Enclosure 1: Formation Evaluation Log

Formation Evaluation
Quick Look

Products:	• Interactive Petrophysics*
Company:	• Beach Petroleum Ltd
Well(s):	• Spikey Beach-1
Analysis Interval:	• 1525 – 2085 m
Analysis Date:	• 18-September-2009
Logging Date:	• 10-September-2009 (LWD)
Location:	• Schlumberger Data Services Centre • Perth, Western Australia
Analyst(s):	• Peter Miklavs
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Executive Summary

- The FEQL for Spikey Beach-1 indicates no hydrocarbon pay zones over the interpreted interval. Below is the detailed summary of the FEQL using LWD log data between 1525 – 2085m.

CUTOFF SUMMARY REPORT

Well : SPIKEY BEACH-1
Date : 09/20/2009 17:44:12

Reservoir SUMMARY

Zn #	Zone Name	Top	Bottom	Gross	Net	N/G	Av Phi	Av Sw	Av Vcl	Phi*H	PhiSo*H
1	Upper Eastern View	1525.00	1870.00	345.00	270.60	0.784	0.216	1.000	0.282	58.51	0.01
2	Middle Eastern View	1870.00	2085.00	215.00	114.65	0.533	0.193	0.997	0.253	22.11	0.07
	All Zones	1525.00	2085.00	560.00	385.25	0.688	0.209	0.999	0.273	80.62	0.08

Pay SUMMARY

Zn #	Zone Name	Top	Bottom	Gross	Net	N/G	Av Phi	Av Sw	Av Vcl	Phi*H	PhiSo*H
1	Upper Eastern View	1525.00	1870.00	345.00	0.00	0.000	---	---	---	---	---
2	Middle Eastern View	1870.00	2085.00	215.00	0.00	0.000	---	---	---	---	---
	All Zones	1525.00	2085.00	560.00	0.00	0.000	---	---	---	---	---

CUTOFFS USED

Zn #	Zone Name	Top	Bottom	Min. Height	Phi PHIE	Sw SW	Vcl VWCL
	Reservoir						
1	Upper Eastern View	1525.00	1870.00	0.	>= 0.1		<= 0.6
2	Middle Eastern View	1870.00	2085.00	0.	>= 0.1		<= 0.6
	Pay						
1	Upper Eastern View	1525.00	1870.00	0.	>= 0.1	<= 0.6	<= 0.6
2	Middle Eastern View	1870.00	2085.00	0.	>= 0.1	<= 0.6	<= 0.6

