

The Value of Outcrop Studies in Reducing
Subsurface Uncertainty and Risk in Hydrocarbon
Exploration and Production

The Geological Society of London
Books Editorial Committee

Chief Editor

RICK LAW (USA)

Society Books Editors

JIM GRIFFITHS (UK)

DAVE HODGSON (UK)

PHIL LEAT (UK)

NICK RICHARDSON (UK)

DANIELA SCHMIDT (UK)

RANDELL STEPHENSON (UK)

ROB STRACHAN (UK)

MARK WHITEMAN (UK)

Society Books Advisors

GHULAM BHAT (India)

MARIE-FRANÇOISE BRUNET (France)

ANNE-CHRISTINE DA SILVA (Belgium)

JASPER KNIGHT (South Africa)

MARIO PARISE (Italy)

SATISH-KUMAR (Japan)

VIRGINIA TOY (New Zealand)

MARCO VECOLI (Saudi Arabia)

Geological Society books refereeing procedures

The Society makes every effort to ensure that the scientific and production quality of its books matches that of its journals. Since 1997, all book proposals have been refereed by specialist reviewers as well as by the Society's Books Editorial Committee. If the referees identify weaknesses in the proposal, these must be addressed before the proposal is accepted.

Once the book is accepted, the Society Book Editors ensure that the volume editors follow strict guidelines on refereeing and quality control. We insist that individual papers can only be accepted after satisfactory review by two independent referees. The questions on the review forms are similar to those for *Journal of the Geological Society*. The referees' forms and comments must be available to the Society's Book Editors on request.

Although many of the books result from meetings, the editors are expected to commission papers that were not presented at the meeting to ensure that the book provides a balanced coverage of the subject. Being accepted for presentation at the meeting does not guarantee inclusion in the book.

More information about submitting a proposal and producing a book for the Society can be found on its website: www.geolsoc.org.uk.

It is recommended that reference to all or part of this book should be made in one of the following ways:

BOWMAN, M., SMYTH, H. R., GOOD, T. R., PASSEY, S. R., HIRST, J. P. P. & JORDAN, C. J. (eds) 2016. *The Value of Outcrop Studies in Reducing Subsurface Uncertainty and Risk in Hydrocarbon Exploration and Production*. Geological Society, London, Special Publications, **436**.

RACEY, A., FISHER, J., BAILEY, H. & ROY, S. K. 2016. The value of fieldwork in making connections between onshore outcrops and offshore models: an example from India. In: BOWMAN, M., SMYTH, H. R., GOOD, T. R., PASSEY, S. R., HIRST, J. P. P. & JORDAN, C. J. (eds) 2016. *The Value of Outcrop Studies in Reducing Subsurface Uncertainty and Risk in Hydrocarbon Exploration and Production*. Geological Society, London, Special Publications, **436**, 21–53. First published online May 23, 2016, <http://doi.org/10.1144/SP436.9>

GEOLOGICAL SOCIETY SPECIAL PUBLICATION NO. 436

The Value of Outcrop Studies in Reducing
Subsurface Uncertainty and Risk in Hydrocarbon
Exploration and Production

EDITED BY

M. BOWMAN

Texas A&M University, Qatar

H. R. SMYTH

Neftex Exploration Insights, UK

T. R. GOOD

ExxonMobil, UK

S. R. PASSEY

CASP, UK

J. P. P. HIRST

Sedimentology Consultant, UK and

C. J. JORDAN

British Geological Survey, UK

2016

Published by

The Geological Society

London

THE GEOLOGICAL SOCIETY

The Geological Society of London (GSL) was founded in 1807. It is the oldest national geological society in the world and the largest in Europe. It was incorporated under Royal Charter in 1825 and is Registered Charity 210161.

The Society is the UK national learned and professional society for geology with a worldwide Fellowship (FGS) of over 10 000. The Society has the power to confer Chartered status on suitably qualified Fellows, and about 2000 of the Fellowship carry the title (CGeol). Chartered Geologists may also obtain the equivalent European title, European Geologist (EurGeol). One fifth of the Society's fellowship resides outside the UK. To find out more about the Society, log on to www.geolsoc.org.uk.

The Geological Society Publishing House (Bath, UK) produces the Society's international journals and books, and acts as European distributor for selected publications of the American Association of Petroleum Geologists (AAPG), the Indonesian Petroleum Association (IPA), the Geological Society of America (GSA), the Society for Sedimentary Geology (SEPM) and the Geologists' Association (GA). Joint marketing agreements ensure that GSL Fellows may purchase these societies' publications at a discount. The Society's online bookshop (accessible from www.geolsoc.org.uk) offers secure book purchasing with your credit or debit card.

To find out about joining the Society and benefiting from substantial discounts on publications of GSL and other societies worldwide, consult www.geolsoc.org.uk, or contact the Fellowship Department at: The Geological Society, Burlington House, Piccadilly, London W1J 0BG: Tel. +44 (0)20 7434 9944; Fax +44 (0)20 7439 8975; E-mail: enquiries@geolsoc.org.uk.

For information about the Society's meetings, consult *Events* on www.geolsoc.org.uk. To find out more about the Society's Corporate Affiliates Scheme, write to enquiries@geolsoc.org.uk.

Published by The Geological Society from:

The Geological Society Publishing House, Unit 7, Brassmill Enterprise Centre, Brassmill Lane, Bath BA1 3JN, UK

The Lyell Collection: www.lyellcollection.org

Online bookshop: www.geolsoc.org.uk/bookshop

Orders: Tel. +44 (0)1225 445046, Fax +44 (0)1225 442836

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 of London 2016. No reproduction, copy or transmission of all or part of this publication may be made without the prior written permission of the publisher. In the UK, users may clear copying permissions and make payment to The Copyright Licensing Agency Ltd, Saffron House, 6–10 Kirby Street, London EC1N 8TS UK, and in the USA to the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, USA. Other countries may have a local reproduction rights agency for such payments. Full information on the Society's permissions policy can be found at: www.geolsoc.org.uk/permissions

British Library Cataloguing in Publication Data

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

ISBN 978-1-78620-140-9

ISSN 0305-8719

Distributors

For details of international agents and distributors see:

www.geolsoc.org.uk/agentsdistributors

Typeset by Nova Techset Private Limited, Bengaluru & Chennai, India

Printed and bound by CPI Group (UK) Ltd, Croydon CR0 4YY

Acknowledgements

The Geological Society thanks the following companies for their generous sponsorship of the Petroleum Group and the conference that led to

this volume. The Petroleum Group is thanked for its contribution towards the colour printing in this volume.



Petroleum Group corporate sponsors at the time of the conference:



Statoil

Sponsors of the 'Reducing Subsurface Uncertainty and Risk Through Field-Based Studies' conference:

