OFFSHORE SOMALIA 2019

7th February

Federal Government of the Somali Republic Ministry of Petroleum & Mineral Resources

Calendar of events

The timetable of events for the Somalia licensing round are as follows:

February 7, 2019	Publication of the Tender Protocol
February 8, 2019	Data Viewing available via SPECTRUM
July 4, 2019	Final date for questions and comments regarding Qualification
July 11, 2019	Final date for an application for Qualification
August 29,2019	Final date for MINISTRY to qualify Operators and Non-Operators
September 2, 2019	Final date for questions and comments regarding the Protocol and Production Sharing Agreement
September 12, 2019	Publication of final version of Protocol and Production Sharing Agreement, in case MINISTRY decides to make changes because of clarifications and comments of the Participants
October 17, 2019	Final date for registering a Consortium
October 31, 2019	Final date for MINISTRY to answer questions regarding the procedure of making Proposals
November 6, 2019	Close of Data access
November 7, 2019	Bid date. Successful Bidder(s) will be notified shortly afterwards
December 9, 2019	Final Date for signing of the Production Sharing Agreement by winning bidder
December 19, 2019	Final Date of approval of the signed Agreement by the Council of Ministers and for signing by the Minister
January 1, 2020	Effective Date of the Production Sharing Agreement

Somalia: The Vision for the Petroleum Sector

Somalia will exploit its petroleum resources effectively to achieve peace, stability and shared prosperity for all Somalis without damaging the environment.

The principles of inclusiveness, equal opportunity, transparency and accountability will guide sustainable development of the petroleum sector of Somalia.

Main Activities in the development of the Petroleum Industry

PREPARING FOR EXPLORATION:

- During 2014-2015, 20,000 km of offshore seismic data was acquired covering both the shallow and deep water of the southern Indian Ocean of Somalia, by Soma Oil and Gas.
- In 2016, a further 20,000 km Multi-Client seismic data was acquired offshore Somalia by Spectrum.
- The completion of the construction of the new Ministry building and making it operational.
- Data room set-up is now complete enabling the Ministry to store and use the acquired seismic data.
- Training both in-house and by 3rd parties, has raised the knowledge and capabilities of the Ministry's available human resources.
- Licence Round is opening 7th February 2019

Legal & Regulatory framework

- The amendment of Petroleum Law 2008 is under process in the Federal Parliament and the New Law may get ratified within the coming three months.
- Regulatory documents available at the Regulatory Directorate of the

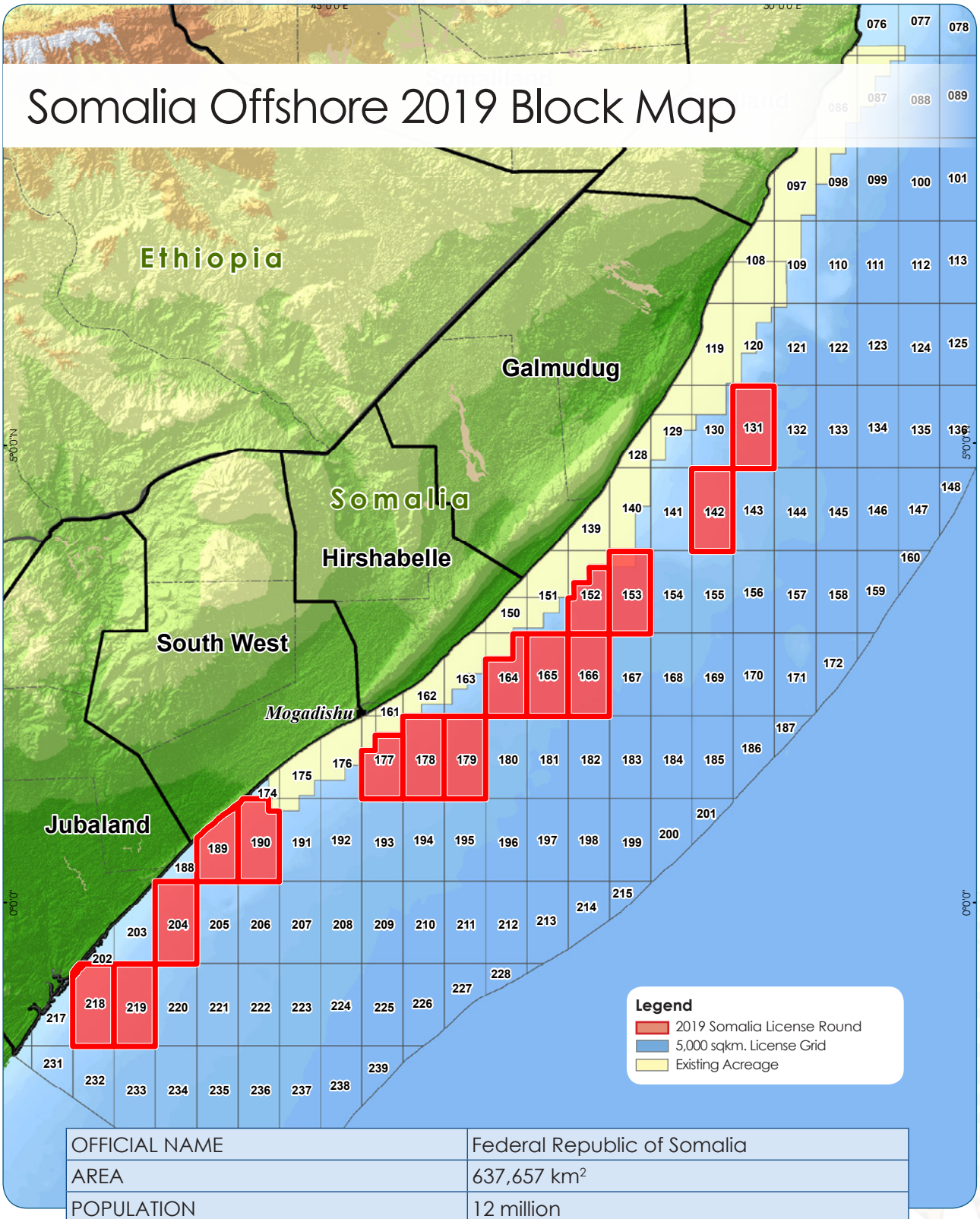
Ministry (which will evolve in the future to become the Somali Petroleum Authority - SPA) include an Environmental Regulation, a Health and Safety Regulation and the SPA regulation. These documents are annexes to the new Petroleum Law under the process of ratification of the Federal Parliament.

