Permo-Carboniferous and older plays

Introduction and review

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The aim of this session of the conference was to elucidate the nature of the Permo-Carboniferous and older plays in the producing areas of NW Europe and to suggest areas and play types where new discoveries could be made.

The introductory paper by Gérard et al. describes the main producing areas: Southern Permian Basin, Timan-Pechora and the Baltic Basin. Source-rock distribution from Cambrian to Permian times is discussed in terms of eustatic and supercontinent cycles, while the obvious relation of areas of production to areas without late tectonic deformation is described.

For the Southern Permian Basin, the general hydrocarbon habitat and the development of the Southern North Sea is well illustrated by Hollywood and Whorlow's paper on multiphase structural development and the review by Bailey et al. of the plays of the Silver Pit Basin. The paper on the Caister Field by Ritchie and Pratsides illustrates the details of stacked structural plays with reservoirs of Triassic and Carboniferous age, while the papers by Turner et al. on the Ravernspurn North Field and by Burri et al. on the Rotliegend of NW Germany highlight the complexity of some traps. These two key papers on Rotliegend fields demonstrate the relationships between diagenesis, stratigraphy and structural history with the presence of good reservoir and the definition of subtle trap geometries. The approaches used by these authors point the way to future exploration evaluation as the Southern Permian Basin becomes increasingly mature.

That the detailed stratigraphic and sedimentological frame-works necessary in the search for subtle traps are being constructed is demonstrated by Collinson et al. on Carboniferous depositional systems, by Besley et al. on the Upper Carboniferous red beds and by Quirk on the Westphalian stratigraphy of the Cleaver Bank High.

The paper by Taylor on Zechstein pseudo-reefs analyses the reasons for the failure of a high-risk innovative play, while the work by Chadwick et al. describes the evolution of the Northumberland-Solway Basin, a region in which future plays may be pursued. In a similar vein, the paper by Smith analyses the potential for another high risk UK play, that associated with the Variscan fold belt.

Adding a broader international vision to the session, the paper by Christiansen et al. demonstrates the concepts of Paleozoic plays in East Greenland, thereby provoking thoughts as to the likely presence of such plays offshore mid-Norway. The contribution by Brangulis et al. on the Baltic Paleozoic is a further timely international contribution in advance of a possible Latvian round of licensing.

Overall these plays, and the mining of their source rocks, have played a major role in providing the energy utilized in Western Europe since the start of the Industrial Revolution. There seems to be little doubt that from subtle traps in established areas, from discoveries in new areas and possibly from such relatively unconventional sources such as coal bed methane, the Permo-Carboniferous and older plays of NW Europe will continue to be significant sources of energy.