



INVICTUS

ENERGY LIMITED

Invictus Energy Ltd (ASX: IVZ)

Cabora Bassa Project

SG 4571 – Conventional Oil & Gas

March 2019

Company and Project Overview

Zimbabwe Geological Society Presentation

invictusenergy.com

Invictus & Cabora Bassa Project Overview



Invictus Energy Ltd is an upstream E&P company listed on the Australian Securities Exchange (ASX: IVZ) focused on oil and gas in Sub Saharan Africa

Invictus is the 80% owner and operator of the Cabora Bassa Project (One-Gas Resources 20%), SG 4571 exploration permit in the Cabora Bassa Basin in northern Zimbabwe

SG 4571 contains the Mzarbani Prospect, potentially the largest, seismically defined, undrilled structure onshore Africa

- **3.9 Tcf + 181 million bbls of conventional gas-condensate** in primary Upper Angwa target alone*
- Simple 4-way dip closure / anticline mapped on multiple seismic lines over a large area (>200km² under closure) with multiple stacked targets

Significant additional prospectivity to be evaluated in Q1 CY2019 post seismic reprocessing results

- Potential to add material prospective resources to inventory

New basin modelling and geochemical study confirms oil potential of Cabora Bassa Basin

- Primary target in Upper Angwa contains source rocks within the wet gas and oil generation window present day
- Source kitchen contained within the fetch area is modelled to have sufficient charge to fill the Mzarabani structure

Acreage formerly held by Mobil in early 1990s and has an **extensive legacy dataset** not previously available in the public domain

- ~US\$30m spent on 2D seismic, gravity, aeromagnetic and geochemical data

Invictus is seeking to develop potential regional markets in addition to significant local natural gas demand in Zimbabwe

Maiden Prospective Resource Estimate



3.9 Tcf + 181 million barrels of conventional gas-condensate (gross mean unrisked) from primary target alone

- Independently verified by Netherland, Sewell and Associates, Inc. (NSAI)
- Additional horizons and prospects + leads being mapped
- Final CPR early 2019 post seismic reprocessing and interpretation to incorporate additional potential

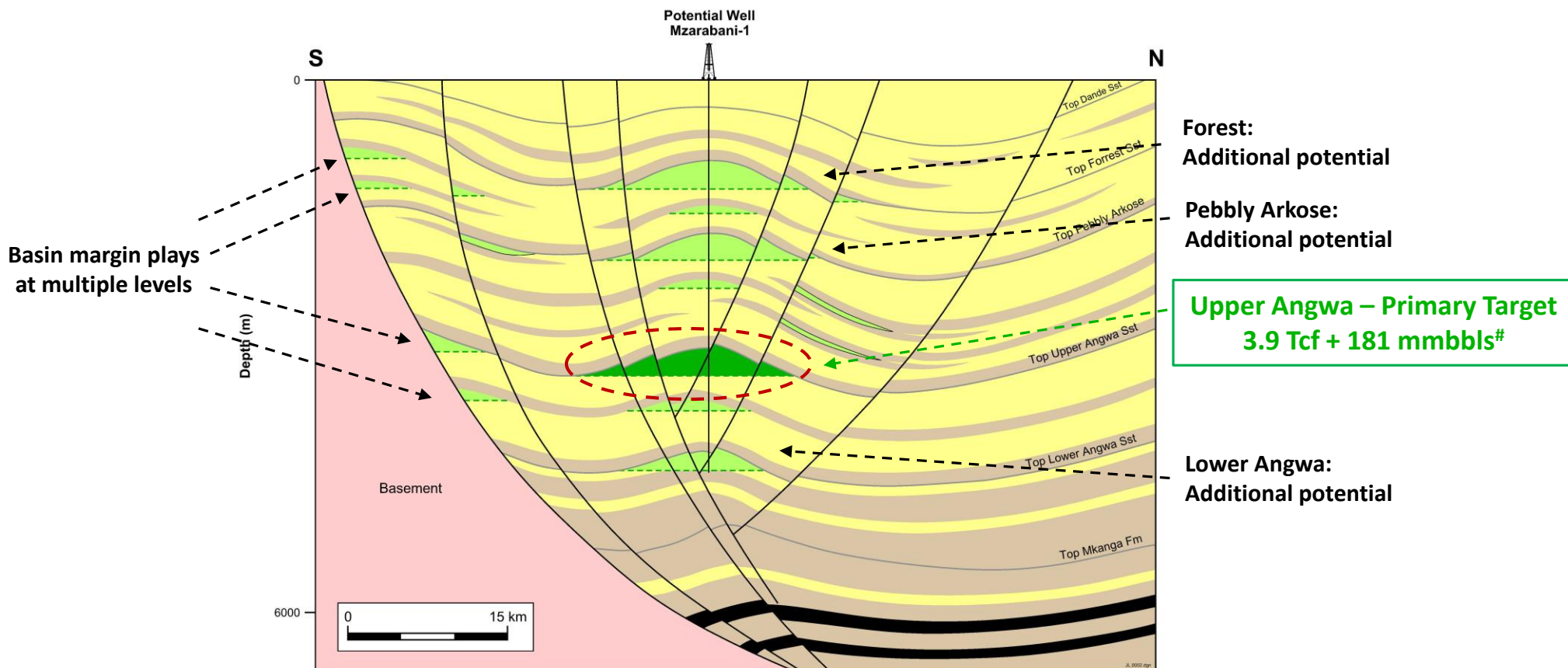
Cabora Bassa Project: SG 4571 Mzarabani Prospect	Gross Unrisked Estimated Prospective Resources[#] <i>Source: NSAI as of 29 October 2018</i>			
Upper Angwa Reservoir Only	Low	Best	High*	Mean
Gas (Bcf) – Gross (100%)	826.0	3,357.0	9,403.0	3,880.0
Condensate (mmbbl) – Gross (100%)	8.3	100.7	658.2	181.1
Total (mmboe) – Gross (100%)	150.7	679.5	2,279.4	850.1
Gas (Bcf) - Net IVZ (80%)	660.8	2,685.6	7221.5	3,104.0
Condensate (mmbbl) - Net IVZ (80%)	6.6	80.6	505.5	144.9
Total (mmboe) - Net IVZ (80%)	120.6	543.6	1,750.6	680.1

#Cautionary Statement: The estimated quantities of petroleum that may be potentially recovered by the application of a future development project relate to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Further exploration, appraisal and evaluation are required to determine the existence of a significant quantity of potentially movable hydrocarbons. Prospective Resource assessments in this release were estimated using probabilistic methods in accordance with SPE-PRMS standards.



Mzarabani Prospect Schematic

- Multiple targets from a single well in a huge stacked prospect
- Significant additional potential being mapped (4 way structural and basin margin plays)



Directors & Management



Scott Macmillan – Managing Director

Mr. Macmillan is a Reservoir Engineer and founder of Invictus Energy. He has a Bachelor of Chemical Engineering and an MSc in Petroleum Engineering from Curtin University. He is a member of the Society of Petroleum Engineers (SPE) and has over 12 years experience in exploration, field development planning, reserves and resources assessment, reservoir simulation, commercial valuations and business development. He worked for Woodside Energy as a Senior Reservoir Engineer on large offshore oil and gas field developments and as Business Advisor in the Global New Ventures team focused on Africa exploration. He was the Senior Reservoir Engineer for AWE Ltd working on the Waitia Gas Field which is the largest onshore gas discovery in Australia in the last 40 years. He has extensive business experience in Zimbabwe.

