7.9 Mud and Cutting Handling Summary

36-Inch Hole Section

Drilling fluid properties and performance:

Displacement Mud

Property	Value	Unit
Density	10,5	ppg
6 RPM	10-15	
pH	8 - 10	

Sweeps

Property	Value	Unit
Density	8,7-9,0	ppg
6 RPM	30-35	
pH	8-9,5	

Discussion:

The pilot hole was drilled using sea water pumped at 10 bbl/ min. A 30-50 bbl. viscous sweep was pumped on every single and a 50-70 bbl. viscous pill was spotted during every connection, which cleaned the hole sufficient. The string became stuck at 249 m – and worked free again, at this time the size and frequency of pills was increased.

As a contingency measure against shallow gas, 1083 bbls of 10,5ppg kill mud were mixed prior to starting the pilot hole. The pilot hole was filled with 10,5 ppg. mud during the trip out.

The 24-inch bit and 36-inch hole opener opened the hole to 304 m. using sea water. The size of the sweeps pumped on each single was increased to 50 bbl and a 70 - 100 bbl pill was spotted at each connection. The hole was displaced to 10,5 ppg. Bentonite mud and a wiper trip was made. This trip showed the hole to be in good condition. A 100 bbl. viscous pill was circulated out and the hole was again displaced to 10,5 ppg. mud.

The mud for sweeps was prepared by mixing 35 ppb. Bentonite in drill water which had been treated with 0,2 ppb. Soda Ash. This viscous slurry was then diluted with sea water to a Bentonite concentration of 22 ppb. and flocculated with 1.5 ppb. Soda Ash or Lime. The kill mud was prepared in a similar manner, but was not flocculated with Soda Ash.

Hole problems:

The assembly became stuck at 249 m. and had to be fished from the hole. This probably occurred in a sand. Hole cleaning had, until that incident, appeared to be adequate. The 36-inch hole was drilled without significant hole problems.

Cost comments:

Cost (NOK)	Budgeted	Actual	Δ%
Section:	170196	180391	6,0
Per bbl :	106,8	29,9	-280,0
Per m :	1050,6	929,9	-11,4

Recommendations:

A contingency supply of 40 sx Guar Gum should be available on the rig. If very large volumes of spud mud have to be mixed in a short period, it becomes difficult to mix and hydrate Bentonite in drill water. On this well Rhodopol was used to a limited extent. This is a more sophisticated and expensive viscosifier and tended to plug pump suction filters when mixed quickly.

Drilling small pilot holes usually represents a greater hazard than hole opening or drilling larger diameter surface holes. It may be necessary to increase flow rates and pump larger sweeps, especially in the sands.

17 1/2-inch Hole Section

Drilling fluid properties and performance:

Property	Value	Unit
Density	8,7-9,0 ppg	
6 RPM	30-35	
pH	8-9,5	

Discussion:

The 17 1/2-inch section of Trud 2/8 -17 S well was started on 10/12/97. A 9 7/8-inch pilot hole was drilled as a precaution against shallow gas. The hole was drilled with sea water and viscous sweeps. A closed system was used to monitor volumes, while adding sea water to control mud weight and solids build up. A potential hydrocarbon sand was identified by LWD at 1015-1018m. At 1023m shallow gas was suspected. This was confirmed by a flow check which showed a gain of six barrels over an eight minute period. Approximately 1000 bbls of kill mud at 10.5 ppg was pumped with returns diverted.

Circulating continued until the gas level dropped below 1 %. A wiper trip to 758 m showed the hole was in good shape. The maximum gas from this trip was 2,45 %. Static losses were averaging 10-12 bbl/ hr on the trip out to pick up the cement stinger. A cement plug was set from 1023 to 923 m.

While circulating to clean up the hole, 1200 bbls of 10,3 ppg mud was prepared in the pits. The gas level dropped to 0,17 %, indicating that the plug was successful. At this stage the active mud weight was reduced to 9,5 ppg over one circulation.

The pilot hole was then opened up to 17,5-inch. The mud weight was maintained at 9,5-9,6 ppg throughout the interval. No problems occurred when opening the hole to 963 m.

