

## Curriculum Vitae

**Name:** Natasha Khan

**Position/Title:** Researcher, Dr.

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**Contact:** 0334 5456090

**Higher Education Commission- PhD Country Directory (HEC PCD) No:** 24626

**Research Interests:** Petroleum Geology, Oil and Gas prospects, Sequence and Seismic Stratigraphy, Well Logging and Petrophysics, Thin Sections Study (Mineralogy/Micropaleontology), Computational Geosciences, Geomorphology (GIS/Remote Sensing)

## Summary

Ph.D. in Geology (2020) from the University of Peshawar (Pakistan). B.Sc. (Hons.) and M.Sc. Geology with distinction (first position in both sessions 2006-2007, University Gold Medal), followed by M.Phil. in Geology (2015). School and college education received from Pakistan International School Jeddah (Saudi Arabia). Having 9+ years of professional work experience in teaching at the University of Peshawar (Pakistan), oil and gas company (Petroleum Exploration Pvt. Limited, Islamabad, Pakistan), Government oil and gas sector (Energy and Power Department, Government of Khyber Pakhtunkhwa, Pakistan) and Abbottabad University of S&T. Research experience in collaboration with professor/lecturer from the Royal Holloway University of London, United Kingdom (UK). Reviewer/referee for international impact-factor journals including Arabian Journal for Science and Engineering, Journal of Petroleum Science and Engineering, Marine Geophysical Research, Petroleum Geoscience Natural Resources Research, Bulletin of Geophysics and Oceanography and MDPI Journals (Minerals, Applied Sciences, Processes and Sustainability).

Previously Submitted 1 project to PSF for funding in collaboration with ORIC ABBOTTABAD UNIVERSITY OF SCIENCE AND TECHNOLOGY.

## Achievements

Gold Medalist

Ist Position Holder both in BSc and MSc Geology.

HEC Scholarship for PhD Studies.

Merit Certificate and Cash Prize in SSC for securing A+ in FBISE Board Exam.

3<sup>rd</sup> Best Student Paper Award in ATC/PAPG (November 24-25, 2015).

## Education

**Degree name:** **Ph.D. Petroleum Geology (2020)**

**Aggregate:** 4.00/4.00 CGPA

**Institute:** NCE in Geology, University of Peshawar, Pakistan (**Session:** 2016-2017)

**Courses:** Advanced Geophysics, Diagenesis of Sediments, Marine Depositional Environments, Sequence Stratigraphy, Continental Environment and Facies, Regional Tectonics

**Research Title:** *Stratigraphic analysis of Cretaceous and Paleogene successions in the eastern Sulaiman Depositional Province, D.G. Khan, Pakistan: Implications for hydrocarbon potential (Unpublished PhD Dissertation)*

**Degree name:** **M.Phil. Petroleum Geology with Geophysics as minor**

**Aggregate:** 3.83.00/4.00 CGPA

**Institute:** University of Peshawar Pakistan (**Session:** 2012-2013)  
**Courses:** Applied Geophysics, Seismic Stratigraphy, Formation Evaluation, Petroleum Geology, Tectonics of North Pakistan, Non clastic sedimentology  
**Research Project:** *High resolution sequence stratigraphic analysis of Eocene rock units Indus Offshore, southwest Pakistan: Implications for hydrocarbon potential (Unpublished MPhil Thesis)*

**Degree name:** **MSc. Petroleum Geology (with First Position, University Gold Medal)**  
**Aggregate:** 82%  
**Institute:** University of Peshawar Pakistan (**Session:** 2006-2007)

**Degree name:** **B.Sc. Geology (with overall First Position)** **Aggregate:** 74%  
**Institute:** University of Peshawar Pakistan (**Session:** 2003-2006)

**Degree name:** **SSC and HSSC**  
**Institute:** Pakistan International School Jeddah, KSA (**Sessions:** 2001 and 2003)

### **Work Experience/ Professional Training**

**Organization:** **Abbottabad University of S&T, Havelian, Abbottabad (12 Oct 2020- Oct 2023)**

**Designation:** Assistant Professor (Petroleum Geology)

**Job Responsibilities:** Teaching and Research (Courses Taught: Micropaleontology, Sedimentology, Research Methodology, Sequence Stratigraphy, Introduction to Paleontology, Environmental Geology). Research Supervision of BS Thesis students'. 3 groups of BS students worked under my supervision on the hydrocarbon potential of Kohat & Offshore basins.