- For registry purposes, the Petroleum Registry is available for use by legacy contract holders and the new companies interested to obtain PSAs in offshore Somalia
- There is a revised Model Production Sharing of Somalia introduced recently. The model is very competitive and attractive, while it takes care of the interests of Somalia.
- There is also a Tender Protocol for use by companies interested to participate in the First Bid Round of Somalia.
- The Petroleum Management and Revenue Sharing Agreement between the Federal Member States (FMS) and the Federal Government of Somalia (FGS) lays potential conflicts arising from the ownership, management and resource sharing to rest. Those issues are already agreed upon between the FMS and the FGS.

Exploration background

- Somalia came to the attention of IOCs in the early 1950's, mostly onshore.
- Most Giant IOC's had acreages in Somalia before 1991, before the collapse of the state.
- Geophysical data was gathered, exploration took off and more than 60 wells were drilled in the efforts preceding 1991.
- The existence of petroleum systems was confirmed, but there was no commercial discovery due to poor quality data and the use of wrong geologic models.
- Mostly the work was onshore, but now the focus is on the Indian Ocean. The potential is huge.
- Somalia is now recovering and emerging from more than two decades of political conflict and instability.

Somalia Offshore 2019 Block Map



OFFICIAL NAME	Federal Republic of Somalia
AREA	637,657 km^2
POPULATION	12 million
OFFICIAL LANGUAGE	Somali, Arabic
CAPITAL	Mogadishu
CURRENCY	Somali Shilling
LOCAL TIME	GMT+3

Federal Government of the
Somali Republic Ministry of
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Somalia is ready to award blocks

- The Federal Ministry of Petroleum and Mineral Resources has finalized the legal and the regulatory framework.
- Modern 2D data was acquired in 2015 and 2016, and the seismic data shows that the offshore potential is huge. The data is available with the Somali Government and Spectrum for marketing purposes.
- Offshore security is encouraging at the moment. There are no incidents of piracy since 2015
- The government is committed and has provided the necessary directives and support to move forward.
- A modern Model PSA with attractive fiscal terms is introduced for use in the Bid Rounds.

Petroleum Management

- The Petroleum Management and Revenue Sharing Agreement covers how to manage the petroleum activities in Somalia.
- The Ministry of Petroleum and Mineral Resources will regulate, provide approvals and follow up petroleum activities in collaboration with the Federal Member States and the international oil companies.
- In the unlikely event of disputes and conflicts between the FMSs and the FGS, the cases will be referred to the Council of Natural Resources Management, that consists of the Heads of the Federal Member States and the Prime Minister.

Hydrocarbon Exploration

- This year, 2019, the Ministry is undertaking Bid Rounds for 15 blocks in offshore Indian Ocean (see the map of the Blocks). The required documents are already prepared. The ministry intends to execute a fair competition and award PSAs afterwards. The process will be very clean and transparent.
- After January 2020 successful companies will mobilize to offshore Somalia to commence their exploration which is initially 4 years, followed by a renewal of 2 years and again a final renewal of 2 years.
- In each exploration period, there is one well to be drilled and other work commitments such as carrying out 3D seismic surveys.
- Companies having a legacy contract with Somalia, their contract will be converted to follow the New PSA Model Somalia. Once that is done, they can resume their exploration activities.
- In the absence of the Somali Petroleum Authority, the Ministry will act as an interim SPA until such time the SPA construction is justifiable from technical and economical point of view. The Ministry shall regulate upstream and midstream petroleum operations in Somalia by ensuring that all activities from exploration, production and marketing adhere to the requirements of the Petroleum Law.
- Somali National Oil Company (SONOC): SONOC is a government owned company that will be created to represent the commercial interests of Somalia and to boost up the downstream activities. It is established in the Law but it will require some time to be operational.

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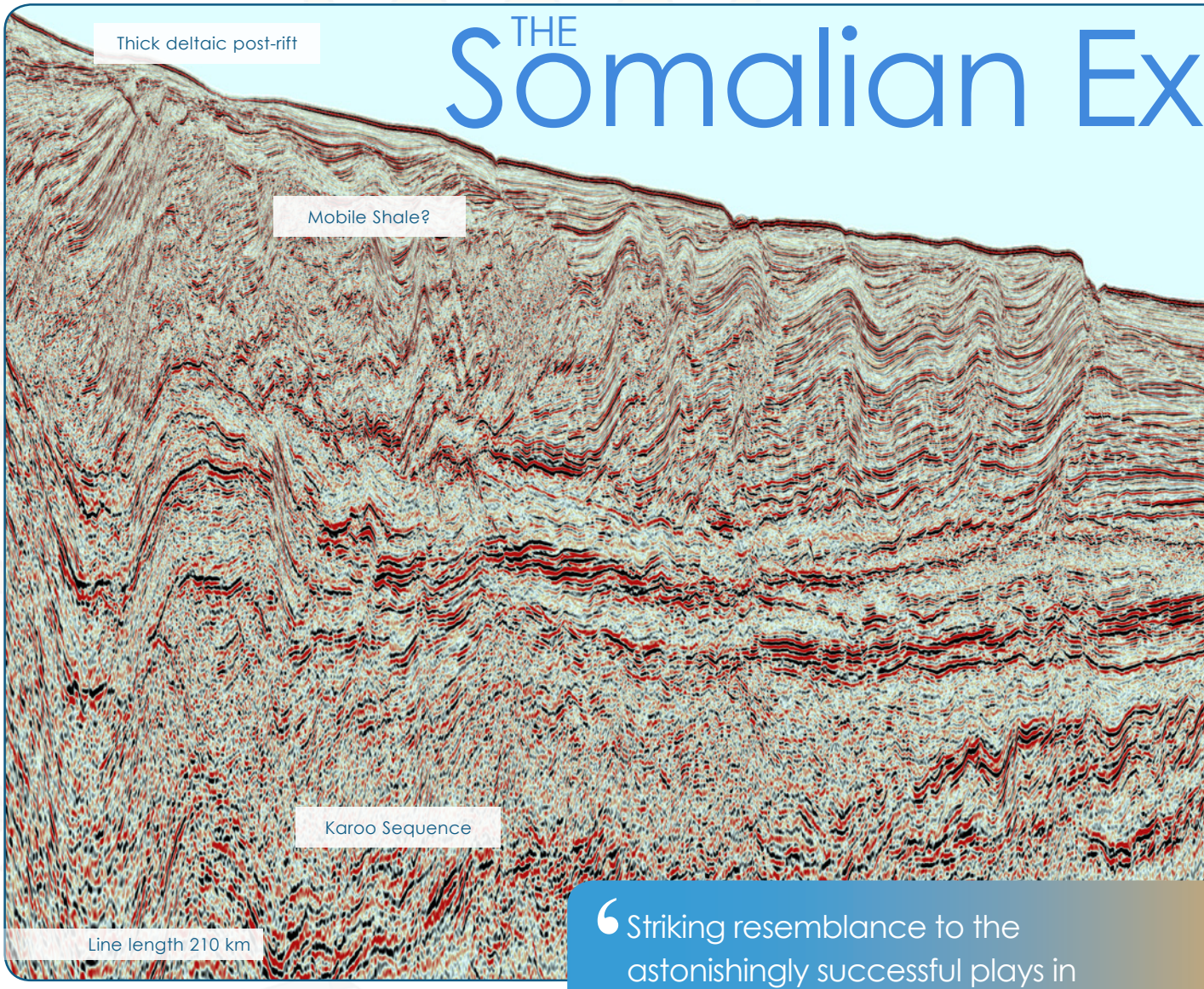


