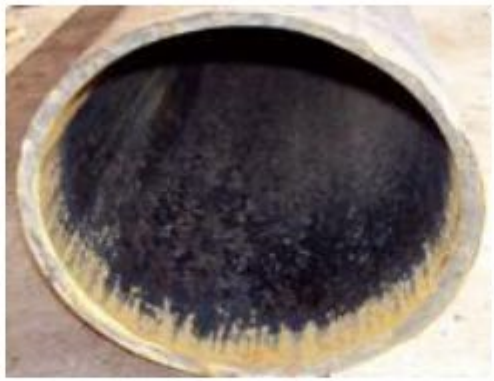
Hydra-Jet Service™

- Rigless Cutting Solution
- Multiple cuts in single run
- Clean cuts no debris
- Multiple layer cutting
- Greater reach vs bladed
- Slow rotation for increased contact

HydraJet™ Pro tool w/ large OD cutting head

7" Inner casing recovered from concentric cut



9-5/8" Outer casing recovered from concentric cut

4" Spiral drill collar

3-1/2" tubing and ESP cables

Casing Jacks

- Casing Jack
- 8.5ft stroke
- 400K lbs pull
- 32” through bore

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United Kingdom: Electromechanical cutter saves customer days of non-productive time and help achieve required P&A depth.

Challenge

- Final well as part of a continuous 5 well P&A campaign – pipe severance was the final stage of operation.
- Unable to reach required target depth to cut 5 ½" tubing for P&A of the producing zone.
- Well had accumulated debris in the tubing reducing ID – explosive cutter unable to deploy.
- Offshore rig on standby – logistical deployment and operational readiness were required to mobilize efficiently and effectively.

Solution

- Halliburton proposed earlier in the campaign the newly acquired electromechanical cutter to enable going through a restricted pipe and still cut the target tubing successfully.

Results

- A rushed mobilization enabled the mechanical cutter and specialist to be on the rig within hours of discussing a need for this solution.
- Slickline crew at wellsite deployed multiple drifting/gauging and bailing to prepare the well for the electromechanical cutter deployment.
- Eline Deployed the electromechanical cutter successfully to target depth.
- Specialist demonstrated to the customer rep on site the different phases of cutting through the debris and then through the pipe steel with a final positive indication of pipe cut within minutes utilizing the unique surface read out control panel.
- A precisely located machine shop quality cut tubing successfully retrieved to surface.

Value Added

- The electromechanical cutter deployment in less than 12 hours from being unable to reach target depth onsite saved the customer days of attempts to clear the obstruction and need for any fishing operations.

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Case Study: First Rigless Abandonment of Wells in the North Sea – Delivered 77 Days Ahead Of Schedule And 20% Under Budget

Halliburton helped operator with well abandonment ahead of schedule, under budget

Challenge

- A global oil and gas company planned to decommission 12 mature wells on multiple platforms in the North Sea. The company needed a safe, cost-effective way to permanently plug the wells to meet both its high standards and government requirements.

Solution

- Effective project management
- Competent engineering expertise accessing a range of Halliburton technologies in cementing and intervention
- Access to all required services from one contractor with minimal third-party involvement
- Innovative cross-business units' working arrangements involving multi-skilled crew
- Simplified pricing structures with flat-rate packages

Results

- Halliburton helped the operator complete the abandonment 77 days ahead of schedule, 20% under budget, and without lost time or incidents

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