CHAPTER 3
STRATIGRAPHY

3.1 INTRODUCTION

Lithology of each well are derived from subsea geophysical correlation log and cutting sample. To set up the location of each well from north to south, it consist of 4 wells in east graben 1.A , 2.B , 3.C , 4.D (Figure 3.1-3.2) and 6 wells in the west graben 1.E , 2. F , 3.G , 4.H , 5.I , 6. J (Figure 3.1-3.3).

3.2 LITHOLOGY OF EACH WELL

East Graben

1. Well name : A

This well located at x-surface 775916E and y-surface 1045989N in concession block 11 in the Pattani Basin, Gulf of Thailand and has API number 7031600 0200. It is categoried as exploratory well and gas well in status with total drilling depth of 11917 ft (MD), 9459 ft (VD) and –9409 ft (SS). It shows 51ft hydrocarbon base, excludes 21 ft in an additional zones of interest (Appendix A-1).

Sequence 5 (-2826 ft to –4260 ft) (top to B37-6)

Subsea geophysical correlation log : can not be interpreted.

Cutting sample : gray clay 85-95%, coal or coaly shale 5-15%.

Sequence 4 (–4260 ft to –7402 ft) (B37-6 to C61-3)

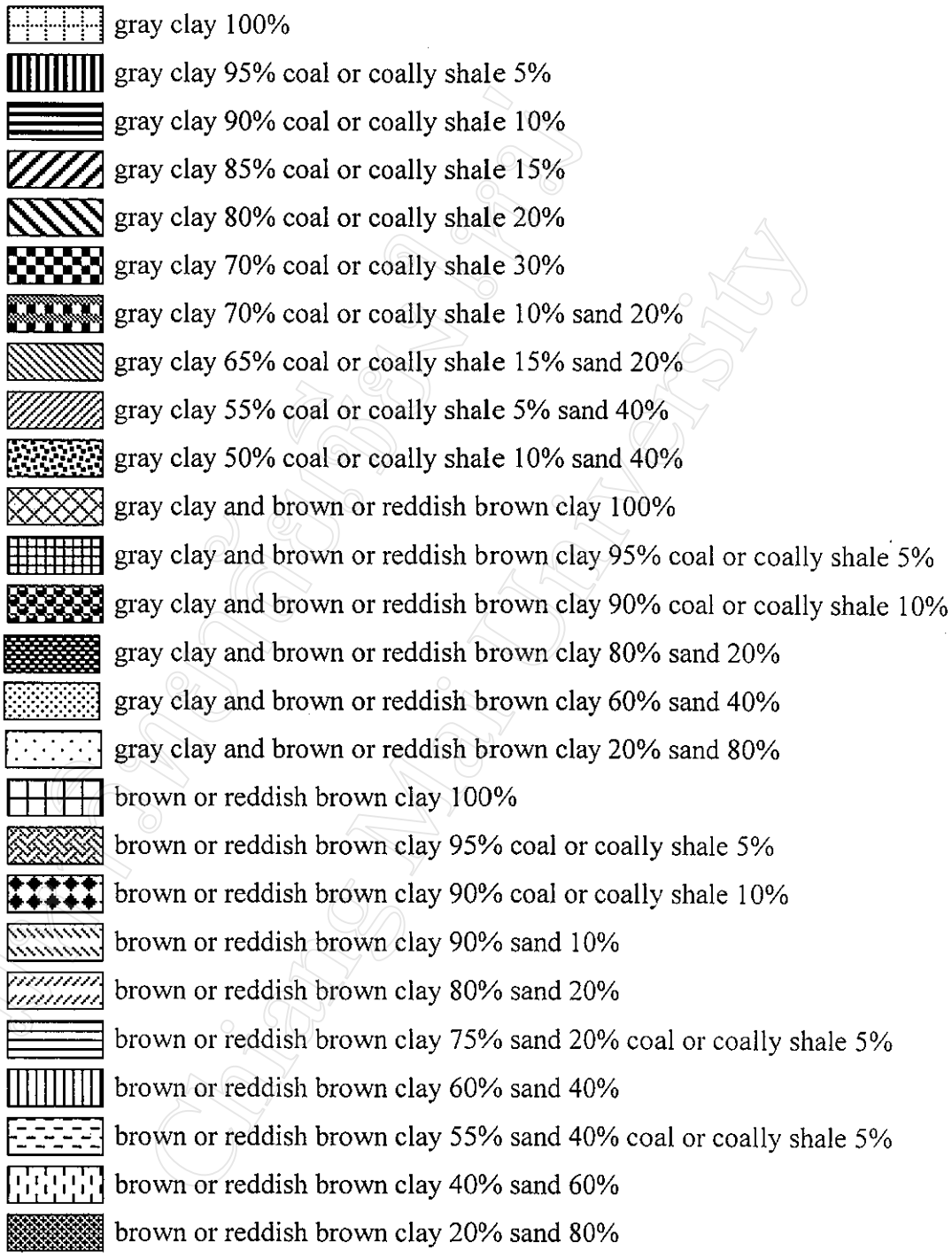

Figure 3.1 Symbol description of lithology used in Figure 3.2 and 3.3.

