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ORAL PRESENTATION

Exploration in the Central Burma Depression, Onshore Myanmar

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The Central Burma Depression comprises several basins (Figure 1), for which the exploration results of the main four basins are described below and summarised in Table 1.

CHINDWIN BASIN

The most northerly basin, the Chindwin Basin covers 35,185 km^2 and is the least explored of the main basins. Oil and gas seeps are recorded in the Western Outcrops and Eastern Thrust Belt whilst 28-35^o api paraffinic oil has been produced from hand dug wells. Exploration to date has resulted in gas discoveries in the Eocene of the Yenan and Patolon fields and oil in the Miocene of the Indaw Field, whilst several large structures remain to be tested. Uyu is the largest mapped structure but has only been tested by one well drilled by Amoco which was dry.

SALIN BASIN

The most explored basin is the Salin Basin where the TD ages are mainly Eocene and Oligocene. Most of the major onshore fields are located in this basin and these include 20 of the 28 known onshore oil discoveries. The main oil-bearing reservoirs are in the Oligocene and to a lesser extent in the Lower to Middle Miocene and Upper Eocene. Source rocks occur throughout the Lower Eocene to Upper Oligocene, although the main source intervals are believed to be the Upper Eocene and Lower Oligocene.

PYAY BASIN

The Pyay Basin covers approximately 24,484 km^2 and contains 12 oil and gas fields with many other wells having significant hydrocarbon shows, although exploration to date has mainly focussed on the area around the main discoveries. Most of these wells targeted the Miocene and to a lesser extent the Oligocene. Eocene and Oligocene formations, although oil bearing in Letpando and Kyaukkwet Fields in the Salin Basin to the north, have not been tested in central and southern parts of basin. The discoveries to date are small with traps comprising long narrow anticlines cross-cut by strike-slip faults. The Pyay Field was discovered in Miocene carbonates below mud volcanoes associated with gas seeps and was the first carbonate discovery in Myanmar. Sub-thrust plays in Eocene and Oligocene sandstones are mainly untested yet are proven to be oil-bearing to the north.

AYEYARWADY BASIN

Most of the wells in this basin have targeted the Miocene, resulting in mainly gas discoveries with minor condensate (65^o api) in Upper and Middle Miocene deltaic sandstones and Pliocene fluvial sandstones. Discoveries include Apyauk, Nyaungdon, Maubin and Payagone. The main discovery is Aypauk, with an EUR of 100-450 Bcf plus associated condensate. Subthrust plays are only moderately explored whilst Eocene and Oligocene sandstones are mainly untested.

PETROLEUM SYSTEMS OBSERVATIONS AND COMMENTS

Many of the drilled structures are tectonically active at present day and thus carry a significant leakage risk. The geochemistry of the oils commonly indicates minimal biodegradation and could indicate direct "plumbing" into a mature source kitchen at depth. Some of the oils are fractionated rather than cracked. This may indicate the presence of a deeper liquid play (possibly Eocene) in the central and southern parts of the Central Burma Depression.

There is a general change from heavier oil in north to lighter oil (condensate) and then gas in the south.

Despite high levels of activity only four fields with greater than 100 MMbo EUR have been discovered to date. To what extent has this been due to limited access to technology due to sanctions?

Why has such a large area (Central Myanmar Depression) with a large sediment thickness yielded so little oil? Many of the structures appear to be under-filled whilst hydrocarbon migration is mainly vertical and over short distances. Trap breaching due to recent tectonism may limit hydrocarbon charge to these structures.

Sandstones often have poor reservoir quality and/or are markedly compartmentalised by faults. Both factors may limit hydrocarbon migration into these sandstones.

Overpressure is commonly encountered in many of the wells drilled and has often led to the suspension of such wells. However, reservoir quality sandstones may be present below such over-pressured zones and this idea has yet to be adequately tested.

Seismic imaging is often difficult and has resulted in most wells (and therefore discoveries) being drilled on the more gently dipping limbs of the main anticlinal structures. Improved imaging techniques may in the future allow the more steeply dipping limbs of such structures to be tested.

Basin	No. Expl. Wells	Well Result (percentage of total wells by basin)								
		Dry	Oil Discovery	Oil shows	Gas & Condensate	Gas Discovery	Gas Shows	Oil & Gas Discovery	Oil & Gas Shows	Unknown
Chindwin	23	22	1	13	0	3	9	9	43	0
Salin	273	30	20	7	1	17	9	5	7	4
Pyay	115	37	7	5	5	17	12	5	5	7
Ayeyarwady	88	38	1	5	15	18	17	3	2	1

Table 1. Summary of exploration results in the four main basins of the Central Burma Depression, Myanmar

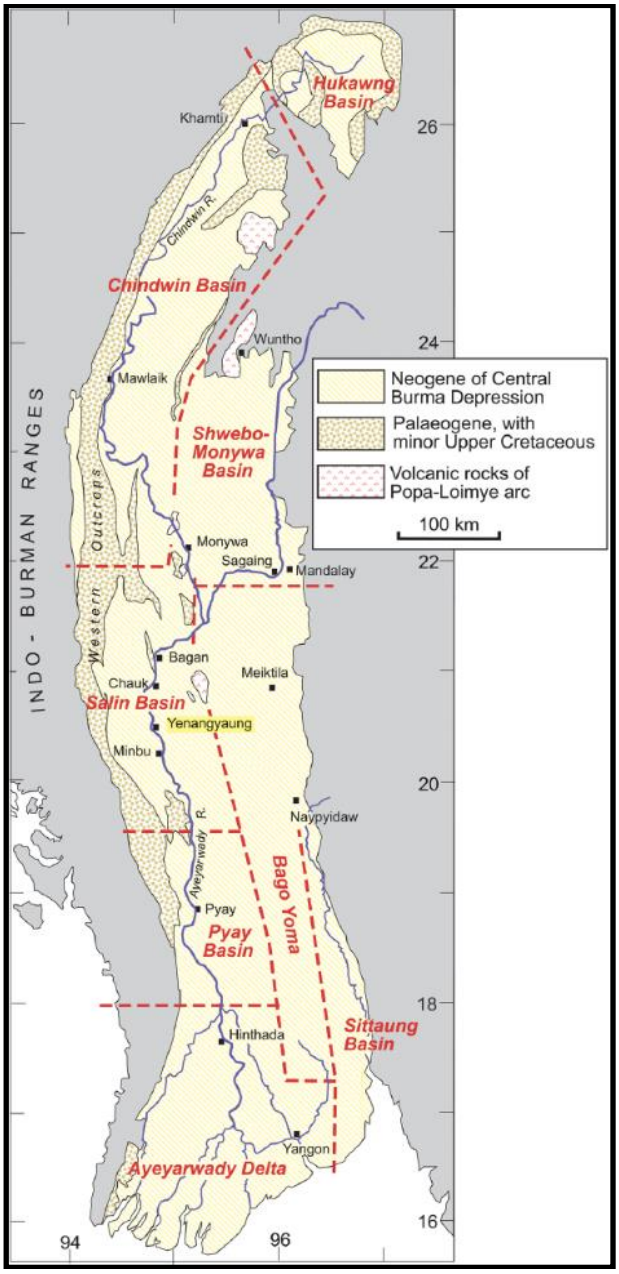

Figure 1. Basin Map of the Central Burma Depression, after Racey & Ridd, 2015