



7-9 FEBRUARY 2022 · CAPE TOWN, SOUTH AFRICA

# REMAINING HYDROCARBON POTENTIAL IN SOUTHERN AFRICAN OFFSHORE BASINS

## WHAT TO EXPECT FROM THE AAPG EXPERIENCE

The American Association of Petroleum Geologists (AAPG) and our suppliers, venues and services partners are committed to providing a clean and safe environment and experience for all our event participants. We remain alert to COVID-19 risks and are closely following and adapting to all applicable health and safety guidelines. While conditions vary between countries, cities, municipalities, and facilities, safeguarding measures you may encounter at AAPG events include physical distancing and masking, readily available hand sanitizer, enhanced cleaning and disinfecting protocols, temperature health checks and screenings, minimized touchpoints and cashless payment options.

As personal safety is a shared responsibility, we ask that all participants ensure that they are feeling well and in good health, with no fever or other symptoms related to COVID-19, before showing up at an AAPG event. Any specific delegate obligations will be published in pre-event communications and clearly displayed on signage throughout our venues. Given the ever-changing nature of the pandemic recovery, registrants will receive regular updates and instructions concerning the latest health and safety requirements.

## TECHNICAL PROGRAM COMMITTEE

**Dave Van Der Spuy**  
(Co-Chair)

Petroleum Agency SA

**K.B. Trivedi**  
(Co-Chair)

PetroSA

**Phil Birch**  
Impact Oil and Gas

**Edward Prescott**  
Impact Oil and Gas

**Peter Dekker**  
PetroSA

**Adrian Strydom**  
SAOGA

**Vincent Mashaba**  
Sasol

**Leah Bailey**  
Schlumberger

**Momonitu Opuwari**  
University of Western Cape

## WORKSHOP OUTLINE

The recent large hydrocarbon discoveries offshore Mozambique and now South Africa highlight the offshore Southern African Basins as a hotspot for global hydrocarbon exploration. This 3-day geosciences technology workshop includes an optional field trip to the deepwater sediments at the Tanqua Karoo. Participants of this field excursion will be visiting the world's best examples of ancient basin floor to slope fan complexes associated with fluvial-dominated deltaic systems. The Permian Tanqua- and Laingsburg fan complexes of the south-western Karoo Basin have served as an analogue for many deepwater systems around the world and continue to be the most sought after "open-air laboratory" for studying the nature of fine-grained deepwater sedimentation.

The workshop aims to provide a broad platform for presenting and discussing the understanding of the petroleum geology of Southern African Offshore Basins in Mozambique, Namibia, Tanzania, Angola and others, encompassing themes associated with its plays and reservoirs. The workshop will also provide an opportunity to integrate academic with industry players in Southern Africa to help establish Southern Africa as a vibrant and emerging prolific petroleum hub. This workshop is intended to bring those working or studying in the Southern Africa basins, geoscientists, engineers, and policymakers together for robust discussions.

## TECHNICAL SESSIONS

### SESSION 1:

New Exploration Opportunities and Recent Advances in Southern African Offshore Basins

### SESSION 2:

Exploring New Plays in a Challenging Environment

### SESSION 3:

Worldwide Analogues to Better Understand the Deep Water of Southern African Basins

### SESSION 4:

Infrastructure and Upstream Development Potential

### SESSION 5:

Legislative Challenges, Local Content and Capacity Development



## WORKSHOP GUIDELINES

### FORMAT

The workshop will be 3 days, consisting of oral presentations, poster presentations and breakout sessions where participants can discuss and investigate a specific theme that is of mutual interest. The first day will feature an inaugural keynote speech by a high-profile professional from the industry.

### ATTENDANCE

Registrations are invited from all relevant disciplines with experience and/or knowledge of the subject areas being addressed in the workshop. Registrations will be accepted on a first-come, first-served basis.

### CALL FOR POSTERS

You are invited to prepare a poster display for presentation. If you are interested in participating, please send a short abstract to [cnavarro@aapg.org](mailto:cnavarro@aapg.org) by 7 January 2022. All posters will be produced as pull-up banners and delivered by AAPG. There will not be any other format available for poster display.