When running the 13 3/8 casing string, drag was experienced at 310, 598 and 686 m, but the pipe was worked through these areas with circulation. After landing the casing, a complete circulation was made before cementing the string.

The pilot hole was drilled using sea water, pumped at 10 bbl/ min. A 30 bbl viscous sweep was pumped on every single and a 50 bbl viscous pill was spotted during every connection. This level of hole cleaning appeared to be adequate while drilling the 9 7/8" pilot hole.

As a contingency measure against shallow gas, 10,0 ppg. kill mud were mixed prior to starting the pilot hole.

Hole problems:

Apart from the shallow gas incident, no hole stability problems occurred on this section.

Sticky clays caused some problems at the shakers but this was alleviated by the addition of Superwash. A small amount of Citric acid was used when dressing off the cement plug to prevent the alkalinity causing instability of the exposed clay section.

Cost comments:

Cost (NOK)	Budgeted	Actual	Δ%
Section:	149306	537437	260
Per bbl:	106,8	29,9	-280,0
Per m:	1050,6	816	-22,3

Recommendations:

Drilling small pilot holes usually represents a greater hazard than hole opening or drilling larger diameter surface holes. It may be necessary to increase flow rates and pump larger sweeps, especially in the sands. Arrange pit disposition to allow the maximum volume of kill mud to be maintained without compromising the ability to monitor and maintain the circulating system.

Keep a minimum stock of 3 MT of Flowzan on board in case of emergency and the need for rapid mixing of kill mud. Additions of Superwash diminished the stickiness of the clays on the shaker screens, and should be included in future programs.

12 1/4-Inch Hole Section

Drilling fluid properties and performance:

Property	Achieved	Unit
Density	12,9 - 14.5	ppg
PV	39 - 44	CP
YP	12 - 22	lb/ 100 ft^2
Gels	5 - 47	lb/ 100 ft^2
3 RPM	7 - 27	lb/ 100 ft^2
HTHP	3.2 - 5,5	ml
OWR	63/37 - 72/28	%
STABILITY	316 - 962	Volt
$CaCl_2$	145 - 315	g/ltr
Alkalinity	1.3 - 2.4	ml
LGS	25 - 66	ppb

Discussion:

A total of 1550 bbls Anco Vert Mud were received from town. This OBM was in excellent condition although some of the properties needed minor alterations to meet the programme for this well. Once the WBM had been displaced with the Anco Vert OBM, the treatments continued, but these treatments were purely for maintenance purposes. The interface between the WBM and OBM was diverted at the shakers to a reserve pit. This mud was treated eventually used as active volume.

Whilst drilling the cement, a higher percent of oil was found on the cuttings. After three circulations, the fluid showed an improvement in HTHP fluid loss and the electrical stability. This improvement was however expected and was a result of the benefits of high pressure shearing through the bit.

In order to save additions of barite, use was made of the heavier reserve mud to maintain and increase weight as required. This had the added advantage of maintaining stable mud properties as the additions consisted of mature OBM. Some small additions of lime were made to the active system, but this was anticipated as this chemical is consumed by the process. Occasional of Bentone 128 were made to raise the low end rheology values to programme requirements. The filtrate started at 5.5 mls and continued to reduce as the mud was circulated. It had reached 3.2 mls when major losses led to large additions of untreated reserve volume.

Solids control equipment performance :

The three Thule shakers were initially dressed with 20 mesh top screens and 52 mesh bottom screens. A cuttings recovery system was made operational to recover the cuttings in 1 m^3 big bags.

After displacing to oil base mud, the screens were changed to 84, and 105 mesh, and then to 145 mesh with no problems. Screen consumption was low as is the case when Thule shakers are used in conjunction with OBM.

Hole problems :

As mentioned in the drilling summary the only hole problem encountered was lost circulation when running and cementing the 9 5/8-inch casing. The actual drilling went extremely well and the cuttings quality from the PDC bit was excellent.

Cost comments:

Cost (NOK)	Budgeted	Actual	Δ%
Section:	1 239008	844735	-31,8
Per bbl:	672	1332	98,5
Per m:	1126	814	36,6

Recommendations:

The Anco Vert mud system showed excellent stability and flexibility during the various operations carried out on the 12 1/4-inch section.

