



SUE CORRIGAN – SENIOR GEOSCIENCE CONSULTANT

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CONFIDENTIAL

KEY ATTRIBUTES AND EXPERIENCE

- **Over 40 years' industry experience in both Exploration and Development geology**
- **Extensive experience of reservoir evaluation in UKCNS and UKSGB, Norway, Algeria, Venezuela, Uganda, Kenya, and West Africa (offshore Ghana Jubilee Field); frontier New Ventures exploration in sub-Saharan Africa**
- **Active participation in a number of North Sea and International field unitisations and development of good negotiating skills**
- **Numerous screenings and evaluations for potential acquisitions and farm-outs**
- **Planning wells in the North Sea and African countries; co-ordination with drilling teams and monitoring of well progress.**
- **Management of external consultants and services**
- **Extensive mentoring of junior staff during the last few years; enjoy imparting knowledge and encouraging development**
- **Presentations to independent reserves auditors, partners, governments, conferences**
- **Software expertise: 2D and 3D interpretation and static modelling in *Petrel*, from seismic interpretation to geocellular modelling for Eclipse simulator; some seismic interpretation in *Kingdom*, *MMRA* for risking and reserves**

CAREER HISTORY

From September 2015:

Independent Consultant (Back to Basics Geoscience Ltd)

- Independent work focussing on the application of basic geological principles as the foundation for both development (static modelling) and exploration projects. Mentoring of junior staff.
- March 2016: delivered keynote address at APPEX 2016 conference (London) entitled: 'Global E & P – what next? A Geoscience perspective'
- April 2016-Dec 2016: 'ad hoc' consulting contract with Cairn Energy

August 2011-September 2015:

Tullow Oil plc, Chiswick, London, UK

PRINCIPAL GEOSCIENTIST (Staff)

- **Jubilee Field, Ghana (since May 2013)**
Principal geoscientist on the **Ghana Jubilee team**, based in London commuting regularly to Accra. Developed a revised geological conceptual model for Jubilee based on core, well and seismic data and outcrop analogues, as part of a multi-discipline team, taking this forward into a new deterministic 3D static model that formed the basis of a dynamic model for simulation and history matching. Assistance in well planning and post-drilling evaluation. Presented to JV partners at technical workshops, mentored junior Ghanaian staff both in London and Accra, and managed external consultants. Attended field courses in Turkey and California to study depositional analogues for Jubilee turbidite system. Logged all Jubilee core as part of team in Houston.
- **TEN project, Ghana:** geoscience adviser; mentoring of MSc interns
- **North Atlantic New Ventures**
Member of due diligence team during evaluation prior to Tullow's purchase of Spring Energy. evaluation of North Atlantic basins and individual opportunities in **Norway**, basin-wide review of **Offshore Netherlands** K and L Blocks.

- **African New Ventures:** Evaluation of potential acquisitions in two **Sub-Saharan Africa** countries based mainly on sparse 2D and well data. Perform detailed evaluations of development and exploration opportunities; mapped and actively promoted prospects resulting in one project receiving commercial sanction going forward to negotiation.

**Sept 2009-August 2011:
Tullow Oil SA, Cape Town, RSA
CONSULTANT GEOSCIENTIST**

- **East Africa Rifts Exploration Team: Kenya**
Principal geoscientist working on Tullow's new acreage acquisition in the **Turkana Basin, Kenya**. Mapped prospects in the Lokichar Basin from poor 2D data; liaised with geophysical technology team in Dublin for line reprocessing. Mapped and picked location of **well Ngamia-1**, the first major oil find in Kenya (oil discovery). Carried out field work and wellsite visit in Lokichar, Northern Kenya in 2011.
- **East Africa Rifts Exploration Team: Uganda**
Lead geologist for exploration and development of oil and gas assets as the for **Lake Albert Block 2A in Uganda**. Worked exclusively in *Petrel* software, carried out 3D and 2D seismic interpretation and geological evaluation of four fields up to 500mmbbls OIP. Worked closely with the geophysical technology team in Dublin on depth conversion and advanced AVO work to extract amplitude anomalies as reservoir sand indicators, as the basis for facies modelling. Constructed reservoir geological models for all four fields using well and core data plus fieldwork-based analogues, applied petrophysical modelling and saturation/height models; produced deterministic volumes and stochastic models for reservoir simulation in Eclipse. Ran Monte Carlo Uncertainty to produce volumetric probability ranges.
- Undertook field work in Uganda (2011)
- Mapped amplitude-based leads and prospects in the offshore Lake area from 3D seismic.
- Made presentations to PEPD Uganda; poster presentations at Tullow Plays Conferences (best poster award), mentored Ugandan graduate. Presented to external auditors December 2010.
- Underwent training in latest Petrel functionality (2010), depth conversion, and gravity magnetic surveys; fieldwork in Spain (fluvial systems) and Uganda (Lake Albert)