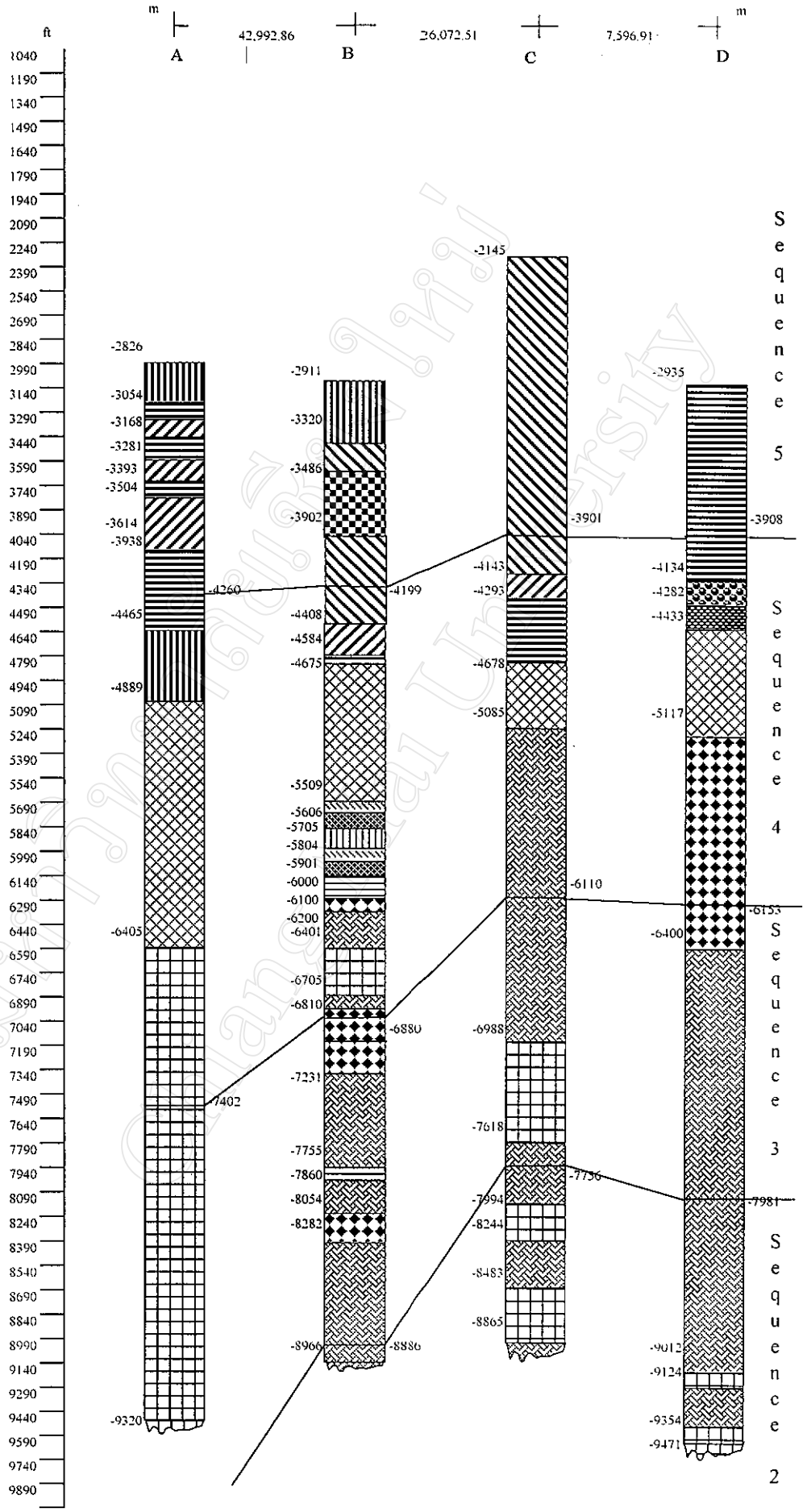

Figure 3.2 Lithological correlation between well in the east graben of the Pattani Basin.