Brent Barber – Country Manager

Mr. Barber is an exploration geologist with over forty years applied experience. He is the Technical Director of Invictus Energy Resources and Managing Director of Geological Organisation Logistics and Design (GOLD). He has been involved in the exploration and evaluation of mineral prospects and mining venture throughout Africa and in South America and SE Asia. When employed by Mobil Exploration he headed the hydrocarbon exploration undertaken along the Zambezi Valley in both Zambia and Zimbabwe. Mr. Barber is based in Harare and currently focuses on the acquisition, assessment and design and management of exploration prospects.

Barnaby Egerton-Warburton – Non Executive Director

Mr. Egerton-Warburton holds a Bachelor of Economics and is a graduate of the Australian Institute of Company Directors and a member of the American Association of Petroleum Geologists. Mr. Egerton-Warburton is currently Managing Director of Eneabba Gas Limited (ASX: ENB) and Non-Executive Director of iSignthis Limited (ASX: ISX). Mr. Egerton-Warburton has over 20 years investment banking experience with a focus on the energy sector.

Eric de Mori – Non Executive Director

Mr. de Mori has over 15 years investment banking experience in ASX listed companies spanning natural resources, biotechnology and technology. Mr. de Mori has held several major shareholder positions with ASX listed companies and is currently a Director and co-founder of ASX listed Adriatic Metals Ltd. (ASX: ADT).

Gabriel Chiappini – Non Executive Director and Company Secretary

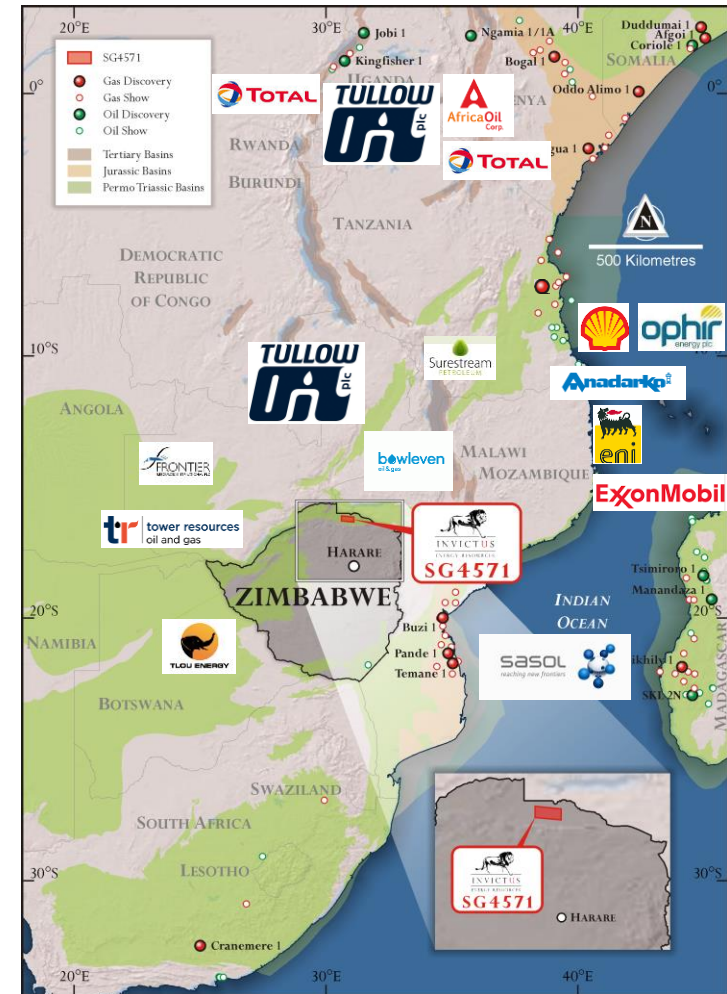
Mr. Chiappini is an experienced ASX director and has been active in the capital markets for 17 years. He has assisted in raising \$AUD450m and has provided investment and divestment guidance to a number of companies and has been involved with 10 ASX IPO's in the last 12 years. He is a member of the AICD and CA ANZ. Mr. Chiappini is a director of Black Rock Mining, Eneabba Gas Limited and Fastbrick Robotics Limited.

Regional Activity Map



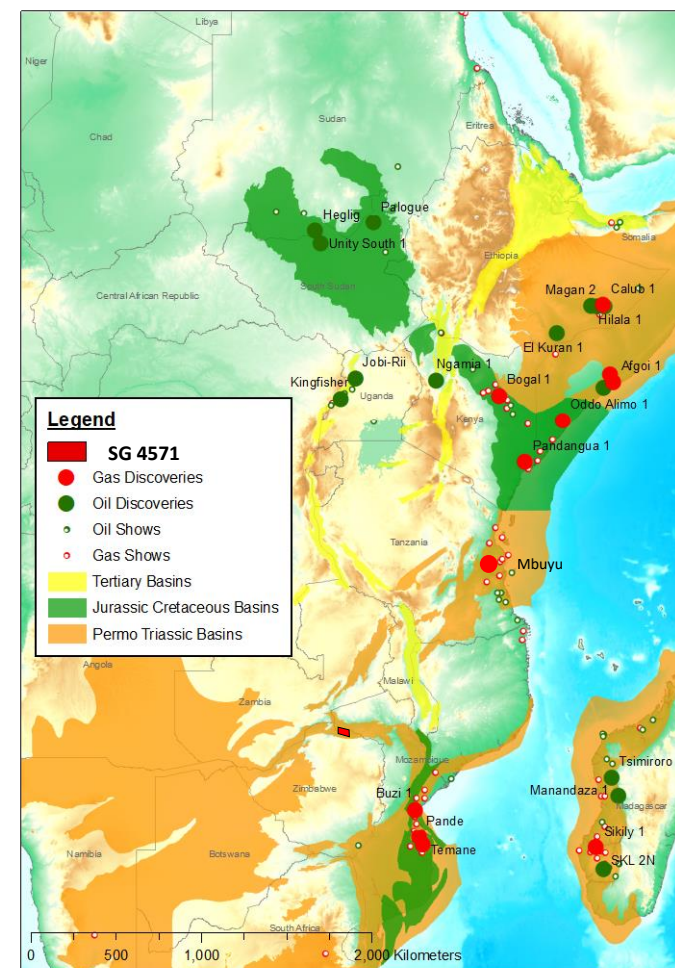
Significant regional activity underway

- Karoo aged (Permo-Triassic) rift plays gaining attention
- Cabora Bassa Basin possesses similar characteristics to prolific interior rift basin petroleum systems in Uganda, Kenya, South Sudan, Perth and Cooper-Eromanga basins
- Regional license rounds have attracted established East African Rift players to Karoo rift basins
- Near term activity and news flow from neighbours will enhance the value of SG 4571
- Invictus is the first mover into Cabora Bassa portion of the greater Zambezi Valley rift play that extends from Namibia, through Botswana, Zambia and Zimbabwe, into Mozambique
- Invictus has secured the most prospective acreage in the basin, as well as an extensive legacy data set



Regional Karoo Hydrocarbon Discoveries

Country	Discovery	HC Type	Estimated Ultimate Recovery (2P/2C)
Ethiopia	El Kuran	Oil	155 million bbl
Ethiopia	Calub & Hilala	Gas-Cond	6.0 – 8.0 Tcf
Ethiopia	Calub South	Oil	-
Ethiopia	Magan	Oil	-
Ethiopia	Genale	Gas-Cond	460 Bcf + 78 million bbl
Kenya	Bogal	Gas	60 Bcf
Somalia	Afgoi	Gas	200 Bcf
Somalia	Coriole	Oil	-
Madagascar	Manandaza	Oil	-
Madagascar	Tsimiroro	Oil	675 million bbl
Madagascar	Belemologa	Tar Sand	22 billion bbl
Madagascar	Sikhily	Gas	-
Tanzania	Mbuyu	Gas	2.7 – 5.9 Tcf





