

C O N T E N T S

Editorial Policy
and
Instructions.....ii

Editorial Board
Members.....iv

2021/2022
NAPE Executive
Committee.....v

Online
Membership
Registration
Procedures.....vi

**Application of Quantitative Interpretation in De-risking Hydrocarbon Type:
Implication for Shallow Water Exploration in EKEM Field, Niger Delta**

Obinna Chudi, Magnus Kanu, Uche Johnbosco, Namso Udoh, Afolabi Fatunmbi,
Obobi Onwuka, Wodu Ebimobowei, Irifeta Ovwigho, Bart Tichelaar and Hong Xian.....1

**Innovative Depth Imaging and Broadband Processing:
A case study from Erha 4D Broadband Reprocessing Project**

Akinwotu K., Assiak E., Bansal R., Obi I., Nwachukwu D., Burnett W. and Park J.....10

**Fault Seal Analysis: A Case Study of the Mixed Clastic Baka Field,
Coastal Swamp Niger Delta Basin**

Njoku, I. O., A. I. Opara, C. A. Jackson, E. M. Okoro, H. N. Echetama,
C. C. Z. Akaolisa and S. O. Onyekuru.....19

**NFW Potential of the Early Accommodation Deepwater Sands (EADS)
Reservoir in Etim Field, NNPC/MPN JV Acreage, Offshore Nigeria**

Banye O. and Ezeh F.....26

**Lithofacies Characterization in Seismic Space Using Rock Physics-based
Decoupling: Application to Niger Delta Turbidite Reservoirs**

Olatunbosun Olagundoye, Sunday Amoyedo, Loreline Kaucsar, Eric Tawile,
and Christopher Enuma.....32

**Depositional Evolution and Sequence Stratigraphy of the Amasiri
Sandstone Member of the Eze-Aku Formation, Southern Benue Trough**

Ogechi C. Ekwenye, Ayonma W. Mode and Ogechukwu A. Moghalu.....44

**3D Basin Architecture Using Gravity and Magnetic Data Closes a
Structural Gap in Petroleum Systems Modeling**

Abimbola Durogbitan, Simon Eyogwe, Ifedayo Fadakinte and Collins Ibekwe.....58

**Convolutional Neural Networks for Salt Bodies Mapping using
Machine Learning: A Case Study of the F3 Block, North Sea**

Olawale Ibrahim, Ayomide Daramola and Sekinat Kemisola Oyero.....66

**Integrated Hybrid Approach for Litho-facies Log Prediction Using
Machine Learning Algorithms in Hydrocarbon Fields in the Niger Delta**

Jerome Asedegbega, Alexander Nwakanma and Richard Alakuko.....71

Petro-elastic Modelling and inverse-Q Estimation for Fluid Discrimination

Wasiu Olanrewaju Raji.....81

What has Nuclear Magnetic Resonance got to do with Low Resistivity Pay?

Stanley Oifoghe, Ibe Eziulo and Stephane Zeh Akame.....90

**Value of Cost Effective and High Impact Data Acquisition Strategy-
Learnings from Usari Graben Re-Development**

Orupabo S., Olatunbosun A., Kumapayi O., Akinpelu J. and Inwere I.....94

**COVER PHOTO
EXPLANATION:**

Generalized Usari Field
Geological Cross-Section
Showing Shallow Gas
Anomaly above the Graben
Area.

Orupabo S., Olatunbosun
A., Kumapayi O.,
Akinpelu J., Inwere I.
Mobil Producing Nigeria
Unlimited

EDITORIAL POLICY AND INSTRUCTION TO NAPE BULLETIN AUTHORS

The NAPE Bulletin is designed for the dissemination of information on the geology and associated technology of petroleum, natural gas, and other energy mineral resources.

ARTICLES

Articles are papers of major extent and contain detailed geoscientific data that support original interpretations or methods. Article length is not to exceed 40 double-spaced typewritten pages. Otherwise, Special authorization must be sought through the editor. Published papers include, but are not invariably limited to those presented at any of the Association's technical sessions or the annual conference.

MEMORIALS

Memorials are not to exceed 800 words. Longer text is subject to approval by the editor.

MANUSCRIPT REVIEW

All Articles are reviewed by two or more referees for technical merit, quality of scientific content, and utility of the results for practicing geoscientist. Discussions and replies are reviewed by the Editor. The Editor makes the final decision concerning the acceptance or rejection of a paper.

