Engineers Experience record

In [14th]July 2006, I formed a consultancy company. I have had over 50 clients with most jobs being short term projects involving trouble shooting, advising on and reviewing projects and valuing assets for mergers or acquisitions. In the last five years I have done over 100 projects usually involving a written report or presentation. I also have run over 10 courses for my peers and financial industry both domestically and internationally. I specialise in the upstream oil and gas industry reservoir and petroleum engineering. In relation to petroleum engineering, I focus on onshore completions and fracture stimulation.

The following table is a breakdown of project work performed. Advice of projects involves engineering, such as, appropriate well design, well location, stimulation and resource management. When a project is underperforming, I am asked to trouble shoot proposed strategies to improve the investment. Clients often seek a review on a project either for optimising production or for investment. The final category is commercial which involves resource/reserves estimating or auditing and asset valuation.

Type of work	Percentage %
Advice on project	44%
Trouble shoot	12%
Review project	24%
Commercial	20%

The following examples are projects I have done in recent times.

Example 1: Gas Compositional study - Coal seam gas feedstock to LNG Plant

In my consultancy role, I was asked to investigate the CSG gas composition of the feedstock to a LNG plant over the life of the project. The Curtis island LNG plants are the first to use CSG as feedstock. The Queensland CSG gas composition comprises primarily of methane, ethane, nitrogen and carbon dioxide. The adsorption characteristics of molecules are different and therefore the gas composition varies with depletion of the reservoir.

There has been very little literature on the forecasting composition changes in CSG. The published papers on modelling compositional changes were based on matching outcomes rather than modelling the desorption characteristics.

The study involved collating all the available laboratorial data and production data. The laboratory data required quality checks and interpretation. Statistical analysis indicated how compositional behaviour may occur during the production cycle. A number of recommendations were generated to improve compositional knowledge. Production data from a number of gas plants were analysed and compared with the laboratory core data from the respective fields. This production data showed how compositional changes occurred with respect to the cumulative production.

A gas compositional forecast was generated based on the current corporate feedstock production model. The next step was to force the model into breaching the proposed LNG plant specifications. The main issue was that the forecasting tools were untested. Carbon dioxide was a great concern as

its concentration increases non-linearly with time. The non-linear nature is unpredictable and therefore it was important to model extreme cases to see if the plant specification can be breached. An iteration process was developed and showed that breaching the plant specification was extremely unlikely based on the current feedstock.

Covers elements Element 12, 14, 15 & 16

Example 2

A company asked me to review their Coal Seam Gas project. The project consisted of multiple exploration core-holes and appraisal pilot production wells. The Production wells consisted of multiple designs and configurations. The review took a holistic approach to determine if the well designs effectively exploited the resource. The report discussed the geological setting, drilling and completion techniques and their relation to the pilot's performance. The report focused on structural geology and the influence tectonics on production performance. Open data on many local CSG projects and other analogues were used to support conclusions and enabled the client to benchmark their project with their peers. The benchmark study compared geological parameters, well designs and field performance thus showing the project is standing within the local setting. An economics model was developed to evaluate the projects potential in meeting production goals. Recommendations on well designs and production trials were focused on economic resource exploitation. Based on this report, the company was able to focus their resources to maximise their commercial investment.

Element 13.