Chandon 1

Carnarvon Basin: WA-268-P (R1)
Well Completion Report
(Interpretive Data)

CONFIDENTIAL

Text, Appendices and Enclosures
Volume 1 of 1

Compiled By:	Robert Fisher Consultant Operations Geologist		
Document ID:	ASBU1-071030006	Revision:	0
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Appendix 1: Chandon 1 Well Index Sheet (Chevron)
Appendix 2: Chandon 1 Horner / Geothermal Gradient Data Report (Chevron)
Appendix 3: Chandon 1 Formation Evaluation Report with Summary Plot (Chevron)
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ENCLOSURES

Enclosure 1: Chandon 1 Well Summary Chart (Predicted V's Actual)
Enclosure 2: Chandon 1 Composite Log – (1:500 Scale)

This report uses the metric system of measurements which is defined in the Commonwealth of Australia's Metric Conversion Act 1970.

The metric system of measurement means measurement in terms of:

- the units comprised in the International System (SI) of Units for the time being approved by the General Conference on Weights and Measures; and
- units decimally related to those units and for the time being so approved; and
- such other units as the Minister declares from time to time, by notice published in the Gazette, to be within the metric system.

The following page lists various SI units with derivatives and symbols that may be pertinent to the compilation of Chevron’s Well Completion Reports. Some basic conversions are also listed. For further information, the reader is referred to the SI Metric System of Units and SPE Metric Standard published by the Society of Petroleum Engineers.

SI base units

(name)	(symbol)	(quantity)
metre	M	length
kilogram	Kg	mass
second	S	time
ampere	A	electric current
kelvin	K	thermodynamic temp

SI derived units

(name)	(symbol)	(formula)	(quantity)
newton	N	kg m/s^2	force
pascal	Pa	N/m^2	pressure
joule	J	N m	energy
watt	W	J/s	power
volt	V	W/A	voltage
ohm	Ω	V/A	resistance
hertz	Hz	1/s	frequency

Declared units having general application

(name)	(symbol)	(form.)	(quantity)
hectare	ha	$10^4 m^2$	area
gigalitre	Gl	$10^6 m^3$	volume
megalitre	Ml	$10^3 m^3$	volume
kilolitre	kl	$1 m^3$	volume
litre	l	$10^{-3} m^3$	volume
millilitre	ml	$10^{-6} m^3$	volume
day	d	24 h	time
hour	h	60 min	time
minute	min	60 s	time
kilometre/hour	km/h	1/3.6m/s	velocity
megatonne	Mt	10^9 kg	mass
kilotonne	kt	10^6 kg	mass
tonne	t	10^3 kg	mass
kilogram/litre	kg/l	10^3 kg/m^3	density
deg Celsius	^{0}C	K + 273	temp

Conversions

(from)	(to)	(factor)			(inches)	(mm)
feet	metres	x by	0.3048		36	914
inch	centimetres	x by	2.54		30	762
pounds	kilograms	x by	0.45359		26	660
°F	°C	x by 1.8 & add 32			20	508
acres	hectares	x by	0.40469		17 $^1/_2$	444
US gallon	cu. metres	÷ by	264.17		13 $^3/_8$	340
Imp gallon	cu. metres	÷ by	219.25		12 $^1/_4$	311
psi	kilopascals	x by	6.8948		9 $^5/_8$	244
psi/ft	SG	x by	0.43353		8 $^1/_2$	216
ppg	SG	÷ by	8.3304		7	178
lb force	newtons	x by	4.4482		6 $^1/_8$	156
horsepower	watt	x by	746		5	127
barrels	cu. metres	÷ by	6.2933	Chevron standard for condensate		
barrels	kilolitres	÷ by	6.2933	Chevron standard for condensate		
cu. feet	cu. metres	÷ by	35.30	Chevron standard for gas		
scf/bbl	std m^3/m^3	x by	5.6146			

Prefixes

(prefix)	(symbol)	(value)	
exa	E	10^{18}	1 000 000 000 000 000 000
peta	P	10^{15}	1 000 000 000 000 000
tera	T	10^{12}	1 000 000 000 000
giga	G	10^9	1 000 000 000
mega	M	10^6	1 000 000
kilo	k	10^3	1 000
hecto	h	10^2	100
deka(†)	da	10^1	10
deci	d	10^{-1}	0.1
centi	c	10^{-2}	0.01
milli	m	10^{-3}	0.001
micro	µ	10^{-6}	0.000 001
nano	n	10^{-9}	0.000 000 001
pico	p	10^{-12}	0.000 000 000 001
femto	f	10^{-15}	0.000 000 000 000 001
atto	a	10^{-18}	0.000 000 000 000 000 001

(†) Sometimes spelt *deca* although *deka* is preferred in Australia for the rare occasions when this prefix may find use.

Note:

All depths are reported in measured depth relative to the rotary table, corrected to MSL, unless otherwise stated.

1 SUMMARY

1.1 EXECUTIVE SUMMARY

The Chandon 1 well was drilled in June 2006 within Exploration Permit WA-268-P (R1) held by Chevron (TAPL) Pty Ltd 100% and operated by Chevron (TAPL) Pty Ltd (Figures 1.1 and 1.2). Pursuant to a Farm In Agreement dated 21st June 2006, each of Mobil Australia Resources Company Pty Ltd and Shell Development (Australia) Pty Ltd (SDA) have a right to earn a 25% interest each in the permit. Each of Mobil and Shell have now completed their earning obligations and earned that interest under the Farm In Agreement. However, the documents to transfer 25% of the permit to Mobil and 25% of the permit to SDA are yet to be lodged at DOIR.

The well is located approximately 27 km E of Mercury 1 and 31 km NW of Jansz 2 on the Exmouth Plateau near the confluence of the NE trending Investigator Sub-basin and Kangaroo Syncline. Chandon 1 was drilled as a vertical well in 1196.1 m of water (MSL) to a total depth (TD) of 3124 m (-3095 m TVD SS) and intersected a 196.6 m gross hydrocarbon column in fluvial and marginal marine Mungaroo Formation AA sands at 2749 m (-2720 m TVD SS). The well delineated the Chandon structure, defined as a large three way Triassic Top Mungaroo Formation footwall closure, and was plugged and abandoned as a new field gas discovery.

The Chandon 1 exploration well fulfils the WA-268-P (R1) year 3, exploration well permit commitment.

1.2 WELL SUMMARY

The Chandon 1 exploration well was drilled by Transocean Semi-submersible Mobile Offshore Drilling Unit (MODU) 'Jack Bates' in Exploration Lease WA-268-P (R1) of the Carnarvon Basin (Dampier Sub-basin), some 294 km WNW of Dampier and 186 km NW of Barrow Island, Western Australia (Figure 1.1). A base map of WA-268-P (R1) is included as Figure 1.2. Chandon 1 was drilled in 1196.1 metres of water referenced to Mean Sea Level (MSL) (Figure 1.3). The rotary table elevation was 28.9 metres. All depth measurements in this report are measured depth referenced to the rotary table and corrected to MSL and are indicated by ‘m’, unless otherwise stated.

The Chandon 1 location is 27 km to the east of Mercury 1 and 31 km to the northwest of Jansz 2, each of which provide offset well control.

The Transocean ‘Jack Bates’ was taken under contract to Chevron Australia Pty Ltd at 16:00 hours on the 17th June 2006 and was towed to the Chandon 1 location, a distance of 51 km or 27.5 nautical miles (NM) at an average speed of 3.9 knots. The rig arrived on location at 23:00 hours on the 17th June 2006 and the anchors were run. Chandon 1 was spudded at 07:30 Hrs on the 21st June 2006 and was drilled as a vertical exploration well to its primary objective in the Triassic Mungaroo Formation, whereupon elevated ditch gas readings were recorded in conjunction with anomalous LWD resistivity measurements indicative of hydrocarbons.

The well reached a total depth of 3124 m (-3095 m TVD SS) at 02:30 hours on the 30th June 2006 within the Mungaroo Formation A Sand. This depth was some 455 m shallow to the original proposed total depth of -3550 m TVD SS and did not test the Mungaroo Formation C Sand as originally planned.

Wireline logs (Suite 1) were acquired at total depth in three runs that included the following:

- PEX-RtScanner (ZAIT)- MSIP-HNGS-PPC-GPIT-ECRD
- MDT-CMR+-GR-ECRD
- MDT-GR-ECRD (Samples only)

Total logging time was 57.73 Hrs.

Following completion of wireline logging operations, three cement abandonment plugs were set, the BOP's/riser was pulled to surface, following which, a seabed survey was conducted. The rig was de-ballasted to transit draft and the anchors were pulled. The rig was released from Chandon 1 to Clio 1 at 12:00 hours on the 11th July 2006. **The total time on contract was 23.83 days.**

The top of the Mungaroo Formation was intersected below the Brigadier Formation at 2749 m (-2720 m TVD SS). The Mungaroo Formation can be subdivided as follows:

- A 76.1 m thick AA Marginal Marine sequence of siltstone and sandstone and;
- A 118.8 m thick AA Fluvial Sand sequence of quartzose sandstone with interbedded siltstone and rare claystone and carbonaceous claystone/coal and;
- A 78.9 m thick Zone 100 Shale sequence of interbedded quartzose sandstone and siltstone with rare claystone and carbonaceous claystone/coal and;
- 101.3 m thick A Fluvial Sand sequence of interbedded siltstone and sandstone with common claystone and rare carbonaceous claystone/coal in which Chandon 1 was terminated at a total depth (TD) of 3124 m (-3095 m TVD SS).

Top porosity and top gas was intersected at -2720 m TVD SS at the top of the Mungaroo Formation. Analysis of the MDT pressure profile suggests that all intersected gas sands were filled as part of the same gas column and share a common gradient with an interpreted free water level of -2916.6 m TVD SS within the uppermost Mungaroo Formation Zone 100 Shale, giving a gross hydrocarbon column of 196.6 m.

Cut-offs of PHIE>7%, VSH<40% and SWT<60% were applied to generate the P50 net pay and net reservoir statistics. A total of 83.8 m of net gas pay is interpreted for the Mungaroo AA Formation with an average PHIT of 27.9%, VSH of 9.7%, permeability of 1743 mD and SWT of 19.2%.

There were no lost time accidents and no environmental incidents during the drilling and testing of Chandon 1. The Chandon drilling program was completed with two first aid incidents and one medical treatment.

A Well Card is presented as Appendix 1. Enclosure 1 is a Well Progress or Summary Chart illustrating the Predicted versus Actual Section and a Drilling Rate Plot for the entire well. The Composite Well Log is included as Enclosure 2, while a Formation Evaluation Plot is included as an Enclosure in Appendix 3.

Table 1: Well Summary

Well Name	Chandon 1	
Well Designation / Type	Exploration Well / Vertical	
Permit	WA-268-P (R1)	
Title Holder(s)	Chevron (TAPL) Pty Ltd:	100%
Operator	Chevron (TAPL) Pty Ltd	
Drilling Contractor / Rig	Transocean / MODU ‘Jack Bates’	
Depth Measurement Units	Metres	
RT - MSL / Water Depth	28.95m / 1196.1m MSL	
Surface Location	**Geographic Location** Lat. 19° 34’ 32.21” S Long. 114° 07’ 41.25” E UTM : 198,691.4 E, 7,832,948.4, N Datum: GDA 94; MGA 50 Spheroid: GRS 1980 CM: 117°00’ 00” Rowley Shoals 1:1,000,000 Map Sheet Graticular Block: 3026 **Seismic Reference** Chandon 3D MSS In-line 1314; Cross-line 3928 Vertical Datum Mean Sea Level (MSL)	
Distances From Proposed Location	2.4 m on bearing of 277.7^{o} (Grid)	
Primary Well Objective	Triassic Mungaroo Formation	
Final Well Status	Plugged and Abandoned	
Well Depth (TD)	3124 m RT (3095.0 m TVDSS)	
Rig Received	17th June 2006 / 16:00 Hrs	
Spud	21st June 2006 / 07:30 Hrs	
Reached TD	30th June 2006 / 02:30 Hrs	
Rig Released	11th July 2006 / 12:00 Hrs	
Days from Spud to TD	8.79	
Total Days	23.83	
AFE Days	38.30	
Target Days	28.80	
AFE well cost	±AU $ 36.049 million (including 20 days @ US$475K/day)	
Actual well cost	AU $ 24.864 million (based on final field estimate)	
Hole Sizes	762 mm (30”) 445 mm (17 ½”)	1291 m MDRT 2077 m MDRT

	311 mm (12 ¼”)	3124 m MDRT
Casing Programme (shoe setting depth)	762 mm (30”) Conductor (jetted) 340 mm (13 ⅜”)	1291 m MDRT 2067 m MDRT

Mud System

Riserless drilling to 2077 m MDRT in 445 mm (17 ½”) hole section; seawater with PHB hi-vis sweeps; SBM (65/35) drilling fluid in 311 mm (12 ¼”) hole section with sodium bromide and 1-bromonaphthalene tracers at 400 ppm (0.2 lb/bbl brine phase) and 100 ppm (+/- 4.9ltr/1000 bbls oil phase) respectively.

Logging Program

MWD/LWD

Run#1: MWD-ARC9-APWD in 445mm (17 ½”) hole;

Run#2: MWD-ARC8-APWD in 311mm (12 ¼”) hole

Wireline: open hole logging in 311 mm (12 ¼”) hole section below 340 mm (13 ⅜”) casing

Run#1: PEX-RtScanner (ZAIT)-MSIP-GPIT-HNGS-PPC-ECRD; 3106-2065m; GR through casing to seafloor and MSIP to 1550m (loss of signal)

Run#2: MDT-CMR+-GR-ECRD; 2 passes. CMR+ 3062-2670m; attempted A total of 80 pre-tests were attempted on with 2 x repeat draw-downs, 56 were successful, 16 tight tests, 3 with lost seals, 1 was supercharged and 2 tests were aborted.;

Run#3: MDT-GR-ECRD; A total of 4 x 450cc MPSR, 2 x 250 cc SPMC and 2 x 3.785 litre (1 gallon) samples were attempted and recovered.

Operational Base	Perth, WA	
Logistical Base	Toll Energy, Dampier, WA	
Personnel Support Base	Barrow Island	
Helicopter Contractor	Bristow Helicopters	
Fixed Wing Contractor	QantasLink from Perth to Barrow Island Bristows from Karratha to barrow Island	
Supply Boat Contractor	FARSTAD	AHTS “Lady Astrid” (13,200 BHP AHTS “Lady Caroline” (13,200 BHP

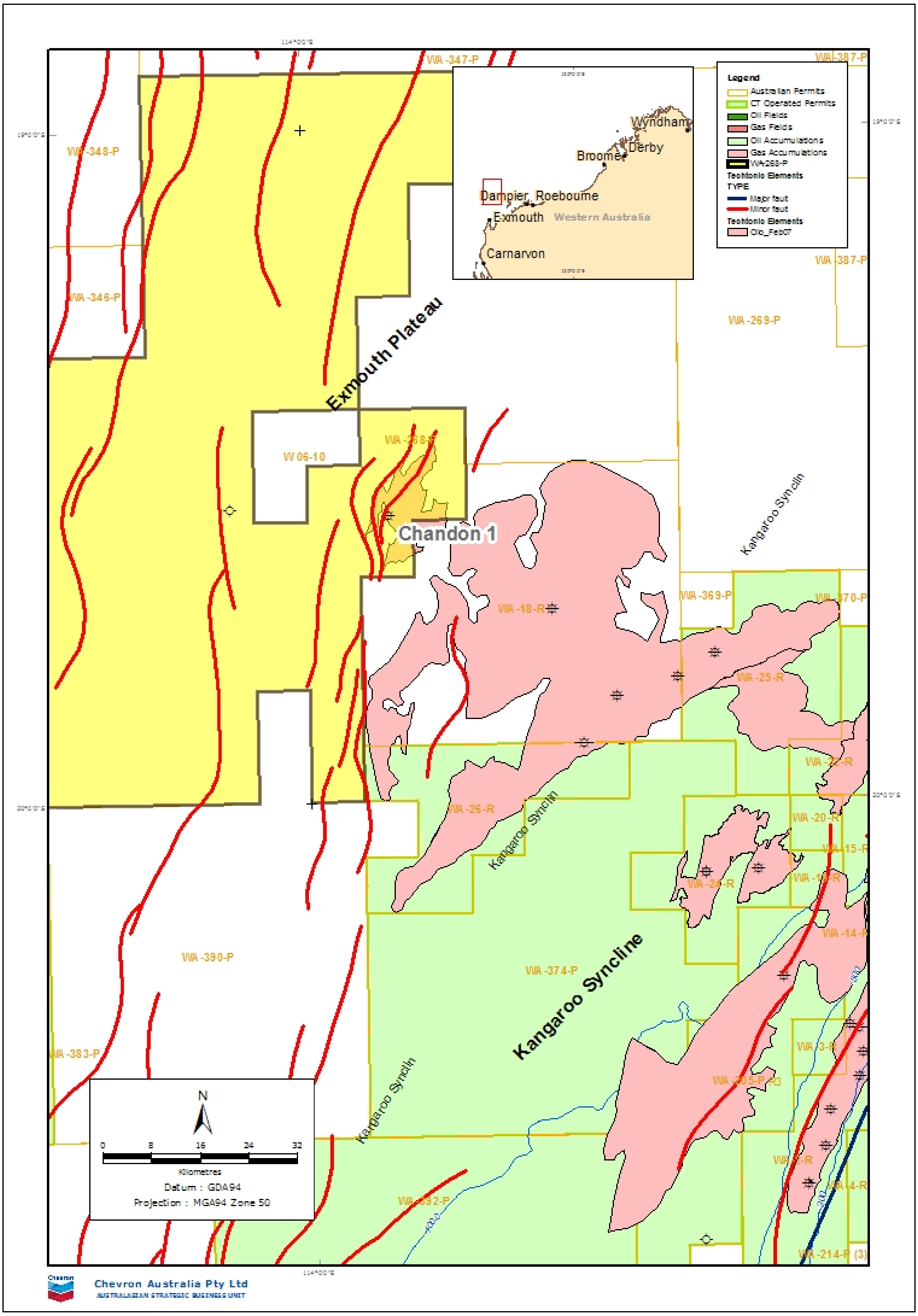


Figure 1.1: Chandon 1 Location and Regional Tectonic Map

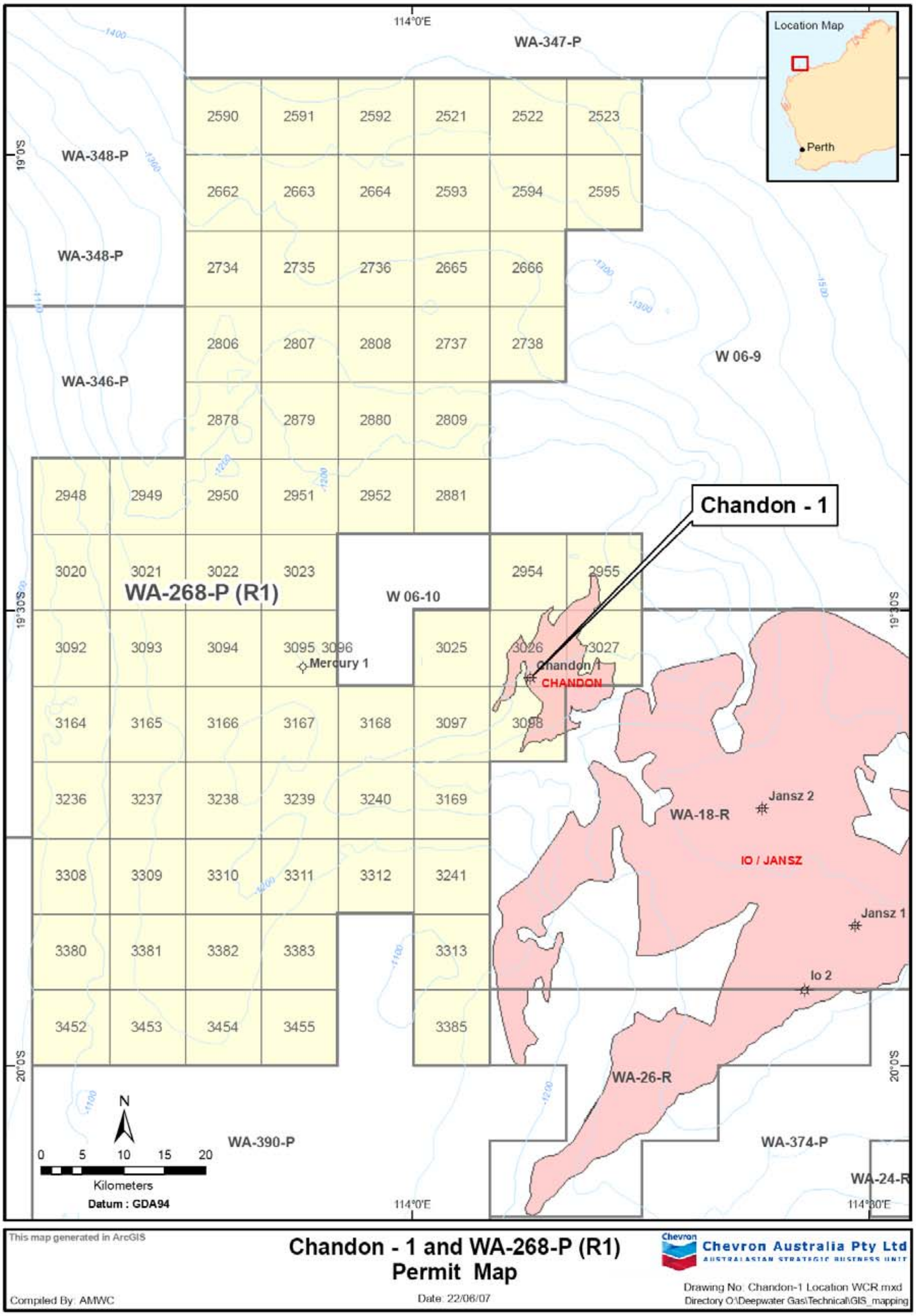


Figure 1.2: WA-268-P (R1) Base Map

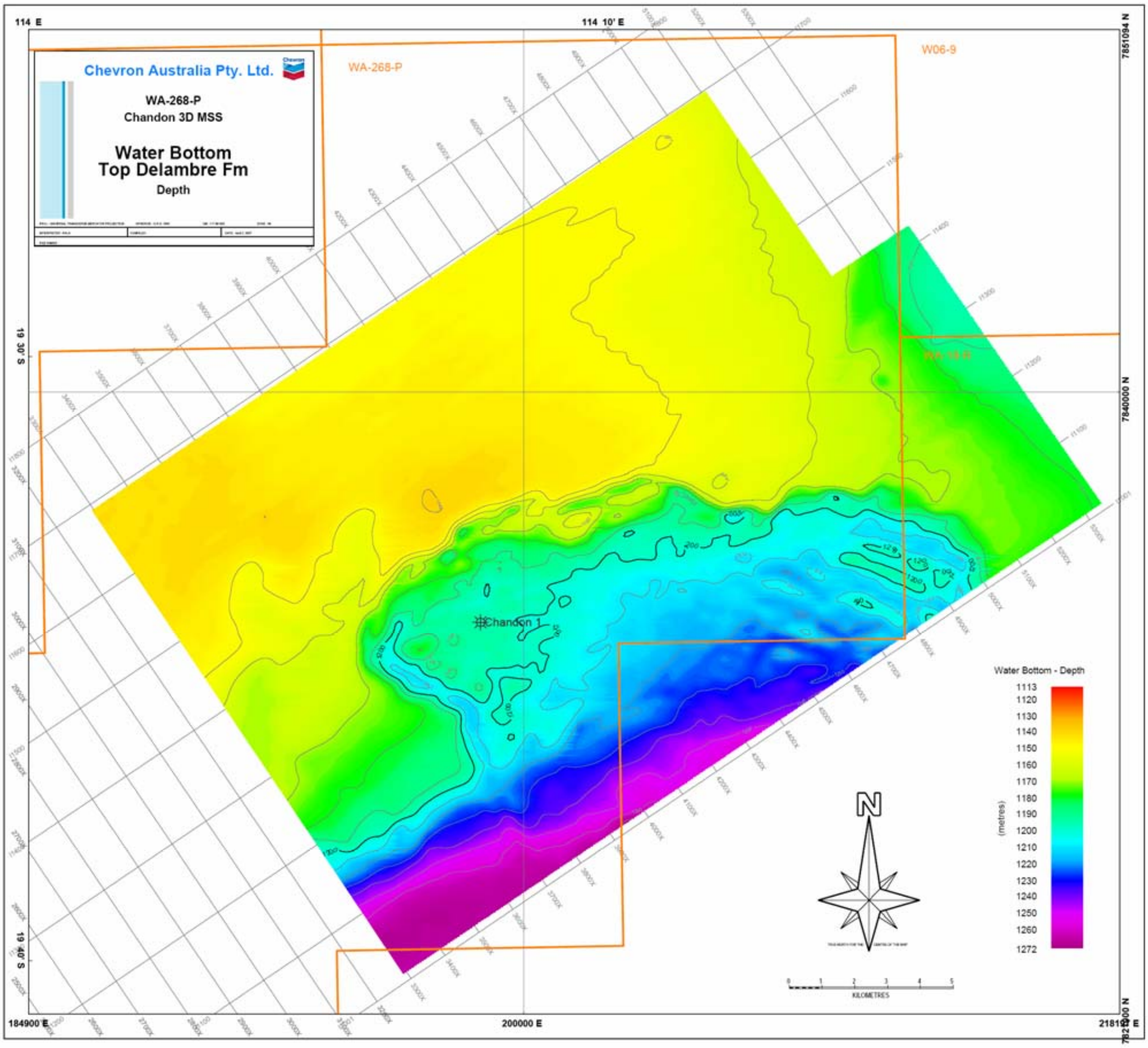


Figure 1.3: Water Bottom Depth Map

2 REGIONAL GEOLOGY

2.1 TECTONIC HISTORY

The Chandon field, delineated by the Chandon 1 discovery well, lies in the southeast portion of the Exmouth Plateau, near the confluence of the northeast trending Investigator Sub-basin and Kangaroo Syncline which separates the plateau from the continental shelf. The water depth over the field grades towards the southeast from approximately 1140 – 1250 m at the northern confluence of an east-west orientated submarine canyon (Figure 2.1) and is located on the boundary of a relative bathymetric dome formed by the transition of the Kangaroo Syncline into the Exmouth Plateau. Peripherally the Plateau varies between ~800 - >2000m and is bounded on three sides by oceanic crustal domains (Argo/Gascoyne/Cuvier Abyssal plains) where water depths extend to >4000m.

The tectonic framework of the area was established by continental rifting & breakup during the Mesozoic (Early Jurassic [Pliensbachian] – Early Cretaceous [Berriasian]) and appears to be isostatically positive for much of the Mesozoic & Cenozoic, isolating it from major sediment supply. The tilted horst block, domino fault geometry seen to be prevalent over the survey area, has a dominant NNE-SSW to NE-SW trend. However, large trapping structural bounding faults appear to be more complex and exhibit a zone of linked faults with components of wrenching rather than discrete surfaces.

The associated structural highs oriented approximately perpendicular to the direction of basin extension, have undergone extensive Triassic and earlier Jurassic erosion, providing the sediment for structural lows. A sea level rise in the early Cretaceous terminated the sub-aerial erosion. The distribution of ensuing sediments was controlled dominantly by the palaeo-topography. Basin definition at this time is attributed to an open passive margin with little structural augmentation effecting trapping mechanisms in the area post continental break-up.

2.2 REGIONAL STRATIGRAPHY

The generalised stratigraphy for the northern Carnarvon Basin is summarised in Figure 2.1 and a type section of the Late Triassic to Early Jurassic is presented as Figure 2.2.

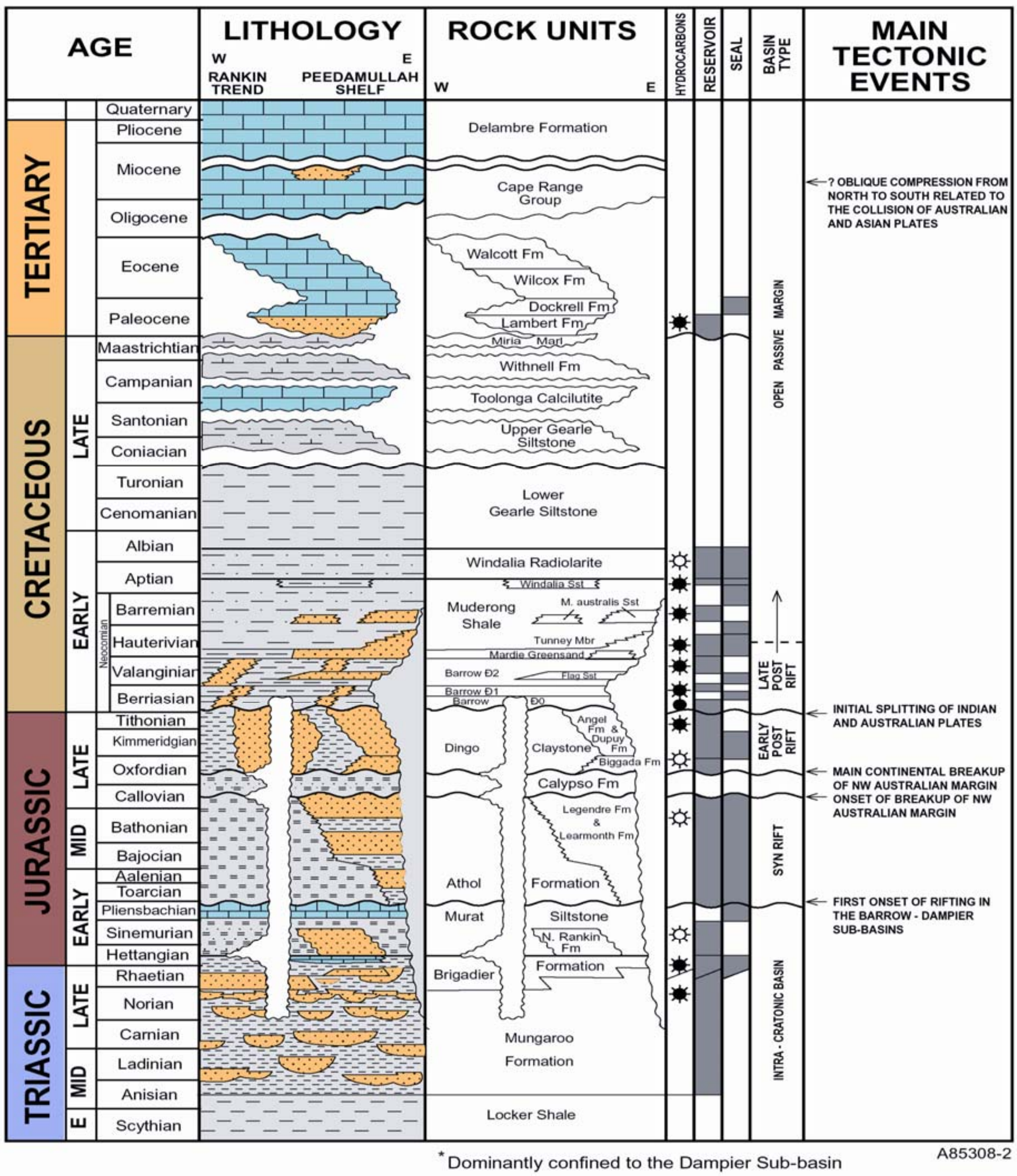


Figure 2.1: Northern Carnarvon Basin Stratigraphic Column

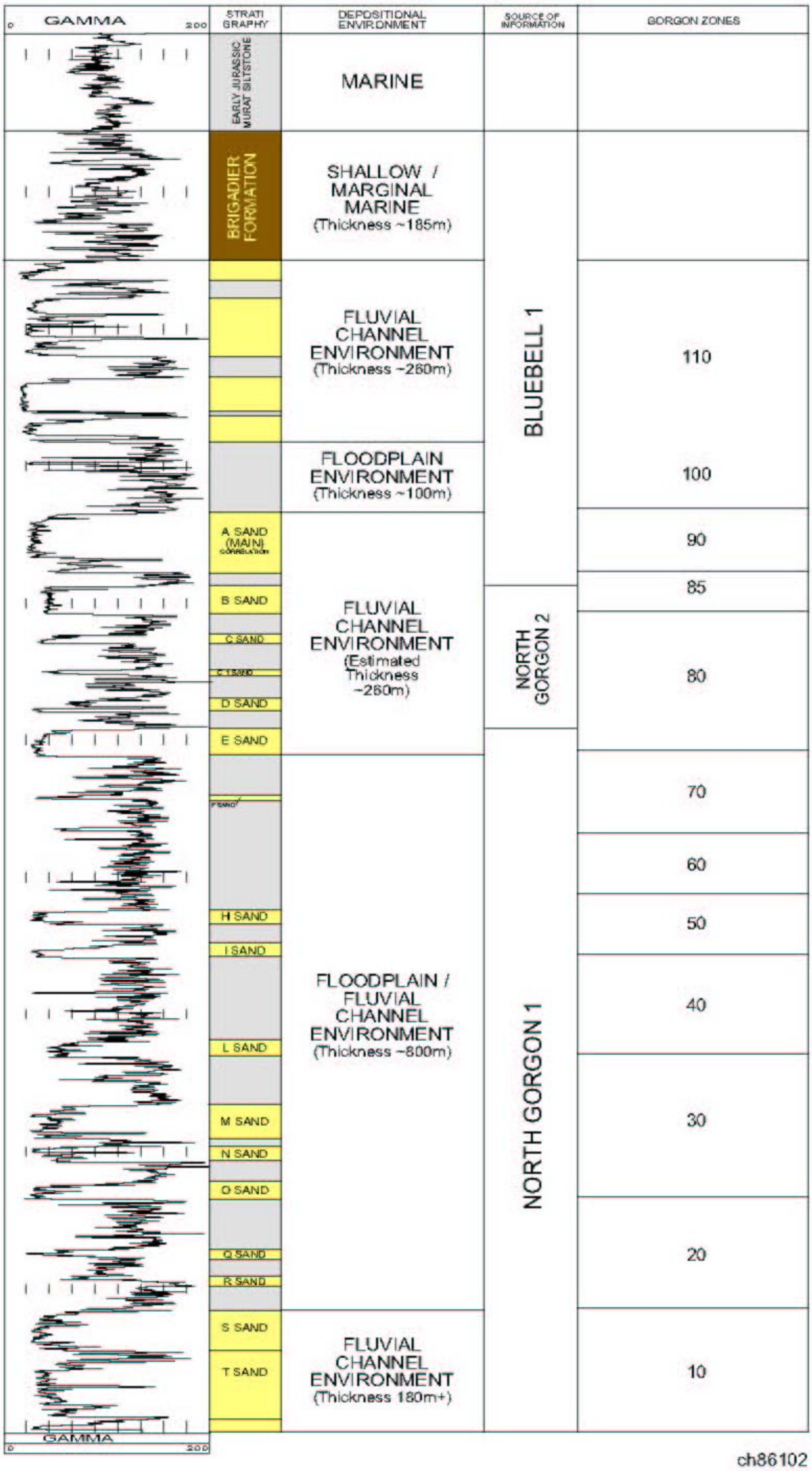


Figure 2.2: Greater Gorgon Area Type Section

2.2.1 Triassic

Exploratory drilling in the northern Carnarvon Basin has recorded widespread Triassic sediments throughout the area. The Locker Shale was deposited during a regional marine transgression in the Early Triassic. It consists of siltstone and claystone with minor interbeds of limestone and sandstone. The Locker Shale has not been penetrated on the Rankin Platform and Alpha Arch but the results of drilling and seismic interpretation along the eastern and southern margins of the Barrow and Dampier sub-basins suggests its presence beneath the Platform. The Locker Shale is a possible contributing source for some of the gas trapped in the giant North West Shelf accumulations.

The Mungaroo Formation is a sequence of interbedded sandstones and claystones deposited regressively over the Locker Shale during the Middle to Late Triassic. This formation extends from the Peedamullah Shelf in the east to the Exmouth Plateau in the west. The thickest section of Mungaroo penetrated by a well exceeds 3000 metres (Jupiter 1) and seismic evidence suggests that the Mungaroo Formation may locally reach thicknesses of up to eight kilometres. In addition to containing several important stacked sandstone reservoirs, the Mungaroo Formation is an important source rock for gas and, in some areas, oil.

The Mungaroo Formation largely comprises a thick package of fluvial sandstones and non-marine to brackish siltstones with grey to black claystones and coaly shales. The uppermost 300 to 400 metres of the Mungaroo Formation (the AA sands) typically include coastal sandstones and claystones, indicative of a more marine influence during the latter stages of deposition. The majority of the Mungaroo Formation in the area is interpreted to have been deposited within a broad, low relief, rapidly subsiding coastal plain which included an extensive swamp system cross-cut by multiple rivers.

The Mungaroo Formation can be sub-divided into a number of seismically resolvable sequences which, based on the available well data, appear to form a series of alternating sand-rich and clay-rich depositional units. The lower part of each sequence is currently interpreted as representing a relative sea-level fall and consists of one or more sharp-based, blocky or fining-upward multi-storey, multilateral channel sandstones. These sands have been interpreted as being deposited in channels that cut into the underlying sediments during the fall in base level, but with only a relatively minor degree of incision (commonly less than 20m).

The amalgamated “lowstand” sands are usually capped by a fining-upward interval and are overlain by a clay-dominated unit. These sediments are interpreted as being deposited during a relative sea-level rise which favoured the development of lakes, swamps and coastal marshes resulting in the accumulation and preservation of organic-rich shales, coals and fine-grained overbank muds on the flood plain. Marine incursion during these transgressive and highstand periods is represented by marine fauna and the presence of glauconite in many wells.

2.2.2 Early to Middle Jurassic

Marine transgression during the Late Triassic to Early Jurassic brought an end to the predominantly fluvial sedimentation. The exact timing of commencement of this transgression is difficult to determine although the biostratigraphic boundary between the older *M. crenulatus* and younger *A. reducta* zones may have some significance as the transition between the two zones shows a marked increase in the amount of marine species. Lithologically, evidence for the onset of the transgression usually occurs significantly above the *M. crenulatus*/*A. reducta* boundary. The uppermost part of the

Mungaroo Formation to the west of the Alpha Arch is represented by a coarsening upwards "Marine AA" unit.

The Brigadier Formation defines the first 'marine' lithostratigraphic unit in the Early Jurassic of the Barrow and Dampier sub-basins. The formation consists of a gradually thinning and fining upwards sequence, with a thick, blocky sandstone at the base and dominant siltstone at the top. This unit is often silty and argillaceous, but can contain thin reservoir units as seen in horst blocks in the north of the Greater Gorgon Area. Further west on the Exmouth Plateau (eg Jupiter 1 and Mercury 1), the time equivalent section is much thinner and consists of a carbonate-rich marine marl.

Deposition of the Brigadier Formation began during the Late Triassic (Rhaetian) and ceased in the Early Jurassic (Mid-Hettangian). The Hettangian Unconformity broadly correlates with the boundary between the *A. reducta* and *C. torosa* biozones. This event is more likely a representation of the maximum flooding surface of the Early Jurassic transgression and does not define an unconformity in wells or on seismic data in the western Barrow Sub-basin and Alpha Arch areas. The event is not time-transgressive in the area due to probable flooding of a relatively flat delta plain that remained after deposition of the Mungaroo Formation in the Triassic.

The Murat Siltstone was initiated during a regressive period following the Hettangian Unconformity or maximum flooding surface. This unit is of Middle Hettangian to Pliensbachian age and comprises argillaceous siltstone, argillaceous sandstone and claystone.

Elsewhere, above the Hettangian Unconformity, a limestone unit is commonly present, reflecting offshore areas that may have been sheltered from the dominant higher energy shelfal processes occurring at the time of maximum sea level rise. In the Dampier Sub-basin, a sandy facies, the North Rankin Formation, is frequently developed over the Hettangian Unconformity.

Both the Brigadier Formation and the Murat Siltstone were eroded from much of the uplifted Rankin Platform horst blocks in the Late Jurassic. Where preserved (eg Bluebell 1 and Saturn 1) the Brigadier Formation and Murat Siltstone provide an effective top-seal for the Mungaroo Formation AA sand reservoir package.

At the end of the Pliensbachian, rifting significantly increased in the Barrow and Dampier sub-basins and to a lesser degree on the Exmouth Plateau, resulting in the Pliensbachian, or rift-onset unconformity. Mapping in parts of the Greater Gorgon Area records several grabens with considerable relief (>500m) that have been previously interpreted to be Triassic. Thickening of the Toarcian to Bathonian interval is interpreted for these grabens and in some areas, an angular unconformity can be mapped between these deposits and the underlying Mungaroo Formation, Brigadier Formation and Murat Siltstone. Whilst the thickness of sediment is much less than that interpreted for the Late Jurassic, there is still considerable Early to Middle Jurassic deposition recorded in these tectonic lows. The lithofacies deposited in these grabens is similar to the underlying shelfal material with offshore silts and muds being deposited (Athol Formation and Calpyso Formation). This is also evident from the 'bland' seismic events that characterise the grabens in the Greater Gorgon Area. Lithologically, the Athol Formation and Calypso Formation are similar to the Murat Siltstone, but contains more clay as evidenced from cores, sidewall cores and wireline log data.

Deposition of the Athol Formation and Calypso Formation appears to have kept pace with subsidence for the most part, with shelfal material dominating the resultant sediment input. It is unlikely that the deltaic facies Legendre Formation of the Dampier Sub-basin is present in the Greater Gorgon Area.

2.2.3 Late Jurassic

Rifting in the Jurassic sub-basins continued until the Early Callovian when separation of India and Australia commenced and initiated the formation of a deep Late Jurassic basin. Tectonic subsidence rates far exceeded sedimentation rates and a thick succession of deep marine shales (Dingo Claystone) gradually filled the accommodation space. Most coarse clastic deposition at this time was confined to the basin margins, with thick mass flow sands deposited at the edge of the Rankin Platform and Alpha Arch. These mass flow deposits were focussed into tectonically active half grabens at the edges of the dominant horst features. The clastic units deposited are likely to be re-worked Mungaroo and Brigadier formations and Murat Siltstone sediment with fluidised flow mechanisms potentially increasing the sorting of the resultant fans.

Late Jurassic coarse clastics are recorded in several wells in the Barrow and Dampier sub-basins (eg the Oxfordian Biggada/Eliassen Formations; the Kimmeridgian and Tithonian Dupuy and Angel Formations), and hydrocarbon accumulations occur in these sands (eg Wanaea, Angel, Pitcairn, West Dixon and Barrow Island L block).

Significant erosion of these high areas throughout the Late Jurassic began to slow in the Tithonian as the relative sea-level rise accelerated, until by the Late Tithonian, deposition of eroded sediments was confined to small grabens and less-prominent Triassic horst blocks. Thin sands are preserved above the Callovian or Intra-Jurassic Unconformity, with a thin sequence of Late Jurassic silts and clays deposited above. In areas where horst blocks were topographically much higher and older Mungaroo Formation sub-crops the Intra-Jurassic Unconformity (eg Gorgon, West Tryal Rocks, Sultan and North Tryal Rocks), a Tithonian unit was not deposited. The Tithonian chronostratigraphic unit is difficult to interpret and map because it is commonly of sub-seismic resolution with thicknesses less than 30 metres and below seismic tuning thickness occurring in most of the wells in the area.

2.2.4 Cretaceous

The Berriasian to Valanginian Barrow Group records several cycles of deltaic deposition. In the Greater Gorgon Area, these cycles can be broadly subdivided into the Barrow Group Delta 1 and the Barrow Group Delta 2.

Berriasian-age Barrow Group Delta 1 cycles prograded from the Exmouth Sub-basin in the southeast, towards the Exmouth Plateau in the northwest.

Progradation of the Valanginian Barrow Group Delta 2 cycles resulted in sedimentation further east over parts of the Alpha Arch and Barrow and Beta North sub-basins. During this time sediment was sourced from both the south and east.

A marine transgression starting in the Valanginian resulted in the deposition of argillaceous marine sediments of the Muderong Shale. Initially transgression was slow, resulting in a transitional unit that cannot be clearly ascribed to either the Barrow Group or lower Muderong Shale (ie Mardie Greensand Member).

Regressive sedimentation started in the Aptian and deposited a regionally extensive silty radiolarian claystone (the Windalia Radiolarite). Marine sedimentation continued throughout the basin from the Albian to Turonian (Lower Gearle Siltstone). Following a regional transgression, the Upper Gearle Siltstone was deposited throughout much of the basin where it typically unconformably overlies the Lower Gearle Siltstone.

2.2.5 Late Cretaceous to Recent

Tectonic stability and a decreasing supply of terrigenous sediments resulted in the initiation of widespread shelf carbonate deposition as a westward prograding shelf/slope complex in the Late Cretaceous.

The Santonian to Campanian Toolonga Calcilutite is carbonate-rich and is unconformably overlain by the Campanian to Maastrichtian Withnell Formation which has a higher claystone content. Locally, the Withnell Formation is unconformably overlain by the Miria Marl.

The base of the Tertiary section is commonly marked by an unconformity. The Tertiary sediments are mainly shelf carbonates comprising calcarenites with minor calcilutite, calcisiltite and marl. Several unconformities are identified within the Tertiary.

The Paleocene through Early Oligocene section, where deposited and preserved, is represented by Lambert Formation clastic sediments and carbonates of the Dockrell, Wilcox and Walcott formations.

This section is in turn unconformably overlain by the progradational carbonates of the Late Oligocene through Miocene Cape Range Group.

The uppermost Tertiary through Quaternary section is represented by the Delambre Formation of Late Miocene to Recent age.

3 GEOLOGICAL INTERPRETATION

3.1 STRATIGRAPHY OF CHANDON 1

Chandon 1 penetrated a Late Triassic to Tertiary/Quaternary sedimentary section. The lithologies described herein follow the convention that the dominant lithology is mentioned first. Unless otherwise stated, all depths are measured depths (MD) in metres (m) below the Rotary Table (RT) which was 28.9 m above Mean Sea Level (MSL) and 1225 m above the seafloor.

No ditch cutting samples were collected over the 762 mm (30-in.) and 445 mm (17 ½-in.) hole sections drilled between the seabed (1225 m) and 2077 m in Chandon 1. Consequently, the entire Tertiary sequence and uppermost part of the Late Cretaceous into the top of the Upper Gearle Siltstone was not sampled.

After setting the 340 mm (13 ⅜-in) casing at 2067 m and following installation of the BOP's and marine riser, the well was drilled from 2077 m to 3124 m (Total Depth) with full returns.

The wellsite lithological descriptions of the cutting samples are contained in Appendix 2 of the Chandon 1 Well Completion Report (Basic Data) issued under separate cover (Doc ID ASBU1-063040032). A composite lithology log is provided in Enclosure 1, this volume. The lithology recorded is a synthesis of the lithological descriptions of cuttings[1] and petrophysical data. Table 2 below summarises the formations intersected and the relevant depths to the top of these formations. The term 'Marl' is used herein according to the following definition of 'Transitional Lithologies' between fine grain siliciclastic and carbonate rocks.

Rock type	***% Calcareous material***	***% Clay material***
Calcilutite	80-100	0-20
Argillaceous Calcilutite	65-80	20-35
Marl	35-65	35-65
Calcareous Claystone	20-35	65-80
Claystone	0-20	80-100

The stratigraphy encountered was very close to prediction with most of the formation tops encountered at or slightly high to prognosis in depth, except for the primary objective Mungaroo Formation which was 5 m low to prognosis. The prognosed seismic picks essentially required no shifts post-drilling. Furthermore, there was no VSP/checkshot acquired in Chandon 1 and therefore no basis to change the seismic times for the formation boundaries. Consequently, the post-drill seismic times shown for all of the formation boundaries have not changed from the pre-drill picks. A comprehensive stratigraphic summary is included in the Well Card (Appendix 1). Enclosure 2 shows the comparison of actual to predicted stratigraphy. The sub-division of the sedimentary section of Chandon 1 by formation boundaries and chronostratigraphic units as shown on the composite log (Enclosure 1) were determined primarily using a combination of drilling parameters, LWD logs, wireline logs, lithological descriptions, biostratigraphic data and petrophysical analysis. The Palynology Report (Basic Data) is included as Appendix 15 of the Chandon 1 Well Completion Report (Basic Data) issued under separate cover and the interpretive palynology report is included as Appendix 5 of this volume. Log and seismic correlation with nearby offset wells was also used to define formation tops.

[1] Chandon 1 was drilled with a synthetic / oil based mud (OBM) using PDC drill bits in both hole sections, consequently the quality of drilled ditch cuttings is often poor, while their colour is often disguised by the mud itself. The dark colour of the lithologies described may be biased by the oil based mud (OBM), despite several cycles of washing. These two factors must be considered when interpreting lithology information from these ditch cuttings which is the only source of rock information available in Chandon 1. Caved ditch cuttings are also evident throughout which also impacts upon palynological analysis, the only source of age dating material in Chandon 1.

Table 2: Chandon 1 Stratigraphic Summary

Water Depth: 1196.1m (MSL) **Rotary Table Elevation: 28.9m**

AGE	UNIT	Seismic Time TWT (msec)	DEPTH		VARIATION TO PREDICTION
			m RT	m TVD SS	
Tertiary - Upper Miocene to Recent	Delambre Fm	1597	1225	-1196.1	Seafloor
Late Miocene Unconformity 1459.7 m / 1430.8 m TVD SS					
Early to Middle Miocene	Cape Range Group	1857	1459.7	-1430.8	16.2 m high
Mid-Oligocene Unconformity 1472.1 m / 1443.2 m TVD SS					
Early Oligocene to Late Eocene	Walcott Fm		1472.1	-1443.2	Not Prognosed
Early to Middle Eocene	Wilcox Fm		1516.4	-1487.5	Not Prognosed
Base Eocene Unconformity 1567.9 m / 1539 m TVD SS					
Paleocene	Dockrell Fm		1567.9	-1539	Not Prognosed
	Lambert Fm	1980	1596.0	-1567.1	1.1 m low
Base Tertiary Unconformity 1648.5 m / 1619.6 m TVD SS					
Late Cretaceous - Maastrichtian	Miria Marl	2035	1648.5	-1619.6	4.4 m high
Campanian	Withnell Fm	2091	1720.0	-1691.1	21.1 m low
Santonian - Campanian	Toolonga Calcilutite	2345	1929.8	-1900.9	18.1 m high
	Upper Gearle Siltstone	2440	2053.0	-2024.0	2 m low
Turonian Event 2143.0 m / 2114.0 m TVD SS					
Early to Late Cretaceous – Albian - Turonian	Lower Gearle Siltstone	2510	2143.0	-2114.0	14 m low
Early Cretaceous – Aptian	Windalia Radiolarite	2724	2348.0	-2319.0	6 m high
Aptian Disconformity 2405.1 m / 2376.1 m TVD SS					
Barremian	Muderong Shale	2742	2405.1	-2376.1	0.9 m high
Berriasian - Hauterivian	Barrow Group	2805	2475.0	2446.0	NP
Intra-Valanginian Unconformity 2548.0m / 2519.0 m TVD SS					
Neocomian	Intra-Barrow Marker	2868	2548.0	-2519.0	104 m high
Nr Base Cretaceous Unconformity 2642.0 m / 2613.0 m TVD SS					
Late Jurassic– Undifferentiated	Dingo Claystone	2951	2642.0	-2613.0	24 m high
Intra-Jurassic Unconformity 2680.2 / 2651.2 m TVD SS					
Early / Middle Jurassic (Undiff.)	Athol Formation / Murat Siltstone	2978	2680.2	-2651.2	4.8 m high
Late Triassic Rhaetian/Norian	Brigadier Formation	3013	2714.8	-2685.8	17.1 m high
Late Triassic - Norian	Mungaroo Formation	3025	2748.9	-2719.9	5 m low
	AA Marginal Marine		2748.9	-2719.9	

AGE	UNIT	Seismic Time TWT (msec)	DEPTH		VARIATION TO PREDICTION
			m RT	m TVD SS	
	AA Fluvial Sand		2825.0	-2796.0	
	Zone 100 Shale	3174	2943.8	-2914.8	5.2 m high
	A Sand	3211	3022.8	-2993.7	17.7 m low
TOTAL DEPTH (Driller) **(Logger)**			3124.0 3110.0	-3095.0 -3080.9	455 m shallow to pre-drill TD

* Subsea depths in metres below Mean Sea Level (MSL) and are corrected for hole deviation where appropriate.