Cabora Bassa Basin Stratigraphy

Thick sedimentary sequences set up multiple targets

Dande Sandstone – tertiary target

Forest Sandstone – tertiary target

Pebbly Arkose – secondary target

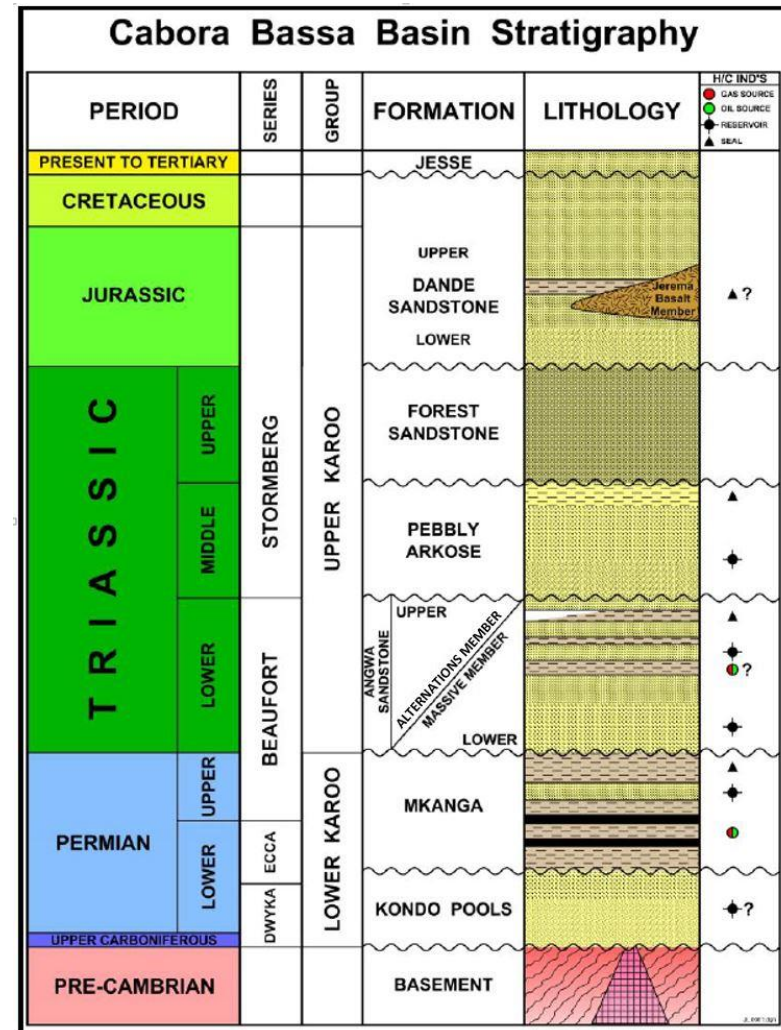
Upper Angwa – Alternations Member – Primary Target

Lower Angwa – Massive Member – Secondary Target

Mkanga Formation – secondary target

Kondo Pools Formation – tertiary target

Play Elements





Cabora Bassa Basin Play Elements

Source ✓

46m thick outcrop of Upper Angwa source rock

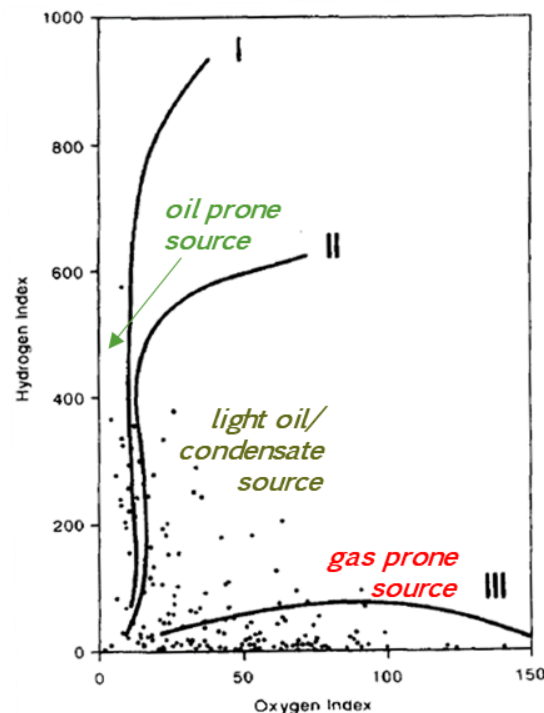


Plate 4 Oil-prone Shales of Upper Alternations Member, Angwa Sandstone Formation; Manyima River-Cabora Bassa Basin



Maturity ✓

Type I / Type III mixture capable of generating low sulphur waxy crude or rich gas condensate depending on maturity.



New source rock sample acquired from Manyima Bridge outcrop

Seal ✓

Mudstone and siltstones capable of 1000m oil column heights

Table 1
Mercury and Oil/Brine Breakthrough Pressures
with Corresponding Maximum Oil Column Heights

Sample	Lithology	Porosity	P(bt) Hg	P(bt) oil	Height (ft)
90/1630A2-1a	Mst		2,500	170	1,308
90/1630A2-2	Sst	13.3	3,000	204	1,570
90/1630A2-3a	Mst		1,000	68	523
90/1630B1-1	Slst		100	7	52
91/1529D2-3	Mst		6,000	408	3,140
91/1529D2-11	Sst	11.7	2,500	170	1,308
91/1529D4-3	Mst		75	5	39
91/1530C3-3	Sst	10.2	1,000	68	523
91/1530C3-9	Sst	18.1	2,000	136	1,047
Z69/2	Mst		500	34	262

Lighter, more gas-rich oils would have greater buoyancy and therefore reduced maximum oil column heights. Heavier oils could accumulate in taller columns. Due to compaction, the sealing capacities of fine-grained sediments tend to increase with depth. Since the Angwa samples were obtained from outcrops, it is likely that their subsurface equivalents are better seals.

Cabora Bassa Basin Play Elements (continued)

Reservoir ✓

Angwa Sandstone primary target has conventional reservoir properties with excellent porosity around 20% and permeability in 100-1000+ mD range.



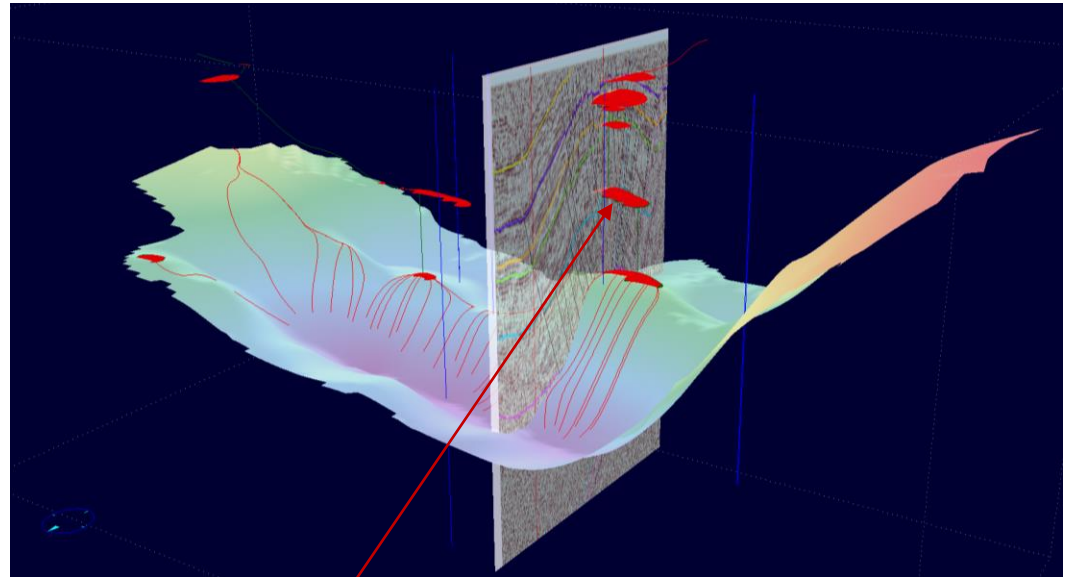
The Angwa Sandstones - braided stream sands, meandering river sands, flood plain sands - have good porosities (around 20%) and permeabilities up to 1200 md. Thus, the thick Angwa Formation offers a good reservoir potential which is close to underlying Mukanga Formation source rocks and intercalated source rocks. Mudstones within the Angwa Formation can provide efficient seals.