Depth Units : m

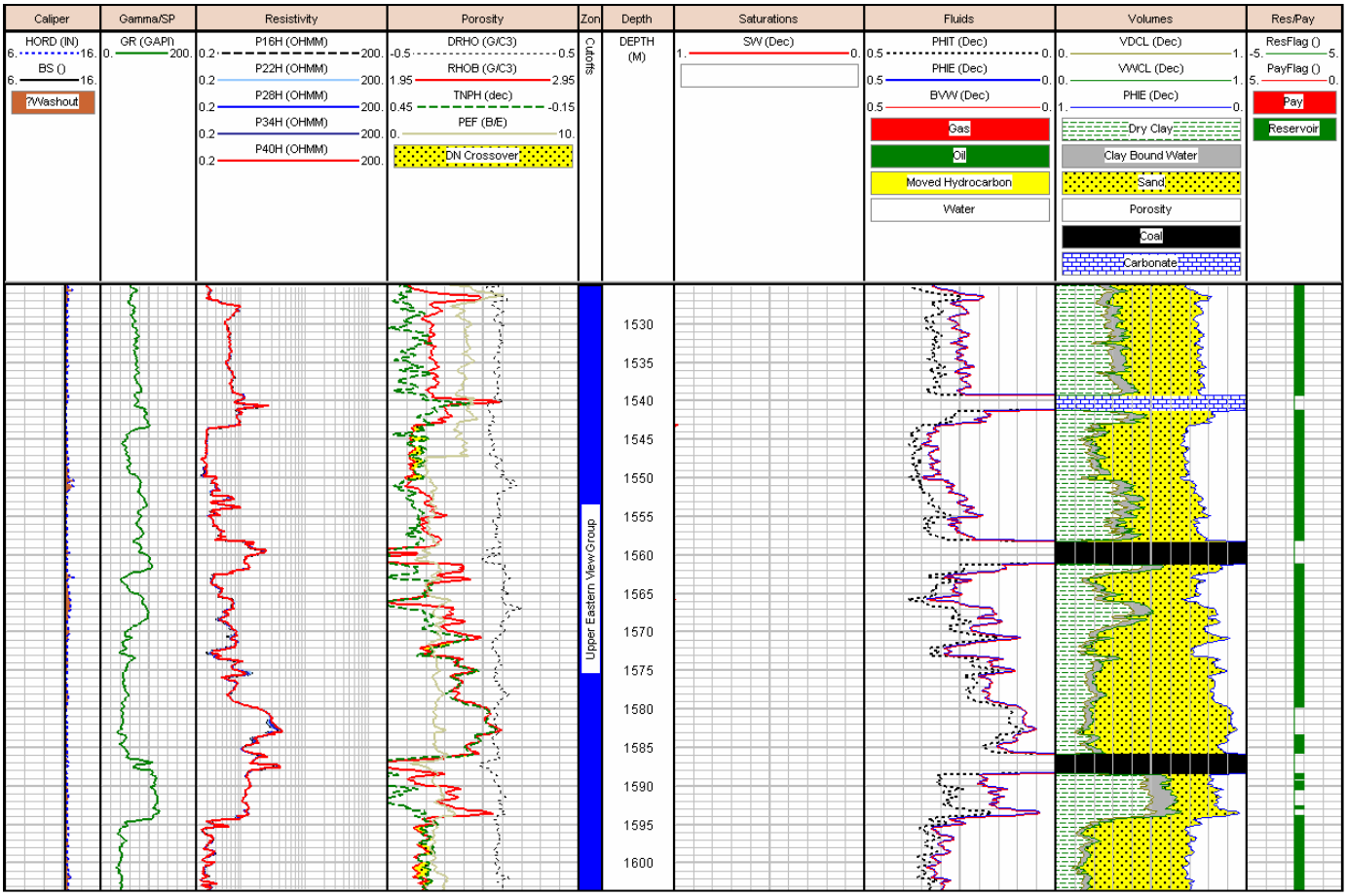

Figure 1 : Evaluation results 1525 – 1603m.

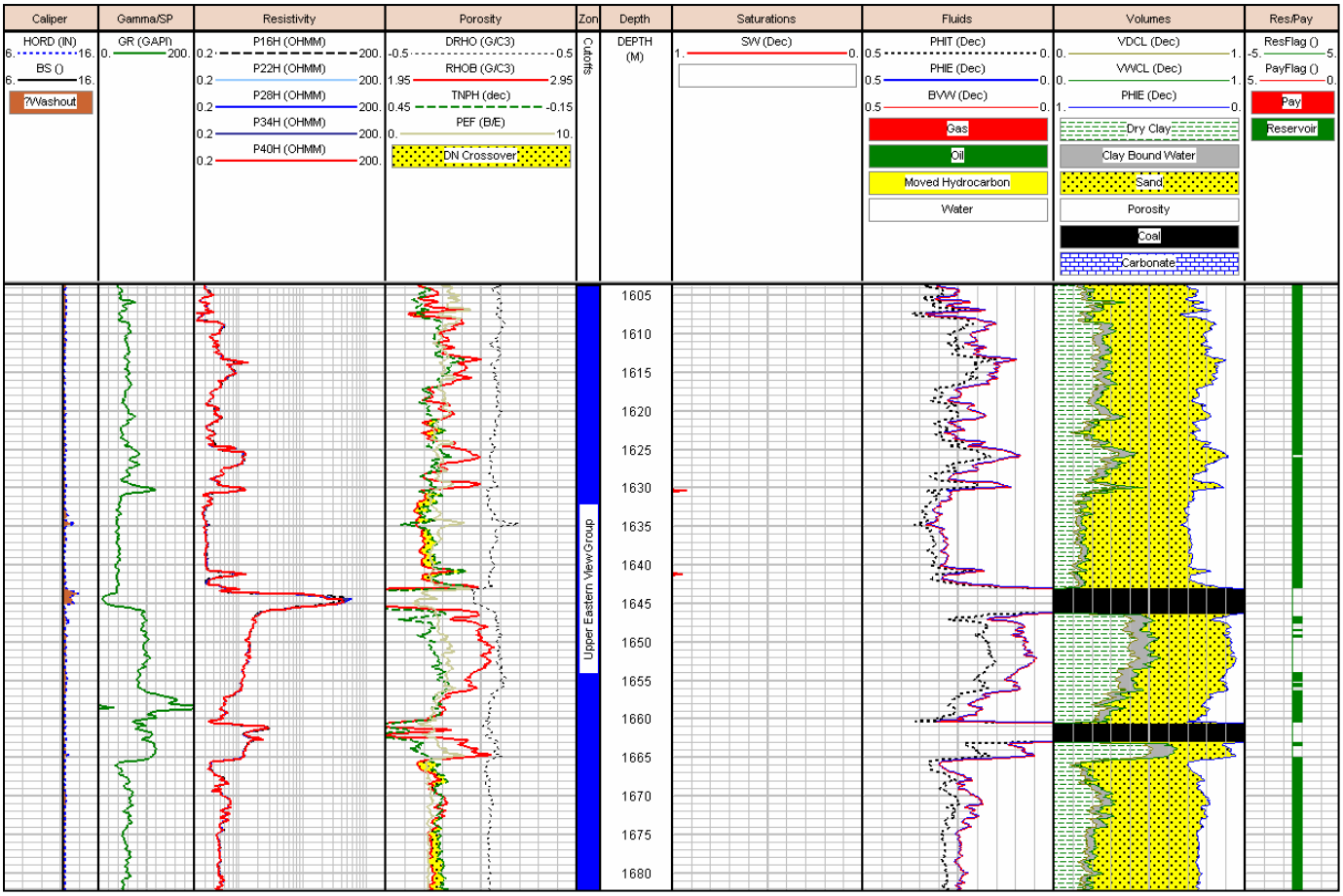

Figure 2 : Evaluation results 1604 – 1682m.

