

Mark W. Shuster

Bureau of Economic Geology
Jackson School of Geosciences
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Executive Summary

Passionate Energy leader with a proven track-record of successful business delivery in Oil & Gas Exploration and Research in the United States and Internationally. Thirty years of Industry experience as Associate Director (current), Executive Vice President, Vice President, Manager and Geologist. PhD in Geology.

Professional Experience

September 2016 - ongoing Bureau of Economic Geology
University of Texas, Austin
Associate Director Energy
Energy Division

Accountable for the Bureau of Economic Geology's Energy Division. Coordination of Energy Research Programs. Ca. 125 Research and Support Staff.

January 2016 – August 2016 Shell Energy Resource Company
Houston, Texas
Executive Vice President
Arctic (Alaska)
Unconventional Resources

Accountable for Shell's Alaska leasehold comprising 7990 sq. km. offshore (Chukchi and Beaufort) and over 5000 sq. km. of onshore (Foothills); oversight of Arctic capability and theme. Scope comprises 165 staff and \$ 400 million expenditure.

Define and execute Alaska transition strategy post-2015 Chukchi drilling campaign including wind-down of operations, contract management, engagement with Federal, State and Native Alaskan stakeholders and re-assessment of Alaskan portfolio and organization. Intent is to preserve and extract value from the current leasehold and position Shell for future Arctic options. Accountable for Health, Safety, Security and Environment of staff and contractors.

May 2013 – January 2016 Shell Energy Resource Company
Houston, Texas
Executive Vice President
Americas Exploration

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Directly accountable for Shell's conventional exploration in North and South America (excluding Alaska). Scope comprises 500 staff and annual Exploration budget of \$1.3 billion.

Formulation and execution of Shell America's Exploration strategy with focus on organic value creation and high-grading Shell's portfolio through Shell's organizational, technical, operational and commercial capabilities. Highlights include multiple commercial discoveries in Gulf of Mexico successful bid (\$1.3 billion) on Libra (Brazil) and start-up of Libra Joint Venture; establishment of offshore Nova Scotia Shelburne venture; execution of Colombia deepwater venture; divestment and dilution of exploration portfolio to manage risk. Liaise with Industry and Government leaders to co-create sustainable value for Industry and host countries. Accountable for Health, Safety, Security and Environment of staff and contractors.

Reshaped Exploration strategy to increase performance, value delivery and build sustainable exploration business to enable growth while managing risk to acceptable levels. Implemented change program to build exploration excellence, stimulate innovation and strengthen leadership development.

Member of Upstream Member of Americas Leadership Team

May 2012 – May 2013

Shell International Exploration & Production
Dubai, U.A.E.

Vice President MENA Exploration
Middle East/North Africa

Directly accountable for Exploration and Appraisal in Shell's MENA Operating Units and New Ventures including Egypt, Libya, Oman, Qatar and Turkey. Scope comprised ca 200 staff and annual Exploration budget of \$250 million.

Highlights included successful near-field exploration in Egypt and Oman, delivery of new exploration venture for Shell in Black Sea, oil shale characterization in Jordan, and start-up of Qatar exploration drilling and implementation of Shell's exit from Libya.

Additional duties included: Member of Upstream International Exploration Leadership Team

May 2011 – May 2012

Shell International Exploration & Production

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Houston, Texas, USA
Chief Exploration Geologist
Royal Dutch Shell

Directly accountable for Exploration capability development and technical assurance for Global Exploration in Shell.

Delivered and implemented strategic framework for Exploration capability development across Shell. Provided assurance on major exploration projects. Liaised with Universities and Professional Societies to foster technology and capability development and leverage for talent recruitment.

Additional duties included: Shell's representative on the Corporate Advisory Board for the American Association of Petroleum Geologists.

April 2008 – May 2011

Shell Exploration & Production Co.
Houston, Texas, USA
Exploration Manager Greenfield Exploration
Gulf of Mexico

Directly accountable for Gulf of Mexico New Ventures exploration. Manage annual budget of more than \$300 million and team of 45 staff. Accountable for Gulf of Mexico exploration strategy and prosecution of deepwater exploration programs, lease sales, commercialization and regional studies. Liaised with drilling, seismic processing, production and development assets to maximize opportunity and volume delivery. Accountable for Health, Safety, Security and Environment of staff and contractors.

Delivered Appomattox discovery – second largest commercial discovery in the Gulf of Mexico. Built extensive acreage position in the Gulf of Mexico. Managed Shell's effort to restart drilling in the Gulf of Mexico after the BP DW Horizon tragedy. Liaised with US Government Regulators, Legislators, Oil & Gas Companies and Industry Associations. Delivered Industry's first well in Gulf of Mexico under revised U.S. regulatory framework.

Additional duties include: Vice President, Shell Offshore Inc., Member of Business Continuity Team (disaster recovery), Exploration Americas Leadership Team.

May 2005 – April 2008

Shell Exploration & Production Co.
Houston, Texas, USA

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Exploration Manager Maturation / Appraisal
Gulf of Mexico and Newfoundland

Directly accountable for GoM exploration strategy and execution of Shell-operated and Non-Shell operated deepwater exploration and appraisal program. Managed annual budget of more than \$160 million and team of 40 staff to find and appraise oil resources. Accountable for commercialization of non-strategic exploration assets in the Gulf of Mexico and maturation of discoveries. Maintained and developed relationships with partners and other Operators in the Deepwater Gulf of México.

Managed Shell's Orphan Basin (offshore Newfoundland, Canada) interests.

August 2001 – May 2005

Petroleum Development Oman
Muscat, Oman
Exploration Asset Manager:
Oman Exploration

Led exploration and evaluation activities and operations for Petroleum Development Oman's concession (114,000 sq. km). Accountable for executing Petroleum Development Oman's exploration program comprising ~ \$ 135 million per year and over 50 staff. Strong focus on staff development to build sustainable capability for Oman. Managed portfolio to successfully deliver oil and gas resources for Petroleum Development Oman and the Oman Government. Liaised with Government and Private Shareholders (Shell, Total, and Partex) on a routine basis. Interfaced with Production Assets and functional organizations. Drove strong Health, Safety and Environment performance.

July 2000 – July 2001

Woodside Energy Ltd (New Ventures)
Perth, Australia
Exploration Manager:
Southeast Australia

Managed & operated southeast Australian exploration portfolio (5 exploration licenses – 3 Joint Ventures). Managed Joint Venture and stakeholder relationships and liaised with federal, state and local government agencies and officials. Led Exploration program in environmentally sensitive areas (offshore Victoria & South Australia). Shaped & implemented Eastern States exploration strategy. Oversaw new opportunity evaluations & acquisitions in south-eastern Australia. Controlled total budget of ~ US\$ 26

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million. Successfully delivered major gas discoveries for Woodside's Eastern States gas business.

January 1999 – June 2000

Woodside/Shell Alliance (New Ventures)
Perth, Australia

Manager:

Geological Services & SE Australia

Managed company-wide geological services for Woodside & Shell. Directly supervised 25 staff. Co-ordinated frontier acreage and farm-in evaluation/acquisitions resulting in three successful license rounds and two farm-ins. Managed study/bidding group with multi-national partners. Managed external communications with Australian authorities, non-government organizations and partners. Company focal point for exploration Research and Development liaising with Australian Universities and Research Institutions.

April 1997 - December 1998

Shell Company of Australia Ltd
Melbourne, Australia

Senior Exploration Geologist:

Growth Co-coordinator

Co-ordinated evaluations for new acreage acquisitions. Supervised project team. Acted as technical committee representative for all joint venture study groups. Successful acquisition of six exploration permits.

February 1996 - April 1997

Shell Company of Australia Ltd.
Melbourne, Australia

Senior Exploration Geologist:

Northwest Australia

Lead interpreter for gazettal (new acreage) acquisitions. Lead interpreter for Browse Basin WA-35-P exploration (Adele discovery). Successful acquisition of several blocks including new play entry (Petrel Basin) for Shell.

February 1995 - February 1996

Shell International Central
Office, The Hague

Senior Geologist:

Venezuela & Nigeria

Play/lead generation and Greenfield acreage evaluation including Venezuela exploration. Generated Venezuelan prospect portfolio for bid round and & conducted Nigeria geological studies.

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June 1991 - February 1995

Shell Research, Rijswijk

Research Geologist:

Global Studies:

Reservoir prediction/characterization of the Cristobal Colon gas fields, Venezuela using 3-D seismic. Application of seismic inversion and visualization techniques. Regional evaluation and play mapping in SE Asian basins including, Brunei, Indonesia (NE Sumatra and Java Sea) and Malaysia (offshore Sabah). Key player in evaluation of Brunei deep water. Keladi-1 exploration success in Indonesia.

Consultation for Greenfield exploration ventures. Exploration staff training (sequence stratigraphy) & Co-leader Geological Seminar, Spanish Pyrenees. Liaised with European Universities.

March 1986 - May 1991

Bellaire Research Center
(Shell Development Co.),
Houston, TX

Research Geologist:

Global Geology

Regional studies of the NW Africa and North American Atlantic Margins, offshore Somalia, Permian Basin, and onshore Texas. Worked closely with Pecten, Shell Western E&P and Shell Offshore to identify and evaluate prospective areas.

Exploration training: Led geological course in Colorado-Wyoming Rockies. Taught geological courses for Shell.

1982 - 1985

University of Wyoming, Laramie, WY

Lecturer & Teaching Assistant:

Sedimentology

1981 (Spring/Summer)

ARCO Coal Co., Denver, CO

Assistant Geologist:

Coal Geology

1980 (Summer)

Los Alamos Scientific
Laboratories, Los Alamos, NM

Geological Technician:

Radioactive Waste Disposal

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Education

1986 PhD (Geology) University of Wyoming,
Laramie, WY

1980 BS (Geology) University of the Pacific,
Stockton, CA

Professional Awards and Activities

Best Paper Award (1998), Australian Petroleum Production and Exploration Association Annual Meeting. Paper entitled "Neogene tectonics, Greater Timor Sea, offshore Australia, implications for trap risk".

Best Paper Award (1993), American Association of Petroleum Geologists, Southwest Section (w/ David Childers). Paper entitled "High resolution stratigraphic forward modeling: a case study of the Lower-Middle San Andres Sequence, Permian Basin"

John B. Runge Award (1983), Rocky Mountain Section, American Association of Petroleum Geologists Annual Meeting

Board Member and Membership Chair of American Geoscience Institute Foundation

Trustee of the American Association of Petroleum Geologist Foundation

Advisory Committee Member, XPrize

Board Member of the Energy & Geoscience Institute

Shell Representative of National Offshore Industry Association

Member of the Geological Society of America

Member of the American Association of Petroleum Geologists

Co-chair of 2015 Shell's United Negro College Fund Walk for Education

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Bibliography and Select Oral Presentations

Refereed Publications (external)

Peters, J.M., J.B. Filbrandt, J.P. Grotzinger, M.J. Newall, M.W. Shuster and H.A. Al-Siyabi 2003. Surface-piercing salt domes of interior North Oman, and their significance for Ara carbonate 'stringer' hydrocarbon play. *GeoArabia*, v.8, no. 2, p. 231-270.

Castillo, D.A., Bishop, D.J., Donaldson, I., Kuek, D., de Ruig, M., Trupp, M., and Shuster, M.W., 2000, Trap integrity in the Laminaria High - Nancarrow Trough region, Timor Sea: Prediction of fault seal failure using well-constrained stress tensors and fault surfaces interpreted from 3D seismic, *APPEA Journal*, v. 40.