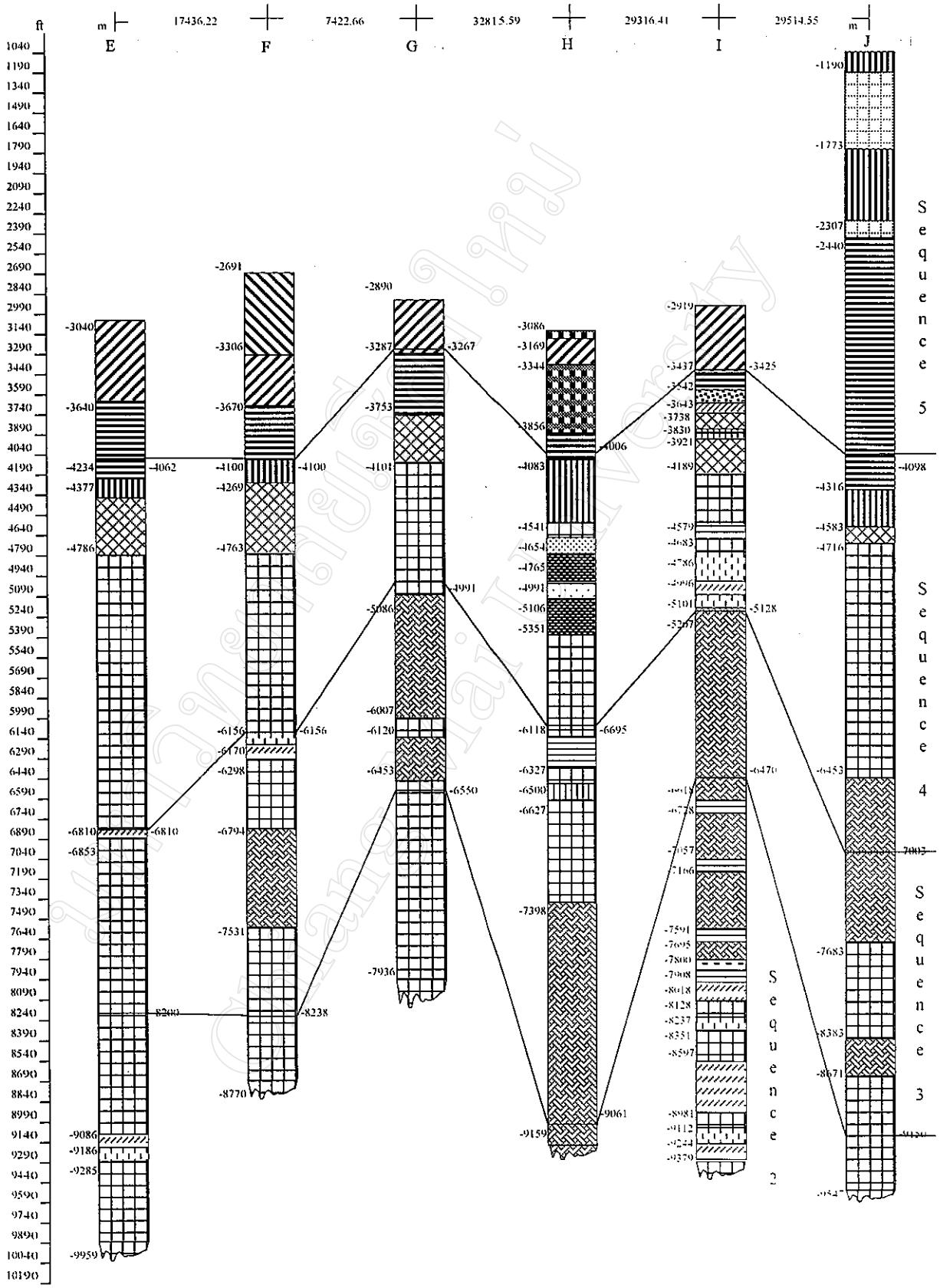

Figure 3.3 Lithological correlation between well in the west graben of the Pattani Basin.

Subsea geophysical correlation log :

–4260 ft to –5012 ft can not be interpreted;

–5012 ft to –7402 ft, it represents 21 wet sandstone beds interbedded with thick set of thin interlayer between sandstone, shale and coal. Wet sandstone beds have porosity between 6-26 %, water saturate 72-100 % and total gas unit 10-20.

Cutting sample :

-4260 ft to –4889 ft : gray clay 90-95%, coal or coaly shale 5-10%;

-4889 ft to –6405 ft : gray clay mixed with brown or reddish brown clay 100%;

-6405 ft to –7402 ft : brown or reddish brown clay 100%.

Sequence 3 (–7420 ft to below–9331 ft) (C61-3 to below J80-3)

Subsea geophysical correlation log :

It represents 15 wet sandstone beds, a gas sandstone bed and an additional interest zone interbedded with thick set of thin interlayer between sandstone, shale and coal. Wet sandstone beds have porosity between 5-16 %, water saturate 72-100 % and total gas unit 12-94. Gas sandstone bed located at –7441 ft to –7490 ft have porosity between 19 %, water saturate 49% and total gas unit 400. An additional interest zone located in the depth –8043 ft to –8073 ft 64% porosity, 20% water saturate and 20 total gas unit.

Cutting sample : brown or reddish brown clay 100%.

Drilling was terminated in sequence 3.

2. Well name : B

This well is located at x-surface 782348E and y-surface 100348N in concession block 12 in the Pattani Basin, Gulf of Thailand and has API number 70312004 0400. It is developed gas well with total drilling depth of 13572 ft (MD), 9086 ft (VD) and –9000 ft (SS). It shows 168 ft of hydrocabon in 15 zones, 162 ft hydrocarbon base in 14 zones and 6 ft hydrocabon with water, excludes 100 ft in 8 additional zones of interest (Appendix A-2).

Sequence 5 (–2910 ft to –4199 ft) (top to B37-6)

Subsea geophysical correlation log : can not be interpreted.

Cutting sample : gray clay 70-95%, coal or coaly shale 5-30%.

Sequence 4 (–4199 ft to –6880 ft) (B37-6 to C61-3)

Subsea geophysical correlation log :

–4199 ft to –4650 ft can not be interpreted;

–4650 ft to –6880 ft, it represents 14 wet sandstone beds, 8 gas sandstone beds and 3 additional interest zones interbedded with thick set of thin interlayer between sandstone, shale and coal. Wet sandstone beds have porosity between 8-26 %, water saturate 56-100 % and total gas unit 50-1465. Eight gas sandstone beds have porosity between 20-29 %, water saturate 21-61 % and total gas unit 830-2000. Three additional interest zones have 11-20% porosity, 54-88% water saturate and 475-1510 total gas unit.

Cutting sample :

-4199 ft to –4675 ft : gray clay 85-90%, coal or coaly shale 10-15%;

-4675 ft to -5509 ft : gray clay mixed with brown or reddish brown clay 100%;

-5509 ft to –6100 ft : brown or reddish brown clay 20-90%, sand 10-80%;

-6100 ft to –6401 ft : brown or reddish brown clay 90-95%, coal or coaly shale 5-10%;

-6401 ft to –6705 ft : brown or reddish brown clay 100%;

-6705 ft to –6880 ft : brown or reddish brown clay 90-95%, coal or coaly shale 5-10%.

Sequence 3 (–6880 ft to –8886 ft) (C61-3 to K83-2)

Subsea geophysical correlation log :

It represent 16 wet sandstone beds, 7 gas sandstone beds and 5 additional interest zone interbedded with thick set of thin interlayer between sandstone, shale and coal. Wet sandstone beds have porosity between 10-24%, water saturate 47-100 % and total gas unit 80-910. Seven gas sandstone beds have porosity between 15-20 %, water saturate 29-55 % and total gas unit 780-1570. Five additional interest zones have 12-16% porosity, 51-53% water saturate and 170-1570 total gas unit.

Cutting sample :

-6880 ft to –7755 ft : brown or reddish brown clay 90-95%, coal or coaly shale 5-10%;

-7755 ft to –7860 ft : brown or reddish brown clay 75%, coal or coaly shale 5%, sand 20%;

-7860 ft to > -8966 ft : brown or reddish brown clay 95%, coal or coaly shale 5%.