8 1/2-inch Hole Section

Drilling fluid properties and performance:

Property	Value	Unit
Density	13,5-15,4	ppg
PV	23-48	CP
YP	13-23	lb/ 100 ft^2
Gels	8-21/15-23	lb/ 100 ft^2
3 RPM	7 - 13	CP
HTHP	4,6 - 2,0	ml
OWR	71:29-80:20	%
STABILITY	738-1190	Volt
$CaCl_2$	14,6-18,5	%/wt
Alkalinity	1,3 - 2,6	ml
LGS	64 - 40	ppb

Discussion:

The Anco Vert Mud from the previous section was used in this section. This mud also contained some Versaport mud which had been received at the end of the 12 1/4-inch section. It was treated with Tritium and Isotag tracers to facilitate formation fluid evaluation.

The mud was in good condition at the end of the previous section, but an additional treatment was made with 0.7 ppb Ancovert P, 0.4 ppb Ancovert S and 0.8ppb Ancovert F. This reduced the HTHP fluid loss from 4.0 mls. to 2.0 mls. at 250 F. The oil : water ratio was also increased to 77:23. After this initial treatment the fluid properties remained very stable. Lime appeared to be consumed during drilling , and regular treatments were required. The electrical stability increased after the Lime additions to a maximum of 1028 volts.

The lost circulation that occurred at 2685 m was a total loss of returns. An MWD tool was in the string and the bit had 18/ 32 jets which denied the use of coarse Mica material. A pill was mixed containing the following concentrations of lost circulation material:

- 55ppb Mica Fine
- 12ppb Venfyber
- 16ppb Kwikseal M

This pill failed to cure the losses.

The second pill pumped was a Gunk squeeze. This pill had been used with success on the Valhall operations. It was mixed in the Halliburton unit to the following formulation:

- 32 bbls Drillwater

- 25kg Lime
- 50kg Lignosulphonate
- 4325kg Bentone 128
- Barite to 14.3ppg.

A 10bbl. spacer of viscosified sea water was pumped ahead of and behind this pill. The success of this type of pill appears to depend largely on the ratio with which it is mixed with an oil based mud. On this operation it was not possible to provide a suitable pump rate down the annulus, due to bridging caused by collapsed hole below the shoe.

The mud system showed excellent stability and resistance to contamination from various types of LCM material, green cement, and cement spacers. There were many fluctuations in the mud weight while regaining well control, and attempting to ream the collapsed section below the shoe. Large dilutions with premix did not have any detrimental effects on the system notwithstanding the fact that they were made quickly over two or three circulations.

Solids control equipment performance :

The three Thule shakers performed well throughout this section with only one brief mechanical failure. The shakers were dressed with 20 mesh screens on top and 165mesh screens on the lower deck. The Brandt shaker was not used. An attempt was made to use 200mesh screens, but they initially removed large quantities of Barite and plugged off.

The degasser was also used when circulating out gas peaks. This equipment performed well, as there were no incidences of re-circulated gas.

The bagging system worked extremely well and a total of 105 big bags were filled down to a depth of 2685 m. When the LCM was mixed in the mud, it was necessary to segregate the bags containing a high percentage of this material, to avoid adverse effects on the injection operation on Valhall. These bags were eventually sent to town for destruction onshore.

The augurs worked efficiently.

Hole problems :

The 8 ½" hole was drilled from the previous liner shoe to the coring point at high penetration rates and without hole problems. The combination of a PDC bit and the Ancovert oil mud produced cuttings of an excellent quality.

The first indication of hole problems occurred just above the loss zone, when the penetration rate was slower. Subsequent to the total losses on bottom, the hole became completely destabilised as documented in the drilling summary. Several attempts were made to re-enter and regain control over the collapsed section but these were all in vain and it was decided to plug back and side track.