Shuster, M.W., Eaton, S., Wakefield, L.L and Kloosterman, H.J., 1998, Neogene tectonics, Greater Timor Sea, offshore Australia: Implications for Trap Risk, *APPEA Journal*, v. 38, Part I, p.351-379.

Shuster, M.W. and Aigner, T., 1994, 2-D Synthetic seismic and log cross section from stratigraphic forward models, *Amer. Assoc. Petrol. Geol. Bull.*, v. 78, no.3, p.409-431.

Shuster, M.W. and Steidtmann, J.R., 1991, Discussion on elastic flexure with compressive thrusting of the Green River Basin, Wyoming, U.S.A., *Geological Magazine*, p. 543-545.

Steidtmann, J.R., Middleton, L.T., and Shuster, M.W., 1989, Post-laramide (Oligocene) uplift in the Wind River Range, Wyoming, *Geology*, v. 17, p. 38-41.

Shuster, M.W., and Steidtmann, J.R., 1988, Tectonic and sedimentary evolution of the northern Green River Basin, western Wyoming, in Schmidt, C.J., and Perry, W.J., eds., *Interaction of the Rocky Mountain foreland Cordilleran thrust belt: Geological Society of America Memoir 171*, p. 515-529.

Shuster, M.W., and Steidtmann, J.R., 1987, Fluvial - sandstone architecture and thrust-induced subsidence, northern Green River Basin, Wyoming, in Ethridge, F.G., Flores, R.M., and Harvey, M.D., eds., *Recent Developments in Fluvial Sedimentology, Soc. Econ. Paleont. Mineral. Pub. No. 39*, p. 279 - 285.

Shuster, M.W., 1986, The origin and sedimentary evolution of the northern Green River Basin, western Wyoming, [PhD dissertation], Laramie, University of Wyoming, 323 p.

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Heller, P.L., Bowdler, S.S., Chambers, H.P., Coogan, J.C., Hagen, E. S., Shuster, M.W., Winslow, N.S. and Lawton, T.F., 1986, Timing of initial thrusting in the Sevier orogenic belt, Idaho-Wyoming and Utah, *Geology*, v. 14, p. 388-391.

Hagen, E.S., Shuster, M.W., and Furlong, K.P., 1985, Tectonic loading subsidence of intermontane basins: Wyoming foreland province, *Geology*, v. 13, p. 585 - 588.

Select Oral Presentations, Keynotes & Panel Participation (external)

Testimony to the United States House of Representatives Committee on Natural Resources, "Oversight Hearing on "Examining the Future Impacts of President Obama's Offshore Energy Plan." 15 April, 2016, Washington D.C..

Shuster, M.W., 2014, Learnings from the Energy Industry, Rio Oil & Gas Conference, Rio De Janeiro, Brazil

Shuster, M.W., 2014, The key to unlocking Deepwater Success, Sixth Annual Colombia Oil & Gas Conference, Cartagena, Colombia

Shuster, M.W., 2013, Risk or reward ? Deepwater Exploration in the South Atlantic, Offshore Technology Conference, Rio De Janeiro, Brazil

Shuster, M.W., 2013, Are we keeping up ? Unlocking America's Energy Potential, United States Energy Association, Washington, D.C., USA.

Shuster, M.W., 2009, Deepwater Exploration Challenges, 13th SPE Gulf of Mexico Deepwater Technical Symposium 2009, New Orleans, USA.

Hiebert, S., Mazrui, M., Al Harthy, M., Harris, K., Al Hadrami, M., Blonk, B. and Shuster M., 2006, Exploration Success in Northern Oman: PDO Opens up an Unconventional Oil Play, Canadian Society of Petroleum Geologists, 2006

Shuster, M.W., 2003, The Ara and Haima Plays in Oman – Exploration for oil and gas in terminal Neoproterozoic and Lower Paleozoic reservoirs. Presented at the International AAPG 2003 meeting, Barcelona, Spain.