3.1.1 Delambre Formation

Interval 1225 – 1459.7 m (Seafloor – 1430.8 m TVD SS)
True Vertical Thickness 234.7 m
Age: Late Miocene to Recent
N-P-C-Composite Zonation: Not Determined
Depositional Environment: Open Marine
Seismic Time (TWT): 1.597 sec

The 762 mm (30-in.) and 445 mm (17½-in.) hole sections drilled between the seabed at 1225 m and 2077 m within the upper part of the Upper Gearle Siltstone in Chandon 1 was logged with the benefit of an MWD/LWD logging tool string (Powerpulse-MWD-ARC9-APWD) that provided inclination/direction data, array resistivity and gamma ray data, in addition to annular pressure measurement (APWD), equivalent circulating density (ECD) and various other drill monitoring parameters. Although the ARC9 tool achieves multiple depths of investigation with an array of five transmitters and two receivers, only three resistivity curves were utilised in Chandon 1 and included the following:

- 2 MHz Phase Shift Resistivity @ 16” and 40” (P16H and P40H)
- 2 MHz Attenuation Resistivity @ 28” (A28H)

The LWD was included in the BHA in order to assist in identifying the top of the Late Cretaceous and particularly the Late Cretaceous Toolonga Calcilutite and selecting a casing seat for the 340 mm (13 ⅜-in.) casing within the uppermost part of the Upper Gearle Siltstone. This casing string was subsequently run and cemented to a depth of 2067 m. This same interval between seafloor and 2077 m was subsequently logged with wireline gamma ray through casing which represents the primary depth control in Chandon 1 and to which the LWD gamma ray has been depth matched. A wireline cased hole sonic scanner (MSIP) log was recorded up to the loss of signal at approximately 1550 m.

All formation boundaries within the Tertiary and Late Cretaceous sequence between the seafloor and 2077 m are based entirely on correlation with offset wells (and seismic correlation) using the above mentioned depth matched LWD gamma ray, resistivity and sonic data.

No drilled ditch cuttings were collected through the Delambre Formation, however the sequence is thought to consist of gradational and interbedded deep water deposits composed mainly of calcilutite and marl, with rare possible calcarenite.

The Delambre Formation exhibits a moderately uniform gamma ray response throughout that varies between 12 and 55 API units, gradually decreasing with depth and therefore with a slight bell-shaped gamma ray motif.

The Delambre Formation unconformably overlies the undifferentiated Cape Range Group at 1459.7 m MD (-1430.8 m TVD SS) at a seismic time of 1.857 sec. TWT and which is herein referred to as the Late Miocene Unconformity. The ARC9 gamma ray curve exhibits a subtle decrease from 20 API units above 1459.7 m, to 20-40 API units below, while the ARC9 array resistivity curves (A28H/P16H/P40H) exhibit an increase from 0.8-1.0 ohm-m above 1459.7 m to 1.0-1.6 ohm-m below. These changes in log response reflect a subtle change in lithology that is not defined in Chandon 1.

No age dating was undertaken in this sequence however, it is assumed to be Late Miocene to Recent in age and incorporates modern day seafloor sediments herein.

Recognition of the boundary at 1459.7 m as an unconformity is based on available regional evidence and correlation with offset wells. There is no direct evidence in Chandon 1 for the presence of an unconformity at 1459.7 m.

3.1.2 Cape Range Group

Interval:	1459.7 – 1472.1 m (1430.8 – 1443.2 m TVD SS)
True Vertical Thickness:	12.4 m
Age:	Early Miocene to Middle Miocene
N-P-C-Composite Zonation:	Not Determined
Depositional Environment:	Open Marine (bathyal?)
Seismic Time (TWT):	1.857 sec

No drilled ditch cuttings were collected through the Cape Range Group however, the sequence is thought to consist of calcilutite. This short interval exhibits a gamma ray response between 20-40 API units and a resistivity response between 1.0-1.6 ohm-m.

The undifferentiated Cape Range Group unconformably overlies the Walcott Formation at 1472.1 m (-1443.2 m TVD SS), which is herein referred to as the Mid-Oligocene Unconformity. The LWD gamma ray which has been depth matched to the cased hole wireline gamma ray exhibits no well defined shift at this formation boundary, although the gamma ray appears more uniform at 15-20 API units below 1472.1 m compared to the overall response above which is more variable. The ARC9 array resistivity curves (A28H/P16H/P40H) exhibit a decrease from 1.0-1.6 ohm-m above 1472.1 m to a uniform 0.7-0.9 ohm-m below. .

No age dating was undertaken in the sequence, however it is assumed to be Early to Middle Miocene.

Recognition of the boundary at 1472.1 m as an unconformity is based on available regional evidence and correlation with offset wells. There is no direct evidence in Chandon 1 for the presence of an unconformity at 1472.1 m.

3.1.3 Walcott Formation

Interval	1472.1– 1516.4 m (1443.2 – 1487.5 m TVD SS)
True Vertical Thickness	44.3 m
Age:	Middle Eocene?
N-P-C Composite Zonation:	Not determined
Depositional Environment:	Open marine (bathyal or deeper?)
Seismic Time (TWT):	Not Picked

No drilled ditch cuttings were collected through the Walcott Formation however, the sequence is thought to consist of calcilutite with minor marl and locally with accessory chert. The Walcott Formation exhibits a very clean, uniform gamma ray response between 12-35 API units and a resistivity response of 0.8-1.0 ohm-m, reflecting a very uniform, mainly carbonate lithology throughout.

No age dating was undertaken in the sequence, however it is assumed to be Middle Eocene.

The Walcott Formation conformably overlies the Wilcox Formation at 1516.4 m (-1487.5 m TVD SS). The contact is very subtle on all LWD log traces. The gamma ray displays a slight increase from 20 API units above 1516.4 m to 20-35 API units below, while the ARC9 resistivity curves (A28H/P16H/P40H) display a slight shoulder and increase from 0.8 ohm-m above 1516.4 m to 0.9-1.1 ohm-m below. This boundary is also defined by correlation with offset wells.

3.1.4 Wilcox Formation

Interval	1516.4 – 1567.9 m (1487.5 – 1539.0 m TVD SS)
True Vertical Thickness	51.5 m
Age:	Early to Middle Eocene?
N-P-C Composite Zonation:	Not determined
Depositional Environment:	Open marine (bathyal or deeper?)
Seismic Time (TWT):	Not Picked

No drilled ditch cuttings were collected through the Wilcox Formation however, the sequence is thought to consist of argillaceous calcilutite with minor marl. The LWD gamma ray exhibits a relatively uniform character of 15-40 API units, with evidence of both fining-upward and coarsening-upward cycles 3-8 m thick and a resistivity response of 0.8-1.3 ohm-m which reflects a relatively uniform lithology throughout.

The Wilcox Formation unconformably overlies the Dockrell Formation at 1567.9 m (-1539 m TVD SS) and is herein referred to as the Base Eocene Unconformity. The boundary with the Dockrell Formation exhibits no diagnostic gamma ray shift across the formation boundary, while the ARC array resistivity curves (A28H/P16H/P40H) exhibit an increase from 0.8 ohm-m above 1567.9 m to 1.5 ohm-m below. Despite the relatively subtle change in log character, the formation boundary is well documented by correlation with offset wells.

No age dating was undertaken in this sequence however, it is assumed to be Early to Middle Eocene.

Recognition of the formation boundary as being an unconformity is based upon regional evidence and correlation with offset wells, however it is not documented directly by micro-palaeontological evidence in Chandon 1. Rocks from the early Early Eocene are generally documented above the formation boundary, directly overlying Late Paleocene rocks below, suggesting a hiatus or unconformity.

3.1.5 Dockrell Formation

Interval	1567.9 – 1596.0 m (1539.0 – 1567.1 m TVD SS)
True Vertical Thickness	28.1 m
Age:	Paleocene
N-P-C Composite Zonation:	Not Determined
Depositional Environment:	Open marine (bathyal or deeper?)
Seismic Time (TWT):	Not Picked

No drilled ditch cuttings were collected through the Dockrell Formation however, the sequence is thought to consist predominantly of argillaceous calcilutite and calcilutite. The occurrence of any associated chert within this sequence is not documented. The

LWD gamma ray exhibits a slightly fluctuating response between 18-35 API units with a gradual decrease with increasing depth, while the resistivity response on the ARC9 resistivity curves (A28H/P16H/P40H) is 1.0-1.5 ohm-m.

No age dating was undertaken in this sequence, however it is assumed to be Paleocene based on regional evidence and by correlation with offset wells.

The Dockrell Formation overlies the Lambert Formation with apparent conformity at 1596.0 m (-1567.1 m TVD SS), 1.1 m low to prognosis and a seismic time of 1.980 sec. TWT. The boundary with the Lambert Formation is subtle on the gamma ray curve which displays an increase from 20-30 API units above 1596.0 m to 20-50 API units below, increasing with depth, while the ARC9 array resistivity curves (A28H/P16H/P40H) exhibit a decrease from 1.5 ohm-m above 1596 m to 1.0-1.8 ohm-m below. These log changes reflect a probable lithology change from carbonate-rich lithologies above 1596.0 m to more clay-rich carbonates and calcareous claystone below.

The nature of the formation boundary as being conformable is not able to be documented directly in Chandon 1, however based on regional evidence and correlation with offset wells, both units above and below the contact are of Paleocene age.

3.1.6 Lambert Formation

Interval	1596.0 – 1648.5 m (1567.1 – 1619.6 m TVD SS)
True Vertical Thickness	52.5 m
Age:	Paleocene
N-P-C Composite Zonation:	Not Determined
Depositional Environment:	Open marine (bathyal or deeper?)
Seismic Time (TWT):	1.980 sec.

No drilled ditch cuttings were collected through the Lambert Formation however, the sequence is thought to consist predominantly of marl and calcareous claystone with lesser interbedded siltstone. The LWD gamma ray increases with depth from 20 API units at the top to 50 API units near the base, reflecting a prograding depositional sequence with a funnel-shaped motif. The interval does include more subtle fining-upward and coarsening-upward smaller cycles less than 5-10 m thick.

No age dating was undertaken in this sequence, however it is assumed to be Paleocene based on regional evidence and by correlation with offset wells.

The Lambert Formation unconformably overlies the Miria Formation at 1648.5 m (-1619.6 m TVD SS) and a seismic time of 2.035 sec. TWT and is herein referred to as the Base Tertiary Unconformity (BTU). This boundary was intersected 4.4 m high to prognosis. The formation boundary is well displayed on the gamma ray curve which exhibits a decrease from 50 API units above 1648.5 m to 20-40 API units below, while the ARC9 array resistivity curves (A28H/P16H/P40H) exhibit a decrease from 1.6 ohm-m above 1648.5 m to 0.9-1.3 ohm-m, (decreasing with depth) below. These log changes reflect a change in lithology based on regional evidence from calcareous claystone and possible siltstone above 1648.5 m to a more carbonate-rich sequence of marl and possible calcilutite below.

Recognition of the boundary at 1648.5 m as an unconformity is based upon regional evidence, correlation with offset wells and seismic evidence however it is not documented directly by micro-palaeontological age dating evidence in Chandon 1. Rocks of Paleocene age are generally documented above the formation boundary, directly overlying Late Cretaceous (Campanian to Maastrichtian) rocks below.

Furthermore, the boundary is well documented seismically as a major regional unconformity (BTU).

3.1.7 Miria Formation

Interval	1648.5 m – 1720.0 m (1619.6 – 1691.1 m TVD SS)
True Vertical Thickness	71.5 m
Age:	Late Cretaceous (Campanian to Maastrichtian?)
N-P-C Composite Zonation:	Not Determined
Depositional Environment:	Open marine (bathyal or deeper?)
Seismic Time (TWT):	2.035 sec.

No drilled ditch cuttings were collected through the Miria Formation however, the sequence is thought to consist predominantly of varicoloured marl and other more carbonate-rich sediments than those lying above and below. The interval is characterised by a gamma ray curve that exhibits at least three prograding depositional cycles each of 15-30 m thick, between 20 and 70 API units. Each cycle can be further sub-divided into a combination of prograding and fining-upward cycles each of 5-8 m in thickness. The ARC9 array resistivity curves (A28H/P16H/P40H) are in the range of 0.8-1.5 ohm-m throughout. The three intervals are:

- 1648.5-1667.5 m and;
- 1667.5-1697 m and;
- 1697-1720 m.

No age dating was undertaken in the sequence however, it is assumed to be Late Cretaceous (Campanian to Maastrichtian) based on regional evidence and by correlation with offset wells.

The Miria Formation overlies the Withnell Formation with apparent conformity at 1720.0 m (-1691.1 m TVD SS), 21.1 m low to prognosis and a seismic time of 2.091 sec. TWT. The boundary is poorly defined on the LWD gamma ray and resistivity curves, while recognition of the boundary is by correlation with offset wells.

Recognition of the boundary at 1720.0 m as being conformable is based upon regional evidence and correlation with offset wells, however it is not documented directly by micro-palaeontological evidence in Chandon 1.

3.1.8 Withnell Formation

Interval	1720.0 – 1929.8 m (1691.1 – 1900.9 m TVD SS)
True Vertical Thickness	209.8 m
Age:	Late Cretaceous (Campanian to Maastrichtian)
N-P-C Composite Zonation:	Not determined
Depositional Environment:	Open marine
Seismic Time (TWT):	2.091 sec.

No drilled ditch cuttings were collected through the Withnell Formation however, the sequence is thought to consist predominantly of varicoloured claystone and siltstone with lesser calcilutite. The interval is characterised by a variable gamma ray curve between 40-100 API units, while the ARC9 array resistivity curves (A28H/P16H/P40H) are in the range of 0.8-1.1 ohm-m.

No age dating was undertaken in this sequence however, it is assumed to be Late Cretaceous (Campanian to Maastrichtian) based on regional evidence and by correlation with offset wells.

The Withnell Formation overlies the Toolonga Calcilutite with apparent conformity at 1929.8 m (-1900.9 m TVD SS), 18.1 m high to prognosis and a seismic time of 2.345 sec. TWT. The boundary is displayed on the gamma ray curve with a decrease from 70 API units above 1929.8 m to 60-20 API units below, generally decreasing with depth, while the ARC9 array resistivity curves (A28H/P16H/P40H) exhibit an increase from <1 ohm-m above 1929.8 m to 1-2 ohm-m, increasing with depth below. These log changes reflect an assumed lithology change from a claystone-dominated sequence above 1929.8 m to predominantly calcilutite and argillaceous calcilutite with minor marl below.

Recognition of the boundary at 1929.8 m as being conformable is based upon regional evidence and correlation with offset wells however it is not documented directly by micro-palaeontological age dating evidence in Chandon 1.

3.1.9 Toolonga Calcilutite

Interval	1929.8 – 2053.0 m (1900.9– 2024.0 m TVD SS)
True Vertical Thickness	123.1 m
Age:	Late Cretaceous (Santonian-Campanian?)
N-P-C Composite Zonation:	Not Determined
Depositional Environment:	Open marine
Seismic Time (TWT):	2.345 sec.

No drilled ditch cuttings were collected through the Toolonga Calcilutite. The interval is characterised by a low, relatively uniform gamma ray response in the 15-30 API range, although numerous serrate prograding depositional cycles, 5-10 m thick are evident. There is also a distinctive fining-upward top as evidenced by the bell-shaped gamma ray motif in the upper 15-18 m of section. Based upon a combination of clean gamma ray and elevated resistivity response compared to the overlying sequence, the interval is thought to consist almost entirely of calcilutite, except at the top where it may grade to a possible marl.

No age dating was undertaken in the sequence however, it is assumed to be Late Cretaceous (Santonian-Campanian?) based on regional evidence and by correlation with offset wells.

The Toolonga Calcilutite overlies the Upper Gearle Siltstone with apparent conformity at 2053.0 m (-2024.0 m TVD SS), 2 m low to prognosis and at a seismic time of ~2.440 sec. TWT. The boundary is well documented on the LWD gamma ray curve with an increase from 15-20 API units above 2053 m to 30-60 API units below, while there is a subtle decrease in resistivity response on the ARC9 array resistivity curves below 2053 m. This log change reflects a probable change in lithology from calcilutite immediately above 2053 m to a more clay-rich sequence of mixed carbonates and clastics below. The latter is evidenced by the first documented ditch cutting samples of argillaceous calcilutite collected below 2077 m, some 24 m below this major conformable formation boundary.

Recognition of the boundary at 2053 m as being conformable is based upon regional evidence, correlation with offset wells and seismic evidence, however it is not documented directly by micro-palaeontological age dating evidence in Chandon 1. Regional (and seismic) evidence supports rocks of Late Cretaceous (Santonian/Campanian/Turonian?) age, directly overlying rocks of Late Cretaceous (Coniacian-Santonian?) age.

3.1.10 Upper Gearle Siltstone

Interval	2053 – 2143 m (2024 – 2114 m TVD SS)
True Vertical Thickness	90 m
Age:	Late Cretaceous (Undifferentiated Coniacian-Santonian?)
Palynological Zonation:	*Indeterminate*
Depositional Environment:	Open marine
Seismic Time (TWT):	2.440 sec.

Sampling and collection of ditch cuttings commenced in the 311 mm (12 ¼-in.) hole section after setting the 340 mm (13 ⅜-in.) casing at 2067 m and installation of the marine riser and BOP's when drilling below 2077 m within the upper part of the Upper Gearle Siltstone.

The 311 mm (12 ¼-in.) hole section was drilled with the benefit of an MWD/LWD logging tool string (Powerpulse-MWD-ARC8-APWD) over the interval 2077-3124 m (TD) that provided inclination/direction data, array resistivity compensated and gamma ray data, in addition to annular pressure measurement (APWD), equivalent circulating density (ECD) and various other drill monitoring parameters. Although the ARC8 tool achieves multiple depths of investigation with an array of five transmitters and two receivers, only three resistivity curves were utilised in Chandon 1 and included the following:

- 2 MHz Phase Shift Resistivity @ 16" and 40" (P16H and P40H)
- 2 MHz Attenuation Resistivity @ 28" (A28H)

In this section, the LWD was used primarily for realtime stratigraphic correlation and formation evaluation in the deeper objective Mungaroo Formation, while the MWD was used for monitoring direction/inclination of the wellbore and annular pressure was monitored by the APWD sensor.

The Upper Gearle Siltstone consists predominantly of greenish grey calcilutite (locally grading to argillaceous calcilutite) with rare calcareous claystone and claystone. The sequence is characterised by a gamma ray curve that varies between 30 and 60 API units and which appears to define at least three discrete lithological sequences. These lithological sequences are also reflected by the ARC8 resistivity traces which display a variation between 0.9 and 2.8 ohm-m. The intervals defined are:

- 2053 – 2103 m: calcilutite (below 2077 m) grading to argillaceous calcilutite, characterised by a serrate gamma ray response between 18 and 45 API units occurring in subtle fining-upward cycles 3 - 8m thick and;
- 2103 – 2125 m: interbedded argillaceous calcilutite (possibly grading to marl) and calcareous claystone with serrate gamma ray response between 30 and 62 API units in subtle fining-upward cycles 2 - 4 m thick and;
- 2125 – 2143 m: calcilutite grading to argillaceous calcilutite and calcareous claystone (and marl) and claystone, characterised by a serrate gamma ray response between 25 and 65 API units in a prograding depositional cycle with a funnel-shaped gamma ray response.

There were no sidewall cores taken within this unit, consequently the precise age of this unit in Chandon 1 has not been determined accurately. Palynological dating of drilled ditch cuttings attempted over the gross interval 2080 - 2100 m was indeterminate, however, based upon regional evidence and correlation with offset wells, the sequence is considered to be of Cenomanian age?

The Upper Gearle Siltstone unconformably overlies the Lower Gearle Siltstone at 2143 m (-2114 m TVD SS), 14 m low to prognosis, at a seismic time of ~2.510 sec. TWT and is referred to herein as the Turonian Event / Unconformity. The boundary is well documented on most LWD and wireline log curves, with the gamma ray exhibiting an increase from 35-70 API units above 2143 m to an average 70 API units below, while the ZAIT resistivity curves exhibit a decrease from 0.8-3.0 ohm-m above 2143 m to an average 0.8 ohm-m below. The density log displays a reduction from 2.15-2.28g/cc above 2143 m to a uniform 2.10g/cc below, while the interval transit time on the sonic scanner (MSIP) log displays an increase from a variable 110-140 µsec/ft above 2143 m to 145-150 µsec/ft below. These log changes reflect a lithology change from dominantly calcilutite above 2143 m to calcareous claystone and claystone below.

Recognition of the boundary at 2143 m as being unconformable is based upon regional evidence, correlation with offset wells and seismic evidence, however it is not documented directly by micro-palaeontological or palynological age dating evidence in Chandon 1. Regional (and seismic) evidence supports rocks of Late Cretaceous (Coniacian-Santonian?) age, directly overlying rocks of Early Cretaceous (Cenomanian/Turonian?) age.

Lithology

2077 – 2143m (66m)	*Calcilutite with rare Calcareous Claystone and Claystone* **ROP range (average): 33-203 (110) m/hr**

Calcilutite (95-100%): light to dark greenish grey, mostly greenish grey, trace light olive grey, mostly firm to minor soft, angular break to amorphous, smooth texture, 15-20% detrital clay, grading to *Argillaceous Calcilutite*
Claystone: calcareous, medium dark grey, firm, sub-blocky to sub-fissile, 20% micrite, 10% quartz silt.
Claystone: medium dark grey, hard, sub-blocky to sub-fissile, slightly silty (5-10%), non-calcareous.

3.1.11 Lower Gearle Siltstone

Interval	2143.0 – 2348 m (2114.0 – 2319.0 m TVD SS)
True Vertical Thickness	205 m
Age:	Early to Late Cretaceous (late Aptian to Cenomanian/Turonian?)
Palynological Zonation:	*D. davidii and younger*
Depositional Environment:	Open marine
Seismic Time (TWT):	2.510 sec.

The Lower Gearle Siltstone consists predominantly of greenish black to grey black claystone, with interbedded medium grey to greenish black calcareous claystone below approximately 2480 m. The interval is characterised by a relatively uniform gamma ray response in the 60-80 API range, with stacked fining-upward and coarsening-upward depositional cycles, generally in the range of 5-10 m in thickness.

There were no sidewall cores taken within this unit, consequently the precise age of this unit in Chandon 1 has not been determined accurately. Palynological dating of drilled ditch cuttings over the gross interval 2300-2310 m towards the base of the sequence is assigned to the *D davidii* palynozone of the Early Cretaceous (late Aptian).

The Lower Gearle Siltstone overlies the Windalia Radiolarite with apparent conformity at 2348.0 m (-2319 m TVD SS), 6 m high to prognosis and a seismic time of 2.724 sec TWT. The sonic scanner (MSIP) log exhibits a decrease in interval transit time from 120-130 µsec/ft above 2348 m to 105-120 µsec/ft below. The gamma ray exhibits only a slight reduction from 30-50 API units above 2348 m to 20-40 API units below, while the ARC8 resistivity curves exhibit an increase from 1.0-1.2 ohm-m above 2348 m to 1.0 to 2.5 ohm-m below. These LWD and wireline log changes reflect a lithology change from predominantly claystone and calcareous claystone above 2348 m to gradational marl and calcareous claystone below.

Lithology

2143 – 2348m (205m)	*Calcareous Claystone with rare to abundant Claystone* **ROP range (average): 22-255 (97) m/hr**

Claystone: (20-100%): calcareous, minor dark greenish grey to medium dark grey, firm, sub-blocky to sub-fissile, 20% micrite, rare calcisilt, 5% quartz silt.
Claystone: medium dark grey to minor dark greenish grey, firm, sub-blocky to sub-fissile, 5% quartz silt.

3.1.12 Windalia Radiolarite

Interval	2348.0 – 2405.1 m (2319.0 – 2376.1 m TVD SS)
True Vertical Thickness	57.1 m
Age:	Early Cretaceous (late Aptian)
Palynozone	*D. davidii*
Depositional Environment:	Open marine
Seismic Time (TWT):	2.724 sec.

The Windalia Radiolarite is a lithological unit of regional significance that is generally well defined lithologically and by wireline/LWD log characteristics. The base of the unit generally has very characteristic log features coincident with a sharp lithology change, while its upper contact with the overlying Lower Gearle Siltstone is often gradational. However in Chandon 1, both the upper and lower formation boundaries are only fair on wireline/LWD logs reflecting more subtle and gradational lithology changes, while identification of this unit as the Windalia Radiolarite has been assigned by virtue of wireline/LWD log characteristics, because the litho-facies is not necessarily characteristic of this formation. Accessory siliceous *Radiolaria* so commonly associated with this formation was not identified in Chandon 1.

The Windalia Radiolarite in Chandon 1 consists of a gradational sequence of light grey to dark greenish grey marl and dark grey to greenish black calcareous claystone (grading to claystone) with minor calcilutite. The sequence occurs in a broadly serrate prograding or coarsening upward depositional cycle with a funnel-shaped gamma ray motif. The gamma ray varies in the range of 20 - 45 API units in the upper part of the sequence (2348-2377 m), accompanied by a resistivity of 1.5-2.5 ohm-m, while over the lower part of the sequence (2377-2405.1 m), the gamma ray increases with depth from 25 to 100 API units and the resistivity decreases to 0.7-1.3 ohm-m.

There were no sidewall cores taken within this unit, consequently the precise age of this unit in Chandon 1 has not been determined accurately. Palynological dating of drilled ditch cuttings over the interval 2400 - 2410 m straddling the base of the Windalia Radiolarite and underlying Muderong Shale is tentatively assigned to the *D. davidii* palynozone of the Early Cretaceous (late Aptian), albeit with a very low confidence rating and possibly should be considered as being indeterminate and older.

The Windalia Radiolarite disconformably overlies the Muderong Shale at 2405.1 m (-2376.1 m TVD SS), 0.9 m high to prognosis and a seismic time of 2.742 sec. TWT and is referred to herein as the Aptian Disconformity. The boundary is well defined with the gamma ray exhibiting a gradational increase from 90 API units above 2405.1 m, to a variable 70-125 API (average 100) units below. There is no change in the resistivity profile across this formation boundary. The log responses described occur in response to no apparent change in lithology from dominantly calcareous claystone at the base of the Windalia Radiolarite above 2405.1 m to dominantly calcareous claystone below. The occurrence of calcareous claystone interpreted in the upper 70 m of the underlying Muderong Shale is questionable and may in part be largely cavings from the overlying sequence. This interpretation is partly supported by palynology for the underlying sequence (2430-2440 m) which is considered to be mostly 'caved' palynomorphs.

The nature of the formation boundary at 2405.1 m as being a disconformity is based on regional stratigraphic and seismic evidence, correlation with offset wells and by direct subtle age dating evidence in Chandon 1. Early Cretaceous (late Aptian) age rocks defined by assignment to the *D. davidii* palynozone occur above 2405.1 m and directly overlie Early Cretaceous (early Aptian) rocks defined by assignment to the *O. operculata* palynozone below 2410 m. This palynological interpretation tentatively supports a hiatus at the documented formation boundary, with some key index species missing or not able to be identified from each of the *D. davidii* and *O. operculata* palynozones. However, more apparent gradational lithological evidence in combination with more subtle LWD and wireline log changes suggests that a hiatus may not be as well developed in this area as occurs in most other parts of the NorthWest Shelf of Australia.

Lithology

2348 – 2405.1m (57.1m)	*Marl (grading to Calcareous Claystone) with rare Calcilutite* **ROP range (average): 30-254 (91) m/hr**

Marl (30-75%): light grey to dark greenish grey, moderately soft to firm, amorphous to sub-blocky, 50-60% micrite, trace to 5% quartz silt, trace calcisilt.
Claystone: calcareous, dark grey to greenish black, firm, sub-fissile to sub-blocky, 10-20% micrite, grading to *Claystone*, nil - 5% quartz silt, trace calcisilt.
Calcilutite: medium light grey, occasionally white, soft to moderately soft, amorphous to sub-blocky, >90% micrite, <5% detrital clay, nil to trace (<1%) carbonaceous specks, nil to trace (<1%), quartz silt.

3.1.13 Muderong Shale

Interval	2405.1 – 2475.0 m (2376.1 – 2446.0m TVD SS)
True Vertical Thickness	69.9 m
Age:	Early Cretaceous (Hauterivian? To Barremian ?)
Palynozone	*M. australis ? to O. operculata*
Depositional Environment:	Open marine
Seismic Time (TWT):	2.742 sec.

The Muderong Shale consists of dark grey to greyish black calcareous claystone, commonly with trace amounts of nodular to disseminated pyrite and rare glauconite, locally grading to claystone with 10-20% micrite and with trace chert and calcilutite. However much of those cuttings described may in part be 'caved' from the overlying sequence which was drilled with very high ROP. The interval is characterised by a gamma ray response in the 80-135 API units range with stacked fining-upward and coarsening-upward motifs. There is two thin streaks less than 1m thick with a low gamma ray response (~68 API units) which are also tight as evidenced by the interval transit time response and very low density. It is possible the sample identified as 'chert' may be siderite or some form of carbonate, commonly more typical within the Muderong Shale. The resistivity response through this interval is uniformly low (0.7-1.0 ohm-m) except for the tight streaks where the response increases to 1.3-1.8 ohm-m.

There were no sidewall cores taken within this unit, consequently the precise age of this unit in Chandon 1 has not been determined accurately. Drilled ditch cuttings from the gross interval 2410-2430 m at the top of the sequence are assigned to the *O. operculata* palynozone of the Early Cretaceous (early Aptian), while the interval 2430-2440 m is questionably assigned to the *M. australis* palynozone of the Barremian. The deeper part of the Muderong Shale was not examined for palynological age dating, however based on regional evidence, it is probably as old as the Early Cretaceous (Hauterivian).

The Muderong Shale overlies the Barrow Group with apparent conformity at 2475.0 m (-2446.0 m TVD SS) and a seismic time of 2.805 sec. TWT. This formation top was not prognosed independently of the Muderong Shale however it is identified on the basis of wireline log gamma ray character, correlation with offset wells and the identification of the Intra-Valanginian Unconformity (commonly identified as the Intra-Barrow Marker) deeper in the section at 2548 m. The gamma ray displays a sharp increase from an average 110 API units (90-120 API) above 2475 m to 100-140 API units below, while the other wireline logs including resistivity, density, interval transit time on the sonic log display no shift at this boundary. The change in gamma ray coincides approximately with a lithology change from apparent calcareous claystone above 2475 m to claystone below.

The nature of the formation boundary at 2475 m as a conformable contact is not documented directly in Chandon 1, although seismic evidence does not support or identify any sequence boundary suggestive of an unconformity occurring at this level.

Lithology

2405.1 – 2475m (69.9m)	*Calcareous Claystone* **ROP range (average): 41-511 (95) m/hr**

Claystone (100%): calcareous, dark grey to greenish black, firm, sub-fissile to sub-blocky, 20% micrite, trace quartz silt.

3.1.14 Barrow Group

Interval	2475 – 2642.0m (2446.0 – 2613.0 m TVD SS)
True Vertical Thickness	88 m
Age:	Early Cretaceous (Berriasian to Hauterivian)
Palynozone	*C. delicata* to *S. areolata*
Depositional Environment:	Open marine
Seismic Time (TWT):	2.805 sec.

The Barrow Group consists of two discrete lithological sequences, separated by a major regional sequence boundary and unconformity identified as the Intra-Valanginian Unconformity. The two sequences are:

- **2475 – 2548 m:** an upper interval of dominantly claystone with rare calcareous claystone and sandstone which is characterised by a gamma ray response in the 100-145 API range, increasing below 2524 m with a slight funnel-shaped motif. There is also a uniformly flat resistivity response of 0.7-1.0 ohm-m and a number of thin tight streaks less than 0.5 m thick that may be siderite streaks/nodules which were not identified, but otherwise common in the Barrow Group and;

- **2548 – 2642 m**: a lower interval of dark grey to grey black claystone with trace accessory glauconite with rare possible interbedded calcareous claystone. This interval is characterised by a gamma ray response of 95-160 API units, with an increase occurring below 2623 m to the base of the interval at 2642 m producing a funnel-shaped gamma ray motif. There is also a uniformly flat resistivity response of 0.8-1.0 ohm-m and a number of thin tight streaks less than 1.0 m thick that may be siderite streaks/nodules which were not identified and which have an associated resistivity response of 1.8-2.0 ohm-m. The resistivity profile also increases slightly over the basal 18 m of this sequence (changing in response with the gamma ray curve). The interval transit time on the sonic log and density response also vary over the basal 15 m of this interval.

The Intra-Valanginian Unconformity or Intra-Barrow Marker that is identified and separates the two lithological sequences discussed above is evident on most wireline log curves at 2548 m except the gamma ray which exhibits no change in character. The interval transit time on the sonic scanner (MSIP) log displays a decrease from an average 133 µsec/ft above 2548 m to an average 126 µsec/ft below, while the density curve exhibits an increase from 2.20-2.25g/cc above 2548 m to 2.25-2.30 g/cc below. The resistivity log also displays a subtle increase at 2548 m, from 0.8-1.0 ohm-m above 2548 m to 1.0-1.3 ohm-m below. There is no obvious change in lithology across this formation boundary that would otherwise explain these wireline log character changes.

The nature of the intra-formational boundary at 2548 m as an unconformity is documented seismically as a regional sequence boundary at 2.868 seconds TWT in Chandon 1 and correlation with offset wells to the west and southwest of Chandon 1. Direct palynological evidence for this boundary in Chandon 1 is non-existent, while correlation of this boundary with offset wells to the southeast (Io 1, Jansz 1, 2 and 3) over the crest of the Io-Jansz structure is unclear due to stratigraphic thinning of the Early Cretaceous sequences.

There were no sidewall cores taken within this unit, consequently the precise age of the upper lithological sequence over the interval 2475 - 2548 m in Chandon 1 is based entirely on correlation, wireline log character and seismic recognition of the base of the sequence. Drilled ditch cuttings from the gross interval 2575 – 2642 m (below the Intra-Valanginian Unconformity) are assigned to the *C. delicata and D. lobispinosum* palynozones of the Early Cretaceous (Berriasian) at the base of the sequence, overlain by the E. *toryna* palynozone (2615 – 2620 m) of the Berriasian – earliest Valanginian, albeit with a low degree of confidence. Tentative recognition of this latter zone documents the depth as being in the pre Intra-Valanginian sequence of rocks by virtue of regional stratigraphy and correlation with offset wells. Consequently it is not possible for the Intra-Barrow Marker sequence boundary prognosed to occur at 2.951 sec. TWT to represent this event and therefore must be moved higher into the sequence to where it is now documented at 2548 m or 2.868 sec. TWT. The middle to upper part of the lower lithological sequence (2575 – 2580 and 2585 – 2590 m) is assigned to the *S. areolata* palynozone of the early Valanginian. Recognition of this zone at this depth tends to contradict the regional geological findings whereby the *S. areolata* palynozone is most normally recognised in the post Intra-Valanginian Unconformity sequence. This finding will have to be reviewed either with additional samples or in subsequent wells drilled in the area.

The Barrow Group unconformably overlies the Dingo Claystone at 2642.0 m (-2613.0 m TVD SS), 24 m high to prognosis and a seismic time of 2.951 sec. TWT and which is herein defined as the Near Base Cretaceous Unconformity. This formation boundary now coincides with the Intra-Barrow Marker that was prognosed pre-drilling to occur at 2623 m TVD SS or 2.951 sec. TWT. The formation boundary is well documented on most wireline/LWD log traces except the gamma ray which displays no significant shift. The sonic scanner (MSIP) log exhibits a sharp decrease in interval transit time from 120-125 µsec/ft above 2642.0 m to 100-120 µsec/ft (decreasing with depth) below and the PEX (ZAIT)) resistivity curve displays an increase from 1-1.4 ohm-m above 2642.0 m to 1.5-2.0 ohm-m below. The density log (RHOZ) displays a sharp increase from 2.28 g/cc above 2642.0 m to 2.40-2.45 g/cc with thin streaks to 2.57 g/cc below. These log changes reflect a marked lithology change from the claystone above 2642 m to marl below.

The nature of the formation boundary at 2642.0 m as the Near Base Cretaceous Unconformity is based on regional stratigraphic evidence, correlation with offset wells, and seismic evidence. Direct age dating evidence in Chandon 1 is ambiguous and questionable, whereby Early Cretaceous (Berriasian) age rocks commence above 2642 m by possible recognition of the *C. delicata* palynozone of the Berriasian over the interval 2635 - 2660 m, thereby straddling the documented depth of the unconformity itself. Furthermore, these rocks overlie a sequence of indeterminate age, consequently the nature of the boundary as an unconformity relies almost exclusively upon seismic data and its recognition as a major sequence boundary.

Lithology

2475 – 2548m (73m)	*Massive Claystone with rare interbedded Calcareous Claystone and trace Sandstone* **ROP range (average): 40-206 (97) m/hr**

Claystone (80-100%): dark grey to greyish black, soft, mostly amorphous, trace glauconite pellets, trace nodular pyrite.
Claystone: calcareous, light olive grey, soft, sub-blocky to sub-fissile, 20% micrite, trace quartz silt.
Sandstone: quartzose, clear translucent, very hard, very fine upper (vfU), round to sub-round, moderately spherical, moderately well sorted.

2548 – 2642m (94m)	*Claystone with rare Calcareous Claystone* **ROP range (average): 23-460 (112) m/hr**

Claystone (95%): dark grey to greyish black, moderately firm, mostly amorphous pellets to minor sub-blocky, trace to rare (1%) calcilutite, trace glauconite pellets.
Claystone: calcareous, light olive grey, soft, sub-blocky to sub-fissile, 20% micrite/dolomite, trace quartz silt, trace glauconite.

3.1.15 Dingo Claystone

Interval	2642.0 – 2680.2 m (2613.0 – 2651.2 m TVD SS)
True Vertical Thickness	38.2 m
Age:	Late Jurassic / Early Cretaceous
Palynozone	Undifferentiated to Berriasian
Depositional Environment:	Marine
Seismic Time (TWT):	2.951 sec.

The Dingo Claystone consists of medium grey to medium dark grey and light olive grey to olive grey marl with rare accessory glauconite and pyrite. The sequence is characterised by a slightly serrate gamma ray response in the range of 120-170 API units, with two discrete intervals identified on gamma ray character. There is no apparent lithology change evident with these subtle log changes.

1. 2642 – 2651 m: prograding sequence with funnel-shaped gamma ray motif; increasing resistivity trend with depth from 1.5 to 2.0 ohm-m; decreasing interval transit time with depth from 115-120 µsec/ft to 108 µsec/ft.
2. 2651 – 2680.2 m: slightly coarsening-downward sequence with overall bell-shaped gamma ray motif.

There were no sidewall cores taken within this unit, consequently the precise age of the sequence in Chandon 1 is based entirely on drilled ditch cuttings. Direct age dating evidence in Chandon 1 is ambiguous and questionable, whereby Early Cretaceous (Berriasian) rocks which commenced above 2642 m by possible recognition of the *C. delicata* palynozone of the Berriasian, extends down to 2660 m through the upper half of the Dingo Claystone. The lower half of the Dingo Claystone is either undated or indeterminate, however by virtue of regional correlation with offset wells, is assumed to be in the Early Cretaceous to Late Jurassic (Tithonian).

The Dingo Claystone unconformably overlies the undifferentiated Athol Formation/Murat Siltstone at 2680.2 m (-2651.2 m TVD SS), 4.8 m high to prognosis at a seismic time of 2.978 sec TWT and is herein referred to as the Intra-Jurassic Unconformity (“IJU”). The formation boundary is well documented on all LWD and wireline log curves, with the gamma ray displaying a decrease from 120-140 API units above 2680.2 m to a variable 45-135 API units below. The interval transit time on the sonic scanner (MSIP) log displays a decrease from 100-110 µsec/ft above 2680.2 m to a variable 62-118 µsec/ft below, while the density log increases from 2.40-2.55g/cc above 2680.2 m to 2.35-2.70g/cc below. These log changes reflect a lithology change from mainly marl above 2680.2 m to interbedded argillaceous calcilutite and marl below.

Recognition of the boundary at 2680.2 m as an unconformity is based upon regional correlation and seismic evidence of a major sequence boundary. There is no palynological age dating evidence directly available in Chandon 1 to confirm the boundary as an unconformity.

Lithology

2642 – 2680.2m (38.2m)	*Marl*
	ROP range (average): 42-278 (86) m/hr

Marl (100%): medium grey to medium dark grey and light olive grey to olive grey, soft to firm, blocky to angular chips, smooth texture, 45% micrite, rare (<1%) glauconite, rare pyrite.

3.1.16 Athol Formation / Murat Siltstone

Interval	2680.2 – 2714.8 m (2651.2 – 2685.8 m TVD SS)
True Vertical Thickness	34.6 m
Age:	Early to Middle Jurassic (Undifferentiated)
Palynozone	*Indeterminate*
Depositional Environment:	nearshore marine shelf?
Seismic Time (TWT):	2.978 sec.

The Athol Formation consists of a condensed, interbedded sequence of medium grey to light olive grey marl with rare accessory glauconite and pyrite, interbedded with light grey to light olive grey argillaceous calcilutite. The sequence is characterised by a serrate gamma ray response in the 45-135 API range in a stacked series of prograding depositional cycles generally less than 3-4 m thick. The top of each cycle appears to coincide with a 1m thick bed of calcilutite, although there is also an indication of small fining-upward cycles. Each of the other wireline logs reflects a similar serrate character to the gamma ray, purely in response to lithology variation between the calcilutite and marl.

There were no sidewall cores taken within this unit, consequently the precise age of this unit in Chandon 1 has not been determined accurately. Palynological age dating was performed using ditch cuttings only over the gross interval 2675 – 2705 m, however all samples failed to yield any palynomorphs and therefore the age is defined to be indeterminate. Ditch cuttings from the base of the sequence over the interval 2705-2710 m and 2710-2715 m were also examined, which resulted in a questionable basal *A. reducta* palynozone assignment for the upper interval, suggesting that the Triassic had been intersected, however this remains doubtful and a firm conclusion is not possible. The deeper interval is assigned to the *M. crenulatus* (Tr8Diii) palynozone of the Late Triassic (Norian) and interpreted as being of continental origins, despite being in a clearly carbonate-rich sequence. However this interpretation also has a very low confidence rating and is a questionable conclusion. Consequently, the age of this sequence is largely considered indeterminate, however it is assumed to be a condensed Early to Middle Jurassic sequence based upon regional considerations.

The undifferentiated Athol Formation/Murat Siltstone overlies the Brigadier Formation with apparent conformity at 2714.8 m (-2685.8 m TVD SS), 17.2 m high to prognosis and at a seismic time of ~3.013 sec. TWT. The formation boundary is well documented on LWD and wireline log curves, with the gamma ray exhibiting a sharp decrease from a baseline of 120 API units above 2714.8 m to 30-80 API units (decreasing with depth) below. There is also a baseline shift in the interval transit time on the sonic scanner (MSIP) log from 110 µsec/ft above 2714.8 m to 90-100 µsec/ft below. These log changes reflect a lithology change from the marl and interbedded argillaceous calcilutite above 2714.8 m to predominantly argillaceous calcilutite and calcilutite with rare marl below.

The nature of the boundary at 2714.8 m as being conformable is not documented directly in Chandon 1 if the questionable Triassic age assignment is ignored for the basal part of the Athol Formation. However, if this age assignment proves to have some validity, it supports the top of the Triassic as occurring within the basal most Athol Formation, directly overlying the Brigadier Formation which is also assigned to the same palynozone (*M. crenulatus*) of the Late Triassic (Norian). Seismic evidence also supports the Athol Formation being conformable with the underlying Brigadier Formation as forming a continuous pre-rift sequence (refer Figure 3.3).

Lithology

2680.2 – 2714.8m (34.6m) *Marl with abundant thinly interbedded Argillaceous Calcilutite*

ROP range (average): 24-135 (57) m/hr

Marl (50%): medium grey to light olive grey, soft to firm, blocky to angular chips, smooth texture, 45% micrite, rare (<1%) glauconite, rare pyrite.
Calcilutite: argillaceous, light grey to light olive grey, brittle to firm, angular chips, smooth, 30% detrital clay, locally grading to *Marl*, trace glauconite, rare pyrite.

3.1.17 Brigadier Formation

Interval	2714.8 – 2748.9 m (2685.8 – 2719.9 m TVD SS)
True Vertical Thickness	34.1 m
Age:	Late Triassic (Norian)
Palynozone	*M. crenulatus*
Depositional Environment:	continental to marginal marine
Seismic Time (TWT):	3.013 sec.

The Brigadier Formation consists mainly of light grey to light olive grey argillaceous calcilutite (grading to calcilutite with increasing depth) and minor marl. The sequence is characterised by a slightly serrate, fining-upward (or cleaning-upward) sequence with an overall bell-shaped gamma ray motif. The resistivity displays a slightly increasing profile from 3 ohm-m at the top of the sequence, to 10 ohm-m at the base, while the interval transit time on the sonic scanner (MSIP) log decreases from 95 µsec/ft at the top to 70-80 µsec/ft at the base.

There were no sidewall cores taken within this unit, consequently the precise age of this unit in Chandon 1 has not been determined accurately. Palynological age dating was performed using ditch cuttings only over the gross interval 2715-2750 m, and despite all samples yielding extremely low palynomorph counts, the interval is questionably assigned to the *M. crenulatus* palynozone of the Norian and deposited in a continental environment.

The Brigadier Formation overlies the Mungaroo Formation with apparent conformity at 2748.9 m (-2719.9 m TVD SS), 5m low to prognosis at a seismic time of 3.025 sec. TWT. The formation boundary is well documented on all LWD and wireline log traces, with the gamma ray displaying an increase from 22-25 API above 2748.9 m to 100-140 API units below. The interval transit time on the sonic scanner (MSIP) log increases from 70-80 µsec/ft above 2748.9 m to 110-120 µsec/ft below, while the density log displays a decrease from 2.65 g/cc above 2748.9 m to 2.25-2.35 g/cc below. The changes in log character reflect an abrupt lithological change from carbonate rocks above 2748.9 m to fine grained clastics below.

The nature of the boundary at 2748.9 m as being conformable is documented directly in Chandon 1 with rocks of Late Triassic (Norian) age by assignment to the questionable *M. crenulatus* palynozone occurring above 2748.9 m, directly overlying the same age rocks below. Seismic evidence further supports these two sequences as being conformable (refer Figure 3.3).

Lithology

2714.8 – 2748.9m (34.1m) *Argillaceous Calcilutite and Marl*
ROP range (average): 30-205 (95) m/hr

Calcilutite (30-80% increasing with depth): argillaceous, light grey to light olive grey, soft to firm, angular to blocky, smooth texture, 10-30% detrital clay, locally grading to *Calcilutite*, trace glauconite.
Marl: medium grey to olive grey, soft to firm, blocky to angular, smooth texture, 45% micrite, rare (<1%) glauconite, rare pyrite.

3.1.18 Mungaroo Formation

Interval	2748.9 – 3124.0 m (2719.9 – 3095 m TVD SS)
True Vertical Thickness	375.1 m
Age:	Late Triassic (Norian)
Palynozone	*M. crenulatus*
Depositional Environment:	Brackish to Marginal marine
Seismic Time (TWT):	3.025 sec.

The Mungaroo Formation, the primary reservoir objective in Chandon 1 consists of a well defined alternating sequence of fluviatile sand-prone and restricted brackish lagoon/lacustrine/marginal marine shale-prone packages. These packages consist of four discrete zones in Chandon 1 and are based upon wireline log and lithofacies correlations with other wells in the area and validate the pre-well seismic interpretation. Each package consists of several well defined lithological intervals as described below:

- **AA Marginal Marine** – 2748.9 – 2825.0 m (2719.9 – 2796.0 m TVDSS). The AA Marginal Marine sequence consists of a sequence of medium dark grey, non-calcareous siltstone with trace accessory carbonaceous matter and pyrite, interbedded and gradational with quartzose, yellowish grey and light to medium grey, very fine to lower fine grained sandstone. The sequence is characterised by stacked fining-upward and coarsening-upward depositional cycles 3-10 m thick, with bell-shaped and funnel-shaped gamma ray motifs respectively. The gamma ray varies between 70 and 175 API units.

  Based upon palynological evidence and the occurrence of dinocysts, the sequence is interpreted as being deposited in a marginal marine setting, while other samples contain only acritarchs favouring brackish conditions.

Gas levels increased significantly below 2748 m, approximately coincident with the penetration of the AA Marginal Marine sequence and consisting of trace to high amounts of methane (C_1), ethane (C_2) and propane (C_3) and also accompanied by trace to minor amounts of butane (iC_4 and nC_4) and pentane (iC_5 and nC_5). Maximum gas recorded in Chandon 1 was 4.69% total gas at 2796 m within the AA Marginal Marine unit, consisting of 60,481 ppm C_1, 2082 ppm C_2, 437 ppm C_3, 39 ppm iC_4, 41 ppm nC_4, 4 ppm iC_5 and 3 ppm nC_5.

Petrophysical analysis of the AA Marginal Marine unit confirms the interval includes 25.756 m of net reservoir sand (net:gross 0.338) and 24.486 m of net gas pay with an average porosity (PHIT) of 26.6% and an average water saturation (Sw) of 27.5 %.

- **AA Fluvial Sand** – 2825.0 – 2943.8 m (2796.0 – 2914.8 m TVD SS). The AA Fluvial Sand sequence consists of two well defined lithological intervals in Chandon 1.
  - ❖ 2825.0 – 2889.0 m (64 m): consists of medium to light grey and light yellow grey, fine to very coarse, dominantly very fine to fine (fining downward), well sorted quartzose sandstone, with trace-10% detrital clay matrix and trace accessory pyrite and carbonaceous matter with poor to good visible intergranular porosity. An upper sandstone unit occurs in a prograding depositional cycle with a funnel-shaped gamma ray motif, interbedded with medium to dark grey siltstone. A lower sandstone unit of ~28 m thickness occurs at the base of the interval and is defined by a relatively uniform gamma ray response with a fining-upward top, interpreted as abandoned stacked fluviatile channel deposit which accumulated in a laterally mobile channel-belt system. The topmost part of the sequence is interpreted as a lower energy distributary mouth bar or splay delta deposit.
  - ❖ 2889 – 2943.9 m (54.9 m): consists of medium dark grey to dark grey arenaceous siltstone, with common to abundant thinly interbedded quartzose sandstone and rare grey black, olive grey and yellow grey claystone. Note that petrophysical analysis of this interval documents numerous thin streaks of carbonaceous claystone/coal which are not documented in samples (refer Enclosure 1, Appendix 3). This lower sequence of the AA Fluvial Sand occurs in a stacked series of predominantly fining-upward depositional cycles 15-20 m thick, with the gamma ray exhibiting a serrate bell-shaped motif. The interval is interpreted as an inter-distributary brackish/lacustrine environment that is intermittently cut by fluviatile channels.

Palynological dating of the Mungaroo Formation was performed over the gross interval 2765 - 2915 m that included a total of 13 ditch cutting samples only. However, many of the assemblages were very poor and remain questionable with a low confidence rating. The uppermost portion of the AA Marginal marine unit to a depth of 2790 m is assigned to the Norian *M. crenulatus* palynozone, albeit undifferentiated, but no younger than the Tr8Diii subzone. Below 2790 m, assemblages improve which include a few dinocysts suggesting assignment to the marginal marine Tr7Aiib subzone at 2810 m. The remainder of the sequence analysed to 2915 m includes palynomorphs which suggest that the section does not get any older than the Tr7Aiic subzone.

Gas readings which increased initially in the AA Marginal Marine sequence remained at moderately high levels through the entire AA Fluvial Sand, with a maximum reading of 2.31% total gas recorded at 2877 m adjacent to the lower part of the main fluviatile channel sand. This gas peak consisted of 26,241 ppm C_1, 1,197 ppm C_2, 311 ppm C_3, 32 ppm iC_4, 35 ppm nC_4, 4 ppm iC_5 and 3 ppm nC_5. Gas readings tapered off to moderately low levels, consisting of C_1-C_3 through the lower sequence of the AA Fluvial sand to a depth of 2940 m.

Petrophysical analysis of the AA Fluvial sand confirms the interval includes 63.96 m of net reservoir (net:gross 0.538) and 59.297 m of net gas pay with an average porosity (PHIT) of 28.2% and an average water saturation (Sw) of 15.8 %.

- **Zone 100 Shale** – 2943.8 – 3022.8 m (2914.8 – 2993.7 m TVD SS). The Zone 100 Shale consists of interbedded and interlaminated siltstone, sandstone and claystone. Note that petrophysical analysis of this interval documents numerous thin streaks of carbonaceous claystone/coal which are not documented in samples (refer Enclosure 1, Appendix 3). The Zone 100 Shale sequence occurs mostly in a series of stacked prograding cycles, each with a serrate funnel-shaped gamma ray motif <5-10 m thick that varies between 55 and 200 API units.

Rare thin fining-upward depositional units <2-3 m thick, each with a subtle bell-shaped gamma ray motif are also evident.

Gas readings increased through the upper part of the Zone 100 Shale over the interval 2942 – 2978 m with a maximum reading of 0.89% total gas occurring at 2961 m. This gas reading consisted of 9,327 ppm C_1, 476 ppm C_2, 126 ppm C_3, 14 ppm iC_4 and 15 ppm nC_4. No C_5 was detected over this interval. These slightly elevated gas readings occur in the upper part of the Zone 100 Shale, despite an interpretation of the free water level occurring at 2945.5 m (-2916.6 m TVD SS) from MDT pressure data. Gas readings reduced significantly below ~2977 m to <0.005% total gas at 3003 m and consisting only of C_1 – C_3.