Sequence 2 (–8886 ft to > –8966 ft) (K83-2 to below)

Subsea geophysical correlation log :

It represents 1 additional interest zone sandstone bed interbedded with thick set of thin interlayer of sandstone, shale and coal. An additional interest zone sandstone beds are located have porosity 0%, water saturate 0% and total gas unit 176.

Cutting sample :

-886 ft to –8966 ft : brown or reddish brown clay 95%, coal or coaly shale 5%;

Drilling was terminated in sequence 2.

3.Well name : C

This well is located at x-surface 789089E and y-surface 978294N in concession block 13 in the Pattani Basin, Gulf of Thailand and has API number 70311601 0100. It is developed gas well with total drilling depth of 12217 ft (MD), 8995 ft (VD) and –8945 ft (SS). It shows 274 ft of hydrocarbon in 9 zones, excludes 19 ft in 3 additional zones of interest (Appendix A-3).

Sequence 5 (–2900 ft to –3901 ft) (top to B37-6)

Subsea geophysical correlation log : can not be interpreted.

Cutting sample : gray clay 80%, coal or coaly shale 20%.

Sequence 4 (–2900 ft to –6110 ft) (B37-6 to C61-3)

Subsea geophysical correlation log :

–3901 ft to –4500 ft can not be interpreted;

–4500 ft to –6110 ft, it represents 13 wet sandstone beds, 2 gas sandstone beds and one additional interest zone interbedded with thick set of thin interlayer between sandstone, shale and coal. Wet sandstone beds have porosity between 6-15 %, water saturate 54-100 % and total gas unit 9-110. Two gas sandstone beds are located at –4934 ft to –5018 ft and –5869 ft to –5878 ft with porosity 25 % and 25 %, water saturate 21% and 37%, and total gas unit 2000 and 110. An additional interest zone locate at –6014 ft to –6130 ft has porosity 14%, water saturate 62% and total gas unit 110.

Cutting sample :

-3901 ft to –4678 ft : gray clay 80-90%, coal or coaly shale 10-20%;

-4678 ft to –5085 ft : gray clay mixed with brown or reddish brown clay 100%;

-5085 ft to –6110 ft : brown or reddish brown clay 95%, coal or coaly shale 5%.

Sequence 3 (–6110 ft to –7756 ft) (C61-3 to K83-2)

Subsea geophysical correlation log :

It represents 11 wet sandstone beds, 5 gas sandstone beds and one additional interest zone interbedded with thick set of thin interlayer between sandstone, shale and coal. Wet sandstone beds have porosity between 7-23 %, water saturate 46-100 % and total gas unit 22-106. Five gas sandstone beds have porosity between

14-24 %, water saturate 24-50 % and total gas unit 80-1540. An additional interest zone located in the depth –7189 ft to –7200 ft have 12% porosity, 65% water saturate and 1300 total gas unit.

Cutting sample :

-6110 ft to –6988 ft : brown or reddish brown clay 95%, coal or coaly shale 5%;

-6988 ft to –7618 ft : brown or reddish brown clay 100%;

-7618 ft to –7756 ft : brown or reddish brown clay 95%; coal or coaly shale 5%.

Sequence 2 (–7756 ft to below –8694 ft) (K83-2 to below N95-2)

Subsea geophysical correlation log :

It represents 7 wet sandstone beds, 2 gas sandstone beds and one additional interest zone interbedded with thick set of thin interlayer between sandstone, shale and coal. Wet sandstone beds have porosity between 5-14 %, water saturate 49-100 % and total gas unit 10-120. Two gas sandstone beds are located at –8247 ft to –8303ft and -8900 ft to the unfixed depth. An additional interest zone located in the depth –8469 ft to –8635 ft with 13% porosity, 48% water saturate and 110 total gas unit.

Cutting sample :

-7756 ft to –7994 ft : brown or reddish brown clay 95%, coal or coaly shale 5%;

-7994 ft to –8244 ft : brown or reddish brown clay 100%;

-8244 ft to –8493 ft : brown or reddish brown clay 95%, coal or coaly shale 5%,

-8493 ft to –8865 ft : brown or reddish brown clay 100%;

>-8865 ft : brown or reddish brown clay 95%, coal or coaly shale 5%.

Drilling was terminated in sequence 2.

4. Well name : D

This well is located at x-surface 795843E and y-surface 981772N in concession block 13, the Pattani Basin, Gulf of Thailand and has API number 7031180 0200. It is delineation well category that was define to be non-commercial gas show in status. It has 15 ft hydrocarbon base in 3 zones, excludes 29 ft in 5 additional zones of interest. Total depth of this well is 10663 ft in measured depth, 9546 ft in vertical depth and –9481 ft in subsea depth (Appendix A-4).

Sequence 5 (–2940 ft to –3908 ft) (top to B37-6),

Subsea geophysical correlation log : can not be interpreted.

Cutting sample : gray clay 90%, coal or coaly shale 10%.

Sequence 4 (–3908 ft to –6153 ft) (B37-6 to C61-3)

Subsea geophysical correlation log :

–3908 ft to –4270 ft can not be interpreted but show fault line at –3975 ft;

–4270 ft to –6153 ft, it have 23 wet sandstone beds and one gas sandstone bed interbedded with thick set of thin interlayer of sandstone, shale and coal. Wet sandstone have porosity 14-28 %, water saturate 70-98 % and total gas unit between 10-40. Gas sandstone bed is located at –5054 ft to –5061 ft, and has porosity 26%, water saturate 37 % and total gas unit 20.

Cutting sample :

-3908 ft to –4134 ft : gray clay 90%, coal or coaly shale 10%;

-4134 ft to –4284 ft : gray clay mixed with brown or reddish brown clay 90%, coal or coaly shale 10%;

-4284 ft to –4433 ft : gray clay mixed with brown or reddish brown clay 80%, sand 20%;

-4433 ft to -5117 ft : gray clay mixed with brown or reddish brown clay 100%;

-5117 ft to –6153 ft : brown or reddish brown clay 90%, coal or coaly shale 10%.

