WCR vol. 2
Mulloway-1

(W988)

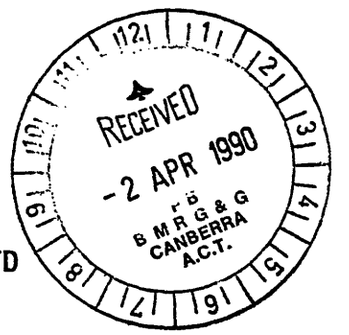
89/125

WELL COMPLETION REPORT

MULLOWAY-1
INTERPRETED DATA
VOLUME II

GIPPSLAND BASIN

VICTORIA



ESSO AUSTRALIA LTD

Completed by: P V Hinton
February 1990

Doc. 8904RP4:1

MULLOWAY-1

WELL COMPLETION REPORT

VOLUME II

(INTERPRETED DATA)

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GEOLOGICAL AND GEOPHYSICAL ANALYSES

1. SUMMARY OF WELL REPORTS

FORMATION/HORIZON TOPS	DEPTH		
	PREDRILL (MKB)	DRILLED (MKB)	(MSS)
Seaspray Group	58	58	37
Latrobe Group			
Gurnard Formation	1141	1127	1106
Top "Coarse Clastics"	1168	1170	1149
Lower N. asperus*	1372	1374	1353
Total Depth	1721	1723	1702

* Seismic Marker

2. INTRODUCTION

Mulloway-1 is located on a discrete closure, 3.15km due west of the Whiptail Field. Both wells are on the same anticlinal trend, with Whiptail-1A located 2km east of the Barracouta Field (Fig. 1).

Whiptail-1A intersected 13.25m of net oil within a 20.25m column, in the Lower N. asperus section (Fig. 2). The crude is medium gravity (API 42°), paraffinic and slightly biodegraded. No hydrocarbons were intersected at the top of "Coarse Clastics". It is postulated that the seal for the Lower N. asperus reservoir may have sufficient lateral continuity to preclude migration of hydrocarbons to the top of "Coarse Clastics" in this region.

The primary objective of Mulloway-1, therefore, was the Lower N. asperus section which was expected to have similar stratigraphy and reservoir characteristics to that intersected at Whiptail.

Mulloway-1 did in fact encounter a very similar section, intersecting 12.2m of net oil in three sands within a 17.2m gross column, at an equivalent stratigraphic level to the oil zone at Whiptail-1A. There are some differences, however, with the oil column intersected slightly higher in the section than at Whiptail-1A and the oil itself exhibits a greater degree of biodegradation over most of the column compared to Whiptail-1A.

The well was c - -d and suspended, pending completion at a later date.

GEOLOGICAL ANALYSIS

3. STRUCTURE

The Whiptail and Mulloway structures are separate culminations on an anticlinal trend associated with an east-west orientated, inverted, normal fault system (Fig. 2). The anticline can be traced from a point west of Mulloway, 9km to where it intersects the major NE-SW Dolphin-Tarwhine-Barracouta anticline.

The Mulloway-Whiptail feature is probably the product of at least two superimposed structural events. The northern, prospect-bounding fault is probably related to extensional deformation associated with the Tasman Sea opening. Following this, in the Late Eocene to Mid Miocene, compression caused inversion of the normal fault and force folding to form an anticlinal trap.

The Mulloway closure, the most westerly culmination on the Mulloway-Whiptail trend, is asymmetrical, dipping more steeply into the fault on the northern flank. Closure is independent of the fault. Small E-W trending faults with throws of less than 10m are interpreted within closure. The throw on one of these faults is greater than the seal thickness for each of the individual sands which make up the oil reservoir at Mulloway-1.

The upper N1.0 sand contains oil which is less biodegraded than that found deeper in the section. This implies little or no communication between the upper N1.0 sand and the N1.1 and N1.3 sands which make up the rest of the reservoir system. However, if these sands are continuous, they should be juxtaposed at the fault and in communication, unless fault seal occurs. It is considered probable however that the thin N1.0 sand shales out (as seen at Whiptail) at or near the fault, making communication between the sandstones impossible.

4. STRATIGRAPHY

The stratigraphy intersected at Mulloway-1 is similar to that encountered at Whiptail-1A.