MANUSCRIPT PREPARATION

Manuscript must be typed double-spaced in Calibri font 11. Please send in a CD or Flash Drive, one original, and 3 photocopies of the manuscript and five photocopies set of the figures to the Editor-in-Chief, NAPE Secretariat, House 47A, Femi Okunnu Rd, Estate Phase 1, Lagos. Send the revised manuscript and any tables and/or computer-generated figures on CD/Flash drive using the following guidelines:

Copy text file in original application

Save graphic file in original application

Indicate disk format and name of application (see below)

Write names used on CD/Flash drive and last name of senior author on label

MANUSCRIPT PARAMETERS

Use metric units or measure with English unit equivalent in parentheses if needed.

Laboratory measurement do not require conversions.

Do not use abbreviations except for units of measure.

Cite figures in numerical order.

Cite all references and include complete information for each citation in References Cited section.

Abstract should not be longer than 25 lines.

REFERENCE FORMAT

References are ordered alphabetically: In case of multiple listings by the author(s), references are ordered by date (earliest first) and then alphabetically.

Single author journal article: Author's last name, Initials, year title of paper (capitalize only proper nouns): full name of journal, v.x.p. Xx-xx.

Computer programs published in Journals: Author's last name, Initials, year, program title: full of journal, v x p. xx-xx.

Computer programs on disk: organization name, year, program name, version number: city of distributor, name of distributor.

We do not cite work submitted or in preparation: these works are cited as personal communication (e.g. S Jonas, 1990, personal communication within text only).

Units

Measurement should be in metric (S.I) units in text and in illustrations or metric with Imperial equivalent in parentheses.

MANUSCRIPT SECTIONS

Manuscript should be organized as follows:

Title

Author(s) and address(es)

Affiliation(s)

Acknowledgments, if included

Abstract (summarizes paper, approximately 250 words, 25 typed lines)

Text (use headings and no more than two classes of sub headings)

Appendix(es), if included

References Cited

Figure captions (listed on a separate sheet) and NOT 'ENCLOSURE' or 'PLATES'

Figures (separate from text)

Tables (separate from text)

ARTWORK PREPARATION

Identify by number all figures using pencil, non-reproducing blue ink, or Indelible Ink.

Do not submit figure larger than 17.8 x 2.9cm (7 x 9 In), expect

with permission of the Editor.

Oversize or colour figures are published at expense of author.

Submit colour figure on CD/Flash drive, as print not larger than 20.3 x 25.4cm (8 x 10 in), or as transparencies not larger than 15.2 x 21.6cm (6 x 8.5in) Do not send ink-jet images or colour photocopies.

Indicate orientation and scale on photography or in caption.
Scales/Axes

All figure must include a scale.

Axes must be labelled on graphs.

Scale bar must be included on photo-micrographs. If a slide is submitted, affix scale bar to a photo print of the slide and we will transfer the bar scale to the slide.

Artwork will not be returned.

PERMISSION/COPYRIGHT

The author is responsible for obtaining permission to use previously published Illustrations. A letter of permission from the copyright holder must be submitted with the manuscript before editing begins.

GALLEY PROOF

No content changes are allowed at galley proof stage.

COVER PHOTOGRAPHS

The Bulletin accepts good quality colour slides of geologic interest for the cover. Slides will not be returned.

REPRINTS

Senior or corresponding authors should arrange with the editor for reprints. Charges shall be borne entirely by the author(s).

SUBMISSION TO NAPE OF COMPUTER-GENERATED TEXT AND GRAPHICS

NAPE uses the printing press for the production of periodicals and thus is limited to the applications and formats locally available. The following are the guidelines for the Computer-Generated Text and Graphics.

APPLICATION AND FORMATS

Save text files in their original application as indicated below

TEXT:

Microsoft Word

GRAPHICS:

Powerpoint (current edition) is recommended

SPREADSHEET:

Excel (current version)

NAPE Bulletin V. 31 No 1 (April 2022)

MEDIA REQUIREMENTS

Please label your CD/Flash drives with your name contents, and the name of the applications(s) used as well as the file format.

If you have any questions about how to submit your computer-generated text and graphics, please contact The Editor-in-Chief, NAPE Secretariat, House 47A, Femi Okunnu Housing Estate, Lekki Phase 1, Lagos.

NAPE POLICY ON ACCEPTANCE OF TECHNICAL PAPER FOR PRESENTATION

It is the policy of **NAPE** to publish papers present at any of its Technical Meetings or Annual Conference. For this purpose, the Association publishes.

