CASE STUDY

Malaysia

Wellbore cleanup tools combined with TCP guns help operator reduce rig time and remove debris in single trip

CleanWell® mechanical wellbore cleaning tools withstand shock force of TCP guns

CHALLENGES

Deploy wellbore cleanup tools and TCP guns in a single string

- Robust tools to withstand the expected shock of TCP guns
- Provide metallic retention to collect produced debris

SOLUTIONS

Model shock force with gun supplier to ensure CleanWell® mechanical wellbore cleaning tool suite is sufficient to withstand expected shock force

RESULTS

Vali Tech® filter tool, Mag Tech® casing magnet, and a CleanWell® spiral wrap string mill run with TCP guns in one trip

- Successfully deburred perforation interval, performed BHA cleanup post-perforate, and achieved displacement in single trip
- Mechanically removed 11.88 lb (5.39 kg) of debris
- Reduced rig time by 24 hours

Overview

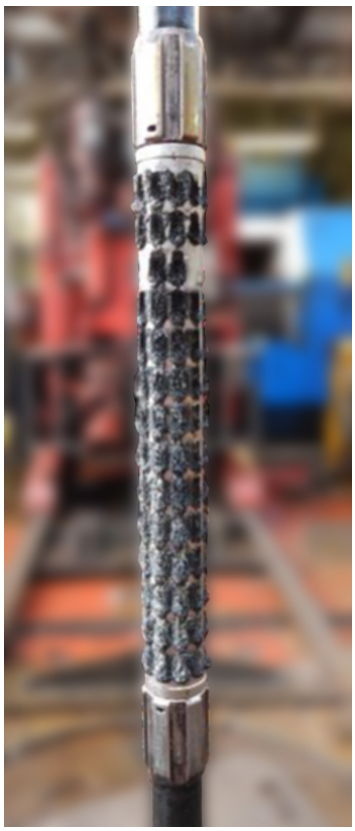
A major operator in southeast Asia engaged Halliburton to provide wellbore cleanup in conjunction with tubing conveyed perforation (TCP). The operator required a string design that allowed perforating, deburring, cleanout, and displacement in a single trip.

Challenges

Tasked to provide wellbore cleanup tools to withstand the expected shock force of the TCP guns, Halliburton was challenged to restore drift and remove debris post-perforating in a single trip with TCP. Deployment in the same string as the TCP guns required the tools to be robust enough to withstand the shock force of firing guns and provide the metallic retention necessary to collect all the produced debris.

Solutions

Halliburton worked with the gun supplier during the pre-job planning phase to model the expected shock forces from firing the guns on the running string. Based on a review of the simulations, Halliburton proposed using a Vali Tech® downhole filter tool, Mag Tech® casing magnet, and CleanWell® spiral wrap string mill in the string to achieve the well objectives.



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Metal shaving and sand sludge collected downhole by Mag Tech® casing magnet

The tools were spaced out in the string above the guns to ensure they remained free of damage during firing and allowed the following:

- Successful run to bottom with 7-in. BHA to perform cleanup and deburr operations (post-perforate)
- Successfully deburred the perforation interval depth (M1.0, 8012 to 8100 ft), (M3.0, 8149 to 8227 ft), (M4-4.5, 8257 to 8358 ft), (M5.0, 8381 to 8403 ft), and (M6.0, 8450 to 8472 ft). Deburred from 7985.96 to 8478.83 ft (spiral mill depth).
- Successfully displaced 7-in. casing with 8.5-lbm/gal clean brine, NTU = 47 and TSS - 0.05%, jet BOP, and pulled out of hole (POOH).
- Executed the scope of work in a safe, efficient, and environmentally acceptable manner with zero health, safety, or environmental (HSE) or service quality (SQ) issues.

Results

Halliburton was able run in hole with TCP guns and successfully deburr the perforation interval, perform BHA cleanup post-perforate, and achieve displacement all in a single trip. The Mag Tech® casing magnet and Vali Tech® mechanical downhole filter successfully recovered 11.88 lb (5.39 kg) of metallic debris during this post-perforate deburr run. This helped prevent lost time attributed to debris-associated issues throughout the upper completion operations.

This is a true example of how strategic mainstays, collaboration, and execution can lead to significant time savings for the operator.

By performing this in a single run with TCP guns, the operator was able to reduce rig time by 24 hours and eliminate the need for a dedicated cleanout run. The following objectives were met during the successful single-trip operation:

- Deburred perforation interval depth in three passes.
- Established 7-in. casing to TD at 9097.40 ft MDDF.
- Displaced 7-in. casing with 8.5-lbm/gal KCl brine.
- Visible tool cleanliness and fluid cleanliness NTU = 47 and TSS <0.05%.

Debris Report

ASSEMBLY NO.	DEBRIS RECOVERY TOOL	RECOVERY (kg)	DEBRIS DESCRIPTION
1	7-in. Mag Tech® (downhole casing magnet) bottom	1.775	Metal shaving and sludge
2	7-in. Mag Tech (downhole casing magnet) top	2.655	Metal shaving and sludge
3	7-in. Vali Tech® (mechanical downhole filter)	0.960	Metal shaving and debris
	Total debris recovered	**5.39 kg**	

For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com

At Halliburton we collaborate and engineer solutions to maximize asset value for our customers. All products and service solutions are available as integrated offerings or as discrete services, based on customer requirements.