

JÜRGEN KRAUS, Ph.D., Dipl. Geol., P.Geol.

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International Exploration, Structural Geology

Professional geologist with 30 years of field experience, the last 15 in international new ventures and frontier exploration in Africa, Asia, North America, and Europe, integrating large-scale tectonic analysis, regional structural geology and geophysics, petroleum systems analysis, paleogeography, and fracture analysis for wellbore optimization. This experience has built on a strong academic background with specializations in fractured reservoirs and tectonically complicated basins. I am a creative, enthusiastic, process- and results-oriented and computer-savvy individual, who is keen on solving geological problems in a team environment and who is passionate about finding hydrocarbons in geologically complex basins.

CORE COMPETENCIES

- Structural Geology of Deformed Basins
- Fractured Reservoirs
- International and Frontier Exploration
- Prospect Generation
- Exploration Geophysics
- Lithological and Structural Mapping
- Reserves and Resource Assessment
- Geological Synthesis from Plate to Basin to Well Scale
- Strong Analytical/Problem-Solving Skills
- Strong Written and Oral Communication
- Leadership and Mentoring
- Excellent Negotiation Skills
- Works Well with Sparse Data

PROFESSIONAL EXPERIENCE

Owner and Operator of Franconia Geoscience Ltd.: Independent Structural Geologist and International-Exploration Consultant since 2003

Overview: Franconia Geoscience Ltd. has created value through international hydrocarbon exploration in deformed frontier basins, conventional and unconventional grassroots plays, and in fractured reservoirs. For 15 years, I have helped establish the technical foundations to build small companies on. I have also assisted medium and big companies solving specific geological problems.

Services Offered:

- Cross-Section Construction Using Lithotect
- Validation of Structural Models
- Delineation of the Structural and Tectonic History of Complexly Deformed Basins
- Structural Support of Seismic Interpretations
- Fractured Reservoir Characterization, Fracture Field & Core Studies
- Lithological and Structural Surface Mapping
- Exploration in Frontier Areas
- Evaluating New Opportunities
- Prospectivity Analysis
- Reserves Assessment
- Characterization of Petroleum Systems and Play Types
- Geological Synthesis from Plate to Basin to Well Scale
- Seismic Interpretation and Subsurface Mapping
- Exploration in Crystalline Rocks
- Data Rooms for Farm-Outs and IPOs
- Well Planning and Well Prognosis
- Report Writing

Project Highlights:

Petrobaltic Offshore Germany Oil & Gas Project (Central European Petroleum, Calgary, 2013 – 2014)

- Analyzed the prospectivity of and created new play concepts and drillable prospects in the Southern Permian Basin, the German-Polish Caledonides, and the Baltic shelf (clastic rocks and carbonates)
- Supported seismic interpretation and calculated risked reserves estimates (probabilistic).
- Wrote well report.

Sidi Moktar Gas Project, Morocco (Longreach Oil & Gas, London, UK, 2011 – 2013)

- Evaluated the hydrocarbon potential of a salt-invaded, inverted Permo-Triassic Atlantic rift basin in Morocco. Established the technical framework that attracted \$30 MM investment capital. Created high

risk – high reward ratio prospects and planned two wells drilled in Q3 2013 and Q2 2014.

- Represented Longreach at the Calgary Global Exploration Forum.

Nyalga PSC-16 Conventional Oil Project, Mongolia (Sunwing Energy Limited, Calgary, 2009 – 2010)

- Defined and executed exploration work program in frontier basin, from basic data acquisition to selecting well locations. Hired and supervised contractors.
- Identified and evaluated drillable prospects in obliquely inverted lacustrine, clastic rift basins.
- Performed field work in order to gain subsurface control and to minimize drilling risk.
- Evaluated petroleum systems and play concepts of analog basins in Mongolia and China.
- Performed basin modeling and sequence stratigraphic interpretation.
- Authored technical reports for the Mongolian government.
- Participated in seismic interpretation and risk analysis.
- Searched for and evaluated new opportunities in Mongolia and China.

Zitong Unconventional/Tight Gas Project, China (Sunwing Energy Limited, Calgary, 2003 – 2009)

- Generated drillable prospects in overpressured, tight, clastic rocks of the Sichuan Basin of China.
- Characterized the local petroleum systems and play concepts of the Triassic composite foreland fold and thrust belt and underlying Paleozoic extensional continental margin.
- Integrated geological, petrophysical, and geophysical data to understand paleogeography, tectonic events, stress and strain regimes, fracturing and hydrocarbon migration and trapping mechanisms.
- Used outcrop data and several thousand metres of drillcore to build fracture models for use in exploratory drilling and testing.
- Participated in the preparation and acquisition of a >1100 km 2-D seismic survey and AVO analysis.
- Interpreted 2-D seismic data and created structural subsurface maps.
- Authored internal and external reports.
- Participated in the selection and drilling of several deep, deviated wells (results up to 13 mmcf/d).

