

Basil Nwafor

Ph.D. Candidate in Geophysics and Seismology, University of Houston, Texas

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PROFESSIONAL SUMMARY

Enthusiastic Geoscientist with up to 2 years of experience in the oil & gas industry, with an exciting history of proffering innovative solutions and optimizing values for assets in both exploration and developmental projects across different sedimentary basins globally, meeting company goals utilizing consistent and top-notch geological and geophysical practices. Highly skilled in qualitative and quantitative interpretation of seismic data, velocity model building, prospect evaluation, reservoir characterization, well planning, field development planning (FDP), and risk & uncertainty analysis. Excellent reputation for resolving subsurface problems, improving client satisfaction, and being ready to tackle any challenge with a positive attitude. Very flexible, adaptable, and achieves laudable results within the shortest possible deadline.

WORK HISTORY

PhD Candidate /Geoscientist

University of Houston/Lumina Geophysical/The Strickland Group, Texas (Jan 2023 – present)

- ❑ Subsurface leader, SEG EVOLVE CCUS project, focused on **re-characterizing** of sleipner field reservoir for **CO2 storage**, using an amended workflow.
- ❑ **Characterized Powel Ranch Field, Permian Basin, West Texas, USA.** Aim: to recommend two new drill locations. The study involves seismic stratigraphy interpretation to map bioclast-filled channels, prospect evaluation, and risk analysis.

Research Assistant (Geoscientist)

Center for Subsurface Imaging, UTP, Perak Malaysia (Jan 2021 – Dec 2022)

- ❑ Developed **BM-Net Model**, a deep learning model that **automatically picks p and s wave arrival time from seismic signals.**
- ❑ Developed AcoustBoost Model, a Machine learning model that **automates the computation of Acoustic impedance** from 3D Seismic volume.
- ❑ Re-characterized Inas field by applying a novel **sparse layer spectral inversion** for thin-bed enhancement, **geostatistical inversion for facies characterization**, and **AVO analysis** for fluid identification.
- ❑ integrated 3D seismic volume, well, and production data to define a structural and stratigraphic framework for reservoirs, finding additional commercially viable leads and prospects, and increasing the recoverable oil volumes.
- ❑ Performed data room reviews and interpreted seismic and well data gleaned from Malay basin for hydrocarbon production optimization.

Geoscientist (Seismic Interpreter)

Ankor Pointe Integrated Limited, Lagos (Oct-2016 -Dec. 2020)

- ❑ Accomplished several exploration and development projects involving fault interpretation, Horizon interpretation, Seismic-to-well tie, **Map generation, velocity modeling, depth conversion, AVO analysis, Seismic inversion**, static modeling, etc.
- ❑ Actively worked with project teams and clients to achieve project milestones and deliverables, demonstrating excellence in meeting project needs.
- ❑ Interpreted seismic data, and other **geophysical and geologic** data for different field evaluation, development, and exploration projects.
- ❑ Developed opportunities from existing oil reservoirs along with new oil and associated gas, and proposed new wells encountering new hydrocarbon-bearing intervals.
- ❑ Designed projects based on clients' needs, for geoscience and reservoir engineering work scope, assigned tasks, and monitored work progress.
- ❑ Drove revenue improvements by doubling as both technical sales personnel and reservoir geoscientist, allowing my organization to save costs and improve profit margins by about 48.7% in 2019.

- Optimized the production of marginal reservoirs by successfully recommending new in-fill wells.
- Contributed to Oredo Feld development planning (FDP), taking the field's production to its peak in 2019 at 7.15 thousand BPD.

EDUCATION

- Doctor of Philosophy: Geophysics and Seismology, **University of Houston, Texas, USA** - 2023 -01 – Present
- Master of Science: Petroleum Geoscience, **Universiti Teknologi PETRONAS, Malaysia** 2021 -01 - 2023-01
- Bachelor of Science: **Geology & Mining**, Enugu State **University of Science and Technology**, Nigeria 2012-09 - 2016-08

SKILLS

- Expert in qualitative and quantitative **Seismic Interpretation**
- Petrophysical evaluation
- Well Log correlation and reservoir characterization.
- Static reservoir modeling and hydrocarbon Volume Estimation
- Presentation skills
- Computer Vision
- Python Coding
- MATLAB Coding
- Deep Learning
- Machine Learning
- Article writing
- Research
- Teaching

SOFTWARE

Proficient in using the following software:

- Petrel E&P software
- Basic Programming/Machine learning/Artificial intelligence
- DecisionSpace Geoscience
- DecisionSpace Seismic Analysis (QI interpretation)
- Hampson Russel Software (QI interpretation)
- Lumina QI Software (QI interpretation)
- RocKDoc (QI interpretation)
- Techlog (Schlumberger) – Petrophysics
- Microsoft suites (Excel, word, Team, Projects, and Outlook)
- Jupyter Notebook
- Google Colab

LANGUAGE

- English Language

SELECTED TECHNICAL PROJECTS

□ **AVO analysis of Songhai Field, offshore Niger delta Basin (October 2021)**

First Exploration and production oil and gas company

Identified DHI, evaluated and classified fluid types based on AVO responses. Generated AVO cross-plot clusters and cross-sections, and overlaid results on structural maps to verify conformity. Compared results with seismic attribute extractions to determine fluid contacts and made recommendations based on results.