Trap ✓

Massive 4 way Mzarabani anticline provides structural closure with >500m vertical relief

Migration ✓

Proximity to kitchen immediately north as well as underlying source rocks allows for lateral and vertical migration



Mzarabani closure at Upper Angwa. Large fetch area with extensive hydrocarbon migration pathways into the trap. Upper Angwa has ~2,000m thickness within SG 4571 portion of Cabora Bassa Basin. Image shows fetch area (slice at top Lower Angwa superimposed on seismic line 013) with migration pathways into 4 way closure at each horizon.



Geochemistry sampling program currently underway to determine full extent of oil prone source rocks in Cabora Bassa Basin

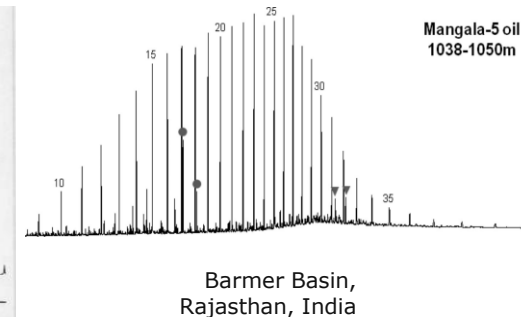
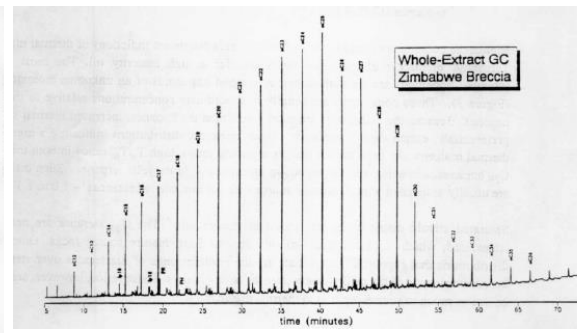
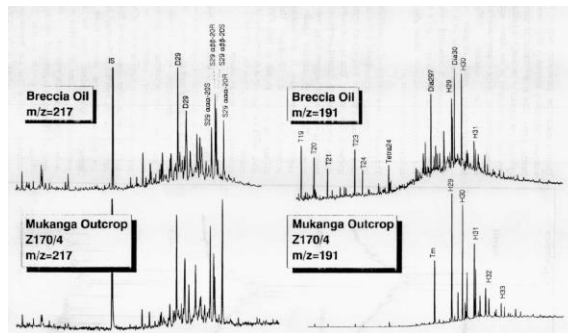
Previous geochemical studies of outcrop samples suggest a fluvial to fluvio-lacustrine source rock is present in both Late Permian Mkanga Formation and Triassic Upper Angwa Formation (Alternations Member).

Two main types of source rock present

- Gas prone carbonaceous and coaly shales (Type F organofacies or “Type III/IV”)
- Interbedded, laterally discontinuous shales, deposited in swampy, paludal and/or lacustrine environments with the potential to generate light oil, condensate and gas (Type D/E organofacies or “Type III/I”)
- Additional possible isolated lacustrine source (Type C organofacies or “Type I”) with the potential to generate oil

Oil recovered from the Mid Zambezi Basin (Breccia Oil, south west of Cabora Bassa) generated from swampy lacustrine or lacustrine influenced source rock

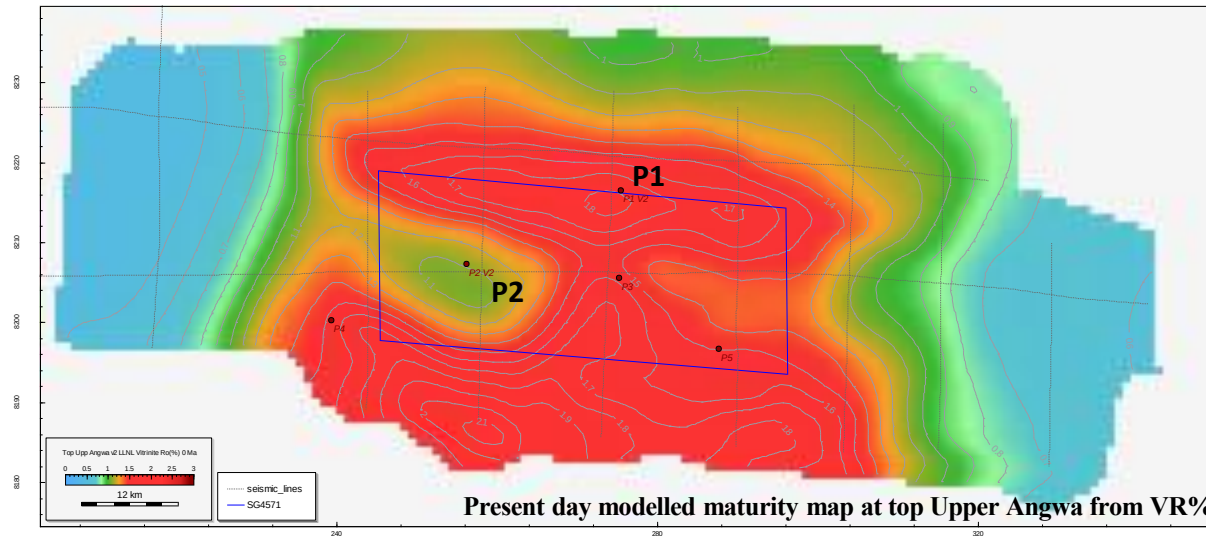
- High wax content and Pr/Ph ratio suggests correlation with lacustrine/lacustrine influenced oils of other rift basins (Africa and worldwide)
- Analysis of nearby source rocks suggests Late Permian Madumabisa Formation (time equivalent to Mkanga Formation) expelled oil