Cost Comments:

Cost (NOK)	Budgeted	Actual	Δ%
Section:	668,520	1290418	93,1
Per bbl :	685	1059	54,6
Per m :	836	1887	125,6

Recommendations:

1. Despite the serious mud loss problem, the Ancovert performed very well. It remained stable despite treatments with various Lost Circulation Materials and very large additions of new mud and base oil. It is recommended for future similar operations.
2. The mixing of gunk pills did pose a serious problem. The addition of very large concen-trations of Bentone to the Halliburton mixing system was difficult and labour intensive. (See sparate attachment)
3. Lessons learned from mixing the first gunk pill eliminated the problems with the second pill. The sacks were added evenly at approximately one minute per sack, with at least half a minute between sacks. The pill was completed in three hours and a homogeneous mix was obtained. The level of the water in the batch tank was initially kept low to provide the maximum agitation.

Geochemical Report for

Well NOCS 2/8-17S

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Chapter 1

INTRODUCTION

1.1 General Comments

Well NOCS 2/8-17S was analysed on behalf of Amoco Norge and on authorization from Kjell Øygård. Initially, one mud sample and a couple of core samples were analysed as "hot shot" samples and subsequently only a few more samples were analysed, restricted to core samples and oil extracts from formation waters.

All analyses have been performed as per the Standard Guide for Organic Geochemical Analyses and therefore no experimental procedures are included in this report.

1.2 Analytical Program

Analysis type	*No of samples*	*Figures*	*Tables*
Lithology description	4		1.
Thermal extraction GC (GHM, S_1)	5	2	
Pyrolysis GC (GHM, S_2)	5	3a-b	2
Soxhlet Extraction of organic matter	7		
MPLC/HPLC separation	6		
Saturated hydrocarbon GC	6	4a	3
Aromatic hydrocarbon GC	4	4b	4
GC - MS of saturated hydrocarbon	4	5a-b	5
GC - MS of aromatic hydrocarbon	2		5
EOM GC (1 mud and 2 water)	3	1, 6	

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Table 1 : Lithology description for well 2/8-17S

Depth unit of measure: m

Depth Int	Depth Cvd	Type	TOC%	%	Lithology description	Trb	Sample
2617.80		ccp					0005
				90	Ca : w, m brn, st, chk, bit		0005-1L
				10	Bit/Asp: blk		0005-2L
2626.50		ccp					0006
				90	Ca : w, m brn, st, chk, bit		0006-1L
				10	Bit/Asp: blk		0006-2L
2635.30		ccp					0007
				90	Ca : w, m brn, st, chk, bit		0007-1L
				10	Bit/Asp: blk		0007-2L
2655.70		ccp					0008
				90	Ca : w, m brn, st, chk, bit		0008-1L
				10	Bit/Asp: blk		0008-2L

Table 2 : Pyrolysis GC Data (S2 peak) as Percentage of Total Area for Well 2/8-17S

Depth unit of measure: m

Depth	Typ	Lithology	C1	C2-C5	C6-C14	C15+	S2 from Rock-Eval	Sample
2608.70	ccp	bulk	5.37	31.19	43.14	20.30	-	0001-0B
2608.70	asf	bulk	10.01	29.89	48.63	11.47	-	0003-0B
2608.70		bitumen	8.89	23.55	37.41	30.15	-	0003-01
2618.10	ccp	bulk	6.00	29.32	43.03	21.65	-	0002-0B
2618.10	asf	bulk	9.39	30.41	48.75	11.45	-	0004-0B

Table 3: Saturated Hydrocarbon Ratios (peak area) for well 2/8-17S

Depth unit of measure: m

Depth	Typ	Lithology	Pristane / nC17	Pristane / Phytane	Pristane/nC17 / Phytane/nC18	Phytane / nC18	CPI1	nC17 / nC17+nC27	Sample
2617.80	ccp	bulk	0.57	2.85	1.45	0.40	1.04	0.98	0005-0B
2626.50	ccp	bulk	0.48	2.11	1.02	0.47	1.31	0.97	0006-0B
2635.30	ccp	bulk	0.56	2.26	1.21	0.46	1.15	0.99	0007-0B
2655.70	ccp	bulk	0.51	2.52	1.24	0.41	1.50	0.99	0008-0B

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Table 4a: Aromatic Hydrocarbon Ratios (peak area) for well 2/8-17S