- **A Fluvial Sand** – 3022.8 – 3124 m (2993.7 – 3095.0 m TVD SS). The A Fluvial Sand consists of an interbedded sequence of medium grey to grey black siltstone, commonly arenaceous grading to very fine grained quartzose sandstone and abundant carbonaceous matter, dark grey to grey black claystone, (documented petrophysically as thin streaks of possible coal) and with light grey to yellow grey, fine to medium, well sorted quartzose sandstone. The interval is characterised by a serrate gamma ray response in the 55-190 API range and commonly displays a combination of stacked fining-upward and coarsening-upward depositional cycles 2-4 m thick with bell-shaped and funnel-shaped gamma ray motifs respectively. The overall sequence is interpreted as an inter-distributary brackish/lacustrine environment that is intermittently cut by fluviatile channels in a laterally mobile channel-belt system. The fining-upward top reflects the abandonment of the channel into the overlying inter-distributary, shale-prone deposits.

Note: there is a discrepancy in lithological characterization of the A Sand between the lithological percentages (%) reflected on the Composite Log (Enclosure 1) and those described in the Cuttings Description Report (Appendix 1) of the Chandon 1 Well Completion Report – Basic Data issued under separate cover (Doc. ID: ASBU1-063040032) on the 11th April 2007. The former reflects a significantly higher percentage of claystone compared to siltstone in the sequence and may require a re-evaluation of the cuttings.

Chandon 1 reached total depth at 3124 m (-3095 m TVD SS) after penetrating some 101.3 m into the A Fluvial Sand, 455 m shallow to the planned total depth of 3550 m TVD SS within the Mungaroo Formation C 2 Fluvial Sand or equivalent. The well was terminated prematurely to minimise available critical rig time.

Background gas recorded throughout the A Fluvial Sand was generally low in the range of 0.02-0.17% total gas, consisting of trace to minor amounts of C_1 to C_4.

Lithology

2748.9 – 2787.5m (38.6m) *Siltstone with common interbedded Sandstone*
ROP range (average): 44-139 (95) m/hr

Siltstone (50-80%): medium dark grey, friable, sub-blocky, quartz silt, grades in part to very fine sandstone, non-calcareous, trace carbonaceous, rare pyrite.
Sandstone: quartzose, yellowish grey, light to medium grey, very fine to lower fine (vfL-fL), well sorted, sub-angular to sub-rounded, 10% detrital clay matrix, trace lithics, trace carbonaceous matter, friable to rarely firm, poor to fair porosity, no fluorescence.

2787.5 – 2825.0 m (37.5m) *Sandstone with common interbedded Siltstone*

ROP range (average): 39-202 (92) m/hr

Sandstone (80-90%): quartzose, medium light grey, light grey to yellowish grey, very fine to lower fine (vfL-fL), well sorted, sub-angular to sub-rounded, trace to10% detrital clay matrix, trace lithics, trace carbonaceous matter, trace pyrite, friable to rarely firm, common loose grains, poor to fair porosity, no fluorescence.
Siltstone: medium dark grey, friable, sub-blocky, quartz silt, grades in part to very fine *Sandstone,* non-calcareous, trace carbonaceous matter, rare pyrite.

2825.0 – 2889 m (64m) *Sandstone with rare to abundant interbedded Siltstone*
ROP range (average): 9-232 (87) m/hr

Sandstone (50-90%): quartzose, medium to very light grey, yellowish grey, translucent, very fine to coarse, dominantly very fine to lower fine (vfL-fL), locally coarsening-downward, well sorted, sub-angular to sub-rounded, trace to 10% detrital clay matrix, mostly clean, trace lithics, trace carbonaceous matter, trace disseminated pyrite, loose to friable, rarely firm, poor to good porosity, no fluorescence.
Siltstone: medium dark grey to dark grey, soft to firm, amorphous to sub-blocky, commonly arenaceous and grading to very fine *Quartzose Sandstone*; rarely soft and argillaceous, grading to *Claystone*, trace pyrite.

2889 – 2943.8 m (54.8m) *Siltstone with common to abundant interbedded Sandstone and rare Claystone*
ROP range (average): 14-160 (73) m/hr

Siltstone (10-70%): medium dark grey to dark grey, soft to firm, amorphous to sub-blocky, commonly arenaceous and grading to very fine *Quartzose Sandstone,* locally argillaceous, grading to *Claystone*, trace pyrite.
Sandstone: quartzose, translucent, very light grey to yellowish grey, mostly very fine to lower fine (vfL-fL), with some rare medium to coarse grains, well sorted, with occasional loose coarse grains, sub-rounded, minor sub-angular, sub-spherical, mostly clean, trace detrital clay matrix, trace carbonaceous matter, loose to friable, good visible porosity, no fluorescence.
Claystone: dark grey to greyish black, minor olive grey, occasional yellowish grey, soft, amorphous

2943.9 – 3022.8 m (78.9m) *Siltstone with common to abundant interbedded Sandstone and rare Claystone*
ROP range (average): 7-144 (49) m/hr

Siltstone (40-80%): medium grey to dark grey, soft to firm, amorphous to sub-blocky, commonly arenaceous and grading to very fine *Quartzose Sandstone*, commonly soft and argillaceous, grading to *Claystone*.
Sandstone: quartzose, translucent, very light grey to yellowish grey, mostly very fine to lower fine (vfL-fL), well sorted, sub-rounded, minor sub-angular, sub-spherical, mostly clean, trace clay matrix, very finely laminated carbonaceous material interbedded within sandstone, loose to friable, good visible porosity, no fluorescence.
Claystone: dark grey to greyish black, minor olive grey, occasional yellowish grey, soft, amorphous

3022.8 – 3124 m (101.2m) *Siltstone with common to abundant interbedded Sandstone and rare to common Claystone*

ROP range (average): 4-113 (37) m/hr

Siltstone (10-95%): medium grey to greyish black, soft to moderately firm, amorphous to sub-blocky, commonly arenaceous and grading to very fine *Quartzose Sandstone*, abundant carbonaceous material.
Sandstone: quartzose, light grey to yellowish grey, translucent, fine to medium (fL-mL), well sorted, sub-rounded, sub-spherical, mostly clean, trace detrital clay matrix, trace carbonate cement, mostly friable, trace disseminated carbonaceous material, rare laminated carbonaceous material, trace pyrite, good visible porosity, no fluorescence.
Claystone: dark grey to greyish black, soft, amorphous, trace disseminated pyrite.

3.2 TRAP (Structure and Seal)

The Chandon field is positioned on the Exmouth Plateau near the confluence of the northeast trending Investigator Sub-basin and Kangaroo Syncline. The field is delineated by a recently acquired 875 km^2 3D seismic data set, processed for consistent and reliable amplitude presentation (Chandon 3D MSS 2004), with regional ties to wells outlined by an extensive multi vintage 2D dataset (Figures 3.1 and 3.2).

Chandon 1 was drilled as a vertical well in 1196.1 m of water (MSL) to a total depth (TD) of 3124 m (-3095 m TVD SS) and intersected a 196.6 m gross hydrocarbon column in fluvial and marginal marine Mungaroo Formation AA sands at 2748.9 m (-2719.9 m TVD SS). The well delineated the Chandon structure and gas accumulation, defined as a large three way Triassic top Mungaroo Formation footwall closure, and was plugged and abandoned as a new field gas discovery.

The primary reservoir interval is the Triassic Mungaroo Formation fluvial and marginal marine AA Sand (Figure 3.3). The fluvial sands are characterised by stacked, multi-lateral, anastomosing channel sands which grade laterally to finer overbank and sandy splay complexes. These fluvial units are in turn overlain by marginal marine sands which were deposited in deltaic to near shore settings. Both sand types observe anomalous far-angle offset amplitude brightening, analogous to Mungaroo Formation hydrocarbon accumulations within the Greater Gorgon Area (Figures 3.4 & 3.5).

The field is bound by two main westerly dipping faults which contribute to the tilted horst block structure and northeasterly dipping reservoir units, which in turn are overlain by a thick, regionally extensive Cretaceous Muderong Shale (and Barrow Group) seal sequence. The primary Chandon field bounding fault follows an arc orientated northeast grading to north-south, and therefore observes a component of wrenching. All faulting at reservoir level appear to be related to the separation of Australia and India in the Bathonian/Callovian and have been periodically reactivated to present.

The primary western bounding fault creates the three way closure from the intra-Barrow Formation to the Mungaroo Formation. Below the Mungaroo Formation the faults appear to sole out in an intrusive plutonic event of un-defined age. A spill point occurs on the fault at the axis of changing angle. The difference in throw at this point may suggest the faults formed as different entities and have converged following the point of maximum weakness during a period of reactivation. A secondary northeast-southwest trending western bounding fault is located out-board of the primary and defines the western boundary of the prospect. The prospect is therefore contained within two separate, but connected reservoirs (Figures 3.5, 3.6 and 3.7).

Structural spill is observed to the southwest of the prospect within the western reservoir container at approximately 2917 m (Figure 3.7) and is the dependant factor for the maximum hydrocarbon column. The structure is therefore interpreted to be full to spill with a maximum of approximately 210 m of vertical closure. This depth corresponds to an observed horizontal flat spot DHI, stacked seismic amplitude cut-offs and pressure defined gas/water fluid contact.

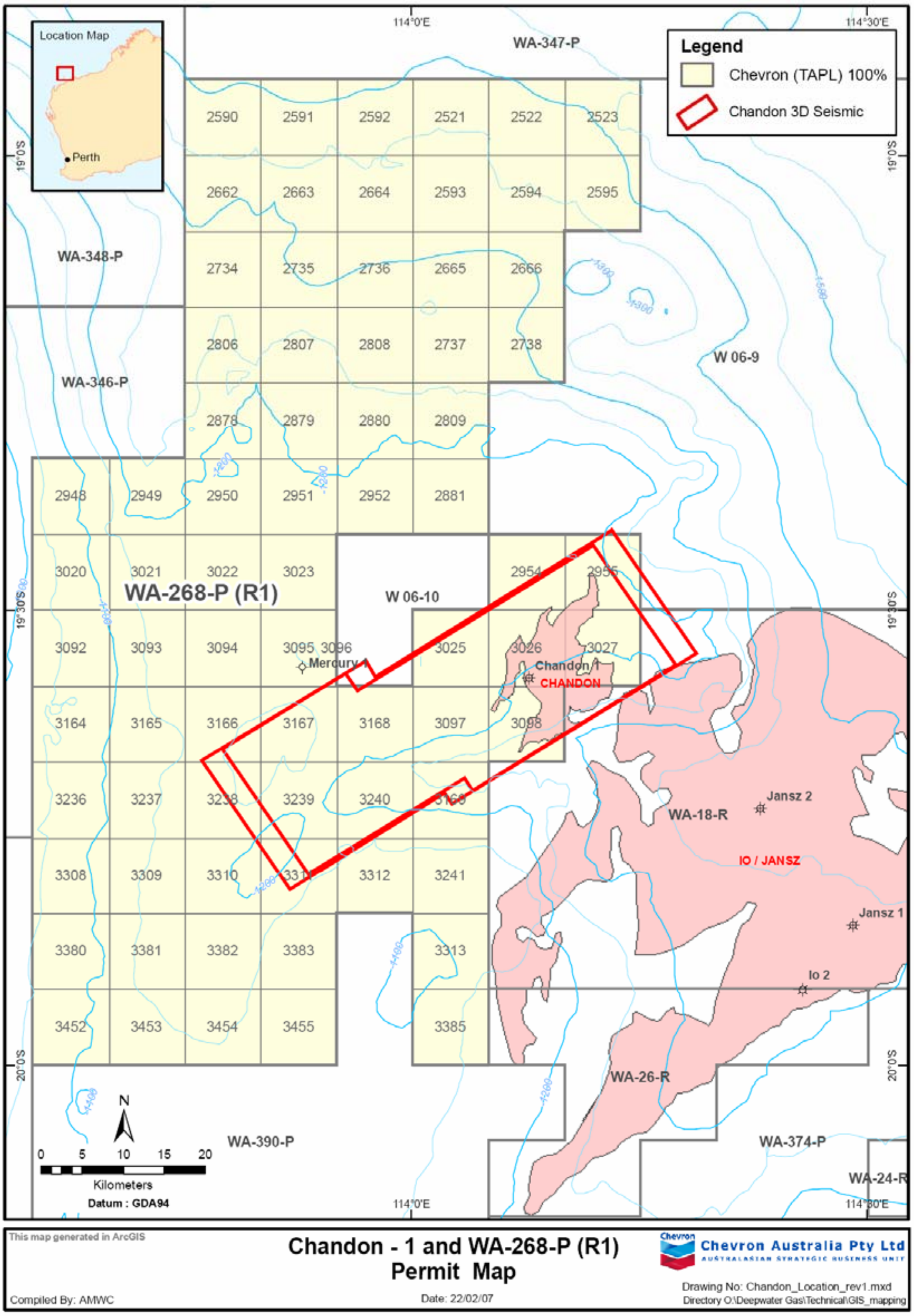


Figure 3.1: WA-268-P (R1) Base Map and Current Permit Interests

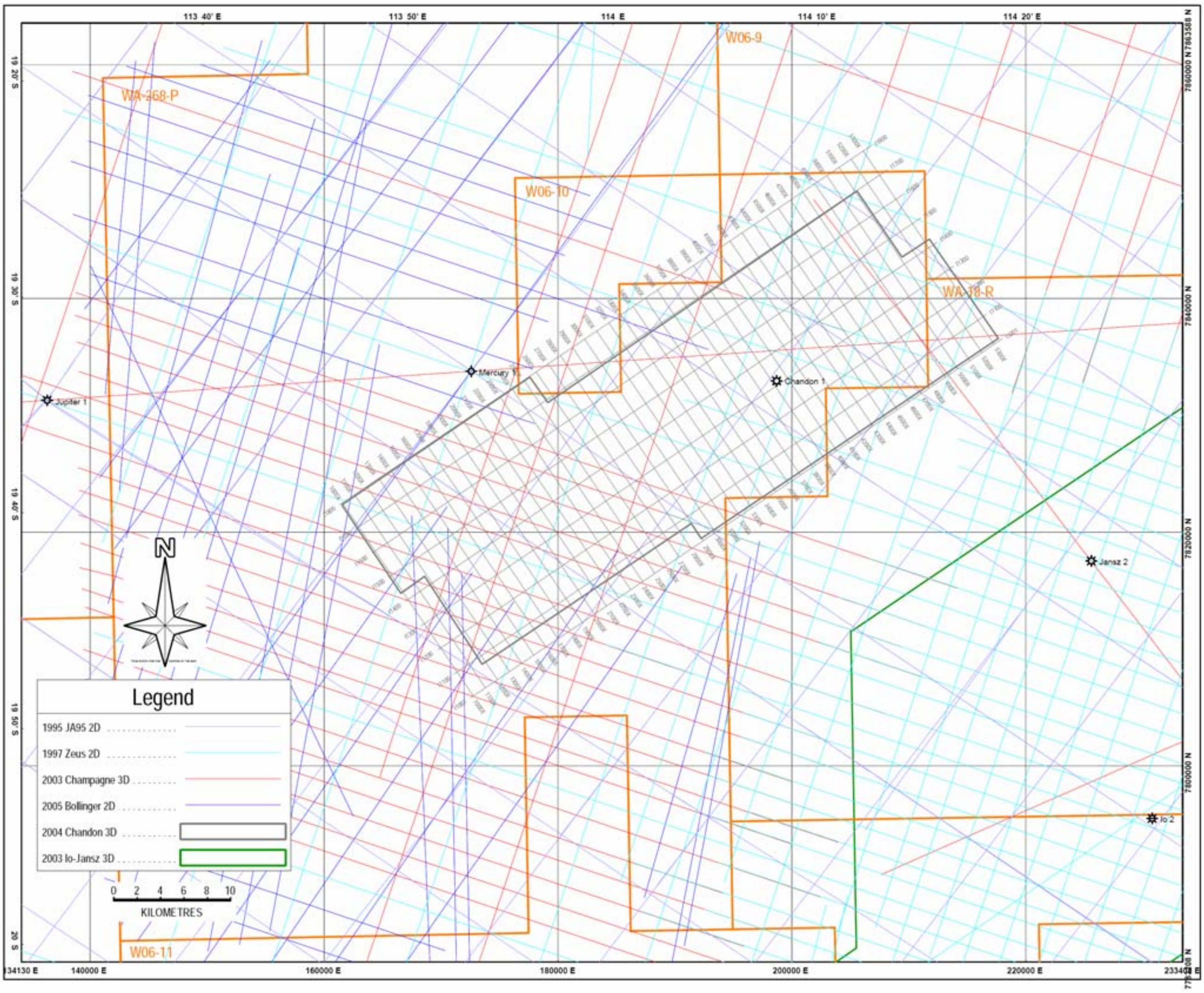


Figure 3.2: Seismic Base Map

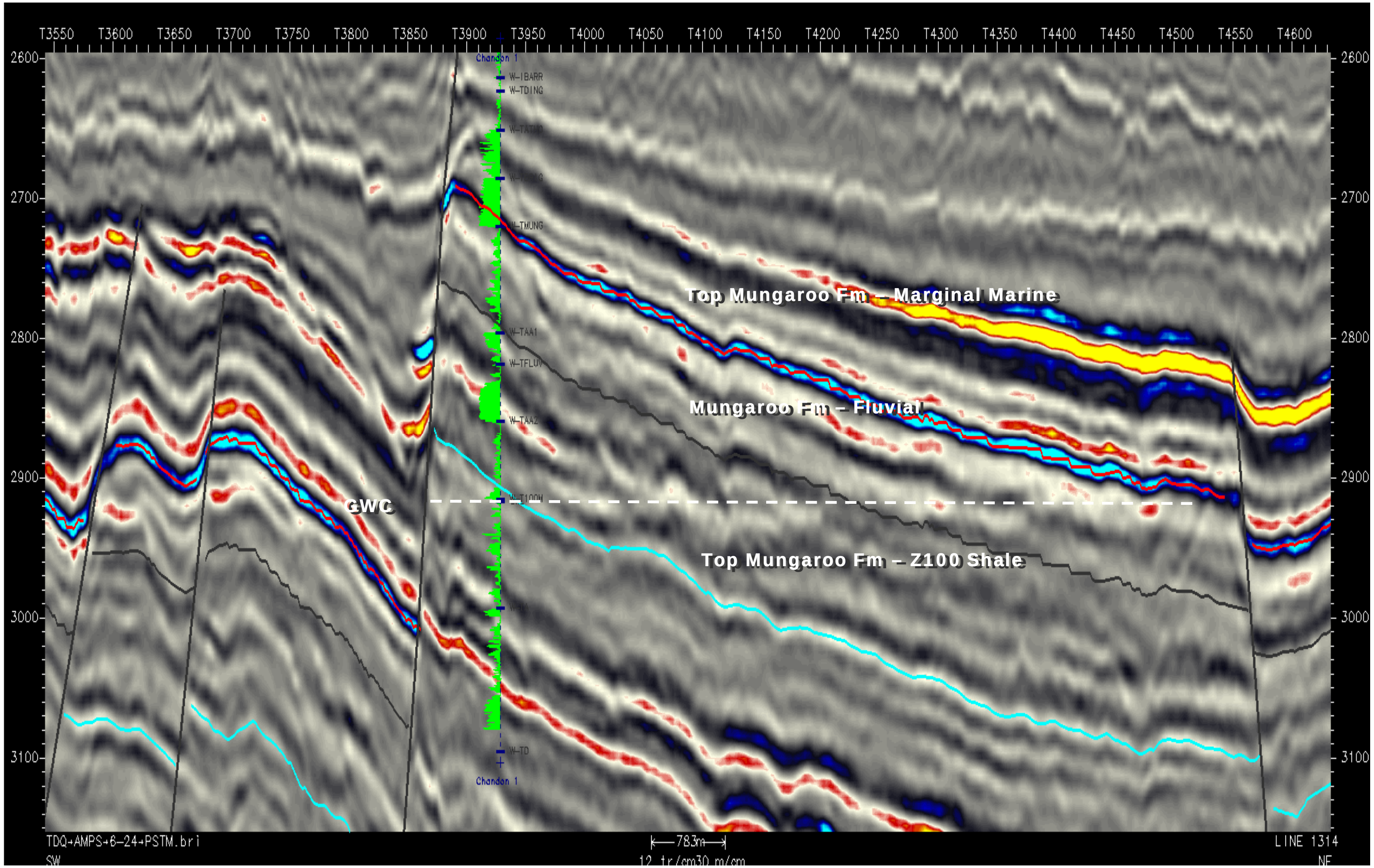


Figure 3.3: Chandon 3DMSS In-Line 1314 through Chandon 1

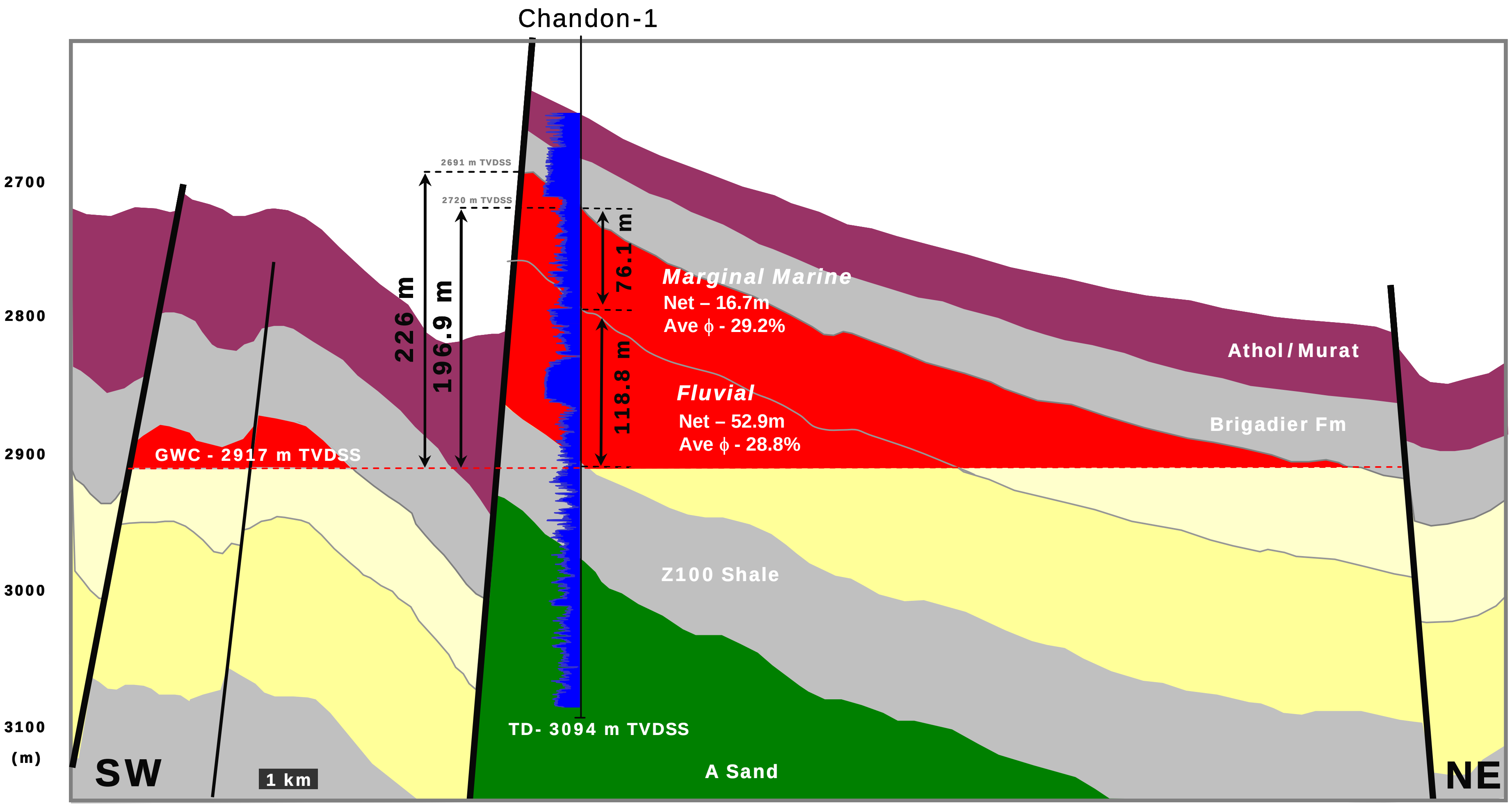


Figure 3.4: Chandon 1 Schematic Structural Cross Section

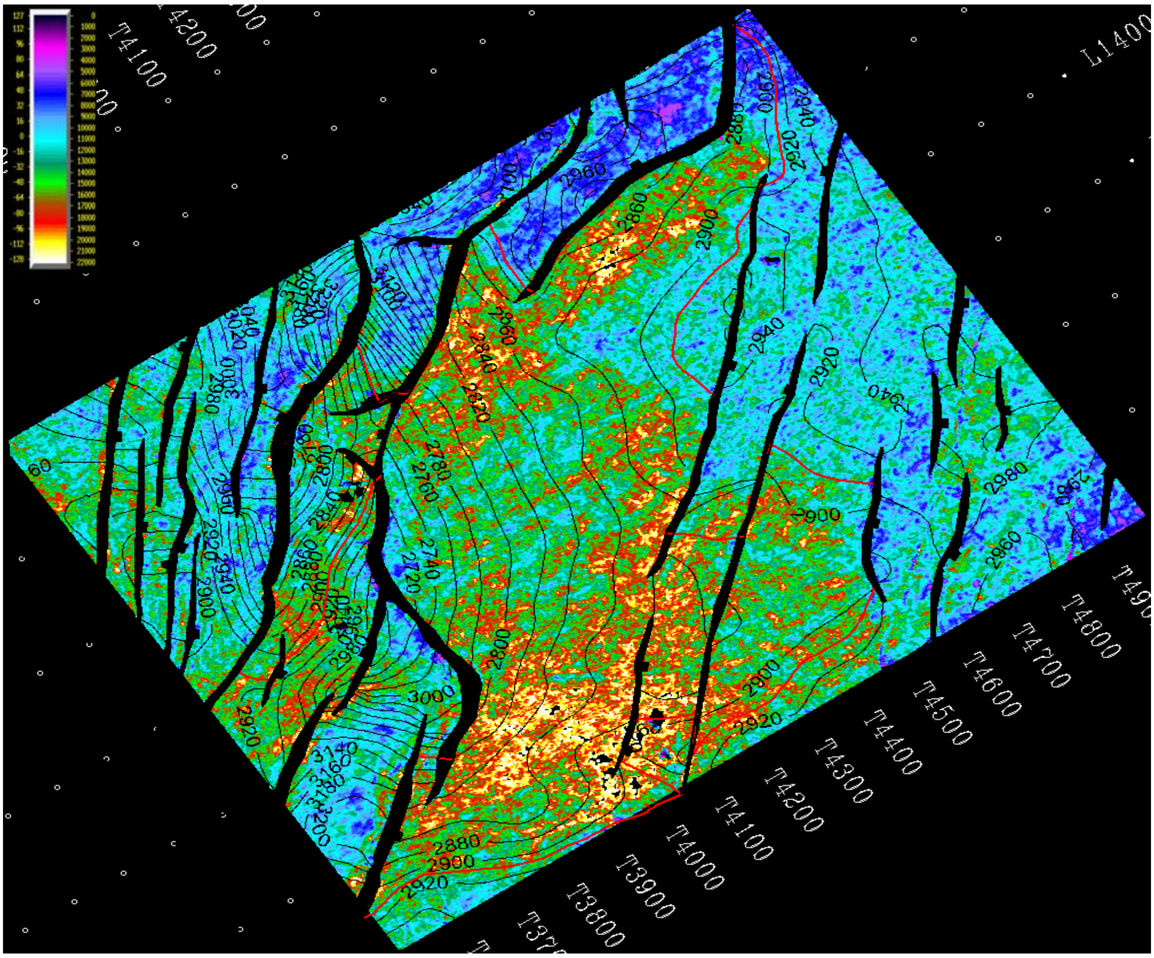


Figure 3.5: Chandon Field – Top Mungaroo Formation AA Sand 6-24° RMS Amplitude

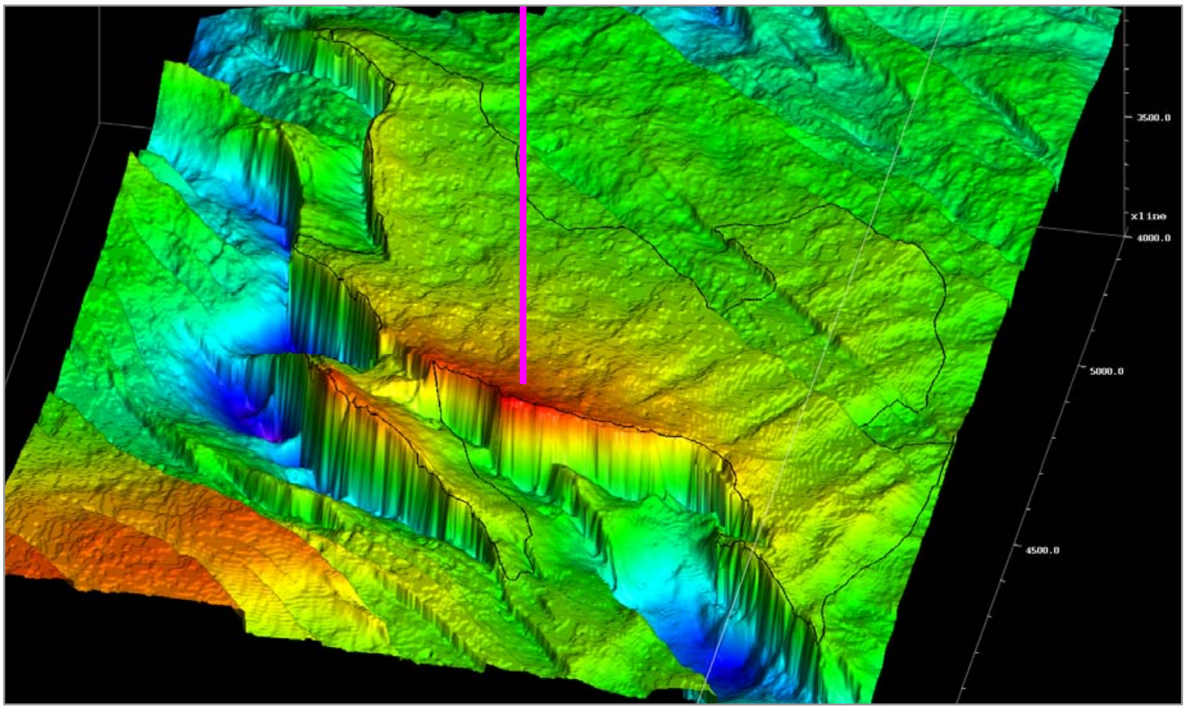


Figure 3.6: Chandon Field – Top Mungaroo Formation AA Sand Structure

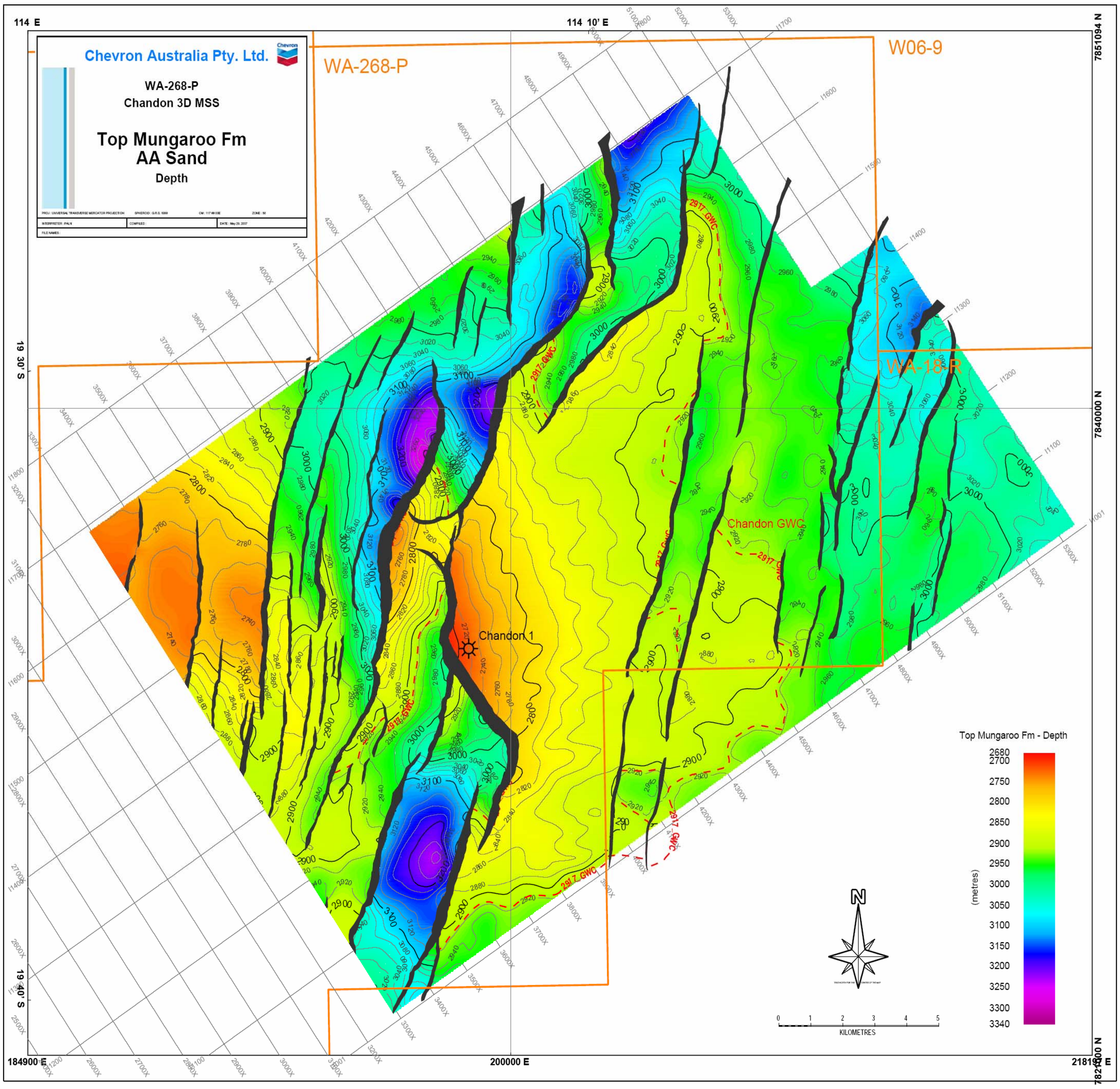


Figure 3.7: Chandon 3D MSS Top Mungaroo Formation AA Sand Depth Map

4 FORMATION EVALUATION

A formation evaluation report and a petrophysical summary plot (1:500 scale) is included in Appendix 3.

4.1 Temperature Data

There were no temperature surveys run in Chandon 1. Three maximum recording thermometers were used on all wireline logging runs to record the borehole temperature. The following temperatures shown in Table 3 were recorded on the three open hole logging runs conducted at final TD (3124 m).

Table 3: Wireline Recorded Temperature Data

Run No.	Log	Max. Recorded Temperature	Depth (m) TVDSS	Hours Since Last Circulation	t/(tx+t)
1	PEX/RtScanner/ MSIP/HNGS/GP IT/PPC/ECRD	72.3°C	3,040 m	22.98 hrs	0.8748
2	MDT/CMR+/GR/ ECRD	78.2°C	2,952.0 m	36.51 hrs	0.9471
3	MDT/GR/ECRD	76.5°C	2909.0 m	51.56 hrs	0.9574

A seabed temperature of 5°C at 1196 m was measured by the remote operated vehicle (ROV), while the surface temperature of the water was not measured directly, it is assumed to be approximately 18°C.

There is a large database of evidence across the Carnarvon Basin that the Horner technique underestimates the true static bottom hole temperature (SBHT) and consequently the present day geothermal gradient. Therefore the data needs to be corrected using either the Shell Technique or Modified Horner Method.

The Shell technique utilises a simple relationship that involves the proportional addition of 15°C, 30°C or 35°C to the BHT recorded on the first logging run only, when measured as 50°C, 100°C or 150°C. This technique approximately coincides with a modified Horner technique (ie 1.09 x Horner) calculated temperature which is verified by temperature data from wireline tests and DST results. The standard Horner calculated temperature itself underestimates the SBHT in most Australian basins. The 1.09 factor was established by Doug Waples (pers. com.).

Furthermore, normal convention is to calculate a gradient using the seafloor temperature as a base temperature for the rock mass (ie seafloor to TD). This implies that the water layer has an effect on the temperature at great depth, most particularly in deep water wells. There is good evidence to suggest the water column effect is probably only limited to the top few tens / hundreds of metres of rock immediately below the seafloor, below which depth the true geothermal gradient emerges. Consequently, a seafloor temperature of ~4-10ºC for wells in water depths greater than 200 m and the presence of a water layer should be ignored in calculating the geothermal gradient. Instead, the gradient should be established by extrapolating the curve from the SBHT at TD back to a temperature at seabed equivalent to a nominal sea level (SL) temperature of 18ºC for example in this region.

The estimated stabilised formation temperature at near TD (3124 metres) of the 311 mm (12 ¼-in) hole section, as determined by the Shell method is 95.24ºC and using the Modified Horner method is 93.55ºC. The maximum bottom-hole temperatures recorded during the logging runs and a Shell and Horner Temperature Plot are included herein as Appendix 2. Using a nominal ambient seafloor temperature of 18ºC the present day geothermal gradient at the Chandon 1 location is 4.10ºC/100m using the Shell Method, 3.6ºC/100m using the Horner Method and 4.01ºC/100m using the Modified Horner Method (Figure 4.1).

The maximum temperature recorded by the MDT tool while taking formation pressures and samples was 78.2ºC at 3027.1 m (-2998 m TVD SS) in the uppermost sand of the Mungaroo A Sand during wireline Run#2 and 78.9 ºC at 2939.4 m (-2910.4 m TVD SS) in the basal most sand of the Mungaroo Formation AA Fluvial Sand during wireline Run#3. Neither of these tool measured temperatures is considered to be a static formation temperature.

4.2 Porosity, Permeability and Formation Fluids

No conventional cores or rotary sidewall cores which are otherwise suitable for the direct measurement of porosity and permeability was acquired in Chandon 1. Consequently, the empirical evaluation of porosity relies on the evaluation of wireline log data, while permeability may also be assessed from the wireline pressure/sampling data.

The **Mungaroo Formation** consists of a well defined alternating sequence of fluviatile sand-prone and restricted brackish lagoon/lacustrine/marginal marine shale-prone packages. The upper unit of the Mungaroo Formation in Chandon 1 below the regional seal formed by the overlying Dingo Claystone / Athol Formation - Murat Siltstone / Brigadier Formation is the **AA Marginal Marine** unit (2748.9 – 2825.0 m) which consists of a sequence of siltstone with interbedded very fine to fine, well sorted quartzose sandstone with trace lithics and carbonaceous matter and a variable component of detrital clay matrix. Petrophysical analysis of the AA Marginal Marine unit confirms the interval includes 25.77 m of net reservoir sand (net:gross 0.338) and 24.49 m of net gas pay with an average porosity (PHIT) of 26.6% and an average water saturation (Sw) of 27.5 %. **The AA Fluvial Sand** (2825.0 – 2943.8 m) consists of thick, very fine to coarse, mainly very fine to fine, well sorted quartzose sandstone with trace lithics, carbonaceous matter and pyrite and a variable component of detrital clay matrix, interbedded with siltstone and claystone. Petrophysical analysis confirms the interval includes 63.96 m of net reservoir (net:gross 0.538) and 59.30 m of net gas pay with an average porosity (PHIT) of 28.2% and an average water saturation (Sw) of 15.8 %.

These data result in a total of 89.72 m of net reservoir sand interpreted for the Mungaroo AA Formation with an average PHIT of 27.9%, V_{SH} of 9.7%, permeability of 1743 mD and SWT of 19.2%.

From an analysis of the MDT pressure profile, all intersected gas sands were filled as part of the same gas column and share a common gradient with an interpreted free water level of -2916.6 m TVD SS giving a gross hydrocarbon column of 196.6 m.

A water sample was obtained from a sand interval within the Zone 100 Shale of the Mungaroo Formation below the free water level at a depth of 2981.1 m. The recovered water sample had a salinity of 29,200 mg/L (NaCl equivalent). This equates to a formation water resistivity of approximately 0.219 ohm.m @ 25°C.

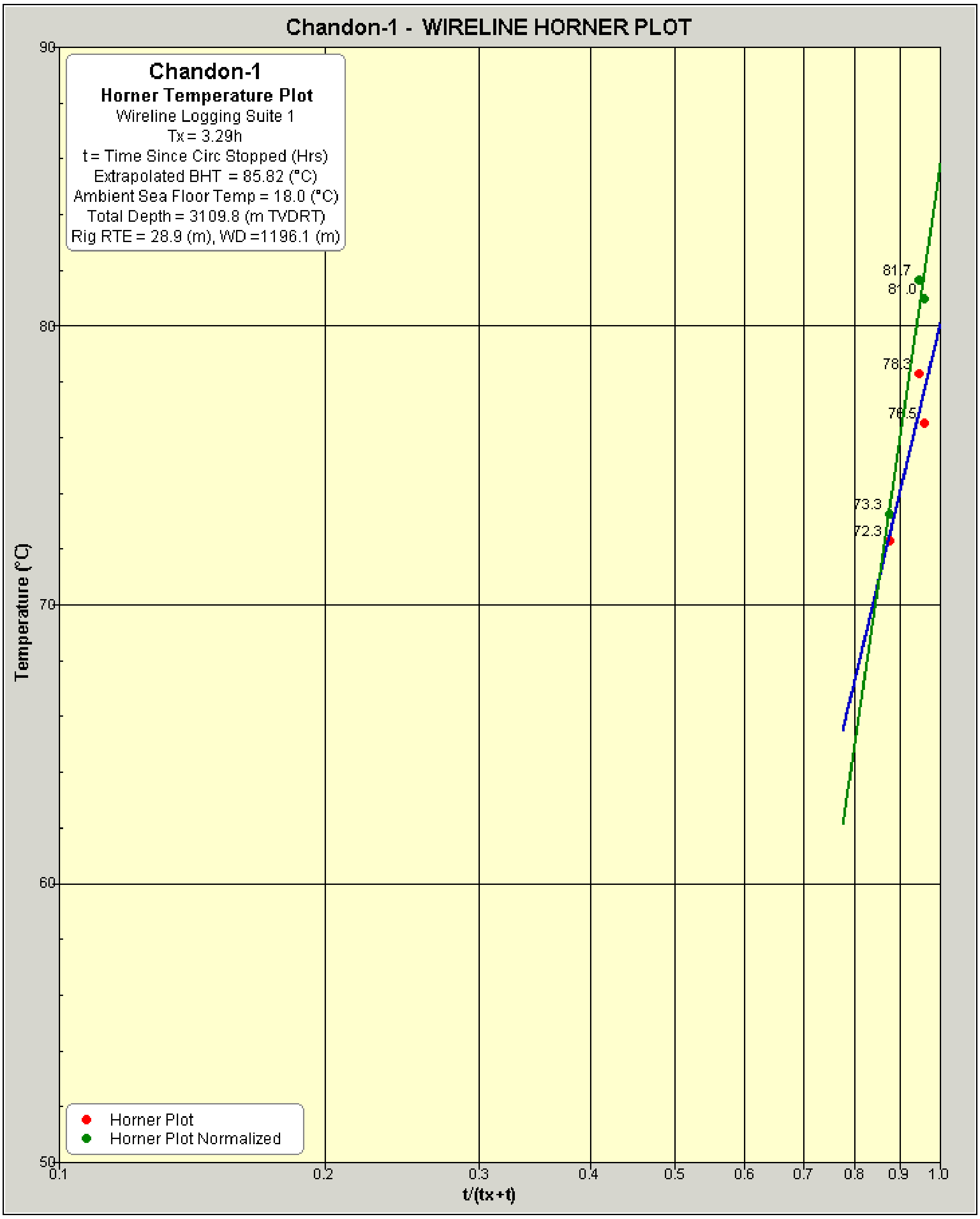


Figure 4.1: Wireline Horner Plot

4.3 Petrophysical Evaluation

The relatively simple mineralogy of the Mungaroo Formation makes the interpretation of these sands under normal circumstances fairly straight forward. However, in the presence of gas saturated sands, the estimation of V_{SH} can be somewhat uncertain. Through the marginal marine section of the Mungaroo Formation, the reservoir tends to be finely interbedded and interlaminated and therefore have an impact on log resolution. In order to understand and quantify the uncertainty that exists in the evaluation, two methodologies were attempted.

A combined deterministic and NMR based interpretation methodology has been employed, to help better define and reduce uncertainty in reservoir properties, in-particular through the shaly parts of the Mungaroo Formation reservoir. In these intervals a standard deterministic approach produced unrealistically pessimistic results.

Each methodology has it's own advantages and disadvantages, however a final single mid-case is required for the assessment of reserves. It is believed that the standard deterministic methodology represents a pessimistic case. Conversely, the V_{SH} estimates derived from the NMR log are interpreted to be slightly optimistic. Therefore the final evaluation is based on the following combination of the two methodologies:

V_{SH} → Arithmetic average of V_{SH} from CBW and V_{SHMIN} from GR & D-N
PHIT → From DMR porosity
PHIE → PHIT – CBW

Sw → Dual-Water equation, using Swb from PHIE/PHIT

Net reservoir and net pay summaries were output within the program and are documented in Table 4. A summary of interpretation parameters used for the petrophysical analysis are included in Table 5. Cut-offs of PHIE>7%, VSH<40% and SWT<60% were applied to generate the P50 net pay and net reservoir statistics. A total of 83.8 m of net gas pay has been interpreted for the Mungaroo AA Formation with an average PHIT of 27.9%, VSH of 9.7%, PERM of 1743mD and SWT of 19.2%.

The top of the Mungaroo Formation Marginal Marine AA Sand was intersected below the "IJU" at 2749.0 m (-2720.0 m TVD SS) and the AA Fluvial Sand was intersected at 2824.6 m (-2795.6 m TVD SS). A gas/water contact as indicated from MDT results was intersected at 2945.6 m (-2916.6 m TVDSS). Petrophysical analysis of the AA Marginal Marine unit confirms the interval includes 25.756 m of net reservoir sand (net:gross 0.338) and 24.486 m of net gas pay with an average porosity (PHIT) of 26.6% and an average water saturation (Sw) of 27.5 %. Petrophysical analysis of the AA Fluvial Sand confirms the interval includes 63.96 m of net reservoir (net:gross 0.538) and 59.297 m of net gas pay with an average porosity (PHIT) of 28.2% and an average water saturation (Sw) of 15.8 %. This results in a total Mungaroo Formation AA Sand net reservoir thickness of 89.68 m, 83.78 m of which is net gas sand.

The Chandon 1 Formation Evaluation Report is included herein as Appendix 3.

Pay Summary Specification: determin_cmr
Primary reference for reporting and sample control: DEPTH
Cutoff details:-
PHIE_DMR >= 0.07 V/V
VSH_AVG <= .4 V/V
Lumping details:-
Standalone Minimum Thickness: 0.1524 METRES
Include Minimum Thickness: 0.1524 METRES
Maximum Separation: 0.1524 METRES

Well	Interval	DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	PHITH (V/V)M	PERMH MDM	PHIT_AV V/V	PHIE_AM V/V	VSH_AM V/V	PERM_AM MD	PERM_GM MD
CHANDON-1	Mungaroo Fm Upper	2748.9	2825	76.1	25.756	0.338	6.855	24898.38	0.266	0.212	0.153	966.72	439.49
CHANDON-1	Mungaroo Fm Lower	2825	2943.8	118.8	63.92	0.538	17.634	121800.67	0.276	0.22	0.082	1905.52	1030.96
CHANDON-1	*Total*	*2748.9*	*2943.8*	*194.9*	*89.675*	*0.46*	*24.489*	*146699.05*	*0.273*	*0.218*	*0.103*	*1635.89*	*807.03*

Pay Summary Specification: determin_cmr
Primary reference for reporting and sample control: DEPTH
Cutoff details:-
PHIE_DMR >= 0.07 V/V
SWT <= 0.6 V/V
VSH_AVG <= .4 V/V
Lumping details:-
Standalone Minimum Thickness: 0.1524 METRES
Include Minimum Thickness: 0.1524 METRES
Maximum Separation: 0.1524 METRES

Well	Interval	DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	PHITH (V/V)M	BVWH (V/V)M	HVOLH (V/V)M	PERMH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	VSH_AM V/V	PERM_AM MD	PERM_GM MD	SWE_AM V/V
CHANDON-1	Mungaroo Fm Upper	2748.9	2825	76.1	24.486	0.322	6.618	1.823	4.795	24832.72	0.27	0.275	0.217	0.148	1014.18	536.63	0.248
CHANDON-1	Mungaroo Fm Lower	2825	2943.8	118.8	59.297	0.499	16.736	2.651	14.086	121264.47	0.282	0.158	0.229	0.076	2045.04	1338.47	0.141
CHANDON-1	*Total*	*2748.9*	*2943.8*	*194.9*	*83.783*	*0.43*	*23.354*	*4.474*	*18.88*	*146097.2*	*0.279*	*0.192*	*0.226*	*0.097*	*1743.77*	*1024.72*	*0.172*

Table 4: Petrophysical Net Reservoir and Pay Summary (P50 Statistics)

WELL	TOP (M)	INTERVAL	GRma (GAPI)	GRsh (GAPI)	DTma (us/ft)	DTsh (us/ft)	RHOma (g/cc)	RHOsh (g/cc)	RHOfl (g/cc)	NPHIma (V/V)	NPHIsh (V/V)	NPHIfl (V/V)	RTsh (ohm.m)	a	m	n	CECdrysh (Meq/g)	Rw (ohm.m)
CHANDON-1	2715.5	BRIGADIER FM	35	135	-	-	2.72	2.42	1	0	0.422	1	1.8	1	2	2	0.06	0.34 @ 25.0 (degC)
CHANDON-1	2749	MUNGAROO FM	57	150	-	-	2.65	2.34	0.85	-0.025	0.387	0.369	1.8	1	1.8	2	0.06	0.24 @ 25.0 (degC)
CHANDON-1	2848	MUNGAROO FLUVIAL	40	150	-	-	2.65	2.34	1	-0.025	0.422	0.24	1.8	1	1.8	2	0.1	0.24 @ 25.0 (degC)
CHANDON-1	2890	AA SHALE	40	150	-	-	2.65	2.34	1	-0.025	0.422	0.5	1.8	1	1.8	2	0.1	0.24 @ 25.0 (degC)
CHANDON-1	2944	ZONE 100 SHALE	40	155	-	-	2.65	2.43	1	-0.025	0.407	1	1.8	1	1.8	2	0.1	0.24 @ 25.0 (degC)
CHANDON-1	3022.5	A SAND	40	155	-	-	2.65	2.44	1	-0.025	0.388	1	1.8	1	1.8	2	0.06	0.29 @ 25.0 (degC)

Table 5: Summary of Interpretation Parameters Used for the Petrophysical Analysis

5 WIRELINE TESTING EVALUATION

5.1 MDT Results and Evaluation

Successful static pressure data and fluid samples were achieved from the Mungaroo Formation in two runs of Schlumberger's Modular Formation Dynamics Tester (MDT). Pressure data was acquired over the gross interval 2749.7 – 3027.1 m (2720.7 - 2998.0 m TVD SS) during Run#2 and reservoir fluid samples were subsequently collected over the gross interval 2792.9 – 2981.1 m (2763.9 - 2952.0 m TVD SS). A total of 68 pre-tests were attempted, of which 46 were successful, 16 were tight, 1 was supercharged and 5 experienced lost seal. This was subsequently followed by the collection of 4 x 450cc segregated MPSR gas samples and 2 x 250cc segregated SPMC gas samples, 1 x 1 gallon (3.8L) MRSC water sample and 1 x 1 gallon (3.8L) MRSC gas sample. The tool was configured with a Pump-out Module (MDT-PO), a Live Fluid Analyser (MDT-LFA), a Compositional Fluid Analyser (CFA) and H_2S Coupons. The MDT tool string was initially configured with and run with the CMR+ sonde (RUN#2). After successfully obtaining all pre-test pressure data during this run, problems associated with the Pump-out Module (PO) during the attempted first sampling necessitated pulling out of hole (POOH), changing out the PO module and dropping the CMR sonde from the tool string. The MDT-GR-ECRD was re-run as RUN#3 for the purpose of taking samples only. Low shock sampling equipment also included 2 x single probe modules. The second probe was run for redundancy only. The samples recovered were generally of excellent quality.

The results of the MDT log run are consistent with the petrophysical evaluation and are summarised below. Pressure data is displayed in Figure 5.1 with a comparison of the regional pressure data included as Figure 5.2. Gas compositions and condensate/gas ratio off-site laboratory analyses and water composition are documented in Appendix 4.

