

RESUME: DR MARK LISK

PhD (Applied Geology), MSc (Hons), BSc.

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CAREER PROFILE

Dynamic oil and gas geoscientist with more than 30 years' experience in basins across Australia, the Asia Pacific region and the Atlantic conjugate margin. World class technical capability in regional basin studies, reservoir geology and diagenesis, charge and trap integrity evaluations. An adept prospect generator with well-developed seismic interpretation capabilities and a solutions mindset with a strong business impact focus, I have excellent written and spoken communication skills. Experience in mature, emerging and frontier basins, both offshore and onshore, with a proven track record in revealing new play opportunities that drive value creation by delivery of attractive prospect inventories. Highly qualified with a MSc. degree in Geothermal Systems and an award-winning PhD in Petroleum Systems and Trap Integrity Analysis I have a blend of E&P company and R&D experience that allows me to deliver innovative solutions for exploration, CCS and general basin analysis. I have published widely across diverse topics including petroleum and geothermal systems, trap integrity, petrophysics, igneous systems, geochemistry and regional geology.

EMPLOYMENT HISTORY

Freelance Geologist	Own Business	Oct 2020 – Today
Principal Geologist	Woodside Energy Ltd	2005 – 2020
Senior Research Scientist	CSIRO Petroleum	1990 – 2005
Junior Geologist	BHP Gold Mines, NZ	1990

KEY SKILLS / COMPETENCIES

Petroleum Exploration Geology | Conventional Exploration | Global New Ventures | Clastic Carbonate Reservoir Geology | Regional Petroleum Systems | Play Based Exploration | Seismic Interpretation | Prospect Delineation Volumes & Risks | Structural Geology | Geochemistry | Reservoir Diagenesis | Fluid Migration & Seeps | Salt Basins | Analogue Field Studies | CCS evaluations | R&D Solutions.

QUALIFICATIONS AND AWARDS

– PhD (Department of Applied Geology) – Curtin University	2013
– Recipient: Professor Krishna & Pamela Sappal Prize - Best Higher Research Degree Research Candidate in Geoscience,	2013
– Joint recipient: CSIRO Medal for Research Excellence	2005
– Msc. (Hons) – Auckland University	1990
– BSc. – Auckland University	1987

PUBLICATIONS

Author more than 80 publications, including 35 Peer Reviewed articles. A full list of publications is available on request.

**PROFESSIONAL EXPERIENCE
WOODSIDE ENERGY LTD**

2005 – 2020

Woodside Energy is an integrated energy company with major focus on global LNG.

2020 – 2020 Principal Geologist – Australian New Ventures team

Responsible for a full basin review of the Browse Basin to evaluate opportunities in the 2020 Australian Gazettal round in close collaboration with our commercial screening team. A systematic screen of all public domain 3D seismic data high-graded a suite of new play concepts with new leads offering substantial volume potential. Completed a comprehensive review of basin CO₂ risk and developed a predictive model for high-grading opportunities with potential low/reduced CO₂ content.

2015 – 2020 Principal Geologist – Central Atlantic Margins, Global New Ventures Team and Peru

Responsible for seismic mapping, prospect generation, regional play-based exploration studies and assessing new venture opportunities to support hub growth for the Sangomar (SNE) oil field development in Senegal. In addition to a focus on Senegal, the greater MSGBC basin and Moroccan basins also gained experience along the West African Margin, including Gabon, Congo, and Angola and worked the related conjugate margin in Atlantic Canada, USA, Ireland and the Bahamas. Provided Woodside technical lead for JV with ENI and Chariot for two licences in Morocco and led technical engagement with government regulators in Morocco and Senegal. Completed full country reviews for offshore and onshore basins in Senegal and Morocco to assess and rank new opportunities using field studies in the High Atlas and data room visits.

Provided expert input to the evaluation of the Ene Basin, a Sub-Andean Fold-and-Thrust Belt in Peru and post-well evaluation of the Boca Satipo Est-1 exploration well (operated by Pluspetrol) to aid the integration of Fission Track, Fluid Inclusion and (U-Th)/He radiogenic dating techniques.

2011 – 2015 Principal Regional Geologist – Australian North West Shelf Venture exploration team

Led regional play-based exploration studies and undertook evaluation of the existing lead and prospect inventory. Produced updated reservoir and seal GDE maps for the Mesozoic section, undertook post-mortem well reviews and evaluated the reservoir effectiveness of key reservoir units to support the new Fortuna 3D seismic program. Proposed and led a series of technical play workshops with NWSV JVPs (Woodside, BHPB, BP, Chevron, MIMI, Shell) to successfully identify a suite of new play concepts to underpin future exploration.

2009 – 2011 Principal Regional Geologist – Australian Browse Basin exploration team

Responsible for planning and completing basin-scale regional geological studies, defining new leads and prospects and providing geological support for exploration drilling campaigns. Produced basin-wide GDE maps for Jurassic and Triassic reservoir targets, evaluated reservoir effectiveness through facies-based description of porosity-depth trends and evaluated the impact of igneous rocks on reservoirs in conjunction with researchers from the Queensland University of Technology. Completed regional 2D and 3D seismic interpretation across the Browse Basin and mapped an inventory of new leads and prospects that added material risked volume potential to the portfolio. Evaluated Carbon capture and Storage potential in the Roebuck Basin as a potential site for CO₂ disposal from the Browse gas fields.

