

Petroleum Geology of the Southern North Sea: Future Potential

Geological Society Special Publications
Series Editor A. J. FLEET

GEOLOGICAL SOCIETY SPECIAL PUBLICATION NO. 123

Petroleum Geology of the Southern North Sea:
Future Potential

EDITED BY

KAREN ZIEGLER

University of Western Ontario, Canada

PETER TURNER

University of Birmingham, UK

AND

STEPHEN R. DAINES

Conoco (UK) Ltd, Aberdeen

1997

Published by

The Geological Society

London

THE GEOLOGICAL SOCIETY

The Society was founded in 1807 as The Geological Society of London and is the oldest geological society in the world. It received its Royal Charter in 1825 for the purpose of 'investigating the mineral structure of the Earth'. The Society is Britain's national society for geology with a membership of around 8000. It has countrywide coverage and approximately 1000 members reside overseas. The Society is responsible for all aspects of the geological sciences including professional matters. The Society has its own publishing house, which produces the Society's international journals, books and maps, and which acts as the European distributor for publications of the American Association of Petroleum Geologists, SEPM and the Geological Society of America.

Fellowship is open to those holding a recognized honours degree in geology or cognate subject and who have at least two years' relevant postgraduate experience, or who have not less than six years' relevant experience in geology or a cognate subject. A Fellow who has not less than five years' relevant postgraduate experience in the practice of geology may apply for validation and, subject to approval, may be able to use the designatory letters C. Geol. (Chartered Geologist).

Further information about the Society is available from the Membership Manager, The Geological Society, Burlington House, Piccadilly, London W1V 0JU, UK. The Society is a Registered Charity, No. 210161.

Published by The Geological Society from:
The Geological Society Publishing House
Unit 7, Brassmill Enterprise Centre
Brassmill Lane
Bath BA1 3JN
UK
(Orders: Tel. 01225 445046
Fax 01225 442836)

First published 1997

The publishers make no representation, express or implied, with regard to the accuracy of the information contained in this book and cannot accept any legal responsibility for any errors or omissions that may be made.

© The Geological Society 1997. All rights reserved. No reproduction, copy or transmission of this publication may be made without written permission. No paragraph of this publication may be reproduced, copied or transmitted save with the provisions of the Copyright Licensing Agency, 90 Tottenham Court Road, London W1P 9HE. Users registered with the Copyright Clearance Center, 27 Congress Street, Salem, MA 01970, USA: the item-fee code for this publication is 0305-8719/97/\$10.00.

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library.

ISBN 1-897799-82-9
ISSN 0305-8719

Typeset by Aarontype Ltd, Unit 47, Easton Business Centre, Felix Road, Easton, Bristol, UK

Printed by The Alden Press,
Osney Mead, Oxford, UK

Distributors

USA
AAPG Bookstore
PO Box 979
Tulsa
OK 74101-0979
USA
(Orders: Tel. (918) 584-2555
Fax (918) 560-2652)

Australia
Australian Mineral Foundation
63 Conyngham Street
Glenside
South Australia 5065
Australia
(Orders: Tel. (08) 379-0444
Fax (08) 379-4634)

India
Affiliated East-West Press PVT Ltd
G-1/16 Ansari Road
New Delhi 110 002
India
(Orders: Tel. (11) 327-9113
Fax (11) 326-0538)

Japan
Kanda Book Trading Co.
Tanikawa Building
3-2 Kanda Surugadai
Chiyoda-Ku
Tokyo 101
Japan
(Orders: Tel. (03) 3255-3497
Fax (03) 3255-3495)

Contents

ZIEGLER, K., TURNER, P. & DAINES, S. Introduction	1
GLENNIE, K. W. History of exploration in the southern North Sea	5
GLENNIE, K. W. Recent advances in understanding the southern North Sea basin: a summary	17
GEORGE, G. T. & BERRY, J. K. Permian (Upper Rotliegend) synsedimentary tectonics, basin development and palaeogeography of the southern North Sea	31
HOWELL, J. & MOUNTNEY, N. Climatic cyclicity and accommodation space in arid to semi-arid depositional systems: an example from the Rotliegend Group of the UK southern North Sea	63
LEVEILLE, G. P., KNIPE, R., MORE, C., ELLIS, D. DUDLEY, G., JONES, G., FISHER, Q. J. & ALLINSON, G. J. Compartmentalization of Rotliegendes gas reservoirs by sealing faults, Jupiter Fields area, southern North Sea	87
LEVEILLE, G. P., PRIMMER, T. J., DUDLEY, G., ELLIS, D. & ALLINSON, G. J. Diagenetic controls on reservoir quality in Permian Rotliegendes sandstones, Jupiter Fields area, southern North Sea	105
CAMERON, N. & ZIEGLER, T. Probing the lower limits of a fairway: further pre-Permian potential in the southern North Sea	123
QUIRK, D. G. & AITKEN, J. The structure of the Westphalian in the northern part of the southern North Sea	143
QUIRK, D. G. Sequence stratigraphy of the Westphalian in the northern part of the southern North Sea	153
MIJNSSEN, F. C. J. Modelling of sandbody connectivity in the Schooner Field	169
YANG, C. S. & BAUMFALK, Y. A. Application of high-frequency cycle analysis in high-resolution sequence stratigraphy	181
Index	205