

Pressurised Bioreactor Study Confirms Advantage of Rawwater’s “Earliest Possible” Oilfield Reservoir Souring Forecasting Model

Rawwater, the leading provider of services for forecasting, simulating and mitigating microbiological oilfield reservoir souring, has completed a major pressurised bioreactor study to underpin the significant benefits offered by its newly introduced ‘field planning stage’ souring modelling capability.

The results of the study, which lasted six months, will be used to demonstrate to oil operators and service companies that, thanks to Rawwater, it is now possible to conduct accurate reservoir souring forecasting at the earliest possible stages of field development and, by doing so, benefit from previously unavailable data to assist in planning the cost-effective future management of reservoir assets.

“At Rawwater we are always looking to offer our global client base greater insight with regard to reducing operating costs and improving efficiency,” said Rawwater Head of Division and Senior Research Scientist, Matt Streets. “It is for that reason we recently enhanced our industry-leading DynamicTVS[®] predictive software modelling program to provide the earliest possible indication of future hydrogen sulfide (H₂S) production and resultant souring in new discoveries. Early forecasting is achieved by using our vast oilfield souring database and known field parameters from the asset in question to provide a qualitative forecast at very early planning and decision gates.

“As soon as a full reservoir simulation is up and running, and well profiles have been determined, DynamicTVS[®] can then be used to underpin our earlier software modelling findings,” he continues. “We believe that the benefit to oil companies is immeasurable. Indeed, this service has already been used by a leading oil operator in the North Sea and has provided them with valuable insight into future microbial souring within their reservoirs – and all achieved in the absence of a full reservoir flow simulator.”

Rawwater completed the six-month pressurised bioreactor study at its UK-based laboratories to demonstrate the efficacy of its early souring modelling to the operator. The study placed crude from the asset in question under simulated pressure and temperature (P/T) conditions to determine the levels of microbiological souring that would occur under different injection water scenarios.

“Later on, when the full reservoir simulator was running and well profiles had been determined, we completed quantitative reservoir souring modelling using DynamicTVS[®],” adds Matt Streets. “This forecast confirmed the accuracy of our earlier modelling at the field planning stage, with regard to the degree of microbially-induced souring that would occur over the life of the asset, and whether or not it would impact production. Perhaps most importantly, as well as corroborating the findings from both modelling forecasts, the pressurised bioreactor study also enabled us to fine tune the results.”

Oilfield reservoir souring can cause corrosion of topside equipment, with the potential for risk to the environment, a health and safety risk to personnel and increased cost of production – all things that can adversely impact reputation and oil revenues.