- A hydraulically continuous column was interpreted in the Mungaroo AA Formation from -2732.8 m TVD SS to the GWC within the Zone 100 Shale at -2916.6 m TVD SS, with a gas gradient of 0.31 psi/m.
- The gas gradient measured indicates the reservoir gas is likely to be a dry gas with CGR of approximately 5 – 10 bbl/mmscf, and this was later confirmed with laboratory test measurements of the collected gas samples.
- A hydraulically continuous water column was interpreted from the GWC within the Zone 100 Shale at -2916.6 m TVD SS to a depth of -2998.0 m TVD SS, within the Mungaroo A sands, with a water gradient of 1.42 psi/m.
- Pressure points collected in the water leg appear to plot parallel but slightly offset to the regional water gradient found in offset Mungaroo wells, indicating the Chandon water leg maybe in communication with the regional Mungaroo aquifer.
- The mobility measurements throughout the column indicate excellent (multi-Darcy) permeability within the Mungaroo AA sands; however this has not been confirmed with DST or core permeability measurements.
- Compositional analyses of the MDT fluid samples were initially performed on site by Oilphase. Independent, onshore laboratory measurements by both Oilphase and Core Laboratories Australia later confirmed the concentration of CO_2 and N_2 as being approximately 0.3 - 0.4 mol % and 3.4 – 3.6 mol % respectively.

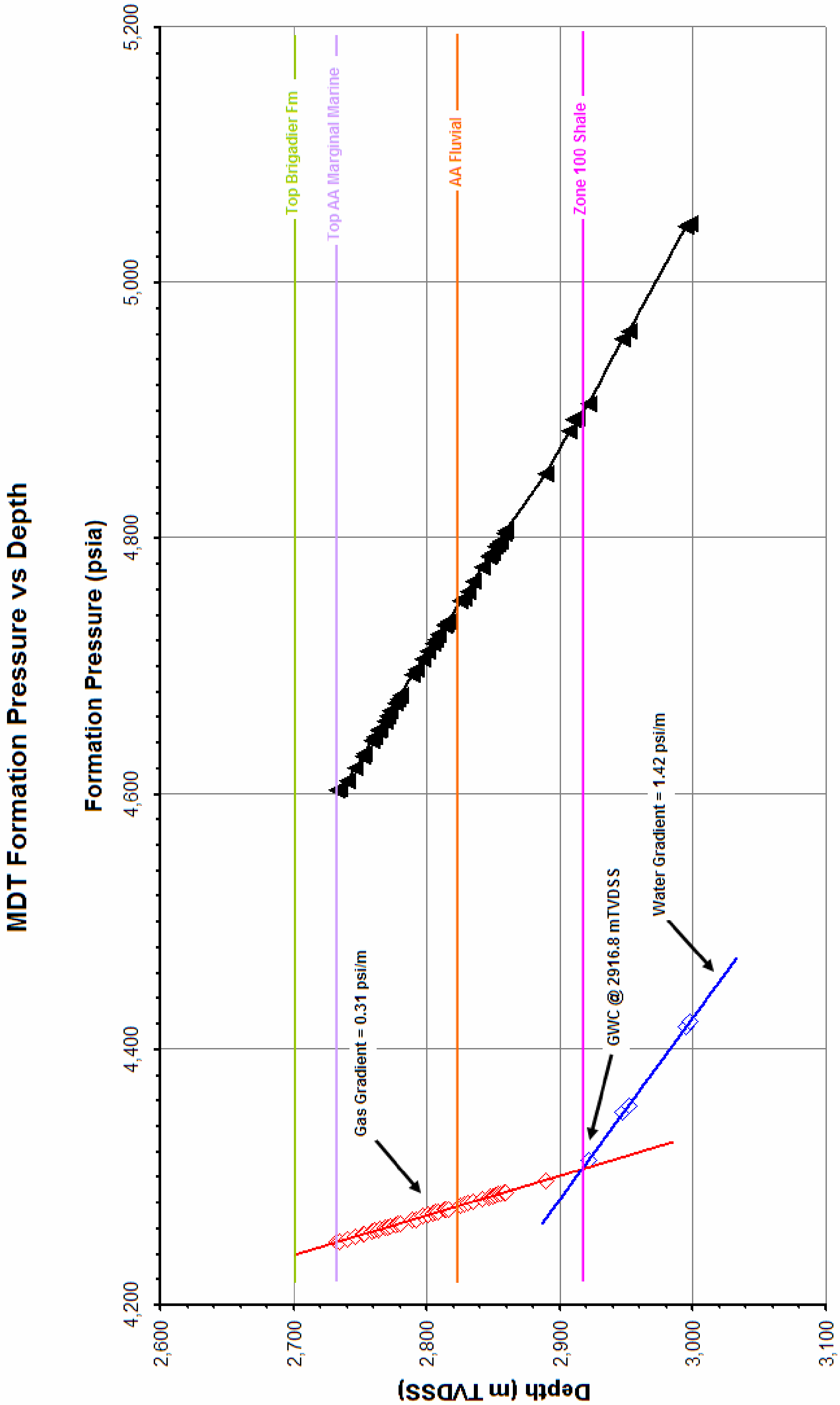


Figure 5.1: Plot of MDT pre-test data showing gas and water gradients

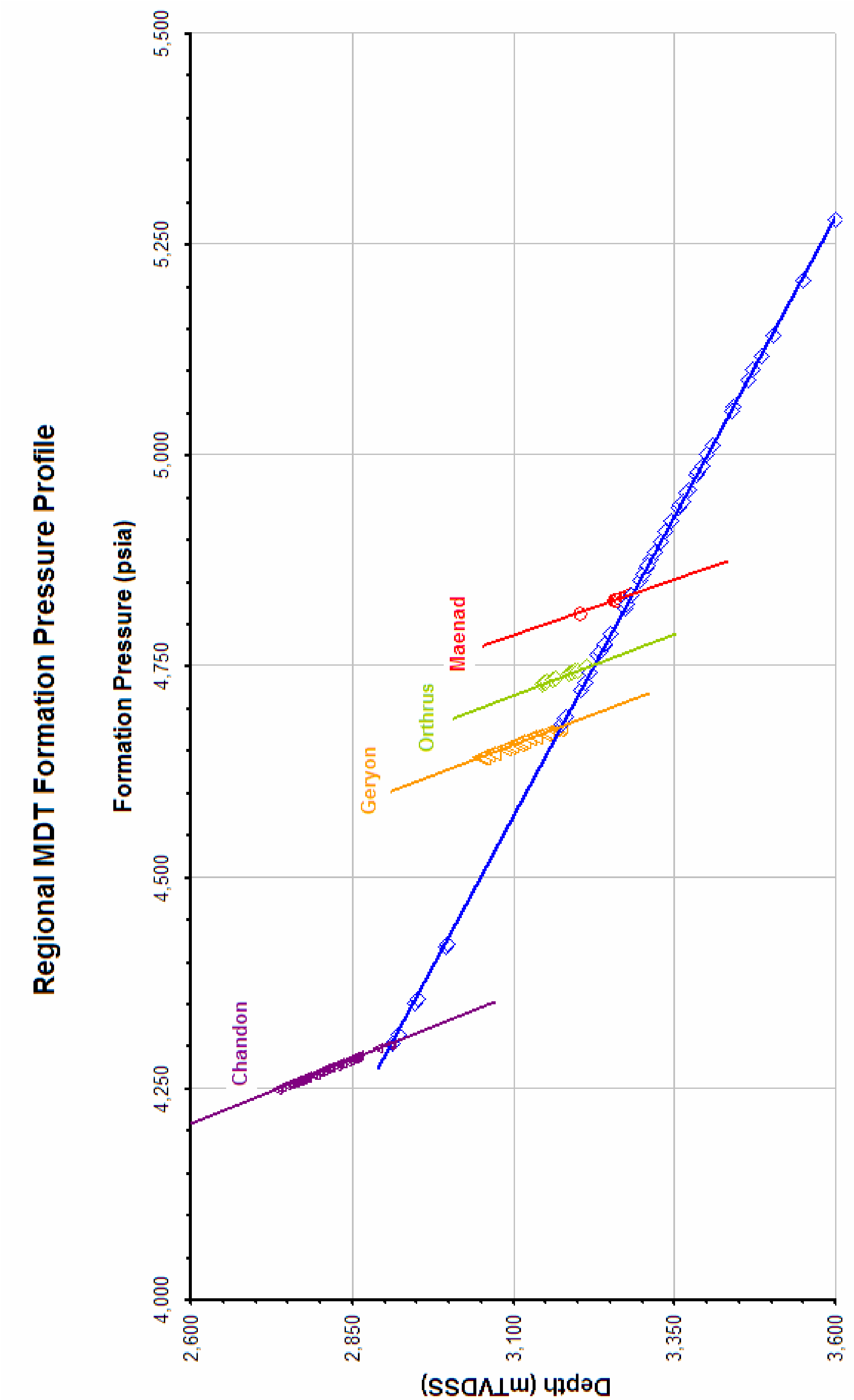


Figure 5.2: Regional plot of pressure data showing Chandon 1 water leg pressures lying on regional Mungaroo aquifer gradient.

6 DRILL STEM TESTING EVALUATION

No DST was conducted in Chandon 1.

7 GEOCHEMICAL EVALUATION

Core Laboratories Australia Pty Ltd and Schlumberger Oilphase provided onshore laboratory GC analysis of gas samples collected from Chandon 1 from samples collected with the MDT tool during open hole wireline logging operations. The results of the Core Laboratories analyses are presented in Appendix 11 and the results of the Oilphase analyses are presented in Appendix 10 of the Chandon 1 Well Completion Report – Basic Data report issued under separate cover (Doc. ID: ASBU1-063040032) on the 11^{th} April 2007.

Gas compositional analyses and compound specific isotope analyses (CSIA) were performed on eleven (11) ditch gas samples collected in Isotubes while drilling over the gross interval 2460-3049 m. These results are presented in Appendix 9 of the Chandon 1 Well Completion Report – Basic Data report issued under separate cover (Doc. ID: ASBU1-063040032) on the 11^{th} April 2007.

7.1 Source Rock Evaluation and Thermal Maturation

No source rock or thermal maturation studies have been undertaken on Chandon 1.

7.2 Petroleum Composition

The carbon isotopic composition of methane, obtained from the analysis of Isotube gases, varies between $\delta^{13}C$ -38.2 and -40.0 ‰, indicating a mainly thermogenic origin. The maturity of the gas can be inferred from the isotopic data for methane and ethane, applying the model published by Whiticar (1994, Figure 7.1). Based on a typical kerogen type II trend, the isotopic data suggest that the gases were generated at an equivalent vitrinite reflectance of between 1.3 and 1.5%.

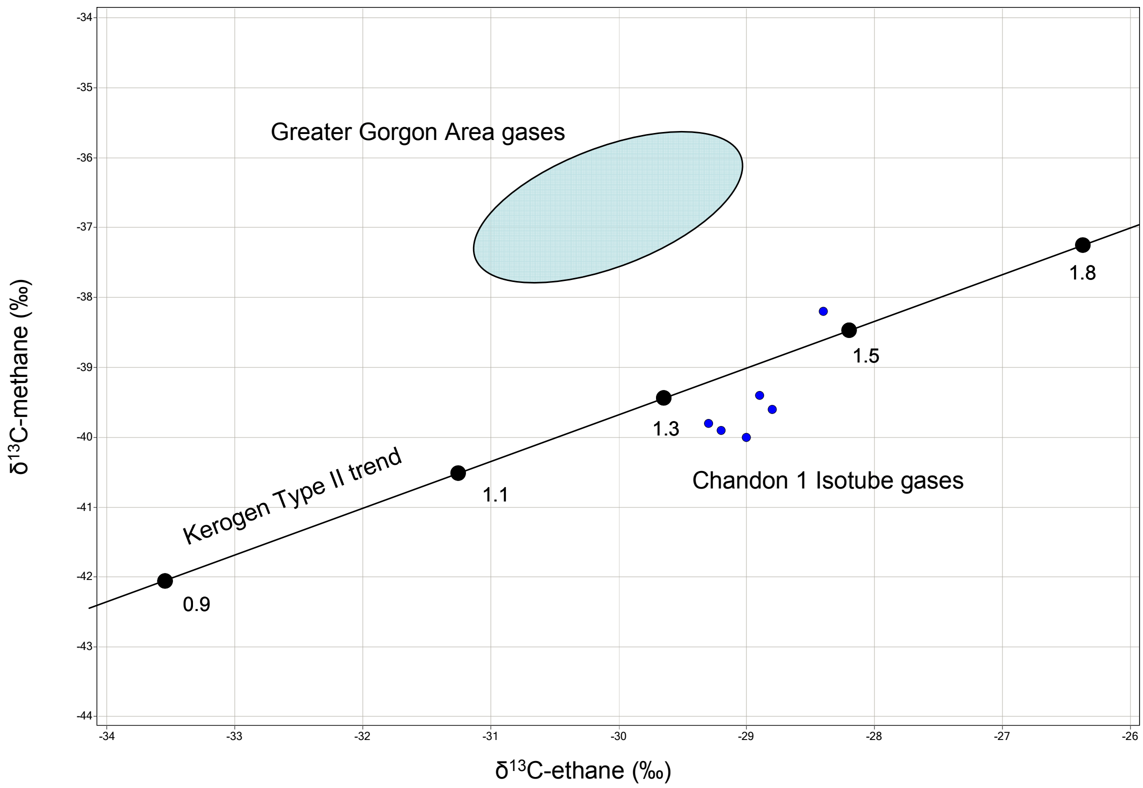


Figure 7.1: Cross plot of methane vs. ethane carbon isotopes of Chandon Isotube gases. Correlation with vitrinite reflectance is based on Whiticar (1994)

7.3 Fluid History Analysis

No fluid history analyses were performed on samples from Chandon 1.

8 CONTRIBUTIONS TO THE EVALUATION OF THE CHANDON 1 ACCUMULATION

The Chandon field is positioned on the Exmouth Plateau near the confluence of the northeast trending Investigator Sub-basin and Kangaroo Syncline. Chandon 1 was drilled as a vertical well in 1196.1 m of water (MSL) to a total depth (TD) of 3124 m (-3095 m TVD SS). The Chandon gas accumulation is a large three way Triassic top Mungaroo Formation footwall closure. The well resulted in the discovery of the Chandon gas accumulation.

The well contributed the following information to the understanding of the Chandon accumulation and the surrounding area:

Stratigraphy

- The stratigraphy encountered was close to prediction with most of the formation tops encountered slightly high to prognosis.
- Chandon 1 intersected the Mungaroo Formation at 2749 m (-2720 m TVD SS) and successfully identified the seismically defined AA marginal marine and fluvial sands and A fluvial sand packages and Zone 100 shale package which had been predicted prior to drilling.

Structure/Trap

- Chandon 1 validated the pre-well seismic interpretation with most differences between pre-well and post-well mapping due to minor changes in the depth conversion.
- The Early/Late Jurassic undifferentiated Athol Formation/Murat Siltstone and Late Triassic Brigadier Formation are effective top-seals to the Mungaroo Formation where it sub-crops the Intra-Jurassic Unconformity. Fault seals are also effective.
- The field is bound by two main westerly dipping faults which contribute to the tilted horst block structure and north-easterly dipping reservoir units, which in turn are overlain by a regionally extensive Cretaceous seal sequence. The primary Chandon field bounding fault follows an arc orientated northeast grading to north-south, and therefore observes a component of wrenching.
- The primary western bounding fault creates the three way closure from Intra-Barrow Formation level through to Mungaroo Formation.
- Below the Mungaroo Formation the faults appear to sole out in an intrusive plutonic event of un-defined age. A spill point occurs on the fault at the axis of changing angle. The difference in throw at this point may suggest the faults formed as different entities and have converged following the point of maximum weakness during a period of reactivation.
- A secondary northeast-southwest trending western bounding fault is located out-board of the primary fault and defines the western boundary of the prospect. The prospect is therefore contained within two separate, but connected reservoirs.
- Structural spill is observed to the southwest of the prospect within the western reservoir container at approximately 2917 m and is the dependant factor for the maximum hydrocarbon column. The structure is therefore interpreted to be filled to spill with a maximum of approximately 210 m of vertical closure. This depth corresponds to an observed horizontal flat spot direct hydrocarbon indicator (DHI), stacked seismic amplitude cut-offs and pressure defined gas/water fluid contact.

Source / Migration / Timing

- The low risk predicted for gas source and the presence of migration pathways was confirmed by the well results.

Reservoir

- The **Mungaroo Formation AA Marginal Marine** unit (2749 – 2824.6 m) consists of a sequence of siltstone with interbedded very fine to fine, well sorted quartzose sandstone.
- The **Mungaroo Formation AA Fluvial Sand** (2824.6 – 2943.9 m) consists of thick, very fine to coarse, mainly very fine to fine, well sorted quartzose sandstone, interbedded with siltstone and claystone.

Formation Evaluation

- At the Chandon 1 location, the Triassic Mungaroo Formation AA Marginal Marine Unit and AA Fluvial Sand are gas-bearing and the Mungaroo Formation A Sand is water-wet.
- Elevated gas readings were observed while drilling through the gas-bearing zones over the gross interval 2749 - 2945 m.
- All intersected gas sands were filled as part of the same gas column and share a common gradient with an interpreted free water level of -2916.6 m TVD SS within the Zone 100 Shale giving a gross hydrocarbon column of 196.6 m with a gas gradient of 0.31 psi/m.
- A total of 83.8 m of net gas pay is interpreted for the Mungaroo AA Formation with an average PHIT of 27.9%, V_{SH} of 9.7%, PERM of 1743 mD and SWT of 19.2%. Cut-offs of PHIE>7%, V_{SH}<40% and SWT<60% were applied to generate the P50 net pay and net reservoir statistics.
- A hydraulically continuous water column was interpreted from the gas-water-contact (GWC) within the Zone 100 Shale at -2916.6 m TVD SS to a depth of -2998.0 m TVD SS within the Mungaroo A sands, with a water gradient of 1.42 psi/m
- Pressure points collected in the water leg appear to plot parallel but slightly offset to the regional water gradient found in offset wells that penetrate the Mungaroo Formation, indicating the Chandon water leg maybe in communication with the regional Mungaroo aquifer.
- MDT sampling successfully recovered gas to the surface from the Mungaroo Formation AA Marginal Marine unit and the Mungaroo Formation AA Fluvial Sand.
- A condensate to gas ratio was measured (CGR) in the range of 5 – 10 bbl/mmscf.
- The dry gas composition includes:
    - 3.4 – 3.6 mol % Nitrogen (N_2)
    - 0.3 - 0.4 mol % Carbon Dioxide (CO_2)
    - <1 ppm Hydrogen Sulphide (H_2S)
- The mobility measurements throughout the gas column indicate excellent (multi-Darcy) permeability within the Mungaroo Formation AA sands; however this has not been confirmed with DST or core permeability measurements.

Geochemistry

- The carbon isotopic composition of methane, obtained from the analysis of Isotube gases, indicates a mainly thermogenic origin, while the gas maturity indicates generation at an equivalent vitrinite reflectance (VR) of ca. 1.4%.

9 REFERENCES

Chandon 1 Drilling Program WA-268-P (R1) - 2006; Chevron Australia Pty Ltd (Unpublished Report) Doc ID: ASBU - 060800053

Data Management Plan Chandon 1, WA-268-P; Chevron Australia Pty Ltd (Unpublished Report) Doc ID: ASBU1-061020018

Helby, R., Morgan, R. & Partridge, A. D. 1987. ‘A palynological zonation of the Australian Mesozoic’ In: Jell, P.A. (ed) Studies of Australian Mesozoic Palynology, 1-94

WA-268-P Chandon 1 Well Proposal and Formation Evaluation Programme (Unpublished Report) Doc ID: ASBU1-060310028

WA-268-P (R1), Chandon 1 Geological Prognosis; Chevron Australia Pty Ltd (Unpublished Report) Doc ID: ASBU1-060930075

Whiticar M.J. (1994). Correlation of natural gases with their sources. In Magoon L.B. and Dow W.G. (Eds), The petroleum system from source to trap. AAPG Memoir 50, pp 261-283.

APPENDIX 1

WELL CARD
(BY CVX)

Chevron Australia Pty Ltd

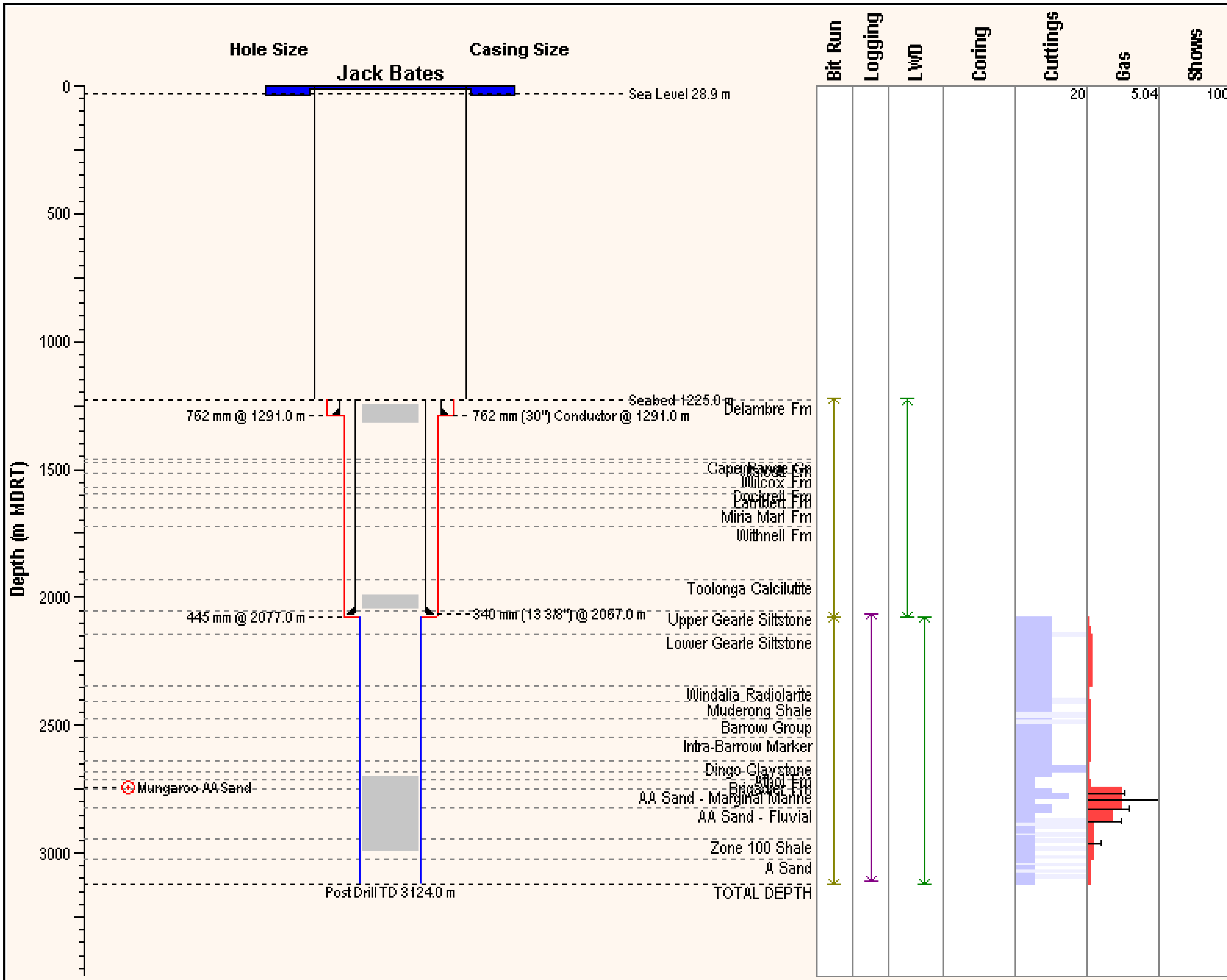
WELL CARD

Chandon-1

DATE: 25-May-2007

PREPARED BY: R Fisher

Chandon-1 WELL SKETCH



Well Details

Project:	Greater Gorgon Exploration
Well Name:	Chandon-1
Hole:	Main
Operator:	Chevron Australia Pty Ltd
Location:	Carnarvon Basin
Permit:	WA-268-P
Spud Date:	21-Jun-2006 07:30
Status:	PA AS NEW GAS DISCOVERY
Rig Name:	Jack Bates
Rig RT:	28.90 m
Latitude:	019° 34' 32.210 South
Longitude:	114° 07' 41.250 East
Easting:	198691.475 m East
Northing:	7832948.585 m South
UTM Zone:	50
Spheroid:	Geodetic Reference
Geod Datum:	NAD83, GDA94
AFE Code:	201039
User Set:	Operations Geologists

Legend

- Critical Lesson
- Serious Lesson
- Minor Lesson
- Suggestion
- Well Target
- Sidetrack
- Sidetrack Join Parent

LOCATION DETAILS:

Latitude:	019° 34' 32.210" South	Seismic Reference:	Chandon 3D;Inline 1314; Xline3928
Longitude:	114° 07' 41.250" East	Rig:	Jack Bates
UTM Easting (m):	198,691.475 E	Permanent Datum:	Mean Sea Level
UTM Northing (m):	7,832,948.585 S	Rig RT to Datum:	28.9 (m)
UTM Zone :	50 Central Meridian 117° East	GL Elevation:	
Geodetic Datum :	NAD83, GDA94	Water Depth :	1,196.1 (m)
Geodetic Ellipsoid :	Geodetic Reference System 1980		
Permit:	WA-268-P		

PARTICIPATING INTERESTS:

Joint Venture Partner	Interest %
Chevron Australia Pty Ltd	75.000
ExxonMobil	0.000
Shell	25.000

CASING SUMMARY:

Casing String	MDRT (m)	TVDRT (m)
762 mm (30") Conductor	1291.0	1291.0
340 mm (13 3/8")	2067.0	2066.9

PRIMARY DATES:

Date Rig On Contract :	17-Jun-2006 16:00
Date Rig On Location :	17-Jun-2006 23:00
Date Rig Released :	11-Jul-2006 12:00
Date Rig Off Contract :	11-Jul-2006 12:00

WELL SECTION DATES:

Spud Date / Kick Off Date and Time	Date / Time TD Reached
21-Jun-2006 07:30	30-Jun-2006 02:24

HOLE SUMMARY:

Hole Size (mm)	Total Depth MDRT (m)	Total Depth TVDRT (m)
762.000	1291.0	1291.0
445.000	2077.0	2076.9
311.000	3124.0	3123.8

STATUS:

Current Status	P&A as New Gas Discovery
Planned TD:	3579.0 m MDRT (-3579.0 m TVDSS)
Driller's TD :	3124.0 m MDRT (-3094.9 m TVDSS)
Logger's TD :	3110.0 m MDRT (-3080.9 m TVDSS) PO Module of MDT tool failed on Run#2; POOH; dropped CMR tool from tool string and changed out PO Module; RIH and taken MDT samples Actual seabed temperature ~4 deg C; used nominal surface temperature of 18 deg C at seafloor for calculation of SBHT to match offset wells

WELL COMPLETION DETAILS:

Plug #	From (m)	To (m)	Comments
1	2699.0	2985.0	Balanced plug; pump 22.74m3 (143bbl) of 1.9sg (15.8ppg) cmt
2	1990.0	2040.0	EZSV packer at 2040m; moved to 2042m
3	1247.0	1315.0	Pumped 4.29m3 (27bbl), 131 Sx of 1.89sg (15.8ppg) cement

BOTTOM HOLE LOCATION:

Main

Latitude	019° 34' 31.426" South	Northing	7,832,972.570 N
Longitude	114° 07' 41.011" East	Easting	198,684.000 E

FORMATION TOPS:

Formation Name	MDRT (m)	TVDRT (m)	TVDSS (m)	Thickness (m TVT)	Comments
Delambre Fm	1225.0	1225.0	-1196.1	236.0	
Cape Range Gp	1459.7	1459.7	-1430.8	12.4	
Walcott Fm	1472.1	1472.1	-1443.2	44.3	
Wilcox Fm	1516.4	1516.4	-1487.5	51.5	
Dockrell Fm	1567.9	1567.9	-1539.0	28.1	

Formation Name	MDRT (m)	TVDRT (m)	TVDSS (m)	Thickness (m TVT)	Comments
Lambert Fm	1596.0	1596.0	-1567.1	52.5	
Miria Marl Fm	1648.5	1648.5	-1619.6	71.5	
Withnell Fm	1720.0	1720.0	-1691.1	209.8	
Toolonga Calcilutite	1929.8	1929.8	-1900.9	123.2	
Upper Gearle Siltstone	2053.0	2052.9	-2024.0	90.0	
Lower Gearle Siltstone	2143.0	2142.9	-2114.0	205.0	
Windalia Radiolarite	2348.0	2347.9	-2319.0	57.0	
Muderong Shale	2405.1	2405.0	-2376.1	-	
Barrow Group	2475.0	2474.9	-2446.0	73.0	Not Prognosed
Intra-Barrow Marker	2548.0	2547.9	-2519.0	105.5	
Dingo Claystone	2642.0	2641.9	-2613.0	38.2	
Athol Fm	2680.2	2680.1	-2651.2	34.6	
Brigadier Fm	2714.8	2714.7	-2685.8	34.2	
Mungaroo Fm	2748.9	2748.8	-2719.9	-	
AA Sand - Marginal Marine	2748.9	2748.8	-2719.9	76.1	
AA Sand - Fluvial	2825.0	2824.9	-2796.0	118.8	
Zone 100 Shale	2943.8	2943.7	-2914.8	79.0	
A Sand	3022.8	3022.6	-2993.7	-	
C-1 Sand				-	Not Drilled
C-2 Sand				-	Not Drilled
TOTAL DEPTH	3124.0	3123.8	-3094.9	-	

Prepared by: Operations Geologists

WIRELINE LOGGING / TEMPERATURE SUMMARY:

Logging Suite #: 1 - Hole Size : 311 mm
Date Mud Check : 6/30/2006 Date / Time Circ. Stopped : 30-Jun-2006 2:24 am Circ. Time : 3.29 (h)

Run #	Tool String	Logged Interval (m)	BHT°C /Time Since Last Circ.	Comments
1	PEX-RtScanner-MSIP-HNG S-GPIT-PPC-ECRD-LEHQT	3109.8 - 2065.0	72.30 / 22.98	TD wireline = 3109.8 m MDRT. Pick-up at 3106; depth casing at 2065m; GR through casing to seafloor at 1196.1m; MSIP through casing to 1450m
2	MDT-GR-CMR+-ECRD	2660.3 - 3066.1	78.28 / 58.85	CMR logged over the interval 3050-2670m before MDT pre-tests
3	MDT-GR-ECRD	2749.7 - 2939.4	76.50 / 73.93	Run 3 (MDT-GR-ECRD) was re-run after a pump failed in Run 2 (MDT-CMR-GR-ECRD) . The CMR was removed from the Run 2 tool string. Temperature in header is from pre-test. The thermometers read 77, 77 and 78 deg C.

WIRELINE PRESSURE SUMMARY:

Hole ID			Aborted	Dry	Seal Failure	Super Charged	Tight	Valid	Total
Main	Suite # 1 Run 1	0	0	0	0	0	0	0	0
	Suite # 1 Run 2	0	2	1	3	1	15	46	68
	Suite # 1 Run 3	0	0	0	0	0	0	6	6
	Total	0	2	1	3	1	15	52	74

SIDEWALL CORE SHOT SUMMARY:

No sidewall cores shot.

ROTARY CORING SUMMARY:

No rotary cores taken.

MWD / FEWD INTERVAL SUMMARY:

Run #	Tool Description	Start Interval (m)	End Interval (m)	Interval Logged (m)	Comments
1	APWD-ARC-MWD	1225.0	2077.0	852.0	
2	ARC-GR-RES-DI-APWD	2077.0	3124.0	1047.0	

CORING SUMMARY:

No cores cut.

GEOLOGICAL SUMMARY :

Chandon-1 Well Summary

Chandon-1 which was spudded on the 21st June 2006 , was drilled as a vertical exploration well. Chandon-1 penetrated a sedimentary section ranging in age from Tertiary to Late Triassic. The stratigraphy encountered was essentially as predicted with most of the formation tops encountered at or slightly high to prognosis in depth, except for the primary objective Mungaroo Formation which was 5m low to prognosis.

The 762 mm (30") conductor was jetted to 1291 mMDRT and the 445 mm (17 ½") hole section was then drilled riserless with a mill tooth bit and mud motor using sea water and prehydrated gel sweeps from 1291 mMDRT to 2077 mMDRT (-2048 mTVDSS). Formation tops down to and including the Top Upper Gearle at 2053 mMDRT; (-2024 mTVDSS) were identified from LWD logs (ARC-GR & ARC-Resistivity) acquired while drilling the 445 mm hole section.

The 445 mm section was drilled to 2077 mMDRT (-2048 mTVDSS), 20 m below the top of the Upper Gearle Siltstone and 340 mm (13) casing was set at 2067 mMDRT (-2038 mTVDSS), 14 m into the Upper Gearle. The Upper Gearle was identified by a gradational GR increase, an increase in ROP and a resistivity decrease and was 2 m low to prognosis.

The Lower Gearle Siltstone was intersected at 2143 m MDRT (-2114 mTVDSS), which was 14 m low to prognosis. The Lower Gearle was identified by an increase in GR and lower, smoother resistivity character. The Windalia Radiolarite was recorded at 2348 m MDRT (-2319 mTVDSS) and was associated with an increase in resistivity and decrease in ROP and GR. The Muderong Shale was intersected at 2405.1 m MDRT (-2367.1 m TVDSS) exactly as prognosed and identified by a charactersitic increase in GR. The Barrow Group which was not mapped prior to drilling was recorded at 2475 m MDRT (-2446 m TVDSS) and identified by a increase in GR. The Intra-Valanginian Unconformity that is normally reflected by an Intra-Barrow Marker is now identified at 2548 m MDRT (-2519 m TVDSS) reflected by a significant shift in interval transit time on the sonic log and increase in density.

The Dingo Claystone was identified at 2642 m MDRT (-2613 m TVDSS), 24 m high to prognosis. The undifferentiated Athol Formation/Murat Siltstone was intersected at 2680.2 m MDRT (-2651.2 m TVDSS), 4.8 m high to prognosis. The boundary is marked by a decrease in GR and an increase in resistivity as the sequence becomes more cabonate rich. The Brigadier is interpreted to be at 2714.8 m MDRT (-2685.8 m TVDSS), 17.2 m high to prognosis, where the GR decreases further and the lithogy becomes even more carbonate rich. The Mungaroo Formation (AA Sand - Marginal Marine) is documented at 2748.9 m MDRT (-2719.9 m TVDSS), 5 m low to prognosis and is marked by an abrupt increase in GR in association with the first evidence of quartzose sandstone below the marl-dominated Brigadier Formation.

The upper part of the Mungaroo Fm is identified as the Marginal Marine AA Sand, comprising finely interbedded/interlaminated very fine to fine grained quartzose sandstone and siltstones / claystones down to 2825.0 m MDRT (-2796.0 m TVDSS). This depth defines the Mungaroo Formation AA Fluvial Sand. Over the interval 2825 to 2836 mMDRT, there is a well developed sandstone with a slightly serrate and prograding gamma ray log motif, underlain by a further siltstone and claystone interval down to 2854 m MDRT. Thin laminated coals are interpreted from wireline logs below 2848 m MDRT, consequently this depth is defined as the base of the AA marginal marine sand/top of the AA Sand - Fluvial.

A massive, well developed, very fine to fine grained quartzose sandstone unit extends over the interval from 2854 m to 2889 m MDRT which exhibits a relatively uniform gamma ray motif with a fining-upward top. The remainder of the Mungaroo Formation consists mainly of siltstone with thin, poorly developed sands and interbedded claystone and rare thin coals. The Zone 100 Shale is interpreted at 2943.8 m (-2914.8 m TVDSS) which also has very poor sand development and consists mainly of siltstone with lesser claystone and rare thin coal. Chandon-1 reached TD within the Zone 100 Shale at 3124 m MDRT (-3095.0 m TVDSS) at 02:24 hours, 30th June 2006. This depth was some 455m shallow to the original proposed TD of the well at 3579 m MDRT. The well was deliberately shortened by the indicated amount in order to reduce rig time days on the Chandon-1 well.

Background gas readings commenced below 2077 m MDRT within the Upper Gearle Siltstone and consisted of uniform amounts of trace to minor amounts of total gas consisting of C1-C2 with intermittent trace C3, which continued to a depth of 2743m MDRT through the Lower Gearle Siltstone, Windalia Radiolarite, Muderong Shale, Barrow Group, Dingo Claystone, Athol Formation and Brigadier Formation. There were no gas peaks recorded throughout this interval. Background gas increased substantially over the interval 2743 to 2878 m MDRT, with moderate to high amounts of total gas consisting of C1-C5. Maxiumun gas recorded over this interval was a gas peak at 2797m MDRT consisting of 5.038% total gas, 61,490ppm C1, 2097ppm C2, 439ppm C3, 40ppm iC4, 41ppm nC4, 4ppm iC5 and 3ppm nC5. Background gas decreased below 2878 m MDRT from 1.755% total gas (C1-C5) to 0.96% total gas (C1-C5) at 2886 m MDRT. Further gradual reduction in background gas to <0.1% total gas and consisting of trace to minor amounts of C1-C4 occurred down to a depth of 2939 m MDRT. Background gas increased over the interval 2939-2977 m MDRT, with a maximum reading of 0.9% total gas consisting of 9,271ppm C1, 468ppm C2, 124ppm C3, 13ppm iC4, 15ppm nC4 and nil C5 . Below 2977m MDRT, background gas consisted of trace to minor amounts of total gas, consisting of minor amounts of C1-C3 with intermittent traces of C4. At TD of 3124 m MDRT, background gas was 0.023% total gas consisting of 164ppm C1, 23ppm C2, 18ppm C3, 3ppm iC4 and 5ppm nC4.

Commenced wireline logging operations and rigged up Schlumberger. Ran Suite # 1 wireline logs comprising: **Run-1**: PEX-RtScanner-MSIP-HNGS-PPC-GPIT-ECRD-LEHQT which was logged over the interval 3109.8-2065.5mMD, with MSIP recorded through casing to ~1500mMD and GR to seafloor. **Run-2**: MDT-CMR+-GR-ECRD; acquired CMR over the interval 3060-2670mMD, followed by formation pre-test data with the MDT over the interval 2749.7-3027.1mMD; attempted 65 P/T, 56 good valid tests, 16 tight, 3 SF, 1 supercharged, 2 dry and 2 aborted. The pressure survey established gas and water gradients. PO module failed during attempt to take sample during pre-test program and continued with P/T. A second attempt to use PO also failed; POOH to change same and removed CMR from tool string. **Run-3**: MDT-GR-ECRD was run for samples ONLY and collected 4 x 450cc gas samples, 2 x 250cc gas samples, 1 x 1 gallon gas sample and 1 x 1 gallon water sample over the gross interval 2981.1-2825.8mMD. POOH and rigged down Schlumberger at 07:14 hours, 3rd July 2006. **Total logging time 57.73 Hrs.**

Log analysis indicates 83.8m of net gas pay within the Mungaroo Formation (net:gross 0.43) with an average total porosity (PHIT) 27.9% and average total water saturation (SWT) of 19.2%. The A Sand at 3022.4 m MDRT is interpreted to be water saturated.

Chandon-1 was plugged and abandoned as a new field gas discovery.

OPERATIONS / DRILLING SUMMARY

Chandon-1 Drilling Summary

Transocean's MODU 'Jack Bates' was taken under contract from the Chevron Io-2 appraisal well location at 16:00 hours on the 17th June 2006 and was towed to the Chandon-1 location. The rig arrived on location at 23:00 hours on the 17th June 2006 and the anchors were run. The rig was positioned by FUGRO using the Primary Differential GPS Data System. The final Drill Stem location after landing the 762 mm (30") casing was determined to be:

Latitude: 19° 34' 32.21" S
Longitude: 114° 07' 41.25" E
Easting: 198, 691.4 m
Northing: 7, 832, 948.4 m
Datum: GDA 94
Spheroid: GRS 80
Zone: 50
CM: 117° E

Rig Heading: 224.18° True

The position is 2.4 m on a grid bearing of 277.7° from the proposed location. The actual water depth referenced to Mean Sea level (MSL) was 1196.1 m and the drill floor elevation was 28.9 m.

Chandon-1 was spudded at 07:30 hours on the 21st June 2006. The 762 mm (30") conductor was jetted from 1225 mMDRT to 1290.7 mMDRT with seawater and pre-hydrated gel (PHG) sweeps. The conductor was allowed to soak for 0.5 hours prior to releasing the drill ahead cam actuated running tool (DACART) and drilling ahead in 445mm (17 ½") hole.

The 445 mm (17 ½") hole was drilled with a mill tooth bit and mud motor using sea water and PHG sweeps. The 445 mm (17 ½") hole was drilled ahead from 1290.70 mMDRT. ARC-9 LWD GR and Resistivity logs were used correlate with the offset wells and the section TD was called at 2077 mMDRT, 20 m below the top of the Lower Gearle Formation. At section TD the hole was swept with hi-vis mud containing LCM. A 15.6 m3 (100 bbl) 1.16 SG KCl pill was spotted on bottom and the rest of the hole displaced to 1.08 sg hi-vis mud. The 445 mm (17 1/2") BHA was pulled out of the hole and the 340 mm (13 3/8") casing was run to 2067 mMDRT and cemented in place.

The BOP's and riser were then run and tested.

The 311mm (12 /4") BHA was run in the hole. A LOT was conducted after drilling out the cement, shoe track, rat hole and 3m new formation to 2070mMD. The EMW was 1.32 sg. The 311mm hole was drilled in one bit run to a total depth of 3124 m reached at 02:24 hours on 30th June 2006. The hole was circulated clean before POOH for wireline logging. Dowloaded LWD memory data at surface.

Wireline logging operations commenced with a THINK plan at 19:00 hours 30th June 2006 and Schlumberger was rigged up at 19:20 hours.Completed 3 open hole logging runs; rigged down Schlumberger at 07:14 hours, 3rd July 2006. **Total logging time 57.73 Hrs.**

Upon completion of the wireline logging programme, the well was plugged and abandoned. Set a balanced cement plug (PLUG#1) over the interval 2985-2699mMD; set EZSV packer after several attempts at 2040mMD and pressure tested same and pressure bled off; RIH and tagged packer at 2042mMD (packer moved 2m during the failed pressure test). Displaced SBM in well to seawater; closed in well and mixed and pumped 8.42 m3 (53 bbls), 295 sx cement at 1.89sg and squeezed below EZSV; opened well and pulled out of EZSV and set balanced cement plug from 2040m to 1990mMD. POOH with 7 stands of drill pipe, monitored well and noted slight increase; shut-in well and applied pressure to back side to keep cement in place until cement hardened. Opened well and pressure tested cement plug and casing; POOH to 1315mMD and spot 4.29m3 (27bbl) 131 Sx, x 1.89sg (15.8ppg) cement over the interval 1315-1247mMD.

Unlatched and lifted BOP off wellhead at 12:00 hours, 6th July 2006. Moved rig 20m off location and pulled riser and BOP and set back same. AS good indication of the Sub Mudline Abandonment Connector (SMAC) functioning correctly was noted, the MOST tool and BHA for cutting 340mm (13 3/8") casing was RIH to 1216mMD; repositioned rig and tripped into 1235mMD (cut depth) and commenced cutting casing. With good indications of the 340mm (13 3/8") being cut, attempted to pull casing, conductor and wellhead without success; POOH; installed blades to cut 508mm (20") and 762mm (30") casing and RIH; latched MOST tool to wellhead and ROV applied pressured to open side of SMAC tool and attempted to pull without success. Attempted to cut 508mm (20") and 762mm (30") casing without success; released MOST tool and pulled above wellhead, with blades caught on wear bushing; pulled wear bushing and layed down same and changed out cutters. Tripped in hole and finished cutting casing at 1228.1mMD (3.81m below mudline). POOH with with wellhead, RGB, mud mat and casing. Began deballasting rig at 11:00 hours, 9th July 2006.

Commenced pulling anchors at 00:00 hours 10th July and retrieved last anchor (#5) at 12:00 hours 11th July 2006 and rig released from the Chandon-1 location. Total time on contract was 23.83 days.

APPENDIX 2

HORNER / GEOTHERMAL GRADIENT DATA REPORT (BY RWEB)

Chevron Australia Pty Ltd

Horner / Geothermal Gradient Data Report

GENERAL WELL DATA

Well Name :	Chandon-1	**Suite :**	1	**Rig :**	Jack Bates
Permit :	WA-268-P	**Date 1st Log :**	30-Jun-2006	**GL Elevation :**	
Latitude :	019° 34' 32.210" South	**Date Last Log :**	03-Jul-2006	**Water Depth :**	1,196.1 (m)
Longitude :	114° 07' 41.250" East	**Depth Ref. :**	RT	**Witnesses :**	A. Beech, S. Cole, B. Goff, N. Palmer
Easting (m) :	198 691.48	**Rig RTE :**	28.9 (m)	**Engineers :**	R. Clark, D. Crighton, R. Zambrano
Northing (m) :	7 832 948.59	**Service Comp. :**	Schlumberger		
UTM Zone :	50				
Geo. Datum :	NAD83, GDA94				
Ellipsoid :	Geodetic Reference System 1980				

HOLE DATA

Hole Size :	311.0 (mm)	**Seabed Temp :**	18.0 (°C)	**Max Hole Dev :**	1.4 (°)
Driller's Depth :	3,124.0 (m)	**Surface Temp :**	25.0 (°C)	**Max Dev Depth :**	3,092.8 (m)
Logger's Depth :	3,110.0 (m)	**Max BHT :**	72.30		
Survey Type :	Wireline				

Hole Problems : None. Hole smooth and in guage.
Actual seabed temperature ~4 deg C; used nominal surface temperature of 18 deg C at seafloor for calculation of SBHT to match offset wells

HORNER PLOT DATA

Date of Mud Check: 30-Jun-2006 **Date / Time Circ. Stopped:** 30-Jun-2006 02:24 **Circ. Time (Tx) :** 3.29 (h)

Run #	Tool String	Max BHT (°C)	BHT Depth (m)	Logger on Bottom	Elapsed Time (t) (h)	t/(tx+t)
1	PEX-RtScanner-MSIP-HNGS-G	72.30	3069.0	01-Jul-2006 01:23	22.98	0.8748
2	MDT-GR-CMR+-ECRD	78.28	2980.9	02-Jul-2006 13:15	58.85	0.9471
3	MDT-GR-ECRD	76.50	2938.0	03-Jul-2006 04:20	73.93	0.9574

GEOTHERMAL GRADIENT DATA

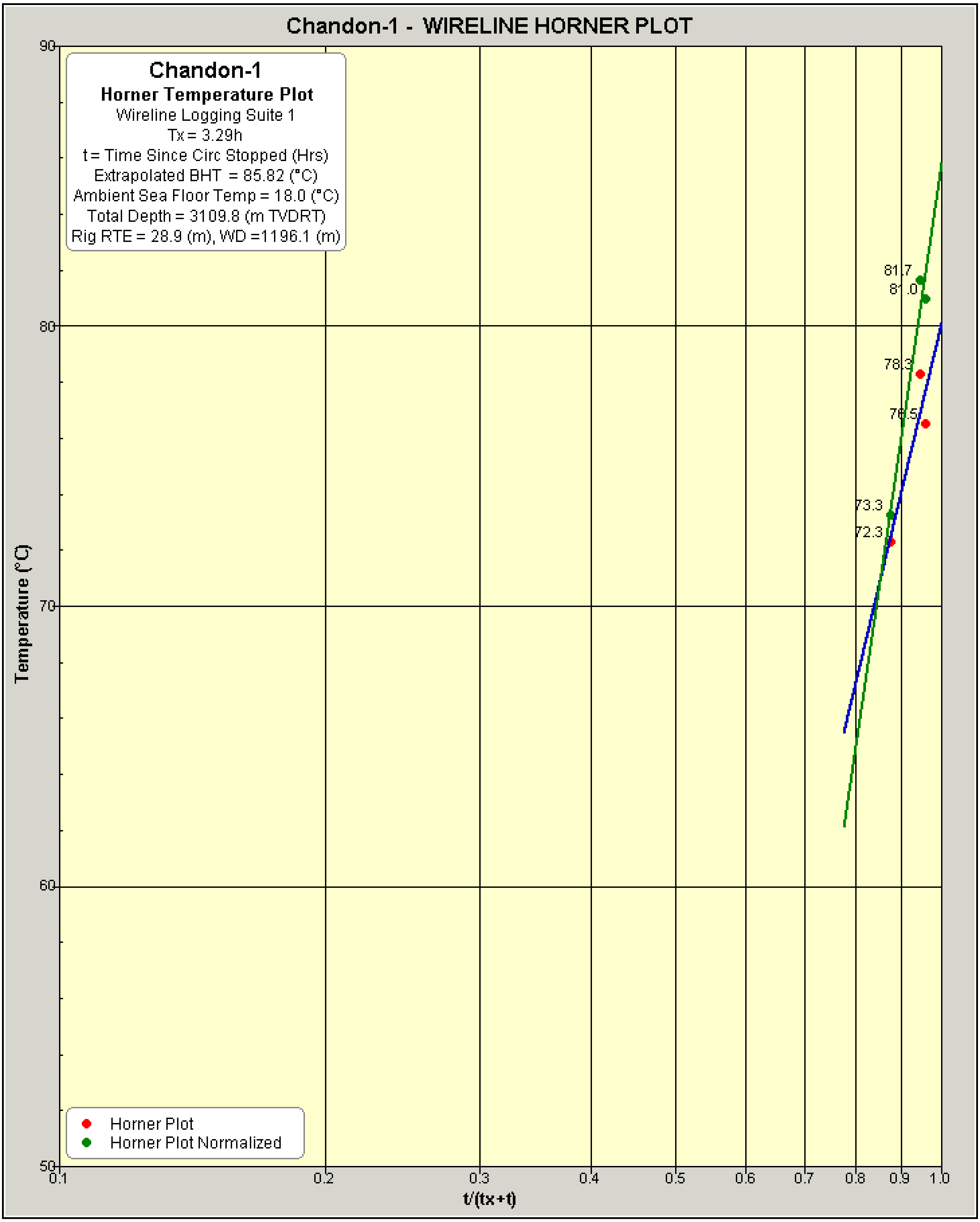
HORNER DATA		HORNER MODIFIED DATA *		SHELL METHOD	
Depth (m)	Temperature (°C)	Depth (m)	Temperature (°C)	Depth (m)	Temperature (°C)
1,196.10	18.00	1,196.10	18.00	1,196.10	18.00
3,080.91	85.82	3,080.91	93.55	3,080.91	95.24
GRADIENTS: 3.60°C/m(10		4.01 °C/m(100)		4.10 °C/m(10	

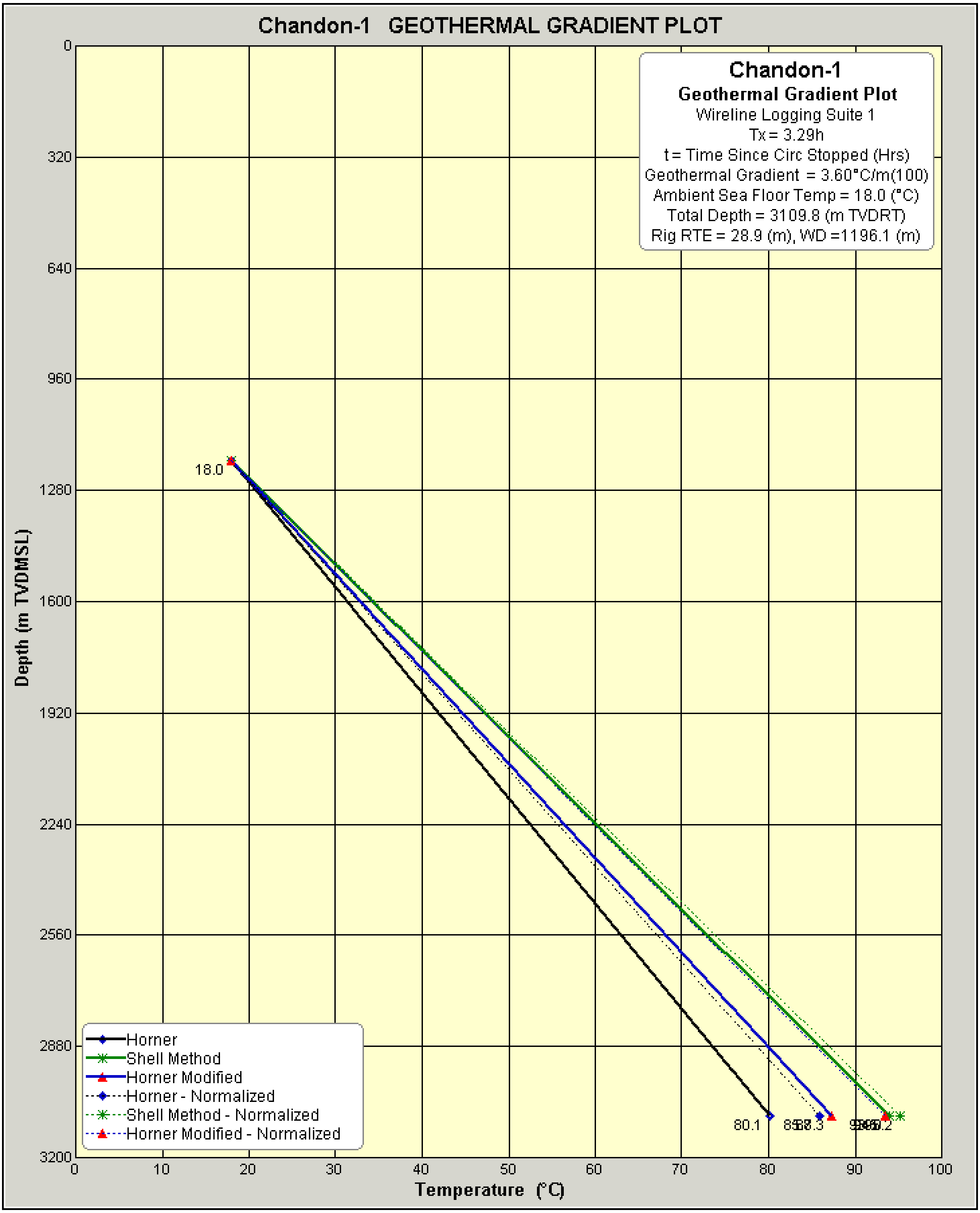
AVERAGE GRADIENT: 3.90°C/m(100)

Note (*) - BHT * 1.09 for NW Shell

EXTRAPOLATED BHT DATA

Horner BHT (°C)	Horner Modified BHT (°C)	Shell Method BHT : (°C)	Average BHT : (°C)
85.82	93.55	95.24	91.54


Chandon-1 - WIRELINE HORNER PLOT
Chandon-1
Horner Temperature Plot
Wireline Logging Suite 1
Tx = 3.29h
t = Time Since Circ Stopped (Hrs)
Extrapolated BHT = 85.82 (°C)
Ambient Sea Floor Temp = 18.0 (°C)
Total Depth = 3109.8 (m TVDRT)
Rig RTE = 28.9 (m), WD =1196.1 (m)
81.7
81.0
78.3
76.5
73.3
72.3
Horner Plot
Horner Plot Normalized
Temperature (°C)
t/(tx+t)
90
80
70
60
50
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0


Chandon-1 GEOTHERMAL GRADIENT PLOT
Chandon-1
Geothermal Gradient Plot
Wireline Logging Suite 1
Tx = 3.29h
t = Time Since Circ Stopped (Hrs)
Geothermal Gradient = 3.60°C/m(100)
Ambient Sea Floor Temp = 18.0 (°C)
Total Depth = 3109.8 (m TVDRT)
Rig RTE = 28.9 (m), WD =1196.1 (m)
18.0
80.1
Horner
Shell Method
Horner Modified
Horner - Normalized
Shell Method - Normalized
Horner Modified - Normalized
Depth (m TVDMSL)
Temperature (°C)
0
320
640
960
1280
1600
1920
2240
2560
2880
3200
0
10
20
30
40
50
60
70
80
90
100

APPENDIX 3

FORMATION EVALUATION REPORT (WITH PETROPHYSICAL EVALUATION PLOT – 1:500 SCALE) (BY CVX)

WA-268-P (R1)
Chandon 1

Formation Evaluation

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Compiled By:	Paul Theologou Petrophysicist		
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WA-268-P (R1) Chandon 1 Formation Evaluation

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APPENDICES

APPENDIX 1: SUMMARY OF LWD TO WIRELINE DEPTH SHIFTS APPLIED IN CHANDON 1

APPENDIX 2: SUMMARY OF WIRELINE MDT SAMPLES AND PRE-TESTS.