### REGISTRATION TYPES & FEES

Fees are inclusive of onsite documentation, coffee breaks and luncheons.

#### REGISTRATION TYPES & FEES

AAPG Member / Committee / Speaker\*: \$450.00

AAPG Non-Member: \$650.00

Join & Save: \$650.00

YP\*\* & Academia: \$150.00

Students (Masters): \$75.00

To register, please visit: [africa.aapg.org](http://africa.aapg.org)

\*To avail the Member/Committee/Speaker rate you must be an active member of AAPG or a committee/speaker at the event.

\*\*To register as a Young Professional you must be under the age of 35 with less than 10 years of work experience.e.

### REGISTRATION DEADLINE

To guarantee your seat, please make sure to register by 28 January 2022.

### WORKSHOP LOCATION

Cape Town, South Africa

### CANCELLATION POLICY

AAPG will refund the tuition, less a \$100 processing fee, if the request is received no later than 30 days prior to the workshop. Cancellations must be made in writing. The registrar will accept cancellation notices by telephone, but all such notices must be followed up by fax or e-mail. No refund will be made for cancellations received less than 30 days prior to a workshop being given. Nonpayment of tuition does not constitute automatic cancellation. If no cancellation notice is received by 30 days prior to a workshop, participants are liable for full tuition. AAPG reserves the right to cancel a workshop if enrollment is insufficient to ensure proper effectiveness. Substitutions for individuals can be made at any time. A paid enrollment may be transferred one time to a future workshop if the request is received prior to the 30-day cut-off date.

# REMAINING HYDROCARBON POTENTIAL IN SOUTHERN AFRICAN OFFSHORE BASINS

## 7-9 FEBRUARY 2022

### DAY 1 MONDAY 7TH FEBRUARY

#### SESSION 1: NEW EXPLORATION OPPORTUNITIES AND RECENT ADVANCES IN SOUTHERN AFRICAN OFFSHORE BASINS

Frontier offshore basins of Southern Africa have proven to be rich in hydrocarbon source rocks with some prolific basins already under exploration. The Mozambican deep-water gas fields in the Rovuma Basin and have already resulted in plans for LNG projects with more potential in fairways that extend into Tanzania, the Zambezi Delta Basin, and further offshore. Off the coast of Namibia, exploration continues in the Orange Basin and deep water blocks offshore Angola have boasted significant discoveries, most recently being light oil in the Cuica exploration prospect. New exploration ventures in South Africa have reawakened interest for further exploration with the significant gas condensate discoveries in the Outeniqua Basin, which highlights the petroleum potential of up to 20 000 km<sup>2</sup> of Early to Mid-Cretaceous rift and drift basins. Renewed interest in the extension of the Orange Basin off the west coast of South Africa and its potential for Mid-Cretaceous oil plays, has operators planning to drill key wells in the coming years. On the east coast of South Africa, the Natal and Zululand Basins too have good potential for an Aptian source rock.

Southern Africa countries have only scratched the surface of what hydrocarbon potential the offshore basins may hold, which promises exciting years of exploration to come. As the legislative routes begin to open up, investment opportunities for the offshore oil and gas market will grow along with an abundance of opportunities. This session theme aims to draw attention to Southern Africa's vast hydrocarbon potential and to discuss the various active, innovative, and upcoming avenues for exploration to be found offshore.

