PERMIT REVIEW

OF

EXPLORATION PERMIT EP-426

ONSHORE PERTH BASIN

WESTERN AUSTRALIA

by

Dr B.J. WARRIS

for

EMPIRE OIL COMPANY (WA) LIMITED

August, 2005

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1 INTRODUCTION

Exploration Permit EP-426 is favourably located on the eastern flank of the Dandaragan Trough in the northern part of the onshore Perth Basin. It was awarded 100% to Gulliver Productions Pty Ltd, a wholly owned subsidiary of Empire Oil & Gas NL on 16th July, 2004 for an initial six year period. It consists of 32 graticular blocks covering an area of 2,390 sq kms. The ownership was transferred to Empire Oil Company (WA) Limited on 16th December, 2004.

The Perth Basin is a deep elongate trough which covers an area of some 45,000 sq kms onshore and 55,000 sq kms offshore. The basin contains up to 15,000 metres of Permian and Mesozoic marine and non-marine clastic sediments.

Exploration Permit EP-426 is situated some 300 kilometres north of the city of Perth. The Midland Highway, an all weather sealed road, runs north-south through the permit. The all weather sealed road between Dongara and Mingenew runs east-west through the permit (Figure 1). The Dampier-Perth and Dongara-Perth Natural Gas Pipelines transverses north-south some 25 kms west of the permit.

2 EXPLORATION HISTORY

Exploration Permit EP-426 is covered by a fair grid of seismic lines dating from 1968 to 1994. The last seismic acquired in the application area was part of the Mingenew Seismic Survey. This survey was carried out by Discovery Petroleum in 1994 and part of the survey detailed the Moriary Prospect.

Only one well, Abbarwardoo-1, drilled by Wapet in 1962, is located within the permit itself. This well was drilled in the far north of the permit and is not relevant as the best hydrocarbon potential is in the southern part of the area where potential source rocks are thermally mature.

The most significant wells are Erregulla-1 and North Erregulla-1 located only a few kms from the western and southern borders of the permit. Erregulla-1, drilled by Wapet in 1966, recovered 36 barrels of 47° API by swab testing two sandstones in the Early Jurassic Eneabba Member of the Cockleshell Gully Formation.

North Erregulla-1, drilled by Wapet in 1967, recovered 20 gallons of 38° API from an open hole drill stem test of fine grained sandstones in the Middle Triassic Woodada Formation, plus 8 gallons of 38° API from an open hole drill stem test of silicified sandstones in the Late Permian Wagina Formation.

3 REGIONAL GEOLOGY AND STRATIGRAPHY

The Perth Basin contains a sequence of up to 15,000 metres of Permian to Cretaceous sediments deposited between the Yilgarn Precambrian Block to the east, the Indian continent to the west, the Antarctic continent to the south and which opens to the north where joins with the Palaeozoic to Tertiary Carnarvon Basin.

Exploration Permit EP-426 is situated on the northeastern flanks of the Dandaragan Trough and to the west of the major, down-to-the west Urella Fault (Figure 2).

The generalised stratigraphy of Exploration Permit EP-426 is illustrated in Figure 3. This is based on formations outlined by Playford et al (1976), Discovery Petroleum (1996) and the results of Erregulla-1 and North Erregulla-1 wells.

Pre-rift sedimentation began in the Perth Basin during the Permian to Early Triassic with intracratonic downwarping and mostly marine deposition. Marine environments were present in the Holmwood Shale, Carynginia Formation and Beekeeper Limestone with a high stand tract during the Artinskian Irwin River Coal Measures.

Rifting commenced towards the end of the Early Triassic. The marine Lower Triassic Kockatea Shale was swamped with initially deltaic deposits (Woodada Formation), and then fluvial to continental sedimentation (Lesueur Sandstone).

Rifting and non-marine sedimentation continued into the Jurassic with the continental red beds of the Eneabba Member and the swamp, marsh and lacustrine environments of the Cattamarra Coal Measures. Sedimentation slowed and a marine transgression (Cadda Formation) took place during the Bajocian.

Further rifting reactivated the basin margins and thick, fluvial and alluvial plain deposition of the Yarragadee and Parmelia formations covered the basin.

Breakup occured during the Valanginian with the post-rift marine sediments of the Cretaceous Warnbro and Coolenya groups onlapping the Intra-Valanginian Unconformity surface.

4 HYDROCARBON POTENTIAL

4.1 Reservoir/Seal

4.1.1 Cattamarra Coal Measures

The primary objectives in Exploration Permit EP-426 are the Early Jurassic Cattamarra Coal Measures and Eneabba members of the Cockleshell Gully Formation. Secondary objectives are present in the Late Permian Wagina Formation, but these reservoirs are deep, tight and gas-prone.

The Cattamarra Coal Measures are composed of interbedded sandstones, shales siltstones and coals. The sandstones vary from fine to coarse grained with average porosities of 20% predicted between 2,100-2,700 metres and deteriorating with depth due to silicification (Discovery Petroleum, 1996).

In Erregulla-1, the sandstones in the Eneabba Member had core derived porosities up to 21%, and permeabilities up to 753 millidarcies.

The Wagina Formation is a sequence of fluvial-deltaic to shelfal marine sandstones which are restricted to the northern Perth Basin. The reservoir quality of these sandstones deteriorates with depth to to diagenetic processes including silicification (Tupper et al, 1994). Porosities deteriorate from 20-25% at around 1,500 metres to less than 10% below 3,000 metres. More importantly, permeabilities deteriorate from 100 millidarcies to multi-darcies at around 1,500 metres to less than 1 millidarcy below 3,000 metres.

Sandstone reservoirs in the Cattamarra Coal Measures and Eneabba members are sealed by the marine shales of the Cadda Formation, and intraformationally by lacustrine and alluvial plain shales. Because these shales are not very thick, lateral fault seal can be a major risk. Significant crestal faulting on Jurassic anticlines can cause cross fault leakage and a lack of exploration success. In North Erregulla-1, the Coaly Unit consists of over 100 metres of interbedded carbonaceous shales and coals. This is the most likely seal for the Moriary Prospect in Exploration Permit EP-426 (Figure 6). Other seals are the “K” Shales and the150 metre red shale sequence at the top of the Eneabba Member.

Sandstone reservoirs in the Wagina Formation are sealed by the thick marine shales of the Kockatea Shale. In North Erregulla-1, the Kockatea Shale is 260 metres thick and provides both vertical and lateral fault seal for the sandstones of the Wagina Formation.

4.2 Source

In the coaly and carbonaceous shales of the Cattamarra Coal Measures, organic content is high with up to 27.2% TOC, and averaging 2.8%. These source rocks contain both humic and sapropelic organic matter and are probably capable of generating both oil and gas.

The main source rocks in the permit are the marine shales in the basal part (transgressive systems tract) of the Kockatea Shale which is one of the major oil-prone source rocks in the northern Perth Basin. TOC's range up to 12.6% with S1+S2's up to 34 and hydrogen indices up to 450. The basal

Kockatea Shale is 50 metres thick in North Erregulla-1, near the Mooriary Prospect, and has TOC's of 0.53 – 6.92% with S2's up to 13 (Geotechnical, 1993). These are good oil-prone source rocks.