Reservoir Evaluation of Amoji Marginal Field, Onshore Niger Delta Basin (June-August 21) - *Independent*

Consultation Interpreted 82 square kilometres sized seismic data that has 7 reservoirs, 3 wells, and 2 side-tracks. The work scope involved data loading, Well-seismic-tie, Horizon, and fault interpretations, seismic sequence stratigraphic interpretation, loop tie analysis, time residual analysis, velocity modelling, depth conversion, time and structural map generation, volume estimation, and recommendations.

Ogo field evaluation and Prospectivity Studies (July 2020-Nov. 2020)

Client: LEKOIL Nigeria Limited

Evaluated Ogo Field in Dahomey (Benin) Basin, using supplied PSTM Partial angle (Near, Mid, and far) stacks and Full stacked PSDM 3D seismic volume, well data, and other available information for all hydrocarbon bearing Cretaceous reservoirs and defined the structural, sedimentological, and stratigraphic framework for the reservoirs, conducted detailed mapping interpretation on prospective levels to identify viable exploration leads.

OML 150 wells intervention and opportunity generation studies (Sept. 2019 -March 2020) - Client: Continental Oil and Gas (CONOG)

Participated in the evaluation OML 150, using 3D seismic volume, well data, production data and other available information to delineate all hydrocarbon-bearing reservoirs and the remaining hydrocarbon pool reserves. Integrated well and production data to define the structural and stratigraphic framework for the reservoirs and discovered additional prospects, by-pass oil, oil behind sleeves, attic oil etc. We also conducted detailed mapping interpretation on possible deep prospective levels to identify technically and commercially viable exploration leads and prospects.

Odeama Creek Field Review and Further oil & AG development Study (Dec 2018.- Aug. 2019). Client: AITEO Oil and Gas Limited

Developed oil opportunity in the Odeama Creek oil and gas field from existing oil reservoirs along with further oil and Associated Gas development in the Field. New wells were drilled, encountering 25 hydrocarbon-bearing intervals. New prospects were Identified and evaluated.

PROFESSIONAL TRAININGS

- ⊗ RokDoc Rock physics (Ikon science) (Jan 2022)
- ⊗ RokDoc Seismic inversion (Ikon science) (February 2022)
- ⊗ RokDoc Geo-Pressure (Ikon science) (February 2022)
- ⊗ RokDoc Geomechanics (Ikon science) (March 2022)
- ⊗ Application of Permedia in Carbon Capture Unification and Sequestration (CCUS) and Basin Modelling - Halliburton (June 2021)
- ⊗ Signal Processing Using MATLAB Programming Language – (April 2021)
- ⊗ Spectral Inversion and Seismic resolution enhancement – (May 2021)
- ⊗ Full Stack, Partial angle stack Inversion and AVO analysis – (Dec. 2020)
- ⊗ International Well Control Forum, Level 1. (IWCF) – January 2020
- ⊗ Well Crew Resource Management (IWCF) – January 2020
- ⊗ ExxonMobil Visit Geoscience Programme (VGP) Training (2015)
- ⊗ Seismic Interpretation workflow using Petrel E&P software– Ankor Pointe Integrated Limited

AWARDS, HONOURS AND CERTIFICATES

- Early Ph.D. Project Award, Department of Earth and Atmospheric Science, University of Houston, Texas, April, 2023
- Best Graduate Assistant Student, Geoscience Department, Universiti Teknologi PETRONAS (2021 Departmental end of the year awards)
- Certificate for online course participation in Energy Transition - Innovation Towards a Low Carbon Future – IFP School, Paris, France (2019)
- Third Best Technical Paper Presentation award by Nigerian Association Petroleum Explorationist (NAPE), at 39th Edition of their International Conference, 2021
- Health, Safety and Environment Certificate – World Health Organization (2018)
- Best graduating student, Geology and Mining Department (2016)
- Best undergraduate Sequence Stratigraphy Mapping Project (Panel 1), GEO ESUT (2016)
- National award of excellence for “invaluable contribution and uplifting Geoscience Students in Nigeria”. By Nigeria Mining and Geoscience Society of Nigeria, Students Body. (2016)
- Best seminar presentation on “The Application Geoscience for Environmental Preservation” by AAPG ESUT Chapter (2016)

RESEARCH PUBLICATIONS

- 1) **B. O. Nwafor**, M. Hermana, M. Elsaadany, (2022), Geostatistical inversion of spectrally broadened seismic data for evaluation of oil reservoir continuity in Inas field, offshore Malay Basin, *J. Mar. Sci. Eng.* 2022, 10 (6), 727.
DOI: <https://doi.org/10.3390/jmse10060727>
- 2) **B. O. Nwafor** and M. Hermana, (2022), Harmonic extrapolation of seismic reflectivity spectrum for resolution enhancement: an insight from Inas field, offshore Malay basin.– *Appl. Sci.* 2022, 12(11), 5453.
DOI: <https://doi.org/10.3390/app12115453>
- 3) **B. O. Nwafor**, M. Hermana, (2022), Understanding of the mechanisms of earth fissuring and the relative importance of their causative factors for hazard prediction in Najran city, Saudi Arabia, *Environmental Sciences*, (Accepted)
- 4) **B. O. Nwafor**, H. Ts. Gebretsadik, M. Hermana, (2022), Characterization of intertidal depositional environment using spectrally decomposed high-resolution seismic and biostratigraphic data: a case study of Inas Field, offshore Malay Basin, *Journal of paleontology* (in Press)
- 5) **B. O. Nwafor**, (2021): Evaluation of Stratigraphic trapping Potentials of Sedimentary Sequences in Nigerian's sector of Dahomey Basin using Petro-elastic parameters and multi-AVO attributes, 39th NAPE international Conference, 2021 Edition, Lagos, Nigeria