#### SESSION 2: EXPLORING NEW PLAYS IN A CHALLENGING ENVIRONMENT

Few people realize that the search for oil and gas in South Africa goes back more than 125 years to 1873 when a letter to the Cape Argus referred to the discovery of black earth at the foot of table mountain "from which Petroleum is said to have been distilled" (South Africa's oil search down the years – Eric Rosenthal). Since that time petroleum geologists have been actively searching for oil and gas plays in South Africa. First onshore in challenging environments and since 1969 offshore. Exploration for new plays in Southern Africa have expanded from South Africa to the neighboring countries. Recent discoveries in new plays in Mozambique and Tanzania have encouraged further exploration in Southern Africa. The industry has always been on the forefront of technology and geoscience in order to find new hydrocarbon plays and solutions to the ever more challenging environments. In the 60's onshore drilling in Mozambique resulted in 459 day blowout in the Panda field which had to be extinguished with 4 relieve wells. In the early 1980's Soekor attempted to drill the F-Q well close to the shelf edge and encountered challenging metocean conditions after which the attempt had to be abandoned until today. TotalEnergies attempted to drill the Brulpadda prospect proving a new hydrocarbon play in 2014 and were only successful in 2019 with special designed drilling equipment. New plays in ultra deep water are being tested in Namibia.

The processes and technologies to explore for new plays have changed tremendously in the last decade. From the integration and interpretation of data using Artificial Intelligence, Blockchain technology for securing the data management processes and providing added efficiency. Southern Africa has benefitted from the growth in new technologies and these benefits continue to grow as can be witnessed with the Mozambique LNG development, the mooted deepest new wells in offshore Angola and Namibia. South Africa is not far behind with the hype of activity in its deep and ultradeep water spearheaded by TotalEnergies. This session focusses on what is needed to identify new hydrocarbon plays and which technology could be employed to prove new plays in challenging environments and which technology should be improved to achieve this.

### DAY 2 TUESDAY 8TH FEBRUARY

#### SESSION 3: WORLDWIDE ANALOGUES TO BETTER UNDERSTAND THE DEEP WATER OF SOUTHERN AFRICAN BASINS

In E&P industry the most cost intensive projects are exploring in Deep waters. In recent years many discoveries are being made across Southern African deep water Petroleum systems, especially in Mozambique, Tanzania, and recently in South Africa. Each discovery presents a new challenge, starting from data acquisition, processing, mapping (API) and finally to drilling, production and development. We have to learn from these discoveries to mitigate risk and minimize cost of production to make it profitable. Global analogues are widely used across the Exploration and Production (E&P) life cycle to meet these challenges. Analogues, used in conjunction with primary data, expand the knowledge of both the individual and team and develop insights that are not possible from using either local data or individual experience in isolation. Difficulties in the application of analogues arise when the analogues are not selected consistently, are too specific, or are in conflict with empirical local data. Most of these difficulties arise from the lack of a proper definition of analogues, absence of a systematic method of analogue selection, and poorly defined objectives for the use of analogues.

Analogues are herein defined as comparable fields and reservoirs relevant to a specific question or set of questions. To select appropriate analogues, Explorationist should focus on specific individual question(s) instead of "look-alike" fields, as each field has its unique adversity.

Papers and speakers in this section are invited to present case studies for Proved, probable and possible petroleum systems in deep water and their appropriate application of global analogues to a local situation, as this will not only fosters creative thinking but also provides a way to quickly learn, increase confidence, and efficiently reduce risk for E&P decision-making.

#### SESSION 4: INFRASTRUCTURE AND UPSTREAM DEVELOPMENT POTENTIAL

The development phase of an oil field life cycle follows a successful appraisal phase and is commonly the most investment intensive phase of a project which focuses on economical evaluation and risk management. Critical operating decisions for field development planning and execution are made involving many different stakeholders including those involved in understanding the subsurface deliverability of the hydrocarbon reservoirs, and those involved in the design and manufacture of facilities and pipelines. Key decisions include selection of fields for development, subsurface recovery design, well design, platform installation and sizes, field network and facilities design, as well as expected production of oil and gas from selected fields.

With several large hydrocarbon discoveries offshore Southern Africa in recent years, many operators are now moving into field development planning aimed at optimizing complex economic objectives. The decisions made require consideration of a number of physical and practical factors such as, existing infrastructure in place offshore Southern Africa and at the nearest port, facility requirements based on hydrocarbon composition and flow profiles, and the production planning schedule for each project. In addition to these considerations, operators are required to work within the legal, environmental and economic frameworks of the Production Sharing Agreements with local government. Final development plans may include a combination of; conventional platforms, tension leg platforms (TLPs), floating production system (FPS), floating production storage and offloading systems (FPSOs), floating liquefied natural gas (FLNG), subsea structures (flowlines, wellheads etc.) and more. This session will discuss planning, optimization, and challenges related to infrastructure and field development offshore Southern Africa.