Sequence 3 (–6153 ft to –7981 ft) (C61-3 to K83-2),

Subsea geophysical correlation log :

It shows 22 wet sandstone beds, one gas sandstone bed and 3 additional interest zone sandstone beds interbedded with thick set of thin interlayer between sandstone, shale and coal. Wet sandstone bed have porosity 6-22 %, water saturate 69-100% and total gas unit 25-90. Gas sandstone bed is located at –7952 ft to –7962 ft with porosity 15%, water saturate 59 % and total gas unit 200. Three additional interest zones have porosity 10-19 %, water saturate 63-69 % and total gas unit 40-174.

Cutting sample : brown or reddish brown clay 90-95%, coal or coaly shale 5-10%.

Sequence 2 (–7981 ft to –9470 ft) (K83-2 to below)

Subsea geophysical correlation log :

It represents 26 wet sandstone beds, one gas sandstone bed and 2 additional interest zone sandstone beds interbedded with thick set of thin interlayer of sandstone, shale and coal. Wet sandstone bed have porosity between 4-15 %, water saturate 73-100 % and total gas unit 40-191. Gas sandstone bed located at –8040 ft to –8048 ft by it have porosity 14%, water saturate 53 % and total gas unit 80. Two additional interest zone sandstone beds are located at –9089 ft to –9095 ft and –9448 ft to –9453 ft by it have porosity 13% and 6%, water saturate both 64% and total gas unit 145 and 85.

Cutting sample :

-7981 ft to –9012 ft : brown or reddish brown clay 95%, coal or coaly shale 5%;

-9012 ft to –9124 ft : brown or reddish brown clay 100%;

-9124 ft to –9354 ft : brown or reddish brown clay 95%, coal or coaly shale 5%;

-9354 ft to –9471 ft : brown or reddish brown clay 100%.

Drilling was terminated in sequence 2.

West Graben

1. Well name : E

This well is located at x-surface 768055E and y-surface 1087518N in concession block 10 in the Pattani Basin, Gulf of Thailand have API number 70312402 0100. It is a developed gas well with total drilling depth of 11740 ft (MD), 10064 ft (VD) and –10014 ft (SS). It has 111 ft hydrocarbon in 9 zones show 87 ft hydrocarbon base in 7 zones, 24 ft

hydrocarbon with water in 2 zones and excludes 27 ft in 3 additional zones of interest (Appendix A-5).

Sequence 5 (–2950 ft to –4062 ft) (top to B37-6)

Subsea geophysical correlation log : can not be interpreted.

Cutting sample : gray clay 85-90%, coal or coaly shale 10-15%.

Sequence 4 (–4062 ft to –6810 ft) (B37-6 to C61-3)

Subsea geophysical correlation log :

–4062 ft to –4500 ft : can not be interpreted;

–4500 ft to –6810 ft : it represents 17 wet sandstone beds, 3 gas sandstone bed and an additional interest zone interbedded with thick set of thin interlayer between sandstone, shale and coal. Wet sandstone beds have porosity between 16-85 %, water saturate 45-85% and total gas unit 6-30. Three gas sandstone beds have porosity 21-28%, water saturate 45-64% and total gas unit 17-100. An additional interest zone located at –6023 ft to –6046 ft has porosity 23%, water saturate 66% and total gas unit 60. It shows a fault line at –4660 ft.

Cutting sample :

-4062 ft to –4377 ft : gray clay 90-95%, coal or coaly shale 5-10%;

-4377 ft to –4786 ft : gray clay mixed with brown or reddish brown clay 100%;

-4786 ft to –6810 ft : brown or reddish brown clay 100%.

Sequence 3 (–6810 ft to –8200 ft) (C61-3 to K83-2)

Subsea geophysical correlation log :

It represents 10 wet sandstone beds, 4 gas sandstone beds and 1 additional interest zone interbedded with thick set of thin interlayer between sandstone, shale and coal. Wet sandstone beds have porosity between 10-20%, water saturate 54-100% and total gas unit 10-40. Four gas sandstones have porosity between 15-20%, water saturate 38-60% and total gas unit 25-150. An additional interest zone located at –7548 ft to –7555 ft has porosity 20%, water saturate 66% and total gas unit 30.

Cutting sample :

-6810 ft to –6853 ft : brown or reddish brown clay 80%, sand 20%;

-6853 ft to –8200 ft : brown or reddish brown clay 100%.

Sequence 2 (–8200 ft to –9956 ft) (K83-2 to below)

Subsea geophysical correlation log :

It represents 17 wet sandstone beds, 2 gas sandstone bed and 1 additional interest zone interbedded with thick set of thin interlayer of sandstone, shale and coal. Wet sandstone bed have porosity 5-17%, water saturate 42-96% and total gas unit 9-94. Gas sandstone bed located at –8472 ft to –8458 ft and –8956 ft to –8990 ft, both have porosity 16%, water saturate 54 % and 60% and total gas unit 20 and 54. An additional interest zone located at –9824 ft to –9830 ft have porosity 9%, water saturate 47% and total gas unit 81.

Cutting sample :

-8200 ft to –9086 ft : brown or reddish brown clay 100%;

-9086 ft to –9285 ft : brown or reddish brown clay 40-80%, sand 20-60%;

-9285 ft to –9959 ft : brown or reddish brown clay 100%.

Drilling was terminated in sequence 2.

2. Well name : F

This well is located at x-surface 761116E and y-surface 1071522N in concession block 10 in the Pattani Basin, Gulf of Thailand and has API number 70314803 0500. It is a developed gas well with total drilling depth of 10495ft (MD), 8890 ft (VD) and –8793 ft (SS). It shows 24 ft of hydrocarbon base in 4 zones (Appendix A-6).