**June-August 2009:
Sasol, South Africa (Contractor)**

- Short contract to build a basic Petrel static model for the **Temane gas field, Mozambique**

**May 2007-May 2009:
Bow Valley Petroleum (UK) Limited, Windsor (bought out by Dana in May 2009)
SENIOR GEOLOGIST (Staff)**

- As the only staff geologist in a small company focussed on the **Central North Sea**, responsibilities covered a wide spectrum, requiring a great deal of flexibility and ability to make technically sound decisions in tight time frames, and included prospect generation (identified new play area), planning and drilling wells, evaluation of potential acquisitions and conducting farm outs (successfully farmed out 22/11b).
- Carried out regional geological study of Jurassic prospectively in Forties-Montrose area - based on my geological model mapped prospect for 24th Round commitment **well 22/11b-3** and discovered oil in Middle Jurassic Sand; well proposal and well monitoring; coring decision
- Mapped an undiscovered extension of the **Chestnut Field** and persuaded Operator to drill an additional well which was an oil discovery and extended the field area by approximately 25%
- Generated prospects for **25th Licensing Round applications** (BVP were awarded 4 blocks).
- Attended TCMs and OCMs in UK and Norway for non-operated producing and pre-production assets, and managed external contractors.
- Interviewed professional candidates, mentored, and helped build an integrated technical team.
- Used *Petrel* software on daily basis, also undertook some seismic interpretation (*Kingdom*).

Jan 2005 – May 2007:**Newfield Petroleum (UK) Limited, London (sold UK assets in 2007)
SENIOR GEOLOGIST (Contractor; then Staff since May 2006)**

- Part of a small multidisciplinary hands-on team working on interests in the **Southern Gas Basin**. Built several Petrel reservoir geological models of the **West Sole Area** as basis for evaluation of new and infill drilling locations.
- Identified additional potential in the **Seven Seas discovery well** which led to the drilling of a successful horizontal well. Supported drilling of **Auburn** appraisal well
- Contributed to evaluation of **23rd Licensing Round** acquisitions and numerous other opportunities in the SGB and CNS using *Petrel/Kingdom* software. Active participation in planning of exploration and appraisal well drilling. Petrophysical skills and use of *Interactive Petrophysics* log analysis software.
- Key player in Newfield's successful acquisition of all three SGB Blocks applied for in the **24th UK Licensing Round**: prepared and presented technical case to DTI.

Dec 2003-Dec 2004:**EnCana UK Limited/Nexen Inc, Uxbridge
DEVELOPMENT GEOLOGIST (Contractor 1 year)**

- Working within a multidisciplinary team on the EnCana-operated Upper **Jurassic Scott/Telford Fields** in the Outer Moray Firth. Long Term Reservoir Plan to identify new drilling locations and intervention candidates, to economically exploit remaining hydrocarbons in this mature area.
- Carried out complete revision of the field geological model based on core and wireline data, and production histories, in order to identify flow units and areal reservoir geometry in order to plan well locations for the 2005 drilling campaign.
- Constructed 2D and 3D geocellular models in *Petrel*: included structural modelling, facies and zone correlation, isochore mapping, property modelling, volumetrics.

Sept 1999-Dec 2003:**Amerada Hess, London (mass redundancy in UK in Dec 2003)
SENIOR STAFF DEVELOPMENT GEOLOGIST (Staff)**

- Built deterministic geological models using well and seismic data (*Geoframe 4.3*) to determine lateral and vertical characterisation of reservoirs, and key controls on porosity and permeability distribution. Major project carried out for **Algerian Field Development** in **Gassi El Agreb**.
- Constructed 3D geocellular models (for Algerian project) using *Petrel* Software, incorporating the deterministic models into structural and property modelling; stochastic modelling and upscaling into the *Eclipse* simulator, in order to plan and monitor water flood and miscible gas flood schemes; production of independent volumetrics.
- Contributed geological predictions to several well prognoses during ongoing development of major Algerian oilfield.
- Represented the company in the UKCNS **Goldeneye Field Unitisation**, taking the company's best technical case forward to committee, resulting in improvement of the company's equity and optimisation of subsequent asset sale.
- Managed geological workflows including contractors; ensured that contractors' input was focussed on the specific objectives of the project.
- Acted as geological expert in internal peer reviews and produced critiques which contributed to viability of various prospects.
- Helped produce seismically-driven geological model of **Schiehallion Field**, incorporating well data and palynological model, for the company's technical interpretation of this non-operated asset.