4.3 Maturity

The Cattamarra Coal Measures in the southern part of Exploration Permit EP-426 have vitrinite reflectances ranging from 0.6 to 0.75 (Figure 4). This is based on studies by (Paran, 1995). However, given the terrestrial nature of the organic matter, these source rocks are only in the early oil mature window. While these source rocks may be contributing to oil migration in the area, the main, oil generating source rocks are believed to be at the base of the Kockatea Shale.

The Kockatea Shale in the southern part of Exploration Permit EP-426 have vitrinite reflectances ranging from 1.1 to 1.35 (Figure 5). This is based on studies by (Paran, 1995). These source rocks are in the peak oil mature window and are interpreted to be generating significant amounts of oil in the area. The oil generated from the basal Kockatea Shale source rocks migrates vertically up faults and charges the younger sands such as the Eneabba Member in Erregulla-1 and the Woodada Formation in North Erregulla-1. A similar migration and charging mechanism is anticipated for the Moriary Prospect (Figure 6).

4.4 Timing

Maturity modelling by Paran (1995) suggests that the source rocks in the lower part of the Kockatea Shale reached thermal maturity for oil generation during the Early Cretaceous, after the thick deposits of the Yarragadee and Parmelia formations were laid down.

The Jurassic structures in the southern part of Exploration Permit EP-426 show evidence of structural growth during the Late Jurassic and Early Cretaceous. For example, the Mooriary Prospect is very robust at the base of the Coaly Unit, is less robust at the Newmarracarra Limestone horizon and is not present by the middle of the Yarragadee Formation. Therefore, timing of structural growth is ideal for oil migration into these prospects.

5 SEISMIC INTERPRETATION

There is a considerable amount of 2D seismic data over the southern part of Exploration Permit EP-426. This consists mostly of 1987 and 1988 seismic data (Mooriary and Goondaring surveys - reprocessed in 1994); and 1994 and 1997 (Mingenew and Ruth surveys) acquired by Discovery Petroleum. This seismic data has been interpreted by the previous operator, Discovery Petroleum, and their interpretation was submitted to Geological Survey when the area was relinquished.

The quality of the 1987-1997 seismic data is of reasonable quality and is quite good at the main objective Jurassic levels. Selected lines over the Moriary Prospect were reprocessed by Empire Oil Company (WA) Limited during 2004. The seismic lines selected for reprocessing were 87-02, 87-08, 88-02, 88-07, D94-23, D94-24, D94-25 and D94-26. The reprocessing contract was awarded to Robertson (Fugro) and Andrew Vater supervised the reprocessing on behalf of Empire Oil. The reprocessing project was completed in January, 2005 and the Reprocessing Report is attached to this report as Appendix A.

The seismic grid over the Moriary Prospect comprised the eight reprocessed 2D lines totalling 200 km. Lines 87-02, 87-08, 88-02, D94-24, D94-25, D94-26 are the dip lines over the structure while lines 88-07 and D94-23 provide strike control. The data was considerably improved upon the 1994 reprocessing with better definition of the faulting associated with the structure. The data were available in digital SEGY format but the interpretation was carried out on paper sections.

Two horizons were picked; the Near Base Cadda Formation and the Near Base Coaly Unit (Figures 8 and 9). Seismic ties to the nearest well control could not be obtained due to the major fault between North Erregulla-1 and the Moriary Prospect. Both maps show a major fault striking northwest-southeast to the northeast of the Moriary Prospect and downthrown to the southwest. The Moriary structure is formed by a rollover into this fault.

The Near Base Cadda Map shows an unfaulted anticline striking northwest parallel to and on the downthrown side of the major fault. A small antithetic fault is present on the southwest side of the Moriary structure.

The Near Base Coaly Unit Map shows a complexly faulted anticline on the downthrown side of the major fault. The small antithetic fault present on the southwest side of the Moriary structure extends down and breaks the top of the anticline at this horizon. Another fault is present to the west of the Moriary structure but this fault is downthrown to the west, away from the Moriary Prospect.

While the Near Base Cadda event is unfaulted, the Near Base Coaly Unit map is faulted on the crest. Therefore, the “F” Sand is the main objective in the Moriary Prospect with the “J” and “L” Sands relying on cross fault seal against thick lacustrine shales within the Cattamarra Coal Measures.

A seismic line over the Moriary Prospect is shown in Figure 9.

6 PROSPECTS

6.1 Moriary Prospect

The Moriary Prospect is a east-west anticline defined by eight seismic lines; 87-02, 87-08, 88-02, 88-07, D94-23, D94-24, D94-25 and D94-26 (Figures 7 and 8). There is no significant crestal faulting at the Near Top Cadda Formation (Figure 9); however, at the Top Coal Unit, the structure is cut by a fault with approximately 70 metres throw (50 milliseconds).

While the prospect is small in area, there is the potential for stacked pays within the Jurassic section. Based on the Erregulla-1 and North Erregulla-1 wells, potential reservoirs exist at:

(i) "F" Sands sealed by lacustrine shales in the upper part of the Cattamarra Coal Measures;

(ii) "J" Sands sealed by the Coaly Unit;

(iii) "L" Sands sealed by the "K" Shale; and

(iv) Intra-Eneabba Member sands sealed by a 150 metre red shale sequence at the top of the Eneabba Member.

North Erregulla-1 was drilled only 4 kms to the northwest of the Moriary Prospect. This well intersected good reservoir quality sands in the "F", "J" and "L" Sands of Cattamarra Coal Measures plus good reservoir quality sands in the Eneabba Member. Each of these potential reservoirs are sealed by thick lacustrine shales within the Cattamarra Coal Measures; and the 150 metre thick red shale sequence at the top of the Eneabba Member.

The Moriary Prospect has 160 hectares of anticlinal closure with a vertical relief of 15 metres at the "F" Sand and 45 metres at the Top Coaly Unit. Estimated potential recoverable reserves for the "F", "J" and "L" Sands of the Cattamarra Coal Measures are 3.0 million barrels, 2.0 million barrels and 2.5 million barrels respectively (Tables 1-3).

Since the Near Base Cadda event is unfaulted and the Near Base Coaly Unit map is faulted on the crest, the "F" Sand is the main objective in the Moriary Prospect with the "J" and "L" Sands relying on cross fault seal against thick lacustrine shales within the Cattamarra Coal Measures.

The proposed location is at SP 340 on Line D94-24 which is the intersection of lines 88-07 and D94-24. The location is on the Mooriary Road at the intersection with Ludlow Road and is about 9 kilometres south of the road from Dongara to Mingenew.

