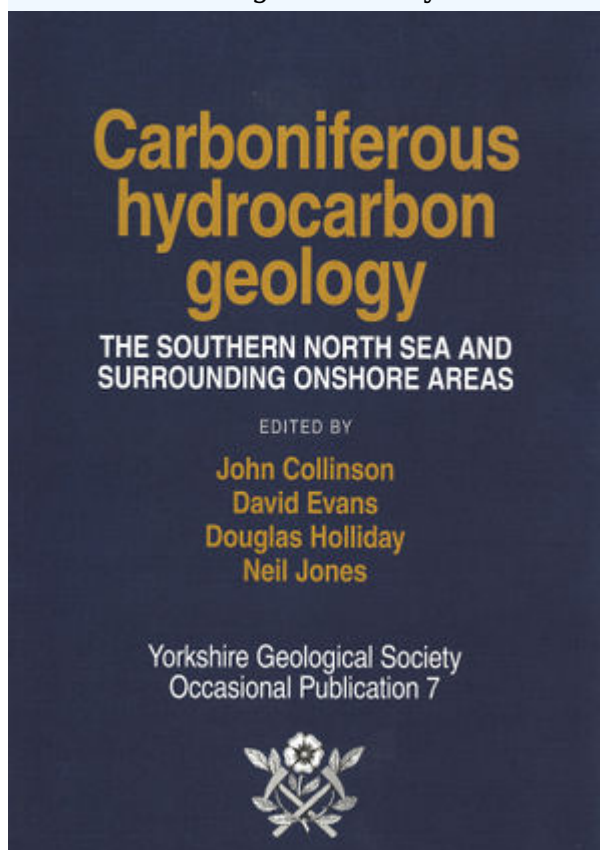


Carboniferous hydrocarbon resources: the southern North Sea and surrounding onshore areas

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Introduction

Although hosting several small hydrocarbon fields in eastern England, and recognized in the 1960s as providing the main source rocks for the gasfields of the southern North Sea, Carboniferous rocks were thought until quite recently to have little reservoir potential off shore. However, since 1984, 23 significant gas discoveries have been made in the Carboniferous of the UK southern North Sea,

along with other examples in the Netherlands sector. Thus, in recognition of its increasingly important contribution to total UK gas production, the offshore Carboniferous, particularly the Late Westphalian red bed sequence, has locally been the locus of considerable research by the hydrocarbon industry. However, the Carboniferous of much of the southern North Sea remains poorly known and under-explored.

In order to generate interest in unexplored areas and to highlight outstanding issues of field development and reservoir modelling, the Yorkshire Geological Society organized a conference in Sheffield on 13-14 September 2002. This brought together scientists working on the offshore area and those whose primary knowledge is of the Carboniferous of the adjacent onshore, which has been studied extensively for over two centuries. Over a hundred delegates attended, including many of the current key offshore and onshore researchers. The main aim of the conference — the promotion of the relevance of the well-studied onshore Carboniferous to the understanding of the lesser-known offshore successions, with the objective of locating and producing additional hydrocarbon reserves — was a major underlying feature of most of the papers presented.

This volume contains fourteen of the papers presented at the meeting by leading specialists in their fields. The papers range widely in stratigraphical and geographical extent, and review such topics as biostratigraphy, lithostratigraphy, chemostratigraphy, regional tectonics, provenance, sedimentology and reservoir architecture, depositional systems and sequence stratigraphy, post-depositional uplift and geophysical imaging of coal-bearing strata. Much new information is presented on the offshore sequences and several papers summarize current knowledge of the onshore strata that will aid investigation off shore. A detailed review of remaining offshore prospects is included.

Preface

This volume is the proceedings of a conference organized by the Yorkshire Geological Society and held at Stephenson Hall, University of Sheffield on 13 and 14 September 2002. A further day of field trips was held on 15 September. The conference aimed to bring together geoscientists experienced in the Carboniferous of the southern North Sea and also those whose experience has been mainly derived from the study of the Carboniferous on shore, either at outcrop or in the subsurface. These two areas are mostly parts of the same set of basinal and depositional systems, and it was thought that a forum for transfer of knowledge and experience between the two communities would be widely beneficial and stimulating. The Yorkshire Geological Society, whose members probably represent the greatest accumulation of onshore Carboniferous experience in the UK, was thought to be an especially relevant organization to run such an event. The timing was also thought to be particularly appropriate, as the exploration for gas in the southern North Sea moves into a phase where most of (if not all) the major accumulations in the Rotliegendes reservoir have already been found and mostly exploited and where future exploration must increasingly focus on the deeper and more complex Carboniferous reservoir sections.

Some 120 participants attended the conference, mainly from the UK and The Netherlands, but also from Germany and Australia. Participants came from the petroleum industry, from geological surveys and other government institutes, and from academia. The facilities at Sheffield, with almost all participants resident on site, provided an ideal setting for both the formal sessions of the conference and also for much informal discussion. Twenty-eight talks were presented at the meeting, along with posters and a fascinating core-and-log display by Tony Hodge and colleagues at Roc Oil, giving an insight into the concealed Carboniferous of the East Midlands oil province. The topics ranged widely in their stratigraphical and geographical coverage, and across a range of subdisciplines. Although few contributions explicitly compared offshore with onshore, that theme

was implicit in much of the conference discussion and was particularly apparent during the field trips, when the relevance of outcrops to particular offshore situations was widely discussed.

This proceedings volume reflects quite well the overall scope of the conference, although obviously it does not record all that was presented there. We hope that it will prove a useful resource for future work, both onshore and offshore, in the coming years.

As well as the full papers, the volume also includes the abstract of a talk given at the conference by Bernard Besly. The reasons for this slightly unusual presentation are that the stratigraphical nomenclature proposed in this abstract has, since the conference, become widely adopted in the industry and it is also widely cited in full papers within this volume. Its inclusion here will make it more widely accessible than if it remained confined to the abstract volume, which had only limited circulation. The abstract is published without full peer review. The absence of type sections for the proposed new formations will be rectified when the full account is eventually published, which it is hoped will be in a future volume of the Proceedings of the Yorkshire Geological Society.

The conference and this volume would not have been possible without the encouragement and financial support of the conference sponsors who are listed below. All their contributions are warmly acknowledged. We would like to single out for particular thanks Andy Spencer of GDF Britain, whose initial encouragement and support led to the planning of the meeting. We would also like to thank Duncan McLean, Mike Romano and Gill Johnson of the University of Sheffield, who were responsible for most of the arrangements at Stephenson Hall. The production of this volume has been made possible by the help that the editors have received from many referees and from the excellent support and advice received from Roger Jones of Terra Publishing.

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Referees

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