TO REGISTER, PLEASE CLICK [HERE](#)

### DAY 3 WEDNESDAY 9TH FEBRUARY

#### SESSION 5: LEGISLATIVE CHALLENGES, LOCAL CONTENT AND CAPACITY DEVELOPMENT

This session will look at the critical reforms brought by-laws and standards regarding regulating and supporting local content development of various countries in Southern Africa. These laws and regulations may include provisions to prioritise the national workforce in available jobs, the hiring of the foreign workforce only in exceptional circumstances and for jobs requiring critical skills, and the progressive replacement of the foreign workforce by the national workforce. One of the key issues to be discussed is establishing of training institutions/programmes in the Southern African countries for producing of sufficient local skills that would drive the oil and gas sector. The session will also reflect on local supplier development.

The legislation and regulations related to local content and capacity development in the Southern African region and Africa, in general, are slightly different to that of established IOC requirements, but the objectives pursued are similar to that of other countries. These objectives are all designed to increase the technical capacity of the locals and their economic participation in the oil and gas sector. African countries need to develop fair, balanced local content policies that create economic and educational opportunities for Africans without overtly burdening foreign investors and discouraging them from operating in Africa. This session will bring together other shining examples within the African continent, like; Nigeria, Equatorial Guinea, Gabon, and Angola, to share their experiences that supported the successful implementation of their local content development policies. The session will also explore barriers to local supplier development, with the view of addressing these.

### FIELD TRIP

#### ARCHITECTURAL STYLES OF DEEP-WATER DEPOSITIONAL ELEMENTS - EXAMPLES FROM THE SOUTHWESTERN KAROO BASIN, SOUTH AFRICA

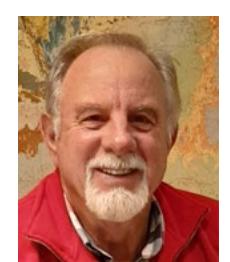
Date 10 – 12 February 2022

Field Trip Guide De Ville Wickens, Geo-Routes Petroleum

Start/Return Cape Town

Registration Fee \$1,495 (inclusive of all local taxes and VAT), inclusive of 2 nights accommodation at Inverdoorn Game Reserve Lodge, all F&B, transportation and entry fees to farms.

Registration Deadline 5 December 2021



Field Trip Guide  
**De Ville Wickens**

#### Who Should Attend

This field trip is targeted at exploration and development geologists, geophysicists, reservoir engineers and managers who are actively involved in deep-water exploration and development. It will also benefit those unfamiliar with deep-water systems.

#### Overview

Participants of this field excursion will be visiting the world's best example of an ancient fine-grained basin floor to slope fan complex associated with a fluvial-dominated deltaic system. The Permian Tanqua Fan Complex of the southwestern Karoo Basin has served as analogue for many deep-water systems around the world and continues to be the most sought after "open-air laboratory" for studying the nature of fine-grained deep-water sedimentation. The fan systems are tectonically undeformed, outstandingly well exposed and easily accessible with present day erosion allowing 3D-viewing of laterally continuous (tens of kilometers) outcrops. It hosts an inexhaustible amount of information on deep-water element architecture from lower slope channel complexes to extensively developed basin floor deposits.

#### Objectives

The prime objective of this field trip is to attempt a better understanding and appreciation of the depositional processes and facies distribution within fine-grained deep-water fan systems and the implication thereof for reservoir and non-reservoir distribution, their architecture, heterogeneity and quality. It further aims to integrate different scales of observation and interpretation, namely the basin (exploration) scale (e.g. sequence expression on the basin floor, sequence stacking, influences of basin floor topography) and the development and production scale (e.g. facies/element/heterogeneity distribution, stacking patterns, bed-scale stratigraphy, hierarchy of architectural elements) within distributive deep-water systems.



FOR MORE INFORMATION VISIT  
[africa.aapg.org](http://africa.aapg.org)