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TABLE 1

POTENTIAL RESERVE ESTIMATE

MORIARY PROSPECT

"F" SAND

Area	160 hectares
Maximum Gross Pay	10 milliseconds 15 metres
Net Sand	12 metres
Average Net Pay	5 metres
Volume	800 hectare-metres
Reservoir	Porosity = 20% (average) Sw = 30% FVF = 1.25
Oil-in-Place	7,080 barrels/hm 5.6 million barrels
Recovery Factor	55%
Recoverable Oil Reserves	3.0 million barrels

TABLE 2

POTENTIAL RESERVE ESTIMATE

MORIARY PROSPECT

"J" SAND

Area	100 hectares
Maximum Gross Pay	30 milliseconds 45 metres
Net Sand	5 metres
Average Net Pay	5 metres
Volume	500 hectare-metres
Reservoir	Porosity = 20% (average) Sw = 30% FVF = 1.25
Oil-in-Place	7,080 barrels/hm 3.5 million barrels
Recovery Factor	55%
Recoverable Oil Reserves	2.0 million barrels

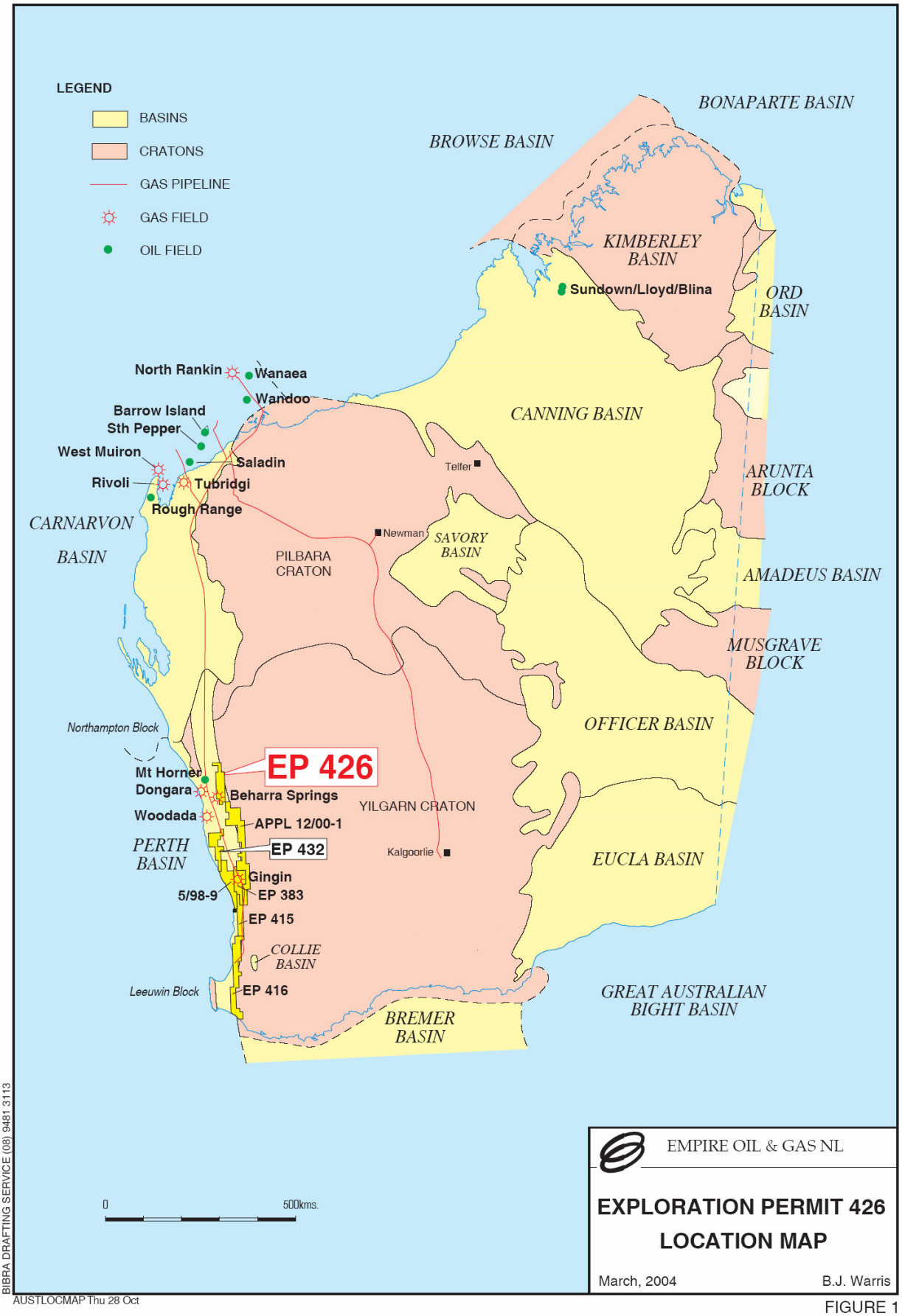
TABLE 3

POTENTIAL RESERVE ESTIMATE

MORIARY PROSPECT

"L" SAND

Area	40 hectares
Maximum Gross Pay	30 milliseconds 45 metres
Net Sand	35 metres
Average Net Pay	15 metres
Volume	600 hectare-metres
Reservoir	Porosity = 20% (average) Sw = 30% FVF = 1.25
Oil-in-Place	7,080 barrels/hm 4.25 million barrels
Recovery Factor	60%
Recoverable Oil Reserves	2.5 million barrels



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EXPLORATION PERMIT 426
LOCATION MAP