Depth unit of measure: m

Depth	Typ	Lithology	MNR	DMNR	BPhR	2/1MP	MPI1	MPI2	Rc	DBT/P	4/1MDBT	(3+2) /1MDBT	Sample
2617.80	ccp	bulk	-	-	-	0.95	0.70	0.84	0.82	-	-	-	0005-0B
2626.50	ccp	bulk	-	-	-	0.82	0.58	0.68	0.75	-	4.36	0.57	0006-0B
2635.30	ccp	bulk	-	-	-	1.10	0.72	0.86	0.83	-	6.42	1.33	0007-0B
2655.70	ccp	bulk	-	-	-	0.96	0.55	0.62	0.73	-	-	-	0008-0B

Table 4b: Aromatic Hydrocarbon Ratios (peak area) for well 2/8-17S

Depth unit of measure: m

Depth	Typ	Lithology	F1	F2	Sample
2617.80	ccp	bulk	0.41	0.25	0005-0B
2626.50	ccp	bulk	0.39	0.23	0006-0B
2635.30	ccp	bulk	0.43	0.26	0007-0B
2655.70	ccp	bulk	0.43	0.24	0008-0B

Table 5a: Variation in Triterpane Distribution (peak height) SIR for Well 2/8-17S

Depth unit of measure: m

Depth	Lithology	Ratio1	Ratio2	Ratio3	Ratio4	Ratio5	Ratio6	Ratio7	Ratio8	Ratio9	Rat.10	Rat.11	Rat.12	Rat.13	Rat.14	Sample
2608.70	bulk	0.80	0.45	0.14	0.63	0.39	0.08	0.04	0.06	0.03	0.07	0.91	0.38	0.09	60.43	0001-0
2617.80	bulk	0.88	0.47	0.17	0.70	0.41	0.09	0.05	0.07	0.05	0.22	0.91	0.40	0.09	60.28	0005-0
2618.10	bulk	0.81	0.45	0.15	0.66	0.40	0.09	0.04	0.06	0.04	0.20	0.90	0.39	0.10	61.25	0002-0
2635.30	bulk	0.89	0.47	0.16	0.72	0.42	0.09	0.03	0.05	0.03	0.10	0.91	0.41	0.08	60.62	0007-0

List of Triterpane Distribution Ratios

Ratio 1: 27Tm / 27Ts

Ratio 2: 27Tm / 27Tm+27Ts

Ratio 3: 27Tm / 27Tm+30aß+30ßa

Ratio 4: 29aß / 30aß

Ratio 5: 29aß / 29aß+30aß

Ratio 6: 30d / 30aß

Ratio 7: 28aß / 30aß

Ratio 8: 28aß / 29aß

Ratio 9: 28aß / 28aß+30aß

Ratio 10: 24/3 / 30aß

Ratio 11: 30aß / 30aß+30ßa

Ratio 12: 29aß+29ßa / 29aß+29ßa+30aß+30ßa

Ratio 13: 29ßa+30ßa / 29aß+30aß

Ratio 14: 32aßS / 32aßS+32aßR (%)

Table 5b: Variation in Sterane Distribution (peak height) SIR for Well 2/8-17S

Depth unit of measure: m

Depth	Lithology	Ratio1	Ratio2	Ratio3	Ratio4	Ratio5	Ratio6	Ratio7	Ratio8	Ratio9	Ratio10	Sample
2608.70	bulk	0.64	43.59	64.68	1.37	0.68	0.57	0.46	0.48	0.77	1.62	0001-0
2617.80	bulk	0.75	50.48	62.98	1.92	0.63	0.65	0.54	0.46	1.02	1.72	0005-0
2618.10	bulk	0.77	47.82	68.03	2.10	0.69	0.63	0.51	0.52	0.92	2.04	0002-0
2635.30	bulk	0.73	52.23	61.48	1.49	0.60	0.56	0.46	0.44	1.09	1.67	0007-0

List of Sterane Distribution Ratios

Ratio 1: 27dßS / 27dßS+27aaR

Ratio 2: 29aaS / 29aaS+29aaR (%)

Ratio 3: 2*(29ßßR+29ßßS) / (29aaS+29aaR + 2*(29ßßR+29ßßS)) (%)

