SEAPEX Exploration Conference 2007
Orchard Hotel, Singapore
24th – 26th April 2007

Day: **Tuesday 24th April**
Session: **Indian Sub-Continent**
Time: **1730 – 1800 hrs**

Appraisal Strategy in the Mangala, Aishwaryia and Bhagyam Fields (Rajasthan) from Pore Size to Seismic Scale

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The Mangala, Bhagyam and Aishwariya fields, the three biggest discoveries in the Rajasthan licence block RJON90/1, were all discovered between January and December of 2004. In the same vicinity, all three fields contain a medium density, high viscosity oil within the stacked fluvial sand units of the Fatehgarh Group (Palaeocene).
Since discovery an accelerated data acquisition programme has been pursued and realised which includes amongst others, several appraisal wells, 3D seismic, detailed stratigraphic and sedimentological studies, extensive core and fluid analysis along with a detailed well test campaign to evaluate potential deliverability.

This focused activity allowed Cairn to reduce the critical uncertainties in a timely manner and to compile and submit the Field Development Plans within a tight schedule (Bhagyam FDP submission expected early 2007, while Mangala and Aishwaryia have been submitted in 2005).

Of particular interest is the significant water saturation uncertainty which was addressed by coring with low invasion oil based mud and wellsite plugging to minimise invasion effects. The core extracts lab results confirmed the extremely low irreducible water saturation which was suspected from the wettability and capillary pressure data, but could not be proved by the log interpretation alone. Once confirmed, this significantly increased the amount of proved reserves.

In addition to the Fatehgarh reservoir, oil and gas was found in the overlaying Barmer Hill lacustrine formation, which constitutes a partial seal/waste zone and the source rock for the Fatehgarh sands. The reservoir potential of this unit has been evaluated by means of two fracture treatments in both Mangala and Aishwaryia. The enigmatic Barmer Hill lithologies share many properties with the Monterey formation, being formed by shale size siliceous particles of probable but not proven organic origin. A study on the potential of this unit is currently under way.