- (a) The Bulletin of the Nigerian Association of Petroleum Explorationists (ISSN 2734-3235) which contains technical papers presented to the Association during the preceding Association year, solicited papers, and other papers judged suitable for publication in the Bulletin.
- (b) Proceedings of the Annual Conference of the Nigeria Association of Petroleum Explorationists (ISSN 07944-1064) which included papers and discussions at the Annual preconference Workshop and Conference.

In pursuance of this policy, interested contributors to **NAPE** technical program note the following:

1. The presenter would ensure the release of any proprietary data in their texts from the relevant authorities.
2. Although **NAPE** prefers original contributions, part published works may be considered for publications.
3. Where an author represents a paper orally to the Association and does not wish to have the paper published for proprietary reasons or others technical reasons, the author should clearly indicate that on this manuscript
4. All papers are sent to Independent reviewers for technical evaluation before publication

MANDATORY REQUIREMENTS FOR SUBMISSION OF PAPERS

It is mandatory for authors submits along their papers, the following via the electronic media:

1. A brief bio-profile
2. A passport size photograph

Reprints of papers in this Bulletin are available for a fee from the

NAPE Secretariat,
47A, Femi Okunnu Housing Estate,
Lekki Peninsula, Lagos
P.M.B 12598, Marina, Lagos.
Tel:(234)-1-9092143198.
e-mail: infor@nape.org.ng
website: www.nape.org.ng



EDITORIAL BOARD MEMBERS



Dr. Christopher Asuquo Jackson
Editor-in-Chief

Editor-in-Chief

Dr. Christopher Asuquo Jackson

PetroVision Energy Nigeria Limited, Lagos.

Mobile: +2348063922525

Email: chrisjackconsult4all@yahoo.co.uk
editorinchief@nape.org.ng

Assistant Editor-in-Chief

Mrs. Victoria Okorie

Chevron Nigeria Limited, Lagos.

Editorial Board Advisers

Dr. Lawrence Fadiya

Obafemi Awolowo University, Ile-Ife

Dr. Jasper Nwachukwu, FNAPE

Atlantic Subsurface Energy Consultants Ltd

Prof. Gbenga Ehinola, FNAPE, FNMGS

University of Ibadan, Nigeria

Dr. Juliet Emudianughe

Federal University of Petroleum Resources, Effurun

Prof. Moruffdeen Adabanija

LAUTECH, Ogbomosho

Dr. Berti Ozumba, FNAPE

Ex-SPDC, Port Harcourt

Prof. Olusola Ojo, FNMGS

Federal University Ado-Ekiti

Associate Editors

Mr. Ehi Bazuaye

NAOC, Abuja

Dr. Adekunle Sofolabo

University of Port Harcourt

Mr. Olusegun Obilaja

SNEPCO, Lagos

Prof. W. A. Mode

University of Nigeria, Nsukka

Mr. Kolawole Fabiyi

Chevron, Lagos

Mr. Afolabi Fatunbi

Shell, Port Harcourt

Mr. Wilson Osung

Petroleum Training Institute, Warri

Dr. JohnBosco Onyeji

Chevron, Lagos

Dr. Thomas Harry

Akwa Ibom State University

Dr. Jerome Asedegbega

G-Cube Energy Services

Dr. Kehinde Olafiranye

SNEPCO, Lagos

Dr. Abimbola Durogbitan

AMNI, Lagos

Dr. Ifeanyi Obi

Exxon Mobil, Lagos

Prof. Taofik Adedosu Adewale

LAUTECH, Ogbomosho

Dr. Noble Nnakenyi

NPDC / NNPC

Mr. Udeme Udofia

WTS Energy, Houston, USA

Mr. Timothy Tella

University of Leeds, UK

Prof. Ernest Durugbo

Redeemer's University, Ede, Nigeria

Mr. Reginald Mbah Sureseis

Geosolutions Limited

Mr. Francis Ezeh

Exxon Mobil, Lagos

Mrs. Eudoria Ochai-Audu

Shell, Port Harcourt

Mrs. Oluwatosin Odewoye

Seplat Energy

Dr. Adelola Adesida

Shell Petroleum Development Company

Dr. Chidozie Princeton Dim

University of Nigeria, Nsukka

Mrs. Abiola Soremekun

Charity Partway Solutions



**NIGERIAN ASSOCIATION OF
PETROLEUM EXPLORATIONISTS**

47A, Femi Okunnu Housing Estate, Lekki Peninsula, Lagos.
P.M.B 12598, Marina, Lagos.
Tel: (234)-1-9092143198.
E-mail: info@nape.org.ng Website: www.nape.org.ng

