

EDWARD B. DONALDSON M.S.

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- » Experienced Sr. Geoscientist, accomplished in finding and developing unconventional and conventional hydrocarbons by integrating well and seismic data with structural and stratigraphic geologic expertise
- » Risk and Uncertainty technology expert, using geostatistics to predict rock/fluid properties and volumetrics
- » Skilled in seismic reprocessing and interpretation projects, both onshore and offshore, ensuring QA/QC
- » Experience helping subsurface geo/RE teams tune geomodels / flow simulations to optimize HC recovery

CORE STRENGTHS

Tech-Adaptive Natural Resource Value Identification ♦ Coachable Cross Functional Networker & Collaborator
Excellent Presenter/Communicator ♦ Micro-to-Macro Critical Thinker

TECHNICAL STRENGTHS

Applying Seismic Methods to Geologic Exploration of Oil & Gas ♦ De-Risking Geologic Models via Quantitative Wells-to-Seismic Workflows ♦ Applying Risk & Uncertainty Methods to Optimize HC Depletion Planning (greenfield and brownfield) ♦ Software – Petrel/RokDoc/Paradigm

PROFESSIONAL EXPERIENCE

EXXONMOBIL (EM) - Houston, TX

2008 – Dec 2021

4D Seismic Production Optimization, Offshore Guyana, (Remote Cincinnati) (Nov 2020 – Dec2021)

- Guided geo/RE/commercial staff through the parameterization process of a Bayesian Monte Carlo Value-of-Information (VOI) study for ExxonMobil's largest offshore Guyana asset (Yellowtail):
 - **Applied risk/uncertainty techniques that showed > 1MBO / producer/injector** incremental life-of-field oil production uplift by using permanent sea floor sensor time-lapse (4D) option
 - **Results used to justify equipping 2 FPSO ships for on-demand sea floor seismic surveillance**
- Leveraged similar VOI workflows to guide E. Canada Hibernia & Hebron subsurface teams to show barrels impact enabled by sea floor 4D seismic sensors relative to traditional streamer 4D surveys:
 - **Results showed largest uplift was also via optic sensor sea floor strategy for Hibernia only**
 - **However, results also confirmed limited remaining upside for Hebron asset, and thus recommending only infrequent seismic surface streamers for Hebron's end-of-field-cycle**

West Africa New Opportunities/Geophysicist/QI Geoscience (Quantitative Interp.) (2018 – Nov 2020)

- **Seismic Acquisition & Processing** – responsible for QA/QC of **3D seismic survey acquisition parameters** and **vendor seismic processing steps** to image target for AVO analysis
 - **QI Geoscience** – Calibrated both seismic surveys via amplitude analysis using the Ghana wells (aka "QI") to **successfully identify high risk HC potential in Exxon's DWCTP block**
 - **Resulting recommendation due to high risk was to divest - approved by management**
- Evaluated prospective blocks for future commercial HC potential, resulting in identification of only one high potential, high-risk, block for possible lease. **Results supported subsequent Ghana exit**
- A farm-in visit to TOTAL's (Paris) data room for offshore Mauritania resulted in low oil potential because **TOTAL's reports of seismic anomalies were actually artefacts within the seismic data**
 - **Resulting recommendation was to not farm-in and management approved non-pursuit**

Geophysical Applications Core Group (largely Americas Exploration) (2014 - 2018)

- Successfully applied geostatistical methods to Guyana discovery well (Liza-1) to constrain Net Rock Volume range; supported post-XTO integration with geophysical sweet spotting of the Marcellus Fm.
- Co-invented a Geology/Geophysics Monte Carlo tool (USA Patent awarded in 2020) that integrated core description facies, petrophysics, and seismic data to ensure in-place oil volume were data-consistent
 - Method increased the confidence of life-of-field production estimates and was used to **create high-confidence Guyana Liza development scenarios**
 - **Subsequently predicted Net Thickness of Guyana Turbot-1 discovery to within 1m, combining stratigraphy, geophysics, and geostatistics**

Geoscience & Reservoir Engineering Uncertainty Analysis (UA) Group – Development Co. (2011 - 2014)

- Provided Value-of-Information (VOI) and other decision support services to GOM's Hadrian North, Kashagan, E.Canada's Hebron, and UAE's UZ750 projects, integrating inputs from geoscience and RE
- **Successfully characterized pre-sanction risk/uncertainty chance of outcome of reserve estimates** for multiple engineering projects, with **results used with SEC-required reporting of proved reserves**
 - Performed UA for the Arab Emirates Upper Zakum 750k Artificial Island project; **Results proved subsurface controls on flow were adequate to green-light the project**
 - Updated UA to show much lower in-place oil for deep water GOM project Hadrian North; **Results supported prevention of \$5B USD mal-investment in Hadrian North,**