> “Striking resemblance to the astonishingly successful plays in Kenya, Tanzania and Mozambique indicate that offshore Somalia is about to become the hottest area offshore East Africa, but this time it’s OIL!”

HISTORY

The East Africa region has seen several notable successes to date with discoveries of multi-billion barrel exhumed oil fields within the Permo-Triassic basins of Madagascar and the huge Permo-Triassic gas fields of the Ethiopian Ogaden basin. There have been many more significant discoveries throughout the region; from within Jurassic sediments of onshore Yemen to the Cretaceous petroleum system in South Sudan. These discoveries coupled with those in Kenya, Mozambique and in the Rovuma Basin offshore Tanzania only magnify the potential within the region.

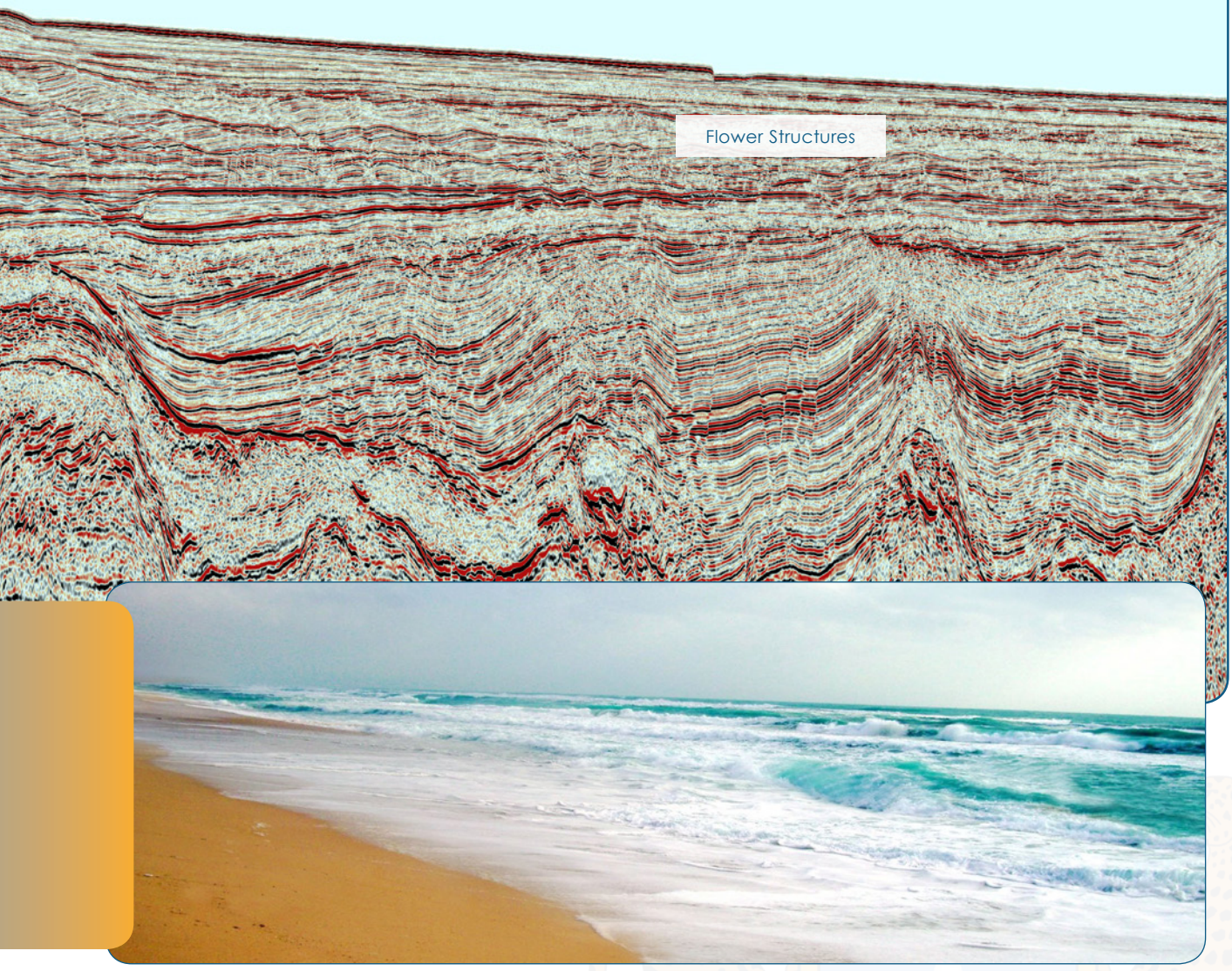
Much of East Africa remains underexplored due to previous above-ground risks. However, the inauguration of the Federal Government of Somalia has led to recent developments in political stability, encouraging explorers to return to the region. Somalia is developing a new degree of civil society determined to bring peace, progress and foreign direct investment. It is with this positive progress that the potential of the offshore basins can finally be unlocked.