Sequence 5 (–2691 ft to –4100 ft) (top to B37-6)

Subsea geophysical correlation log : can not be interpreted.

Cutting sample : gray clay 80-90%, coal or coaly shale 10-20%.

Sequence 4 (–4100 ft to –6156 ft) (B37-6 to C61-3)

Subsea geophysical correlation log :

–4100 ft to –4280 ft can not be interpreted;

–4280 ft to –6156 ft, it represents 13 wet sandstone beds and 1 gas sandstone bed interbedded with thick set of thin interlayer between sandstone, shale and coal. Wet sandstone beds have porosity between 20-31 %, water saturate 75-95 % and total gas unit 15-50. Gas sandstone bed is located at –5712 ft to –5725 ft with porosity 25%, water saturate 55% and total gas unit 125.

Cutting sample :

-4100 ft to –4269 ft : gray clay 80-90%, coal or coaly shale 10-20%;

-4269 ft to –4763 ft : gray clay mixed with brown or reddish brown clay 100%;

-4763 ft to –6156 ft : brown or reddish brown clay 100%.

Sequence 3 (–6156 ft to –8238 ft) (C61-3 to K83-2)

Subsea geophysical correlation log :

It represents 15 wet sandstone beds and 2 gas sandstone beds interbedded with thick set of thin interlayer between sandstone, shale and coal. Wet sandstone beds have porosity between 11-25%, water saturate 67-100 % and total gas unit 15-166. Two gas sandstone beds are located at -7175 ft to –7182 ft and –7960 ft to –7962 ft with porosity between 20 % and 18%, water saturate 51% and 64% and total gas unit 376 and 730. It shows a fault line in –7470 ft.

Cutting sample :

-6156 ft to –6298 ft : brown or reddish brown clay 40-80%, sand 20-60%;

-6298 ft to –6794 ft : brown or reddish brown clay 100%;

-6794 ft to –7531 ft : brown or reddish brown clay 95%, coal or coaly shale 5%;

-7531 ft to –8238 ft : brown or reddish brown clay 100%.

Sequence 2 (–8238 ft to –8772 ft) (K83-2 to below)

Subsea geophysical correlation log :

It represents 5 wet sandstone beds and one gas sandstone bed interbedded with thick set of thin interlayer of sandstone, shale and coal. Wet sandstone bed have porosity 10-20%, water saturate 60-100% and total gas unit 34-88. Gas sandstone bed is located at –8251 ft to –8255 ft with porosity 22%, water saturate 62% and total gas unit 50.

Cutting sample :

-8238 ft to > -8770 ft : brown or reddish brown clay 100%;

Drilling was terminated in sequence 2.

3. Well name : G

This well is located at x-surface 753775E and y-surface 1070424N in concession block 10 in the Pattani Basin, Gulf of Thailand and has API number 70315801 0600. It is categoried as developed well and is gas and oil well in status. The total drilling depth is 10891 ft (MD), 8136 ft (VD) and –8050 ft (SS). It shows 117 ft hydrocarbon in 9 zones with 87 ft hydrocarbon base in 6 zones and 30 ft hydrocarbon with water in 3 zones, includes a 15 ft oil with water zone, excludes 5 ft an additional zone of interest (Appendix A-7).

Sequence 5 (–2889.8 ft to –3267 ft) (top to B37-6)

Subsea geophysical correlation log : can not be interpreted.

Cutting sample : gray clay 85%, coal or coaly shale 15%.

Sequence 4 (–3267 ft to –4991 ft) (B37-6 to C61-3)

Subsea geophysical correlation log :

–3267 ft to –3750 ft can not be interpreted;

–3750 ft to –4991 ft, it represents 10 wet sandstone beds interbedded with thick set of thin interlayer between sandstone, shale and coal. Wet sandstone beds have porosity between 25-31 %, water saturate 70-98 % and total gas unit 5-25.

Cutting sample :

-3267 ft to –3753 ft : gray clay 85-90%, coal or coaly shale 10-15%;

-3753 ft to –4101 ft : gray clay mixed with brown or reddish brown clay 100%;

-4101 ft to –4991 ft : brown or reddish brown clay 100%.

Sequence 3 (–4991 ft to –6550 ft) (C61-3 to K83-2)

Subsea geophysical correlation log :

It represents 10 wet sandstone beds and 3 gas sandstone beds interbedded with thick set of thin interlayer between sandstone, shale and coal. Wet sandstone beds have porosity between 12-29 %, water saturate 50-99 % and total gas unit 5-10. Three gas sandstone beds have porosity between 17-24 %, water saturate 31-53 %, and total gas unit 5-40.

Cutting sample :

-4991 ft to –5086 ft : brown or reddish brown clay 100%;

-5086 ft to –6007 ft : brown or reddish brown clay 95%, coal or coaly shale 5%;

-6007 ft to –6120 ft : brown or reddish brown clay 100%;

-6120 ft to –6453 ft : brown or reddish brown clay 95%, coal or coaly shale 5%;

-6453 ft to –6550 ft : brown or reddish brown clay 100%.

Sequence 2 (–6550 ft to below –7455 ft) (K83-2 to below N95-2)

Subsea geophysical correlation log :

It represents 6 wet sandstone beds, 6 gas sandstone beds and one additional interest zone interbedded with thick set of thin interlayer between sandstone, shale and coal. Wet sandstone beds have porosity between 12-21 %, water saturate 53-80% and total gas unit 10-42. Six gas sandstone beds have porosity 12-19%, water saturate 42-60% and total gas unit 5-60. An additional interest zone located in the depth –6915 ft to –6921 ft with 19% porosity, 65% water saturate and 13 total gas unit.

Cutting sample : brown or reddish brown clay 100%.

Drilling was terminated in sequence 2.