Stratigraphy & Reservoir Systems Research Group (2010 - 2011)

- Attended Human/Computer Interface (HCI) Conference 2010, and visited Sandia National Labs, and SRI Research Labs to evaluate potential of technologies during Disruptive Technology Review
 - **Provided funding proposal to EM Upstream Research President at project conclusion; co-authored proprietary white paper on future applications of HCI technologies.**
- Assumed internal instructor role for EM's 'Psychology of Assessment Judgment' course - primarily applying the latest techniques for mitigating the impact of cognitive biases on decision making
- **Twice awarded Excellence in Instruction award from EM Research Co.**

Geophysical Applications Core Group – IQI (Integrated Quantitative Interpr.) Lead (2008 - 2010)

- **Performed AVO expectation analysis for Alaska Beaufort Sea OCS tender round**
 - Tied multiple regional wells to offshore 2D seismic data to inform seismic far offset amplitude interpretation for reservoir/HC indication
- Produced the delivery of eight advanced workshops over of a 2-year period of geophysics / geology workflows, combining seismic, stratigraphy, core workshops for both unconventional/convention reservoirs, and petrophysics to enable a step-change improvement in exploration behaviors
 - Assembled a panel of experts to design and coordinate the activities of 20 instructors and university professors to provide over 100 ExxonMobil geoscientists with core quantitative interpretation capabilities. **Care was taken to emphasize that geophysics and petrophysics were meant to improve geologic interpretation methods; (many graduates became managers)**

DONALDSONBRADFORDINC CONSULTING - Charlotte, NC.; Lagos, Nigeria 2001 - 2008

President of Geoscience consulting firm.

Cathodic Protection Survey Services (2003 - 2008)

- Surveyed hundreds of underground petroleum-related facilities in NC, SC, and Va that were required to maintain corrosion-inhibiting direct current sacrificial anode systems for ground water protection.

Geophysical Computing Integration and Training onsite - Lagos/Houston (2001 - 2003)

- On-site rotator for geoscience technology transfer for Mobil Nigerian nationals, Lagos.

EXXON EXPLORATION CO - Houston, TX

1994 - 2001

Team Lead for Onsite Geoscience Computing, Central Production Technology (1999 - 2001)

- Advised and assisted with the professional development of 20 geoscience computing staff
- Coordinated post-merger standardization project for 20 client groups, impacting 400+ geoscientists and engineers

Geophysical Modeling Specialist and Trainer – (remote: Pittsburgh, PA) (1997 - 1999)

- Served as liaison between researchers and programmers to create/upgrade proprietary geophysical statistics and modeling reservoir property prediction tools based on seismic attributes; pioneered first geoscientist remote-office, Neville Island, Pa during this 2-year period
- Trained 75 foreign national geophysicists during travel to affiliates in Malaysia, Australia, England, Canada, and Norway.

Geoscience Computing Onsite Specialist, Far East Exploration (1995 - 1997)

- Optimized exploration project cycle time via technology transfer to geophysicists serving the Far East
- Developed and presented a corporate-wide well log standards manual for 100+ relational database users.

ATEC Associates (1994)

- Performed full range of hydrogeological investigations, monitoring/recovery well installations and report writing for remediating shallow aquifers damaged by leaking UST's at many NC/SC locations

SERVICE / EDUCATION / RESEARCH / AWARDS

M.S. Geological Sciences, 1995 Duke University - Durham, NC

Research: Modified government ground water simulation flow model to predict pre- and post-earthquake groundwater flow in Santa Cruz Mtns, Ca. Results used to explain permeability/storage changes due to earthquakes. Performed well withdrawal tests to determine formation permeability and other subsurface reservoir parameters, to initialize 3D finite-difference flow models for history match analysis and prediction

B.S. Geologic Sciences, The Ohio State University - Columbus, OH - 1991

With Distinction, cum Laude --- With Honors in the Liberal Arts (minor in English)

Winner Undergraduate Research Award - Ground Water Flow Modeling - Franklin County, OH

PATENT

Method for rapid calibration of seismic interval attributes to rock properties for assessment uncertainty

Basler-Reeder, K., Matheney, M, and Donaldson, E.,

USA Patent 10,816,684 filed December 8, 2017 and granted October 7, 2020

PUBLICATION

Co-Authored Proprietary report of the Cognitive Adaptive Smart Technology Breakthrough Research Project

MILITARY SERVICE: US Navy Submarine, Nuclear Plant Operations (pre-college) – Reactor Electronics

Six patrols, N. Atlantic near Iceland - USS VON Stueben, SSBN-632, Nuclear Reactor Operator, Gold Crew

INTERESTS

History, Classical Education (incl. philology), Piano, and Golf