Cabora Bassa Basin Basin Model - Present Day Maturity Map



New basin model – more liquids (oil and wet gas) prone

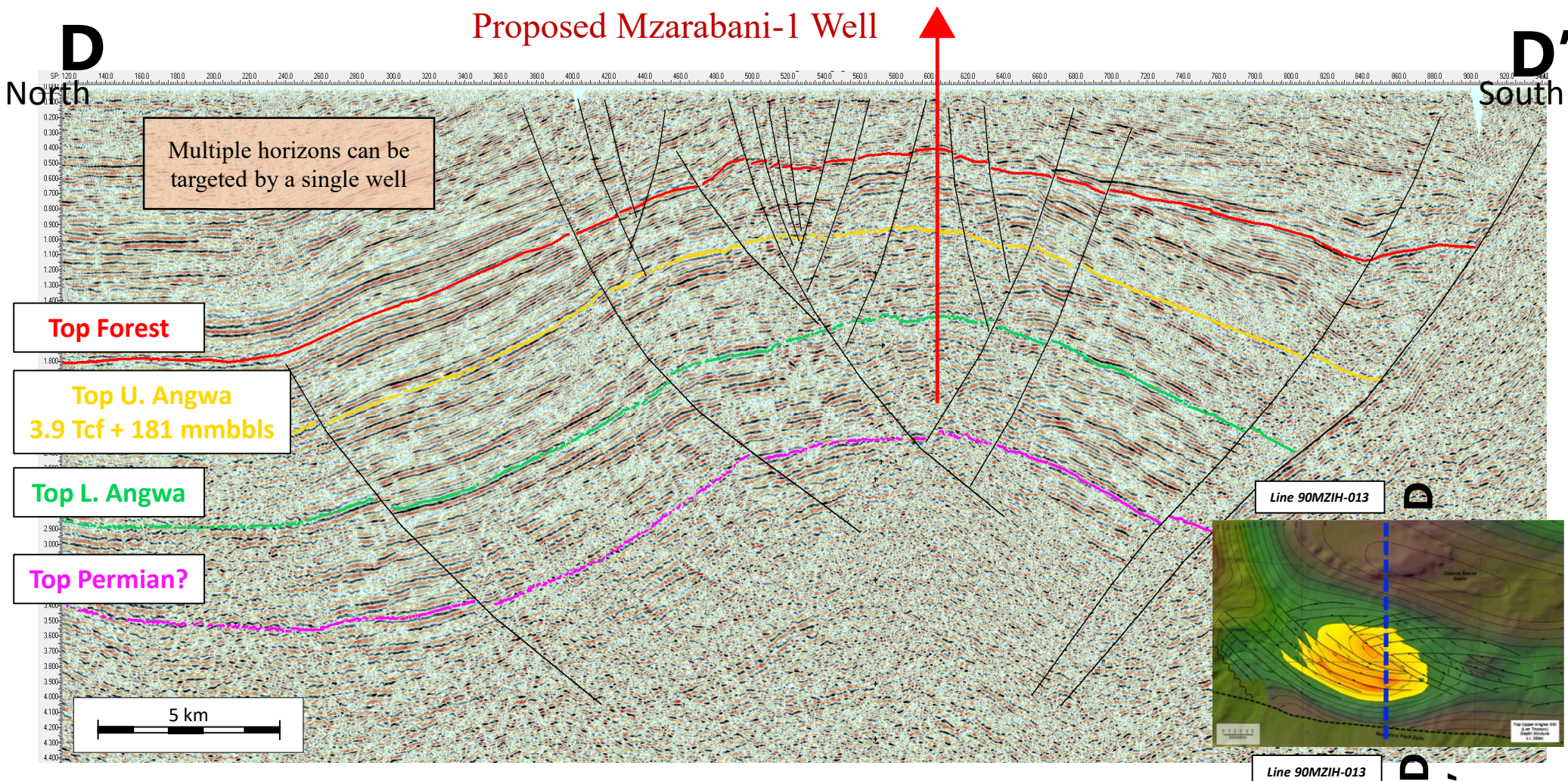


- Present day maturity for the gas and light oil/condensate source rock at the top of the Upper Angwa sequence shows maturity for gas generation and expulsion in the main basin (P1) and against the southern bounding fault, with maturity for condensate and light oil on the flanks of the basin
- Maturity at the Mzarabani structure location (P2) suggests condensate/light oil expulsion present day
- Upper Angwa hydrocarbon expulsion modelled to have taken place 230-200 Ma from central basin kitchen (P1), and 200-20 Ma from Mzarabani structure location (P2)
- Later hydrocarbon charge than previously modelled due to updated basin modelling practices and more extensive database

New basin model present day maturity map from vitrinite reflectance suggests both oil and wet gas expulsion has taken place in the past and is continuing to present day