Ratio 4: 27dßS+27dßR+27daR+27daS / 29dßS+29dßR+29daR+29daS

Ratio 5: 29ßßR+29ßßS / 29ßßR+29ßßS+29aaS

Ratio 6: 21a+22a / 21a+22a+29aaS+29ßßR+29ßßS+29aaR

Ratio 7: 21a+22a / 21a+22a+28daS+28aaS+29daR+29aaS+29ßßR+29ßßS+29aaR

Ratio 8: 29ßßR+29ßßS / 29aaS+29ßßR+29ßßS+29aaR

Ratio 9: 29aaS / 29aaR

Ratio 10: 29ßßR+29ßßS / 29aaR

Table 5c: Variation in Triaromatic Sterane Distribution (peak height) for Well 2/8-17S

Depth unit of measure: m

Depth	Lithology	Ratio1	Ratio2	Ratio3	Ratio4	Ratio5	Sample
2617.80	bulk	0.35	0.40	0.14	0.14	0.18	0005-0
2635.30	bulk	0.29	0.31	0.11	0.11	0.14	0007-0

Ratio1: a1 / a1 + g1
Ratio2: b1 / b1 + g1
Ratio3: a1 + b1 / a1 + b1 + c1 + d1 + e1 + f1 + g1
Ratio4: a1 / a1 + e1 + f1 + g1
Ratio5: a1 / a1 + d1

Table 5d: Variation in Monoaromatic Sterane Distribution (peak height) for Well 2/8-17S

Depth unit of measure: m

Depth	Lithology	Ratio1	Ratio2	Ratio3	Ratio4	Sample
2617.80	bulk	0.28	0.19	0.18	0.14	0005-0
2635.30	bulk	0.21	0.15	0.13	0.11	0007-0

Ratio1: A1 / A1 + E1
Ratio2: B1 / B1 + E1
Ratio3: A1 / A1 + E1 + G1
Ratio4: A1+B1 / A1+B1+C1+D1+E1+F1+G1+H1+I1

Table 5e: Aromatisation of Steranes (peak height) for Well 2/8-17S

Depth unit of measure: m

Depth	Lithology	Ratio1	Ratio2	Sample
2617.80	bulk	0.19	0.96	0005-0
2635.30	bulk	0.23	0.96	0007-0

Ratio1: $\frac{C1+D1+E1+F1+G1+H1+I1}{C1+D1+E1+F1+G1+H1+I1 + c1+d1+e1+f1+g1}$ Ratio2: g1 / g1 + I1

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Table 5f: Raw triterpane data (peak height) m/z 191 SIR for Well 2/8-17S

Depth unit of measure: m

Depth	Lithology	23/3	24/3	25/3	24/4	26/3	27Ts	27Tm	28aß	25nor30aß	Sample
		29aß	29Ts	30d	29ßa	30O	30aß	30ßa	30G	31aßS	
		31aßR	32aßS	32aßR	33aßS	33aßR	34aßS	34aßR	35aßS	35aßR	
2608.70	bulk	1396.6	798.8	259.9	927.0	199.2	2459.8	1978.8	405.2	0.0	0001-0
		7105.8	3296.1	912.5	604.7	0.0	11279.8	1138.8	0.0	4664.5	
		2878.8	2699.2	1767.2	2052.1	1347.0	1147.8	677.8	584.8	352.5	
2617.80	bulk	9848.5	6129.6	2123.0	4522.5	1235.8	7215.6	6317.3	1300.2	0.0	0005-0
		19080.3	8232.3	2519.3	1252.6	0.0	27254.6	2841.5	0.0	11053.3	
		7185.7	6096.8	4016.6	4187.7	2678.1	2012.7	1150.5	1000.4	574.7	
2618.10	bulk	25014.3	15736.0	5938.4	11718.0	3883.1	19008.9	15344.3	3154.4	0.0	0002-0
		51055.6	24417.6	7174.1	4491.0	0.0	77723.5	8622.3	0.0	33023.1	
		20346.0	20706.8	13100.2	15866.7	9951.6	8238.4	5244.6	4576.1	2931.0	
2635.30	bulk	5129.1	2958.2	1198.4	3315.0	824.0	6685.8	5979.6	982.3	0.0	0007-0
		20685.3	8574.2	2440.8	1177.2	0.0	28565.2	2897.8	0.0	11279.6	
		7459.1	6240.4	4054.5	4335.8	2809.1	2046.7	1249.8	927.2	573.5	

