FIELD Challenge judges reveal the secrets to being a winning team

Our judges tell us why the FIELD Challenge is such a great competition and how your student team can win.

2017 saw the seventh FIELD Challenge – a 'Fully Integrated EvaLuation and Development' task, now also known as the 'Laurie Dake' Challenge, Dake being a giant in the discipline of reservoir engineering.

The contest would not be possible without our sponsoring companies which have included Shell, Total, Statoil, ExxonMobil, BP, Maersk, Wintershall, OMV, Repsol, and WesternGeco. We are hugely grateful to them. They have provided funding to support the travel grants and prizes and/or data sets for an unidentified field in one of the world's hydrocarbon provinces.

IFP School, University of Manchester and the Universiti Teknologi Petronas teams with Chris Ward (EAGE President 2016-2017) at the Student Evening.

When introduced in 2011, the FIELD Challenge was a two-round competition in which the first round was an essay competition where the teams of up to five members, were tasked with writing a 2000 to 3000-word essay on some aspect of professionalism, ethics, future technologies or crystal-balling our business in 20 years time.

Good though the essay process was, for 2017 we've experimented with a new approach that is more technical throughout, and simulates real industry activity even more closely. It is probably tougher for the teams, too: not least as we have added a second qualifying round – a compliment to the quantity and quality of the entries!

In the first round this year, the teams had to evaluate the available seismic, well, and supplementary data: armed with their interpretations, with notional costs for seismic and drilling, and with a fictitious budget, they had to identify prospects and bid (on paper) for license blocks. Then, the ten most credible bids were invited to present their bid to us as a short movie.

Eight finalists were selected from these movies, and were subsequently given a much bigger dataset – a full 3D seismic cube as well as the sparse 2D grid of the first round, for example – and tasked with working up a full life-of-field interpretation and evaluation (geological and petrophysical models, reservoir simulation, reserves, drilling strategy, development through to abandonment. No small task!

Eight judges evaluate the presentations from the finalists.

We all look forward to the day of the 'finals', when the eight teams come to present their field development plans. Far from experiencing a 'long day', the judges feel energized. We are constantly impressed by the teamwork, the effort that has gone into the project, the communication skills and how the teams defend their work in the 15 minutes of sometimes withering questioning. Most teams have figured out that having too many slides and running over time is a bad move and that questions are best answered with simple honesty; it is indeed OK to admit the constraints that time and data put on any project.

This year the judges singled out for praise the presentation skills. These were considered as first-rate time management with clarity of slides and question-handling. The best of the finalists were as good as professionals, and the work underlying the presentations is like a full Master's project. Pretty much all of the teams portrayed inter-disciplinary team work that served as great examples for petroleum companies and even professional organizations. This year, Total organized a two days trip for the winning team in Pau, where they met with the global chiefs geophysicist, geologist and reservoir engineer. They also visited the High Performance Computer & core library, and spent a day in the field discovering the geology of the French Pyrénées.

For the first time, the winner (IFP School team) was also acknowledged on stage during the opening ceremony, which is indeed a nice recognition from EAGE. This is high praise indeed and fully merited.

We are already looking forward to again meeting the best of our student community at next year's Laurie Dake Challénge finals in Copenhagen! Go to http://students.eage.org/en/laurie-dake-challenge for more information, team up with your friends and all be winners!

Pitfalls to avoid in a presentation

At the risk of appearing to be a band of old curmudgeons, the judges would like to point out for future reference some underlying weaknesses seen in various approaches and presentations over the years?

Data screening and QC: While we have never consciously given 'bad data' to trick contestants, the information collected when a prospect is appraised cannot always be taken at face value and given equal weighting. Information from lab and other reports should be checked for internal consistency and against possible field analogues. You should not be fearful of highlighting numbers that somehow do not feel right and recommending further data acquisition strategies to reconcile.

Data limitations: Even perfectly good data is constrained by its resolution. Simply because a seismic reflector shows lateral continuity, you cannot assume geological homogeneity (and in the reservoir section this is a critical consideration). The realities of acquiring and analyzing core, log and well test data present

challenges when upscaling to create a reservoir model. Have the confidence to recommend further sampling and data acquisition to reduce uncertainties before or during the field development. Look for field analogues that might help you fill in some of the gaps in the data, but be careful to always reference the source.

Reservoir heterogeneities: These are one of the biggest hurdles to optimizing how many wells are drilled, where they are landed and understanding sweep efficiencies during production. Have a clear picture of your depositional setting and how reservoir thickness, quality and lateral extent might be further impacted by post depositional diagenetic and structural changes. What can be helpful in understanding the risks and what can you do during the production phase to identify and alleviate potential problems or identify issues with sweep efficiency?

Geomechanics: Well construction and completion are critical high budget items in any development and costs increase with overpressured zones, sloughing shales and either tight or, conversely, unconsolidated reservoirs. Predictions of mechanical rock properties, and the cost impact, are an essential part of any development plan and many teams seem to overlook the significance and budget impact. Talk about mud systems, completion strings, stimulation strategies and their estimated costs.

Sensitivity testing: Reservoir simulators are powerful tools. They allow multi-scenario options to be compared and trade-offs made. Frequently we see a single minded approach using 'most likely' input parameters with little analysis of the riskier assumptions that are being made and therefore constituting the weak links of the development strategy.

Winners on stage: IFP School received the Field Challenge Trophy during the opening ceremony.

Recovery factors, for example, tend to be assumed rather than more comprehensively analyzing the variables (technical and economic). This will impact sweep efficiency and recovery optimization.

Corporate social responsibility: Failing to assure sustainable development by keeping 'onside' with the local communities, environmental groups, local and regulatory authorities and a whole range of different stakeholders and interested parties can be the downfall of what would otherwise be a technically successful project. Teams should think hard not just about the technical pitfalls but also the environmental, commercial, operational and political risks of any venture.

Verification: Once a project is sanctioned and the development work starts, what additional data acquisition is recommended to assure that the initial assumptions (as to the reservoir's character and behaviour) are indeed correct and that production will proceed as intended. Does the development plan allow the option of 'course changes' should the production wells and volumes produced not match the prognoses?

Planning for the end game: In some cases it seems that relatively little thought goes into the cost of abandonment and the conceptualizing of innovative plans and actions, which could be used to either defer or otherwise minimize the social, economic and environmental impacts at the end of the field's life.

Do not be seduced by the software: While the introduction of the big industry software packages like Petrel and Eclipse has brought university programs forward in leaps and bounds, and has been of huge value in preparing people for their first jobs, there are some downsides to this evolution. Firstly, don't fall into the trap of thinking you can only do what a big commercial packages let you do. You should be a scientist, not a technician. Some industry gurus fear that exploration and production successes are perhaps declining because we are all doing the same things, blindly following the same paradigms, workflows and analyses that the software feeds us. Be prepared to code to delve into problems; even Excel will let you do a good investigation. And do not think you must do everything that the big commercial packages let you do. By way of an analogy, simply throwing everything in your fridge at the wall does not make a nice meal out of what sticks to it! Be selective, think of the specific challenges offered by the field in question, come up with a bespoke solution not a generic one.