Mar 1982- Sept 1999:**Independent Consultant; Affiliated Consultant to IPEC, ECL, E&P Consultants Ltd, RESERVOIR/DEVELOPMENT GEOLOGIST (mainly UK)**

- Participated in several **North Sea Field Unitisations** (oil and gas) notably the **Nelson Field unitisation – 2 years** (for Neste Oy/Svenska against Shell and Enterprise), **Markham Field unitisation – 18 months** (for Lasmo against EBN and Total) and **Johnston and Galleon Field unitisations** (Powergen; including field excursion to view modern depositional analogues in Tunisia); produced geological models to maximise clients' equity position and took the technical arguments forward to committees. Employed negotiating skills and became adept at interpreting opposing parties' strategies.
- Evaluation of **Ninian Field** geological model for Neste Oy
- Acted as **Independent Expert for a gas field offshore UAE** for Crescent Petroleum; technical and negotiating skills resulted in satisfactory resolution for Sharjah and Ajman governments
- Carried out basin-wide evaluation of **Eastern Algerian reservoirs – 2 years** for Neste Oy in connection with development of field acquired under Production Sharing Contract.
- Geological evaluation the **North Brae Field** on behalf of Bow Valley; was instrumental in persuading Marathon (Operator) to re-evaluate their drilling strategy
- Constructed geological model for **Rob Roy/Ivanhoe Fields** (IMF), for the FDP, for Monsanto
- Carried out several reservoir characterisation studies (core and log based) (e.g, **UKSNS 'V' Fields** for Conoco, **CNS fields** for Hess, Amoco, Sun Oil, Burmah Oil, Monument)
- Evaluated several prospects in **Eastern and Central Algeria, NW Borneo and North Sea** for potential acquisition.
- Constructed reservoir models of various fields in the **Central and Southern North Sea**; evaluation of controls on reservoir quality distribution to maximise production planning.
- Modelled large area of **Thames Field trend (S.N.S. Gas Basin)** using seismic and well data, to investigate controls on dry well distribution.
- Carried out **major research project – 2 years** (OSO-sponsored) into restored-state permeability behaviour in North Sea reservoirs, with team at UCL.
- Carried out regional petrographic study of Rotliegendes gas basin reservoirs (for Erico)

May 1979-Mar 1982:**Amoco (UK) London
SENIOR DEVELOPMENT GEOLOGIST (Staff)**

- Developed comprehensive reservoir geological model of **NW Hutton and Hutton Fields** as basis for water-injection scheme.
- Sat on geological subcommittee in **Fulmar Field unitisation**: constructed geological model and carried technical arguments to subcommittee (against Shell).
- Evaluated prospects **West of Shetlands** for 7th Round North Sea licensing application.
- Attended several field courses including South Caroline, Mississippi Delta and Cayman Islands

May 1974-May 1979:**Shell (KSEPL) Rijswijk, Netherlands
PRODUCTION GEOLOGIST (Staff)**

- Developed comprehensive reservoir model for Eocene deltaic **Venezuelan reservoirs** in connection with water drive scheme; several visits to Maraven, Caracas including fieldwork
- Constructed geological models based on core, petrographic and well data for numerous reservoirs in the North Sea (**Brent Province, Central North Sea, Southern Gas Basin**). Worked closely with Ken Glennie (Rotliegendes guru) on SBB evaluations
- Evaluated causes of reservoir variability in **Nigerian reservoir**.
- Carried out research into the effects of compaction and cementation on sand reservoir quality, in conjunction with Imperial College, London.
- Attended Shell's comprehensive in-house training programme
- Lectured at Shell's annual Geological Seminar and attended Shell field excursions to Pyrenees (clastics) and Southern France (carbonates).

Qualifications B.Sc. (2/1 Hons) Geology; Queen Mary College, University of London (1972);
1 year post-graduate field mapping of Channel Islands for BGS (1973-4)

Civil Status Single UK National; two grown-up independent children

Languages English (native); moderate French and Dutch (both written and spoken)

Membership Fellow of the Geological Society of London; member PESGB

Hobbies: Singing and guitar, walking and horse riding

Publications:

AAPG Annual Convention in Houston, 1979:

'Facies Recognition from Logs to Predict Permeability Distribution of Eocene Deltaic Sandstones, Lake Maracaibo, Venezuela'. Sponsored Shell/Maraven.

Conference: Developments in Reservoir Geology, London, 1990:

'Reservoir Heterogeneity in the Vanguard Field, UK Southern N Sea'.
Co-author with Conoco (UK) Ltd.