March, 2004 B.J. Warris

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FIGURE 1

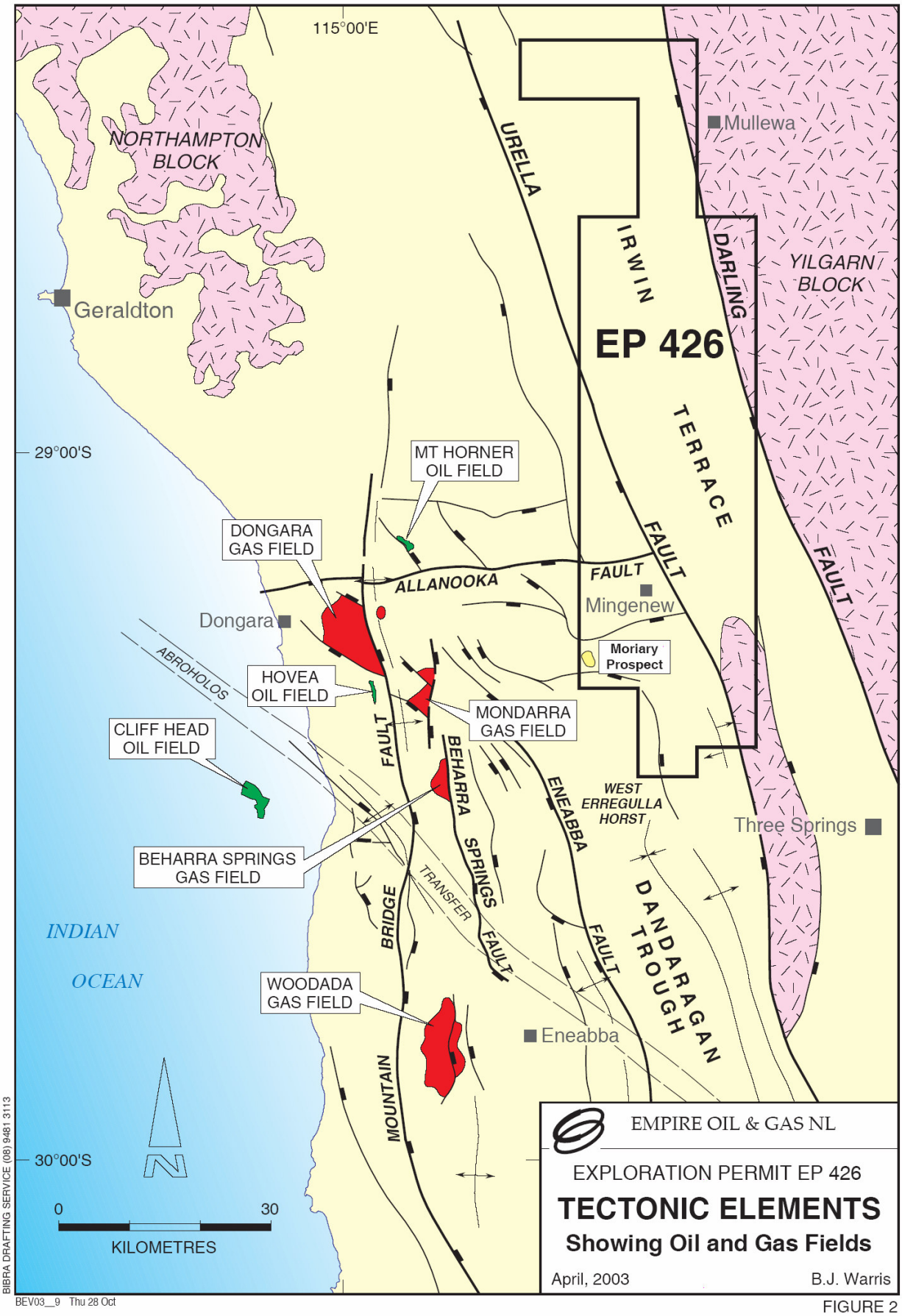

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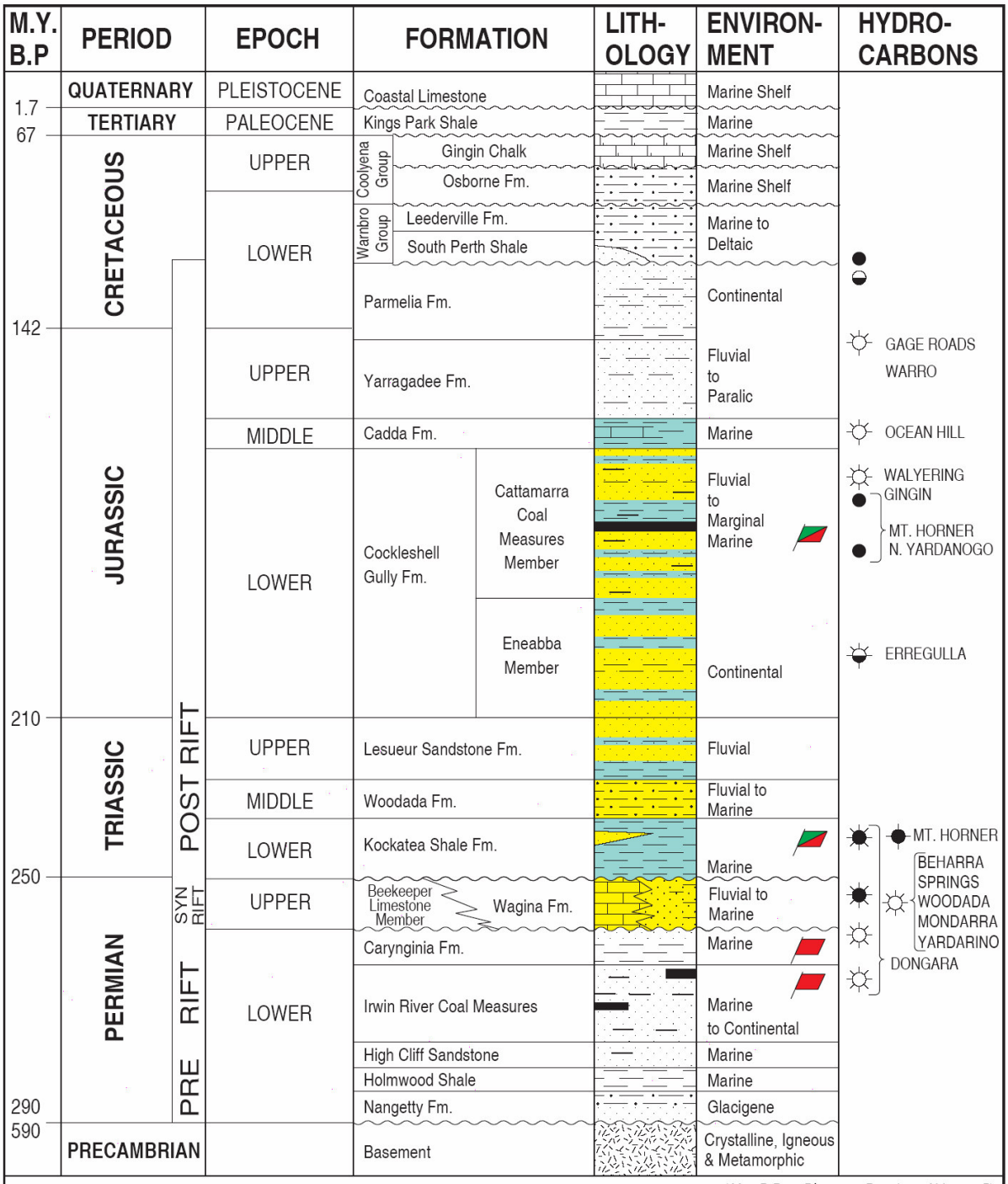
FIGURE 2



(After D.Burt, Discovery Petroleum N.L., 1995)

