



Pipeline Operator Gains Key Information on Severe Wax Deposits in Critical Pipeline

INNERVUE™ PIPESUITE SURVEY CAPABILITIES PROVIDE ACCURATE END-TO-END DEBRIS PROFILE IN ONE DAY

NORTH SEA, UNITED KINGDOM

CHALLENGE

- » Severe pipeline restrictions caused by paraffin wax
- » Complex multiphase production fluid
- » Only one end of pipeline accessible without dive support vessel intervention

SOLUTION

Use InnerVue™ PipeSuite diagnostics service to:

- » Survey and assess profile of wax deposits
- » Establish baseline to determine best cleaning solution

RESULT

- » Accurate, high-definition pipeline debris profile recorded
- » Verified client’s theoretical software-generated pipeline deposition model
- » Performed rapid analysis and presentation of data within 24 hours

OVERVIEW

The operator of an 8-inch subsea oil production pipeline, running in daisy-chain fashion from Crathes to the Kittiwake platform in the North Sea, experienced severe pipeline restrictions caused by paraffin wax deposits. Clean-out maintenance was needed to optimize production of the complex multiphase fluid transported through this pipeline system.

Analyzing the situation was difficult, since the pipeline was unpiggable and just one end could be accessed without dive support vessel intervention. Halliburton’s InnerVue™ PipeSuite diagnostics service was therefore the most viable and efficient solution to give the client a clear picture of the debris build-up within the pipeline. Although initial pipeline conditions were not conducive to gaining accurate data via InnerVue PipeSuite survey techniques, they could easily be manipulated to achieve the conditions required to record usable data.



InnerVue™ PipeSuite survey equipment connected to the pipeline via instrument point.

PROJECT DETAILS

In order to create “survey-able” conditions inside the pipeline, it was necessary to displace the gas content from the pipeline to give single phase conditions, which was achieved by injecting solvent into the pipeline, which had the added benefit of treating the wax deposit. This change of pipeline contents improved the clarity of data recorded, which had a direct result on accuracy—from meaningless to a high resolution of hydraulic diameter +/-1mm at 5m intervals along the length of the pipeline.

SUMMARY

The wax deposit profile derived from the InnerVue PipeSuite survey enabled engineers to effectively design their cleaning program. This automated software technology allowed rapid data analysis and presentation in a single day for fast decision-making. The results improved

the operator's confidence in their remediation plan, as the findings verified a theoretical deposition model they had previously generated via another software.

DID YOU KNOW

The InnerVue PipeSuite service is a low risk, fast and accurate technique used to map the quantity and distribution of what may be limiting the throughput of the pipeline system, such as wax, hydrate, stuck pig or tool. A pressure wave is created at one end of the pipeline and travels through its entire length at the speed of sound. A reflected signature wave is returned, which corresponds to actual conditions within the pipeline, including:

- » Changes in flow velocity from deposits/debris
- » Changes in medium properties, such as density, viscosity and phase

Analysis of critical data collected by the "pressure wave" technology will increase your understanding of a given pipeline transportation system—from end to end—and provide valuable insight for decisive asset performance management. The InnerVue PipeSuite service locates pipeline blockages to high accuracies within 0.3% of pipeline length.

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