The Federal Government boosted hydrocarbon exploration activity by permitting acquisition of the first two 2D long offset exploration seismic surveys covering an area of over 122,000 km^2. Imaging to 15 seconds TWT allows explorers to build a complete understanding of the evolution of the rifted margin.

Successful completion of both these offshore seismic acquisition programs, with no security incidents, is testiment to the developing political stability and proof that an effective offshore operating environment is now in place.

ploration Journey

Peace is bringing hope, seismic exploration and evidence of exciting hydrocarbon-bearing structures offshore Somalia.



PROSPECTIVITY

The Somalia seismic programmes highlight a number of plays with structural and stratigraphic trapping potential. Seismic sections clearly show very large Permo-Triassic to Jurassic rotated fault blocks, large-scale anticlinal structures related to cretaceous transform movement, carbonate build-ups on palaeo-highs sealed by post-rift mudstones, and strong structuration within extensional and compressional domains of deltaic gravity slides. Laterally extensive basin floor fans and turbidites may also create stratigraphic traps at multiple levels.

Karoo and syn-rift Jurassic sediments are a likely oil source for these very large structural and stratigraphic traps. In the post-rift, multiple décollement horizons may also be coincident with early mature organic-rich shales. Preliminary geothermal gradient analysis, as well as evidence from naturally occurring oil seeps correlated with subsurface structural trends, provides further support for present day oil generation with access to the numerous traps, indicated via multiple possible migration routes recognised on the seismic data. Several slicks correlate with toe thrust structures like those shown in the seismic image above.

TECTONO-STRATIGRAPHIC EVOLUTION

Thye hydrocarbon story of Somalia began with the deposition of the Karoo Supergroup from the Permo-Triassic through to the Jurassic. The Karoo Supergroup is synonymous with the deposition of a world class source rock observed from Yemen to South Africa. The initial rifting of the Gondwana super-continent began in the Late Carboniferous. Break-up commenced in the Early Jurassic and saw the formation of an oblique rift valley between Somalia and the Madagascar-Seychelles-India (MSI) block. This coincided with a marine transgression in the Early Jurassic, which resulted in the regional deposition of organic-rich marine sediments in a restricted embayment, where northerly transform faults created partial barriers to oceanic circulation.

Following the separation of East Africa and Madagascar, a period of uplift and erosion occurred in Somalia during the Cretaceous as the Jurassic rift shoulders responded to unloading. From the Early Cretaceous, northern Somalia saw the deposition of a marly-mudstone sequence, distal to an aggradational carbonate platform throughout the Cretaceous. Cenozoic sediments are characterised by a thick aggradational passive margin carbonate platform sequence or pro-platform marly mudstones.

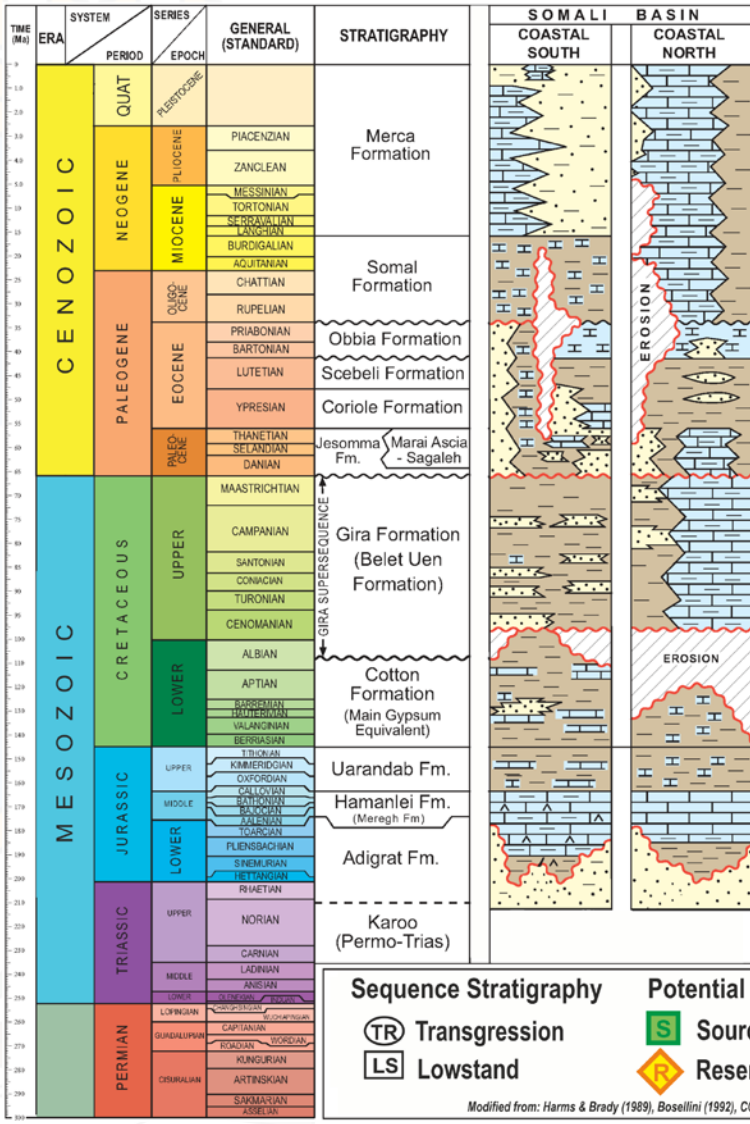
The southern offshore saw increased coarse clastic input from the Shabeelle / Jubba / Tana River Deltas in the Early Cretaceous, depositing a significant post-rift pro-deltaic sequence. This pro-deltaic sequence provides a potential source rock interval in the south. A number of lignitic potential source rock intervals have been observed in onshore wells in Tertiary sediments, including the Eocene Coriole and Scebeli Formations. The Palaeogene consists of predominantly deltaic clastics capped by thick marls, overlain by Miocene and younger deltaics and platform carbonates.

