We wish you all a Merry Christmas and we look forward to the new year having secured these few wins of the past year:

Education
- The new BEng (Pet Eng) degree at last count had 19 first preferences and 18 second preferences. All school leavers have the chance to apply for the Woodside scholarship.
- We welcome new staff Associate Professor Jorge Sampaio, who previously was in the drilling department at ENI Australia, who joins us to provide lectures in Advanced Drilling Techniques. Jorge is heavily involved with both CSIRO and the new Deep Exploration Technologies CRC. We also welcome Dr Ebenezer Sholarin who will lecture Project Management and Risk. Ebenezer previously lecturer the Engineering First Year so it will be useful to have him onboard as we welcome our new first years to the B Eng (Pet Eng).
- We thank Woodside for their scholarships for the top TEE high school student picking petroleum engineering as their degree of choice, and the top first year engineer who switches to petroleum engineering from another discipline.
- Congratulations to Stuart Weston who was awarded his PhD and will receive a Chancellor’s Commendation- top marks. The PhD abstract is over page. Stuart is now working for RISC in Perth. Congratulations also to Masters graduate Pamela Widjanarko for her thesis titled “The development of a new enhanced oil recovery (EOR) screening method”. The thesis was funded by a scholarship from Senergy. Pamela is now working in Jakarta for Schlumberger.
- We thank Schlumberger for donating copies of Eclipse and also CGM for donating 50 copies of the Reprise version of their simulator. Po Chu of Strategy Central- you are a star.
- Thanks to Phil Huizenga and his team at Carnarvon Petroleum for organising and sponsoring the end-of-year student barbeque.

CRC Successes
- We are pleased to have become involved in two new CRCs. We have an involvement with CO2CRC, and the new Deep Exploration Technologies (DETCRC) in which we have involvement in the drilling and sensor developments

Research
Fraccing studies contact Vamegh on v.rasouli@curtin.edu.au
Tight Gas studies contact Reza on r.rezaee@curtin.edu.au
Sanding/fracc stimulation studies Mofazzal on m.hossain2@curtin.edu.au
In-flow performance studies contact Akim on a.kabir@curtin.edu.au
Core flooding studies contact Ali on saeedia@gmail.com

Keeping the COGS oiled with Curtin Petroleum Engineering- the Good Oil
PhD thesis abstract

Advanced down-hole fluid analysis

Stuart Weston email: stuart.weston@riscpl.com

Abstract

A down-hole sampling tool has been designed to perform a range of fluid analyses. The tool’s main functionality would be to rapidly and accurately perform molecular analysis and fluid characterisation at reservoir conditions. Sampling can occur over a productive interval to clearly define compositional distribution in a manner that is currently not available. Such a tool’s ability precludes the need for further wire line runs to obtain more fluid samples. Some reservoir fluid components such as hydrogen sulphide are absorbed by the steel casings and fittings which are poorly identified at the surface. The down-hole analysis method should avoid these problems and give a greatly improved accuracy with a faster and cheaper service that will result in improved production and process design.

Description

Characterisation of formation test tools was limited to pressure, temperature, density, viscosity and resistivity with more recently, NMR and optical spectroscopy. Chromatography to date has been limited to the domain of the lab but this research shows the ability to package a self-contained gas chromatograph into a well-deployable tool. The miniaturisation and adaption of the chromatograph has been completed to ensure correct operation at elevated temperatures and pressures. This down-hole chromatograph is remotely controlled with the ability to transmit the fluid compositional data to the surface in real-time.

The tool has been shown to separate and oil sample and identify components up to C12 thus extending the range of in-situ compositional data currently attainable.

Conclusions

Crocker Research is now developing this tool into the Formation Evaluation Tool (FET) following the pioneering development of flow-through wire-line testing.

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Figure 1. GC traces

Since hydrogen sulphide H2S is lethal so its early detection is critical. H2S reacts with test equipment and thus its presence in the reservoir fluid is not seen at the surface where it is currently analysed. By carrying out the analysis down-hole the detection is less subject to this error.

Figure 1 shows an example prototype chromatogram of a hydrocarbon mixture with a column temperature of 150°C. Figure 2 is a photo of a prototype on the lab floor.

Figure 2. Prototype testing at reservoir conditions using petroleum engineering lab core flood equipment.