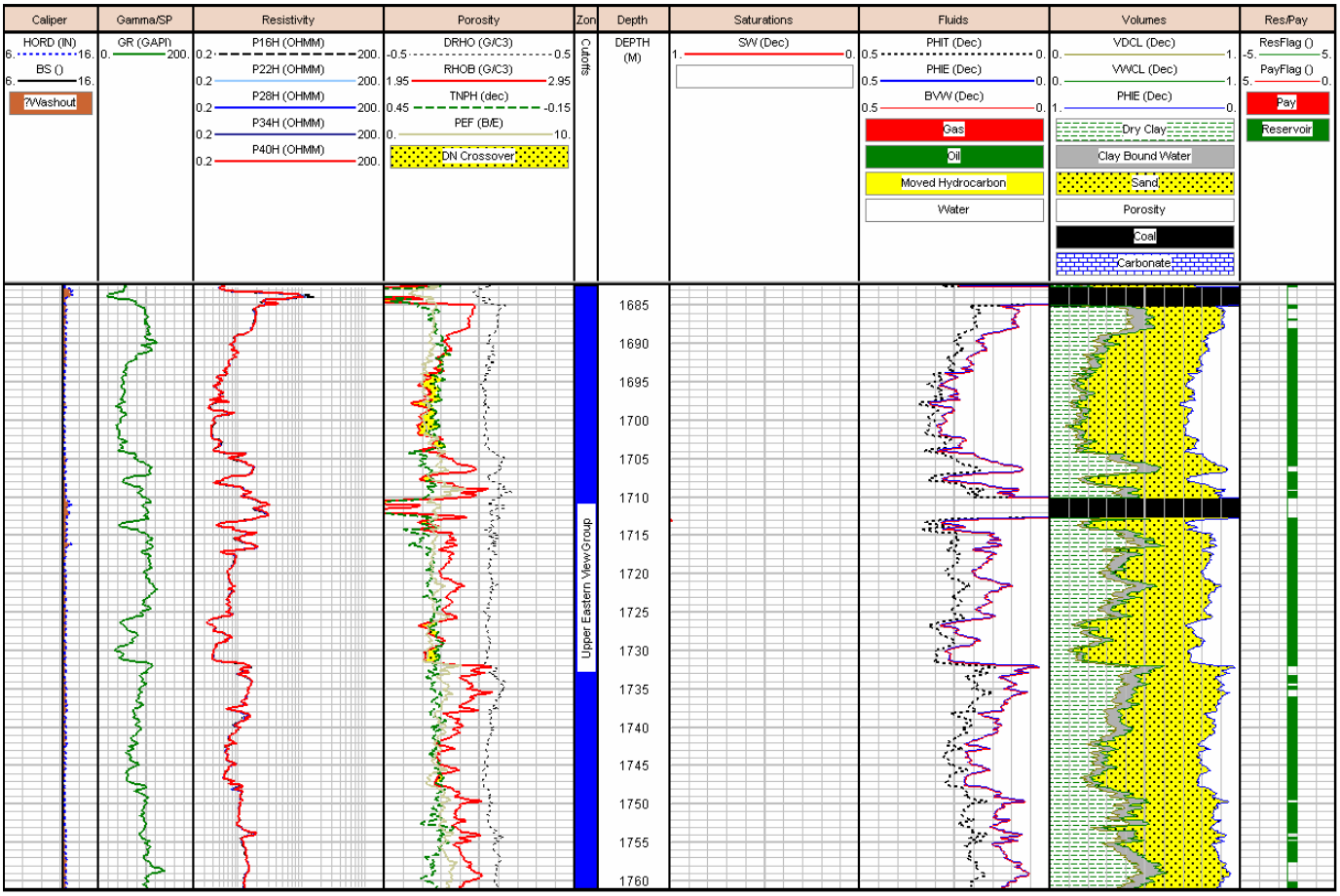

Figure 3 : Evaluation results 1682 – 1761m.

