



Distribution of Turbidite Elements From a Small, Sandy Basin Floor Fan, Tanqua Karoo, South Africa

*William R. Morris and Mark H. Scheihing
ConocoPhillips Alaska Inc.*

**Note: AGS meetings will be at the BP Energy Center for 2009-2010.
Please check the website (www.alaskageology.org) and issues of the AGS newsletter for updates.
This newsletter promotes the January luncheon talk of the Alaska Geological Society,
to be held Thursday, January 21st, at the BP Energy Center.**

The extraordinarily well-exposed outcrops of the Permian-age Skoorsteenbergh Formation in the Tanqua Karoo sub-basin of South Africa provide excellent examples of deepwater basin-floor fan systems. There are a total of five sand-rich fans developed within the Tanqua Karoo, Fans 1 through 5, with major axes trending from north-south to east-west across the basin. Several fans, especially Fan 3, have almost continuous exposure from proximal to distal fan settings. These fans can be subdivided into so-called "turbidite elements", basically facies associations characterized by contrasting physiographic location within the fan system, constituent facies, dominant depositional processes and resulting reservoir architecture.

The major turbidite elements considered here include proximal channel (thalweg), overbank, crevasse splay and scours, erosional channel and aggradational channel fill and amalgamated and layered lobe / sheet deposits. Examination of proximal channel systems in Fan 3 shows that distinguishing true channels from channel-form bodies such as thalweg deposits and scours can be difficult and such bodies may be of similar size and filled with similar facies. Facies proportions within such channel systems can vary significantly, even over short distances. Associated overbank and crevasse splay elements generally have an overall tabular character, interrupted by lenticular and channel-form bodies associated with proximal crevasse splay and scour fill. However, unlike channel and associated channel thalwegs, the fill is dominated by T_{cd} beds. Although of limited vertical permeability because of pervasive T_{cd} beds, net-to-gross sand in these facies can be relatively high and lateral continuity of individual sand packages of overbank and

AGS Luncheon

Date & Time: Thursday, Jan. 21st, 11:30 am – 1:00 pm

Program: Basin Floor Fan, Tanqua Karoo, South Africa

Speaker: Mark Scheihing / William Morris

Place: BP Energy Center

Reservations: Please make your reservation before noon Tuesday, Jan. 19th, 2010.

Cost: Seminar only, no meal: Free
Reserve a box lunch: \$13
Nonmember: \$15

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www.alaskageology.org

crevasse splay elements can extend over thousands of feet.

Volumetrically, lobe / sheet elements dominate these fans. A number of recently published models of lobe / sheet fan deposition invoke construction by networks of distributary channels, in some models, extending to the terminus of the fans. However, outcrops of the Tanqua Karoo fans clearly show broadly tabular bodies, generally of high lateral continuity and exhibiting compensation and off-stacking. Channel-form bodies may not be true channels, but rather, more localized scours. In addition, rather than decreasing gradually in net-to-gross and high density turbidite content, lobe / sheet elements in the Tanqua

Karoo typically exhibit relatively high net-to-gross and high proportions of Tab beds to the fan terminus.

A key to modeling fluid flow behavior in lobe /sheet elements is correctly capturing laterally continuous inter- and intra-fan shales (deterministic elements) and more laterally discontinuous intra-fan shales (stochastic elements). In addition, models need to represent the lateral continuity of turbidite elements and the transition between different turbidite elements. The fine-scale of bedding features in turbidite systems, particularly lobe / sheet system requires effective properties models of these features to capture the effects of thin facies types below even the resolution of detailed geological models.

About the Authors:

Mark H. Scheihing is currently Principal Geologist in the Western North Slope group of ConocoPhillips Alaska, Inc. where he works on reservoir characterization and geocellular modeling of assets across the Alaskan business units. Prior to joining ConocoPhillips in 2000, he worked in the upstream technology unit of ARCO in Plano, Texas, leading a group of reservoir geologists involved in technical service, training and applied technology development projects for ARCO upstream companies and has worked in various aspects of reservoir description during his time at ARCO. Before joining ARCO in 1982, he received his B.A. and Ph.D. degrees in geology from the University of Pennsylvania and his M.S. in geology from the University of Illinois at Urbana.