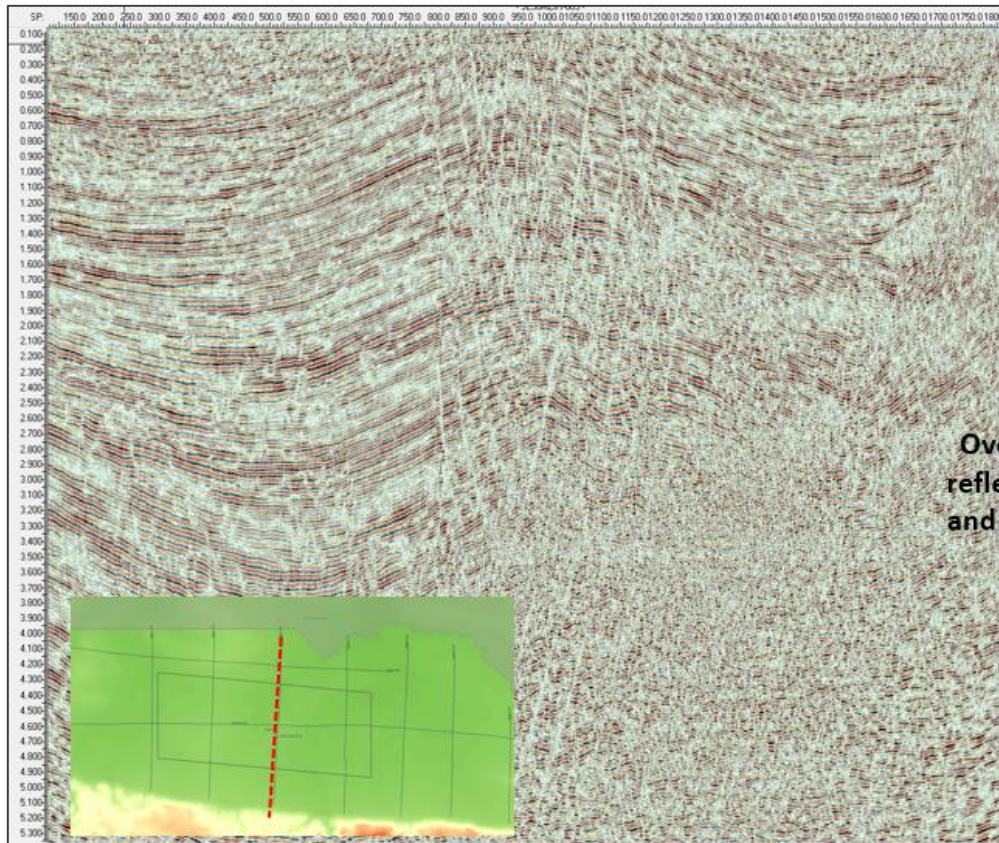
Mzarabani Prospect – Seismic Line 013



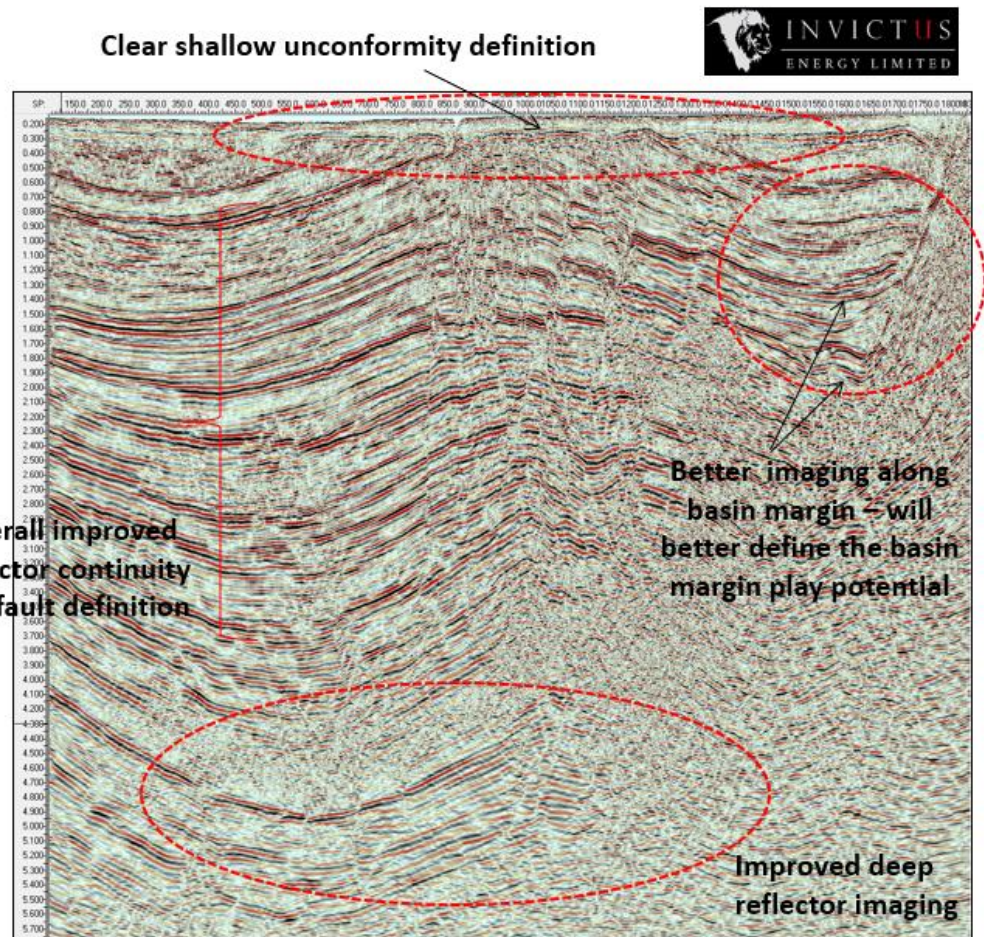


Line 005 Reprocessing Results

Line 005



Original



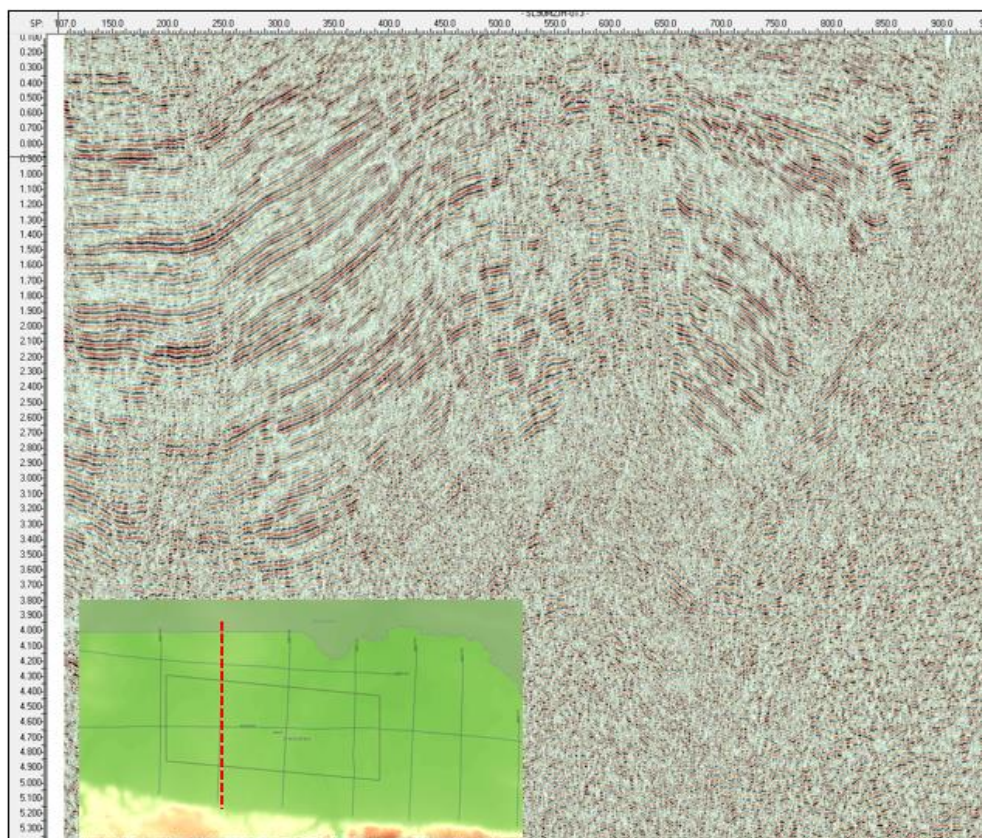
Reprocessed

Figure 2 – Seismic Line 005 Processing Results

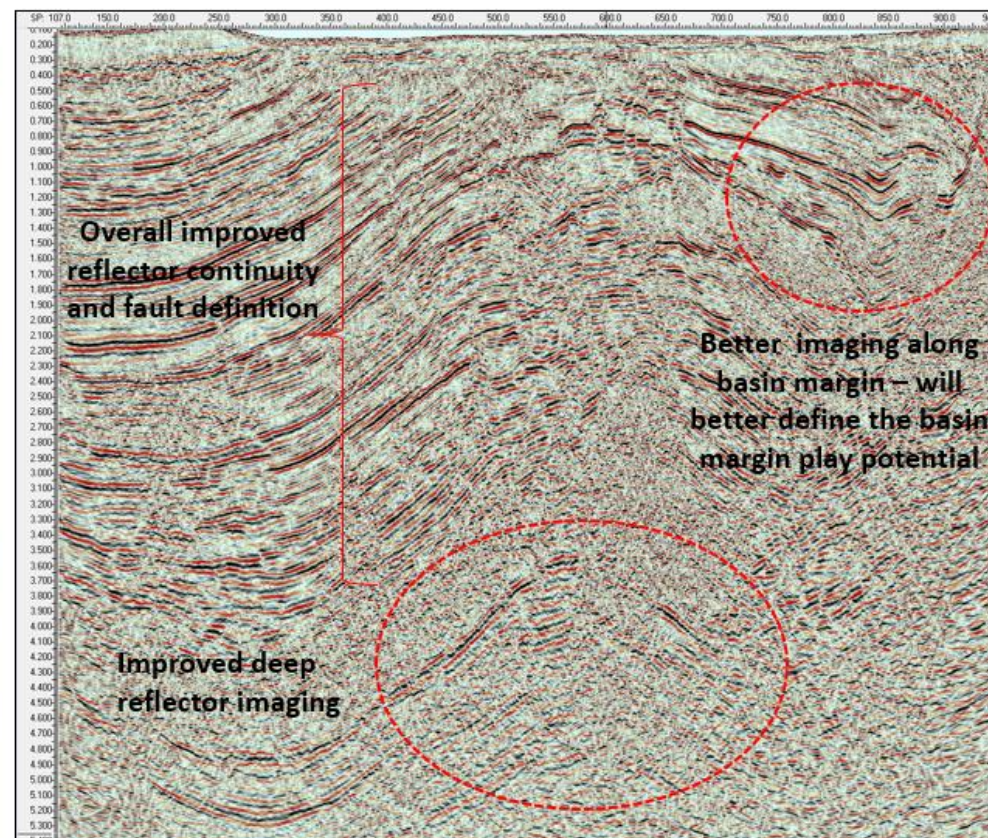


Line 013 Reprocessing Results

Line 013



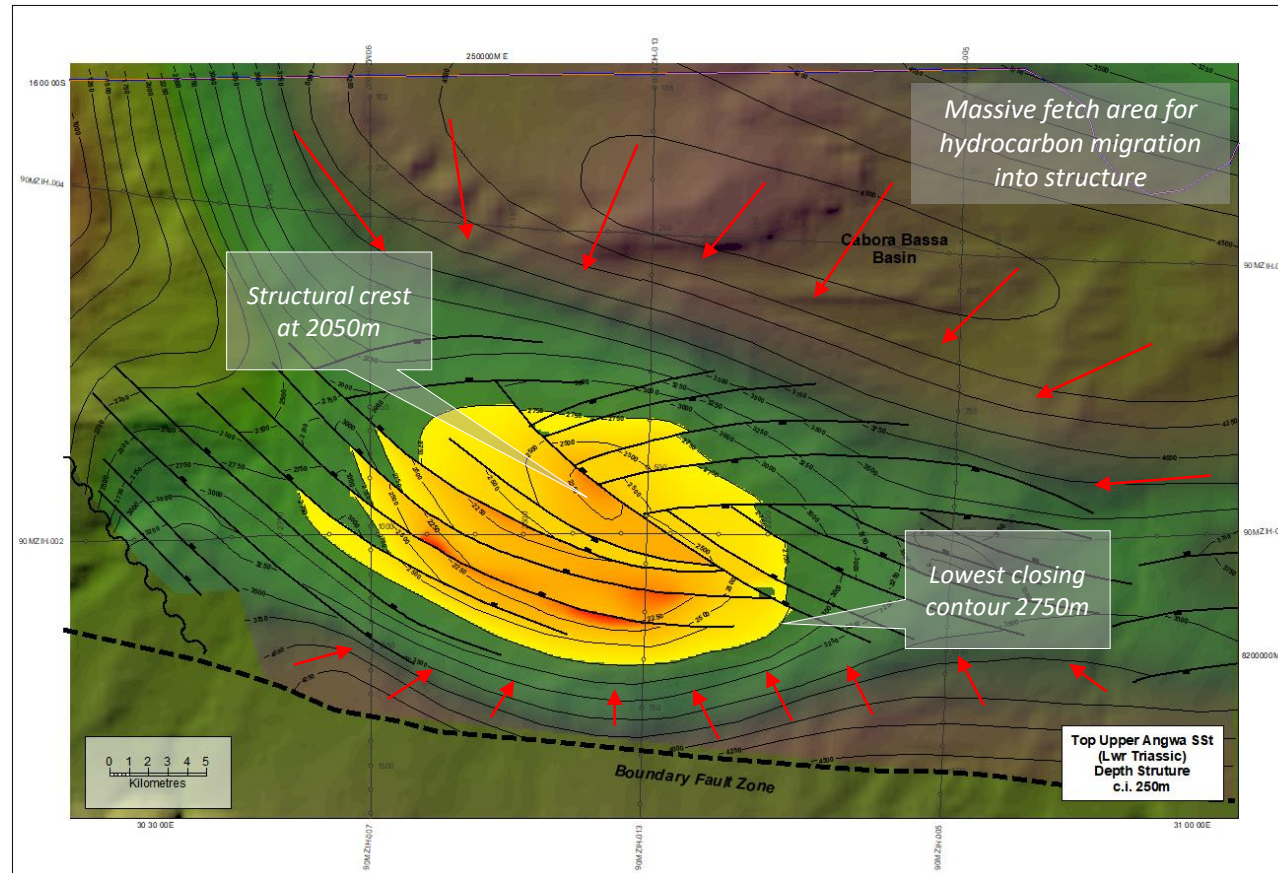
