Curriculum Vitae

Tom Bjorklund

Research Scientist and Oil and Gas Consultant
Department of Earth and Atmospheric Sciences
University of Houston
4800 Calhoun Rd. Houston,
TX 77204-5006
Phone=832-816-9982
email=tbjorklund@uh.edu

SUMMARY

Dr. Bjorklund has supervisory and technical experience with three major oil and gas companies that range from exploitation and close-in exploration in the West Coast, Rocky Mountain and Mid-continent areas of the U.S. to international operations in Trinidad, the South China Sea and the NW Territories of Pakistan. He has broad-based skills in structural geology, reservoir description, reserve estimation and risk-weighted prospect analysis. He has led multidisciplinary teams responsible for geologic operations on drilling wells in a wide range of geographic settings. He has experience with UNIX workstations, the SMT Kingdom suite, 2DMove, ArcInfo and the application of advanced seismic attributes to assess subsurface reservoirs for CO2 sequestration potential. His research interests are the tectonics and petroleum potential of California and climate change issues. Dr. Bjorklund has been associated with the University of Houston since 1995. He is a Research Scientist in the Department of Earth and Atmospheric Science and petroleum industry consultant.

RESEARCH INTERESTS

The focus of current research is (1) to better understand the structural evolution of the Los Angeles basin area and the continental borderland region with emphasis on the use of seismic data to characterize the deep structure of offshore basins and (2) to clarify climate change issues by applying oil and gas industry uncertainty analysis methodology.

Areas of Expertise: Active Tectonics, Petroleum Geology

ACADEMIC ACCOMPLISHMENTS

Degrees

Ph.D. in Geology, University of Houston, 1995-2002 Advisor: K. Burke
Dissertation: Evolution of the Whittier fold-fault system of the northeastern Los Angeles basin, California

M.A. in Geology (math minor), University of Texas, 1960-1962 Advisor: W. R. Muehlberger *Thesis: Structure of Horse Mountain anticline, Brewster County, Texas*

B.S. in Geology (with honor), California Institute of Technology, 1956-1960 Advisor: R. H. Jahns

Continuing Education

Post-graduate university courses in engineering mathematics, operational calculus, reservoir engineering, elasticity and plasticity and the theory of seismic computations. Industry courses in well logging, reservoir engineering, subsurface geology, petrophysics, geophysics, petroleum economics, geostatistics, coal petrology, carbonate and clastic depositional systems, sequence stratigraphy, structural geology, GIS and managemen

WORK ACCOMPLISHMENTS CO_2

Sequestration Evaluation

Principal Investigator for University of Houston DOE funded project entitled "Application of Cutting-Edge 3-D Seismic Attribute Technology to the Assessment of Geological Reservoirs for CO2 Sequestration." Advised graduate students each semester and completed nine progress reports over 27 months that resulted in continued DOE funding of the project and excellent relationships with DOE management.

Resource Evaluation

Analyzed potential for offshore California oil development from onshore sites using extended-reach drilling technology and reported on results in a lead article in the Oil and Gas Journal. Wide-spread interest in the article led to an AAPG poster that was published on the AAPG Search and Discovery website, an interview broadcast locally on PBS and contacts from representatives of the press, government and industry requesting additional information.

Led team of geologists that successfully employed leading-edge computer technology to map the distribution of economic coalbed methane resources in the San Juan Basin of New Mexico.

Completed detailed field studies of sandstones and fractured shale reservoirs in California fields that led to the drilling of 11 wells and the discovery of 10 million barrels of oil.

Coordinated evaluation of Cement Field in Oklahoma and subsequent step out drilling that discovered 100 billion cubic feet of deep, geopressured gas reserves in Springer sandstones

Identified over sixty drilling and workover opportunities in Oklahoma gas fields with 30 billion cubic feet of gas reserves.

Carried out subsurface geologic study Yorba Linda, California heavy oil sands that dramatically changed long-standing stratigraphic interpretation and provided a sound basis for reservoir management.

International Drilling Operations

Coordinated evaluation of Second Round bid blocks in Eastern China that provided basis for the timely ranking of areas of interest and focusing efforts on the most attractive blocks.

Established close working relationships with Pakistan oil industry personnel that led to the cost-efficient execution of exploratory drilling program in the Northwest Territories.

Coordinated geologic operations for South China Sea exploratory drilling program that evaluated six prospects and contributed to timely Chinese government approvals of plans.

Developed operations procedures for offshore wells in Trinidad that ensured adherence to government requirements, promoted cross-disciplinary teamwork and achieved technical objectives.

Supervised team of operations geologists responsible for coordinating activities on key exploratory wells in Australia, Pakistan and Myanmar.

Leadership and Personnel Development

Chaired a steering committee of exploration supervisors that was responsible for moving the company from a mainframe system to distributed geoscience databases and applications.

