CASE STUDY

Client: North Sea operator

VR90® downhole X-ray diagnostic service paves the way for a successful fishing job

North Sea operator uses Visuray's X-ray diagnostic service to successfully identify and recover a retrievable plug.

THE CHALLENGE

In an offshore horizontal oil well, a North Sea operator encountered an unexpected restriction below the wireline entry guide. To investigate the restriction, the operator first performed a series of lead impression block (LIB) runs which yielded inconclusive results. At this time, the operator suspected the restriction might be a retrievable plug originally placed 200 meters further down the well, but that had perhaps been pushed upwards. Multiple attempts to return the well to production failed, so the operator decided to diagnose the restriction. This time, Visuray's VR90 downhole X-ray diagnostic service was run. The objective was to verify the operator's suspicion and decide on the most suitable fishing approach.

OUR SOLUTION

The VR90 downhole X-ray diagnostic tool was tractored until it was held up at a depth of nearly 3000 meters. The first imaging sequence showed a debris field very close to the bottom nose of the tool with a diameter which matched the inner diameter of the retrievable plug. From the information on the plug dimensions and the measured distance to the debris field, it was determined that the tool was resting inside the plug's fishing profile. The figures overleaf show the debris field reconstruction produced by the VR90 tool superimposed on a 3D CAD model of the retrievable plug.

A second imaging sequence was performed outside the fishing profile, approximately 0.5 meters above the first position. It indicated a curved unobstructed object eccentered in the well consistent with the top of the plug.

From the imaging and inclination data from the VR90 tool and the geometrical information about the plug, it was deduced that the plug's fishing profile was free, filled with debris and eccentered in the well. This allowed the operator to discard the LIB conclusions and to successfully retrieve the plug.

OVERVIEW

CLIENT:

- North Sea operator

CHALLENGE:

- Clarify status of fish in well.
- Choose a solution for fishing.

SOLUTION:

- Use VR90 downhole X-ray diagnostic service to visualize downhole obstruction.
- Several imaging sequences confirm obstruction is retrievable plug eccentered in well.
- Surface reconstruction reveals that retrievable plug is caked with debris.

BENEFITS:

- Provided quantitative information about restriction in well.
- Client was able to use findings to plan effective well intervention.
- Eliminated cost and risk associated with unnecessary operations.

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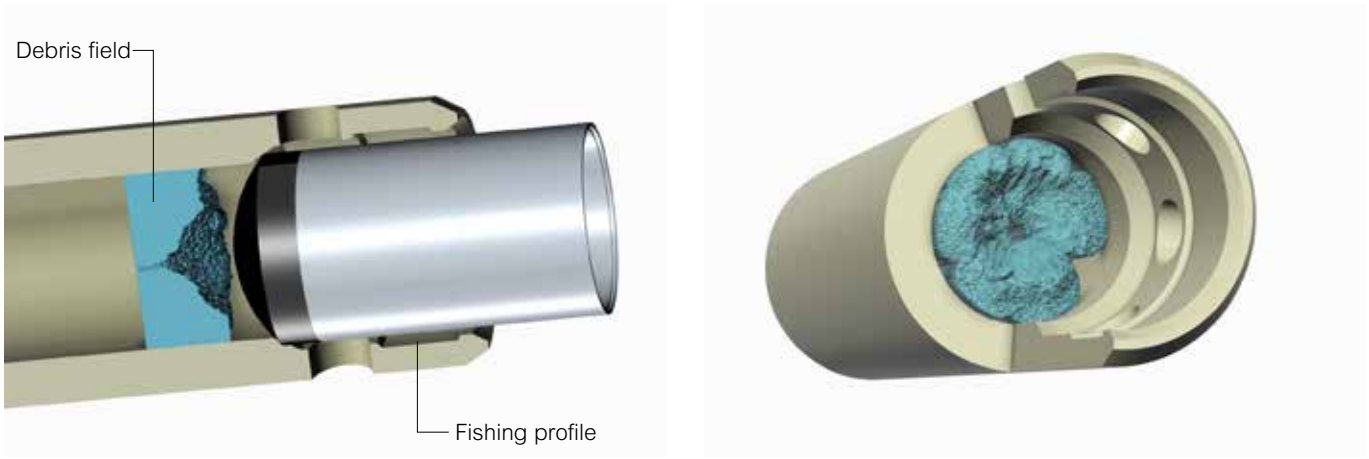

3D view of debris field produced by VR90 tool superimposed on CAD model of retrievable plug. Image to the left is side cross-section view, while image on the right is oblique view.

CLIENT BENEFIT

The VR90 downhole X-ray diagnostic service provided clear, quantifiable information about the downhole restriction in the well. This enabled the operator to conduct a successful fishing operation, saving further non-productive time and associated expenses.

ACCURATE. MEASURABLE. RECOGNIZABLE.

Well intervention decisions are not easy to make. The Visuray® VR90® tool offers a new commercial wireline diagnostic service that uses ground-breaking X-ray technology to give you downhole images in any well production fluid – allowing you to see with certainty and act with confidence.

Visit visuray.com/case-studies for examples.