

Petroleum Geoscience

Editor-in-Chief: **P A F Christie**, Schlumberger Cambridge Research, UK (email: pafc1@slb.com)
Co-Editors: **A J Fraser**, BP Exploration, Sunbury, UK (email: alastair.fraser@uk.bp.com) and **P F Worthington**, Gaffney, Cline and Associates, Singapore (email: pworthington@gaffney-cline.com)
Production Editor: **S Oberst**, Geological Society Publishing House, Bath (email: sally.oberst@geolsoc.org.uk)

The journal is abstracted and/or indexed in *Current Contents*, *Science Citation Index*, *GeoArchive*, *GeoRef*, *Geobase*, *Petroleum Abstracts*, *Geological Abstracts*, *Mineralogical Abstracts* and *Cambridge Scientific Abstracts*

To advertise in Petroleum Geoscience contact:

Paul Turp
Tel: +44 (0)117 9232951
E-mail: paul.turp@societymediasales.co.uk
Society Media Sales Ltd, Unit 25, The Coach House, 2 Upper York Street, Bristol, BS2 8QN

CONTENTS – Volume 15, No 3

Interplay between igneous and tectonic processes in prospective sedimentary basins

Guest editors: Nick Schofield, Jonathan Turner & John Underhill

Introduction and rationale

by N Schofield, J P Turner & J R Underhill 195

Role of intrusion-induced salt mobility in controlling the formation of the enigmatic ‘Silverpit Crater’, UK Southern North Sea
by J R Underhill 197

The extension discrepancy and syn-rift subsidence deficit at rifted margins
by T J Reston 217

Mesozoic–Cenozoic exhumation and volcanism in Northern Ireland constrained by AFTA and compaction data from the Larne No. 2 borehole

by S P Holford, P F Green, R R Hillis, J P Turner & C T E Stevenson 239

Back-stripped 3D seismic data: A new tool applied to testing sill emplacement models

by J R Smallwood 259

Insights into magmatism in volcanic margins: bridge structures and a new mechanism of basic sill emplacement – Theron Mountains, Antarctica

by D H W Hutton 269

Rotation of the Falklands microplate reassessed after recognition of discrete Jurassic and Cretaceous dyke swarms

by P Stone, G S Kimbell & P C Richards 279

Petroleum Geoscience (ISSN 1354-0793) is published in February, May, August and November by the Geological Society Publishing House for the Geological Society, London and the European Association of Geoscientists and Engineers.

Subscriptions (volume 15, 2009): The subscription rate is £305 (UK), £305/\$US610 (Europe & USA) and £350/\$US700 (rest of world) per volume, including postage and air-speeded delivery. Single issue price is £84 (UK), £84/\$US168.00 (Europe & USA) and £97/\$US195 (rest of world).

Trade subscriptions should be addressed to Journals Subscription Dept, Geological Society Publishing House, Unit 7, Brassmill Enterprise Centre, Bath BA1 3JN, UK (tel. +44(0) 1225 445046; fax +44 (0)1225 442836).

Periodical postage paid at Middlesex, N.J. *Postmaster:* send address changes to *Petroleum Geoscience*, The Geological Society, c/o Pronto Mailers, PO Box 177, Middlesex, NJ 08846.

© 2009 The Geological Society of London and EAGE. Except as otherwise permitted under the Copyright, Designs and Patents Acts, 1988, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the Publishers or in the case of reprographic reproduction in accordance with the terms of licences issued by the Copyright Licensing Agency, 90 Tottenham Court Road, London W1P 9HE, UK. Enquiries concerning reproduction outside these terms should be sent to the Publishers at the Bath address. Users registered with the Copyright Clearance Center, 27 Congress Street, Salem, MA 01970, USA: the item-fee code for this journal is 1354- 0793/09 \$15.00.

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

Cover illustration: Seismic line from the Silverpit Basin of the Southern North Sea depicting the prominent folds resulting from Early Cenozoic salt mobility within the Zechstein Supergroup. The zones of seismic disturbance that characterize the synclinal axes equate with Palaeogene igneous dykes, the intrusion of which is contemporaneous with halokinesis and causes the apparent thinning of the Chalk Group evident in the section. The intrusion and associated heat flow provides an attractive mechanism by which to re-interpret the genesis of the enigmatic ‘Silverpit Crater’ that has previously been ascribed to meteorite impact. Photo provided by John Underhill (The University of Edinburgh) and shown by permission of Rupert Hoare of the data provider, WesternGeco.