APPENDIX 3: SUMMARY OF INTERPRETATION PARAMETERS USED FOR THIS ANALYSIS

APPENDIX 4: SUMMARY OF NET RESERVOIR AND NET PAY STATISTICS FOR P10 P50 AND P90 CUT-OFFS

ENCLOSURE

ENCLOSURE 1 – EVALUATION SUMMARY PLOT

1.0 SUMMARY

The Chandon 1 exploration well was drilled by Transocean Semi-submersible Mobile Offshore Drilling Unit (MODU) 'Jack Bates' in Exploration Permit WA-268-P (R1) of the Carnarvon Basin (Dampier Sub-basin), some 256km WNW of Dampier and 146km NW of Barrow Island, Western Australia. A base map of WA-268-P (R1) is included as Figure 1. Chandon 1 was drilled in 1196.1 metres of water referenced to Mean Sea Level (MSL). The rotary table elevation was 28.9 metres.

Wireline logging for Chandon 1 was conducted in three runs. Run 1 consisted of the Platform Express (PEX), Sonic Scanner (MSIP), RtScanner (ZAIT), hostile natural gamma sonde (HNGS), inclinometry (GPIT) and four-arm caliper (PPC). The second run consisted of the Combinable magnetic resonance tool (CMR+) and the Modular formation tester (MDT). During Run 2 a pump failed, and the MDT was re-run without the CMR as Run3. The logging operation was completed incident free, and good quality data was acquired.

Measurement and logging while drilling was performed in Chandon 1 by Schlumberger Drilling & Measurement from a depth of 1225 m to total depth at 3124 m throughout the 445 mm (17 ½-in) and 311 mm (12 ¼-in.) hole sections. In both hole sections, pulsed real-time data and recorded memory data was acquired.

No cores were acquired, or production tests undertaken on Chandon 1.

Top porosity, and top gas was intersected at 2720m (TVDSS) corresponding with the top of the Mungaroo Formation. From an analysis of the MDT pressure profile, all intersected gas sands were filled as part of the same gas column and share a common gradient with an interpreted free water level of 2916.6m (TVDSS) giving a gross hydrocarbon column of 196.6m.

A combined deterministic and NMR based interpretation methodology has been employed, to help better define and reduce uncertainty in reservoir properties, in-particular through the shaly parts of the reservoir. In these intervals a standard deterministic approach was found to produce unrealistically pessimistic results.

Cut-offs of PHIE>7%, VSH<40% and SWT<60% were applied to generate the P50 net pay and net reservoir statistics. A total of 83.8m of net gas pay has been interpreted for the Mungaroo AA Formation with an average PHIT of 27.9%, VSH of 9.7%, PERM of 1743mD and SWT of 19.2%.

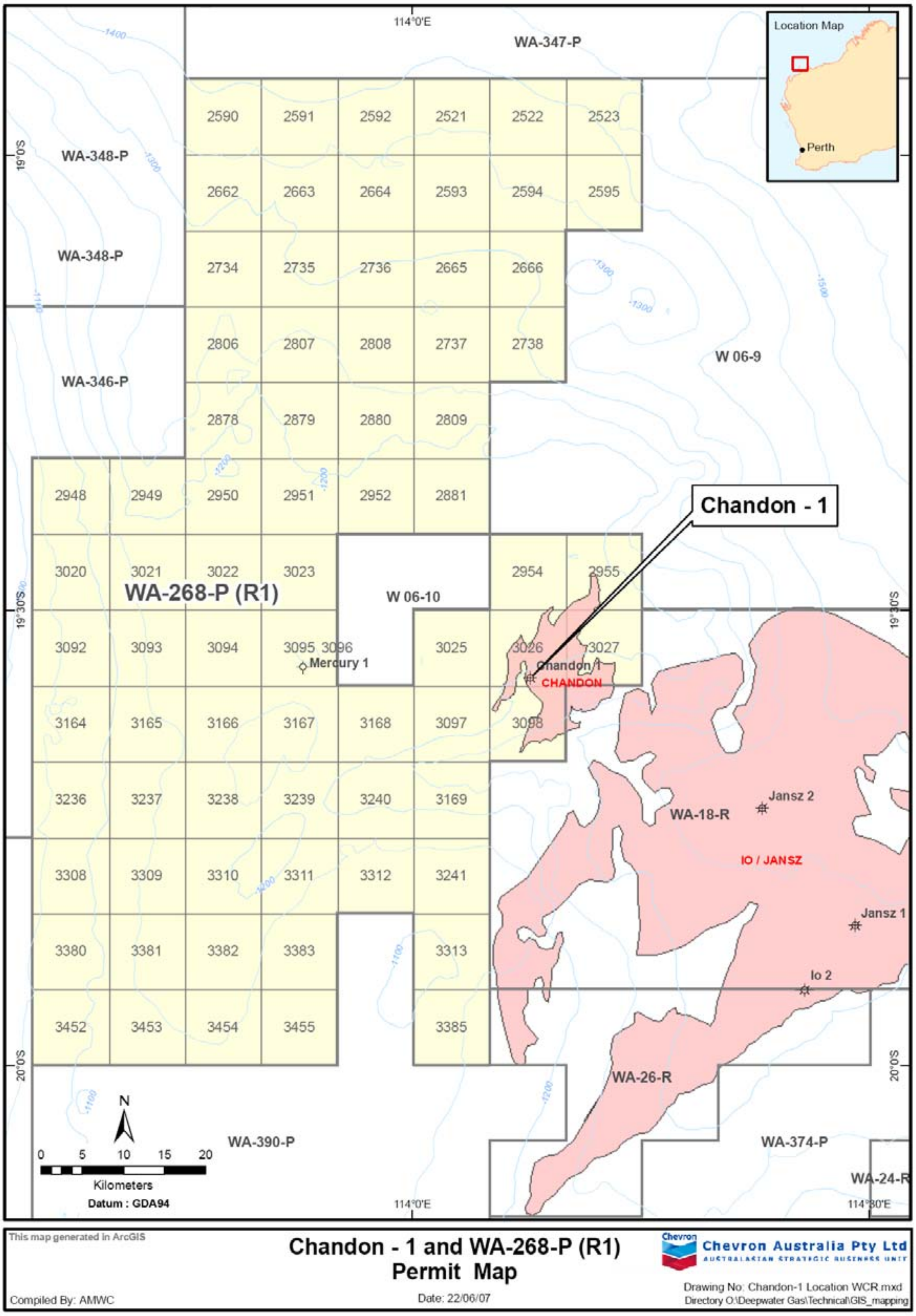

Figure 1: Location and permit map of Chandon 1 exploration well.

2.0 DATA AVAILABILITY

2.1 Wireline Data

Wireline logging for Chandon 1 was conducted in three runs. Run 1 consisted of the Platform Express (PEX), Modular Sonic Imaging Platform (MSIP), RtScanner (ZAIT), Hostile Natural Gamma Sonde (HNGS), General Purpose Inclinometry Tool (GPIT) and four-arm caliper (PPC). The second run consisted of the Combinable Magnetic Resonance Tool (CMR+) and the Modular Dynamic Tester (MDT). During Run 2, after successfully completing the CMR pass and obtaining all pre-test pressure data with the MDT, the pump-out module (PO) failed during the attempted first sampling which necessitated pulling out of hole (POOH), changing out the PO module and dropping the CMR sonde from the tool string. The MDT was re-run without the CMR as Run3. The logging operation was completed incident free, and good quality data was acquired.

A complete listing of the intervals logged in both the main and repeat passes are presented in Table 1.

The logging operation was completed incident free, and good quality data was acquired. Details of the wireline logging operations are documented in Appendices 3, 4, 5 & 6 of the Chandon 1 Well Completion Report (Basic Data) issued under separate cover.

Down time was recorded during Run-1 (0.45 hours) due to a fault with the Sonic Scanner whereby the upper monopole transmitter was not firing. A decision was made to run with the transmitter off and accept data loss. Down time of 3.45 hours was recorded during Run-2 due to a faulty pump out module. The tool had to be pulled out of hole and the pump changed out. A total of 6.8% of the wireline logging job time was recorded as down time.

2.1.1 Depth Shifts Used

Wireline log data for this interpretation was supplied depth-shifted by Schlumberger. This quality of the depth shifting was checked and no further depth shifts were required.

Table 1: Chandon 1 Summary of Wireline Logging Runs

Suite/Run	Wireline Log Tool String	Interval mMD	Circulation Time (Hours)	Circulation Stopped	Time Logger on Bottom	Time Since Circulation Stopped (hrs)	Max. Recorded Temp (^{O}C) @ mTVDSS
1/1	PEX-Rt Scanner-MSIP-GPIT-HNGS-PPC-ECRD	3106 - 2065; GR to seafloor & MSIP to 1550	3.29	30th June 2006; 02:24 Hrs	1st July 2006; 01:23 Hrs	22.98	72.3 @ 3040.0
1/2	MDT-CMR+-GR-ECRD (Pressures)	3062-2670m; (1st Pass-CMR); 2749.7-3027.1m (pressures)	3.29	30th June 2006; 02:24 Hrs	2nd July 2006; 13:15 Hrs	36.51	78.2 @ 2952.0
1/3	MDT-GR-ECRD (Samples)	2938 (pre-test); 2825.8-2981.1 (Samples)	3.29	30th June 2006; 02:24 Hrs	3rd July 2006; 04:20 Hrs	51.56	76.5 @ 2909.0

2.1.2 Wireline Log Data QC

All log data has been compared and contrasted to ensure the data is of good quality. When repeat sections have been logged the main and repeat passes have been overlain to ensure that the repeatability of the measurement is within acceptable limits. Repeat sections for all logging tools proved to be good.

The density tool was quality checked by inspecting the density detector, density computation and PEF inversion flags. In zones where the density or PEF data is flagged as poor, the caliper curve was checked for washout. The PEF inversion flag was commonly 'On' over porous intervals through the Mungaroo Formation. A check with Schlumberger revealed that this was due to the presence of barite in the mud, and the subsequent high density of the created mud cake. As a final check the RHOZ and RHO8 and the PEFZ and PEF8 curves were overlain to ensure the alpha processing was successful. The density and PEF logs were good over the entire open hole section, except above 2076.8 metres where the hole is enlarged due to drilling the intermediate section rat hole, or the logs were recorded through casing.

The neutron tool was quality checked by reviewing the neutron porosity flag. As an additional check all neutron porosity log outputs were overlain to ensure the alpha processing was successful and that all conversions are consistent. The neutron log is good over the entire open hole section except above 2076.8 metres where the hole is enlarged due to drilling the intermediate section rat hole, or the logs were recorded through casing.

The HNGS (hostile natural gamma sonde) data was quality checked by comparing the main and repeat passes only. These repeats were good.

The MSIP (sonic scanner) data was quality checked by comparing the main and repeat passes. As a check coherency plots of the reprocessed MSIP data were reviewed to ensure picks for DT compressional and DT shear were okay. The shear and compressional curves were also compared to other porosity logs (density and neutron) over the entire logged interval. This comparison showed that the sonic data was good.

2.1.3 CMR Processing

The CMR+ data has been reprocessed to remove the effect of gas from the response by adopting a density-NMR correction (Freedman et al, 1998). This allows for a better evaluation of permeability. The methodology used and the results of this work are presented in Appendix 12 of the Chandon 1 Well Completion Report (Basic Data) report (Doc ID: ASBU1-063040032) issued under separate cover.

2.1.4 MSIP Processing

The Chandon 1 MSIP processing was undertaken by Schlumberger DCS, and is summarised in Appendices 14/14a/14b of the Chandon 1 Well Completion Report (Basic Data) report (Doc ID: ASBU1-063040032) issued under separate cover.

Processing products requested from Schlumberger were:

Routine Processing:- P & S, 2D anisotropy, mono-pole radial profiling, rock physics
Advanced Processing:- Geophysics: 3D anisotropy, Stonely radial profiling, dipole radial profiling

2.2 MWD/LWD Data

Measurement and logging while drilling was performed in Chandon 1 by Schlumberger Drilling & Measurement from a depth of 1225 m to total depth at 3124 m throughout the 445 mm (17 ½-in) and 311 mm (12 ¼-in.) hole sections. In both hole sections, pulsed real-time data and recorded memory data was acquired. Real-time data was monitored at the well site.

The 311 mm (12 ¼-in.) hole section was drilled using the 210 mm (8 ¼-in.) Powerpulse MWD-ARC8 tool which nominally provides eight (8) resistivity measurements, however only three (3) of these measurements were acquired in Chandon 1 as in the 445 mm (17 ½–in) hole section.

A brief summary of the LWD logging runs is presented in Table 2 below. A summary of the MWD/LWD runs and full details of the MWD/LWD/APWD operations, are included in Appendices 1 and 7 of the Chandon 1 Well Completion Report (Basic Data) report (Doc ID: ASBU1-063040032) issued under separate cover.

Table 2: LWD Log Summary

Run No.	Hole Size (mm)	Tool Sizes (mm)	Logging Tools	Depth Interval (m)	Date Started	Date Finished
1	445	229	Powerpulse MWD-ARC9 (GR-Res)-APWD	1225-2077	21/06/2006*	2/06/2006
2	311	210	Powerpulse-MWD-ARC8 (GR-Res) – APWD	2077-3124	27/06/2006	30/06/2006

❖ Picked up first tools in BHA on the 20th June 2006 inside conductor.

The LWD data was depth shifted to be on-depth with the main depth reference log (first run of the main PEX suite) using an automatic depth shift algorithm, followed by manual QC. Depth shifts applied are summarised in Appendix 1.

2.3 Mud Log Data

The mud log data is based on driller's depth, and thus has been shifted to match logger's depth based on the depth shifts derived using MWD logs.

The mud gas compositions have been used to evaluate GWR (gas wetness ratio), LHR (light heavy ratio) and OCQ (oil character quality) using the method presented in Haworth et al. (1985) and are presented in Figure 2.

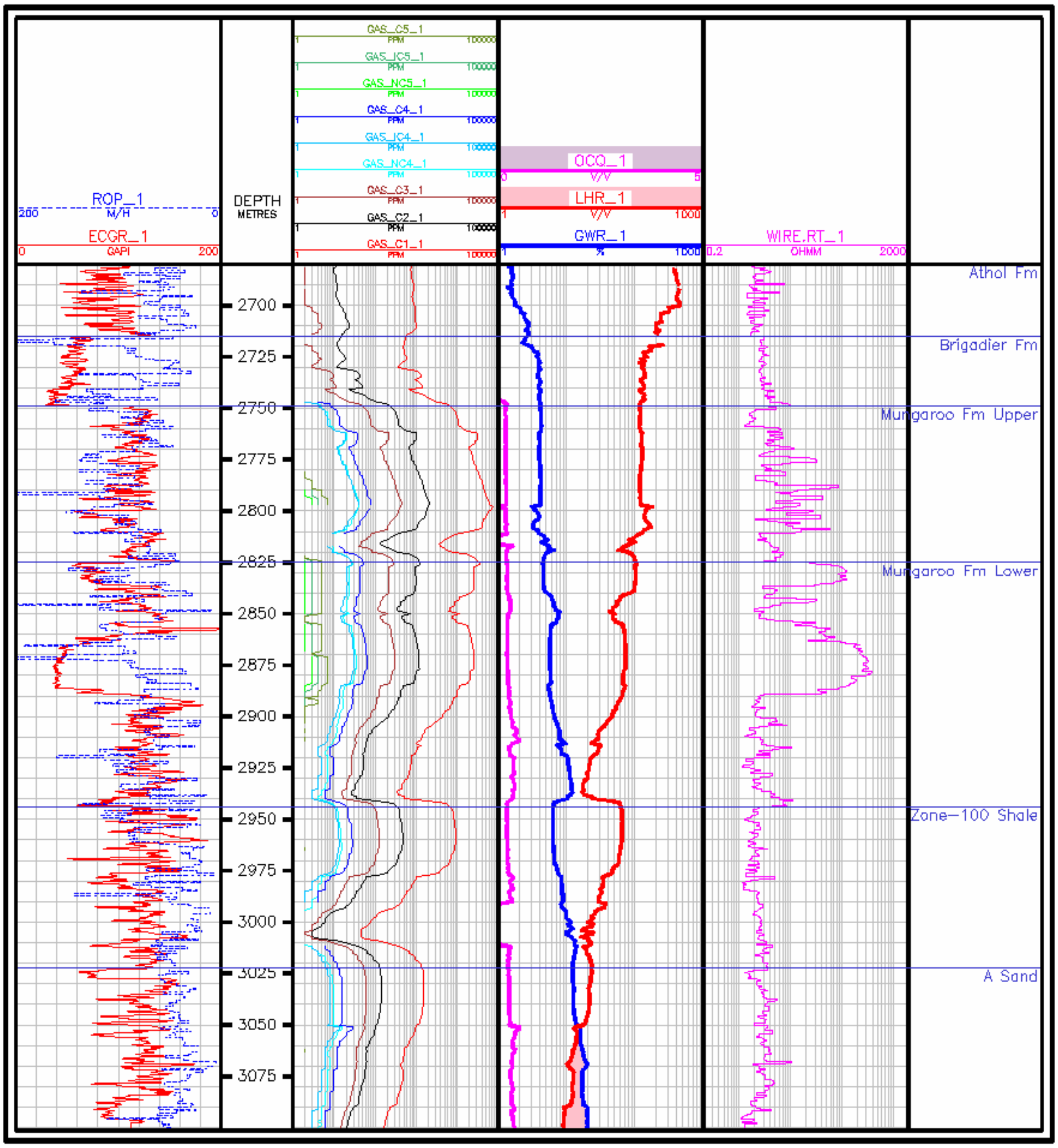

Figure 2: Depth summary of mud gas, ROP, and resistivity from the objective interval in Chandon 1.

2.4 Core / Sidewall Core Data

No whole core or mechanical sidewall core samples were acquired in Chandon 1.

2.5 DST / WFT Data

2.5.1 Wireline Formation Testing

All of the required wireline testing data in Chandon 1 were acquired in two runs of the *Schlumberger* Modular Formation Dynamics Tester (MDT). Two large diameter probes were run on the MDT tool; the second probe was for redundancy purposes only. The tool was also configured with a Pump-out Module (MDT-PO), a Live Fluid Analyser (MDT-LFA) and a Compositional Fluid Analyser (CFA).

The sample chamber configuration consisted of:

- 1 x multi-sample module (MDT-MRMS) with 4 x 450cc MPSR sample chambers and 2 x 250 SPMC sample chambers set up for low-shock sampling and;
- Two x 3.785 litre (US 1 gallon) sample chambers set up for low-shock sampling.

A total of 4 x 450cc, 2 x 250 cc and 2 x 3.785 litre (1 gallon) samples were attempted and recovered.

A summary of the wireline testing samples is presented in Appendix 2. An interpretation report of the MDT results is included as Appendix 4 of the Chandon 1 Well Completion Report (Interpretive Data) Report.

2.5.2 Pressure

A total of 80 pre-tests were attempted with 2 x repeat draw-downs, 56 were successful, 16 x tight tests and 3 x lost seals, 1 was supercharged and 2 tests were aborted. A summary of the wireline pressure data is presented in Appendix 2 and a plot of the pressure data is presented in Figure 3.

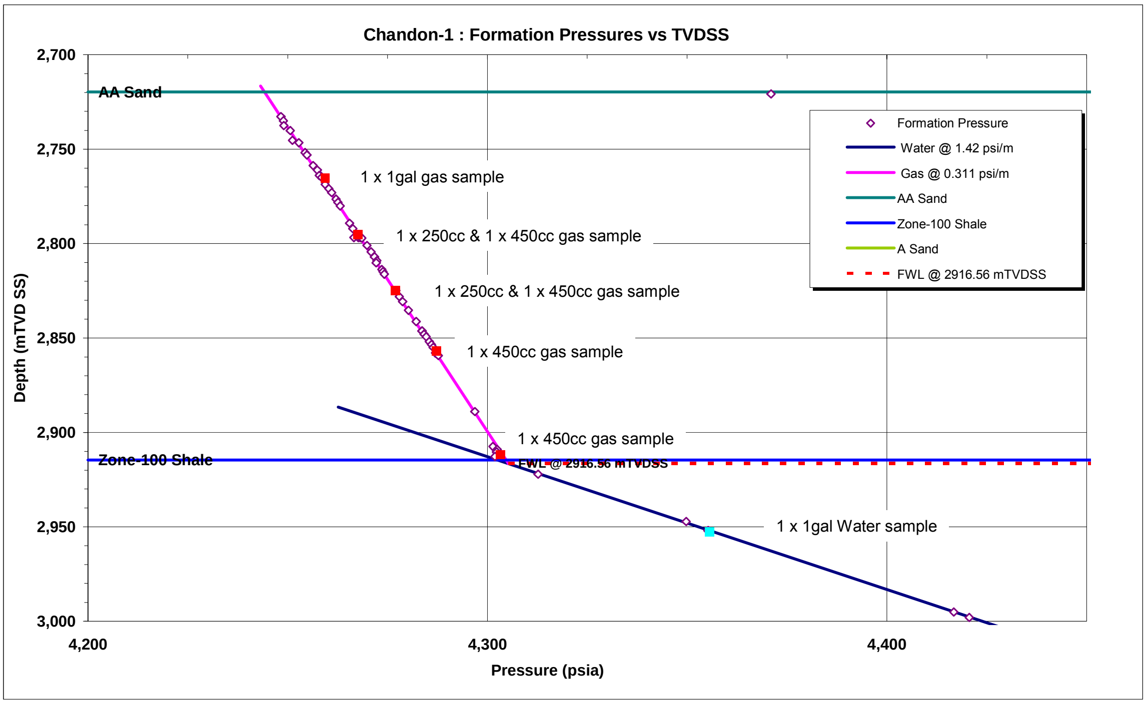

Figure 3: Summary of wireline formation pressure and sampling data in Chandon 1. Red dots indicate the depths of the gas samples, blue dot indicate the depth of the water sample. A free water level of 2916.6m (TVDSS) has been interpreted.

2.5.3 Mobility

Mobility is estimated from the pressure versus time data acquired during the draw down. This calculation is automatic and assumes spherical flow to occur. The calculated mobilities are presented on the evaluation summary plot (Enclosure 1) in the permeability track.

2.6 Produced Water

2.6.1 MDT Sample Analysis

One bulk water sample was acquired by the MDT in Chandon 1 at a depth of 2981.1mDRT (2952 mTVDSS), see Table 3. No tracers were run so the amount of contamination is difficult to ascertain accurately, however given that a SBM was used, and a pump-out module, contamination should be relatively low.

The results indicate a water salinity of 29,200 mg/L (NaCl equivalent). This equates to a formation water resistivity of approximately 0.219 ohm.m @ 25degC.

Table 3: Summary of MDT water sample chemistry analyses.

Client:	Chevron	Field:	Chandon
Well:	Chandon-1	Rig:	Jack Bates
Permit:	WA-268-P	Easting:	198691.4m
Latitude:	19°34'32.21"	Northing:	7832948.4m
Longtitude:	114°07'41.25"	Elevation:	RT: +28.9m WD: 1196.1m

WATER ANALYSIS

Sample 1.07 (A-B-C)
Depth: 2981.1 m MDRT
Date: 2/07/2006 Time: 23:02

Physical properties		*Sample*
pH	7.25	1.07A
Conductivity (mmho/cm) at 25°C	45.6	1.07A
Total Dissolved Solids (mg/L), NaCl equivalent	29200	1.07A
Resistivity (ohm.m) at 25°C	0.219	1.07A
Total Dissolved Solids (mg/L), gravimetric at 180°C	30300	1.07A
Density (g/mL) at 25° C	1.0180	1.07A

Ion name	*Ion symbol*	*mg/L*	*me/L*	
Sodium	Na	10600	461	1.07B
Potassium	K	170	4.3	1.07B
Lithium	Li	1.5	0.2	1.07B
Calcium	Ca	340	17.0	1.07B
Magnesium	Mg	59	4.9	1.07B
Barium	Ba	64	0.9	1.07B
Strontium	Sr	58	1.3	1.07B
Iron	Fe	1.5	0.1	1.07B
Manganese	Mn	0.2		1.07B
Silicon	Si	20		1.07B
Boron	B	28		1.07B
Chloride	Cl	17110	483	1.07A
Carbonate alkalinity as CO_3	CO_3	0	0.0	1.07A
Bicarbonate alkalinity as HCO_3	HCO_3	875	14.3	1.07A
Sulphate	SO_4	4	0.1	1.07A
Nitrate	NO_3	1.6		1.07A
Thiocyanate	SCN	<0.1		1.07A
Dissolved carbon dioxide	CO_2	81		1.07A
Hydrogen sulphide	H_2S	0.6		1.07C
Cations			490	
Anions			497	
Sum of Ions		29331	987	
% Variation (anions over cations)			0.7	
Formic acid		< 10		1.07C
Acetic acid		113		1.07C
Propanoic acid		35		1.07C
Butyric acid		5		1.07C
Hexanoic acid		28		1.07C

Notes:
1.07A Unpreserved sample
1.07B Preserved with nitric acid (pH <2)
1.07C Preserved with zinc acetate / sodium hydroxide
Water analysis conducted by Geotechnical Services Pty Ltd.

2.7 Mud Properties

Chandon 1 was drilled using a synthetic oil-based mud system. The mud properties are described in Table 4.

Table 4: Chandon 1 Temperature, Drilling and Mud Property Data

Hole & Casing Details	
Water Depth (m)	1196.1
Hole Size (mm)	311
Depth Driller (m)	3124
Depth Logger	3110
Casing Size (mm) and Depth Driller (m)	340 (13⅜”) @ 2067
Casing Size (mm) and Depth Logger (m)	340 (13⅜”) @ 2065
Mud Data	
Last Circulation (hrs)	3.29
Last Circulation Stopped	30th June 2006; 02:24 Hrs
Rm @ Measured Temperature	N/A
Rmf @ Measured Temperature	N/A
Rmc @ Measured Temperature	N/A
Rm @ BHT	N/A
Mud Type	SBM
Oil:Water Ratio	64:36
LGS:HGS (%)	4.04:3.49
Mud Weight (g/cc)	1.145
Water Content	SBM
Bromonaphthalene Tracer (mg/l) in Oil Phase	Nil
Sodium Bromide in Water Phase	Nil
Calcium Chloride Activity	0.783
Electrical Stability (v)	540
HGS (%)	6.58
Salinity (chlorides) (mg/l) Water Phase	176,987
Yield Point	19
Funnel Viscosity	80
Plastic Viscosity (cp)	24
Fluid Loss (cc)	2.8
Temperature Data	
Maximum Recorded Temperature (^{O}C)	78.2
Extrapolated BHT (^{O}C)	(Refer to Interpretive Well Completion Report)
Seafloor Temperature (^{O}C)	5
Surface temperature (^{O}C)	Not Recorded
Present Day Geothermal Gradient	(Refer to Interpretive Well Completion Report)

2.8 Temperature

There were no temperature surveys run in Chandon 1. Three maximum recording thermometers were used on all wireline logging runs to record the borehole temperature. The temperatures shown in Table 5 were recorded on the three open hole logging runs conducted at final TD (3124 m):

Table 5: Wireline Recorded Temperature Data

Run No.	Log	Max. Recorded Temperature	Depth (m) TVDSS	Hours Since Last Circulation	t/(tx+t)
1	PEX/RtScanner/ MSIP/HNGS/GP IT/PPC/ECRD	72.3°C	3,040 m	22.98 hrs	0.8748
2	MDT/CMR+/GR/ ECRD	78.2°C	2,952.0 m	36.51 hrs	0.9471
3	MDT/GR/ECRD	76.5°C	2909.0 m	51.56 hrs	0.9574

A seabed temperature of 5^{O}C at 1196 m was measured by the remote operated vehicle (ROV). A modified Horner extrapolated bottom hole temperature of 93.55°C, representing a geothermal gradient of 4.01 deg/100m has been interpreted for Chandon 1 (Chandon 1 Well Completion Report (Basic Data) Report.

3.0 ENVIRONMENTAL CORRECTIONS

The platform express tool is speed corrected so that all measurement sondes (HGNS, ZAIT, HRDD and HRCC) have a significantly improved depth correlation with respect to each other. All corrections conducted by Schlumberger were either done in real time, or on play-backs conducted before final data was dispatched from the well site.

3.1 Gamma Ray (HGNS)

Schlumberger environmentally corrected the gamma ray log for hole size, mud density and tool type.

3.2 RtScanner (ZAIT)

Schlumberger environmentally corrected the Rt Scanner in the field. The correction algorithm iteratively solves for borehole effect parameters of standoff, mud resistivity, hole size, direction of standoff and formation anisotropy by an error minimisation approach.

3.3 High Resolution Density (HRDD)

Schlumberger environmentally corrected the high resolution density log for hole size and mud type.

3.4 Thermal Neutron (CNT)

Schlumberger environmentally corrected the neutron log for hole size, mud cake thickness, borehole salinity, mud weight, mud type, standoff, borehole temperature and pressure. The thermal neutron curve has not been corrected for formation salinity.

3.5 Sonic Scanner (MSIP)

No environmental corrections are required to the sonic log. Schlumberger reprocessed the MSIP logs to produce better quality shear and compressional transit times (Appendix 14, 14a and 14b of the Chandon 1 Well Completion Report (Basic Data) issued under separate cover.

3.6 Combinable Magnetic Resonance (CMR)

No environmental corrections are required to the CMR log. Schlumberger reprocessed the CMR logs to account for gas in the measurement volume, this has improved the CMR total porosity and permeability evaluation (refer Appendix 12 of the Chandon 1 Well Completion Report (Basic Data) Report issued under separate cover.

3.7 Spectral Gamma (HNGS)

Schlumberger environmentally corrected the spectral gamma log for hole size, tool position, mud weight and barite.

4.0 INTERPRETATION METHODOLOGY

4.1 Lithology

The main focus of the petrophysical analysis in Chandon 1 was the primary objective – the Mungaroo Formation. The Mungaroo Formation is largely composed of a thick package of fluvial sandstones and non-marine to brackish siltstones, with grey to black claystones and coaly shales. The majority of the Mungaroo Formation in the area is interpreted to have been deposited within a broad, low relief, rapidly subsiding coastal plain, which included an extensive swamp system cross-cut by multiple river systems (Korn et al, 2003).

The Mungaroo Formation has been subdivided into a series of seismically resolvable sequences which appear to form packages of alternating sand-rich/clay-rich depositional units. The upper part of the Mungaroo sequence was deposited during a relative sea-level rise, which resulted in more fine grained sedimentation, and some marine incursions (Korn et al, 2003).

The overlying units of the Brigadier Formation, Undifferentiated Athol Formation/Murat Siltstone and Dingo Claystone were deposited under marine conditions. Sheet sand development (possibly transgressive sands) have produced thin but extensive sands – Tithonian Sand and Oxfordian Sand which may contain gas accumulations.

Of most volumetric importance is the AA sand member of the Mungaroo Formation. This unit has been divided into the upper AA Marginal Marine facies and the AA Fluvial facies, based on lithology and palynology. The marginal marine facies consists of thin channel sands and floodplain deposits interspersed with frequent marginal marine episodes. The AA fluvial facies is characterised by blocky stacked channel sands and fining upwards channel fill deposits.

Mineralogically, the Mungaroo Formation sands are dominated by fine to coarse grained quartz, moderately to well sorted sub-arkoses with minor sub-litharenites. Some sandstones (particularly within the AA Marginal Marine) and regional sand poor intervals, may be carbonate cemented. “Hot sands” have been recognised, particularly in the marginal marine interval, probably related to the presence of K-feldspar and/or heavy minerals.

4.2 Interpretation issues

This relatively simple mineralogy makes the interpretation of these sands under normal circumstances fairly straight forward. However in the presence of gas saturated sands, the estimation of Vsh can be somewhat uncertain. Through the marginal marine section, the reservoir tends to be finely bedded/laminated, meaning that resolution issues also come into play.

In order to understand and quantify the uncertainty that exists in the evaluation two methodologies were attempted.

4.3 Standard Deterministic Workflow

4.3.1 Volume of Shale (VSH)

Environmentally corrected logs were used to estimate the volume of shale (VSH) through the open hole interval. The presence of gas in the pore space, as well as some K-Feldspar in the framework grains complicated the VSH estimation process.

Differentiation between water-saturated and gas-saturated formation could be made prior to the analysis (based on the response of the nuclear and resistivity tools), therefore specific interpretation parameters for each interval could be applied enhancing the quality of the analysis. In-particular, the D-N endpoint parameters were modified through gas bearing intervals to account for the gas effect on the logs (Figure 4).

VSH was estimated using a linear GR method, and a density-neutron (D-N) method. The minimum of these two methods was used as the final VSH log.

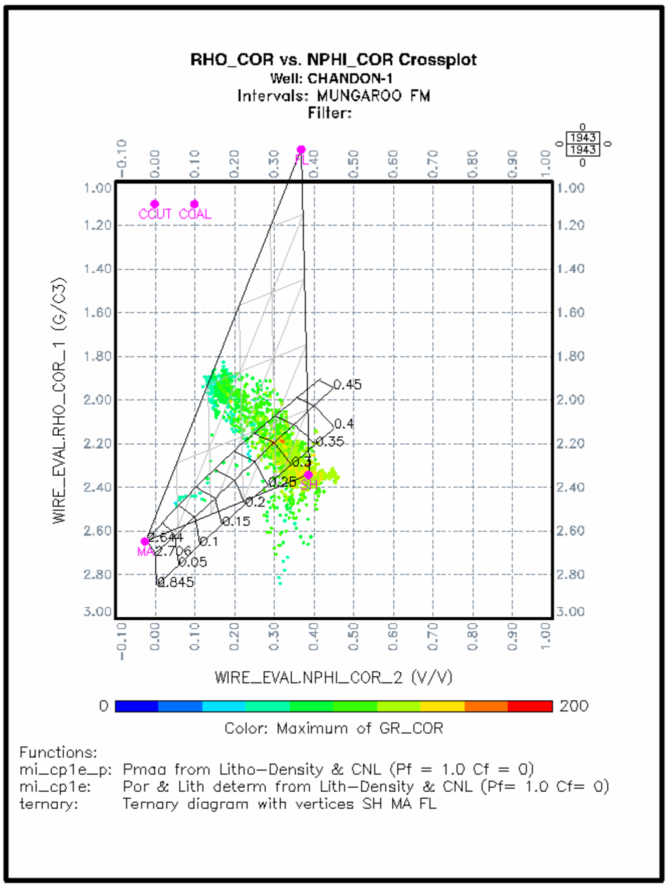

Figure 4: Example of how D-N fluid parameter points are modified in order to account for gas effects in the estimation of Vsh.

4.3.2 Porosity

Total and effective porosity was estimated using the D-N Bateman-Konen technique as implemented in Geolog6. In this method, the cross plot porosity and matrix density are derived using the method of Bateman and Konen (1977). The density and neutron response equations are combined to give cross plot porosity and the use of suitable "pseudo-minerals" ensures that the solution area encloses all anticipated log responses. Once a "shale reduced" porosity is determined, matrix density is calculated.

The porosity algorithm firstly calculates effective porosity from the shale-reduced input log measurements, and then compute total porosity by adding VSH*PHITsh (bulk volume of shale porosity) to the value of effective porosity. In this method a value for total shale porosity must be know in order to accurately estimate total porosity.

In Chandon 1 the CMR+ tool was run over the upper part of the Mungaroo Formation. The total porosity (TCMR) computed from the T2 distributions offers the best available estimate of shale total porosity, where the TCMR will equal BFV plus Clay bound water volume (CBW) and no effective porosity will be recorded.

4.3.3 Water Saturation

Water saturation through the sequence was estimated using the Dual-Water equation. The VSH, and total porosity logs were used as input into the Dual-Water water saturation estimations. The following is a summary of how the input parameters were derived.

4.3.3.1 Archie Parameters

No core data was available from Chandon 1 for calibration of electrical properties parameters. In the absence of this core data, a value for cementation exponent (m^0) of 1.8 was used, based on data from other wells in the region. A standard value for saturation exponent (n^0) of 2 was used for this analysis.

The bound water saturation (Swb) is estimated from the cation exchange capacity (CEC) and Vsh. The CEC of the dry shale can be a difficult parameter to calibrate. Given the clean nature of the majority of the sandstone reservoirs in this field, the clay conductivity should have little to no effect on the final predicted gas saturations, but may have more significant impact in the more shaly intervals of the sequence. Based on information from off-set wells, a value of 0.06 meq/g was used.

4.3.3.2 Formation Water Salinity

Formation water salinity was estimated from the produced water sample and from an apparent water resistivity analysis from logs in water saturated sands.

<u>Produced water samples</u>
A water sample was obtained from a sand interval within the Zone-100 shale sequence near (below) the free water level at a depth of 2981.1m. The recovered water sample had a salinity of 29,200 mg/L (NaCl equivalent). This equates to a formation water resistivity of approximately 0.219 ohm.m @ 25degC.

<u>Apparent water resistivity analysis</u>
Apparent water resistivity analysis was conducted using the Dual-Water equation through the water bearing, clean sandstone intervals of the Mungaroo Formation. This analysis predicted an apparent resistivity of 0.238 ohm.m @ 25°C (24,800 ppm NaCl equiv.) for a water wet sand within the Z-100 shale and 0.29 ohm.m @ 25°C (20,000 ppm NaCl equiv.) for the A sand (Figure 5).

The values derived from the apparent water resistivity analysis were used in this analysis. These values were preferred as they will result in an internally consistent analysis. If the electrical properties parameters of the formation were better understood, then use of the measured water salinity would be more appropriate, and it is likely that the salinity from Rwa would approach the measured value in this case.

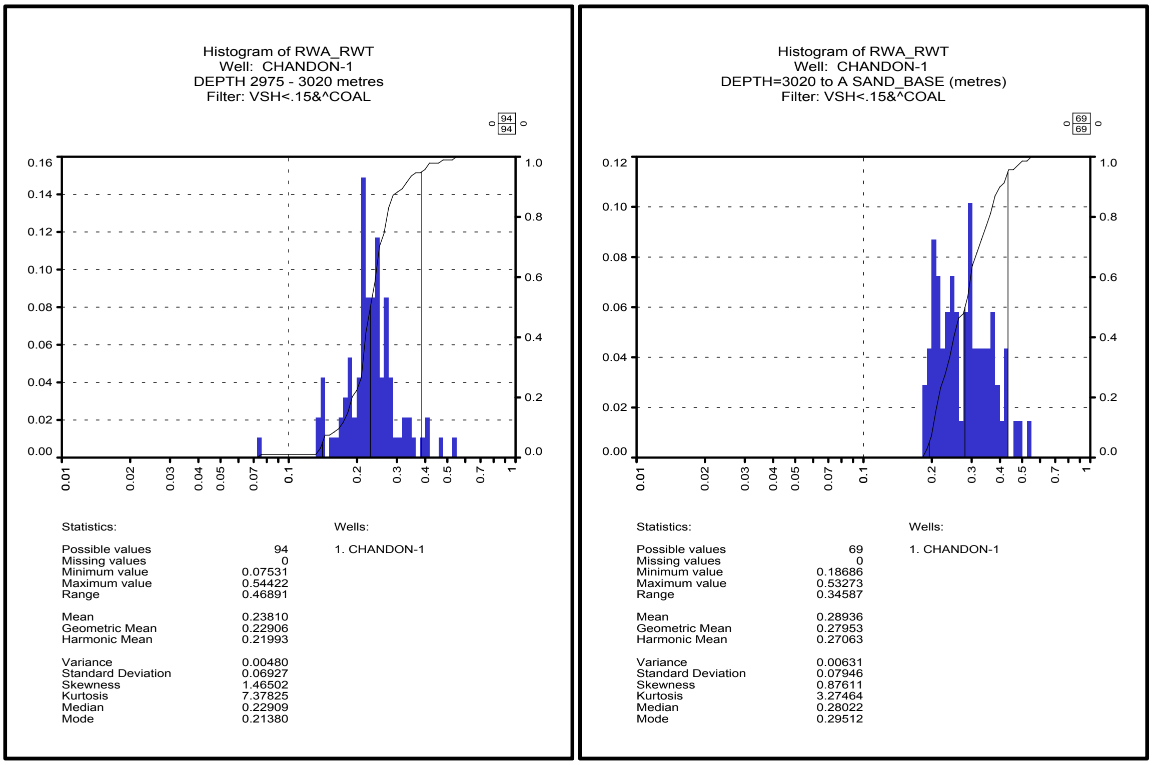

Figure 5: Histogram of apparent water resistivity for a water saturated Mungaroo Z-100 sand and A-sand in Chandon 1.

4.3.4 Results

A review of the results from the standard deterministic approach indicated that the methodology may have been underestimating the amount of net gas pay within the sequence (in particular the marginal marine sequence).

Figure 6 shows the location of net pay following the standard analysis. There are zones where effective porosity and permeability are relatively high, however the estimated shale volume is above cut-offs due to a combination of gas effect, laminated sequence, and ‘hot’ sands. The bi-modal distribution of the T2 relaxation are supportive of the presence of effective porosity thought these intervals (blue intervals in Figure 6).

It is also possible that the cut-offs applied are not appropriate in this well. This has not been tested as part of this investigation.

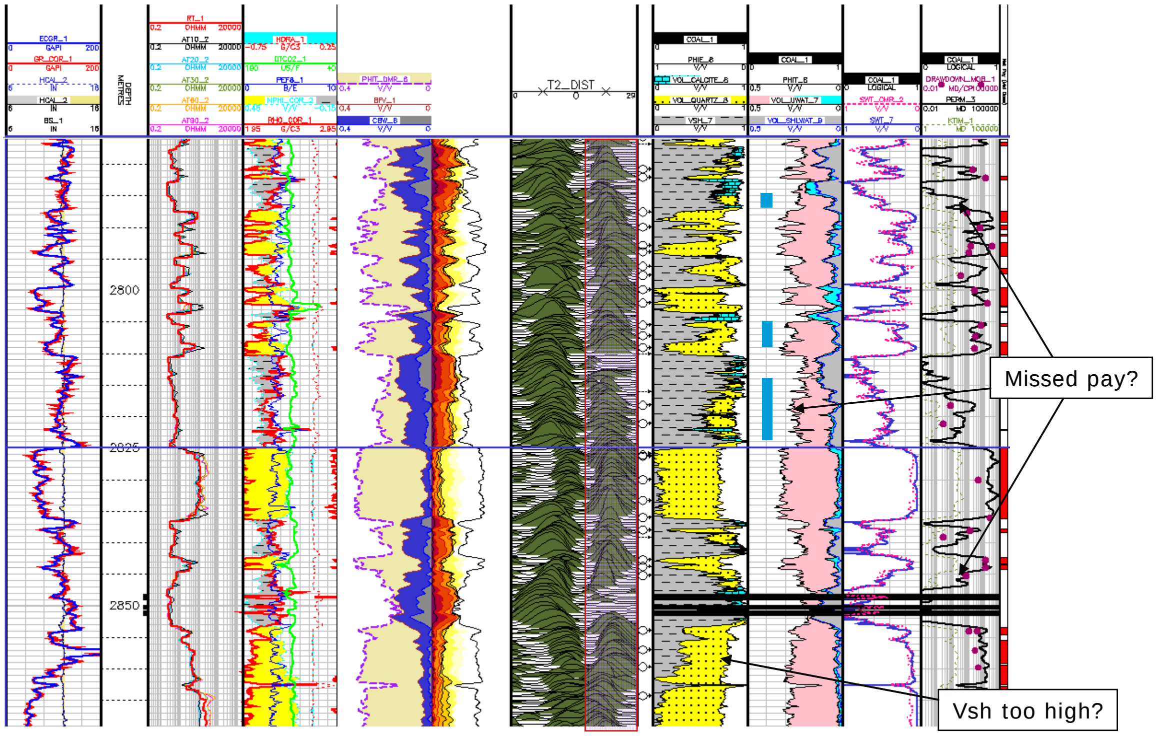

Figure 6: Example of intervals where the standard deterministic analysis may be under-estimating net pay.

4.4 Modified NMR-based analysis

An alternative methodology was developed to incorporate the NMR data into the workflow, as this tool seemed to be able to better identify the presence of reservoir quality sands.

4.4.1 Volume of shale (VSH)

The NMR response of the formation was used to estimate the volume of shale in the reservoir. The short T2 time response of the NMR log is known to be controlled by the volume of clay bound water in the formation. A 3msec cut-off is normally applied to estimate this volume of clay bound water (Figure 7). In fact this is a pore size response – rather than a mineralogical response, and therefore should provide us with a reasonable estimate of the volume of the very fine grained (shale) component of the rock.

To ensure a constant petrophysical evaluation, the correct end-points should be chosen. The clean sand end-point is simply when clay bound water volume (CBW) is equal to zero. The 100% shale point was chosen to correspond to the point at which the free fluid porosity (i.e. porosity greater than 33msec) is equal to zero (Figure 8). This defines rock which theoretically cannot hold any hydrocarbon (i.e. pore space consists of micro-porosity and clay-bound water). This represents the equivalent to no effective porosity in a standard deterministic analysis. It has been found in this well to roughly correspond with the maximum measured CBW values.

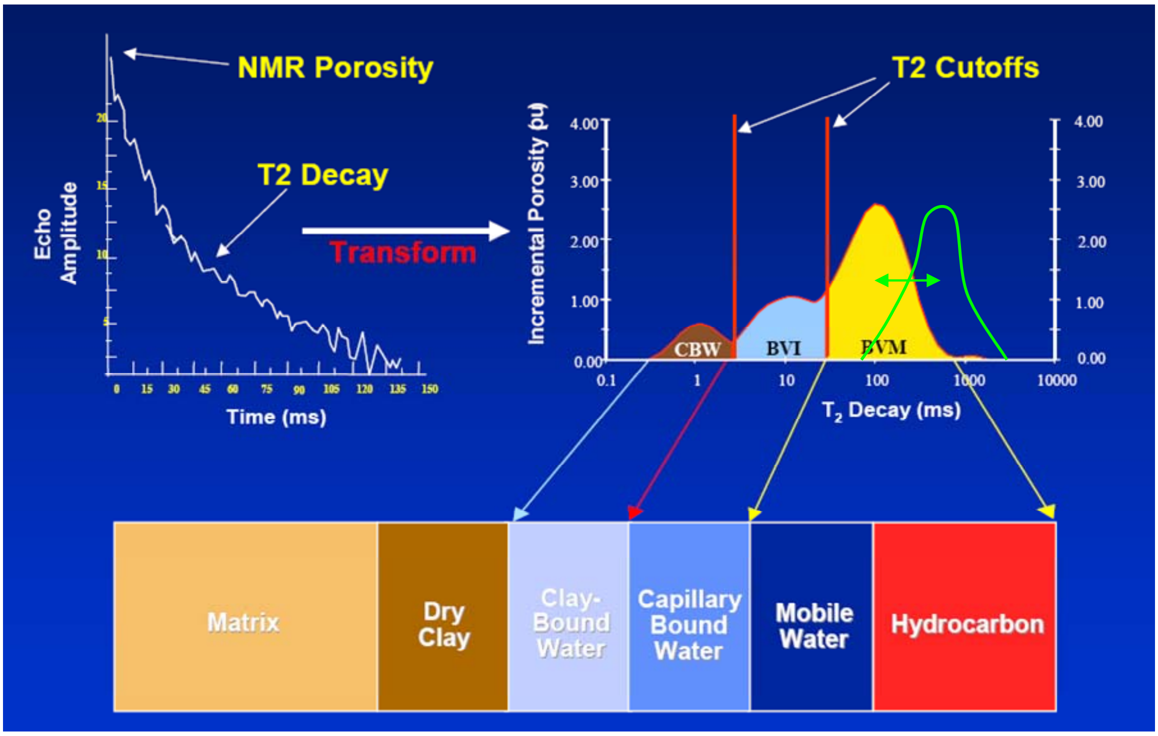

Figure 7: Interpretation of T2 distributions for fluid components of the pore space. 3msec is commonly used to define clay-bound pores, and 33 msec for capillary bound pores (after Torres-Verdin, 2002)

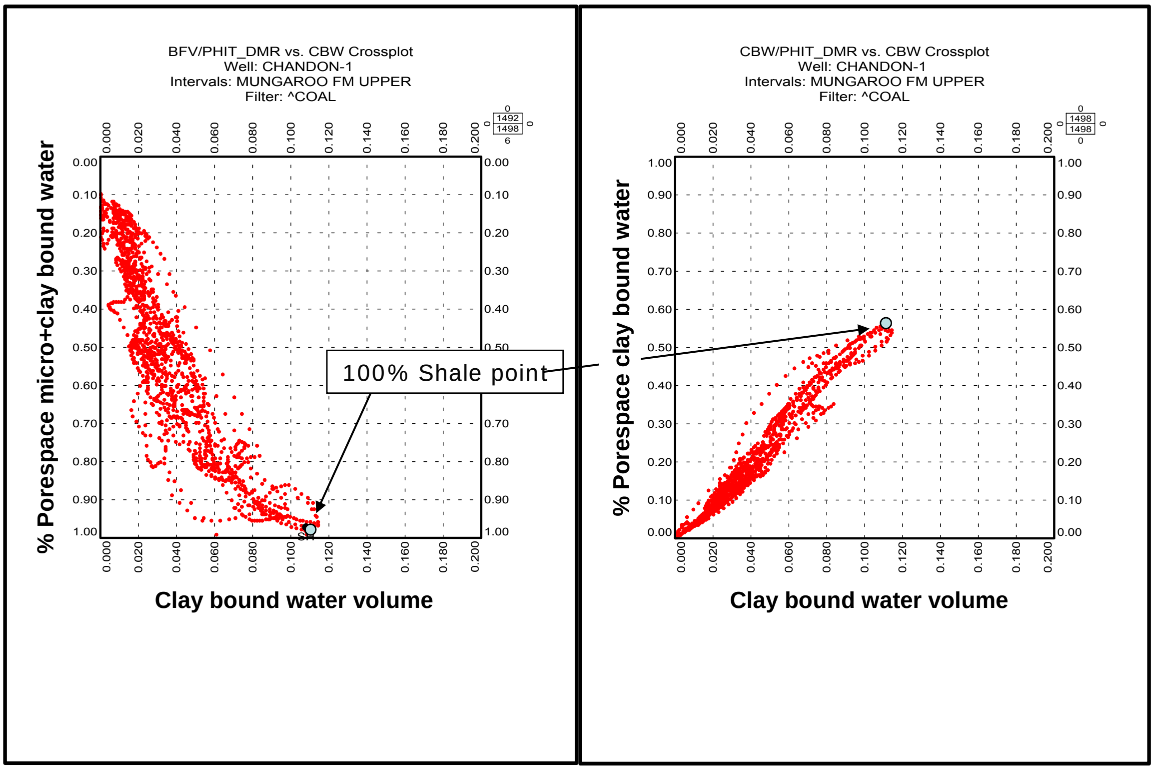

Figure 8: End-point calibration of Vsh from CBW. 100% shale point corresponds with the pore space containing no pores with T2 greater than 33msec (i.e. only clay bound water and capillary bound water).