LEGEND

- Shale
- Sandstone & Shale
- Sandstone
- Limestone
- Chalk
- Intrusive

PETROLEUM SYSTEM

- Seal
- Oil/Gas source
- Reservoir
- Gas source

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EXPLORATION PERMIT EP 426

GENERALISED STRATIGRAPHY

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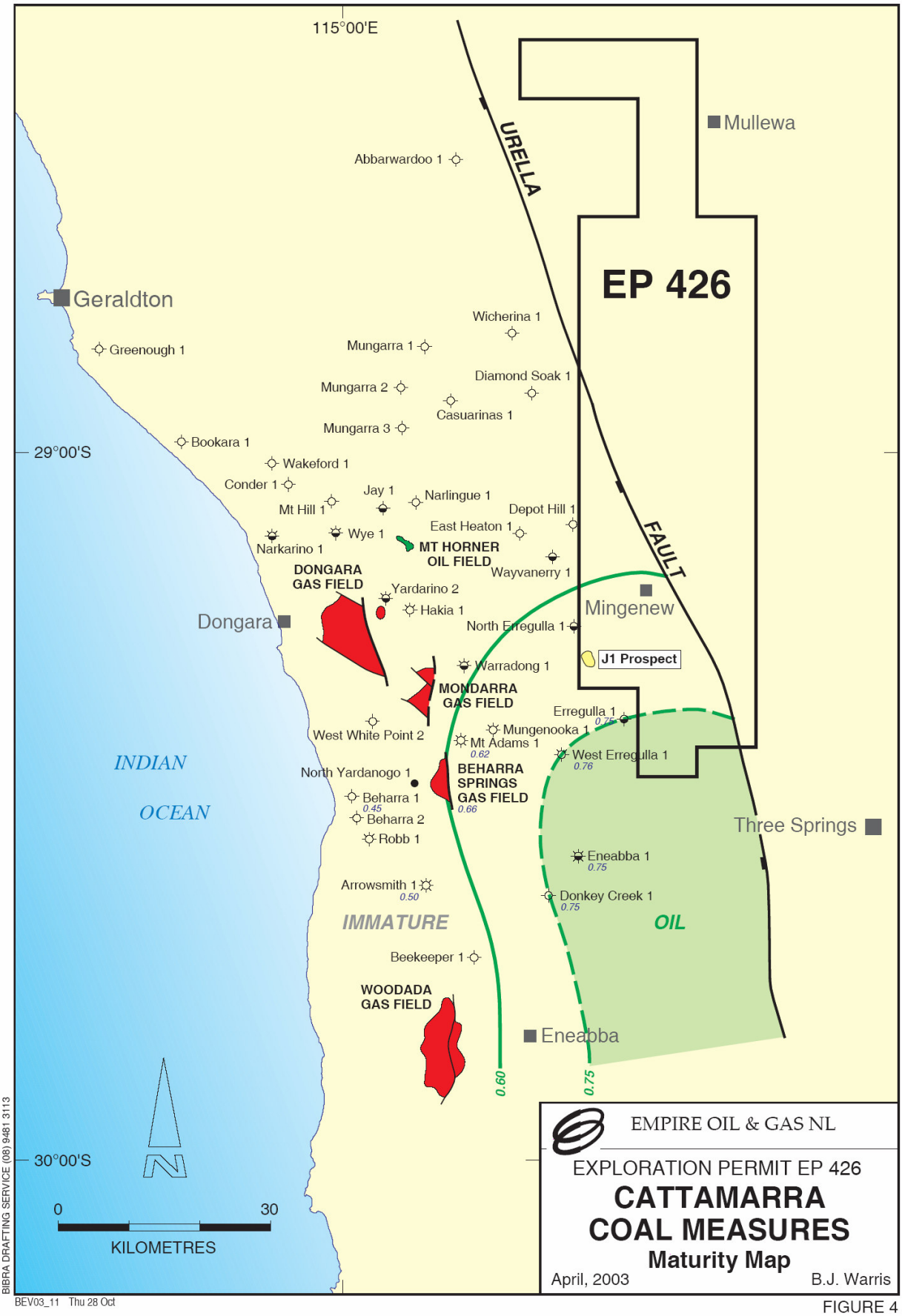
FIGURE 3


115°00'E
29°00'S
30°00'S
Mullewa
Geraldton
Dongara
Mingenew
Three Springs
Eneabba
EP 426
URELLA
FAULT
Abbarwardoo 1
Wicherina 1
Greenough 1
Mungarra 1
Mungarra 2
Diamond Soak 1
Casuarinas 1
Mungarra 3
Bookara 1
Wakeford 1
Conder 1
Jay 1
Narlingue 1
Mt Hill 1
Depot Hill 1
East Heaton 1
Wye 1
Narkarino 1
MT HORNER OIL FIELD
Wayvanerry 1
DONGARA GAS FIELD
Yardarino 2
Hakia 1
North Erregulla 1
J1 Prospect
Warradong 1
MONDARRA GAS FIELD
Erregulla 1
0.75
Mungenooka 1
West White Point 2
Mt Adams 1
0.62
West Erregulla 1
0.76
INDIAN
OCEAN
North Yardanogo 1
BEHARRA SPRINGS GAS FIELD
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Beharra 1
0.45
Beharra 2
Robb 1
Eneabba 1
0.75
Arrowsmith 1
0.50
Donkey Creek 1
0.75
IMMATURE
OIL
Beekeeper 1
WOODADA GAS FIELD
0.60
0.75
0
30
KILOMETRES
EMPIRE OIL & GAS NL
EXPLORATION PERMIT EP 426
CATTAMARRA
COAL MEASURES
Maturity Map
April, 2003
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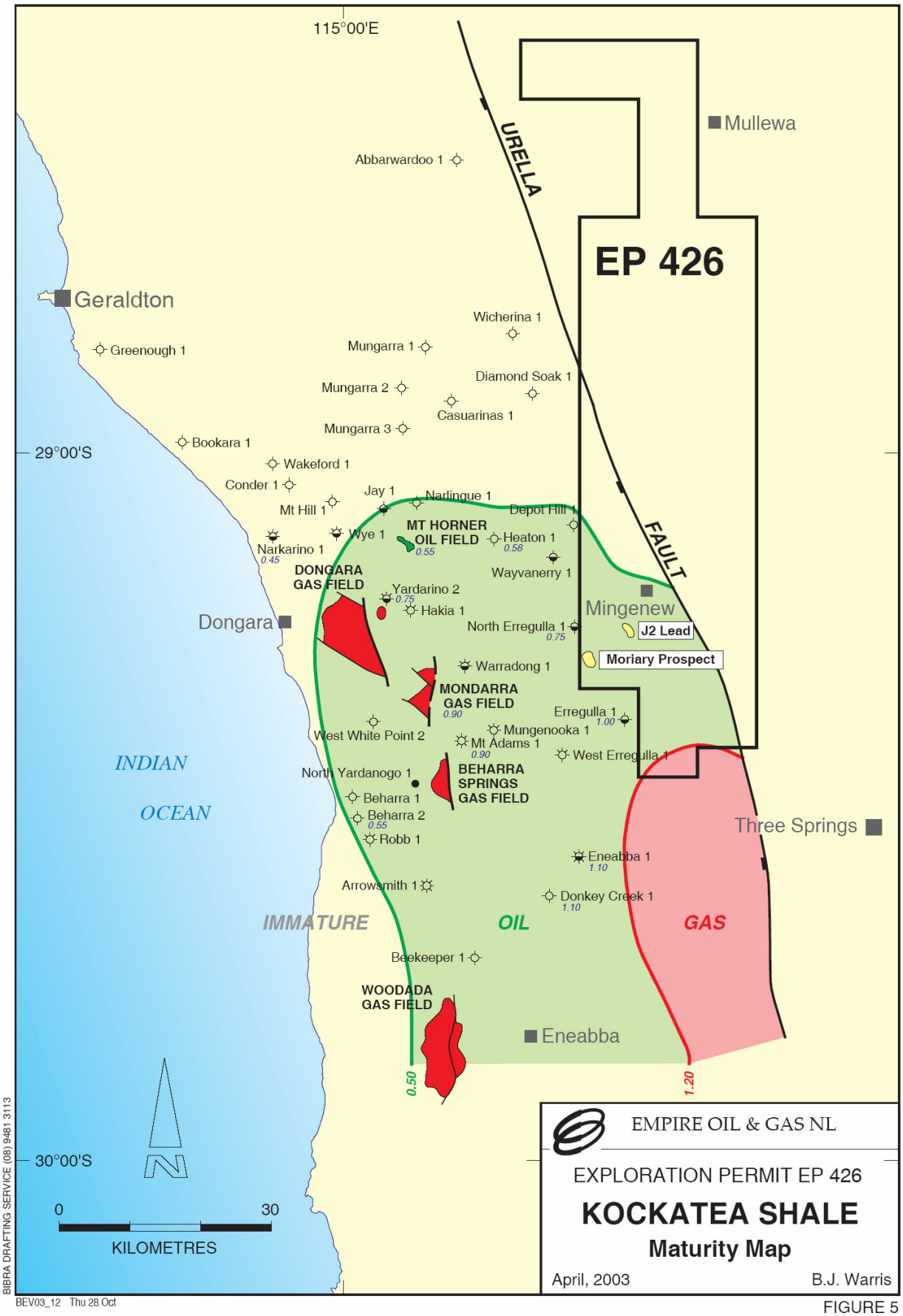
FIGURE 4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29°00'S
30°00'S
Mullewa
Geraldton
Dongara
Mingenew
Three Springs
Eneabba
URELLA
FAULT
EP 426
Abbarwardoo 1
Wicherina 1
Greenough 1
Mungarra 1
Diamond Soak 1
Mungarra 2
Casuarinas 1
Mungarra 3
Bookara 1
Wakeford 1
Conder 1
Jay 1
Narlingue 1
Mt Hill 1
Depot Hill 1
Wye 1
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Heaton 1
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Narkarino 1
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DONGARA GAS FIELD
Wayvanerry 1
Yardarino 2
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Hakia 1
North Erregulla 1
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J2 Lead
Moriary Prospect
Warradong 1
MONDARRA GAS FIELD
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Erregulla 1
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Mungenooka 1
Mt Adams 1
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West Erregulla 1
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OCEAN
North Yardanogo 1
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Robb 1
Eneabba 1
1.10
Arrowsmith 1
Donkey Creek 1
1.10
IMMATURE
OIL
GAS
Beekeeper 1
WOODADA GAS FIELD
0.50
1.20
0
30
KILOMETRES
EMPIRE OIL & GAS NL
EXPLORATION PERMIT EP 426
KOCKATEA SHALE
Maturity Map
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FIGURE 5