**Students Supervision:** Supervised BS Theses of 21 Students as 3 Groups/ Teams. The theses titles are:

1. ***Reservoir investigation of the Cretaceous and Paleocene strata in the Kohat Sub-Basin, north Pakistan. Session (Spring 2017-Fall 2020).***
2. ***Analysis of Neogene and Quaternary strata by using 2d seismic and well log data from the Offshore Makran, Sw Pakistan. Session (Fall 2017-2021).***
3. ***Petrophysics of the Cretaceous clastic strata from the Upper Indus Basin (NW Pakistan). Session (Fall 2018-Spring 2022).***

### **Projects:**

1 project submitted to Pakistan Science Foundation (PSF) worth 0.9 million PKR for funding. The Project title is: ***Evaluation of marble slurry waste material and granite by-product from Abbottabad, Mansehra and Mardan mining and industrial sites for economical utilization***

***WORKED IN CLOSE COLLABORATION WITH ORIC AUST IN FORMULATING AND DESIGNING DIFFERENT PROJECTS FOR SUBMISSION TO FUNDING AGENCIES.***

**Organization:** Energy Department, Government of Khyber Pakhtunkhwa (Sep 2013- Dec 2015)

**Designation:** Assistant Manager (Oil/ Gas)

**Job Responsibilities:** Worked on government related projects including the establishment of the Provincial Oil and Gas Company (KPOGCL).

- ✚ Furnished reports on various topics assigned by Secretary Energy and Power Department including:
  - i. Oil and gas potential of KP with details of blocks where concession rights are already awarded
  - ii. Well-wise oil and gas production in KP
  - iii. Gathering data on unconventional oil and gas resources such as oil shales, stranded and tight gas possibilities.
  - iv. Coal potential of KP exploring the possibility of coal-fired power generation based on options such as mouth-of-the-quarry power generation, CBM, coal gasification as well as coal water slurry based generation.
  - v. Gas based combined cycle thermal power plant, working out the dependable availability of gas for such power plant.
- Signing PCAs' of **Marwat, Pezu and Baratai blocks** for Khyber Pakhtunkhwa Oil and Gas Company Limited (**KPOGCL**).
- Preparation of presentation "Security for Revenue Generation in Khyber Pakhtunkhwa".
- Geological and geophysical data review of Marwat Block for farm-in opportunity
- Preparing Opening Words/ talking points for Chief Minister Khyber Pakhtunkhwa for
  - meeting with Federal Minister for Petroleum and Natural Resources.
- Various tasks carried out for the newly established KPOGCL in Jan 2014 during its initial setup stage including KPOGCL Board of Directors details, Ads (Dawn, News, Mashriq) for hiring Professional Staff for KPOGCL, G&G Studies for farm-in opportunities in OGDCL, OPL blocks.
- Written Correspondence with DGPC for the award of Paharpur Block, Request of Unspent Balance welfare funds by E&P Companies to date including bidding round, Complimentary access to DGPC Data Room to KPOGCL.
- Grant of new licenses to new OMCs' (Oil Marketing Companies)
- Review of Petroleum Policy 2012 for Royalty and Production Bonus details, including
  - policy for utilization of royalty issued by the Finance Department, KP and policy for
  - utilization of production bonus notified by E&P, Supreme Court Judgement on royalty &
  - production bonus in KP.
- Review of Tirah and Orakzai blocks data/ presentations provided by OGDCL to KPOGCL for joint venture partnership.
- Review Oil/ gas Exploratory and development/ appraisal activities, grant of new D&P Leases, development plans, Well-wise oil/ gas production details of major oil/ gasfields in the upper indus basin (Nashpa- Chanda- Mela – Manzalai etc)
- Review different oil/ gas projects, proposals and furnishing comments on various oil and gas proposals in light of Petroleum Policy 2012, CSR (Corporate Social Responsibilities), PPRA Rules (Public Procurement Regulatory Authority).
- Attended meetings at various Government Departments as representative of Energy and Power Department. Pre-Bid Meeting on Request for Proposal (RFP) for **Shale Gas, Shale Oil and Tight Gas (SSTS) Study in Khyber Pakhtunkhwa.**
- Summaries to Chief Minister on Shale Gas, Gas Turbine Combined Cycle (GTCC) Power Plant effective utilization of oil and gas resources in the province.