**2021 / 2022 NAPE
EXECUTIVE COMMITTEE**

Dr. James Edet , FNAPE. President	Total E & P Nigeria Ltd., Lagos.
Dr. Anthony Ofoma , FNAPE Vice-President	Halliburton Energy Services Nigeria Limited
Mr. Elliot Ibie , FNAPE President-Elect	Shell Petroleum Development Company, Port Harcourt
Mr. Emeka Charles Ejika General Secretary	Chevron Nigeria Limited, Lagos.
Mrs. Nonye Niyi Afolabi Assistant Secretary	Joliks Development Services Ltd, Lagos
Dr. (Mrs.) Juliet Emudianughe Treasurer	Federal University of Petroleum Resources, Effurun.
Mr. Ogunjemiyo Esan Mascot Financial Secretary	Priori Energy Limited, Lagos.
Dr. Christopher Asuquo Jackson Editor-in-Chief	PetroVision Energy Nigeria Limited, Lagos.
Mrs. Olatunbosun Afolayan Publicity Secretary	Shell Petroleum Development Company, Lagos
Mrs. Victoria Nneka Okorie Assistant Editor-in-Chief	Chevron Nigeria Limited, Lagos.
Dr. (Mrs.) Eunice Ajayi Abuja Chapter Coordinator	Biometrics Geo Consult, Abuja
Mr. Emo Dayetuawei Port-Harcourt Chapter Coordinator	Maritime Support Services Ltd, Port Harcourt.
Mr. Wilson Osung Warri Chapter Coordinator	Petroleum Training Institute, Warri.
Mr. Edward Ozah Benin Chapter Coordinator	Nigerian National Petroleum Corporation-NPDC, Benin City.
Dr. Akpan Harry Uyo / Calabar Chapter Coordinator	Akwa Ibom State University, Uyo.
Gideon Giwa UK / Europe Chapter Coordinator	Rocksolve International
Dr. Chidozie Princeton Dim Awka / Owerri Chapter Coordinator	University of Nigeria, Nsukka
Mrs. Patricia Ochogbu , FNAPE Immediate Past President	ExxonMobil, Lagos
Mr. Philip Ajaebili UAP Chairman	Shell Petroleum Development Company, Port Harcourt



NIGERIAN ASSOCIATION OF PETROLEUM EXPLORATIONISTS

MEMBERSHIP REGISTRATION PROCEDURES

NAPE which is an acronym for “Nigerian Association of Petroleum Explorationists” is the largest professional association of petroleum geologists and related disciplines in Nigeria and Africa. Members include geologists, geophysicists, CEOs, managers, consultants, other professionals, and students’ academicians. It was founded in August 1975 by Akomenu Oteri. The society which started with only 10 people attending the inaugural meeting at Federal Palace Hotel in August 1975 now has 12,535 individual members and 178 supporting corporate members.

This Association is undeniably the largest Upstream Oil & Gas professional body for Geoscientists. There are currently six (6) regional NAPE Chapters in addition to the Lagos Headquarters (Foundation Chapter). The NAPE Chapters are located both in and outside Africa and the Chapters are Abuja, Benin, Port-Harcourt, UK/Europe, Uyo/Calabar, Awka/Owerri and Warri Chapters. Each Chapter is headed by a Chapter Chairman who is a member of the NAPE Executive Committee.

Its vision and mission statements are “To be the preferred professional petroleum geosciences Association with a global reach” and “To promote the study and practice of petroleum geosciences for the benefit of members and other stakeholders”

BENEFITS OF NAPE MEMBERSHIP

Membership provides a platform to network, promote and learn about the geological sciences with emphasis on the exploration of petroleum. NAPE’s mandate is to continue to promote the propagation and exchange of technical knowledge in Petroleum Exploration and Production for the overall benefit of the oil and gas industry. All these culminating to inspire high professional conduct among its membership.

In its efforts to fulfil its mandate, NAPE works diligently to become vital to the careers of its membership and the industry it serves by providing access to best practices, operational experience, lessons learned, technological innovations and a peep into the future through our diverse platforms and forums such as our Annual International Conference & Exhibition (AICE), Monthly Technical/Business Meetings, subsidized Short Courses, Workshops, University Assistance Program,

NAPE Bulletin V. 31 No 1 (April 2022)

Summer school program, Chapters Program, Young Professional Presentation series, Student/Post Graduate Scholarships, etc.