Led delegation on visit to China to review data and develop working relationships with Chinese oil industry personnel that contributed to favorable Chinese response to work proposal.

Directed the work of multidisciplinary teams that conducted field studies resulting in numerous completed reports and successful drilling, land acquisition and seismic programs.

Developed procedures to monitor drilling operations in the Overthrust Belt that were recognized for improving performance by effectively promoting cross-disciplinary teamwork.

Facilitated a continuous improvement team that developed a process diagram for well planning that was used as model throughout the company.

Selected Field Studies (carried out or supervised) Anchutz

Ranch-Jurassic Nugget sandstone, gas, Utah
Beurline-Oligocene Vicksburg overpressured gas sands, Texas
Brea-Olinda-Tertiary turbite-channel sandstones, heavy oil, California Cat
Canyon-Miocene fractured Monterey shale and chert, oil, California Cement-
Paleozoic overpressured gas sands, Oklahoma
Dickman, Mississippian porous zone, CO2 sequestration, Kansas
Geysers-Jurassic fractured Franciscan metamorphics, geothermal steam, California
Howard Townsite-Tertiary distal turbidites, oil, California
Hugoton-Panoma-Paleozoic gas-bearing carbonates, Kansas

Javelina-Jefferie-Oligocene Vicksburg overpressured gas sands, Texas
La Copita-Oligocene Vicksburg overpressured gas sands, Texas
Long Beach-Tertiary distal turbidites, waterflood, California
Los Indios-Oligocene Vicksburg over pressured gas sands, Texas McAllen
Ranch-Oligocene Vicksburg over pressured gas sands, Texas Mocane-
Laverne-Paleozoic carbonates and sandstones, gas, Oklahoma Monte Cristo-
Oligocene Vicksburg over pressured gas sands, Texas Newport-Cambrian
sandstone, meteoric impact structure, oil, N. Dakota Orcutt-fractured
Monterey shale, oil, California
Patoka, Trenton and Mt. Simon sandstone, CO2 sequestration, Illinois

Pavillion-Tertiary gas sands, Wyoming
Red Oak-Paleozoic tight gas sands, Oklahoma
Red Wash-Tertiary lacustrine sandstones, high pour-point oil, Utah
Rincon-Oligocene Vicksburg overpressured gas sands, Texas Roscrans-
Tertiary distal turbidites, oil, California
San Juan Basin-Tertiary coalbed methane, New Mexico Schmidt-
Oligocene Vicksburg over pressured gas sands, Texas Seal Beach-
Tertiary distal turbidites, oil, California
Slocum-Tertiary Carrizo sands, steam drive, East Texas
Teapot Dome, Tensleep sandstone, CO2 sequestration, Wyoming Tract
C-b-Eocene oil shale, underground mine evaluation, Colorado TWG-
Paleozoic gas sands, Oklahoma
Wattenberg-Cretaceous tight gas sands, Colorado
Weatherford-Paleozoic gas sands, Oklahoma
Whitney Canyon-Mississippian Madison limestone, sour gas, Wyoming
Wilburton-Paleozoic gas sands, Oklahoma
Yorba Linda-Tertiary turbidite-channel conglomerates, steam-soak, California

Operations Areas-Domestic

Anadarko and Arkoma basins-field development and stepout drilling, Oklahoma California and Alaska offshore hazards evaluations-platform and pipeline site surveys Denver basin, infill drilling, Wattenberg field
Hugoton Embayment-infill drilling, Kansas
Los Angeles, Ventura and Santa Maria basins, California-field and exploratory drilling
Powder River basin, Montana and Wyoming-appraisal core holes, surface coal mine planning
San Juan and Raton basins-coalbed methane development, New Mexico and Colorado
South Texas Vicksburg-overpressured sandstones, gas, stepout drilling
Uinta, Piceance and Sand Wash basins, Utah and Colorado-field and exploratory drilling
Utah-Wyoming overthrust belt-field development and exploratory drilling
Williston basin-field and exploratory drilling, North Dakota
Wyoming foreland basins, tight gas sand development and lease maintenance

Operations Areas-International

Teak, Poui, Mora, Cassia, Samaan fields and Gulf of Paria-exploration seismic surveys and development drilling, offshore Trinidad and Tobago
Liuhua 11-1 field area-Pearl River-Mouth basin, exploratory drilling, South China sea, PRC
Indus and Kohat licenses-exploratory drilling, Northwest Territories-Pakistan

EMPLOYMENT HISTORY

University of Houston **2003-present**

Research Scientist, Department of Earth and Atmospheric Sciences (2008-present)

Consultant, Oxy (part-time 2008-2012)

Principal Investigator, Center for Applied Geosciences and Energy, DOE CO2 sequestration project (2006-2007)

Research Scientist, Department of Geosciences (2003-2007)

Amoco Production Company **1978-1994**

Senior Geological Associate, Amoco Production Company-Houston. Coordination of geoscience computer applications. (1993-1994)