As with all methods, there are some limitations to using the NMR data in this way. Factors which may cause the estimate to be in error are:

- Variable mud filtrate (SBM) invasion causing a change in the T2 distribution
- Relatively poor vertical resolution
- Noise at low CBW levels

4.4.2 Porosity

Through water saturated intervals the total CMR porosity (TCMR) should provide a reliable indication of total porosity. However, through the gas saturated sands, TCMR tends to underestimate total porosity for two reasons. Firstly the long T1 of gas means that it may not be fully polarised at the time of the measurement, and secondly the low hydrogen index of the gas. Polarisation corrections (or using long wait times during acquisition) can remove the effects of the long T1 of the gas. In Chandon 1 the tool was logged at sufficiently slow speed to fully polarise the gas.

For HI corrections a density-magnetic resonance porosity (DMRP) has been estimated using the following equation:

$$\phi_{DMR} = DPHI * w + (1-w) * \frac{TCMR}{(HI)_f}$$

Where:

$DPHI$ = $\dfrac{\rho_b - \rho_{ma}}{\rho_f - \rho_{ma}}$

w = $\dfrac{1 - \dfrac{(HI)_g * P_g}{(HI)_f}}{\left(1 - \dfrac{(HI)_g * P_g}{(HI)_f}\right) + \lambda}$

λ = $\dfrac{\rho_f - \rho_g}{\rho_{ma} - \rho_f}$

P_g = $1 - \exp\left(-\dfrac{W}{T_{1g}}\right)$ = gas polarisation function

$(HI)_f$ = *Hydrogen index of the liquid phase on the flushed zone at reservoir conditions*
$(HI)_g$ = *Hydrogen index of gas at reservoir conditions*
ρ_b = *measured formation bulk density (g/cc)*
ρ_{ma} = *formation matrix density (g/cc)*
ρ_f = *density of the liquid phase in the flushed zone (g/cc)*
ρ_g = *density of gas at reservoir conditions (g/cc)*
W = *wait time for CMPG pulse sequence (s)*
T_{1g} = *gas longitudinal relaxation time at reservoir conditions (s)*

The model used assumes that the formation consists of a porous rock matrix and pore space filled with a liquid and a gas phase. The liquid phase is assumed to be a mixture of formation brine and mud filtrate. It is also assumed that the density tool and the CMR tool are responding to the same volume of rock, i.e. there has been the same amount of mud filtrate invasion affecting both readings. Given that the CMR reads approximately 1.5” into the formation, the density tool reads about 5-8” into the formation it is possible that different volumes of gas could be ‘seen’ by the tools leading to uncertainty in the DMRP calculation.

Given that the NMR tool provides us with an estimate of CBW volume, we can also estimate effective porosity PHIE as:

$$PHIE = PHIT - CBW$$

4.4.3 Water Saturation

Water saturation through the sequence was estimated using the Dual-Water equation. The total and effective porosity logs (derived from DMR) were used as input into the Dual-Water water saturation estimations. The parameters used are the same as discussed in section 4.3.3. The saturation of bound water was estimated directly from the difference between PHIE and PHIT, which means that an estimate of dry shale CEC is not required.

4.4.4 Results

The NMR based evaluation provides a more optimistic evaluation of net hydrocarbon pay. The main driver behind the change in net hydrocarbon pay is the change in estimated Vsh. The change in porosity and Sw are relatively small.

This is not surprising, as we would expect that Vsh would have a high amount of uncertainty through gas bearing zones, especially where some radioactive minerals such as K-feldspar are present. The reason for this is the difficulty in accurately defining D-N endpoint parameters.

However, there is also some uncertainty associated with the evaluation of Vsh from the CBW log. Figure 9 shows an example where Vsh may be underestimated from CBW. The arrow indicates a zone where there is a very large difference between Vsh from GR/D-N and CBW, where capillary bound water is high but CBW is low (almost zero). The reason for this is unknown but may be related to a large micro-porosity filled Vsilt volume in the formation, which should probably be included in Vsh estimate.

In Figure 10 the clean high permeability reservoir has some intervals with apparently high CBW and capillary bound water. This is believed to be the result of mud filtrate on the NMR log, leading to artificially high bound fluid volumes.

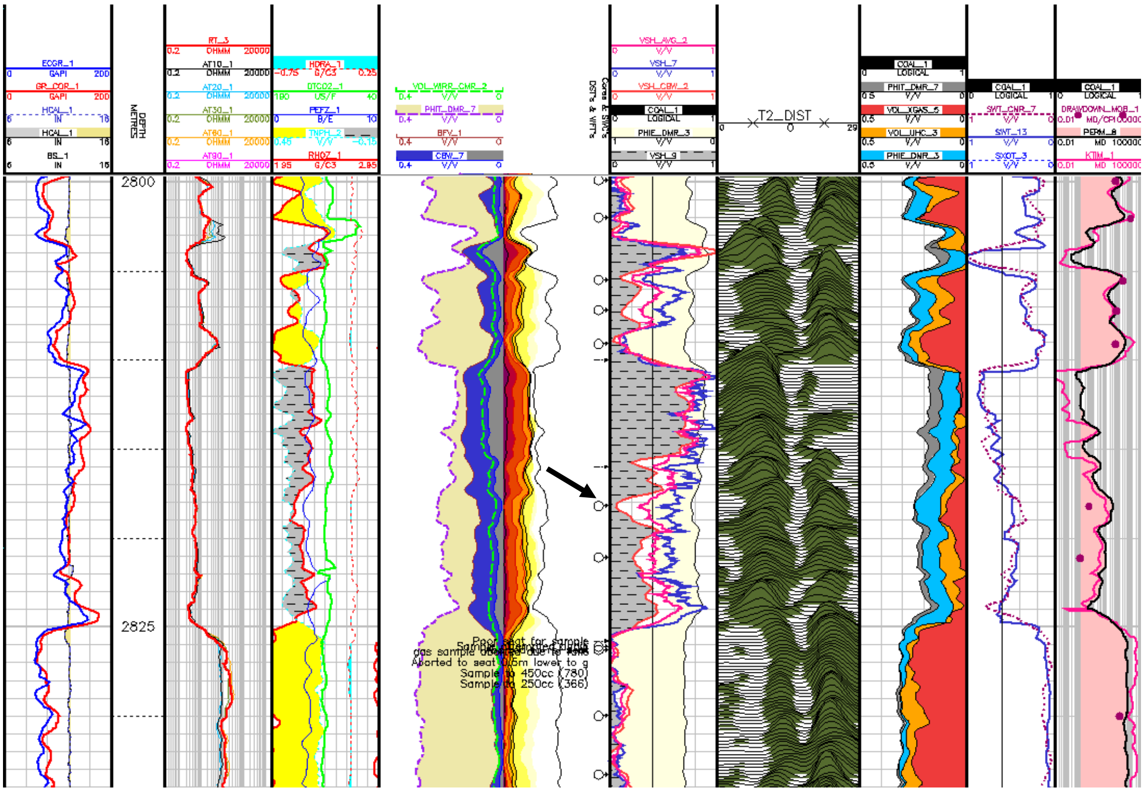

Figure 9: Example of optimistic Vsh estimates from CBW. Note the large range in Vsh estimates.

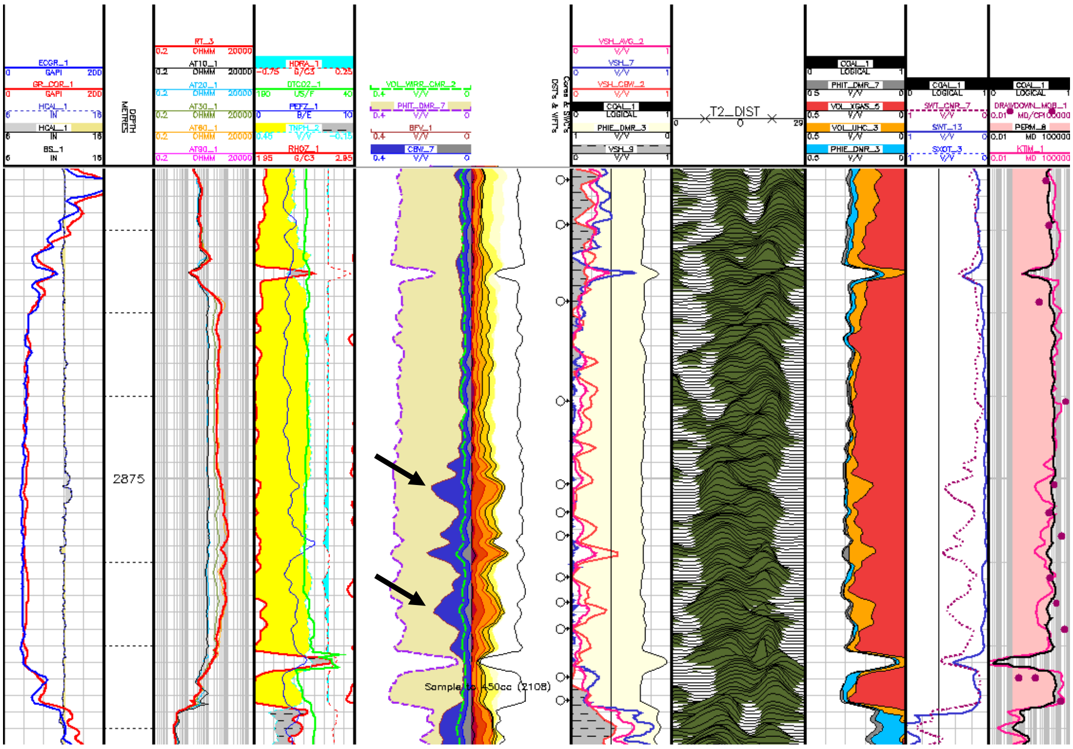

Figure 10: Example of artificially high Vsh estimates from CBW. Note the high bound fluid volumes in the lower section of this clean, high permeability sandstone.

4.5 Final Evaluation

Two evaluation techniques have been applied to Chandon 1. Each methodology has its own pro's and cons, however a final single mid-case is required for the assessment of reserves. It is believed that the standard methodology (as discussed in Section 4.3.4) represents a pessimistic case. Conversely, the Vsh estimates derived from the NMR log are interpreted to be (on the whole) optimistic (Section 4.4.4).

Therefore the final evaluation is based on the following combination of the two methodologies:

Vsh → Arithmetic average of Vsh from CBW and Vshmin from GR & D-N
PHIT → From DMR porosity
PHIE → PHIT – CBW
Sw → Dual-Water equation, using Swb from PHIE/PHIT

4.6 Permeability

Log-derived permeability was estimated several ways based on regional core-based calibration data in the Mungaroo Formation. The different methods have been used to define the range of likely permeability, and a geometric average of all methods has been applied to generate the most likely permeability. The minimum and maximum permeability estimate from each method was used to define the permeability range at any depth (see Enclosure 1).

The equations incorporated in the analysis are summarised as follows:

```
/* Calculate permeability using Dionysus-1 RCA plug calibration
KINT_CALI1 = limit((119.62*PHIE**2.25*(PHIT-VOL_WIRR_C)/VOL_WIRR_C)**1.788,0.001,10000)

/* Calculate permeability using the Dionysus-1 ProbeK data calibration
KINT_CALI2 = limit((497.072*PHIE**2.25*(PHIT-VOL_WIRR_C)/VOL_WIRR_C)**1.22533,0.001,10000)

/* Estimate permeability using the Dionysus-1 Poro Perm relationship
KINT_CALI3 = limit(10**(-20.395*PHIt**2 + 29.184*PHIt - 4.0191),0.001,10000)

/* Estimate permeability using the Greater Gorgon Poro perm relationship
KINT_CALI4 = limit(10**(-258303*MIN(PHIT,.29)**6 + 243886*MIN(PHIT,.29)**5 + -
81234*MIN(PHIT,.29)**4 + 10469*MIN(PHIT,.29)**3 ~
  -284.19*MIN(PHIT,.29)**2 + 11.643*MIN(PHIT,.29) - 3.2351),0.001,10000)

/* Estimate permeability using standard default equation parameters
KINT_CALI5 = limit((100*PHIE**2.25*(PHIT-VOL_WIRR_C)/VOL_WIRR_C)**2,0.001,10000)
```

VOL_WIRR_C = bulk volume of irreducible water (derived from Vsh)

4.7 Interpretation Parameters

Appendix 3 contains a summary table of the interpretation parameters used for this analysis.

5.0 CUT-OFFS AND LUMPING

5.1 Cut-offs

Net reservoir and net gas pay was determined using a standard set of cut-offs defined during the reserves certification study of Mungaroo Formation gas reservoirs in the region during 2003 (NSAI, 2003). In an attempt to capture the range of uncertainty associated with the formation evaluation of these reservoirs, the same cut-offs have been applied to the ‘pessimistic’ standard analysis results, and the ‘optimistic’ NMR analysis results.

Summary tables of net reservoir and net hydrocarbon pay are presented in Appendix 4.

6.0 RESULTS

Top porosity, and top gas was intersected at 2720 m TVDSS corresponding with the top of the Mungaroo Formation. From an analysis of the MDT pressure profile, all intersected gas sands were filled as part of the same gas column and share a common gradient with an interpreted free water level of 2916.6 m TVDSS giving a gross hydrocarbon column of 196.6m.

A combined deterministic and NMR based interpretation methodology has been employed, to help better define and reduce uncertainty in reservoir properties, in-particular through the shaly parts of the reservoir. In these intervals a standard deterministic approach was found to produce unrealistically pessimistic results.

A total of 83.8m of net gas pay has been interpreted for the Mungaroo AA Formation with an average PHIT of 27.9%, VSH of 9.7%, PERM of 1743mD and SWT of 19.2% (Appendix 4). A detailed tabular summary of the net reservoir and net pay for the mid-case, high-case and low-case interpretations are also presented as Appendix 4. The cut-offs applied are based on previous work performed by NSAI certifiers (NSAI, 2003). These were:

Sand - PHIE > 0.07,
Reservoir - PHIE > 0.07 & VSH < 0.4,
Pay - PHIE > 0.07, VSH < 0.4 & SWT < 0.6

7.0 DESCRIPTION OF THE EVALUATION SUMMARY PLOTS

The evaluation summary plot (Enclosure 1) contains both measured data (left hand side), the interpreted data (right hand side) and summary data (far right).

The measured data area contains three log data tracks and a summary section. Not all of the raw data is displayed on this plot. The first track contains a gamma ray curve and the caliper log shaded to the bit size to indicate zones of washout/mud cake.

The second track contains resistivity data from the RtScanner tool. The first and second tracks are separated by a depth reference. This depth reference is logger's measured depth (rotary table). As the well was not deviated, no true vertical depth subsea (TVDSS) depth reference is displayed. Inside the depth track are two flags that may be displayed: to the left is bad hole (red flag), to the right is coal (black flag).

The third track contains density, neutron, compressional sonic velocity, photoelectric factor and density quality logs. The summary section contains: locations of sidewall cores and recovery, location of wireline formation tests and test type. It also contains the binned porosity curves from the CMR+ tool, which are shaded according to the porosity bin (yellow colours represent larger pore size).

The interpreted data area contains four log data tracks. The first interpreted track contains a volumetric break down of the rock into: shale (wet), matrix, effective porosity and coal. The mid case Vsh is shaded on either side to the high side and low side Vsh estimates.

The second interpretive data track contains a break down of the pore volume into: total porosity, effective porosity, volume of water in the reservoir. The third track contains saturation information of both the flushed and unflushed zones in total porosity units only. The irreducible water saturation from NMR (SWT_CMR) is also displayed. This value is based on applying a constant T2 cut-off of 33 msec.

The fourth track contains permeability data from various different sources (if available), including core data, wireline formation tool draw down mobility and log derived permeability. The mid case permeability is shaded on either side to the high side and low side permeability estimates.

The summary data area contains two flags and a comment section. The two flags are net reservoir to the left (shaded orange) and net pay to the right (shaded red). These flags only appear when the zone is net reservoir (potential) or net pay (hydrocarbon bearing). These flags are calculated for 3 different cut-off values. The area to the far right of the plot is for plot annotation, pay summary data and labelling of formation tops.

8.0 REFERENCES

Bateman, R.M., and Konen, C.E. (1977): The Log Analyst and the Programmable PocketCalculator. Part II - Cross plot Porosity and Water Saturation. *The Log Analyst*, Nov-Dec.

Chandon 1, Carnarvon Basin: WA-268-P (R1), Well Completion Report (Basic Data) Doc. ID: ASBU1-063040032 Rev 0

Chandon 1, Carnarvon Basin: WA-268-P (R1), Well Completion Report (Interpretive Data) Doc ID: ASBU1-071030006 Rev 0

Freedman, R., Minh, C.C., Gubelin, G., McGinness, T., Terry, B., Freeman, J., Rawlence, DO (1998): Combining NMR and Density Logs for Petrophysical Analysis in Gas Bearing Formations, *SPWLA*, Paper No II.

Hawarth, J.H., Sellens, M. & Whittaker, A. (1985): Interpretation of hydrocarbon shows using light (C1-C5) hydrocarbon gases from mud-log data. *AAPG Bulletin V. 69, No 8, pp 1305-1310*

Korn B.E., Teakle R.P., Maughan D.M. & Siffleet P.B., 2003 – The Geryon, Orthrus, Maenad and Urania FGas Fields, Carnarvon Basin, Western Australia, *APEA Journal, pp 285-301.*

NSAI (2003): Reserves certification study of Geryon/Eurytion, Maenad,Orthrus and Urania Fields located in Permit area WA-267-P, Carnarvon Basin, Australia.

Torres-Verdin, C (2002): Fundamentals of Nuclear Magnetic Resonance Logging. Lecture Presentation, Spring PGE385.

APPENDIX 1: SUMMARY OF LWD TO WIRELINE DEPTH SHIFTS APPLIED IN CHANDON 1

DEPTH METRES	DEPTH_COR_1 METRES
1274.3688	1273.1496
2067.1536	2065.9344
2414.6256	2413.8636
2415.8956	2415.1336
2474.46106	2473.9092
2479.22663	2478.4812
2490.295049	2489.6064
2497.770592	2496.9216
2658.581993	2658.4656
2675.3312	2675.5852
2676.8044	2677.0584
2677.414	2677.6172
2678.0744	2678.2776
2678.5316	2678.7348
2679.2936	2679.4968
2679.7508	2679.954
2680.462	2680.6652
2682.3924	2682.5956
2683.1036	2683.3576
2683.9672	2684.2212
2686.3548	2686.6088
2686.9644	2687.2184
2687.4216	2687.6756
2687.8788	2688.1836
2688.5392	2688.844
2691.4856	2691.7904
2691.7396	2692.0444
2692.0952	2692.4
2696.1084	2696.4132
2696.6672	2696.972
2697.2768	2697.6324
2697.9372	2698.2928
2699.3088	2699.6136
2700.0708	2700.3756
2700.5788	2700.8836
2701.8996	2702.2044
2702.5092	2702.814
2703.322	2703.6268
2710.18	2710.4848
2710.9928	2711.2468
2713.5836	2713.8376

DEPTH METRES	DEPTH_COR_1 METRES
2714.5996	2714.8028
2715.8188	2716.0728
2717.7492	2718.0032
2718.7144	2718.9684
2719.324	2719.6288
2720.4416	2720.7464
2721.0004	2721.3052
2721.7116	2722.0164
2722.9816	2723.2864
2723.5404	2723.896
2724.0992	2724.404
2726.1312	2726.436
2739.1868	2739.39
2739.644	2739.8472
2739.7456	2739.9488
2740.7108	2740.914
2741.2188	2741.422
2741.6252	2741.8284
2742.0316	2742.2348
2747.01	2747.2132
2748.0768	2748.28
2748.7372	2748.8896
2752.6488	2752.8012
2753.0044	2753.2076
2753.2584	2753.4616
2753.868	2754.0712
2754.9856	2755.1888
2755.2904	2755.4936
2755.5952	2755.7984
2758.1352	2758.3384
2758.2368	2758.3892
2768.6508	2769.0064
2769.1588	2769.5144
2790.9012	2791.4092
2791.968	2792.476
2792.6284	2793.1364
2793.5936	2794.1016
2794.508	2795.016
2795.016	2795.524
2795.5748	2796.0828
2796.286	2796.794

DEPTH METRES	DEPTH_COR_1 METRES
2796.6416	2797.1496
2798.1656	2798.6736
2798.6736	2799.1816
2799.08	2799.588
2799.842	2800.2992
2800.2992	2800.7564
2809.285897	2810.1036
2824.8864	2825.496
2825.0896	2825.6992
2826.004	2826.6136
2827.02	2827.6296
2827.9852	2828.544
2828.6456	2829.1536
2829.7632	2830.322
2830.576	2831.1348
2830.9316	2831.4904
2831.5412	2832.0492
2832.8112	2833.3192
2834.132	2834.64
2849.5244	2849.5244
2867.5584	2867.5584
2870.962	2871.1144
2871.8256	2871.978
2879.1916	2879.4456
2887.726	2887.8784
2888.6404	2888.8436
2893.349562	2893.314
2896.054825	2896.362
2908.899532	2908.554
2915.314167	2914.9548
2926.950017	2926.9944
2943.164859	2942.6916
2956.1028	2956.0012
2956.4584	2956.3568
2956.7124	2956.6108
2957.0172	2956.9156
2958.3888	2958.2872
2959.1508	2959.1
2959.9128	2959.862
2961.0304	2960.9796
2961.6908	2961.5892

DEPTH METRES	DEPTH_COR_1 METRES
2966.212	2966.1104
2967.2788	2967.1264
2972.562	2972.4096
2972.9684	2972.816
2973.2732	2973.1208
2974.2892	2974.1876
2977.0832	2976.9816
2977.7944	2977.6928
2978.3532	2978.2516
2979.166	2979.0136
2979.5724	2979.42
2980.3344	2980.2328
2983.23	2983.1284
2983.5856	2983.484
2984.0936	2983.992
2984.6016	2984.4492
2985.1604	2985.008
2986.4812	2986.3288
2987.1924	2987.04
2987.6496	2987.4972
2988.4116	2988.2592
2989.2752	2989.1228
2998.6732	2998.47
2999.0796	2998.8764
3000.248	2999.994
3002.7372	3002.4832
3007.64802	3007.3092
3013.8116	3013.71
3014.4212	3014.2688
3014.9292	3014.7768
3015.8436	3015.742
3017.012	3016.9104
3017.8248	3017.7232
3018.7392	3018.6376
3023.362	3023.2604
3023.8192	3023.6668
3024.3272	3024.1748
3025.0384	3024.8352
3025.6988	3025.4956
3026.664	3026.41
3027.8324	3027.5784

DEPTH METRES	DEPTH_COR_1 METRES
3028.5944	3028.2896
3031.2868	3030.982
3031.6424	3031.3376
3032.1504	3031.8456
3032.76	3032.4552
3033.4204	3033.1664
3036.9256	3036.6716
3039.11	3038.9068
3044.0884	3043.8852
3044.7488	3044.5456
3045.2568	3045.0536
3046.6792	3046.476
3047.0856	3046.8824
3048	3047.8476
3050.5908	3050.4384
3051.0988	3050.8956
3053.4864	3053.2832
3054.2992	3054.096
3055.2644	3055.0612
3055.9756	3055.7724
3056.7376	3056.5344
3057.0424	3056.8392
3057.9568	3057.7536
3059.3792	3059.2268
3061.4112	3061.2588
3061.5636	3061.4112
3062.0716	3061.9192
3063.0368	3062.9352
3063.494	3063.3924
3063.6464	3063.5448
3065.7292	3065.6276
3066.3388	3066.288
3072.7396	3072.6888
3073.1968	3073.146
3074.4668	3074.416
3077.8196	3077.7688
3078.0736	3078.0736
3078.6324	3078.6324
3079.2928	3079.242
3080.8168	3080.8168
3081.7312	3081.7312

APPENDIX 2: SUMMARY OF WIRELINE MDT SAMPLES AND PRE-TESTS.

No	Pretest Depth	Pretest Depth	Hydrostatic Before	FSIP	Gauge Temp.	Hydrostatic After	Mobility	Pretest Result	Sample	Comments
	(m RT)	(mTVDSS)	(kPa)	(kPa)	(°C)	(kPa)	(mD/cP)			
1	2,749.7	2,720.7	31,612	30,137	68.3	31,578	0.2	Super Charged		
2	2,761.8	2,732.8	31,737	29,291	68.4	31,716	113.8	Valid		
3	2,763.9	2,734.9	31,743	29,295	68.6	31,730	41.3	Valid		
4	2,766.4	2,737.4	31,764	29,296	69.1	31,743	1.0	Tight		
5	2,769.1	2,740.1	31,785	29,307	69.1	31,781	151.9	Valid		
6	2,774.3	2,745.3	31,854	29,311	69.4	31,836	0.5	Tight		
7	2,775.6	2,746.6	31,854	29,322	69.4	31,852	1017.7	Valid		
8	2,776.8	2,747.8	31,868	-	69.1	31,861	-	Tight		Low priority point
9	2,780.8	2,751.8	31,916	29,333	69.7	31,912	314.0	Valid		
10	2,782.1	2,753.1	31,932	29,336	69.7	31,925	4281.1	Valid		
11	2,787.6	2,758.6	32,001	29,347	69.7	31,992	101.1	Valid		
12	2,790.0	2,761.0	32,023	29,354	69.8	32,012	1526.0	Valid		
13	2,792.9	2,763.9	32,057	29,359	69.9	32,047	15951.1	Valid	1 x 1 gallon	Good for sample
14	2,793.9	2,764.9	32,062	29,361	70.1	32,056	147.6	Valid		
15	2,796.2	2,767.2	32,088	-	-	-	-	Seal Failure		
16	2,797.6	2,768.6	32,105	29,367	70.2	32,099	30.2	Valid		
17	2,799.9	2,770.9	32,132	29,374	70.3	32,126	466.7	Valid		
18	2,802.0	2,773.0	32,162	29,379	70.4	32,150	7018.8	Valid		
19	2,805.5	2,776.5	32,202	29,386	70.5	32,194	1780.3	Valid		
20	2,807.2	2,778.2	32,221	29,389	70.6	32,212	540.2	Valid		
21	2,809.1	2,780.1	32,243	29,393	70.7	32,234	452.6	Valid		
22	2,810.0	2,781.0	32,250	-	70.2	32,241	-	Tight		
23	2,816.0	2,787.0	32,336	-	70.7	32,323	-	Tight		
24	2,818.2	2,789.2	32,357	29,410	71.3	32,342	3.8	Valid		
25	2,821.1	2,792.1	32,387	29,415	71.4	32,371	0.8	Valid		

No	Pretest Depth	Pretest Depth	Hydrostatic Before	FSIP	Gauge Temp.	Hydrostatic After	Mobility	Pretest Result	Sample	Comments
	(m RT)	(mTVDSS)	(kPa)	(kPa)	(°C)	(kPa)	(mD/cP)			
26	2,826.3	2,797.3	32,488	-	-	-	-	Aborted		Aborted, re-seat
26	2,826.1	2,797.1	32,438	29,431	71.5	-	-	Valid		Sample attempted again
26	2,825.8	2,796.8	32,494	29,417	65.6	-	-	Aborted	2 x gas samples	Abort, attempt 50cm lower
27	2,830.0	2,801.0	32,482	29,439	71.6	32,473	1015.9	Valid		
28	2,833.3	2,804.3	32,523	29,447	71.8	32,512	395880.8	Valid		
29	2,836.0	2,807.0	32,548	29,453	71.9	32,541	10705.0	Valid		
30	2,838.0	2,809.0	32,572	29,457	72.0	32,561	180.4	Valid		
31	2,839.1	2,810.1	32,578	29,456	72.3	32,568	0.8	Tight		
32	2,842.7	2,813.7	32,620	29,465	72.3	32,614	4355.1	Valid		
33	2,843.8	2,814.8	32,629	29,467	72.3	32,623	4424.8	Valid		
34	2,845.2	2,816.2	32,643	29,470	72.4	32,638	90.8	Valid		
35	2,853.9	2,824.9	32,757	29,489	72.6	32,746	784.2	Valid	2 x gas samples	
36	2,857.0	2,828.0	32,771	29,495	72.9	32,769	523.2	Valid		
37	2,859.7	2,830.7	32,806	29,501	72.8	32,801	1029.2	Valid		
38	2,864.3	2,835.3	32,863	29,511	72.9	32,855	140.2	Valid		
39	2,870.3	2,841.3	32,938	29,525	73.2	32,926	22523.6	Valid		
40	2,875.3	2,846.3	32,993	29,535	73.4	32,983	2783.2	Valid		
41	2,877.0	2,848.0	33,001	29,538	73.9	32,997	914.2	Valid		
42	2,878.4	2,849.4	33,015	29,542	74.1	33,011	11746.9	Valid		
43	2,880.9	2,851.9	33,046	29,547	74.0	33,040	1223.7	Valid		
44	2,882.4	2,853.4	33,062	29,551	74.2	33,058	4012.3	Valid		
45	2,884.0	2,855.0	33,080	29,554	74.6	33,075	19045.8	Valid		
46	2,886.9	2,857.9	33,116	29,559	74.4	33,110	67.5	Valid	Gas sample	
47	2,888.3	2,859.3	33,131	29,563	74.7	33,123	9728.3	Valid		
48	2,901.2	2,872.2	33,278	-	-	-	-	Seal Failure		Seal failure, attempt 20cm below

No	Pretest Depth	Pretest Depth	Hydrostatic Before	FSIP	Gauge Temp.	Hydrostatic After	Mobility	Pretest Result	Sample	Comments
	(m RT)	(mTVDSS)	(kPa)	(kPa)	(°C)	(kPa)	(mD/cP)			
49	2,901.3	2,872.3	33,280	-	-	-	-	Seal Failure		Seal failure, abort station
50	2,903.8	2,874.8	33,274	-	-	-	-	Dry		Tight, abort station
51	2,914.8	2,885.0	33,434	-	-	-	-	Tight		Tight, abort station
52	2,928.1	2,899.1	33,598	-	-	-	-	Tight		Tight, abort station
53	2,936.5	2,907.5	33,673	29,657	76.2	33,666	2.7	Tight		Volumetric 10cc
54	2,939.4	2,910.4	33,734	29,663	76.3	33,717	14.6	Tight	Gas sample	Volumetric 10cc
55	2,941.8	2,912.8	33,738	29,660	76.4	33,722	0.4	Tight		Volumetric 10cc
56	2,951.1	2,922.1	33,817	29,735	78.3	33,819	18.1	Valid		Volumetric 5cc
56	2,945.7	2,916.7	33,778	-	76.7	-	0.1	Tight		Volumetric 10cc
57	2,956.0	2,927.0	33,906	-	76.8	-	-	Tight		Volumetric 10cc
58	2,976.3	2,947.2	34,166	29,990	77.0	34,146	5.4	Valid		Volumetric 10cc
59	2,981.1	2,952.0	34,209	30,028	77.2	34,198	47.7	Valid	Water sample	Volumetric 10cc
60	3,024.2	2,995.1	34,777	30,453	77.7	34,756	4.0	Valid		
61	3,027.1	2,998.0	34,787	30,479	78.2	34,770	2.3	Valid		
62	2,951.0	2,922.0	33,797	-	-	-	-	Tight		Tight, attempt 10cm above
64	2,918.0	2,889.0	33,439	29,626	77.4	33,442	0.6	Valid		Volumetric 5cc
64	2,917.8	2,888.8	33,418	-	-	-	0.8	Tight		
65	2,938.0	2,909.0	33,883	29,664	76.1	33,863	4.8	Valid		

Well Name :	Chandon 1	**Hole Size :**	311.0 (mm)	**Suite # :**	1
Water Depth :	1,196.1 (m)	**Driller's Depth :**	3,124.0 (m)	**Run No :**	3
Rig RT Elevation :	28.9 (m)	**Logger's Depth:**	3,110.0 (m)	**Tool String:**	MDT-GR-ECRD

Sample No	Depth TVDRT MD (m)	Depth TVDMSL (m)	Hydrostatic Before (kPa)	Final Pressure (kPa)	Gauge Temp °C	Mobility (mD/cP)	Hydrostatic After (kPa)	Pump Time (mins)	Sampling Time (mins)	Sample Date	Chamber Size (cm3)	Chamber No	Sample Type	Comments:
101	2825.8	2796.8	32520.5	29428.2	70.8	204.4	32591.5	32.5	2.8	02-July 2006	450.00	780	Segregated PVT (MPSR)	Gas Sample; verified & transferred to #1949-EA
101	2825.8	2796.8	32520.5	29428.0	72.6	204.4	32591.5	32.5	2.8	02-July 2006	250.00	366	Segregated PVT (SPMC)	Gas Sample; performed onsite UOP analysis & flash GC analysis
102	2853.9	2824.9	32829.4			164.9	32903.9	52.2	2.31	02-July 2006	250.00	368	Segregated PVT (SPMC)	Gas Sample; performed onsite Radon analysis & flash GC analysis
102	2853.9	2824.9	32829.4	29489.5	73.9	164.9	32903.9	52.2	3.13	02-July 2006	450.00	2041	Segregated PVT (MPSR)	Gas Sample; verified & transferred to #1201-EA; performed onsite UOP analysis
103	2886.9	2857.9	33305.8	29557.8	74.1	Very High	33319.6	44.6	3.04	02-July 2006	450.00	2108	Segregated PVT (MPSR)	Gas Sample; verified & transferred to #1954-EA
104	2981.1	2952.0	34325.9	30029.1	77.4	35.3	34326.3	69.3	21.2	02-July 2006	1 gallon	36	MRSC	Water sample; transferred to 1 litre glass bottles (3 x sub-sets)
105	2939.4	2910.4	33751.9	29663.3	78.9	9.5	33820.4	66.8	2.9	03-July 2006	450.00	2169	Segregated PVT (MPSR)	Gas Sample; verified & transferred to #18699-QA
106	2792.9	2763.9	31998.6	29357.1	76.8	234.6	32195.4	69.3	10.7	03-July 2006	1 gallon	16	MRSC	Gas Sample; verified and transferred to 3 x shipping bottles; 12876-QA, 12888-QA, 12886-QA

APPENDIX 3: SUMMARY OF INTERPRETATION PARAMETERS USED FOR THIS ANALYSIS

WELL	TOP (M)	INTERVAL	GRma (GAPI)	GRsh (GAPI)	DTma (us/ft)	DTsh (us/ft)	RHOma (g/cc)	RHOsh (g/cc)	RHOfl (g/cc)	NPHIma (V/V)	NPHIsh (V/V)	NPHIfl (V/V)	RTsh (ohm.m)	a	m	n	CECdrysh (Meq/g)	Rw (ohm.m)
CHANDON-1	2715.5	BRIGADIER FM	35	135	-	-	2.72	2.42	1	0	0.422	1	1.8	1	2	2	0.06	0.34 @ 25.0 (degC)
CHANDON-1	2749	MUNGAROO FM	57	150	-	-	2.65	2.34	0.85	-0.025	0.387	0.369	1.8	1	1.8	2	0.06	0.24 @ 25.0 (degC)
CHANDON-1	2848	MUNGAROO FLUVIAL	40	150	-	-	2.65	2.34	1	-0.025	0.422	0.24	1.8	1	1.8	2	0.1	0.24 @ 25.0 (degC)
CHANDON-1	2890	AA SHALE	40	150	-	-	2.65	2.34	1	-0.025	0.422	0.5	1.8	1	1.8	2	0.1	0.24 @ 25.0 (degC)
CHANDON-1	2944	ZONE 100 SHALE	40	155	-	-	2.65	2.43	1	-0.025	0.407	1	1.8	1	1.8	2	0.1	0.24 @ 25.0 (degC)
CHANDON-1	3022.5	A SAND	40	155	-	-	2.65	2.44	1	-0.025	0.388	1	1.8	1	1.8	2	0.06	0.29 @ 25.0 (degC)

APPENDIX 4: SUMMARY OF NET RESERVOIR AND NET PAY STATISTICS FOR P10 P50 AND P90 CUT-OFFS

Mid Case Net Reservoir and Net pay

Pay Summary Specification: determin_cmr
Primary reference for reporting and sample control: DEPTH
Cutoff details:-
PHIE_DMR >= 0.07 V/V
VSH_AVG <= .4 V/V
Lumping details:-
Standalone Minimum Thickness: 0.1524 METRES
Include Minimum Thickness: 0.1524 METRES
Maximum Separation: 0.1524 METRES

Well	**Interval**	**DEPTH_TOP METRES**	**DEPTH_BASE METRES**	**GROSS METRES**	**NET METRES**	**NET_TO_GROSS M/M**	**PHITH (V/V)M**	**PERMH MDM**	**PHIT_AV V/V**	**PHIE_AM V/V**	**VSH_AM V/V**	**PERM_AM MD**	**PERM_GM MD**
CHANDON-1	Mungaroo Fm Upper	2748.9	2825	76.1	25.756	0.338	6.855	24898.38	0.266	0.212	0.153	966.72	439.49
CHANDON-1	Mungaroo Fm Lower	2825	2943.8	118.8	63.92	0.538	17.634	121800.67	0.276	0.22	0.082	1905.52	1030.96
CHANDON-1	*Total*	*2748.9*	*2943.8*	*194.9*	*89.675*	*0.46*	*24.489*	*146699.05*	*0.273*	*0.218*	*0.103*	*1635.89*	*807.03*

Pay Summary Specification: determin_cmr
Primary reference for reporting and sample control: DEPTH
Cutoff details:-
PHIE_DMR >= 0.07 V/V
SWT <= 0.6 V/V
VSH_AVG <= .4 V/V
Lumping details:-
Standalone Minimum Thickness: 0.1524 METRES
Include Minimum Thickness: 0.1524 METRES
Maximum Separation: 0.1524 METRES

Well	**Interval**	**DEPTH_TOP METRES**	**DEPTH_BASE METRES**	**GROSS METRES**	**NET METRES**	**NET_TO_GROSS M/M**	**PHITH (V/V)M**	**BVWH (V/V)M**	**HVOLH (V/V)M**	**PERMH MDM**	**PHIT_AV V/V**	**SWT_AV V/V**	**PHIE_AM V/V**	**VSH_AM V/V**	**PERM_AM MD**	**PERM_GM MD**	**SWE_AM V/V**
CHANDON-1	Mungaroo Fm Upper	2748.9	2825	76.1	24.486	0.322	6.618	1.823	4.795	24832.72	0.27	0.275	0.217	0.148	1014.18	536.63	0.248
CHANDON-1	Mungaroo Fm Lower	2825	2943.8	118.8	59.297	0.499	16.736	2.651	14.086	121264.47	0.282	0.158	0.229	0.076	2045.04	1338.47	0.141
CHANDON-1	*Total*	*2748.9*	*2943.8*	*194.9*	*83.783*	*0.43*	*23.354*	*4.474*	*18.88*	*146097.2*	*0.279*	*0.192*	*0.226*	*0.097*	*1743.77*	*1024.72*	*0.172*

Low Side Net Reservoir and Net pay

Pay Summary Specification: determin_cmr
Primary reference for reporting and sample control: DEPTH
Cutoff details:-
PHIE_DMR >= 0.07 V/V
VSH_STD <= .4 V/V
Lumping details:-
Standalone Minimum Thickness: 0.3048 METRES
Include Minimum Thickness: 0.1524 METRES
Maximum Separation: 0.5 METRES

Well	Interval	DEPTH_TOP	DEPTH_BASE	GROSS	NET	NET_TO_GROSS	PHITH	PERMH	PHIT_AV	PHIE_AM	VSH_AM	PERM_AM	PERM_GM
		METRES	METRES	METRES	METRES	M/M	(V/V)M	MDM	V/V	V/V	V/V	MD	MD
CHANDON-1	Mungaroo Fm Upper	2748.9	2825	76.1	17.678	0.232	4.815	21869.37	0.272	0.236	0.132	1237.07	539.63
CHANDON-1	Mungaroo Fm Lower	2825	2943.8	118.8	53.455	0.45	15.289	119030.8	0.286	0.236	0.067	2226.75	1546.26
CHANDON-1	*Total*	*2748.9*	*2943.8*	*194.9*	*71.133*	*0.365*	*20.105*	*140900.17*	*0.283*	*0.236*	*0.083*	*1980.79*	*1190.31*

Pay Summary Specification: determin_cmr
Primary reference for reporting and sample control: DEPTH
Cutoff details:-
SWT <= 0.6 V/V
VSH_STD <= .4 V/V
Lumping details:-
Standalone Minimum Thickness: 0.3048 METRES
Include Minimum Thickness: 0.1524 METRES
Maximum Separation: 0.5 METRES

Well	Interval	DEPTH_TOP	DEPTH_BASE	GROSS	NET	NET_TO_GROSS	PHITH	BVWH	HVOLH	PERMH	PHIT_AV	SWT_AV	PHIE_AM	VSH_AM	PERM_AM	PERM_GM	SWE_AM
		METRES	METRES	METRES	METRES	M/M	(V/V)M	(V/V)M	(V/V)M	MDM	V/V	V/V	V/V	V/V	MD	MD	V/V
CHANDON-1	Mungaroo Fm Upper	2748.9	2825	76.1	16.612	0.218	4.621	1.042	3.579	21822.31	0.278	0.226	0.243	0.124	1313.68	721.45	0.198
CHANDON-1	Mungaroo Fm Lower	2825	2943.8	118.8	52.998	0.446	15.188	1.982	13.206	118981	0.287	0.13	0.237	0.065	2245.02	1572.51	0.11
CHANDON-1	*Total*	*2748.9*	*2943.8*	*194.9*	*69.609*	*0.357*	*19.808*	*3.024*	*16.785*	*140803.31*	*0.285*	*0.153*	*0.238*	*0.079*	*2022.76*	*1305.69*	*0.131*

High Side Net Reservoir and net Pay

Pay Summary Specification: determin_cmr
Primary reference for reporting and sample control: DEPTH
Cutoff details:-
PHIE_DMR >= 0.07 V/V
VSH_CBW <= .4 V/V
Lumping details:-
Standalone Minimum Thickness: 0.3048 METRES
Include Minimum Thickness: 0.1524 METRES
Maximum Separation: 0.5 METRES

Well	Interval	DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	PHITH (V/V)M	PERMH MDM	PHIT_AV V/V	PHIE_AM V/V	VSH_AM V/V	PERM_AM MD	PERM_GM MD
CHANDON-1	Mungaroo Fm Upper	2748.9	2825	76.1	39.763	0.523	10.086	26549.69	0.254	0.176	0.207	667.7	242.44
CHANDON-1	Mungaroo Fm Lower	2825	2943.8	118.8	79.668	0.671	20.67	121994.22	0.259	0.191	0.125	1531.29	470.71
CHANDON-1	*Total*	*2748.9*	*2943.8*	*194.9*	*119.431*	*0.613*	*30.756*	*148543.92*	*0.258*	*0.186*	*0.152*	*1243.77*	*377.41*

Pay Summary Specification: determin_cmr
Primary reference for reporting and sample control: DEPTH
Cutoff details:-
SWT <= 0.6 V/V
VSH_CBW <= .4 V/V
Lumping details:-
Standalone Minimum Thickness: 0.3048 METRES
Include Minimum Thickness: 0.1524 METRES
Maximum Separation: 0.5 METRES

Well	Interval	DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	PHITH (V/V)M	BVWH (V/V)M	HVOLH (V/V)M	PERMH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	VSH_AM V/V	PERM_AM MD	PERM_GM MD	SWE_AM V/V
CHANDON-1	Mungaroo Fm Upper	2748.9	2825	76.1	34.442	0.453	8.981	2.853	6.128	26139.17	0.261	0.318	0.188	0.193	758.92	332.15	0.284
CHANDON-1	Mungaroo Fm Lower	2825	2943.8	118.8	63.056	0.531	17.433	3.092	14.341	121128.07	0.276	0.177	0.221	0.088	1920.95	1042.45	0.163
CHANDON-1	*Total*	*2748.9*	*2943.8*	*194.9*	*97.499*	*0.5*	*26.413*	*5.944*	*20.469*	*147267.24*	*0.271*	*0.225*	*0.21*	*0.125*	*1510.45*	*695.96*	*0.206*

ENCLOSURE 1

EVALUATION SUMMARY PLOT

Enclosure-1

Evaluation Summary Plot

Well: CHANDON-1

LATITUDE: 019 34' 32.210'' S
LONGITUDE: 114 07' 41.250'' E
X COORDINATE: –
Y COORDINATE: –
HORIZONTAL UNITS: METRES

MEASUREMENT REF. (KB/RT): –
TD DRILLER: 3124.0
VERTICAL UNITS: METRES
DATE LOGGED: 30–Jun–2006
VERTICAL SCALE: 1:500
DATE PLOTTED: 24–Jan–2007

General Data	Depth	Resistivity Data	Porosity & Lithology Data	Core & Test Data	Formation Composition	Pore Volume Break Down	Fluid Saturations	Permeability / Mobility	Pay Summary Data and Intervals
	Red Flag = Bad Hole; Black Flag = Coal		Shale; Sand or Gas Effect	Full Diam. Core; Valid WFT; Invalid WFT; SWC Recovered (drilled); SWC Lost (drilled)	Shale; Coal; U/Alt Matrix; Porosity; Lithology Analysis; Quartz; Calcite	Shale Water; Water; Gas			All thicknesses are measured depths in meters.

Wireline Nomenclature	
Curve	**Measurement Type**
AHT10	10'' Induction curve, two foot resolution
AHT20	20'' Induction curve, two foot resolution
AHT30	30'' Induction curve, two foot resolution
AHT60	60'' Induction curve, two foot resolution
AHT90	90'' Induction curve, two foot resolution
BS	Bit size
DEPTH	Measured depth (loggers) based on RT
DTCO	Compressional velocity (Reprocessed DSI)
DTSM	Shear velocity (Reprocessed DSI)
ECGR/GR_COR	Environmentally corrected GR
HCAL/CALI	Calliper
CGR	Uranium free GR (from HNGS)
HDRA/DRHO	Density correction (quality) curve
PEFZ/PEF	Photo–electric Facotr
RHO_COR	Standard resolution density
TNPH_COR	Environemntally corrected neutron porosity
SFL	Shallow induction (AIT–H partial failure)
ILD	Deep induction (AIT–H partial failure)
####_MMIN	Final Corrected log used in Multimin

Evaluation Nomenclature	
Curve	**Description**
COAL	Coal volume / flag
_AMB_CR	Core measurement (ambient)
_OB_CR	Core measurement (overburden)
MOB	Mobility derived from MDT drawdown
NET PAY	Net pay flag
NET RESERVOIR	Net reservoir flag
PERM/KINT	Intrinsic Permeability
PHIT_DMR	Density – CMR total porosity
PHIE	Effective porosity
PHIT	Total porosity
PERM_OB_CR	Core permeability (stress corrected)
PHIT_OB_CR	Core porosity (stress corrected)
SWT	Water saturation of virgin zone (total)
SXOT	Water saturation of flushed zone (total)
TCMR	Total porosity from CMR (uncorrected)
VOL_CAPBW	Volume of capillary bound water
VOL_UWAT	Volume of water in unflushed zone
VOL_XWAT	Volume of water in flushed zone

Evaluation Summary Plot

Well: CHANDON-1

"MUNGAROO FM UPPER"
to
"A SAND_BASE"

Evaluated by : **ESP Ref No.:**

Vshale Model	Porosity Model	Sw Model	

APPENDIX 4

MODULAR FORMATION DYNAMICS TESTER (MDT) REPORT (BY CVX)

Chandon 1

Carnarvon Basin: WA-268-P (R1)

Modular Formation Dynamics Tester (MDT) Report

Compiled By:	Trent Shawcross, Petroleum Engineer		
Document ID:	ASBU1- 070580059	Revision:	1
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Chandon 1 Carnarvon Basin: WA-268-P (R1) Modular Formation Dynamics Tester (MDT) Report

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1.0 EXECUTIVE SUMMARY

Chandon 1 was logged by the Modular Formation Dynamics Tester (MDT) tool on 1 – 3 July 2006 to determine the following:

- A hydraulically continuous column was interpreted in the Mungaroo AA Formation from 2732.8 mTVDSS to the GWC within the Zone 100 Shale at 2916.8 mTVDSS, with a gas gradient of 0.31 psi/m.
- The gas gradient measured indicates the reservoir gas is likely to be a dry gas with CGR of approximately 5 – 10 bbl/mmscf, and this was later confirmed with laboratory test measurements of the collected gas samples.
- A hydraulically continuous water column was interpreted from the GWC within the Zone 100 Shale at 2916.8 mTVDSS to a depth of 2998.0 mTVDSS, within the Mungaroo C sands, with a water gradient of 1.42 psi/m.
- Pressure points collected in the water leg appear to plot parallel but slightly offset to the regional water gradient found in offset Mungaroo wells, indicating the Chandon water leg maybe in communication with the regional Mungaroo aquifer.
- The mobility measurements throughout the column indicate excellent (multi-Darcy) permeability within the Mungaroo AA sands; however this has not been confirmed with DST or core permeability measurements.
- Compositional analyses of the MDT fluid samples were initially performed on site by Oilphase. Independent, onshore laboratory measurements by both Oilphase and Core Laboratories Australia later confirmed the concentration of CO_2 and N_2 as being approximately 0.3 - 0.4 mol % and 3.4 – 3.6 mol % respectively.

Several reservoir fluid samples were taken after the pre-tests were completed:

- 1 x 450cc, top of thin sand in the AA Marginal Marine,
- 1 x 450cc, top of thickest sand in the AA Fluvial,
- 1 x 450cc, bottom of thickest sand in the AA Fluvial,
- 1 x 450cc, “gas-down-to” in the AA Fluvial,
- 2 x 250cc, Mungaroo AA Fluvial,
- 1 x gallon, top of the AA Marginal Marine,
- 1 x gallon, Mungaroo A sand (water leg sample).

These samples were taken with the aid of a pump-out module, live fluid analyser, composition fluid analyser and low shock sampling equipment. The samples were generally of excellent quality, requiring extended pump-out time periods to ensure a clean sample with low levels of drilling mud contamination.

2.0 OBJECTIVES

The objectives of the Chandon 1 MDT log survey were to:

- Collect an accurate set of formation pressure points throughout the hydrocarbon and water columns to evaluate the nature of the fluid in each sand, and to identify the fluid contact depths.
- Collect a set of representative fluid samples, primarily from the identified hydrocarbon column, but also from the underlying water leg.
- Collect drawdown mobility measurements from pre-tests performed in each of the sands, to be used later in formation evaluation.

3.0 MODULAR FORMATION DYNAMICS TESTER (MDT) RESULTS

3.1 Modular Formation Dynamic Tester (MDT) Overview

The MDT tool is designed for use in open hole and functions by pressing a probe through the mud cake into the formation and withdrawing a small volume of fluid (typically 20 mL). By monitoring the pressure response at the probe, a measurement of the reservoir pressure at this point can be obtained. The MDT is also able to collect multiple fluid samples. Prior to sampling, the formation fluid may be pumped through the tool until clean fluid is identified using the Live Fluid Analyser (LFA), configured before the pump-out module, and the CFA (Compositional Fluid Analyser) after the pump (for compositional analysis and condensate to gas ratio [CGR]). H_2S coupons are also included within the MDT tool string for monitoring any incidence of H_2S in the tool.

3.2 Static Pressure Data and Sampling Summary

A total of 68 pre-tests were attempted, of which 46 were successful, 16 were tight, 1 was supercharged and 5 experienced lost seals. The pre-test points were initially selected on the basis of the triple-combo logging suite, but were then refined by using the CMR log which was useful in aiding the selection of effective porosity within some of the poorer reservoir sections. Generally, the pre-tests were simple to interpret as the build-up times were very short due the good quality of the formation.

The MDT tool was configured with one multi-sample module (MRMS) containing two 250cc Oilphase Non-reactive Single Phase Multi Chambers (SPMC), four 450cc wireline MDT petroleum sampling receptacles (MPSR) and two 1-gallon large volume chambers (MRSC). The MDT string was configured for low shock sampling and run in-hole using wireline. The wellbore was cleaned-up at each sample location prior to opening the sample chamber, by pumping out both wellbore and formation fluids for an extended period of time. Sample clean-up was indicated by analysis of both the LFA and CFA during the pump-out period. Sample locations were chosen with the intention to minimise clean-up times; however the clean-up period often exceeded 30mins. All SPMC's, MPSR's and one MRSC were used to capture gas samples with one MPSR used to capture a water sample. Upon recovery to surface, the samplers were removed from the MRMS and the opening pressures of the tools were recorded, confirming all samplers had collected samples successfully.