Shuster, M.W., Castillo, D.A., and Eaton, S., 2000, A Neogene-Recent tectonic model for the Timor Sea area, Offshore Australia: implications for trap and charge. Presented at the International AAPG 2000 meeting, Bali, Indonesia.

Shuster, M.W., Eaton, S., Wakefield, L.L. and Kloosterman, H.J., 1998, Neogene tectonics, Greater Timor Sea, offshore Australia: Implications for Trap Risk, APPEA conference, Canberra.

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Shuster, M.W. and Aigner, T., 1994, 2-D Synthetic seismic and log cross section from stratigraphic forward models, Amer. Assoc. Petrol. Geol. International Meeting, The Hague.

Shuster, M.W., and Childers, D.W., 1994, High resolution stratigraphic forward modeling: a case study of the Lower-Middle San Andres Sequence, Permian, Basin, Amer. Assoc. Petrol. Geol. International Meeting, The Hague.

Shuster, M.W., and Childers, D.W., 1992, High resolution stratigraphic forward modeling: a case study of the Lower-Middle San Andres Sequence, Permian, Basin, Amer. Assoc. Petrol. Geol. Annual Meeting, Calgary.

Shuster, M.W. and Lawrence, D.T., 1991, Controls on passive margin stratigraphy: Seismostratigraphic and basin modeling evaluation of the Georges Bank Basin, Amer. Assoc. Petrol. Geol. Annual Meeting, Dallas, Texas.

Shuster, M.W. and Lawrence, D.T., 1990, Seismostratigraphic analysis of the Georges Bank Basin, U.S. Atlantic margin, geol. Soc. America Annual Meeting, Dallas, Texas.

LeFebre, G.B., Steidtmann, J.R., and Shuster, M.W., 1987, Laramide basin subsidence and basement uplift in the Rocky Mountain foreland of Wyoming, Geol. Soc. of America National Meeting. (LeFebre presented).

Shuster, M.W., and Steidtmann, J.R., 1986, Tectogenic sedimentary fill and subsidence history of the Green River Basin, western Wyoming, Geol. Soc. America, Rocky Mountain Section Meeting, Tucson.

Steidtmann, J.R., Shuster, M.W. and LeFebre, G.B., 1986, Laramide basin subsidence and basement uplift in Rocky Mountain foreland of Wyoming, Amer. Assoc. Petrol. Geol. Annual Meeting. (Steidtmann presented).

Shuster, M.W., and Steidtmann, J.R., 1985, Fluvial architecture and tectonic setting of Campanian strata, Hoback Basin, Wyoming, Third International Fluvial Sedimentology Conference (IAS), Ft. Collins, Colorado.

Southwell, E.S. and Shuster, M.W., 1985, Nonmarine biogenic structures in fluvial facies of the Lower Tertiary, greater Green River Basin, Wyoming, Soc. Econ. Paleont. Mineral. Annual Meeting, Golden, Colorado. (Southwell presented).

Shuster, M.W., and Steidtmann, J.R., 1984, Origin and development of Northern Green River Basin: a stratigraphic and flexural study, Amer. Assoc. Petrol. Geol. Annual Meeting, San Antonio, Texas.

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Shuster, M.W., and Steidtmann, J.R., 1984, Fluvial architecture and tectonic setting of Campanian strata, Hoback Basin, Wyoming, Geol. Soc. America Annual Meeting, Reno, Nevada.

Steidtmann, J.R., Hurst, D.J. and Shuster, M.W., 1984, Structural evolution of part of the Wyoming thrust belt and foreland: a sedimentary-tectonic approach, Geol. Soc. America Annual Meeting, Reno, Nevada. (Steidtmann presented).

Shuster, M.W. and Steidtmann, J.R., 1983, Origin and development of Northern Green River Basin: a stratigraphic and flexural study, Amer. Assoc. Petrol. Geol. Rocky Mountain Section Meeting, Billings, Montana.