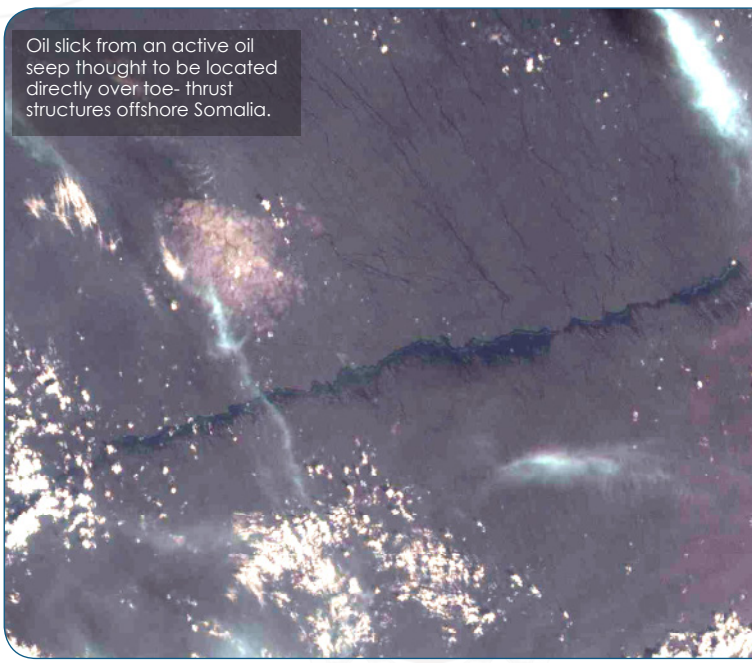
REGIONAL GEOLOGY

The Somalia seismic programmes have highlighted a number of structural and stratigraphic plays. Seismic sections clearly show rotated fault blocks and inversion structures with thick Jurassic and possible Permo-Triassic fill, carbonate build ups on Jurassic highs, trapping geometries within extensional and compressional domains of gravity slides, and stratigraphic traps at multiple levels.

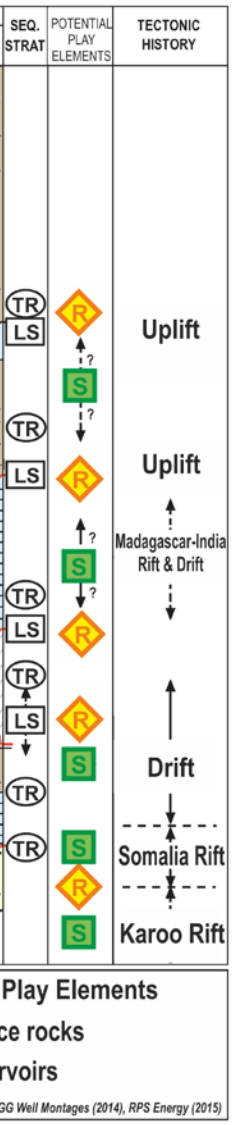
Offshore Somalia can be divided into three basins, each defined by their own individual structural regimes; Obbia Basin in the north, the central Coriole Basin, and the southerly Juba-Lamu Basin.

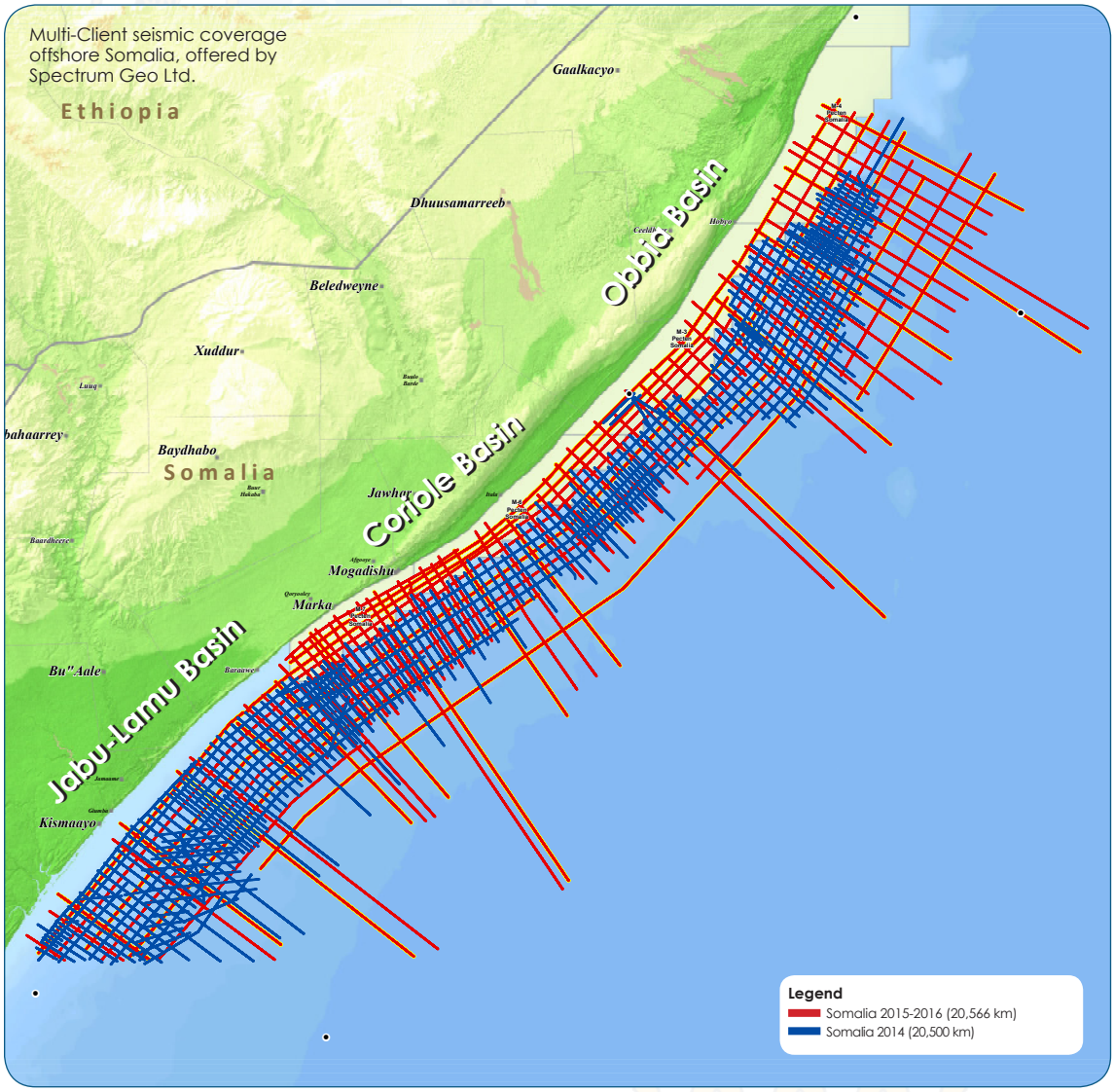
The Obbia Basin, offshore northern Somalia, exhibits





Oil slick from an active oil seep thought to be located directly over toe- thrust structures offshore Somalia.