3.3 Operations Summary

The interval logged was from 2720.7 mTVDSS to 2902.0 mTVDSS. Figure 1 depicts the tool configuration used during the MDT logging run in Chandon 1 over 1 – 3 July 2006.

A low-shock sampling technique was used to collect the gas samples to ensure as low and stable a drawdown as possible, to minimise any liquid drop-out in the samples, and increase the chances of an accurate CGR measurement. Two single probe modules were run in the tool for redundancy purposes, and a large packer as it minimises the drawdown required to obtain a sample and has proven to be significantly more durable. The MRMS module was replaced after it was discovered that the sampling chamber shut-in mechanism had failed during the first log run. A second log run was then undertaken in order to complete the sampling program. There was no evidence of tool sticking problems, which is consistent with the excellent hole condition.

3.4 MDT Results and Conclusions

3.4.1 Pressure Gradients

The results of all the MDT pressure measurements are displayed in Table 1 and Table 2, and a plot of the MDT pressure data is presented in Figure 2.

A gas gradient of 2.14 kPa/m (0.31 psi/m) was measured for the Mungaroo AA Marginal Marine and Fluvial sands. A water gradient of 9.79 kPa/m (1.42 psi/m) was measured in the Zone 100 shale and upper part of the Mungaroo A sands. A gas water contact (GWC) of 2916.8 mTVDSS was determined from the intersection of the gas and water lines measured by the MDT (see Figure 2).

The water pressure points collected appear to plot along, but slightly offset to the regional water gradient found in offset Mungaroo wells, indicating that the Chandon 1 water leg may be connected to the regional Mungaroo aquifer (see Figure 3).

The formation quality of all reservoir sand packages appears high, with drawdown mobility data indicating multi-Darcy permeability.

3.4.2 Temperature Gradients

The MDT temperature measurements are displayed in Table 1 and Table 2.

There is some uncertainty regarding the MDT derived temperature data due to the lack of equilibrium in the tool, mud and formation system. Unlike most other wireline tools, the thermometer is inside the tool, and is affected by the tool temperature. Hence, the last temperature points taken while coming out of the hole are higher than those taken at the same depth while running in. As a result, the temperature data quoted in this report should be used with caution.

3.5 MDT Sampling and Compositional Analysis

3.5.1 Tool Configuration

The MDT tool was configured with one multi-sample module (MRMS) containing two 250cc Oilphase Non-reactive Single Phase Multi Chambers (SPMC), four 450cc wireline MDT petroleum sampling receptacles (MPSR) and two 1-gallon large volume chambers (MRSC) (see Figure 4). All SPMC’s, MPSR’s and one MRSC were used to capture gas samples with one MRSC used to capture a water sample.

All of the low shock sample chambers had water behind the piston (open to hydrostatic pressure) which was pumped into the wellbore when samples were taken. Low shock sampling was used to obtain representative samples. This was achieved by controlling drawdown into the sample chambers by using the pump-out module to pressure-up against the hydrostatic pressure in the chamber. The flow-through tool was not stopped prior to sampling so that steady flow was maintained throughout sampling, which minimises liquid or mud contamination of the sample line. Additional advantages of low shock sampling include the ability to overpressure the sample to maintain single phase samples at surface locations.

3.5.2 Sampling Summary

The MDT tool was run in-hole to predetermined depths and the samplers were filled at six different points of interest (see). All SPMC's, MPSR's and one MRSC were used to capture gas samples with one MPSR used to capture a water sample. Upon recovery to surface, the samplers were removed from the MRMS and the opening pressures of the tools were recorded, confirming all samplers had collected samples successfully.

A total of 8 samples were attempted for Chandon 1. All were successful and are listed below:

- 1 x 450cc, top of thin sand in the Mungaroo AA Marginal Marine Fm (1949-EA),
- 1 x 450cc, top of thickest sand in the Mungaroo AA Fluvial Fm (1201-EA),
- 1 x 450cc, bottom of thickest sand in the Mungaroo AA Fluvial Fm(1954-EA),
- 1 x 450cc, "gas-down-to" in the Mungaroo AA Fluvial Fm (18699-QA),
- 2 x 250cc, Mungaroo AA Fluvial Fm (SPMC 1.05 & 1.06),
- 1 x gallon, top of the AA Marginal Marine Fm (12876-QA, 12886-QA, 12888-QA),
- 1 x gallon, Mungaroo A Fm (water leg sample).

Details of the fluid samples collected are summarised in Table 3. Refer to Figure 5 to identify the various locations from which samples were taken, and Table 3 to correlate the sample numbers with those marked on Figure 5.

Prior to shipping, the four 450cc MPSR's were all heated back to reservoir temperature and agitated, before being transferred into single phase sample bottles (SSB) for safe shipping to the laboratory. The MRSC sample chamber containing gas was transferred into three Oilphase single phase sample bottles (SSB) for safe shipping to the laboratory with the remainder of the sample flashed to atmospheric conditions.

The MRSC sample chamber containing water was decanted into three acid washed glass bottles for storage and transportation. The samples were then appropriately preserved for onshore laboratory analysis. One sample was left unpreserved, required for analysis of pH, anions etc. Another sample was preserved for cations (metals) analysis, using 7mls 35% nitric acid to reduce the pH to < 2 and the other was preserved for sulphide (and VFA) analysis using 2mL 2N Zinc Acetate solution and 1mL 6N Sodium Hydroxide solution to increase the pH to 9.05.

3.5.3 MDT On-Site Analysis of Gas Samples

The results of the on-site MDT gas sample analyses are provided in Table 4 and Table 5

Partial flashes were performed on the two SPMC's for compositional analysis using the Gas chromatograph (GC). UOP and Radon sampling was then performed on the remainder of the sample from the SPMC's by flowing the gas through scrubbing solutions and Radon cells respectively. Titrations were carried out on the scrubbing solutions for the determination of hydrogen sulphide, Mercaptans and Carbonyl Sulphide in the gas phase and Radon was measured using a Pylon detector unit. This analysis was done to obtain a quick-look at the likely gas composition, in particular the concentration of H_2S. The samples indicated a dry gas with relatively low inerts concentration. The concentration of H_2S was estimated at 4.5ppm based on the alteration of the H_2S coupons positioned within the sampling tool. Due to the tendency of H_2S to "plate out" prior to the reservoir fluid entering the sample chamber, this estimate of H_2S concentration is intended as a qualitative measure only, indicating the presence and likely concentrations of H_2S in the reservoir fluid.

3.5.4 MDT Laboratory Analysis of Gas Samples

MDT laboratory analysis was carried out independently by Oilphase and Core Laboratories (CoreLab) Australia. Laboratory flash gas analyses was performed to evaluate the compositions, condensate-to-gas ratios (CGRs) and wt% contamination of flashed bottom hole samples from single phase sample bottles. The results from these analyses were used estimate clean liquid recombined fluid compositions for the flashed gas. A summary of the results from these analyses is provided in Table 6 – 12.

The analyses by CoreLab and Oilphase are considered to be in reasonable agreement, both indicating a consistent composition across the full gas column. The gas composition is indicative of a dry gas with relatively low inerts concentration. The average concentration of methane in the gas samples was 83.7 mol%, but ranged between 80.6 and 85.7 mol%. The condensate to gas ratio (CGR), obtained by flashing the MDT fluid samples to standard conditions (60°F, 14.7psia), ranged between 3.3 and 7.1 bbl.mmcf.

A comparison of the analyses by CoreLabs and Oilphase indicates that there may be a systematic error in either of their methodologies for calculating the uncontaminated gas composition of the reservoir fluid samples. The analyses performed by Oilphase consistently showed a lower methane concentration and higher condensate yield for the calculated uncontaminated fluid when compared to the analyses performed by CoreLabs. However, this discrepancy is considered insignificant given the level of uncertainty associated with estimating the composition and liquid yield from a contaminated MDT fluid sample, particularly for a dry reservoir gas.

3.5.5 MDT Gas Trace Element Analysis

H_2S coupons were included within the MDT tool string for monitoring any incidence of H_2S in the tool. The coupons were inspected upon completion of the survey and it was revealed that H_2S is indeed present in the reservoir fluid, but at relatively low concentrations estimated to be less than 5 ppm, but possibly zero.

The concentration of radon was measured onsite and was shown to exist at concentrations between 310 and 426 Bq/m^3, which is considered relatively low.

3.5.6 MDT Derived Condensate to Gas Ratios

The condensate to gas ratios (CGR) determined from the MDT samples are shown in Tables 6 – 12. The CGRs were derived from the corrected (uncontaminated) composition of the recombined gas and liquid samples. The results indicate a relatively dry gas with a condensate-to-gas ratio between 3.3 and 7.1 bbl/mmscf.

3.5.7 MDT Water Sample Analysis

The 1 gallon MDT water sample was drained onsite into three acid wash glass bottles and treated for laboratory analysis back in Perth, Western Australia. Sample 1.07A was left unpreserved, while samples 1.07B and 1.0C were treated with nitric acid (acidic) and zinc acetate / sodium hydroxide respectively. The results of the analyses performed on these three samples are presented in Table 13. The composition of the water samples indicates a pH neutral fluid with relatively high total dissolved solids (TDS).

4.0 REFERENCES

1. Ritchie, C., “Chevron Australia, Chandon 1 Sampling Operations report,” Oilphase, July 2006.

2. Corbett, J., “PVT Express Fluid Properties Report, Chandon – Chandon 1,”Oilphase, July 2006

MDT-GR-CMR+-ECRD

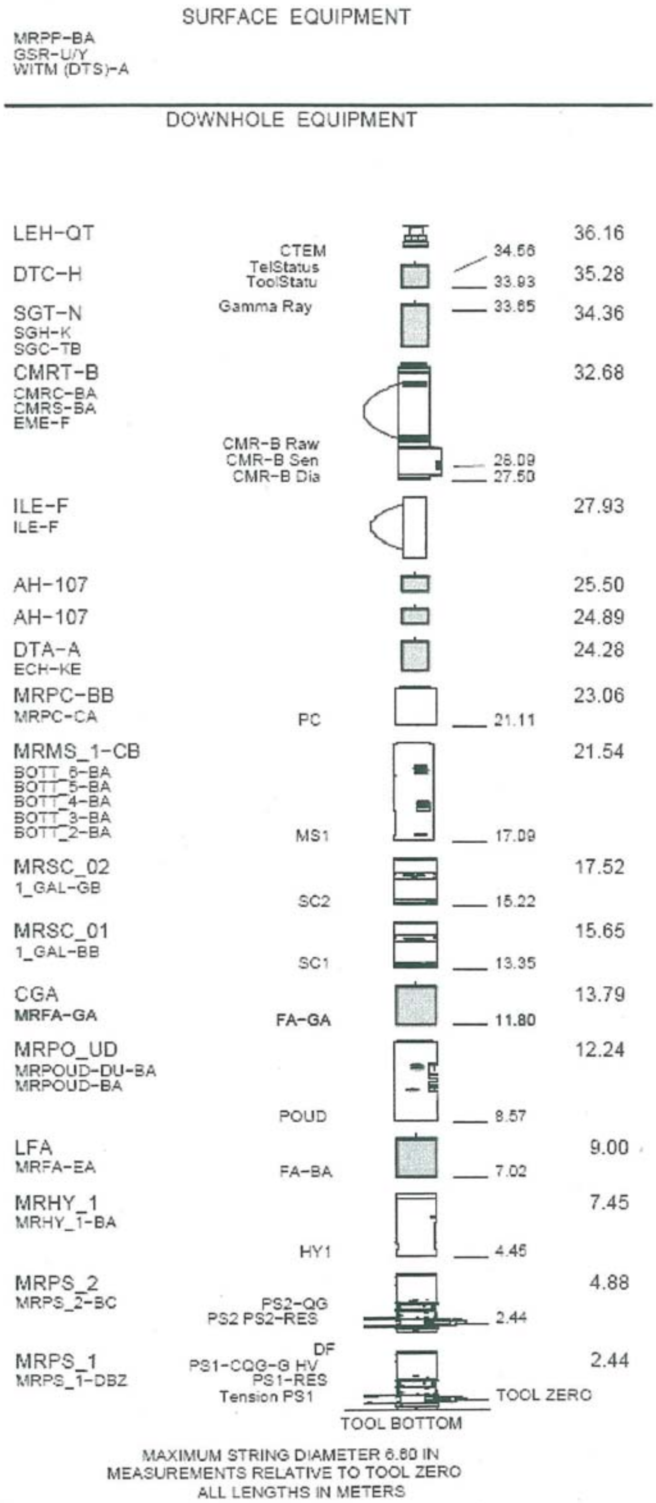


Figure 1 MDT tool string configuration

Table 1 Chandon 1 MDT Pre-Test Datasheet (Metric Units)

Pretest Number	Pretest Depth	Formation	Hydrostatic Before	FSIP	Gauge Temp.	Hydrostatic After	Mobility	Pretest Result
	(mTVDSS)		(kPa)	(kPa)	(°C)	(psia)	(mD/cP)	
1	2,720.7	AA Marine	31,612	30,137	68.3	31,578	0.2	Super Charged
2	2,732.8	AA Marine	31,737	29,291	68.4	31,716	113.8	Valid
3	2,734.9	AA Marine	31,743	29,295	68.6	31,730	41.3	Valid
4	2,737.4	AA Marine	31,764	29,296	69.1	31,743	1.0	Tight
5	2,740.1	AA Marine	31,785	29,307	69.1	31,781	151.9	Valid
6	2,745.3	AA Marine	31,854	29,311	69.4	31,836	0.5	Tight
7	2,746.6	AA Marine	31,854	29,322	69.4	31,852	1017.7	Valid
8	2,747.8	AA Marine	31,868	-	69.1	31,861	-	Tight
9	2,751.8	AA Marine	31,916	29,333	69.7	31,912	314.0	Valid
10	2,753.1	AA Marine	31,932	29,336	69.7	31,925	4281.1	Valid
11	2,758.6	AA Marine	32,001	29,347	69.7	31,992	101.1	Valid
12	2,761.0	AA Marine	32,023	29,354	69.8	32,012	1526.0	Valid
13	2,763.9	AA Marine	32,057	29,359	69.9	32,047	15951.1	Valid
14	2,764.9	AA Marine	32,062	29,361	70.1	32,056	147.6	Valid
15	2,767.2	AA Marine	32,088	-	-	-	-	Seal Failure
16	2,768.6	AA Marine	32,105	29,367	70.2	32,099	30.2	Valid
17	2,770.9	AA Marine	32,132	29,374	70.3	32,126	466.7	Valid
18	2,773.0	AA Marine	32,162	29,379	70.4	32,150	7018.8	Valid
19	2,776.5	AA Marine	32,202	29,386	70.5	32,194	1780.3	Valid
20	2,778.2	AA Marine	32,221	29,389	70.6	32,212	540.2	Valid
21	2,780.1	AA Marine	32,243	29,393	70.7	32,234	452.6	Valid
22	2,781.0	AA Marine	32,250	-	70.2	32,241	-	Tight
23	2,787.0	AA Marine	32,336	-	70.7	32,323	-	Tight
24	2,789.2	AA Marine	32,357	29,410	71.3	32,342	3.8	Valid
25	2,792.1	AA Marine	32,387	29,415	71.4	32,371	0.8	Valid
26	2,797.3	AA Marine	32,488	-	-	-	-	Aborted
26	2,797.1	AA Marine	32,438	29,431	71.5	-	-	Valid
26	2,796.8	AA Marine	32,494	29,417	65.6	-	-	Aborted
27	2,801.0	AA Marine	32,482	29,439	71.6	32,473	1015.9	Valid
28	2,804.3	AA Marine	32,523	29,447	71.8	32,512	395880.8	Valid
29	2,807.0	AA Marine	32,548	29,453	71.9	32,541	10705.0	Valid
30	2,809.0	AA Marine	32,572	29,457	72.0	32,561	180.4	Valid
31	2,810.1	AA Marine	32,578	29,456	72.3	32,568	0.8	Tight
32	2,813.7	AA Marine	32,620	29,465	72.3	32,614	4355.1	Valid
33	2,814.8	AA Marine	32,629	29,467	72.3	32,623	4424.8	Valid
34	2,816.2	AA Marine	32,643	29,470	72.4	32,638	90.8	Valid
35	2,824.9	AA Fluvial	32,757	29,489	72.6	32,746	784.2	Valid
36	2,828.0	AA Fluvial	32,771	29,495	72.9	32,769	523.2	Valid
37	2,830.7	AA Fluvial	32,806	29,501	72.8	32,801	1029.2	Valid
38	2,835.3	AA Fluvial	32,863	29,511	72.9	32,855	140.2	Valid
39	2,841.3	AA Fluvial	32,938	29,525	73.2	32,926	22523.6	Valid
40	2,846.3	AA Fluvial	32,993	29,535	73.4	32,983	2783.2	Valid
41	2,848.0	AA Fluvial	33,001	29,538	73.9	32,997	914.2	Valid
42	2,849.4	AA Fluvial	33,015	29,542	74.1	33,011	11746.9	Valid
43	2,851.9	AA Fluvial	33,046	29,547	74.0	33,040	1223.7	Valid
44	2,853.4	AA Fluvial	33,062	29,551	74.2	33,058	4012.3	Valid
45	2,855.0	AA Fluvial	33,080	29,554	74.6	33,075	19045.8	Valid
46	2,857.9	AA Fluvial	33,116	29,559	74.4	33,110	67.5	Valid
47	2,859.3	AA Fluvial	33,131	29,563	74.7	33,123	9728.3	Valid
48	2,872.2	AA Fluvial	33,278	-	-	-	-	Seal Failure
49	2,872.3	AA Fluvial	33,280	-	-	-	-	Seal Failure
50	2,874.8	AA Fluvial	33,274	-	-	-	-	Dry
51	2,885.0	AA Fluvial	33,434	-	-	-	-	Tight

Pretest Number	Pretest Depth	Formation	Hydrostatic Before	FSIP	Gauge Temp.	Hydrostatic After	Mobility	Pretest Result
	(mTVDSS)		(kPa)	(kPa)	(°C)	(psia)	(mD/cP)	
52	2,899.1	AA Fluvial	33,598	-	-	-	-	Tight
53	2,907.5	AA Fluvial	33,673	29,657	76.2	33,666	2.7	Tight
54	2,910.4	AA Fluvial	33,734	29,663	76.3	33,717	14.6	Tight
55	2,912.8	AA Fluvial	33,738	29,660	76.4	33,722	0.4	Tight
56	2,922.1	Zone 100	33,817	29,735	78.3	33,819	18.1	Valid
56	2,916.7	Zone 100	33,778	-	76.7	-	0.1	Tight
57	2,927.0	Zone 100	33,906	-	76.8	-	-	Tight
58	2,947.2	Zone 100	34,166	29,990	77.0	34,146	5.4	Valid
59	2,952.0	Zone 100	34,209	30,028	77.2	34,198	47.7	Valid
60	2,995.1	A Sand	34,777	30,453	77.7	34,756	4.0	Valid
61	2,998.0	A Sand	34,787	30,479	78.2	34,770	2.3	Valid
62	2,922.0	Zone 100	33,797	-	-	-	-	Tight
64	2,889.0	AA Fluvial	33,439	29,626	77.4	33,442	0.6	Valid
64	2,888.8	AA Fluvial	33,418	-	-	-	0.8	Tight
65	2,909.0	AA Fluvial	33,883	29,664	76.1	33,863	4.8	Valid

Table 2 Chandon 1 MDT Pre-Test Datasheet (Field Units)

Pretest Number	Pretest Depth	Formation	Hydrostatic Before	FSIP	Gauge Temp.	Hydrostatic After	Mobility	Pretest Result
	(mTVDSS)		(psia)	(psia)	(°F)	(psia)	(mD/cP)	
1	2,720.7	AA Marine	4,585	4,371	155.0	4,580	0.2	Super Charged
2	2,732.8	AA Marine	4,603	4,248	155.1	4,600	113.8	Valid
3	2,734.9	AA Marine	4,604	4,249	155.5	4,602	41.3	Valid
4	2,737.4	AA Marine	4,607	4,249	156.3	4,604	1.0	Tight
5	2,740.1	AA Marine	4,610	4,251	156.3	4,609	151.9	Valid
6	2,745.3	AA Marine	4,620	4,251	156.9	4,617	0.5	Tight
7	2,746.6	AA Marine	4,620	4,253	156.9	4,620	1017.7	Valid
8	2,747.8	AA Marine	4,622	-	156.3	4,621	-	Tight
9	2,751.8	AA Marine	4,629	4,254	157.4	4,629	314.0	Valid
10	2,753.1	AA Marine	4,631	4,255	157.4	4,630	4281.1	Valid
11	2,758.6	AA Marine	4,641	4,256	157.5	4,640	101.1	Valid
12	2,761.0	AA Marine	4,645	4,257	157.7	4,643	1526.0	Valid
13	2,763.9	AA Marine	4,650	4,258	157.9	4,648	15951.1	Valid
14	2,764.9	AA Marine	4,650	4,259	158.1	4,649	147.6	Valid
15	2,767.2	AA Marine	4,654	-	-	-	-	Seal Failure
16	2,768.6	AA Marine	4,657	4,259	158.4	4,656	30.2	Valid
17	2,770.9	AA Marine	4,660	4,260	158.6	4,660	466.7	Valid
18	2,773.0	AA Marine	4,665	4,261	158.7	4,663	7018.8	Valid
19	2,776.5	AA Marine	4,671	4,262	158.9	4,669	1780.3	Valid
20	2,778.2	AA Marine	4,673	4,263	159.0	4,672	540.2	Valid
21	2,780.1	AA Marine	4,677	4,263	159.2	4,675	452.6	Valid
22	2,781.0	AA Marine	4,678	-	158.4	4,676	-	Tight
23	2,787.0	AA Marine	4,690	-	159.3	4,688	-	Tight
24	2,789.2	AA Marine	4,693	4,265	160.4	4,691	3.8	Valid
25	2,792.1	AA Marine	4,697	4,266	160.5	4,695	0.8	Valid
26	2,797.3	AA Marine	4,712	-	-	-	-	Aborted
26	2,797.1	AA Marine	4,705	4,269	160.7	-	-	Valid
26	2,796.8	AA Marine	4,713	4,267	150.1	-	-	Aborted
27	2,801.0	AA Marine	4,711	4,270	160.9	4,710	1015.9	Valid
28	2,804.3	AA Marine	4,717	4,271	161.3	4,715	395880.8	Valid
29	2,807.0	AA Marine	4,721	4,272	161.5	4,720	10705.0	Valid
30	2,809.0	AA Marine	4,724	4,272	161.6	4,723	180.4	Valid
31	2,810.1	AA Marine	4,725	4,272	162.1	4,724	0.8	Tight
32	2,813.7	AA Marine	4,731	4,274	162.1	4,730	4355.1	Valid
33	2,814.8	AA Marine	4,732	4,274	162.2	4,732	4424.8	Valid
34	2,816.2	AA Marine	4,734	4,274	162.4	4,734	90.8	Valid
35	2,824.9	AA Fluvial	4,751	4,277	162.6	4,749	784.2	Valid
36	2,828.0	AA Fluvial	4,753	4,278	163.2	4,753	523.2	Valid
37	2,830.7	AA Fluvial	4,758	4,279	163.0	4,757	1029.2	Valid
38	2,835.3	AA Fluvial	4,766	4,280	163.3	4,765	140.2	Valid
39	2,841.3	AA Fluvial	4,777	4,282	163.7	4,776	22523.6	Valid
40	2,846.3	AA Fluvial	4,785	4,284	164.1	4,784	2783.2	Valid
41	2,848.0	AA Fluvial	4,786	4,284	165.0	4,786	914.2	Valid
42	2,849.4	AA Fluvial	4,788	4,285	165.3	4,788	11746.9	Valid
43	2,851.9	AA Fluvial	4,793	4,285	165.2	4,792	1223.7	Valid
44	2,853.4	AA Fluvial	4,795	4,286	165.5	4,795	4012.3	Valid
45	2,855.0	AA Fluvial	4,798	4,286	166.2	4,797	19045.8	Valid

Pretest Number	Pretest Depth	Formation	Hydrostatic Before	FSIP	Gauge Temp.	Hydrostatic After	Mobility	Pretest Result
	(mTVDSS)		(psia)	(psia)	(°F)	(psia)	(mD/cP)	
46	2,857.9	AA Fluvial	4,803	4,287	166.0	4,802	67.5	Valid
47	2,859.3	AA Fluvial	4,805	4,288	166.5	4,804	9728.3	Valid
48	2,872.2	AA Fluvial	4,827	-	-	-	-	Seal Failure
49	2,872.3	AA Fluvial	4,827	-	-	-	-	Seal Failure
50	2,874.8	AA Fluvial	4,826	-	-	-	-	Dry
51	2,885.0	AA Fluvial	4,849	-	-	-	-	Tight
52	2,899.1	AA Fluvial	4,873	-	-	-	-	Tight
53	2,907.5	AA Fluvial	4,884	4,301	169.1	4,883	2.7	Tight
54	2,910.4	AA Fluvial	4,893	4,302	169.4	4,890	14.6	Tight
55	2,912.8	AA Fluvial	4,893	4,302	169.5	4,891	0.4	Tight
56	2,922.1	Zone 100	4,905	4,313	172.9	4,905	18.1	Valid
56	2,916.7	Zone 100	4,899	-	170.0	-	0.1	Tight
57	2,927.0	Zone 100	4,918	-	170.3	-	-	Tight
58	2,947.2	Zone 100	4,955	4,350	170.6	4,953	5.4	Valid
59	2,952.0	Zone 100	4,962	4,355	171.0	4,960	47.7	Valid
60	2,995.1	A Sand	5,044	4,417	171.9	5,041	4.0	Valid
61	2,998.0	A Sand	5,045	4,421	172.8	5,043	2.3	Valid
62	2,922.0	Zone 100	4,902	-	-	-	-	Tight
64	2,889.0	AA Fluvial	4,850	4,297	171.4	4,850	0.6	Valid
64	2,888.8	AA Fluvial	4,847	-	-	-	0.8	Tight
65	2,909.0	AA Fluvial	4,914	4,302	169.0	4,911	4.8	Valid

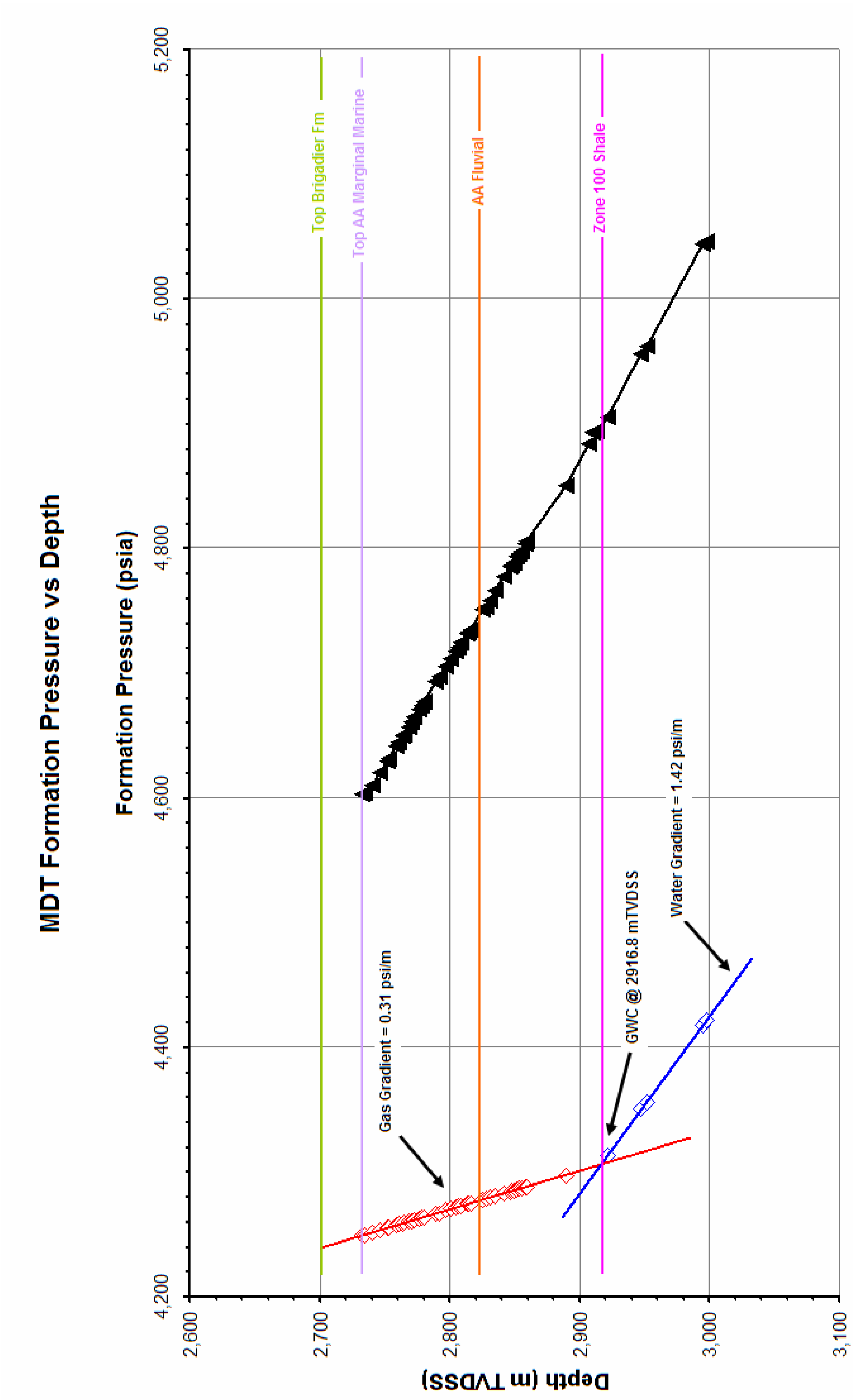


Figure 2 Plot of MDT pre-test data showing gas and water gradients

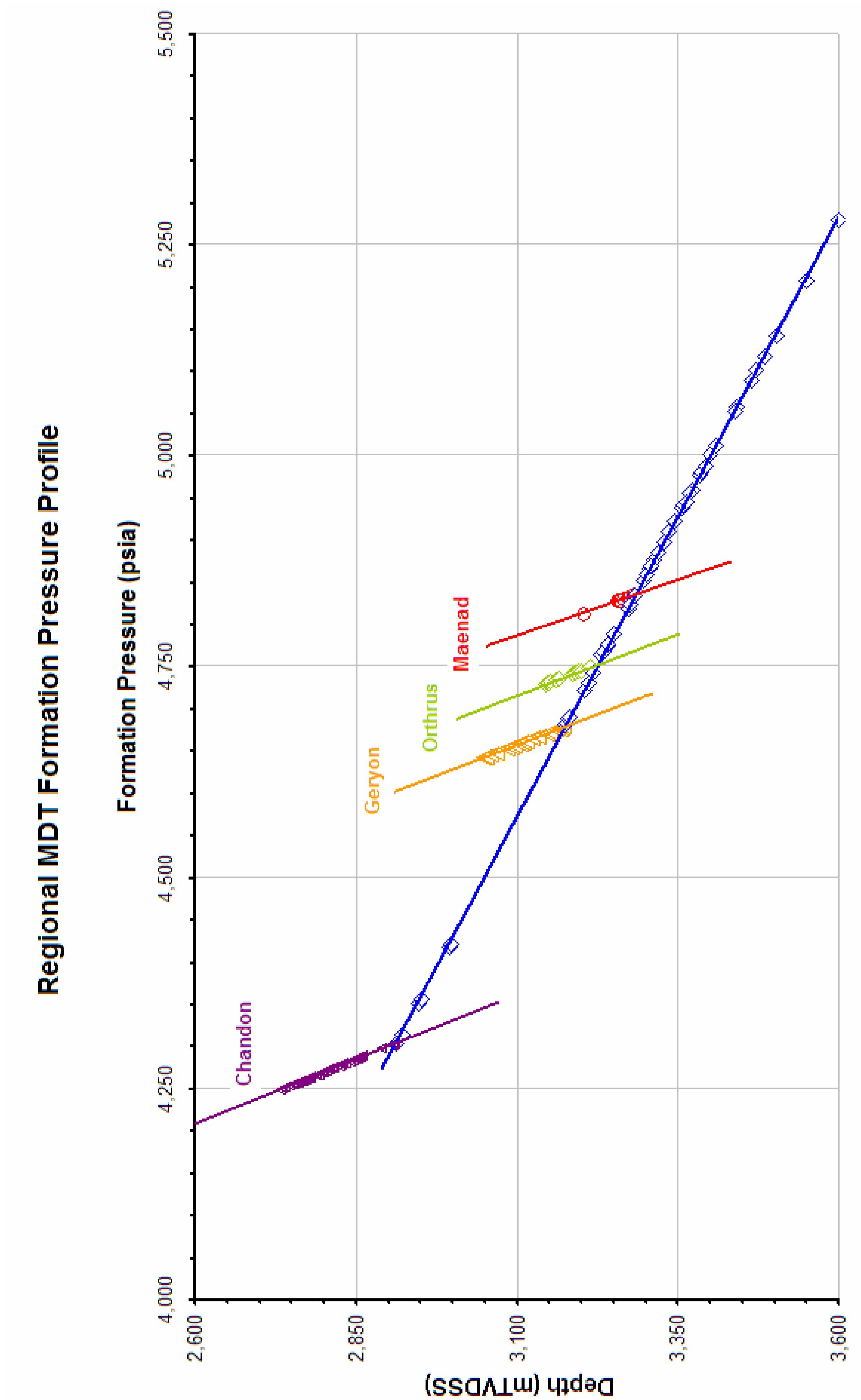


Figure 3 **Regional plot of pressure data showing Chandon 1 water leg pressures lying on regional Mungaroo aquifer gradient.**

Client:	Chevron Australia	**Field:**	Chandon
Job No:	AOH480	**Well:**	Chandon-1
Date:	30th June - 5th July 2006	**Installation:**	Jack Bates

Schlumberger

MDT Sampling Toolstring

MDT - MRMS Module

MRMS 1 - S/N: MRMS 075

Position	Sampler Type	Serial No	N2 Press. (psig)	Trapped Vol* (cc)
1	MPSR	780	N/A	11.1
2	NR-SPMC	366	11,000	10.2
3	NR-SPMC	368	11,000	7.2
4	MPSR	2041	N/A	12.5
5	MPSR	2108	N/A	12.0
6	MPSR	2169	N/A	10.3

*NB: "Trapped Vol" is the volume of distilled water present between the "NC" valve and the sample piston that will report to the sample chamber on the commencement of sampling

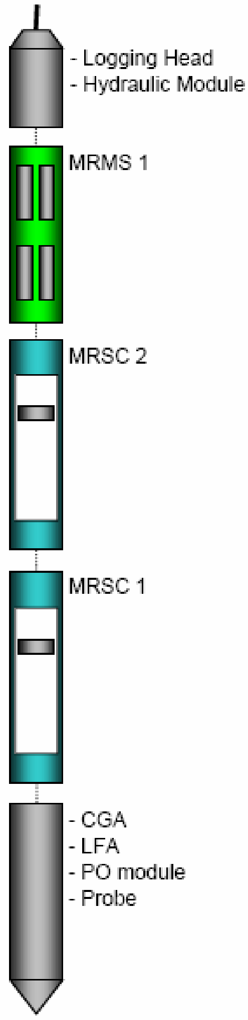
Tools configured for **Low Shock** sampling

SPMC Charge Parameters

Estimated Bottomhole Pressure	4,600	psig
Estimated Bottomhole Temp	75	°C
Expected Fluid Type	Dry Gas	
Assumed Fluid Shrinkage	40	%
Calc'd Recovery Pressure at T(amb)	6,000	psig

MDT - MRSC Modules

Module No	Serial No	Volume (Gal)	Agitation Ring?
1	016	1	N
2	036	1	N



Remarks

Samples were captured using MDT string
MDT Toolstring diagram is indicative only and is not a true representation of the toolstring used
Estimated data calculated by Oilphase Specialist based on information supplied by Mud Engineer

Figure 4 Sample chamber configuration

Table 3 MDT Fluid Sampling Summary

Run Number	Sample Number	Bottle Number	Sample Nature	Date P/O Start	Depth	Depth	Formation Data		Pump out Volume (L)	Pump out Time (mins)	Maximum Drawdown (psi)	LFA	Interpreted Fluid	Sealing Over Pressure (psig)
					mMDRT	mTVDSS	Pressure (psia)	Temperature (°C)						
2	1.01	1949-EA	450cc MPSR	2/07/2006 19:05	2,825.80	2,796.80	4,268.2	72.6	30.1	35	12.3	-	Gas	13,000
2	1.02	1201-EA	450cc MPSR	2/07/2006 20:58	2,854.00	2,825.00	4,276.3	74.1	42.3	56	27.0	-	Gas	13,000
2	1.03	1954-EA	450cc MPSR	2/07/2006 21:37	2,886.90	2,857.90	4,287.0	75.1	41.7	47	2.9	-	Gas	13,000
2	1.04	18699-QA	450cc MPSR	3/07/2006 1:08	2,939.40	2,910.40	4,302.3	78.2	58.2	55	51.3	-	Gas	13,000
2	1.05	N/A	250cc SPMC	2/07/2006 19:28	2,825.80	2,796.80	4,268.2	72.7	49.6	57	6.1	-	Gas	N / A
2	1.06	N/A	250cc SPMC	2/07/2006 21:10	2,854.00	2,825.00	4,276.3	74.1	50.7	68	25.8	-	Gas	N / A
2	1.07A	N/A	1gal sub	2/07/2006 23:02	2,981.10	2,952.10	4,355.4	79.3	22.5	88	1,147.9	-	Water	N / A
2	1.07B	N/A	1gal sub	2/07/2006 23:02	2,981.10	2,952.10	4,355.4	79.3	22.5	88	1,147.9	-	Water	N / A
2	1.07C	N/A	1gal sub	2/07/2006 23:02	2,981.10	2,952.10	4,355.4	79.3	22.5	88	1,147.9	-	Water	N / A
2	1.08A	12876-QA	1gal sub	3/07/2006 2:30	2,792.90	2,763.90	4,257.9	73.0	70.0	80	23.9	-	Gas	11,500
2	1.08B	12888-QA	1gal sub	3/07/2006 2:30	2,792.90	2,763.90	4,257.9	73.0	70.0	80	23.9	-	Gas	11,500
2	1.08C	12866-QA	1gal sub	3/07/2006 2:30	2,792.90	2,763.90	4,257.9	73.0	70.0	80	23.9	-	Gas	11,500

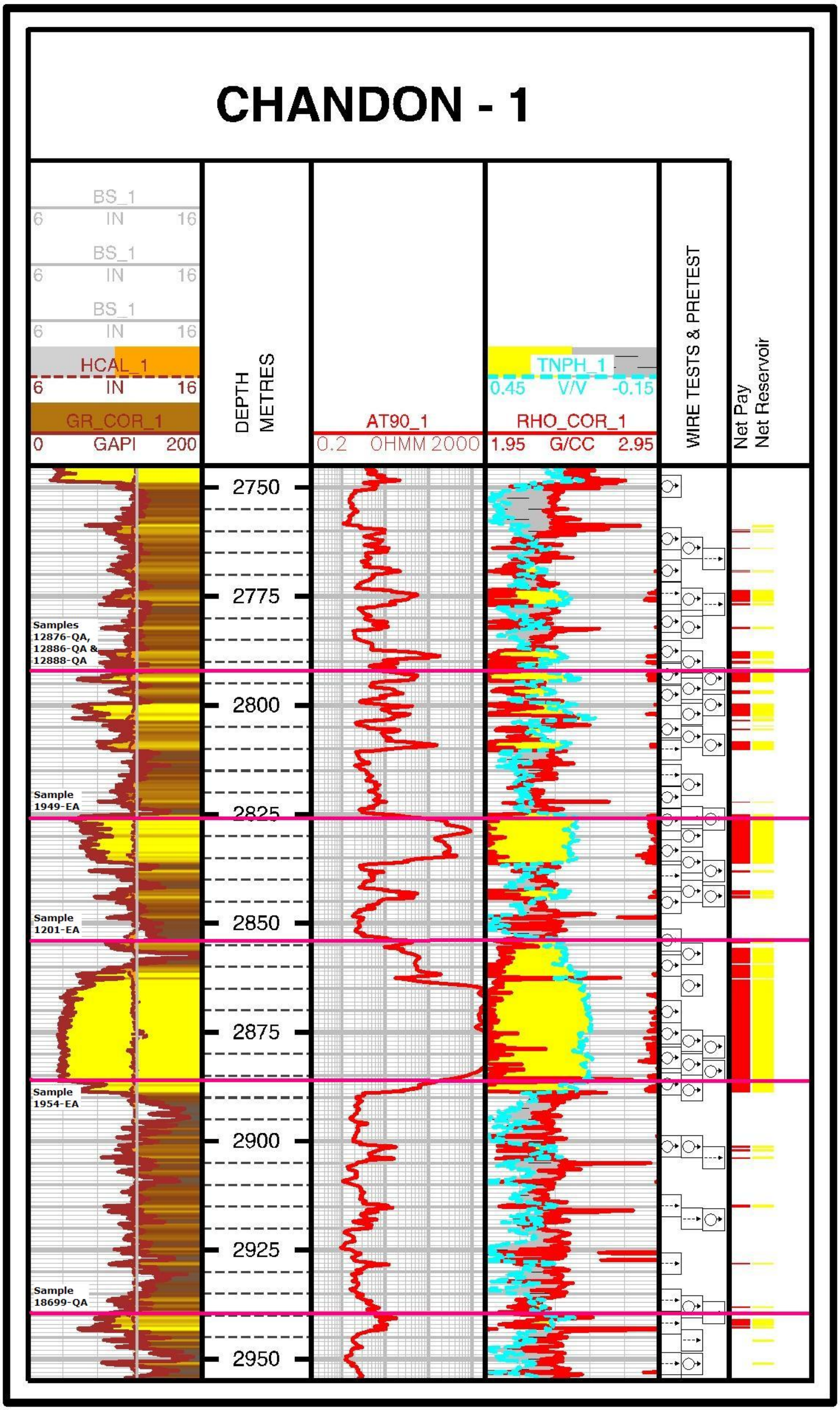


Figure 5 Log section through Chandon 1

Table 4 Well Site GC Analysis on Sample 1.05

Gas Composition Analysis		Physical Properties			
Comp.	Mole %				
N2	2.89	Sampler Serial No:		SPMC 366	
CO2	0.32	Sample Point:		2825.8	m MDBRT
H2S	0.00	Bottom Hole Press:		4268.20	psia
C1	86.66	Bottom Hole Temp:		72.7	°C
C2	5.44	Fluid Type:		Dry Gas	
C3	2.72				
iC4	0.56				
C4	0.75	H2S by UOP:		BDL	ppm vol
iC5	0.25				
C5	0.14	CO2 by length of stain		0.50	% (v/v)
C6	0.14	H2S by length of stain		0.00	ppm (v/v)
C7	0.12				
C8	0.02				
C9	0.00				
C10	0.00				
C11	0.00				
C12+	0.00				

Table 5 Well Site GC Analysis on Sample 1.06

Gas Composition Analysis		Physical Properties			
Comp.	Mole %				
N2	2.82	Sampler Serial No:		SPMC 368	
CO2	0.35	Sample Point:		2850.4	m MDBRT
H2S	0.00	Bottom Hole Press:		4276.32	psia
C1	86.39	Bottom Hole Temp:		74.1	°C
C2	5.34	Fluid Type:		Dry Gas	
C3	2.99				
iC4	0.55				
C4	0.74	Radon	Cell 1	310 Bq/m3	
iC5	0.26		Cell 2	426 Bq/m3	
C5	0.17				
C6	0.16	CO2 by length of stain		0.50	% (v/v)
C7	0.19	H2S by length of stain		0.00	ppm (v/v)
C8	0.05				
C9	0.00				
C10	0.00				
C11	0.00				
C12+	0.00				

Table 6 MDT Offsite Gas Sample Compositional Analysis from 2886.9 mMDRT (Sample 1954-EA)

Component Name	MW (g/mol)	Flashed Gas		Contaminated Flashed Liquid		Clean Flashed Liquid		Monophasic Fluid	
		wt %	mol %	wt %	mol %	wt %	mol %	wt %	mol %
N2	28.01	4.52	3.48	0.00	0.00	0.00	0.00	4.38	3.46
CO2	44.01	0.94	0.46	0.00	0.00	0.00	0.00	0.91	0.46
H2S	34.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	16.04	60.28	80.97	0.00	0.00	0.00	0.00	58.33	80.60
C2	30.07	8.75	6.27	0.02	0.13	0.03	0.16	8.47	6.24
C3	44.10	8.02	3.92	0.08	0.29	0.10	0.36	7.77	3.90
iC4	58.12	2.40	0.89	0.07	0.21	0.10	0.26	2.33	0.89
nC4	58.12	2.97	1.10	0.18	0.51	0.23	0.62	2.88	1.10
iC5	72.15	1.94	0.58	0.23	0.53	0.30	0.65	1.89	0.58
nC5	72.15	1.27	0.38	0.25	0.57	0.32	0.70	1.24	0.38
C6	84.00	1.79	0.46	0.98	1.94	1.28	2.37	1.78	0.47
C7	96.00	3.48	0.78	3.53	6.14	4.64	7.50	3.51	0.81
C8	107.00	2.78	0.56	9.17	14.32	12.06	17.49	3.08	0.64
C9	121.00	0.84	0.15	7.68	10.60	10.10	12.95	1.14	0.21
C10	134.00	0.00	0.00	6.92	8.63	9.10	10.54	0.29	0.05
C11	147.00	0.00	0.00	5.51	6.26	6.98	7.37	0.23	0.03
C12	161.00	0.00	0.00	4.70	4.88	5.96	5.75	0.19	0.03
C13	175.00			3.54	3.38	4.00	3.55	0.13	0.02
C14	190.00			16.86	14.82	13.11	10.71	0.42	0.05
C15	206.00			4.18	3.39	3.91	2.94	0.13	0.01
C16	222.00			12.61	9.49	7.83	5.47	0.25	0.03
C17	237.00			3.93	2.77	3.05	2.00	0.10	0.01
C18	251.00			4.54	3.02	1.94	1.20	0.06	0.01
C19	263.00			2.94	1.87	2.86	1.69	0.09	0.01
C20	275.00			1.86	1.13	1.66	0.93	0.05	0.00
C21	291.00			1.59	0.91	1.34	0.72	0.04	0.00
C22	300.00			1.40	0.78	1.04	0.54	0.03	0.00
C23	312.00			1.33	0.71	1.41	0.70	0.05	0.00
C24	324.00			1.13	0.58	1.07	0.51	0.03	0.00
C25	337.00			0.99	0.49	0.85	0.39	0.03	0.00
C26	349.00			0.86	0.41	0.86	0.38	0.03	0.00
C27	360.00			0.75	0.35	0.99	0.43	0.03	0.00
C28	372.00			0.56	0.25	0.73	0.31	0.02	0.00
C29	382.00			0.46	0.20	0.60	0.24	0.02	0.00
C30	394.00			0.28	0.12	0.37	0.15	0.01	0.00
C31	404.00			0.31	0.13	0.41	0.16	0.01	0.00
C32	415.00			0.20	0.08	0.26	0.10	0.01	0.00
C33	426.00			0.13	0.05	0.17	0.06	0.01	0.00
C34	437.00			0.16	0.06	0.21	0.07	0.01	0.00
C35	445.00			0.08	0.03	0.11	0.04	0.00	0.00
C36+	0.00			0.00	0.00	0.00	0.00	0.00	0.00
Calculated MW (g/mol)		21.50		167.00		155.20		22.20	
Calculated "Uncontaminated" Atmospheric flash data at 60°F.						6.58 bbl/mmscf			

Table 7 MDT Offsite Gas Sample Compositional Analysis from 2825.8 mMDRT (Sample 1949-EA)

Component	MW	Flashed Gas		Contaminated Flashed Liquid		Clean Flashed Liquid		Monophasic Fluid	
Name	(g/mol)	wt %	mol %	wt %	mol %	wt %	mol %	wt %	mol %
N2	28.01	4.86	3.60	0.00	0.00	0.00	0.00	4.68	3.58
CO2	44.01	0.68	0.32	0.00	0.00	0.00	0.00	0.65	0.32
H2S	34.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	16.04	64.31	83.14	0.00	0.00	0.00	0.00	61.95	82.72
C2	30.07	8.16	5.63	0.02	0.12	0.03	0.15	7.87	5.60
C3	44.10	7.27	3.42	0.08	0.30	0.11	0.38	7.01	3.40
iC4	58.12	1.93	0.69	0.07	0.21	0.10	0.26	1.87	0.69
nC4	58.12	2.38	0.85	0.19	0.55	0.26	0.69	2.30	0.85
iC5	72.15	1.50	0.43	0.23	0.54	0.31	0.68	1.45	0.43
nC5	72.15	0.97	0.28	0.25	0.59	0.34	0.74	0.95	0.28
C6	84.00	1.58	0.39	0.99	2.01	1.35	2.52	1.57	0.40
C7	96.00	2.55	0.55	3.43	6.07	4.66	7.61	2.62	0.59
C8	107.00	2.58	0.50	8.58	13.61	11.64	17.07	2.91	0.58
C9	121.00	1.23	0.21	7.11	9.97	9.64	12.50	1.53	0.27
C10	134.00	0.00	0.00	6.46	8.18	8.76	10.26	0.32	0.05
C11	147.00	0.00	0.00	5.31	6.13	6.91	7.37	0.25	0.04
C12	161.00	0.00	0.00	4.69	4.95	6.12	5.96	0.22	0.03
C13	175.00			3.67	3.56	4.24	3.80	0.16	0.02
C14	190.00			16.05	14.34	11.51	9.51	0.42	0.05
C15	206.00			4.15	3.42	3.83	2.92	0.14	0.01
C16	222.00			13.09	10.01	7.83	5.54	0.29	0.03
C17	237.00			4.08	2.92	3.13	2.07	0.11	0.01
C18	251.00			4.85	3.28	2.01	1.26	0.07	0.01
C19	263.00			3.39	2.19	3.46	2.06	0.13	0.01
C20	275.00			2.12	1.31	1.98	1.13	0.07	0.01
C21	291.00			1.80	1.05	1.60	0.86	0.06	0.00
C22	300.00			1.59	0.90	1.25	0.66	0.05	0.00
C23	312.00			1.47	0.80	1.62	0.81	0.06	0.00
C24	324.00			1.24	0.65	1.22	0.59	0.04	0.00
C25	337.00			1.09	0.55	0.97	0.45	0.04	0.00
C26	349.00			0.99	0.48	1.03	0.46	0.04	0.00
C27	360.00			0.93	0.44	1.27	0.55	0.05	0.00
C28	372.00			0.59	0.27	0.80	0.34	0.03	0.00
C29	382.00			0.41	0.18	0.55	0.23	0.02	0.00
C30	394.00			0.39	0.17	0.54	0.21	0.02	0.00
C31	404.00			0.21	0.09	0.29	0.11	0.01	0.00
C32	415.00			0.22	0.09	0.30	0.11	0.01	0.00
C33	426.00			0.13	0.05	0.17	0.06	0.01	0.00
C34	437.00			0.05	0.02	0.07	0.03	0.00	0.00
C35	445.00			0.08	0.03	0.11	0.04	0.00	0.00
C36+	0.00			0.00	0.00	0.00	0.00	0.00	0.00
Calculated MW (g/mol)		20.70		169.80		156.90		21.40	
Calculated "Uncontaminated" Atmospheric flash data at 60°F.						7.14 bbl/mmscf			

Table 8 MDT Offsite Gas Sample Compositional Analysis from 2792.9 mMDRT (Sample 12876-QA)