- Undertake analysis of oil and gas regimes and recommend/ comment on policies and regulations keeping in view the laws and regulations in Pakistan as well as international practices.
- Provide quality analysis including risk based assessments to evaluate the feasibility of projects and facilitate the decision-making.
- Provide assistance in strategy development, negotiation of commercial terms and business plan development on oil and gas-related matters.
- Assessment of projects both in exploration and production assets.
- Review of PC-1 for the establishment of “Technical Lab” and furnishing comments for its approval by the Planning and Development (P&D) Department.
- Liaison with Home and Tribal Affairs Department, KP; Ministry of Interior, Islamabad, Ministry of Petroleum and Natural Resources (MPNR) and various security agencies for the provision of security to oil and gas E&P companies to carry out exploratory activities in the province.

**Organization:**                    **Petroleum Exploration (Pvt.) Limited (Nov 2010- April 2012)**

**Designation:**                    Assistant Geologist

**Job Responsibilities:**

- **Worked on Exploration/ Development projects in Middle and Lower Indus Basins of Pakistan including Badar, Salam, Mirpur Mathelo, Mirpur Khas West and other adjacent Blocks**
- Construction of Regional Stratigraphic/ Structural Well Correlations and Isopachs, Reservoir Facies analysis, Play Fairway Analysis.
- Geological Data Management and Compilation of well completion reports and composite logs
- Data QC and loading of sub-surface data (seismic, well data etc) into the relevant software
- Construction of Geological Well Prognosis on the basis of the previous data, isopachs etc, Reserve Estimation/ Prospect Evaluation
- Preparing of Geological Drilling Manuals, Geological Farm-In Presentations.
- Well Logs petrophysical interpretation (PRIZM and EarthPak, LogPak Modules) to evaluate the sand bodies termination and facies changes on the basis of the log response and properties
- Sequence stratigraphic interpretation of well logs and construction of depositional models.
- Construction of Allen Diagrams (*Fault Seal Analysis*), *Burial History Plots* to determine source rock maturity
- Presentations in TCM's/ OCM's (Technical Committee Meetings) of different blocks.
- Basic knowledge of 2D seismic interpretation and generation of Time and Depth structure maps.
- Experience in use of Geological/Geophysical modules: Kingdom, Geographix, Petrel (Schlumberger)

**Projects**

- In-House study of **Sui Main Limestone** and **Lower Goru Sands** in terms of reservoir distribution in **Middle Indus Basin** and its comparison/ correlation with the studies/ evaluation by Fugro Robertson UK
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**Organization:** Department of Geology, University of Peshawar (Sep 2008 - Nov 2008)

**Designation:** Lecturer (Adhoc)

**Job Responsibilities:** Taught the subject of **Sequence Stratigraphy** to the students of BS Part-4. Lectures on the **Stratigraphy of Pakistan** to BS Part-2 students covering the Introduction, Tectonic framework, sedimentary basins, source rocks and reservoir characteristics of sedimentary basins, structural styles and petroleum play, producing and potential oil and gas reservoirs.