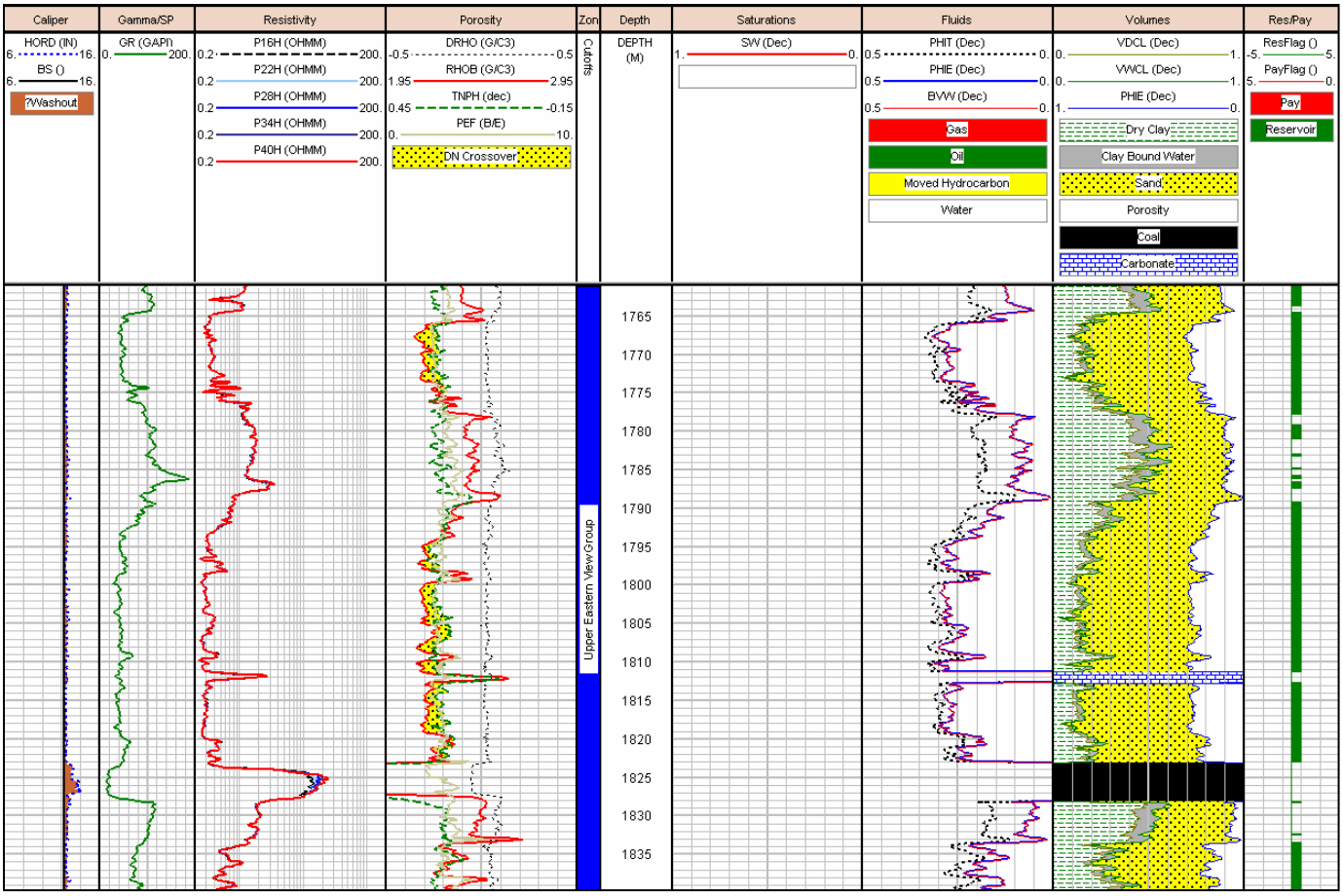

Figure 4 : Evaluation results 1761 – 1840m.

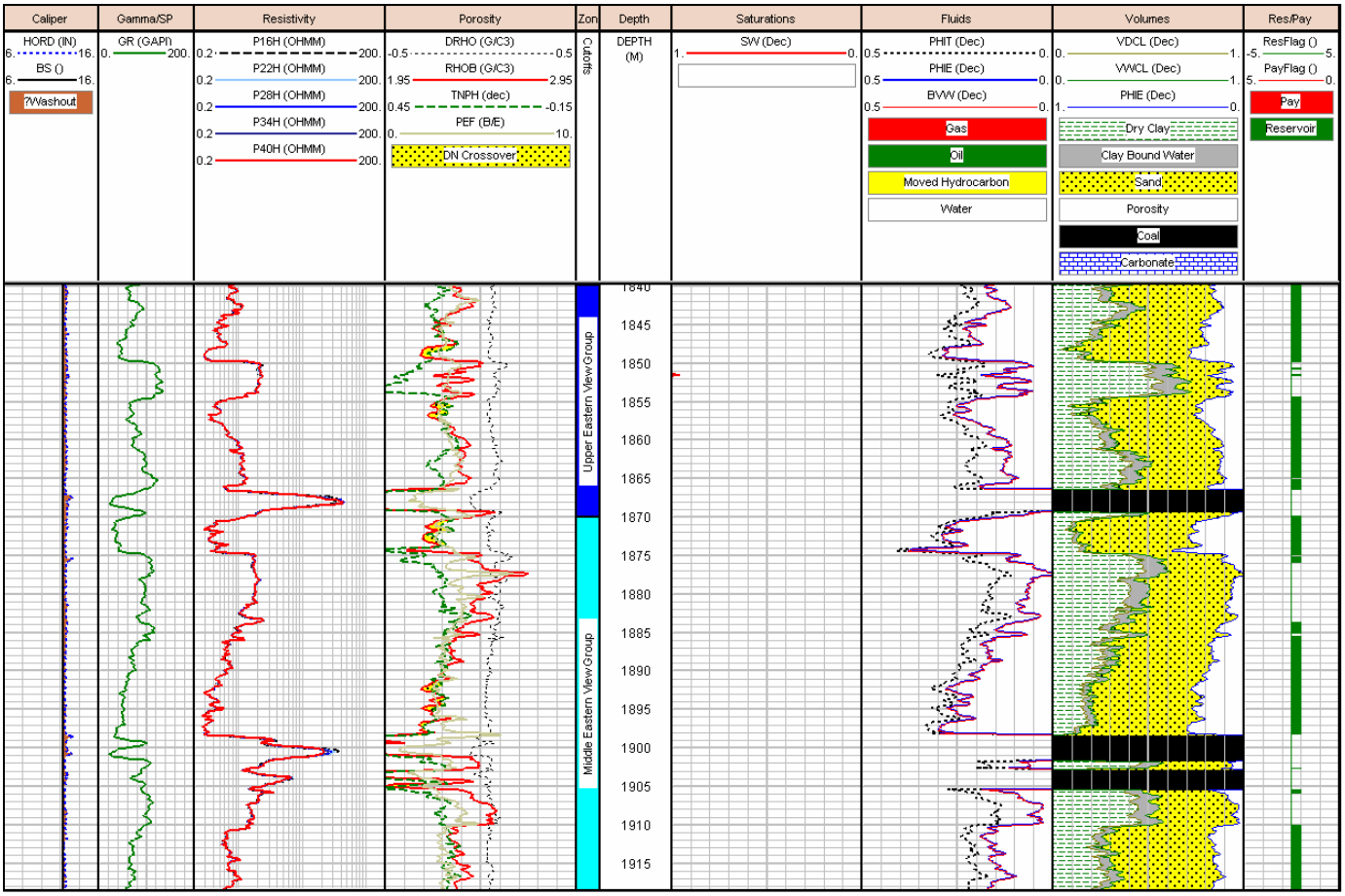

Figure 5 : Evaluation results 1840 – 1918m.