Our Individual and Corporate Members receive a unique suite of valuable NAPE membership benefits. Among them are:

- Invites to Monthly Technical/Business Meetings
- Discount on in-house continuing education courses
- Discount on NAPE Annual International Conference & Exhibition
- Right to publish affiliation with NAPE
- Free subscription to NAPE bulletins and newsletters, etc.

MEMBERSHIP CLASSIFICATION

Membership consists of the following classifications:

1. INDIVIDUAL MEMBERSHIP

- **Student Member:** An undergraduate with a major in any of the geosciences or petroleum related science.
- **Associate Member:** Any person not qualified for any other class of membership who is a graduate of an educational institution of acceptable academic standard.
- **Active Member:** A graduate in the practice or teaching of the geosciences or petroleum related science with at least 3 years work experience.

2. CORPORATE MEMBERSHIP

Any Company or institution registered in Nigeria and engaged in the practice or teaching Oil, Gas and Energy, Mineral, Exploration and Production activities either as an operator, shareholder or service company, training or financial institution may apply for corporate membership

Membership Application Link:

<https://members.nape.org.ng/application/new/>

Membership Upgrade Link:

<https://payments.nape.org.ng/change-of-status-fee/>

Payment link: <https://payments.nape.org.ng/>
(Registration, Annual dues, Workshop, Short Courses, Conference etc)

MEMBERSHIP CLASSIFICATION

		Application Fee (₦)	Registration Fee (₦)	Annual dues for Registered Members (₦)	Total Fee for New Members (₦)
Individual Membership	Student			2,000	2,000
	Associate	1,000	3,000	12,000	16,000
	Active	1,000	3,000	12,000	16,000
Corporate Membership		10,000	30,000	50,000	90,000

Kindly visit our website: www.nape.org.ng for more

Membership Application Link:
<https://members.nape.org.ng/application/new/>

Membership Upgrade Link:
<https://payments.nape.org.ng/change-of-status-fee/>

Payment link: <https://payments.nape.org.ng/>
 (Registration, Annual dues, Workshop, Short Courses, Conference etc)

Kindly visit our website: www.nape.org.ng for more information

Other special membership status includes

Emeritus: An Active member in good standing in the association with all dues fully paid and 30 years in the association and 70 years of age. Total number is 49

Young Professionals: A Graduate with a major in any of the geosciences or petroleum related sciences with 0-10 years post university experience and less than 35 years of age

NAPE AWARDS

Fellows: The NAPE Fellowship Award honor NAPE members who have distinguished themselves by their long-term service and commitment to advancing the science, practice and profession of petroleum geology and to the Nigerian Association of Petroleum Explorationists (NAPE).

Aret Adams, FNAPE: This Award is named in honour of the Late Chief Aretanekhai (Aret) Godwin Adams and his commitment to excellence, is the highest award bestowed by NAPE. It is given to deserving Earth Scientists of any nationality, in recognition of distinguished and outstanding contributions to, or achievements in the sciences and practice of petroleum exploration and exploitation in Nigeria for a continuous NAPE Bulletin V. 31 No 1 (April 2022)

period of 15 years or more.

Honorary Members: This Award honors nonmembers who by their profession, position/office, career or business have had a significant and positive, impact on the affairs of NAPE and the Nigerian Oil & Gas industry at large. He or she does not have to be a professional in the Oil & Gas industry.

Ben Osuno: The NAPE Ben Osuno Pioneering Excellence Award recognizes and celebrates excellence and outstanding contributions by individuals or groups in pioneering activities in the field of the earth sciences in general and the Nigerian Oil and Gas industry.

Young Professionals: The NAPE Outstanding YP Service Award honor NAPE members who are under the age of 35 and have distinguished themselves by their long-term service and commitment to advancing the science, practice and profession of petroleum geoscience and NAPE.

More details available in the NAPE constitution.

For further enquiries, kindly contact

Nigerian Association of Petroleum Explorationists
 47A Femi Okunnu Housing Estate,
 Lekki/Epe Expressway, Lekki Peninsula, Lagos
 Nigeria.

Tel: +234 -1-7731539, +234 (0)9092143198

Email: osuagwu.l@nape.org.ng

Tel: +234 (0)8030432784, +234 (0)9092143198

Email: abieyuwa.o@nape.org.ng

