

Jamming in friable sandstones can also severely reduce the recovery if it is not detected immediately. Surface indications are more subtle and there maybe no change in penetration rate. Instead of being cored, the sandstone is washed away in front of the bit.

The failure to obtain a segregated sample was disappointing but did not detract from the fluid evaluation. Similarly, the inherent limitations of the nitrate tracer did not compromise the evaluation of the recovered fluids. However, had both systems been more functional the final interpretation would have been more quickly and confidently achieved.

Although the tracer levels were easily maintained in the mud the nitrate did not provide a means of determining the relative proportions of filtrate and formation water in the recovered fluid samples. It only provided an indication that there was a mixture. This was because the rate of absorption and breakdown were unknown. In the future consideration could be given to using tritium tracer which eliminates these problems (A tritium tracer was considered for King 1 but a laboratory was not available at the time of drilling).

Log analysis indicated no net pay with water saturations in excess of 60% throughout the EVCM, with exception of the interval 2049.1m to 2057.3m where Sw values of between 38% and 58% were calculated. As noted elsewhere in this report this interval was interpreted to be water wet. This interpretation is both supported by the pretest results which gave a single water gradient of 1.42 psi/m, (0.433 psi/ft) and the recovered water samples indicating lack of producible hydrocarbons. This was in contrast with the observed oil in Core 3 which had indicated some thin reservoirs maybe present. The lack of any recovered oil in the samples indicates that the oil was not in continuous phase.

The absence of significant hydrocarbons for the interval above 2000m may be ascribed to either a lack of effective seal or a lack of communication with a generative section. Local generation and sourcing appears unlikely considering the maturity profile in nearby Cormorant 1. The higher background gas levels below 2000m give some encouragement but the results of the sample recovered from the sandstone at 2053m sandwiched between two coals suggests early generation and a lack of communication with an effective fully mature source. Prior to drilling it was hoped that King 1 would prove at best that the structure was a single hydrocarbon column or at worst that it was a series of stacked hydrocarbon bearing sands. However evaluation of King 1 has proved that the structure is water saturated and acts as a single pressure regime with all the sands being in communication.

There are no producible hydrocarbons present in King 1. The trace amounts of hydrocarbons intersected during the drilling of King 1 are most probably locally generated from early mature source intervals.