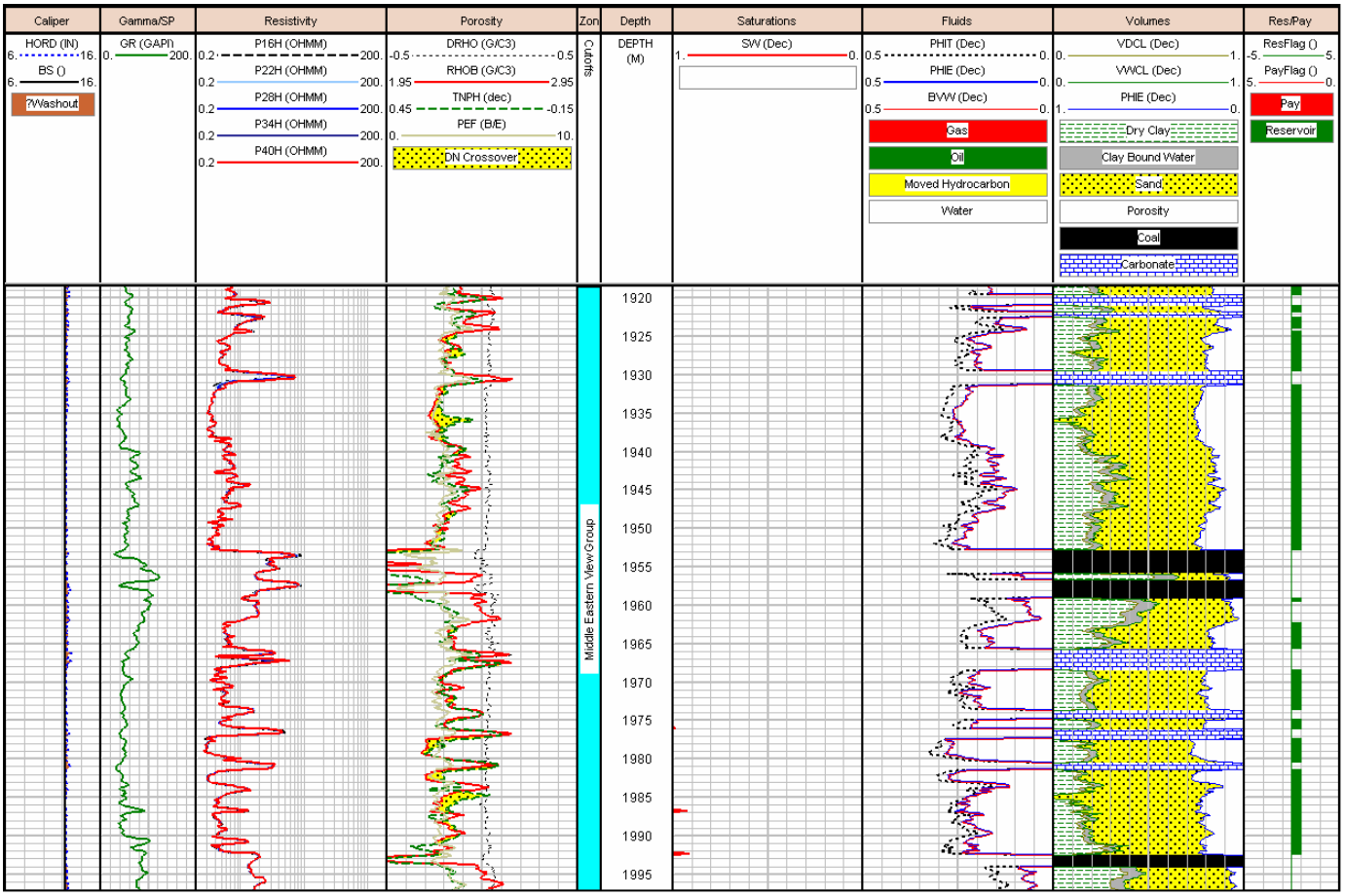

Figure 6 : Evaluation results 1918 – 1997m.