4. Well name : H

This well is located at x-surface 759236E and y-surface 1038066N in concession block 11, the Pattani Basin, Gulf of Thailand and has API number 70315207 0300. This well is categoried as developed well and being gas well in status. From subsea correlation log, this well have 219 ft of hydrocarbon base in 12 zones, excludes 70 ft in 4 additional zones of interest. It has total depth 11931 ft (MD); 9255 ft (VD); -9169 ft (SS) (Appendix A-8).

Sequence 5 (-3086 ft to –4006 ft) (top to B37-6)

Subsea geophysical correlation log : can not be interpreted.

Cutting sample :

-3086 ft to –3169 ft : gray clay 65%, sand 20%, coal or coally shale 15%;

-3169 ft to –3344 ft : gray clay 85%, coal or coaly shale 15%;

-3344 ft to –3856 ft : gray clay 65%, sand 20%, coal or coaly shale 15%;

-3856 ft to –4006 ft : gray clay 90%, coal or coaly shale 10%.

Sequence 4 (–4006 ft to –6695 ft) (B37-6 to C61-3)

Subsea geophysical correlation log :

It represents thick bed sandstone interbedded with thick set of thin interlayer between sandstone, shale, and coal. Thick beds sandstone can be divided into 8 wet sandstone bed and 5 gas sandstone bed. Gas sandstone trap have porosity 23 – 27 %, water saturate 24-45 % and total gas unit 279-545 respectively. The wet sandstone bed has porosity 17 – 29 %, water saturate 17 to 29 % and total gas unit is between 20 to 70.

Cutting sample :

-4006 ft to –4541 ft : gray clay 90-95%, coal or coaly shale 5-10%;

-4541 ft to –5351 ft : gray clay mixed with brown or reddish brown clay 100%;

-5351 ft to –6118 ft : brown or reddish brown clay 100%;

-6118 ft to –6372 ft : brown or reddish brown clay 80%, sand 20%;

-6372 ft to –6500 ft : brown or reddish brown clay 100%;

-6500 ft to –6627 ft : brown or reddish brown clay 60%, sand 40%;

-6627 ft to –6695 ft : brown or reddish brown clay 100%.

Sequence 3 (–6695 ft to –9061 ft) (C61-3 to K83-2)

Subsea geophysical correlation log :

It represents thick bed sandstone interbedded with thick bed of thin interlayer between sandstone, shale and coal. Thick bed sandstones can be divided into 8 gas sandstone beds, 8 wet sandstone beds and 4 additional interest zones. Gas sandstone beds have porosity between 15 – 26 %, water saturate 43 – 74 % and total gas unit between 90 to 629. Additional interest have porosity between 12-17 %, water saturate 65-98 % and total gas unit between 108 – 435. Wet sandstone beds have porosity 8-22 %, water saturate 66-100 % and total gas unit between 90-435.

Cutting sample :

-6695 ft to –7398 ft : brown or reddish brown clay 100%;

-7398 ft to –9159 ft : brown or reddish brown clay 95%, coal or coaly shale 5%.

Sequence 2 (–9061 ft to –9172 ft) (K83-2 to below)

Subsea geophysical correlation log :

It represents 2 wet sandstone beds interbedded with thick set of thin interlayer between sandstone, shale and coal. The wet sandstone has porosity 16% and 17 %, water saturate 89 % and total gas unit 45 and 70.

Cutting sample : brown or reddish brown clay 95%, coal or coally shale 5%.

Drilling was terminated in sequence 2.

5. Well name : I

This well is located at x-surface 748559E and y-surface 1010763N in concession block 12 in the Pattani Basin, Gulf of Thailand and has API number 70311213 0600. It is a developed gas well with total drilling depth 12289 ft (MD), 9590 ft (VD) and –9504 ft (SS). It shows 283 ft hydrocarbon in 13 zones, consist of 260 ft hydrocarbon base in 12 zones and a 23 ft hydrocarbon with water zone, excludes 19 ft in 3 additional zones of interest (Appendix A-9).

Sequence 5 (–2900 ft to –3425 ft) (top to B37-6)

Subsea geophysical correlation log : can not be interpreted.

Cutting sample : gray clay 85%, coal or coally shale 15%.

Sequence 4 (–3425 ft to –5128 ft) (B37-6 to C61-3)

Subsea geophysical correlation log :

–3425 ft to –3770 ft can not be interpreted;

–3770 ft to –5128 ft, it represents 16 wet sandstone beds interbedded with thick set of thin interlayer between sandstone, shale and coal. Wet sandstone beds have porosity between 15-31 %, water saturate 64-100 % and total gas unit 33-77.

Cutting sample :

-3425 ft to –3542 ft : gray clay 85-90%, coal or coaly shale 10-15%;

-3542 ft to –3738 ft : gray clay 50-70%, sand 20-40%, coal or coaly shale 10%;

-3738 ft to –3830 ft : gray clay mixed with brown or reddish brown clay 100%;

-3830 ft to –3921 ft : gray clay mixed with brown or reddish brown clay 95%, coal or coaly shale 5%;

-3921 ft to 4189 ft : gray clay mixed with brown or reddish brown clay 100%;

-4189 ft to –4579 ft : brown or reddish brown clay 100%;

-4579 ft to –4683 ft : brown or reddish brown clay 75%, sand 20%, coal or coaly shale 5%;

-4683 ft to –5128 ft : brown or reddish brown clay 40-80%, sand 20-60%.

Sequence 3 (–5128 ft to –6470 ft) (C61-3 to K83-2)

Subsea geophysical correlation log :

It represents 12 wet sandstone beds, 4 gas sandstone beds and 2 additional interest zone interbedded with thick set of thin interlayer between sandstone, shale and coal. Wet sandstone beds have porosity between 8-30 %, water saturate 68-105 % and total gas unit 34-190. Four gas sandstone beds have porosity between 18-23 %, water saturate 37-53 % and total gas unit 721-2000. Two additional interest zones located in the depth –5755 ft to –5760 ft and –6214 ft to 6220 ft by 18% and 19% porosity, 76% and 81% water saturate and 400 and 360 total gas unit.