William R Morris is currently a Staff Geologist in the New Plays group of ConocoPhillips Alaska, Inc. He has also worked as a sedimentologist in the Technology Group for ConocoPhillips, the upstream technology unit of ARCO, Plano, and as a Development Geologist at Tarn Field for ARCO Alaska. Before joining ARCO in 1990, he received his MS and Ph.D. degrees in geology from the University of California, Santa Barbara and his BS. in geology from the University of New Mexico.

The Alaska Geological Society

LUNCHEON SCHEDULE 2009 - 2010

Updates on the web at:
<http://www.alaskageology.org>

September 2009	Thurs., Sept. 17 th , Paul O'Sullivan, Apatite to Zircon, Inc., Timing of Brooks Range Uplift and Denudation: A Summary of Fission Track Results Over the Last 25 Years.
October 2009	Thursday, Oct. 15 th , Steve Wright, Chevron, Cook Inlet Gas Shortage: Fact of Fiction?
November 2009	Thursday, Nov. 19 th , Stephen Hubbard, University of Calgary, High Relief Clinoform Development
December 2009	Thursday, Dec. 10 th , John Howell, University of Bergen, Laser Scanning and Geological Modeling.
January 2010	Thursday, Jan. 21 st , William Morris / Mark Scheihing, ConocoPhillips Alaska, Inc., Tanqua Karoo, South Africa
February 2010	Thursday, Feb. 18 th , Mark Myers, DNR, AGIA
March 2010	Thursday, March 18 th , Pat Druckenmiller, UAF, Mesozoic Marine Reptiles
April 2010	Wednesday, April 15 TH , Don Gautier, USGS, Circum-Pacific Resource Assess.
May 2010	Thursday, May 20 th , Brigitte Martini, Ormat, Geothermal Prospects of Mt. Spurr

From the President's Desk

Happy 2010 to you! 2010 greets us with the promise to be a year of growth for the country's and Alaska's economy. One piece of news that supports that hopeful feeling is Governor Parnell's recent appointment of one our own, Bob Swenson, to be the In-State Gas Line Project Manager. As you well know, securing a sound gas line agreement is a hugely important, but complex, step in Alaska's path to a successful future. Although we all like to take advantage of Bob's easy-going, fun-loving character by exchanging jabs with him, I think we all realize too that Bob is a very talented and capable professional and that the news of his appointment bodes well for the state of Alaska. Bob has a pragmatic attitude and a no-nonsense, straight – shooting approach to problem solving and I, for one, am confident that he will do his honest best for Alaska and that he will achieve results. So, although AGS is not supposed to take political stands, I think we can be safe in supporting Bob's appointment, feeling proud about it, and wishing

him success. Congratulations Bob...now go get us a gas line!

Also, I want to thank you all for supporting our scholarship program – we have seen an uptick in giving and I hope this continues. One more pitch for that: we are not yet registered to received “Pick-Click-Give” donations through the PFD application process (we plan to be on the list next year), but I hope you will remember our Scholarship Funds when you fill in your PFD application. Please consider directing some of your windfall toward that ultimate wellspring of our collective wealth – geoscience education – by supporting AGS's Scholarship Programs. Just surf over to Alaskageology.org when you finish with your PFD application and do your part.

See you at the January 21st luncheon,

Tom (aka Brad Childress)

AGS SCHOLARSHIPS

The Alaska Geological Society is proud to offer several scholarships annually to undergraduate and graduate students conducting geoscience research projects in Alaska. These scholarships include AGS scholarships and the Don Richter Memorial Scholarship. The goal of the AGS scholarship program is to foster and support interest in Alaskan geology, and to increase geologic knowledge of our state. Detailed information about the scholarships, and applications for the scholarships, can be obtained from our website.

As of July 2009, the Alaska Geological Society has official 501c3 nonprofit status with the IRS. It is now possible to make tax-deductible contributions to AGS to help us sponsor field trips, workshops, technical conferences, and scholarships. The AGS Board of Directors would like to establish self-sustaining scholarship fund accounts. To celebrate our new tax-deductible status, please consider making a contribution to one of our scholarship funds, or to our general fund, this year. If you work for an employer who matches charitable or educational contributions, your contribution can significantly help us to increase our scholarship fund accounts as well as the size of the grants that AGS can afford to award to students. It is easy to make secure donations on our website, and we also happily accept checks by mail.