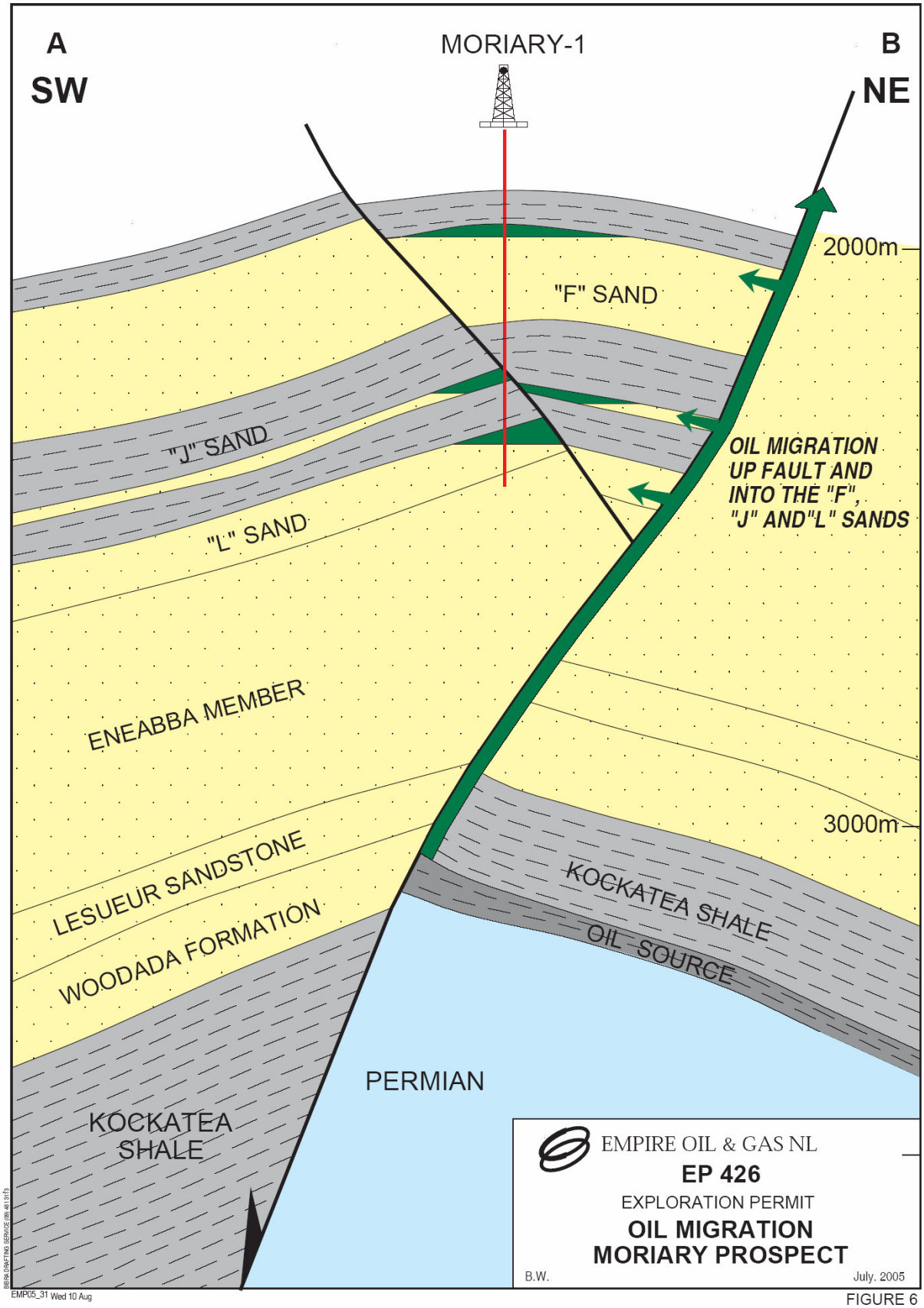

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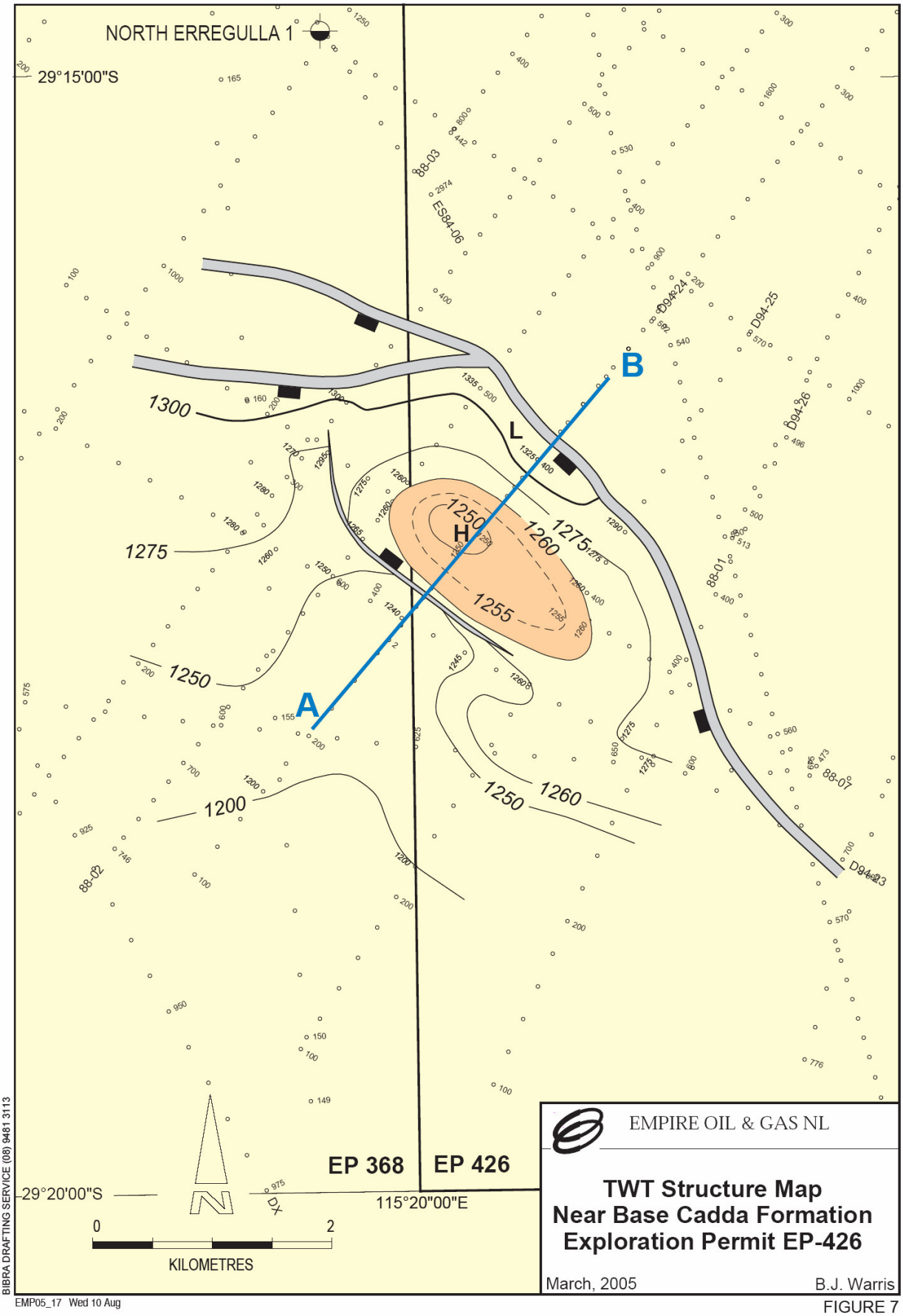
FIGURE 6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29°20'00"S
115°20'00"E
EP 368
EP 426
A
B
H
L
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1275
1250
1260
1255
1200
88-03
ES84-06
D94-24
D94-25
D94-26
88-01
88-07
D94-23
88-02
0
2
KILOMETRES
EMPIRE OIL & GAS NL
TWT Structure Map
Near Base Cadda Formation
Exploration Permit EP-426
March, 2005