Director of Exploration, Amoco Pakistan Exploration-Islamabad, Pakistan. NW Territories exploration drilling. (1992-1993)

Senior Geological Associate, Amoco Production Company-Houston. Strategic planning and operations. (1991-1992)

Chief Geologist, Amoco Orient Oil Company-Shekou, PRC. South China Sea exploration of carbonate mounds. (1990-1991)

Chief Geologist, Amoco Trinidad Oil Company-Port-of-Spain, Trinidad and Tobago. Offshore development and exploration of Tertiary sandstones. (1989-1990)

Division Exploitation Geologist, Amoco Production Company-Denver. Rocky Mountain thrust belt, coal bed methane, Mid-continent operations. (1981-1988)

Staff Geologist, Amoco Production Company-Denver. Morrow sandstones, Anadarko basin. (1978-1981)

Shell Oil Company **1966-1978**

1966-1978, Senior Geological Engineer, Shell Oil Company-Ventura, Los Angeles, Houston and New Orleans. Heavy oil sandstones, turbidites, growth faults, overpressures, coal exploration, oil shale development, geothermal, offshore hazards evaluation.

Chevron Oil Company **1962-1966**

1962-1966, Geologist, Chevron Oil Company-Denver, Salt Lake City and Vernal, Utah. Wellsite geology, Exploration of lacustrine reservoirs.

WORKING PAPER

Global Warming Revisited. https://uh.edu/nsm/earth-atmospheric/people/faculty/tom-bjorklund/ November 6, 2020

RECENT PUBLICATIONS*

*Christopher Gantela, Aifei Bian, Hua-Wei Zhou, Tom Bjorklund, 2015, Demasking Multiple Artifact in Crustal Seismic Images from Marine Reflection Data in the Southern California Borderland, Journal of Earth Science, Vol. 26, No. 4, August 2015, 592–597 (printed in China)

Bjorklund, T., 2007, The Case for Using Extended Reach Drilling to Develop California OCS Reserves from Onshore Locations, AAPG, Search and Discovery Article #40235, http://www.searchanddiscovery.net/documents/2007/07027bjorklund/index.htm.

Bjorklund, T., 2006, Drilling advances warrant new look at leasing of Pacific OCS, Oil & Gas Journal, Aug 7, 2006, v. 104(29), 20-24.

Bjorklund, T., 2004, Abstract: Four-Dimensional Analysis of the Whittier Fault, Los Angeles Basin, California: A Model for Oil-Productive, Inverted Half-Grabens Associated with Continental Transform Fault Systems, *AAPG*, Dallas, Texas, A13.

Bjorklund, T., and Zhou, H., 2003, An Integrated analysis of tomographic and geologic data in the Los Angeles basin: Implications for models of basin evolution and active faults, *GSA Annual Meeting*: Abstracts with programs, Seattle, Vol. 35(6), 238-1.

Zhou, H., and Bjorklund, T., 2003, High-resolution, travel-time tomography in the southern California region: The present and the future, *SCEC Annual Meeting*, Proceedings and Abstracts, Volume XIII, Oxnard, California, September 7-11, p. 159.

Bjorklund, T., 2003, The Whittier fault trend: Cross sections, structure maps, and well tops in the major oil producing area of the northeastern Los Angeles basin, *Search and Discovery*, Article #10038, http://www.searchanddiscovery.com/documents/whittier/index.htm

Bjorklund, T., 2003, The Whittier Fault Trend in the Major Oil Producing Area of the Northeastern Los Angeles Basin: Interpretation and Data, *Search and Discovery*, CD- ROM Series #1 (http://bookstore.aapg.org/).

Bjorklund, T and Zhou, H, 2002, Crustal Tomographic Models of the Greater Los Angeles Basin, *Eos Trans*. AGU, 83(47), Fall Meet. Suppl., Abstract S21A-0971, 2002.

Bjorklund, T., 2002, Evolution of the Whittier fold-fault system of the northeastern Los Angeles basin, California, *Dissertation*, University of Houston, Houston 145 p.

*Bjorklund, T., Burke, K., 2002, Four-dimensional analysis of the inversion of a half- graben to form the Whittier fold-fault system of the Los Angeles basin, *Journal of Structural Geology*, v. 24(9), 1369-1397. (PDF available on *Search and Discovery*, CD- ROM Series #1 (http://bookstore.aapg.org/).

*Bjorklund, T., Burke, K., Yeats, R. S., and Zhou, H., 2002, Miocene rifting in the Los Angeles basin: Evidence from the Puente Hills half-graben, volcanic rocks and P-wave tomography, *Geology*, *30*, 447-450. (PDF available on *Search and Discovery*, CD-ROM Series #1 (http://bookstore.aapg.org/).

Website: http://www.geosc.uh.edu/people/faculty/tom-bjorklund/index.php

*Peer-reviewed Journal