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### **Full Length Articles/ Publications:**

1. **Khan, N\*.,** Rehman, K., Ahmad, S., Khokher, J., Hajana, M. I., Hanif, M., 2016. Sequence stratigraphic analysis of Eocene Rock Strata, Offshore Indus, southwest Pakistan. Marine Geophysical Research, Vol. 37, No. 3, 207-228. 10.1007/s11001-016-9280-5. **(Impact Factor: 2.693)**
2. **Khan, N\*.,** 2018. Comparative study of pore pressure in wells of Indus Offshore, southwest Pakistan. Arabian Journal for Science and Engineering, 43, 349–359. <https://doi.org/10.1007/s13369-017-2867-6>. **(Impact Factor: 2.807)**
3. **Khan, N\*.,** Rehman, K., 2018. Petrophysical Evaluation and Fluid Substitution Modeling for Reservoir Depiction of Jurassic Datta Formation in the Chanda Oil Field, Khyber Pakhtunkhwa, Northwest Pakistan. Journal of Petroleum Exploration and Production Technology. <https://doi.org/10.1007/s13202-018-0513-9>. **(Impact Factor: 2.508)**
4. **Khan, N\*.,** 2019. Tectonic geomorphology and structural architecture of eastern Sulaiman Fold Thrust Belt (SFTB) and adjacent Sulaiman Foredeep (SF), northwest Pakistan. Geomorphology 343 (2019) 145–167. **(Impact Factor: 4.406)**
5. **Khan, N\*.,** 2019. Application of integrated clustering and petrophysical-microscopic methods for facies determination of Campanian–Maastrichtian and Danian–Thanetian reservoirs: Constraints for tectonostratigraphic influences on sedimentation across the NW Indian Plate margin. Journal of Petroleum Science and Engineering (now known as *Geoenery Science and Engineering*), Volume 180, September 2019, Pages 861–885. <https://doi.org/10.1016/j.petrol.2019.05.049> **(Impact Factor: 5.168)**
6. **Khan, N\*.,** Hanif, M., 2020. Abnormal formation pressure in the Sulaiman Province, Pakistan: An insight into factor effecting reservoirs in a compressional strike-slip region. Arabian Journal for Science and Engineering. **(Impact Factor: 2.807)**
7. **Khan, N\*.,** Scarselli, N., 2021. Seismostratigraphic architecture of the Sulaiman Fold-Thrust Belt Front (Pakistan): Constraints for resource potential of the Cretaceous-Paleogene strata in the East Gondwana Fragment. Journal of Asian Earth Sciences. 205, 104598. <https://doi.org/10.1016/j.jseaes.2020.104598> **(Impact Factor: 3.449)** Available online 29 October 2020.
8. **Khan, N\*.,** Rehman, K., 2021. Application of fuzzy logic and neural networks for porosity analysis using well log data: an example from the Chanda Oil Field, Northwest Pakistan. Earth Science Informatics. <https://doi.org/10.1007/s12145-021-00679-2> **(Impact Factor: 2.878)**
9. **Khan, N\*.,** Ali, A., Khursheed, S., Ali, K., Saeed, M., 2022. Reservoir Potential Assessment of the Tortonian–Calabrian Sediments from the Makran Offshore (southwest Pakistan) through a

Multidisciplinary Approach. Acta Geologica Sinica (English Edition). DOI: 10.1111/1755-6724.14954 (**Impact Factor: 3.282**)