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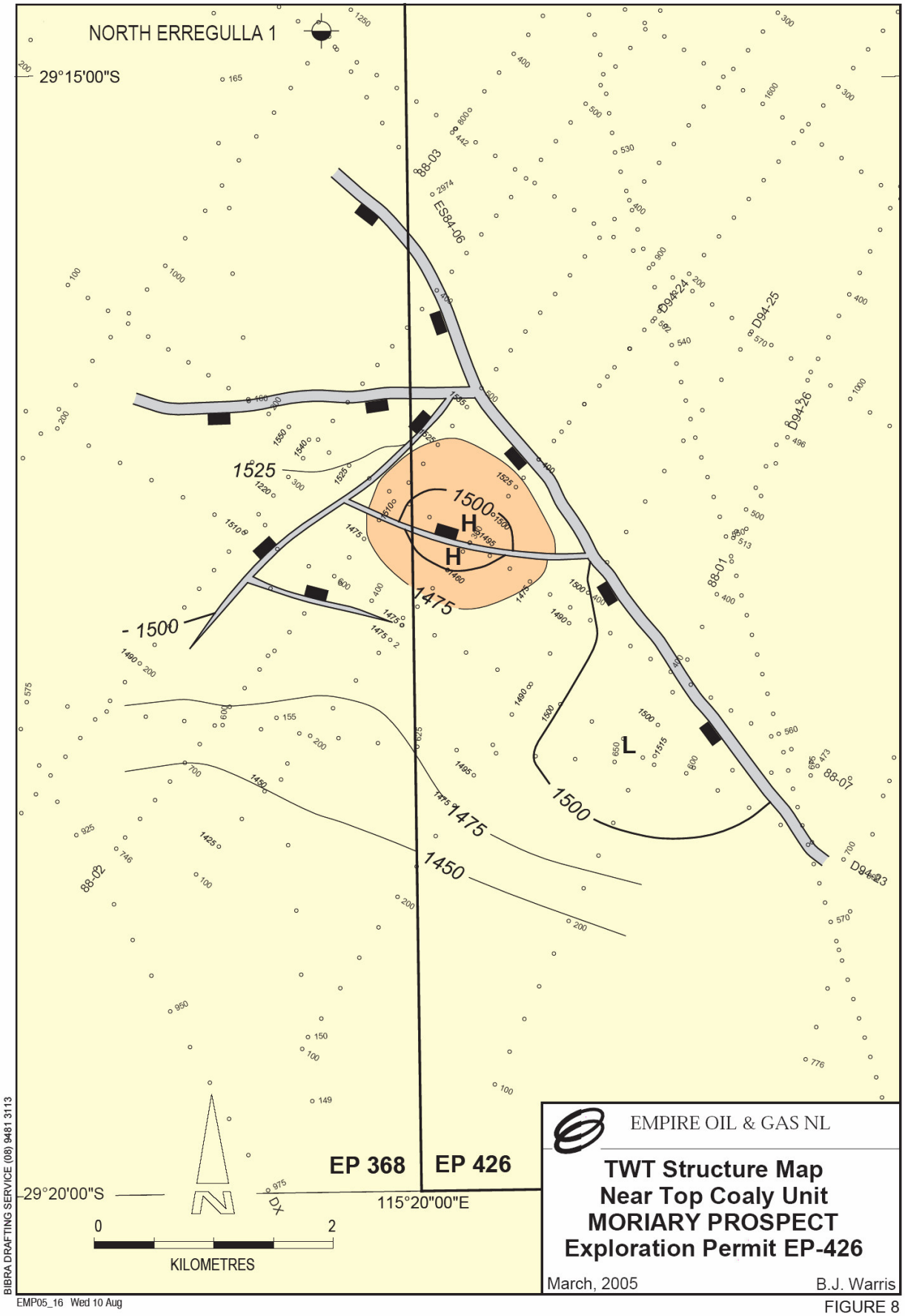
FIGURE 7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29°15'00"S
29°20'00"S
115°20'00"E
EP 368
EP 426
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1475
1450
H
L
88-03
ES84-06
D94-24
D94-25
D94-26
88-01
88-07
D94-23
88-02
0
2
KILOMETRES
EMPIRE OIL & GAS NL
TWT Structure Map
Near Top Coaly Unit
MORIARY PROSPECT
Exploration Permit EP-426
March, 2005
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FIGURE 8