Cutting sample :

-5128 ft to –5207 ft : brown or reddish brown clay 40%, sand 60%;

-5207 ft to –6470 ft : brown or reddish brown clay 95%, coal or coaly shale 5%.

Sequence 2 (–6470 ft to below –7666 ft) (K83-2 to below N95-2)

Subsea geophysical correlation log :

It represents 28 wet sandstone beds, 9 gas sandstone beds and 3 additional interest zones interbedded with thick set of thin interlayer between sandstone, shale and coal. Wet sandstone beds have porosity between 9-22 %, water saturate 58-94 % and total gas unit 23-310. Eight gas sandstone beds have porosity 15-21%, water saturate 20-58% and total gas unit 50-2000. Three additional interest zones have 12-20% porosity, 42-64% water saturate and 60-520 total gas unit.

Cutting sample :

-6470 ft to –6618 ft : brown or reddish brown clay 95%, coal or coaly shale 5%;

-6618 ft to –6728 ft : brown or reddish brown clay 75%, sand 20%, coal or coaly shale 5%;

-6728 ft to –7057 ft : brown or reddish brown clay 95%, coal or coaly shale 5%;

-7057 ft to –7166 ft : brown or reddish brown clay 75%, sand 20%, coal or coaly shale 5%.

-7166 ft to –7591 ft : brown or reddish brown clay 95%, coal or coaly shale 5%;

-7591 ft to –7695 ft : brown or reddish brown clay 75%, sand 20%, coal or coaly shale 5%;

-7695 ft to –7800 ft : brown or reddish brown clay 95%, coal or coaly shale 5%;

-7800 ft to –8128 ft : brown or reddish brown clay 55-80%, sand 20-40%, coal or coaly shale 5%;

-8128 ft to –8237 ft : brown or reddish brown clay 100%;

-8237 ft to –8351 ft : brown or reddish brown clay 40%, sand 60%;

-8351 ft to –8597 ft : brown or reddish brown clay 100%;

-8597 ft to –8981 ft : brown or reddish brown clay 80%, sand 20%;

-8981 ft to –9112 ft : brown or reddish brown clay 100%;

-9112 ft to –9379 ft : brown or reddish brown clay 40-80%, sand 20-60%;

> -9379 ft : brown or reddish brown clay 100%.

Drilling was terminated in sequence 2.

6. Well name : J

This well is located at x-surface 761112E and y-surface 984051N in concession block 13 in the Pattani Basin, Gulf of Thailand and has API number 70310400 0700. It is gas well with total drilling depth 10393ft (MD), 9600 ft (VD) and –9550ft (SS). It shows 73 ft of hydrocarbon base in 4 zones (Appendix A-10).

Sequence 5 (–2950 ft to –4098 ft) (top to B37-6)

Subsea geophysical correlation log : can not be interpreted.

Cutting sample :

-1040 ft to –1190 ft : gray clay 95%, coal or coaly shale 5%;

-1190 ft to –1773 ft : gray clay 100%;

-1773 ft to –2307 ft : gray clay 95%, coal or coaly shale 5%;

-2307 ft to –2440 ft : gray clay 100%;

-2440 ft to –4098 ft : gray clay 90%, coal or coaly shale 10%.

Sequence 4 (–4098 ft to –7003 ft) (B37-6 to C61-3)

Subsea geophysical correlation log :

–4098 ft to –4450 ft can not be interpreted;

–4450 ft to –7003 ft, it represents 26 wet sandstone beds and 1 gas sandstone bed interbedded with thick set of thin interlayer between sandstone, shale and coal. Wet sandstone beds have porosity between 17-30 %, water saturate 73-160 % and total gas unit 10-104. Gas sandstone bed located at –6482 ft to –6486 ft by have porosity 22%, water saturate 69 % and total gas unit 40.

Cutting sample :

-4098 ft to –4316 ft : gray clay 90%, coal or coaly shale 10%;

-4316 ft to –4583 ft : gray clay mixed with brown or reddish brown clay 95%, coal or coaly shale 5%;

-4583 ft to –6453 ft : brown or reddish brown clay 100%;

-6453 ft to –7003 ft : brown or reddish brown clay 95%, coal or coaly shale 5%.

Sequence 3 (–7003 ft to –9150ft) (C61-3 to K83-2)

Subsea geophysical correlation log :

It represents 18 wet sandstone beds and 3 gas sandstone beds interbedded with thick set of thin interlayer between sandstone, shale and coal. Wet sandstone beds have porosity between 7-23%, water saturate 67-138 % and total gas unit 20-150. Three gas sandstone beds are located at -7125 ft to –7135 ft, –7388 ft to –7398 ft and –8750 ft to –8805 ft with porosity between 15-20 %, water saturate 54-64 % and total gas unit 165-280. It shows a fault line in –8720 ft.

Cutting sample :

-7003 ft to –7683 ft : brown or reddish brown clay 95%, coal or coaly shale 5%;

-7683 ft to -8383 ft : brown or reddish brown clay 100%;

-8383 ft to –8671 ft : brown or reddish brown clay 95%, coal or coaly shale 5%;

-8671 ft to –9150 ft : brown or reddish brown clay 100%.

Sequence 2 (–9150 ft to –9542 ft) (K83-2 to below)

Subsea geophysical correlation log :

It represents 1 wet sandstone bed with porosity 11%, water saturate 122% and total gas unit 36 interbedded with thick set of thin interlayer of sandstone, shale and coal.

Cutting sample : brown or reddish brown clay 100%.

Drilling was terminated in sequence 2.