Original



Reprocessed

Figure 1 – Seismic Line 013 Processing Results

Mzarabani Prospect – Top Upper Angwa Structure Map

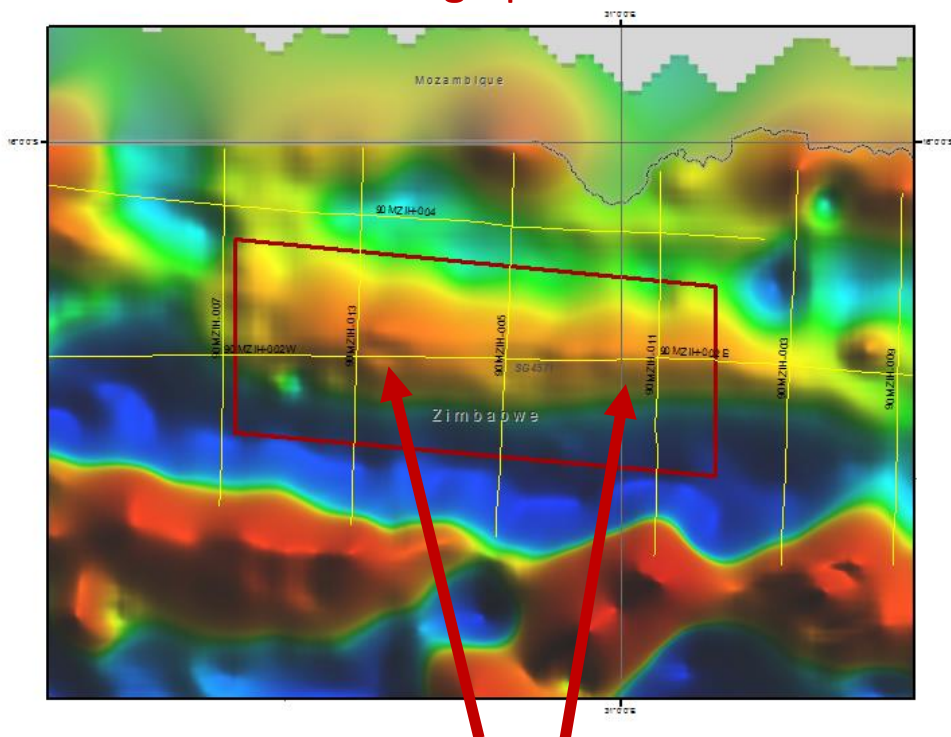


Top Upper Angwa structure map showing 700m vertical relief and >200km² under closure – **the largest, undrilled, seismically defined structure onshore Africa**



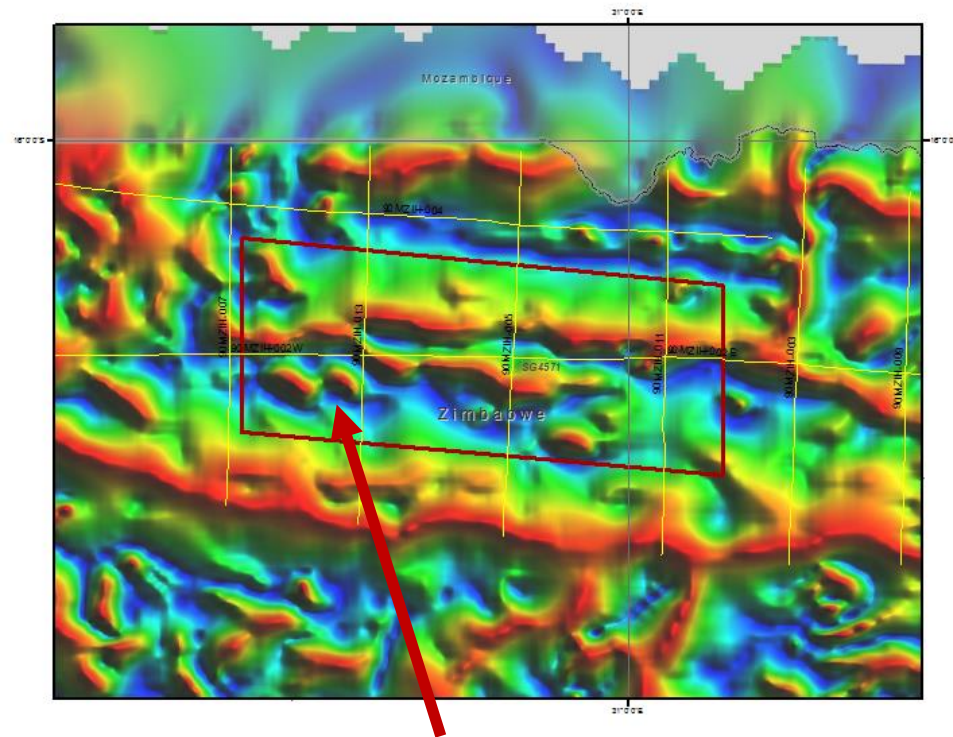
Gravity Reprocessing – New Leads Appearing