Table 5g: Raw sterane data (peak height) m/z 217 SIR for Well 2/8-17S

Depth unit of measure: m

Depth	Lithology	21a	22a	27dßS	27dßR	27daR	27daS	28dßS	28dßR	28daR*	Sample
2608.70	bulk	2486.8	639.3	1384.1	774.7	351.8	368.9	469.0	309.9	693.7	0001-0
2617.80	bulk	9818.4	4225.1	8014.5	4510.8	2361.7	2196.6	3223.1	1466.9	2121.8	0005-0
2618.10	bulk	32764.2	12737.8	30858.4	18821.2	8154.7	8373.1	9808.5	6422.1	8894.3	0002-0
2635.30	bulk	5138.4	2105.7	4053.8	2234.0	1189.7	1126.5	1666.0	797.0	1382.7	0007-0

Depth	29dßS*	28daS*	27aaR	29dßR	29daR	28aaS	29daS*	28ßßS
2608.70	771.4	627.8	786.6	682.8	257.0	285.2	385.3	472.5
2617.80	4250.2	2203.9	2636.6	2540.9	883.1	911.9	1242.2	1621.7
2618.10	12320.8	9097.8	9152.7	10474.9	3799.7	3806.3	4880.9	6004.5
2635.30	2671.1	1394.7	1463.5	1631.8	576.4	600.9	889.3	1226.8

Depth	28aaR	29aaS	29ßßR	29ßßS	29aaR
2608.70	329.1	545.0	634.4	510.5	705.4
2617.80	984.6	2069.7	1891.5	1595.8	2030.3
2618.10	3245.8	6176.6	7587.2	6153.8	6739.6
2635.30	602.2	1636.1	1390.9	1109.0	1496.4

* 28daR coel with 27aaS, 29dßS coel with 27ßßR, 28daS coel with 27ßßS, 29daS coel with 28ßßR

Table 5h: Raw triaromatic sterane data (peak height) m/z 231 for Well 2/8-17S

Depth unit of measure: m

Depth	Lithology	a1	b1	c1	d1	e1	f1	g1	Sample
2617.80	bulk	66244.8	78912.0	131342.9	311627.3	151084.9	141212.0	120832.6	0005-0
2635.30	bulk	43972.4	48314.9	107954.7	259908.3	125710.3	117851.3	108792.2	0007-0

Table 5i: Raw monoaromatic sterane data (peak height) m/z 253 for Well 2/8-17S

Depth unit of measure: m

Depth	Lithology	A1	B1	C1	D1	E1	F1	G1	H1	I1	Sample
2617.80	bulk	20576.8	12429.8	30355.7	31913.9	52541.0	9936.5	44369.1	26055.7	4507.8	0005-0
2635.30	bulk	15890.2	10334.3	36591.8	32246.1	58798.6	11408.1	47135.0	29311.7	4866.2	0007-0

Table 5j: Raw sterane data (peak height) m/z 218 SIR for Well 2/8-17S

Depth unit of measure: m

Depth	Lithology	27ßßR	27ßßS	28ßßR	28ßßS	29ßßR	29ßßS	30ßßR	30ßßS	Sample
2608.70	bulk	792.7	660.8	484.3	552.7	673.3	652.4	132.7	154.0	0001-0
2617.80	bulk	4103.1	2967.5	1802.1	2176.5	2261.6	2524.0	419.8	468.3	0005-0
2618.10	bulk	11909.0	10020.0	6688.8	7630.9	8500.9	8073.0	2090.4	2363.7	0002-0
2635.30	bulk	2404.9	1801.2	1258.8	1443.3	1559.6	1674.5	349.8	396.0	0007-0

Table 5k: Raw triterpane data (peak height) m/z 177 SIR for Well 2/8-17S

Depth unit of measure: m

Depth	Lithology	25nor28aß	25nor30aß	Sample
2608.70	bulk	0.0	0.0	0001-0
2617.80	bulk	0.0	0.0	0005-0
2618.10	bulk	311.8	0.0	0002-0
2635.30	bulk	0.0	0.0	0007-0