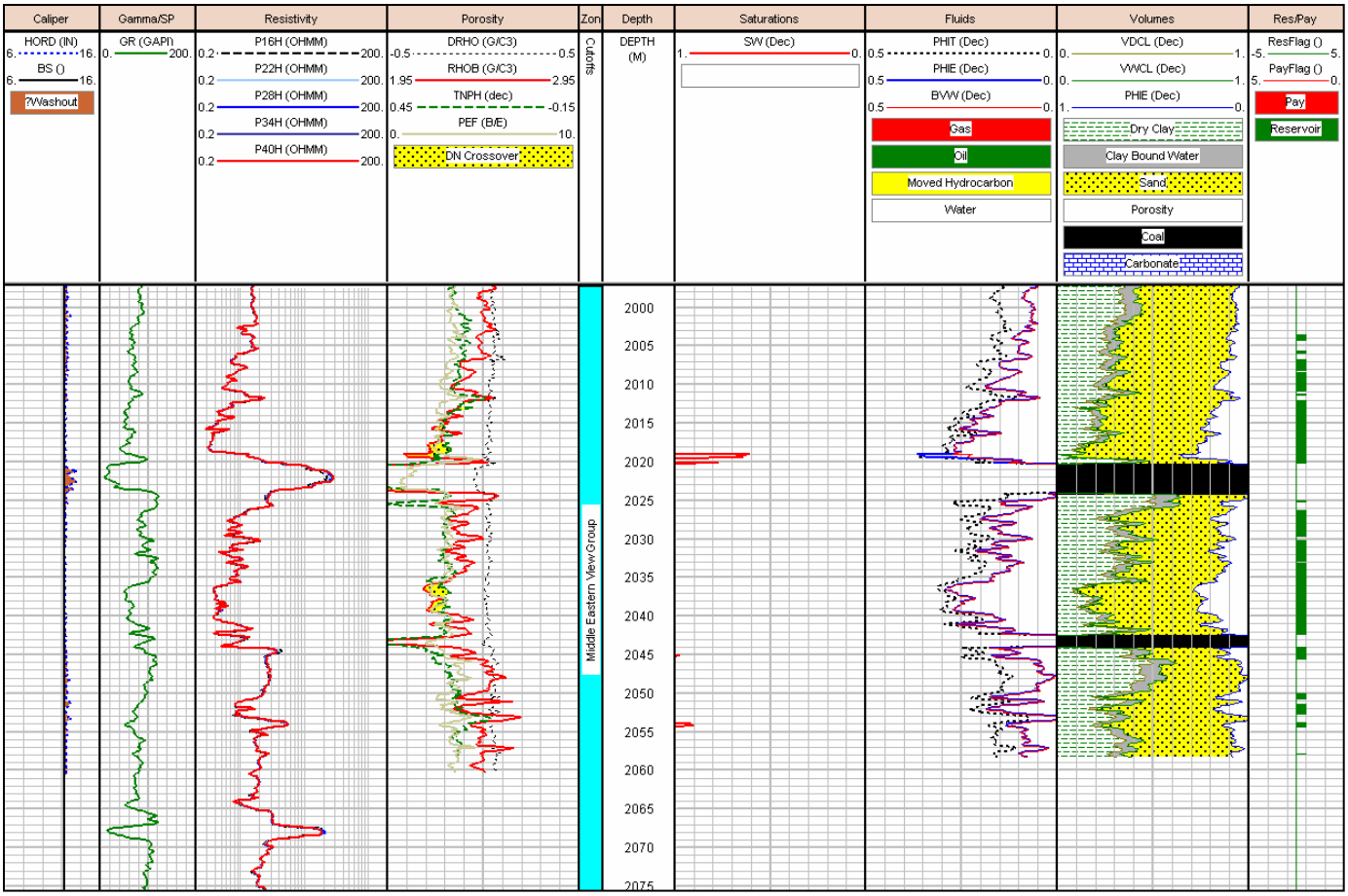

Figure 7 : Evaluation results 1997 – 2075m.

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Methodology

"Logging While Drilling" recorded mode data was used for the FEQL for Spikey Beach-1. The LWD data was analysed using the Schlumberger evaluation package, Interactive Petrophysics (IP*). This graphically interactive package uses deterministic methods to quickly evaluate acquired log data.

Results

The FEQL for Spikey Beach-1 indicates no hydrocarbon pay zones over the interpreted interval between 1525 – 2085m.

Please refer to the "Executive Summary" or the Evaluation Graphics file (GIF format) for the plot of the entire evaluation interval.

General Information

The following general information and parameters were taken from field logs and data files:

Well Data

Company Name	Beach Petroleum Ltd		CN
Well Name	Spikey Beach-1		WN
Field Name	Exploration		FN
Rig:	Ocean Patriot		CLAB, COUN
State:	Tasmania		SLAB, STAT
Nation	Australia		NATI
Field Location	Exploration		FL
Longitude	145 52' 24.71"E		LONG
Latitude	40 28' 53.90"S		LATI
Elevation of Drill Floor	21.5		EKB
Elevation of Ground Level	-74.0		EGL
Permanent Datum	MSL	Elevation of Permanent Datum 0.0 (m)	PDAT, EPD
Log Measured From	DF	Above Permanent Datum 21.5 (m)	LMF, APD
Drilling Measured From	DF		DMF

Absent Valued Parameters: CN1, CONT, FL1, FL2, SECT, TOWN, RANG, APIN, SON, EDF

Job Data

Date as Month-Day-Year	10-Sept-2009	DATE
Run Number	2	RUN
Total Depth - Driller	2100.4 (m)	TDD
Total Depth - Logger	2100.4 (m)	TDL
Bottom Log Interval	2085.0 (m)	BLI
Top Log Interval	803.0 (m)	TLI
Casing Outer Diam.	13.4 (in)	CSIZ
Bit Size	12.25 (in)	BS

End Log Date	13-Sept-2009	
Logging Unit No.	OLU-KC-0702	
Engineer's Name	Marganda Hasiholan Sihite	ENGI