40 km high pass filter



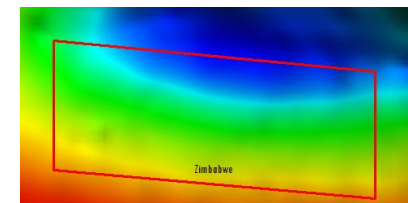
Mzarabani anticline trend clearly visible in west of SG 4571; but likely additional feature to the east as well

Tilt of the Total Horizontal Derivative



Subtle NW-SE features enhanced within the southwest of the block

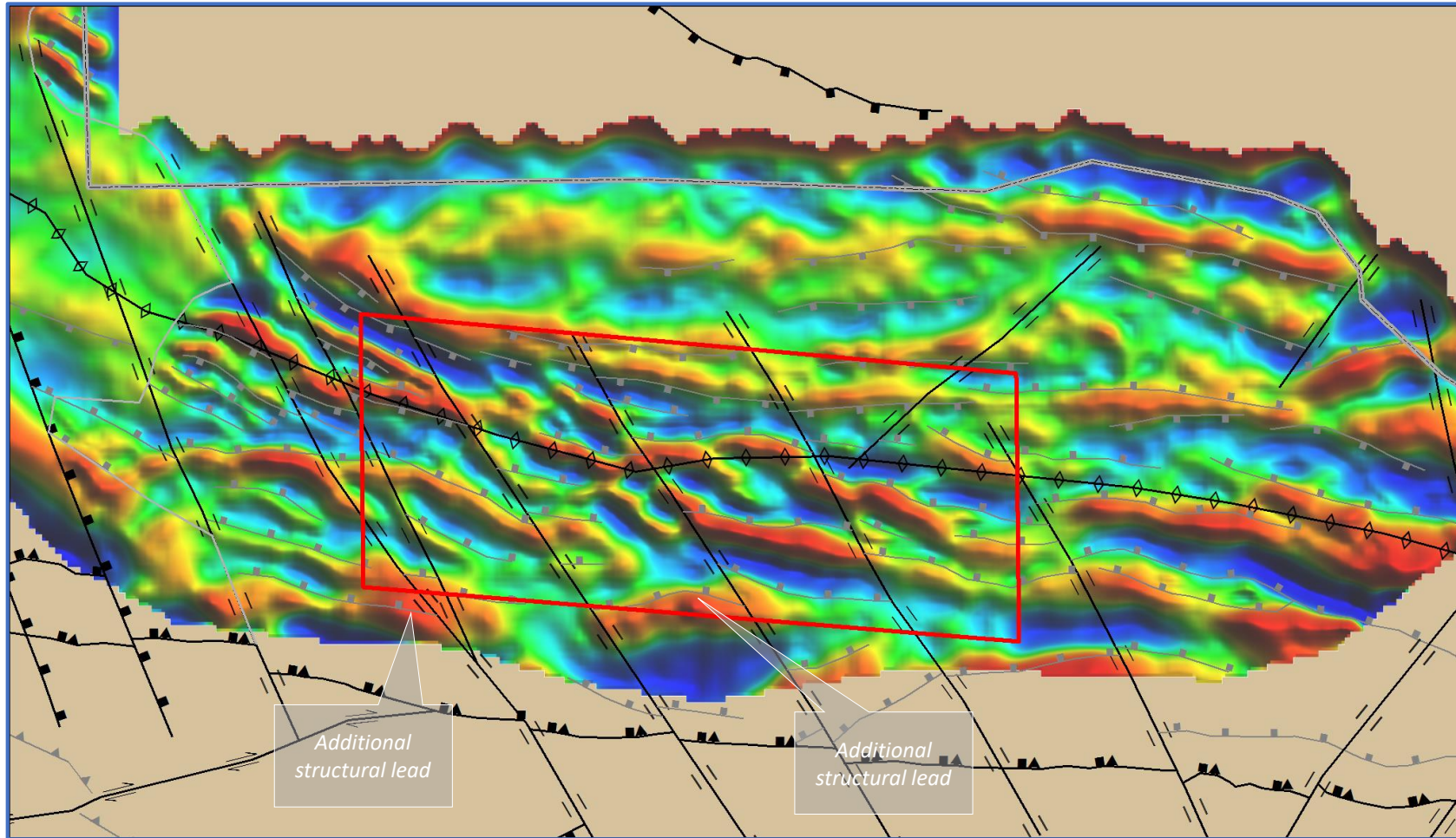
Neither of these are easily visible in the full data:



Aeromagnetic Reprocessing – Further Leads Appearing



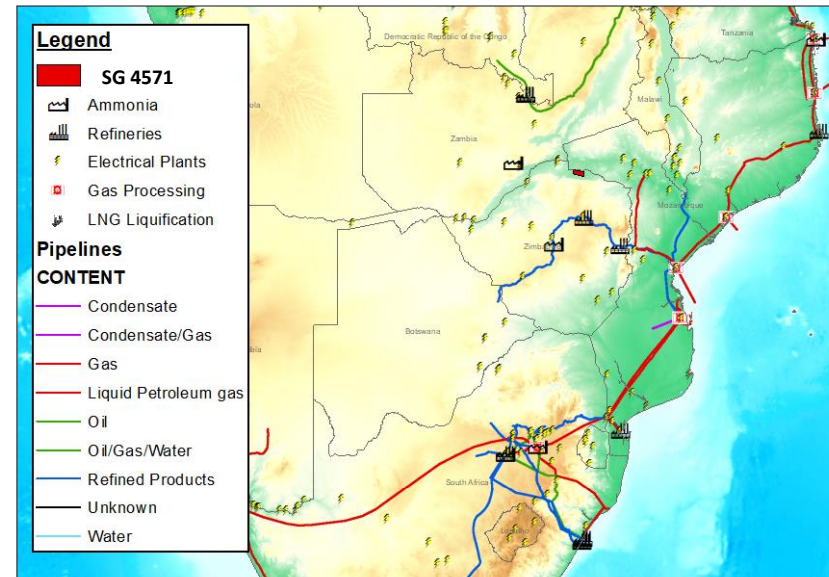
DRTP Magnetics 10 km high pass filter



Infrastructure and Markets



- SG 4571 proximal to existing and future pipeline infrastructure for the domestic and export markets
- Excellent access – dual lane tarmac all the way to the permit. 2 hours from Harare by road
- Located in a non-farming area on State Land with extremely low number of inhabitants and wildlife
- Numerous regional markets exist to monetise oil and gas in a starved market – e.g. Mossel Bay GTL gas feedstock crisis
- Southern Africa power crisis affecting growth in the region amidst a huge push to adopt gas as an alternate energy source to coal



Markets Identified

- Hwange power station
- Pande-Temane gas pipeline to South Africa
- Feruka and Harare refineries
- Sable ammonia plant (Kwekwe)
- South Africa domestic market
- Industrial customers
- Independent Power Plant construction will allow electricity exports to any country within Southern Africa through the Southern Africa Power Pool

Potential Pipeline Route Comparison