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Donations to these scholarship funds are tax deductible*

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The **American Geological Institute** provides a comprehensive list of national and international geoscience meetings at: <http://calendar.agiweb.org>

Local Meetings:

American Water Resources Association—Alaska Section

<http://www.awra.org/state/alaska/index.html>

Alaska Geological Society

<http://www.alaskageology.org>

Lunch meetings are held monthly September through May in Anchorage. For more information, contact Jim Clough, 451-5030.

Alaska Miners Association

<http://www.alaskaminers.org/>

The Anchorage branch of the AMA holds weekly meetings at 7 AM every Friday at the Denny's on Northern Lights and Denali. They hold regular luncheon meetings in association with SME. For more information, contact the AMA office at 563-9229.

American Institute of Professional Geologists

<http://www.aipg.org>

AIPG holds regular quarterly evening Section meetings in Anchorage and Fairbanks. For more information contact Mark Lockwood, President, at Shannon & Wilson, Inc., in Fairbanks, 907-458-3142.

Chugach Gem & Mineral Society

<http://www.chugachgms.org>

CG&MS holds all meetings at the First United Methodist Church on 9th Avenue. Contact their hotline at 566-3403 for information on regular monthly business meetings, monthly potlucks, and guidebook sales, including the new Alaska Rockhound Guidebook.

Geophysical Society of Alaska

<http://gsa.seq.org/>

Luncheon meetings are held monthly September through May at the ConocoPhillips Tower. For more information, contact Phil Rorison, 265-6321

Society of Petroleum Engineers

<http://alaska.spe.org/>

For more information, contact Jack Hartz at 375-8239.

UAS Environmental Science Program

<http://www.uas.alaska.edu/envs>

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The Alaska Geological Society, Inc.
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The Alaska Geological Society is an organization which seeks to promote interest in and understanding of Geology and the related Earth Sciences, and to provide a common organization for those individuals interested in geology and the related Earth Sciences.

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EDITOR
Greg Wilson
ConocoPhillips Alaska, Inc.,
P.O. Box 100360
Anchorage AK 99510-0360
e-mail: Gregory.c.wilson@conocophillips.com
(907) 263-4748 (office)

MEMBERSHIP INFORMATION

AGS annual memberships expire November 1. The annual membership fee is \$15/year. You may download a membership application from the AGS website and return it at a luncheon meeting, or mail it to the address above.

Contact membership coordinator Mark Olson with changes or updates (e-mail: gregory.c.wilson@conocophillips.com; phone: 907-263-4690)

All AGS publications are now available for on-line purchase on our website. Check to see the complete catalogue.
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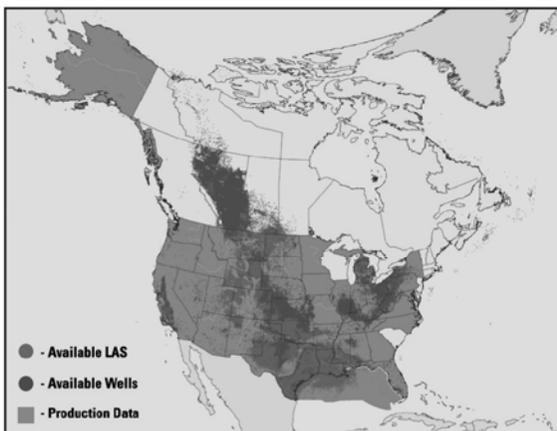
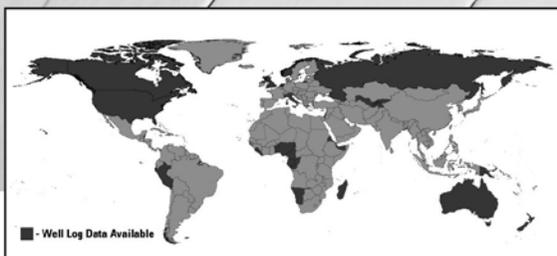
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