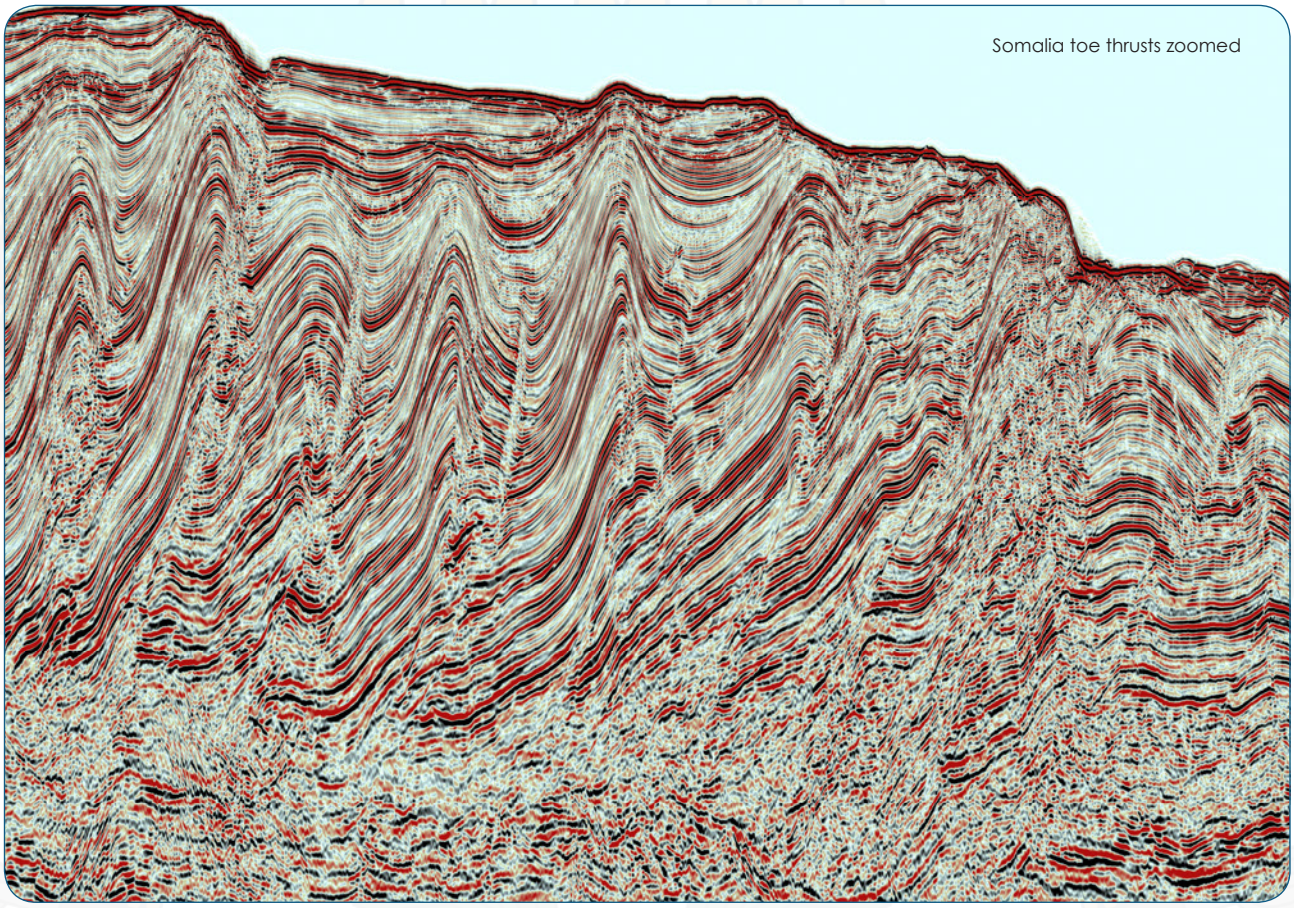




characteristics of a magma-poor rifted margin; with a wide continent-ocean transition zone, limited volcanism with no SDRs, and serpentinised exhumed mantle observed at the palaeo-seabed. Post-rift Early Cretaceous to Recent stratigraphy is primarily calcareous mudstone 1.5 to 3 km thick, overlying very large Permo-Triassic to Jurassic tilted fault block structures, some of which are crowned by carbonate build-ups, comparable to the Sunbird discovery offshore Kenya. In the south, large antiformal Cretaceous to Early Cenozoic flower structures and inversion anticlines post-date Early Cretaceous gravitational slump structures, indicating that regional tectonics have significantly deformed the Cretaceous sequences. Karoo and Jurassic source rocks are a very likely oil source for these potentially very large traps.

The Coriole Basin is characterised by large scale flower structures and inversion anticlines related to the N-S strike-slip motion of transfer faults along the Davie Fracture Zone and southward movement and rotation of Madagascar. Tertiary sediments comprise a thick siliciclastic section, deposited from historic avulsion of the Shabeelle / Jubba / Tana River Deltas. Using a moderate geothermal gradient, but pending confirmation by more detailed basin modelling studies, it is reasonable to assume that structural and stratigraphic traps at Cretaceous and Tertiary levels are likely to have access to oil-rich hydrocarbons generated from Jurassic and Cretaceous source rocks in this basin.