Absent Valued Parameters: CDF, CADT, CASG, BSDF, BSDT, SON , RMB, RMFB

Mud Data

Drilling Fluid Type	WBM Polymer		DFT
Drilling Fluid Density	9.0 (lbm/gal)	Drilling Fluid Viscosity 43.0 (s)	DFD, DFV
Drilling Fluid PH	9.0		DFL, DFPH
Mud Sample Source	Active Tank		MSS
Resistivity of Mud Sample	0.07 (ohm.m)	Mud Sample Temperature 22.4 (degC)	RMS, MST
Resistivity of Mud Filtrate Sample	0.69 (ohm.m)	Mud Filtrate Sample Temperature 22.8 (degC)	RMFS, MFST
Resistivity of Mud Cake Sample	0.08 (ohm.m)	Mud Cake Sample Temperature 20.1 (degC)	RMCS, MCST
Resistivity of Mud - BHT	0.03 (ohm.m)		RMB
Resistivity of Mud Filtrate - BHT	0.03 (ohm.m)		RMFB
Maximum Recorded Temperature	68.0 (degC)		MRT

Absent Valued Parameters: MRT2, MRT3

Log Quality

The LWD logs over the zones of interest are of good quality. The caliper used in the final presentation is only for qualitative use.

Environmental Corrections

Gamma Ray is corrected for mud weight, tool size and bit size.

All corrections for neutron were done in the field, excluding formation salinity. This was computed inside the evaluation software (IP), as it is dependent on saturations.

Borehole corrections were done in the field for the ARC resistivity measurements. Shoulder bed corrections were not done.

Rt Determination

ARC phase shift resistivity 40 inch spacing at 2Mhz (P40H) was used for true resistivity (Rt) in Spikey Beach-1.

Rw Determination

The Rw's were interpreted from the logs.

Vclay Determination

Vclay was determined from the minimum of GR and Density-Neutron indicators.

```
CLAY VOLUME PARAMETERS

Well :  SPIKEY BEACH-1
Date :  09/20/2009 17:44:03

   Input Curves
Gamma Ray          : GR                     Neu/Den Density    : RHOB
Neu/Den Neutron    : TNPH
   Output Curves
Vclay Gamma Ray    : VCLGR                  Vclay Neu/Den      : VCLND
Vclay minimum      : VCL                    Vclay average      : VCLAV

   Zone number 1   Top :  1525.00  Bottom :  1870.00
Gr Use          : Yes         Gr Clean        : 15.         Gr Clay         : 180.
Gr Method       : Linear      ND Use          : Yes         ND Neu Clay     : 0.433
ND Den Clay     : 2.443       ND Den Clean1   : 2.65        ND Den Clean2   : 2.009
ND Neu Clean1   : -0.04       ND Neu Clean2   : 0.298       Link PhiSw Clay : Yes

   Zone number 2    Top :  1870.00  Bottom :  2085.00
Gr Use          : Yes         Gr Clean        : 15.         Gr Clay         : 180.
Gr Method       : Linear      ND Use          : Yes         ND Neu Clay     : 0.433
ND Den Clay     : 2.443       ND Den Clean1   : 2.65        ND Den Clean2   : 2.009
ND Neu Clean1   : -0.04       ND Neu Clean2   : 0.298       Link PhiSw Clay : Yes
```

Lithology Determination

Lithology was assumed to be sand and clay, using the parameters above.
Carbonates were interpreted manually in zones where the density and PEF goes high, neutron porosity goes low, resistivity goes high and compressional slowness decreases.
Coal was manually interpreted in zones where the density goes low, neutron and DT goes high and Resistivity goes high.

Saturation

Saturation was calculated using the Archie equation:

$$1/Rt = Phi^{**}m.Sw^{**}n / (a.Rw)$$

Cementation exponent "m" is the Shell equation in the IP software. "m" increases with decreasing PHIE. The saturation exponent "n" is 1.9.

Porosity

Porosity is calculated using the neutron-density in the IP software.

Cutoff

Cutoffs used for net pay are:
Vclay < 60%, PHIE > 10% and Sw < 60% was used

Assumptions

1. Mineral model of sand, clay.
2. m is assumed to be variable and n assumed to be 1.9

Deliverables

Main Outputs

The following main outputs were delivered with the digital data:

```
#MNEM          UNIT      API CODE   Description
#---------- ---------- ----------  -----------
 DEPTH      .M                     :
 BVW        .Dec                   : Bulk Volume water (Phie x SW)
 BVWSXO     .Dec                   : Bulk Volume water Invaded Zone (Phie x Sxo)
 PayFlag    .                      : Pay Flag
 PayH       .                      : Pay Height
 PHIE       .Dec                   : Effective Porosity
 PHIT       .Dec                   : Total Porosity
 ResFlag    .                      : Reservoir Flag
 ResH       .                      : Reservoir Height
 SW         .Dec                   : Water Saturation
 SWT        .Dec                   : Total Water Saturation
 SXO        .Dec                   : Saturation Invaded Zone
 SXOT       .Dec                   : Total Saturation Invaded Zone
 VCL        .Dec                   : Clay Volume
```

The following deliverables are produced from this processing:

1. Evaluation report (PDF)
2. Evaluation graphics, 1:500 (GIF),
3. LAS outputs of evaluation
4. Cutoffs and evaluation parameters (TXT)