Shell Canada 2001 – 2003: Southern and Central Foothills E & D, Calgary

- Generated Mississippian carbonate prospects in the Waterton gas field.
- Interpreted 2-D seismic data and created structural subsurface maps.
- Integrated petrophysical and reservoir data into volumetric and economic evaluations, and designed well trajectories.
- Conducted 3-D structural modelling of the Waterton thrust stack.
- Generated a (drilled) prospect in laterally overlapping imbricates in the Wildcat Hills by interpreting 3-D seismic data, balancing and restoring cross-sections, producing subsurface structure contour maps, and calculating reserve estimates.

Professional Experience 1987 – 2001

- 2000 – 2001 **Saskatchewan Geological Survey**, Regina (project geologist: Rae and Hearne cratons).
1999 – 2000 **Aachen University of Technology**, Germany (developed geological internet tools).
1998 – 1999 **Geological Survey of Canada**, Ottawa (CAMIRO Thompson Nickel Belt project).
1992 – 1998 **The University of New Brunswick** (TA in Structural Geology, Petrology, Geophysics).
1990 – 1991 **Continental Deep Drilling Program of Germany** (working on microfractures).
1987 **Badley Geoscience Limited**, Lincs., U.K. (Petroleum Consulting; North Sea: Moray Firth).

OTHER SKILLS AND ACCOMPLISHMENTS

- Experienced in rigorous 3-D geometrical and kinematic analysis of various tectonic environments: thrust belt, flexural foredeep (Canada, China, Germany, Scotland); deep basin, extensional (China); transtension/transpression, inversion (Mongolia); continental rifting (Morocco).
- Imaginative mind and problem solver; aims to understand the big picture and thinks 'outside the box'.
- Experienced in the complete exploration and business process in a small company environment, including exploration program design and execution, risk analysis, drilling & completions, joint venture management protocols, data room preparations for farm-outs and IPO applications, and technical and economic assessments of sale blocks in frontier areas.
- Communication, oral & written: gave countless presentations to partners, potential farminees, and to

specialist audiences at (inter)national meetings. Led field trips. Published six peer-reviewed journal articles, many government reports, and geological maps. Mentored interns. Reviewed international-journal manuscripts and B.Sc. & M.Sc. theses. Performed jury duty for Geol. Assoc. Can. awards.

- Conducted grassroots Inca-gold exploration in the Ecuadorian Andes (incl. NI 43-101 report) in 2006.

EDUCATION

- 1992 – 1998 The University of New Brunswick, Canada, Department of Geology, Ph.D. (received Nov. 1998). Thesis supervisor: Dr. Paul F. Williams (one of the world's most distinguished structural geologists).
- 1987 – 1991 Universität Göttingen, Germany, Institut für Geologie und Dynamik der Lithosphäre, combined M.Sc. degree in Structural Geology, Exploration Geophysics, and Metamorphic Petrology (first class; received Oct. 1991). Supervisors: Dr. A. Vollbrecht and Dr. K. Weber.
- 1986 – 1987 The University of Hull, U.K., Department of Geology.
- 1983 – 1986 Universität Würzburg, Germany, Institut für Geologie und Paläontologie, B.Sc. in Geology, Mineralogy, Physical Geography, and Mathematics (first class; Feb. 1986).

EDUCATIONAL QUALIFICATIONS

- Dissertation "Structural and Metamorphic Studies in the Snow Lake Area, Trans-Hudson Orogen, Manitoba, Central Canada" in conjunction with the Geological Survey of Canada. The project was integrated in the NATMAP Shield Margin and LITHOPROBE Trans-Hudson Orogen Transect programs, and supported by the Geological Survey of Canada.
- M.Sc. Mapping Project "The Ductile Thrust System of Sutherland" on the Moine nappe, northern Scottish Highlands.
- M.Sc. Thesis "Microfracture Development in Granites near the KTB Deep Drilling Well", Germany.

PROFESSIONAL AFFILIATIONS

- Professional Geoscientist (P.Geol.) with APEGA.
- Co-chair of the International Division of the Canadian Society of Petroleum Geologists (CSPG).
- Director of the Calgary Global Exploration Forum (CGEF).
- Secretary of the Canadian Tectonics Group.
- Fellow of the Geological Association of Canada (GAC)
- Member of the American Society of Petroleum Geologists (AAPG)
- Member of the Geological Society of America (GSA)

PUBLICATIONS

- A detailed publication list can be downloaded from www.franconia-geo.com