The Juba-Lamu Basin in the south has the thickest post-rift stratigraphy, up to 12 km. The deep water post-rift comprises siliciclastic deltaic sediments, sourced by the Shabeelle / Jubba / Tana River Deltas. The Cenozoic section is characterised by mobile shales and large gravity slides on multiple décollements, which may be coincident with early mature organic-rich mudstones. These slides have created large, stacked toe thrust structures downdip, analogous to areas of significant



Somalia toe thrusts zoomed

success in the Rovuma Basin, offshore Mozambique. Beneath the décollements, thick Cretaceous clastic-rich sequences of basin floor turbidite fans drape tilted fault blocks and stacked post-rift mass transport system deposits. A significant observation from Spectrum's preliminary satellite seep studies is the identification of an active oil seep located directly over the toe-thrust structures where these features come close to seabed.

GIGANTIC STRUCTURES

Spectrum's seismic data from offshore Somalia is revealing extraordinary structures, in an oil-prone frontier province that is yet to be seen or explored before. The data correlate closely with the potential field results, and the most recent seismic is imaging gigantic structures that have never been mapped before.

Striking resemblance to the astonishingly successful plays in Kenya, Tanzania and Mozambique indicate that offshore Somalia is about to become the hottest exploration prospect offshore East Africa. It not only promises huge hydrocarbon potential, but also gives a strong indication that this time the hunt is on for black oil.

SPECTRUM ACQUISITION COMPLETE

On the 5th September 2015 Spectrum ASA and the Federal Government of Somalia entered into a Multi-Client master co-operation agreement during a signing ceremony at the SYL Hotel, Mogadishu.

Spectrum have now completed the 2D seismic program offshore south Somalia following the acquisition of 20,566 line km of data. The survey was completed without any incidents. Seven Ministry geoscientists participated in the acquisition of the data and trained on the vessel executing the seismic shooting. These trainees also travelled to Egypt where they studied data processing and geologic interpretation at Spectrum's imaging centre there.

The new acquisition complements 20,500 km of existing seismic data acquired in 2014, and the two datasets have allowed the in-depth study of hydrocarbon prospectivity offshore Somalia. This has revealed several possible source rock intervals with oil potential confirmed by source rock characterization and basin modelling. Significant potential is associated with both Jurassic and carbonate complexes as well as clastic reservoirs draped on large transpressional and transtensional structures. Hydrocarbon presence is supported by DHI flat spot and phase reversal indicators as well as fluid escape features related to seabed pockmarks and naturally occurring sea surface slicks.

Ministry's Ongoing Upstream Activities

- Block Delineation: TThe exploration blocks map is ready. The area of each block is maximum 5,000 km^2 and represents one PSA.
- Petroleum Registry: Legacy contract holders have been asked to restart activities. Some terminated their contracts and some expressed their willingness to continue, and some are still silent.
- Opening and closing of areas: In February 7, 2019 an offshore Indian Ocean was opened. The open acreage (for the 2019 bid round) comprises of 15 blocks and the application for acreage will close on 11 July 2019.