Evaluation Parameters

The following parameters were used for the interpretation:

```
POROSITY WATER SATURATION PARAMETERS

Well :  SPIKEY BEACH-1
Date :  09/20/2009 17:44:08

   Input Curves
Neutron          : TNPH                    Density          : RHOB
PEF              : PEF                     Clay Volume      : VCL
Rt               : P40H                    Temperature      : Temp
Non Calc. flag   : NO_PAY_US2
   Output Curves
Phi Total        : PHIT                    Phi effective    : PHIE
Sw               : SW                      Sw unlimited     : SWU
Sw total         : SWT                     Sw total unlim   : SWTU
Sxo total        : SXOT                    Sxo total unlim  : SXOTU
Bulk vol water   : BVW                     Wet clay volume  : VWCL
Dry Clay volume  : VDCL                    Bound water sat  : SWB
Volume silt      : VSILT                   Logic flag       : PHIFLAG
Matrix density   : RHOMA                   Coal Volume      : VCOAL
Salt volume      : VSALT                   Hydrocarbon den  : RHOHY
```

Mineral 1 Volume : VSand
Mineral 2 Volume : VLime
Mineral 3 Volume : VDol
Rho Mat apparent : RHOMAPP
U Mat apparent : UMAPP
Kill Anal. Flag : KillFlag

Multi-mineral analysis
3 mineral used : Sand Lime Dol

Zone number 1 Top : 1525.00 Bottom : 1870.00

Rw	: 0.0762	Rw Temp	: 68.	Rmf	: 0.0694
Rmf Temp	: 22.8	Rho Sxo zone	:	Salin Sxo zone	:
Rho Wet Clay	: 2.443	Rho Dry Clay	: 2.78	Neu Wet Clay	: 0.433
Hc Den	: 0.8	Neu Hc HI	:	Den Hc app	:
GD source	: Mlt-Mins	Rho GD	: 2.65	Rho GD max	: 2.95
Rho GD min	: 2.51	Neu Form Sal	: Yes	Neu Log Cont	: Schlumb
Neu Tool Type	: CNL	Porosity Method	: Neu Den	Variable Hc Den	: No
Variable GD	: Yes	Variable Vcl	: No	Mineral Model	: ss/ls/dol
OBM ?	: No	Phi max	: 0.3	Delta Phi max	: 0.15
m vari wth Vcl	: No	Vcl cutoff	: 0.6	Sat Equation	: Archie
a factor	: 1.	m exponent	: 1.8	n exponent	: 1.9
Invasion factor	: 2.	Sxo Method	: Inv Fac	m source	: Shell
n source	: Param	Coal Logic	: No	Salt Logic	: No
PhiT Clay	:	Model Type	: Sand	Sand Umat	: 4.8
Lime Umat	: 13.8	Dol Umat	: 9.	Sand RhoMat	: 2.65
Lime RhoMat	: 2.71	Dol RhoMat	: 2.85	Sand Rho True	: 2.65
Lime Rho True	: 2.71	Dol Rho True	: 2.85	Clay Corr Input	: Yes
Sand Clay ?	: No	Lime Clay ?	: No	Dol Clay ?	: No
Pef Clay	: 3.	Phie Sw Limit	: 0.	Phie Limit	: 0.
Vcl Limit	: 1.	Kill Logic	: No	Link Clay Vol	: Yes
Swi Limit	: 0.				

Zone number 2 Top : 1870.00 Bottom : 2085.00

Rw	: 0.0762	Rw Temp	: 68.	Rmf	: 0.0694
Rmf Temp	: 22.8	Rho Sxo zone	:	Salin Sxo zone	:
Rho Wet Clay	: 2.443	Rho Dry Clay	: 2.78	Neu Wet Clay	: 0.433
Hc Den	: 0.8	Neu Hc HI	:	Den Hc app	:
GD source	: Mlt-Mins	Rho GD	: 2.65	Rho GD max	: 2.95
Rho GD min	: 2.51	Neu Form Sal	: Yes	Neu Log Cont	: Schlumb
Neu Tool Type	: CNL	Porosity Method	: Neu Den	Variable Hc Den	: No
Variable GD	: Yes	Variable Vcl	: No	Mineral Model	: ss/ls/dol
OBM ?	: No	Phi max	: 0.3	Delta Phi max	: 0.15
m vari wth Vcl	: No	Vcl cutoff	: 0.6	Sat Equation	: Archie
a factor	: 1.	m exponent	: 1.8	n exponent	: 1.9
Invasion factor	: 2.	Sxo Method	: Inv Fac	m source	: Shell
n source	: Param	Coal Logic	: No	Salt Logic	: No
PhiT Clay	:	Model Type	: Sand	Sand Umat	: 4.8
Lime Umat	: 13.8	Dol Umat	: 9.	Sand RhoMat	: 2.65
Lime RhoMat	: 2.71	Dol RhoMat	: 2.85	Sand Rho True	: 2.65
Lime Rho True	: 2.71	Dol Rho True	: 2.85	Clay Corr Input	: Yes
Sand Clay ?	: No	Lime Clay ?	: No	Dol Clay ?	: No
Pef Clay	: 3.	Phie Sw Limit	: 0.	Phie Limit	: 0.
Vcl Limit	: 1.	Kill Logic	: No	Link Clay Vol	: Yes
Swi Limit	: 0.				