10. Sajid, M., **Khan, N\***, Shah, F., Kashif, M., Khan, S., 2022. Geochemical characteristics of coal seams within the Paleocene Patala Formation, Central Salt Range coal mines (Punjab), Northern Pakistan. Journal of Sedimentary Environments. <https://doi.org/10.1007/s43217-022-00098-3> (HEC Y-Category Journal).
11. Iqbal, A., Sajid, M., **Khan, N\***, Shah, F., Khan, S., Rehman, F., 2022. Petrophysics based reservoir evaluation of the Cretaceous Lower Goru "C" Sands, Middle Indus Basin, Sindh, Pakistan. Int. J. Econ. Environ. Geol. Vol. 13 (3) 08-14. (HEC Y-Category Journal)
12. **Khan, N\***, 2023. Carbonate facies patterns of the Lutetian-Priabonian strata from the western Indian plate margin: Reservoir potential and palaeoclimatic implications. Marine and Petroleum Geology, Volume 154, August 2023, 106313 <https://doi.org/10.1016/j.marpetgeo.2023.106313> (**Impact Factor: 5.361**)
13. Khan, S., Rehman, F., **Khan, N\***, Sajid, M., 2024. Structural and seismic attribute analysis of the Paleocene carbonate reservoir from the Balkassar Field, Potwar Plateau, Pakistan. March 2024. Journal of Petroleum Research and Studies 14 (1):18-35. DOI:10.52716/jprs.v14i1.871

**Khan, N\*, Corresponding author**

### Published Abstracts

1. **Khan, N.**, Rehman, K., Younis, M., 2016. Reservoir analysis of Datta sands in Chanda-1 and Chanda Deep-1 wells of Chanda oil field, Khyber Pakhtunkhwa, northwest Pakistan. International Conference on Earth Sciences Pakistan, 2016. Abstract Published in Abstract Volume of ESP 2016.
2. **Khan, N.**, Arif, M., 2017. Petrography and Mineral Chemical Study of quartzofeldspathic younger bodies in Chakdara Granite Gneiss, northwest Pakistan. International Journal of Geological and Environmental Engineering, Vol. 4., No. 5.
3. **Khan, N.**, et al., 2018. Delineating structural styles and geomorphological patterns using satellite imagery and seismic images for an improved interpretation in a Fold Thrust Belt and adjacent Foredeep of Pakistan. 5th International Conference Earth Sciences Pakistan 2018, Baragali Campus, 11-13 August, 2018.

### Professional Training/ Courses Attended

- 1 day Course on Petrophysical Interpretation by Schlumberger in June 2011.
- 1 day Course on FMI (Formation Micro Imaging) and MDT (Modular Dynamic Testing) by Schlumberger in June 2011.
- 1 day Sequence Stratigraphy course arranged by PAPG in Hotel Hill View, Islamabad, September 15, 2014 by Applied Stratigraphix LLC. (USA).
- 5 days PETREL training arranged by Schlumberger in Serena, Islamabad from August 3 to August 7, 2015.
- 1D Workshop on Seismic Quantitative Interpretation arranged by National Center of Excellence in Geology, University of Peshawar and OGDCL/ OGTI Islamabad, on Dec 4, 2015.
- Course on Exploration and Development of Carbonate Reservoirs, 19<sup>th</sup> Jan, 2016, Applied Stratigraphix LLC. USA
- Technical Course on **Carbonates Seismic Stratigraphy**, 11<sup>th</sup> Feb 2016, Applied Stratigraphix LLC. USA
- Reservoir Geomechanics course by Stanford University Online (26 March to 2 June 2018).

- 2 coursera courses completed with e-certificates from the University of California, Irvine (**Fundamentals of Management**) and the University of London (**Managing the Company of the Future**). Courses completion date: March, 2023.
  - **Introduction to GIS Mapping** from the University of Toronto, Canada with e-certificate through Coursera. Course completion date: May 20, 2023.
  - **GIS, Mapping and Spatial Analysis Specialization Course**, University of Toronto. Completion and Certificate Issue: July 2023.
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### Computer Skills

- Geological/ Geophysical Modules: IHS Kingdom, Geographix, Petrel, Interactive Petrophysics (IP), LMKR EMS (Exploration Management System)
- GIS Arc, Envi for satellite imagery interpretations and remote sensing data analysis
- MS office (Word, Power Point, Excel), Corel Draw, Adobe Illustrator.
- Online specialization course in **GIS Mapping, And Spatial Analysis** from University of Toronto, Canada. Course completion certificate: May 20, 2023.