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Well Failure; the Fairway to Success. How Understanding Failures can be the Key to Discoveries

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Oil and gas drilling is a high cost activity with an inherently low overall success rate. This low probability of success occurs despite the significant level of “science” that is brought to bear by industry, and illustrates the complexity of factors that must align for volumes of hydrocarbons to accumulate and be discovered.

Key to understanding this complexity is historic well data. Many poor well results lead to negative assumptions about their associated plays. More often than not, these assumptions are held in ‘lore’ even if they have not been subjected to rigorous post well analysis and often persist over generations.

By taking a holistic approach to exploration that incorporates technical results, an improved understanding of the petroleum system and play types that were targeted can be made. Such analysis will in turn help increase the chance of success in future wells targeting those plays.

The National Well Audit (NWA) is a comprehensive and auditable reference database and collation of all offshore exploration well data. Each play for every well, will be thoroughly assessed for the presence of effective reservoir, seal, trap and charge. The resulting analysis is presented on a well by well, play by play basis, incorporating a regional synthesis of exploration plays and associated key risk elements for each of New Zealand’s petroleum basins.

This staged programme recently assessed the Canterbury-Great South basins and has increased our confidence in understanding the play types, petroleum system and risks associated with as yet undrilled exploration targets in these basins.