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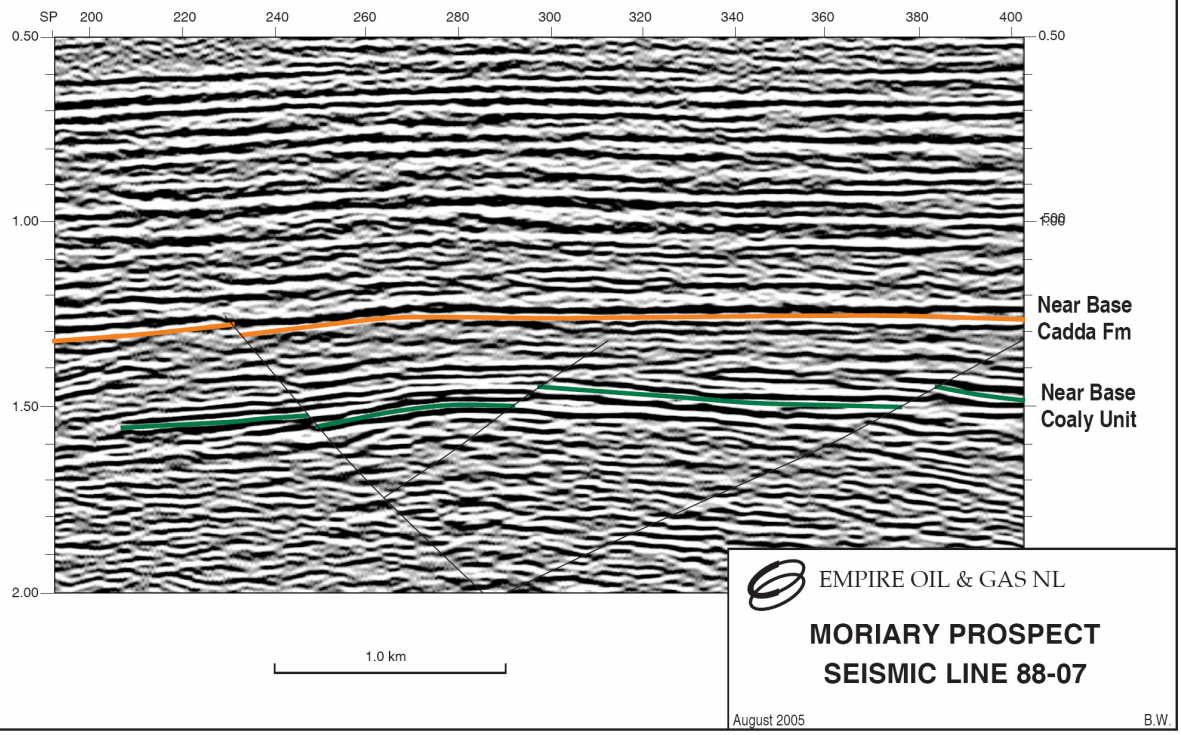

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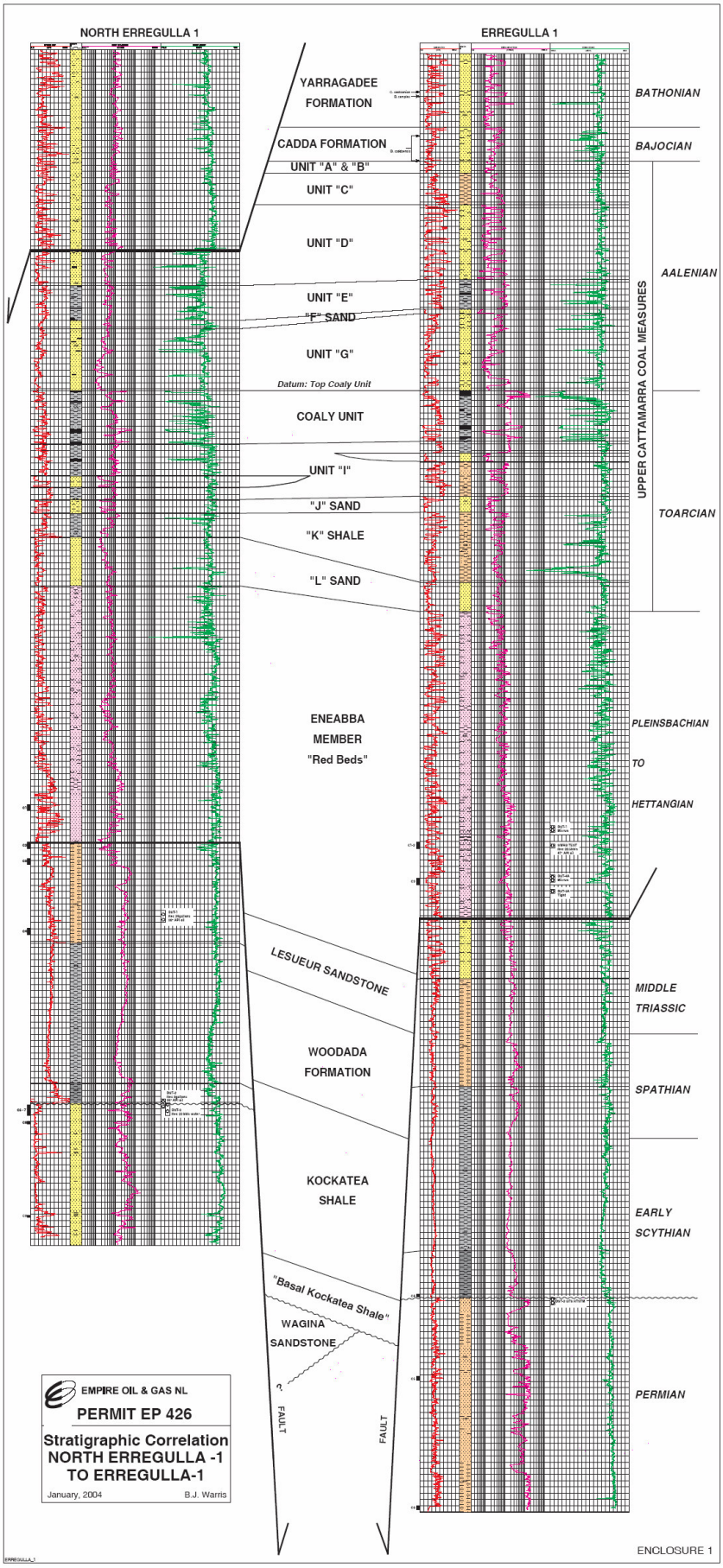
MORIARY PROSPECT
SEISMIC LINE 88-07

August 2005

B.W.

FIGURE 9


NORTH ERREGULLA 1
ERREGULLA 1
YARRAGADEE FORMATION
CADDA FORMATION
UNIT "A" & "B"
UNIT "C"
UNIT "D"
UNIT "E"
"F" SAND
UNIT "G"
Datum: Top Coaly Unit
COALY UNIT
UNIT "I"
"J" SAND
"K" SHALE
"L" SAND
ENEABBA MEMBER "Red Beds"
LESUEUR SANDSTONE
WOODADA FORMATION
KOCKATEA SHALE
"Basal Kockatea Shale"
WAGINA SANDSTONE
FAULT
FAULT
BATHONIAN
BAJOCIAN
AALENIAN
UPPER CATTAMARRA COAL MEASURES
TOARCIAN
PLEINSBACHIAN
TO
HETTANGIAN
MIDDLE TRIASSIC
SPATHIAN
EARLY SCYTHIAN
PERMIAN
EMPIRE OIL & GAS NL
PERMIT EP 426
Stratigraphic Correlation
NORTH ERREGULLA -1
TO ERREGULLA-1
January, 2004
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ENCLOSURE 1