

## **Claim 11 Judgement**

The Joint Venture proposed trialling horizontal wells in our tenements. Due to the geological setting, our primary well design was vertical fracture stimulated wells. The critical issue with a trial is location and well design.

The trial consisted of a multi-well program located in the developed [petroleum lease] and exploration [exploration lease] areas. The trial was to determine if horizontal wells are applicable for this geological setting and how they compare with the current technology.

Upon evaluating the potential performance of horizontal wells, it was evident that for commerciality, there was a need for multiple laterals. The design was structured so that the incremental cost for an additional lateral was economically viable.

The project gained the approvals and commenced with the first well in the petroleum lease. At the completion of the first well, I went to the site for the commissioning. From the start, it was obvious there were issues that required attention. I realised that the diagnosing process needed to be fast if changes were required. I performed a series of tests which indicated critical issues which could be rectified in the wellbore construct where access was permitted. This was a concern because we were unsure of what was happening to the areas where there was no access.

The critical issue here was in the timing as the drilling rig had commenced the second well and I had to resolve issues quickly to determine the best way forward.

The performance of the first well was below expectation and the tests indicated an issue with the well design. Obviously, full analysis was not possible with the time frame but judgement had to be made. The design compromised the petroleum engineering access principle.

Following discussion with the drilling engineer and my peers, we came to a similar analysis of the problem. Changing a well design is a challenge and many things must proceed in parallel. The drilling department worked on the redesign, procured additional equipment and ensured all external approvals and regulatory conditions were satisfied. Drilling program were re-written and service companies' schedules changed. My role was to gain internal and external joint venture approvals for a supplementary budget. My communication with the joint venturer was excellent and approvals were quickly obtained. The drilling department worked in overdrive and were able to change the design for subsequent wells.

In this case, judgement had to be made on the available evidence at the time. In deciding to change the program mid-stream, my experience and the importance of fundamental principles cannot be overstated. The role of the engineer is to ensure that the project has the maximum opportunity to succeed.