Component Name	MW (g/mol)	Flashed Gas		Contaminated Flashed Liquid		Clean Flashed Liquid		Monophasic Fluid	
		wt %	mol %	wt %	mol %	wt %	mol %	wt %	mol %
N2	28.01	4.18	3.26	0.00	0.00	0.00	0.00	4.08	3.25
CO2	44.01	0.89	0.44	0.00	0.00	0.00	0.00	0.86	0.44
H2S	34.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C1	16.04	59.37	80.93	0.00	0.00	0.00	0.00	57.96	80.65
C2	30.07	8.42	6.12	0.01	0.08	0.02	0.10	8.22	6.10
C3	44.10	7.91	3.92	0.05	0.21	0.08	0.27	7.72	3.91
iC4	58.12	2.34	0.88	0.06	0.17	0.08	0.22	2.29	0.88
nC4	58.12	2.92	1.10	0.15	0.44	0.22	0.57	2.86	1.10
iC5	72.15	1.72	0.52	0.21	0.48	0.29	0.62	1.68	0.52
nC5	72.15	1.29	0.39	0.22	0.52	0.32	0.68	1.26	0.39
C6	84.00	2.27	0.59	0.93	1.86	1.32	2.41	2.24	0.60
C7	96.00	4.00	0.91	3.29	5.78	4.69	7.49	4.01	0.93
C8	107.00	3.72	0.76	8.60	13.55	12.26	17.56	3.92	0.82
C9	121.00	1.00	0.18	7.58	10.56	10.81	13.68	1.23	0.23
C10	134.00	0.00	0.00	7.24	9.11	10.33	11.80	0.25	0.04
C11	147.00	0.00	0.00	5.97	6.85	8.16	8.51	0.19	0.03
C12	161.00	0.00	0.00	5.14	5.38	7.02	6.68	0.17	0.02
C13	175.00			4.03	3.88	4.86	4.25	0.12	0.01
C14	190.00			15.23	13.51	9.47	7.63	0.23	0.03
C15	206.00			4.53	3.71	4.32	3.21	0.10	0.01
C16	222.00			11.54	8.76	4.61	3.18	0.11	0.01
C17	237.00			4.15	2.95	3.05	1.97	0.07	0.01
C18	251.00			5.51	3.70	2.41	1.47	0.06	0.01
C19	263.00			2.34	1.50	1.97	1.15	0.05	0.00
C20	275.00			2.17	1.33	2.02	1.13	0.05	0.00
C21	291.00			1.92	1.11	1.73	0.91	0.04	0.00
C22	300.00			1.71	0.96	1.36	0.69	0.03	0.00
C23	312.00			1.59	0.86	1.82	0.89	0.04	0.00
C24	324.00			1.33	0.69	1.34	0.63	0.03	0.00
C25	337.00			1.12	0.56	0.99	0.45	0.02	0.00
C26	349.00			0.95	0.46	0.99	0.44	0.02	0.00
C27	360.00			0.85	0.40	1.22	0.52	0.03	0.00
C28	372.00			0.49	0.22	0.69	0.29	0.02	0.00
C29	382.00			0.34	0.15	0.48	0.19	0.01	0.00
C30	394.00			0.30	0.13	0.43	0.17	0.01	0.00
C31	404.00			0.19	0.08	0.27	0.10	0.01	0.00
C32	415.00			0.10	0.04	0.14	0.05	0.00	0.00
C33	426.00			0.08	0.03	0.11	0.04	0.00	0.00
C34	437.00			0.05	0.02	0.07	0.03	0.00	0.00
C35	445.00			0.03	0.01	0.04	0.01	0.00	0.00
C36+	0.00			0.00	0.00	0.00	0.00	0.00	0.00
Calculated MW (g/mol)		21.90		168.60		153.20		22.30	
Calculated "Uncontaminated" Atmospheric flash data at 60°F.						4.83 bbl/mmscf			

Table 9 MDT Offsite Gas Sample Compositional Analysis from 2854.0 mMDRT (Sample 1201-EA)

Component Name	MW (g/mol)	Contaminated Monophasic Fluid		Uncontaminated Monophasic Fluid	
		mol %	wt %	Mole %	Weight %
H2S	44.01	0.00	0.00	0.00	0.00
CO2	34.08	0.32	0.69	0.32	0.70
N2	28.01	3.59	4.99	3.60	5.08
C1	16.04	85.49	68.03	85.61	69.18
C2	30.07	5.07	7.56	5.07	7.69
C3	44.10	2.56	5.60	2.56	5.70
iC4	58.12	0.51	1.46	0.51	1.49
nC4	58.12	0.76	2.20	0.77	2.24
iC5	72.15	0.31	1.10	0.31	1.12
nC5	72.15	0.23	0.81	0.23	0.83
C6	84.00	0.23	0.96	0.23	0.98
C7	96.00	0.24	1.11	0.24	1.13
C8	107.00	0.26	1.30	0.26	1.33
C9	121.00	0.10	0.65	0.10	0.67
C10	134.00	0.05	0.40	0.05	0.41
C11	147.00	0.03	0.25	0.04	0.26
C12	161.00	0.02	0.18	0.02	0.19
C13	175.00	0.02	0.14	0.02	0.14
C14	190.00	0.10	0.97	0.02	0.15
C15	206.00	0.01	0.12	0.01	0.13
C16	222.00	0.07	0.79	0.01	0.10
C17	237.00	0.01	0.10	0.01	0.09
C18	251.00	0.02	0.27	0.01	0.07
C19	263.00	0.00	0.06	0.00	0.06
C20	275.00	0.00	0.05	0.00	0.05
C21	291.00	0.00	0.04	0.00	0.04
C22	300.00	0.00	0.03	0.00	0.03
C23	312.00	0.00	0.03	0.00	0.03
C24	324.00	0.00	0.02	0.00	0.02
C25	337.00	0.00	0.02	0.00	0.02
C26	349.00	0.00	0.02	0.00	0.02
C27	360.00	0.00	0.01	0.00	0.01
C28	372.00	0.00	0.01	0.00	0.01
C29	382.00	0.00	0.01	0.00	0.01
C30	394.00	0.00	0.01	0.00	0.01
C31	404.00	0.00	0.00	0.00	0.00
C32	415.00	0.00	0.00	0.00	0.00
C33	426.00	0.00	0.00	0.00	0.00
C34	437.00	0.00	0.00	0.00	0.00
C35	445.00	0.00	0.00	0.00	0.00
C36+	0.00	0.00	0.01	0.00	0.01
Calculated MW (g/mol)		20.16		19.85	
Calculated "Uncontaminated" Atmospheric flash data at 60°F.				4.37 bbl/mmscf	

Table 10 MDT Offsite Gas Sample Compositional Analysis from 2939.4 mMDRT (Sample 18699-QA)

Component Name	MW (g/mol)	Contaminated Monophasic Fluid mol %	Contaminated Monophasic Fluid wt %	Uncontaminated Monophasic Fluid Mole %	Uncontaminated Monophasic Fluid Weight %
H2S	44.01	0.00	0.00	0.00	0.00
CO2	34.08	0.33	0.71	0.33	0.72
N2	28.01	3.58	4.86	3.59	4.97
C1	16.04	84.63	65.82	84.82	67.23
C2	30.07	5.20	7.58	5.21	7.74
C3	44.10	2.78	5.94	2.78	6.06
iC4	58.12	0.55	1.56	0.55	1.59
nC4	58.12	0.84	2.37	0.84	2.42
iC5	72.15	0.34	1.20	0.34	1.23
nC5	72.15	0.25	0.88	0.25	0.90
C6	84.00	0.34	1.43	0.34	1.46
C7	96.00	0.32	1.36	0.32	1.40
C8	107.00	0.30	1.48	0.30	1.52
C9	121.00	0.12	0.70	0.12	0.72
C10	134.00	0.06	0.45	0.06	0.47
C11	147.00	0.04	0.25	0.04	0.27
C12	161.00	0.03	0.20	0.03	0.21
C13	175.00	0.02	0.15	0.02	0.16
C14	190.00	0.11	1.02	0.02	0.16
C15	206.00	0.02	0.21	0.01	0.13
C16	222.00	0.09	0.95	0.01	0.11
C17	237.00	0.01	0.12	0.01	0.09
C18	251.00	0.03	0.34	0.01	0.08
C19	263.00	0.01	0.08	0.00	0.06
C20	275.00	0.00	0.07	0.00	0.05
C21	291.00	0.00	0.05	0.00	0.04
C22	300.00	0.00	0.04	0.00	0.04
C23	312.00	0.00	0.03	0.00	0.03
C24	324.00	0.00	0.03	0.00	0.02
C25	337.00	0.00	0.02	0.00	0.02
C26	349.00	0.00	0.02	0.00	0.02
C27	360.00	0.00	0.01	0.00	0.01
C28	372.00	0.00	0.01	0.00	0.01
C29	382.00	0.00	0.01	0.00	0.01
C30	394.00	0.00	0.01	0.00	0.01
C31	404.00	0.00	0.01	0.00	0.01
C32	415.00	0.00	0.00	0.00	0.00
C33	426.00	0.00	0.00	0.00	0.00
C34	437.00	0.00	0.00	0.00	0.00
C35	445.00	0.00	0.00	0.00	0.00
C36+	0.00	0.00	0.03	0.00	0.03
Calculated MW (g/mol)		20.63		20.24	
Calculated "Uncontaminated" Atmospheric flash data at 60°F.				4.59 bbl/mmscf	

Table 11 MDT Offsite Gas Sample Compositional Analysis from 2792.9 mMDRT (Sample 12886-QA)

Component Name	MW (g/mol)	Contaminated Monophasic Fluid		Uncontaminated Monophasic Fluid	
		mol %	wt %	Mole %	Weight %
H2S	44.01	0.00	0.00	0.00	0.00
CO2	34.08	0.30	0.66	0.30	0.67
N2	28.01	3.60	5.04	3.60	5.10
C1	16.04	85.64	68.71	85.74	69.54
C2	30.07	5.05	7.59	5.05	7.68
C3	44.10	2.53	5.58	2.53	5.64
iC4	58.12	0.49	1.43	0.49	1.44
nC4	58.12	0.74	2.14	0.74	2.17
iC5	72.15	0.31	1.12	0.31	1.14
nC5	72.15	0.23	0.83	0.23	0.84
C6	84.00	0.21	0.92	0.21	0.93
C7	96.00	0.24	1.09	0.24	1.11
C8	107.00	0.29	1.44	0.29	1.46
C9	121.00	0.11	0.64	0.11	0.65
C10	134.00	0.04	0.33	0.04	0.34
C11	147.00	0.03	0.21	0.03	0.22
C12	161.00	0.02	0.17	0.02	0.17
C13	175.00	0.01	0.13	0.02	0.14
C14	190.00	0.08	0.76	0.01	0.14
C15	206.00	0.01	0.11	0.01	0.11
C16	222.00	0.05	0.56	0.01	0.09
C17	237.00	0.01	0.08	0.01	0.08
C18	251.00	0.01	0.19	0.01	0.06
C19	263.00	0.00	0.05	0.00	0.06
C20	275.00	0.00	0.05	0.00	0.05
C21	291.00	0.00	0.04	0.00	0.04
C22	300.00	0.00	0.03	0.00	0.03
C23	312.00	0.00	0.03	0.00	0.03
C24	324.00	0.00	0.02	0.00	0.02
C25	337.00	0.00	0.02	0.00	0.02
C26	349.00	0.00	0.01	0.00	0.01
C27	360.00	0.00	0.01	0.00	0.01
C28	372.00	0.00	0.01	0.00	0.01
C29	382.00	0.00	0.00	0.00	0.00
C30	394.00	0.00	0.00	0.00	0.00
C31	404.00	0.00	0.00	0.00	0.00
C32	415.00	0.00	0.00	0.00	0.00
C33	426.00	0.00	0.00	0.00	0.00
C34	437.00	0.00	0.00	0.00	0.00
C35	445.00	0.00	0.00	0.00	0.00
C36+	0.00	0.00	0.00	0.00	0.00
Calculated MW (g/mol)		20.00		19.78	
Calculated "Uncontaminated" Atmospheric flash data at 60°F.				3.68 bbl/mmscf	

Table 12 MDT Offsite Gas Sample Compositional Analysis from 2792.9 mMDRT (Sample 12888-QA)

Component Name	MW (g/mol)	Contaminated Monophasic Fluid mol %	Contaminated Monophasic Fluid wt %	Uncontaminated Monophasic Fluid Mole %	Uncontaminated Monophasic Fluid Weight %
H2S	44.01	0.00	0.00	0.00	0.00
CO2	34.08	0.30	0.66	0.30	0.67
N2	28.01	3.55	4.95	3.55	5.01
C1	16.04	85.50	68.23	85.61	69.14
C2	30.07	5.04	7.54	5.05	7.64
C3	44.10	2.56	5.61	2.56	5.68
iC4	58.12	0.50	1.45	0.50	1.47
nC4	58.12	0.76	2.20	0.76	2.23
iC5	72.15	0.32	1.14	0.32	1.15
nC5	72.15	0.24	0.84	0.24	0.86
C6	84.00	0.24	1.05	0.25	1.06
C7	96.00	0.34	1.52	0.34	1.54
C8	107.00	0.32	1.59	0.32	1.61
C9	121.00	0.05	0.36	0.05	0.37
C10	134.00	0.03	0.21	0.03	0.22
C11	147.00	0.03	0.20	0.03	0.21
C12	161.00	0.02	0.18	0.02	0.18
C13	175.00	0.02	0.14	0.02	0.14
C14	190.00	0.09	0.84	0.02	0.18
C15	206.00	0.01	0.12	0.01	0.12
C16	222.00	0.05	0.59	0.01	0.10
C17	237.00	0.01	0.09	0.01	0.08
C18	251.00	0.02	0.20	0.00	0.06
C19	263.00	0.00	0.06	0.00	0.05
C20	275.00	0.00	0.05	0.00	0.05
C21	291.00	0.00	0.04	0.00	0.04
C22	300.00	0.00	0.03	0.00	0.03
C23	312.00	0.00	0.03	0.00	0.03
C24	324.00	0.00	0.02	0.00	0.02
C25	337.00	0.00	0.02	0.00	0.02
C26	349.00	0.00	0.01	0.00	0.01
C27	360.00	0.00	0.01	0.00	0.01
C28	372.00	0.00	0.01	0.00	0.01
C29	382.00	0.00	0.00	0.00	0.00
C30	394.00	0.00	0.00	0.00	0.00
C31	404.00	0.00	0.00	0.00	0.00
C32	415.00	0.00	0.00	0.00	0.00
C33	426.00	0.00	0.00	0.00	0.00
C34	437.00	0.00	0.00	0.00	0.00
C35	445.00	0.00	0.00	0.00	0.00
C36+	0.00	0.00	0.01	0.00	0.01
Calculated MW (g/mol)		20.10		19.87	
Calculated "Uncontaminated" Atmospheric flash data at 60°F.				3.27 bbl/mmscf	

Table 13 MDT Water Sample Compositional Analysis from 2981.1 mMDRT

Physical Properties				
pH		7.25		1.07A
Conductivity (mmho/cm) at 25°C		45.6		1.07A
Total Dissolved Solids (mg/L), NaCl equivalent		29200		1.07A
Resistivity (ohm.m) at 25°C		0.219		1.07A
Total Dissolved Solids (mg/L), gravimetric at 180°C		30300		1.07A
Density (g/mL) at 25°C		1.018		1.07A
Ion Name	***Ion Symbol***	***mg/L***	***me/L***	
Sodium	Na	10600	461	1.07B
Potassium	K	170	4.3	1.07B
Lithium	Li	1.5	0.2	1.07B
Calcium	Ca	340	17	1.07B
Magnesium	Mg	59	4.9	1.07B
Barium	Ba	64	0.9	1.07B
Strontium	Sr	58	1.3	1.07B
Iron	Fe	1.5	0.1	1.07B
Manganese	Mn	0.2		1.07B
Silicon	Si	20		1.07B
Boron	B	28		1.07B
Chloride	Cl	17110	483	1.07A
Carbonate alkalinity at CO3	CO_3	0	0	1.07A
Bicarbonate alkalinity as HCO3	HCO_3	875	14.3	1.07A
Sulphate	SO_4	4	0.1	1.07A
Nitrate	NO_3	1.6		1.07A
Thiocyanate	SCN	<0.1		1.07A
Dissolved carbon dioxide	CO_2	81		1.07A
Hydrogen sulphide	H_2S	0.6		1.07C
Cations			490	
Anions			497	
Sum of ions		29331	987	
% Variation (anions over cations)			0.7	
Formic acid		<10		1.07C
Acetic acid		113		1.07C
Propanic acid		35		1.07C
Butyric acid		5		1.07C
Hexanoic acid		28		1.07C
1.07A	Unpreserved sample			
1.07B	Preserved with nitric acid (pH < 2)			
1.07C	Preserved with zinc acetate / sodium hydroxide			

APPENDIX 5

PALYNOLOGY REPORT (WITH INTERPRETIVE DISTRIBUTION CHART)
(BY BARRY INGRAM)

PALYNOLOGY

of

CHANDON 1

Offshore Carnarvon Basin

Western Australia

by

Barry Ingram

Prepared for

CHEVRON AUSTRALIA PTY LTD **March 2007**

PALYNOLOGY

of

CHANDON 1

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Appendix 1: Species distribution chart	

SUMMARY

The cuttings samples studied palynologically in Chevron's **CHANDON 1** well can be summarized by interval:

2080-2090 to 2090-2100	: Indeterminate
2100-2110m	:Undifferentiated Cenomanian/Albian, marine
2300-2310 to ?2400-2410m	: *D.davidii* Zone; late Aptian; offshore marine
2410-2420 to 2420-2430m	: lower *O.operculata* Zone; early Aptian; offshore marine
2430-2440m	: ?*M.australis* Zone (undifferentiated); ?Barremian; ?marine
2575-2580 to 2585-2590m	: *S.areolata* Zone; Valanginian; ?shelfal marine
2615-2620m	: ?*E.toryna* Zone; early Valanginian; ?shelfal marine
2625-2630m	: *D.lobispinosum* Zone; Berriasian; ?shelfal marine
2635-2640 to 2655-2660m	: ?*C.delicata* Zone; Berriasian; ?shelfal marine
2675-2680 to 2700-2705m	: Indeterminate
2705-2710m	: ?basal *A.reducta*/top *M.crenulatus* Zone; Rhaetian/Norian marginal marine
2710-2715 to 2910-2915m	: *M.crenulatus* Zone; Norian; continental to marginal marine
2790-2795 to ?2805-2810m	: *H.balmei* event

Individual samples are summarized on the following Table 1.

TABLE 1: Individual sample summary of palynological data from Chandon 1 well (all ditch cuttings)

Samples (m)	Organic yield	Microfossil Yield	Age	Percentage				Diversity		Zone (subzone)	Environments
				Fresh water Algae	Saline Acritarchs	Saline Dinocysts	Spore Pollen	Saline Algae	Spore-Pollen		
2080-2090	0.009	V.V.LOW	INDET			TRACE		EX LOW		-	?
2090-2100	0.013	V.V.LOW	INDET			TRACE	TRACE	EX LOW	EX LOW	-	?
2100-2110	0.023	V.V.LOW	CENOMAN./ALBIAN			TRACE	TRACE	EX LOW	EX LOW	-	?MARINE
2300-2310	0.015	MOD	LATE APTIAN	3	4	84	9	H	L	*D.DAVIDII* (?UPP)	OFFSHORE MARINE
2310-2320	0.031	LOW	LATE APTIAN		3	89	8	H	L	*D.DAVIDII* (?UPP)	OFFSHORE MARINE
2320-2330	0.033	LOW	LATE APTIAN	2	2	91	5	H	EX LOW	*D.DAVIDII* (?UPP)	OFFSHORE MARINE
2330-2340	0.046	MOD	LATE APTIAN		3	94	3	H	EX LOW	*D.DAVIDII* (?UPP)	OFFSHORE MARINE
2340-2350	0.019	V.LOW	LATE APTIAN	1	8	81	10	H	LOW	*D.DAVIDII* (?UPP)	OFFSHORE MARINE
2370-2380	0.025	LOW	LATE APTIAN	3		88	9	H	L	*D.DAVIDII*	OFFSHORE MARINE
2390-2400	0.003	V.V.LOW	LATE ?APTIAN	1		95	4	H	EX.LOW	*D.DAVIDII*	?OFFSHORE MARINE
2400-2410	0.013	LOW/MOD	LATE ?APTIAN	2	2	84	12	H	L	*D.DAVIDII*	OFFSHORE MARINE
2410-2420	0.031	LOW/MOD	EARLY APTIAN	2	1	?86	?11	H	L	*O.OPERCULATA* (LOW)	OFFSHORE MARINE
2420-2430	0.059	LOW	EARLY APTIAN		1	?74	?25	V.H	M	*O.OPERCULATA* (LOW)	OFFSHORE MARINE
2430-2440	0.013	LOW	?BARREMIAN		2	?87	?11	H	L	?*M.AUSTRALIS*	?MARINE
2575-2580	0.016	MOD	VALANGINIAN	5		?57	?38	H	M	*S.AREOLATA*	?SHELFAL MARINE
2585-2590	0.016	LOW	VALANGINIAN	3	1	?60	?36	H	M	*S.AREOLATA*	?SHELFAL MARINE
2615-2620	0.035	LOW	EARLY VALANGINIAN	4	2	?65	?29	V.H	M	*?E.TORYNA*	?SHELFAL MARINE
2625-2630	0.020	V.LOW	BERRIASIAN	4	1	?57	?38	H	M	*D.LOBISPINOSUM*	?SHELFAL MARINE
2635-2640	0.048	V.LOW	BERRIASIAN	3	3	?52	?42	V.H	M	*?C.DELICATA*	?SHELFAL MARINE
2645-2650	0.032	LOW	BERRIASIAN	2	2	?63	?33	V.H	M	*?C.DELICATA*	?SHELFAL MARINE
2655-2660	0.056	LOW	BERRIASIAN	2	1	?61	?36	V.H	H	*?C.DELICATA*	?SHELFAL MARINE
2675-2680	0.012	V.V.LOW	INDET			TRACE	TRACE	EX LOW	EX LOW	-	-
2685-2690	0.018	V.V.LOW	INDET			TRACE	TRACE	EX LOW	EX LOW	-	-
2695-2700	0.026	V.V.LOW	INDET			TRACE	TRACE	EX LOW	EX LOW	-	-
2700-2705	0.094	V.V.LOW	INDET			TRACE	TRACE	EX LOW	EX LOW	-	-
2705-2710	0.079	LOW	RHAETIAN/NORIAN		4	?19	?77	?M	H	Base *REDUCTA* or older	?MARGINAL MARINE
2710-2715	0.019	V.LOW	NORIAN			FEW	FEW	L	L	*M.CRENULATA* (?Tr 8Diii)	?CONTINENTAL
2715-2720	0.042	V.V.LOW	NORIAN			FEW	FEW	L	L	*?M.CRENULATA*	?CONTINENTAL
2720-2725	0.159	V.V.LOW	NORIAN			TRACE	TRACE	EX LOW	EX LOW	*?M.CRENULATA*	?CONTINENTAL

Samples (m)	Organic Yield	Microfossil Yield	Age	Percentage				Diversity		Zone (subzone)	Environments
				Fresh water Algae	Saline Acritarchs	Saline Dinocysts	Spore Pollen	Saline Algae	Spore-Pollen		
2725-2730	0.033	V.V.LOW	NORIAN				TRACE		EX LOW	*?M.CRENULATA*	?CONTINENTAL
2730-2735	0.060	V.V.LOW	NORIAN			TRACE	TRACE	EX LOW	EX LOW	*?M.CRENULATA*	?CONTINENTAL
2735-2740	0.016	V.V.LOW	NORIAN				TRACE		EX LOW	*?M.CRENULATA*	?CONTINENTAL
2740-2745	0.038	V.V.LOW	NORIAN			TRACE	TRACE	EX LOW	EX LOW	*?M.CRENULATA*	?CONTINENTAL
2745-2750	0.031	V.V.LOW	NORIAN			TRACE	TRACE	EX LOW	EX LOW	*?M.CRENULATA*)	?CONTINENTAL
2765-2770	0.016	LOW	NORIAN		2	?5	?93	EX LOW	H	*?M.CRENULATA*	BRACKISH
2780-2785	0.019	LOW	NORIAN		2	?3	?95	EX LOW	H	*?M.CRENULATA*	BRACKISH
2785-2790	0.056	LOW	NORIAN		4	?4	?92	EX LOW	H	*?M.CRENULATA*	BRACKISH
2790-2795	0.036	LOW	NORIAN		4	?6	?90	EX LOW	H	*?M.CRENULATA* (Tr7Aiib)	MARGINAL MARINE
2805-2810	0.061	MOD	NORIAN		2	?1	?97	EX LOW	H	*?M.CRENULATA* (?Tr7Aiib)	MARGINAL MARINE
2820-2825	0.032	MOD/LOW	NORIAN		1	?4	?95	EX LOW	H	*?M.CRENULATA* (?Tr7Aiic)	?BRACKISH
2840-2845	0.038	LOW	NORIAN		1	?5	?94	EX LOW	H	*?M.CRENULATA* (Tr7Aiic)	?BRACKISH
2845-2850	0.042	LOW	NORIAN		1	?2	?97	EX LOW	H	*?M.CRENULATA* (Tr7Aiic)	?BRACKISH
2850-2855	0.013	MODLOW	NORIAN		3	?3	?94	EX LOW	H	*?M.CRENULATA* (Tr7Aiic)	BRACKISH
2890-2895	0.047	MOD/LOW	NORIAN		1	?7	?92	EX LOW	H	*?M.CRENULATA* (Tr7Aiic)	?BRACKISH
2900-2905	0.032	LOW	NORIAN		1	?4	?95	EX LOW	H	*?M.CRENULATA* (Tr7Aiic)	?MARGINAL MARINE
2905-2910	0.029	LOW	NORIAN			?10	?90	EX LOW	H	*?M.CRENULATA* (Tr7Aiic)	?CONTINENTAL
2910-2915	0.044	LOW	NORIAN				100		H	*?M.CRENULATA* (Tr7Aiic)	?CONTINENTAL

Key for Table 1

DIVERSITY	
VERY HIGH	30+ SPECIES
HIGH	20-29 SPECIES
MODERATE	10-19 SPECIES
LOW	5-9 SPECIES
EX LOW	1-4 SPECIES

ENVIRONMENTS		
EVIRONMENTAL SETTING	**SALINE MICROPLANKTON CONTENT (%)**	**SALINE MICROPLANKTON DIVERSITY**
OFFSHORE MARINE	67 to 100	VERY HIGH
SHELFAL MARINE	34 to 66	HIGH
NEARSHORE MARINE	11 to 33	MODERATE
VERY NEARSHORE MARINE	5 to 10	MODERATE-LOW
MARGINAL MARINE	<1 to 4	LOW-VERY LOW
BRACKISH	LOW SALINE ACRTIARCHS ONLY	EXTREMELY LOW
NON-MARINE (UNDIFF)	NO SALINE MICROPLANKTON, LOW FRESHWATER ALGAE	NIL
NON-MARINE (LACUSTRINE)	NO SALINE MICROPLANKTON, HIGH FRESHWATER ALGAE	NIL

INTRODUCTION

A total of forty-seven (47) ditch cuttings have been studied palynologically from Chevron's **CHANDON 1** well. Samples were processed under separate contract by Core Laboratories Pty Ltd. Note that many very poor assemblages were recovered allowing for many poorly defined intervals.

Raw palynological data are included in Appendix 1. The data are based on a hundred (100) specimen count from which an indication of marine microplankton to terrestrial palynomorph proportions can be derived. Unfortunately, cavings are seen persistently so the microplankton percentages, as listed on Table 1, are unreliable making the interpreted environment of deposition a little suspect.

The species distribution on Appendix 1 also allows the palynostratigraphy to be interpreted, mainly based on the schemes of Helby, Morgan & Partridge (1987, 2004), with the Triassic detail based on Backhouse, et al (2002) and recent 'in-house' work (see Figure 1).

FIGURE 1 : LATE TRIASSIC EVENT PALYNOSTRATIGRAPHY (after Backhouse et al, 2002 and *Morgan, Hooker and Ingram 2002)

AGE	TR UNIT	S-P ZONE	DINO ZONE	S-P EVENTS (reliable)	S-P EVENTS (tentative	DINO EVENTS (reliable)	DINO EVENTS (tentative
RHAETIAN	**Tr8Ai**	A.reducta upper	D.priscum lower	**EVENT 1** LAD A.reducta*	**EVENT A** LAD Leschikisporis sp.C	Top Suessia sp.A*	
	Tr8Aii						
	Tr8Bi	A.reducta middle	R.rhaetica upper		base dominant Leschikisporis sp.B		
	Tr8Bii					**EVENT 2** LAD W.listeri* base S.sp.A, S.swabiana* top W.listeri Acme 2	
	Tr8Ci		R.rhaetica lower				**EVENT B** LAD W.misolensis FAD W.misolensis
	Tr8Ciia						
	Tr8Ciib				LAD Thymospora sp.A		Increase W.listeri FAD R.rhaetica
	Tr8Ciii	A.reducta lower				**EVENT 3** base consistent W.listeri*	
	Tr8Di	M.crenulatus upper			top common Dictyophyllidites* **EVENT C** base C.meyeriana		
	Tr8Dii			**EVENT 4** top E.macistriatus* top E.macistriatus acme* base E.macistriatus acme*	**EVENT D** base consist A.reducta		
	Tr8Diii	M.crenulatus middle			**EVENT E** base consist Leschikisporis sp.A		
	Tr7Ai			**EVENT F** top C.stonei* top frequent C.stonei*			
	Tr7Aiia					**EVENT 5** top H.balmei (fine)*	
NORIAN	**Tr7Aiib**		H.balmei	top persist S.speciosus* top common C.stonei* reappearance/influx E.macistriatus*		**EVENT 5** base H.balmei (fine) (lower spike)	
	Tr7Aiic	top M.crenulatus lower (Hooker)			top Abund B.communis		
	Tr7Aiii				top Duplicisporites sp.A		
	Tr6A	top *M.crenulatus* lower (Backhouse)					

(*denotes additional events and those previously used by Morgan, Hooker & Ingram [2002])

PALYNOSTRATIGRAPHY

1. Indeterminate (2080-2090 to 2090-2100m)

These two shallowest samples supplied contain only minor organic debris with very rare, long-ranging microplankton but no miospores. The interval is indeterminate palynologically.

2. Undifferentiated Cenomanian-Albian (2100-2110m)

The small numbers of dinocysts recovered from this sample include *Diconodinium multispinum, Odontochitina costata, O.operculata* and *Palaeoperidinium cretaceum*. In a ditch cutting this only allows a general Cenomanian-Albian age to be suggested.

The few microplankton , but much rarer miospores, do generally indicate a strongly marine environment of deposition.

3. *Diconodinium davidii* Zone (2300-2310 to ?2400-2410m)

This is an unusually thick interval assigned to the late Aptian *D.davidii* Zone in the authors experience. The shallower samples contain frequent *D.davidii*, *Muderongia tetracantha, Dingodinium cerviculum* and *Endoceratium turneri* clearly showing the assignment. Other prominent microplankton are long-ranging genera such as *Spiniferites* and *Sentusidinium*. Miospores are very rare.

Subdivision of the interval should be possible but options in this section are very confusing. Most subdivisions are based on the restriction of the very distinctive dinocyst *Ovoidinium striatum* to central parts of the zone but it is not present here. An unusual acme of large undescribed species of *Batiacasphaera* at 2370-2380m could indicate a lower subzone. The confusion could be due to this section being in a far off-shore environment compared to the more proximal position of most sections studied in detail previously. Alternatively, an intra-zonal hiatus could be possible at about 2360m.

The two basal samples included in this interval contain limited assemblages, consistent with the one at 2370-2380m, but with the possibility all material is caved. Thus 2390 to 2410m could represent an older indeterminate unit.

The dominant microplankton and very rare miospores suggests an off-shore marine environment of deposition.

4. *Odontochitina operculata* Zone (2410-2420 to 2420-2430m)

Although some younger Aptian caving is present in these samples, the presence of *Muderongia mcwhaei*, in the absence of any older indicators, clearly indicates assignment to the early Aptian, lower subzone of the *O.operculata* Zone. Assignment is supported by other earliest occurrences such as *Belodinium dysculum, Circulodinium attadalicum, Cribroperidinium muderongense, Muderongia australis, Leberidocysta chlamydata* and *Tetrachacysta allenii*. The continued presence of *O.operculata* could be due to caving, but does tentatively support the assignment.

The proportions of microplankton **:** miospores as counted may not be accurate due to caving, but it is clear that microplankton predominate and an offshore marine environment is indicated.

5. ?*Muderongia australis* Zone (2430-2440m)

This low yielding, poorly characterized assemblage includes mainly younger cavings but oldest indicators include dinocysts such as *Cribroperidinium muderongense, Belodinium dysculum, Circulodinium attadalicum, Discorsia nanna, Gardodinium trabeculosum,* *Muderongia australis* and *Tetrachacysta allenii*. This allows tentative correlation with the mainly Barremian *M.australis* Zone with sub-zonal assignment not possible.

The oldest assemblages would appear to be dominated by microplankton so some strongly marine environment of deposition is favoured

6. *Systematophora areolata* Zone (2575-2580 to 2585-2590m)

Assemblages in this interval contain indications of the units already described, plus some older units obviously present within the unsampled section above. Interpretation of correlation with the *S.areolata* Zone (Valanginian) is based on the presence of frequent *S.areolata* in the absence of older indicators. Keep in mind that this unit is always poorly characterized but this interpretation, even with the common caving, is relatively strong.

Miospores are more common than seen above, and although the in-place proportion is not accurately definable, some shelfal marine environment of deposition seems to be indicated.

7. ?*Egmontodinium toryna* Zone (2615-2620m)

Again this assignment is based on very meager evidence with the bulk of the assemblage younger than the specimen of *E.toryna*. However, the presence of the species, in the absence of older indicators and within what is obviously a condensed sequence, suggests penetration of the early Valanginian *E.toryna* Zone. Note that in more in-shore parts of the basin *E.toryna* is often reworked into marginal marine *S.areolata* Zone sequences.

Although the bulk of the assemblage recovered is obviously caved, the presence of *E.toryna* indicates some marine environment of deposition.

8. *Dissimulidinium lobispinosum* Zone (2625-2630m)

The recovery of a few specimens of *D.lobispinosum* in this sample clearly indicates penetration of the Berriasian *D.lobispinosum* Zone in the absence of *Batioladinium reticulatum*. Note that a specimen of *B.reticulatum* was seen caved in a deeper sample so it is possible the zone is represented within this condensed sequence.

Cavings dominate making it impossible to accurately assess the marine **:** continental palynomorph proportions so only a general marine environment of deposition can be suggested.

9. ?*Cassiculosphaeridia delicata* Zone (2635-2640 to 2655-2660m)

First down-hole appearances, among the cavings, in this interval include frequent *Flamingoa cometa* with *Broomea simplex*, *Canninginopsis* cf. *tabulata*, *Cassiculosphaeridia delicata*, *Dingodinium jurassicum*, *Imbatodinium kondratjevii*, *Leptodinium ambiguum*, *L.antigonium* and *Peridictyocysta mirabila*. This tentatively favours assignment to the Berriasian *C.delicata* Zone in the absence of older indicators (particularly *Kalyptea wisemaniae*). Again, only a general marine environment of deposition can be suggested.

10. Indeterminate (2675-2680 to 2700-2705m)

The very rare specimens recovered from this interval are obviously caved with no new in-place material, making the interval indeterminate palynologically.

11. ?*A.reducta/M.crenulatus* Zones (2705-2710m)

Triassic palynomorphs are more common than cavings in this samples suggesting the Triassic has now been penetrated. The miospores *Falcisporites australis* (24%) and *Dictyophyllidites* spp (14%) are the dominant components. The presence of a few specimens of *Ashmoripollis reducta* indicates the sample cannot be older than the uppermost part of the *Minutosaccus crenulatus* Zone. Thus is supported by the presence of the dinocyst *Dapcodinium* which is very rare below the *A.reducta* Zone but as *Wanneria listeri* could not be found the *reducta* assignment remains doubtful and a firm conclusion is not possible.

The specimens of *Dapcodinium* and a few acritarchs, which may or may not be in-place, tentatively favours a very marginally marine environment for this sample.

12. *Minutosaccus crenulatus* Zone (2710-2715 to 2910-2915m)

The basal few hundred metres of section studied can all be assigned to the probably Norian *M.crenulatus* Zone. The shallower half of the interval is very poor palynologically and is impossible to define the subzones which should be possible. However, at 2710-2715m a specimen of *Ephedripites macistriatus* indicates that this can be no younger than the Tr8Diii subzone. Assemblages improve at 2790-2795m where a few dinocysts are present including *W.listeri* (3%) and *Hebecysta balmei* suggesting assignment to the marginal marine Tr7Aiib subzone. Deeper samples include persistent, frequent *Cycadopites stonei* and *E.macistriatus* suggesting the section does not get any older than the Tr7Aiic subzone.

i.e.	2710-2715 to 2785-2790m	: ?Tr8Diii to Tr7Aiia undifferentiated
	2790-2795 to 2805-2810m	: Tr7Aiib
	2820-2825 to 2910-2915m	: Tr7Aiic

Rare dinocysts suggests a few marginal marine incursions with other samples containing only acritarchs, which could be in-place, favouring brackish conditions among dominantly continental deposition. The distribution of these variations can be seen on Table 1.

REFERENCES

Backhouse, J., et al (2002); Palynological zonation and correlation of the latest Triassic, Northern Carnarvon Basin; in Keep, M. & Moss, S.J. (Eds.), Proc.PESA Symposium, Perth.

Helby R., Morgan R., & Partridge AD., 1987: A palynological zonation of the Australian Mesozoic; Mem. Assoc. Australas. Palaeontols.4, 1-94.

Helby R., Morgan R., & Partridge AD., 2004: Updated Jurassic-Early Cretaceous dinocysts zonation NWS Australia; GSI Australia publication ISBN 1 920971 01 2

Well Name : Chandon-1

Operator : Chevron Australia
Interval : 2070m - 2935m
Scale : 1:2000
Chart date: 12 March 2007

Palynological Data Chart : INTERPRETIVE DATA
% Abundance histogram : Highest occurrence
Barry Ingram

Chandon-1

Morgan Palaeo Associates
Maitland, South Australia

Enclosure 1

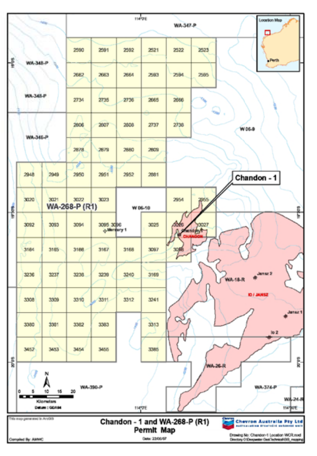
ENCLOSURES

ENCLOSURE 1

Chevron

CHANDON 1

WELL SUMMARY CHART



SEISMIC LINE:	CHANDON 3D IN-LINE 1314; CROSS LINE 3928			RIG :	'JACK BATES'
LATITUDE :	019° 34' 32.23" S	PERMIT :	WA-268-P (R1)	DATUM :	'Mean Sea Level (MSL)'
LONGITUDE :	114° 07' 41.33" E	OPERATOR :	ChevronTexaco Australia Pty Ltd	RT ELEVATION :	+28.95m
UTM ZONE :	GDA 94; Zone 50; CM. 117°E	SPUD :	07:30 Hrs 21st June 2006	WATER DEPTH :	1196.1m
EASTING :	198,693.8 mE	TD REACHED :	02:30 Hrs 30th June 2006	TOTAL DEPTH :	3124.0m (-3094.9m TVDSS)
NORTHING :	7, 832,948.1 mN	RIG RELEASED :	12:00 Hrs 11th July 2006	STATUS :	Plugged and Abandoned as Gas Discovery

SANDSTONE	COAL	CALCILUTITE	GLAUCONITE
SILTSTONE	UNDIFF. CARBONATES	MARL	CHERT / SILICIFICATION
CLAYSTONE	CALCARENITE		RADIOLARIA

Enclosure: 2

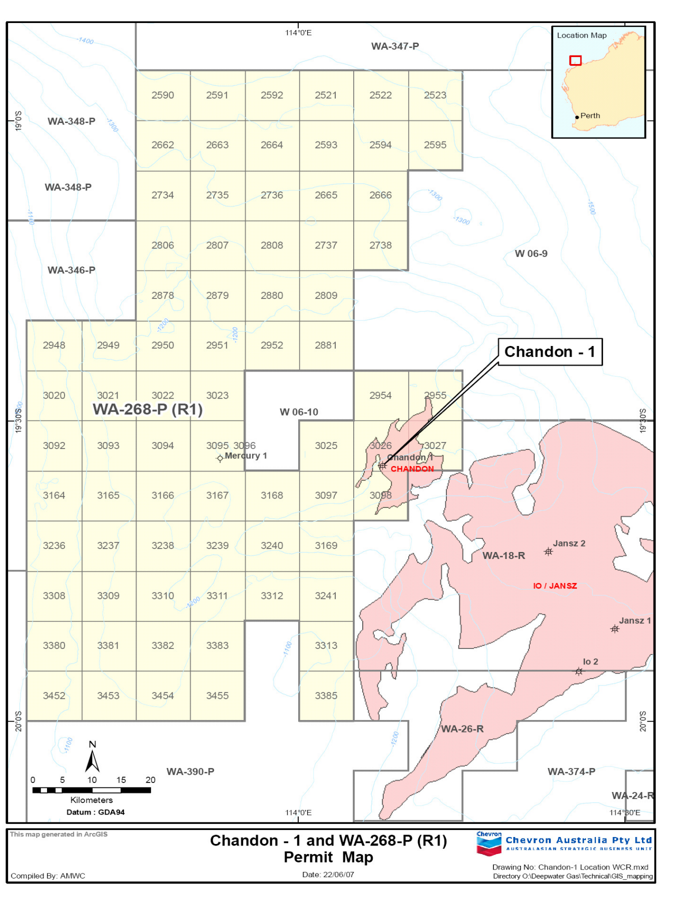
COMPOSITE WELL LOG

CHANDON 1

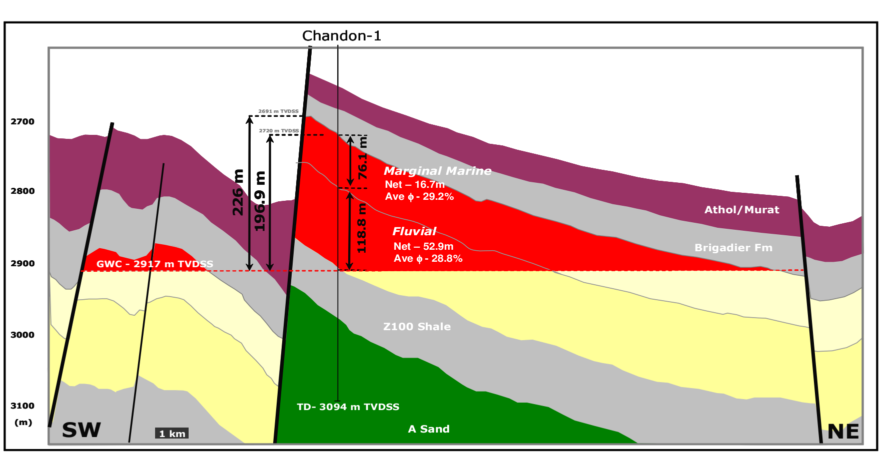
COUNTRY	: Australia	DISPLAY LOGS	: MWD-ARC9
BASIN	: Carnarvon Basin		: PEX-Rt Scanner-MSIP-HNGS-PPC
PERMIT	: WA-268-P (R1)		: ROP (mudlog)
		MUD LOGGING:	: Baker Hughes Inteq (BHI)
		MWD/LWD:	: Schlumberger
LOCATION	Latitude : 19° 34' 32.21" S	WIRELINE:	: Schlumberger
	Longitude : 114° 7' 41.25" E	CEMENTING:	: Halliburton
	Eastings : 198691.4 m E		
	Northings : 7832948.4 m N	DATE WELL SPUDDED	: 21 Jun 2006
	Datum : GDA94	DATE TOTAL DEPTH REACHED	: 30 June 2006
		DATE RIG RELEASED	: 11 Jul 2006
ELEVATIONS	: Based on Mean Sea Level (MSL)		
		WELL STATUS	: Plugged & Abandoned
Rotary Table	: 28.9 m	DRILLING CONTRACTOR	: Transocean
Water Depth	: 1196.10 m	DRILLING RIG	: MODU "Jack Bates"
TOTAL DEPTH (DRILLER)	3124.0 m 3094.9 m TVDSS	LITHOLOGY	: R.Fisher
TOTAL DEPTH (WIRELINE)	3110.0 m 3080.9 m TVDSS	COMPILATION	: R.Fisher/P.Theologou
PLUG BACK DEPTH	1247.0 m	COMPOSITE	: S.Cole

NOTE: All measurements are in metric units
All depths are measured depths below the rotary table unless otherwise noted
Depths in Brackets are TVD sub-sea.

CHANDON 1 LOCATION MAP & SCHEMATIC CROSS-SECTION



Chandon - 1 and WA-268-P (R1)
Permit Map



LOGGING DOWNHOLE

CONTRACTOR	LOGS	SUITE	RUN	DATE	INTERVAL (m)	HOLE SIZE (mm)	MAX REC TEMP @ mTVDSS (℃)	HOURS SINCE LAST CIRC (hrs)	MUD TYPE
LWD									
Schlumberger	Powerpulse MWD-ARC9 (GR-Res)-APWD		1	21-Jun-06	1225.0 - 2077.0	445			SBM
Schlumberger	Powerpulse MWD-ARC8 (GR-Res)-APWD		2	27-Jun-06	2077.0 - 3124.0	311			SBM
Wireline									
Schlumberger	PEX-Rt Scanner-MSIP-GPIT-HNGS-PPC-ECRD	1	1	1-Jul-06	3106.0 - 2065.0*	311	72.3 @ 3040.0	22.98	SBM
Schlumberger	MDT-CMR+-GR-ECRD	1	2	2-Jul-06	3062.0 - 2670.0 (CMR)	311	78.2 @ 2952.0	36.51	SBM
					2749.7 - 3027.1 (pressures)				
Schlumberger	MDT-GR-ECRD	1	3	3-Jul-06	2938.0 (pretest)	311	76.5 @ 2909.0	51.56	SBM
					2825.8 - 2981.1 (samples)				

*GR to seafloor & MSIP to 1550

BOREHOLE

SIZE (mm)	INTERVAL (m)
Surface Conductor	1225.0 - 1291.0
445	1291.0 - 2077.0
311	2077.0 - 3124.0

CASING

SIZE (mm)	INTERVAL (m)
762	Seafloor - 1299.0
340	Seafloor - 2067.0

PLUGS

TYPE	INTERVAL (m)
Cement	2985 - 2699
Cement	2042 - 1990
Cement	1315 - 1247

PERFORATIONS

DST No.	SPACING (Shots/m)	INTERVAL (m)

SYMBOLS

ROCK TYPES

Sandstone, Fine Sandstone, Siltstone, Clay, Claystone, Shale, Coal, Calcarenite, Calcisiltite, Calcilutite, Marl, Limestone, Siderite, Calcareous Claystone

MODIFIERS

pebbly, sandy, silty, argillaceous, glauconitic, micaceous, pyritic, feldspathic, calcareous, dolomitic, sideritic, fossiliferous, forams, bioturbation, carbonaceous, cherty

MISCELLANEOUS

formation boundaries
member boundaries
unconformity
conventional sidewall core (no recovery)
mechanical sidewall core (no recovery)
Wireline Formation Tester
valid pretest
seal failure
sample recovered
perforated interval
drill stem test
conventional cores
shows: cuttings
shows: cores
shows: sidewall cores
cement plug
casing shoe

DEPTH SCALE 1:500

SUMMARY OF MDT PRESSURE DATA

Pretest No.	Depth MD (mRT)	Depth TVD (mSS)	Hydrostatic Pressure (kPa)	Formation Pressure (kPa)	Mobility (md/cp)	Pretest Volume (cm3)	Pretest Buildup Time mm:ss	Gauge Temp. (°C)	Pretest Result	Sample	Pump time prior to sample (min)	Sample Time (min)	Comments
1	2749.7	2720.7	31612	30137	0.2			68.3	Super Charged				
2	2761.8	2732.8	31737	29291	113.8			68.4	Valid				
3	2763.9	2734.9	31743	29295	41.3			68.6	Valid				
4	2766.4	2737.4	31764	29296	1			69.1	Tight				
5	2769.1	2740.1	31785	29307	151.9			69.1	Valid				
6	2774.3	2745.3	31854	29311	0.5			69.4	Tight				
7	2775.6	2746.6	31854	29322	1017.7			69.4	Valid				
8	2776.8	2747.8	31868	-	-			69.1	Tight				Low priority point
9	2780.8	2751.8	31916	29333	314			69.7	Valid				
10	2782.1	2753.1	31932	29336	4281.1			69.7	Valid				
11	2787.6	2758.6	32001	29347	101.1			69.7	Valid				
12	2790.0	2761.0	32023	29354	1526			69.8	Valid				
13	2792.9	2763.9	32057	29359	15951.1			69.9	Valid	1 gallon gas sample	69.3	10.7	Good for sample
14	2793.9	2764.9	32062	29361	147.6			70.1	Valid				
15	2796.2	2767.2	32088	-	-			-	Seal Failure				
16	2797.6	2768.6	32105	29367	30.2			70.2	Valid				
17	2799.9	2770.9	32132	29374	466.7			70.3	Valid				
18	2802.0	2773.0	32162	29379	7018.8			70.4	Valid				
19	2805.5	2776.5	32202	29386	1780.3			70.5	Valid				
20	2807.2	2778.2	32221	29389	540.2			70.6	Valid				
21	2809.1	2780.1	32243	29393	452.6			70.7	Valid				
22	2810.0	2781.0	32250	-	-			70.2	Tight				
23	2816.0	2787.0	32336	-	-			70.7	Tight				
24	2818.2	2789.2	32357	29410	3.8			71.3	Valid				
25	2821.1	2792.1	32387	29415	0.8			71.4	Valid				
26	2826.3	2797.3	32488	-	-			-	Aborted				Aborted, re-seat
26	2826.1	2797.1	32438	29431	-			71.5	Valid				Sample attempted again
26	2825.8	2796.8	32494	29417	-			65.6	Aborted	450cc MPSR gas sample	32.5	2.8 2.8	Abort, attempt 50cm lower
										250cc SPMC gas sample			
27	2830.0	2801.0	32482	29439	1015.9			71.6	Valid				
28	2833.3	2804.3	32523	29447	395881			71.8	Valid				
29	2836.0	2807.0	32548	29453	10705			71.9	Valid				
30	2838.0	2809.0	32572	29457	180.4			72.0	Valid				
31	2839.1	2810.1	32578	29456	0.8			72.3	Tight				
32	2842.7	2813.7	32620	29465	4355.1			72.3	Valid				
33	2843.8	2814.8	32629	29467	4424.8			72.3	Valid				
34	2845.2	2816.2	32643	29470	90.8			72.4	Valid				
35	2853.9	2824.9	32757	29489	784.2			72.6	Valid	250cc SPMC gas sample	4:48	2.31 3.13	
										450cc MPSR gas sample			
36	2857.0	2828.0	32771	29495	523.2			72.9	Valid				
37	2859.7	2830.7	32806	29501	1029.2			72.8	Valid				
38	2864.3	2835.3	32863	29511	140.2			72.9	Valid				
39	2870.3	2841.3	32938	29525	22523.6			73.2	Valid				
40	2875.3	2846.3	32993	29535	2783.2			73.4	Valid				
41	2877.0	2848.0	33001	29538	914.2			73.9	Valid				
42	2878.4	2849.4	33015	29542	11746.9			74.1	Valid				
43	2880.9	2851.9	33046	29547	1223.7			74.0	Valid				
44	2882.4	2853.4	33062	29551	4012.3			74.2	Valid				
45	2884.0	2855.0	33080	29554	19045.8			74.6	Valid				
46	2886.9	2857.9	33116	29559	67.5			74.4	Valid	450cc MPSR gas sample	14:24	3.04	
47	2888.3	2859.3	33131	29563	9728.3			74.7	Valid				
48	2901.2	2872.2	33278	-	-			-	Seal Failure				Seal failure, attempt 20cm below
49	2901.3	2872.3	33280	-	-			-	Seal Failure				Seal failure, abort station
50	2903.8	2874.8	33274	-	-			-	Dry				Tight, abort station
51	2914.8	2885.0	33434	-	-			-	Tight				Tight, abort station
52	2928.1	2899.1	33598	-	-			-	Tight				Tight, abort station
53	2936.5	2907.5	33673	29657	2.7			76.2	Tight				Volumetric 10cc
54	2939.4	2910.4	33734	29663	14.6			76.3	Tight	450cc MPSR gas sample	19:12	2.9	Volumetric 10cc
55	2941.8	2912.8	33738	29660	0.4			76.4	Tight				Volumetric 10cc
56	2951.1	2922.1	33817	29735	18.1			78.3	Valid				Volumetric 5cc
56	2945.7	2916.7	33778	-	0.1			76.7	Tight				Volumetric 10cc
57	2956.0	2927.0	33906	-	-			76.8	Tight				Volumetric 10cc
58	2976.3	2947.2	34166	29990	5.4			77.0	Valid				Volumetric 10cc
59	2981.1	2952.0	34209	30028	47.7			77.2	Valid	1 gallon water sample	7:12	21.2	Volumetric 10cc
60	3024.2	2995.1	34777	30453	4			77.7	Valid				
61	3027.1	2998.0	34787	30479	2.3			78.2	Valid				
62	2951.0	2922.0	33797	-	-			-	Tight				Tight, attempt 10cm above
64	2918.0	2889.0	33439	29626	0.6			77.4	Valid				Volumetric 5cc
64	2917.8	2888.8	33418	-	0.8			-	Tight				
65	2938.0	2909.0	33883	29664	4.8			76.1	Valid				

CHANDON 1