2007 – 2009 Senior Geologist – Australian Exmouth Plateau exploration team

Responsible for regional mapping, prospect generation, providing regional geological expertise for the assessment of petroleum systems and contributed to drilling campaigns across the basin. Exposure to QI techniques for evaluation of fluid response in this strongly amplitude driven play.

2005 – 2007 Senior Geologist – Australian New Ventures team

Responsible for undertaking gazettal reviews and evaluating farm-in farm-out opportunities, principally in the Bonaparte Basin. Regional 2D seismic interpretation completed across much of the eastern Bonaparte Basin and evaluated Jurassic tight gas opportunities and Permian carbonate potential associated with the Kelp Deep-1 discovery and within the Malita Graben.

CSIRO Petroleum, WA Senior Research Scientist (Geology)

1990 - 2005

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) is an Australian Government agency responsible for nation-building scientific research.

Senior Research Scientist and Technical Team Leader with responsibility for conceiving, initiating and completing innovative geological research projects, including conception, funding proposals, staff management, project direction, financial accountability, communication with sponsors and collaborators. Increasingly took a leadership role in the development and application of new evaluation techniques aimed at addressing hydrocarbon migration, retention and trap integrity that resulted in more than 80 publications.

2003 – 2005 Project Leader for the TURI consortium, a 3-year JIP project in the Taranaki Basin, NZ

Funded by BHP, Petrobras, Petronas and Woodside the TURI consortium was a multidisciplinary investigation studying the role of faults in turbidite successions as barriers and conduits to fluid-flow over geological and production timescales. The project involved 18 expert researchers from CSIRO, Curtin University and the Geological and Nuclear Sciences Crown Research Institute in New Zealand. Work comprised detailed outcrop field study, acquisition of GPR and seismic data and behind outcrop drilling coupled with a detailed program of laboratory work.

2000 – 2004 Technical Team Lead for Australian Petroleum Co-operative Research Centre (APCRC)

A collaboration between CSIRO, National Centre for Petroleum Geology and Geophysics (NCPGG) and Curtin University the APCRC faults and seals project aimed at developing new approaches for addressing trap integrity risk. As Technical Team Leader for CSIRO I was responsible for a team of eight research scientists involving application of geochemical, hydrodynamic and structural geology disciplines in the Bonaparte, Carnarvon and Cooper-Eromanga basins. Work led to new predictive tools for trap risking and an enhanced understanding of the role of fault geometries on breach potential. Industry sponsors for the APCRC included Anadarko, BHP Billiton, Chevron Texaco, Exxon Mobil, JNOC, Marathon Oil, Origin Energy, Santos, OMV, Statoil and Woodside.

1995 – 2001 Technical Team Lead for CSIRO-AGSO Collaborative Project

As a Senior Research Scientist, I Collaborated with the Australian Geological Survey Organisation (AGSO, now Geoscience Australia) to investigate controls on trap breach and hydrocarbon seepage principally in the Vulcan Sub-basin. Project integrated well-based data from fluid inclusions and conventional oil shows with shallow leakage indicators from seismic data and integrated remote sensing data combining Airborne Laser Fluorosensor, Synthetic Aperture Radar and shipborne geochemical water column Sniffer data.

1990 – 2005 Experimental Scientist

Developed and applied novel fluid inclusion techniques to improve understanding of fluid migration and accumulation of hydrocarbons in sedimentary basins. Co-inventor of the widely used GOI fluid inclusion technique, to assess palaeo-oil saturation and for the ROI fluid inclusion technique for direct measurement of irreducible water salinity for more accurate R_w values in reserves calculations. Work resulted in two US patents and an extensive number of peer reviewed publications. The GOI technique also led to development of world-leading techniques to extract and geochemically analyse the molecular composition of fluid inclusion oils. Marketed and undertook commercial application of these methods in basins around Australia, NZ, PNG, Atlantic Canada, Japan, Indonesia and India. Mentored and supervised staff across research and commercial application projects.

BHP Gold Mines, New Zealand Junior Geologist

1990 -1990

A principally field based position focusing on epithermal gold exploration in the Coromandel Peninsular (East Coast New Zealand). Field responsibility comprised surface and underground geological mapping, stream sediment and soil sampling programs, and land-owner liaison. Office duties included data compilation and title searches.

Optech International, New Zealand Contract Petrologist (part-time)

1988 – 1990

BHP Gold Mines, New Zealand Student Geologist

1987 - 1988

SOFTWARE / HARDWARE EXPERIENCE

Petrel | Landmark | Shell 123di | ESRI Arc-GIS | GeoX | Trinity | Petrosys | Olympus Petrological Microscopes | Linkam THMS93 Fluid Inclusion Microscopy Stage | Phillips XL40 SEM.

REFEREES

Professional Referees available upon request.