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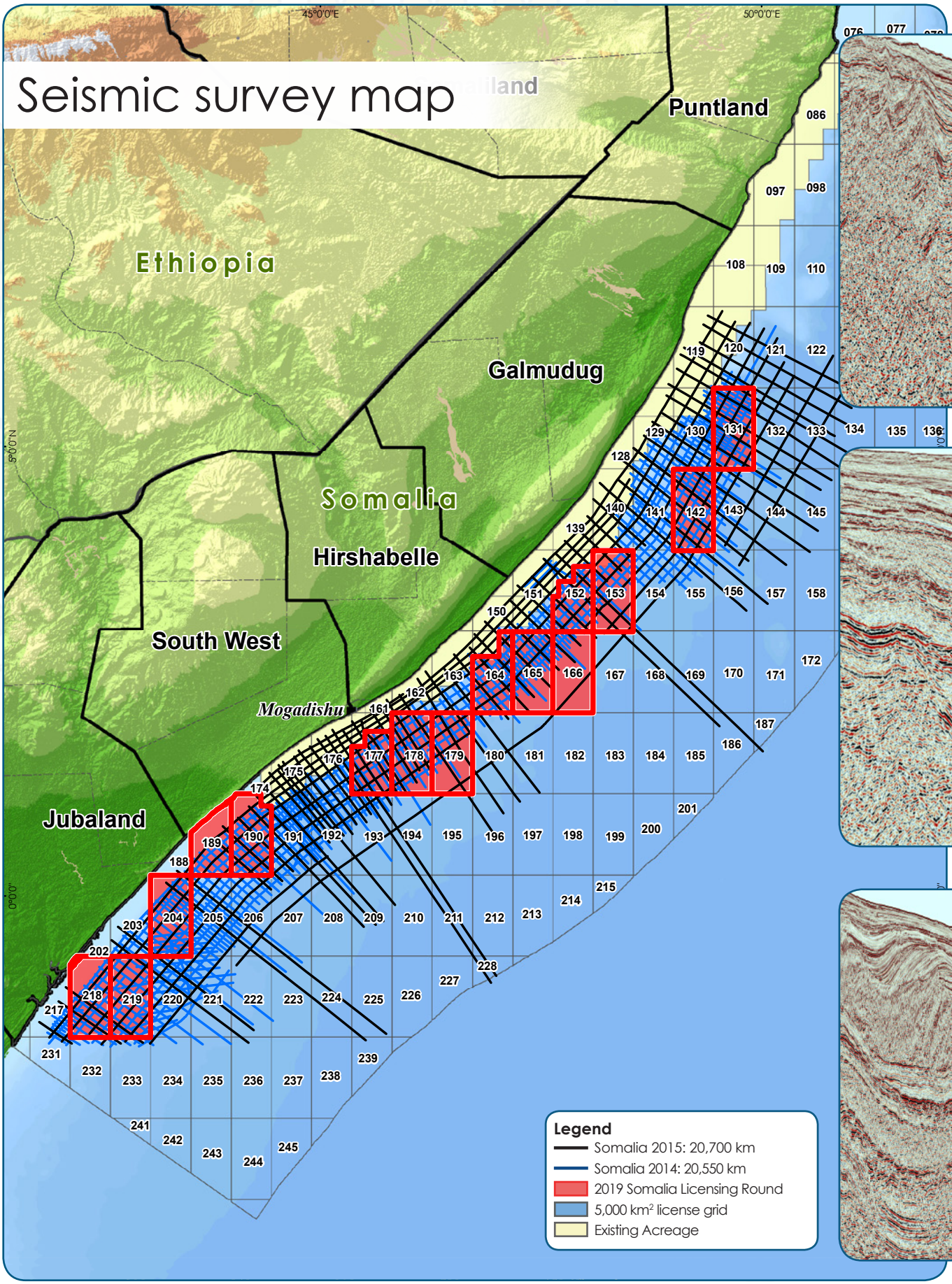
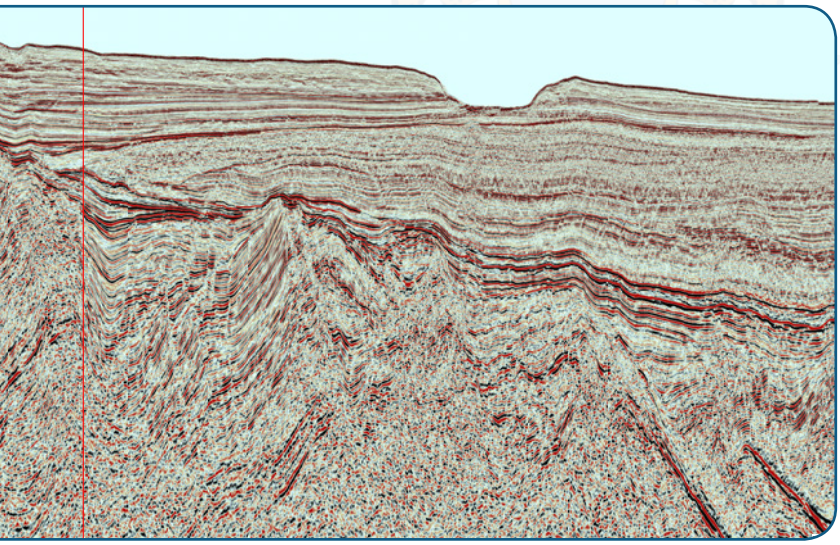
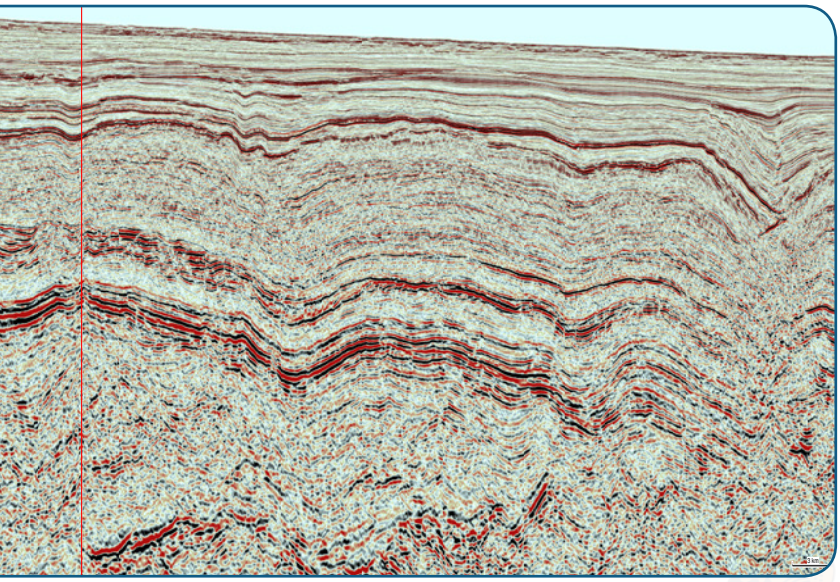
Seismic survey map

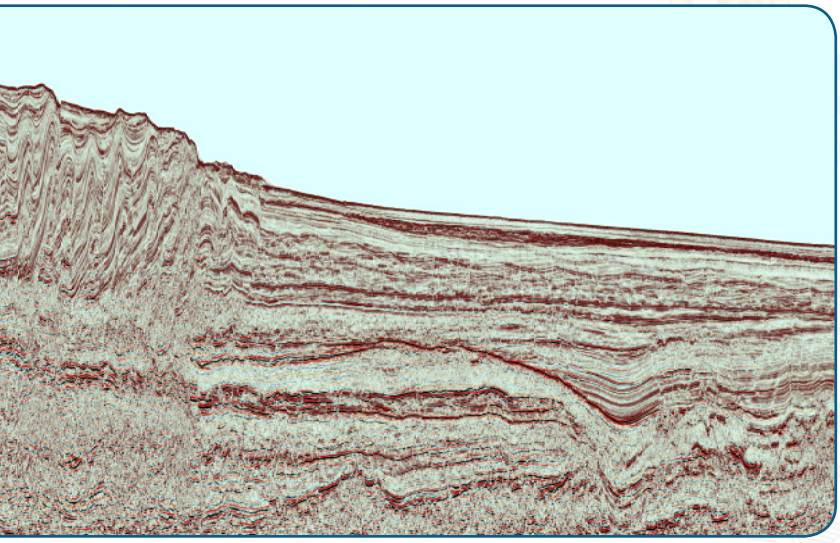




Somalia final PSDM Seismic



Somalia final PSDM Zoom Seismic



Somalia final PSTM Seismic

Somalia seismic data coverage

In preparation for Somalia's upcoming offshore licensing round, Spectrum has completed acquisition and processing of 20,185 km of 2D long-offset seismic data, following a co-operation agreement with the Federal Government of Somalia. This program complements 20,500 km of existing seismic data that was acquired in 2014.

The survey design, which covers water depths of 30 m to 4,000 m, has allowed for seismic coverage over the shelf, slope and basin floor with dip, strike and recording time intervals suitable for defining a range of leads and prospects. Streamer lengths of 10,050 m have been used to adequately record information at all offsets, further assisting imaging of the underlying syn–rift geometries.

Modern processing algorithms were applied to the raw data to achieve optimal imaging of steeply-dipping extensional and compressional features and illumination of subtle amplitude anomalies.

Final PSDM and PSTM products are available now.

Seismic data supplied in association with...

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LICENCE ROUND SOMALIA 2019