The Gurnard Facies comprising glauconitic siltstones, is 43m thick at Mulloway, but only 27m thick at Whiptail, due to differential erosion of this section. The sediments are Middle N. asperus in age, indicating minimal truncation at the top of the Latrobe group.

The Latrobe Group "Coarse Clastics" (Middle N. asperus - L. balmei) is comprised of coastal plain interbedded sandstones, siltstones and coals with the section becoming progressively sandier with depth.

Oil was intersected in both Mulloway-1 and Whiptail-1A within the lower N. asperus. In Whiptail, 8 metres of coal interbedded with a thin siltstone is the seal to the reservoir. In Mulloway, the very same section acts as the seal to the reservoir. However, the interbedded siltstone recorded as Whiptail-1A is an oil saturated sandstone at Mulloway-1, the N1.0. This sand, a part of the gross oil column, may be limited in its lateral extent. Certainly it is a siltstone at Whiptail-1A and it is believed to shale out before intersecting the fault to the south of the well. Only further drilling will tell.

5. HYDROCARBONS

As observed at Whiptail-1A, no hydrocarbons were intersected at the top of "Coarse Clastics". A possible reason is that the lower N. asperus seal may have sufficient lateral continuity to preclude vertical migration of hydrocarbons.

Within the lower N. asperus, a 17.2m gross oil column was intersected in a similar stratigraphic position to the 20.25m gross oil column intersected in Whiptail-1A. Similar to Whiptail the column consists of interbedded sandstones, siltstones and coals. There are three sandstones within the reservoir; the N1.1 and N1.3 which are directly correlative to their namesakes at Whiptail-1A and the N1.0 which is intersected within the coaly section which makes up the seal at Whiptail.

Geochemical analyses indicates the upper, thin N1.0 sand contains a mildly biodegraded 43.4 API oil similar to Whiptail. The lower N1.1 and N1.3 sands, however, contain a moderately biodegraded 32 API oil. The N1.0 sand is believed to have limited communication with the N1.1 and N1.3 sands hence the differing degrees of biodegration.

RFT data indicated a pressure differential between all three of the sands, with the N1.0 sand exhibiting less drawdown than the N1.1 and similarly the N1.1 exhibiting less drawdown than the N1.3. This maybe a function of supercharging in the upper sands or, preferably, a product of reduced communication with the aquifer possibly due to the coal and siltstone interbeds which divide the column, or subtle variations in porosity and permeability, with the more porous and permeable sands being drawndown to a greater degree than the tighter ones.

From RFT and electric log data an OWC is interpreted at 1396m (-1375mSS) for the Mulloway reservoir. The OWC at Whiptail-1A for the equivalent reservoir is -1379mSS, hence the two fields are not in communication.

No further hydrocarbon shows were intersected. The well was cased and suspended pending completion, possibly in tandem with Whiptail-1A, at a later date.

GEOPHYSICAL ANALYSIS

6.1 INTRODUCTION

The east-west trending Mulloway-Whiptail trend is controlled by a 322km reconnaissance 3D seismic grid. This data was interpreted using Exxon's Interactive Seismic Interpretation System (ISIS), while mapping and depth conversion were done using SIERRA's Raymap program.

The primary target in Mulloway-1 was the Lower N. asperus reservoir which contains oil in Whiptail-1A. The N. asperus seismic marker corresponds to the top of a coal which seals this reservoir.

Mulloway-1 encountered 17.2m of hydrocarbons within the N. asperus reservoir.

6.2 DEPTH CONVERSION

Depth conversion to the top of "Coarse Clastics" was done using two smoothed interval velocity maps. The first map was from waterbottom to the base of channel, while the second map went from the base of channel to the top of "Coarse Clastics". To depth convert from the top of "Coarse Clastics" to each intra-Latrobe horizon, constant interval velocities derived from Whiptail-1A were used.

Post-drill, the lower N. asperus horizon and top of "Coarse Clastics" were 2m deep to prediction. To correct for this error a bulk shift of 2m was applied across the Mulloway closure.

6.3 STRUCTURE

The Mulloway and Whiptail closures were mapped as separate culminations. The drilling of Mulloway-1 confirmed that this is true.

Figures . . . .

LOCALITY MAP

MULLOWAY-1

SCALE 1 : 250 000

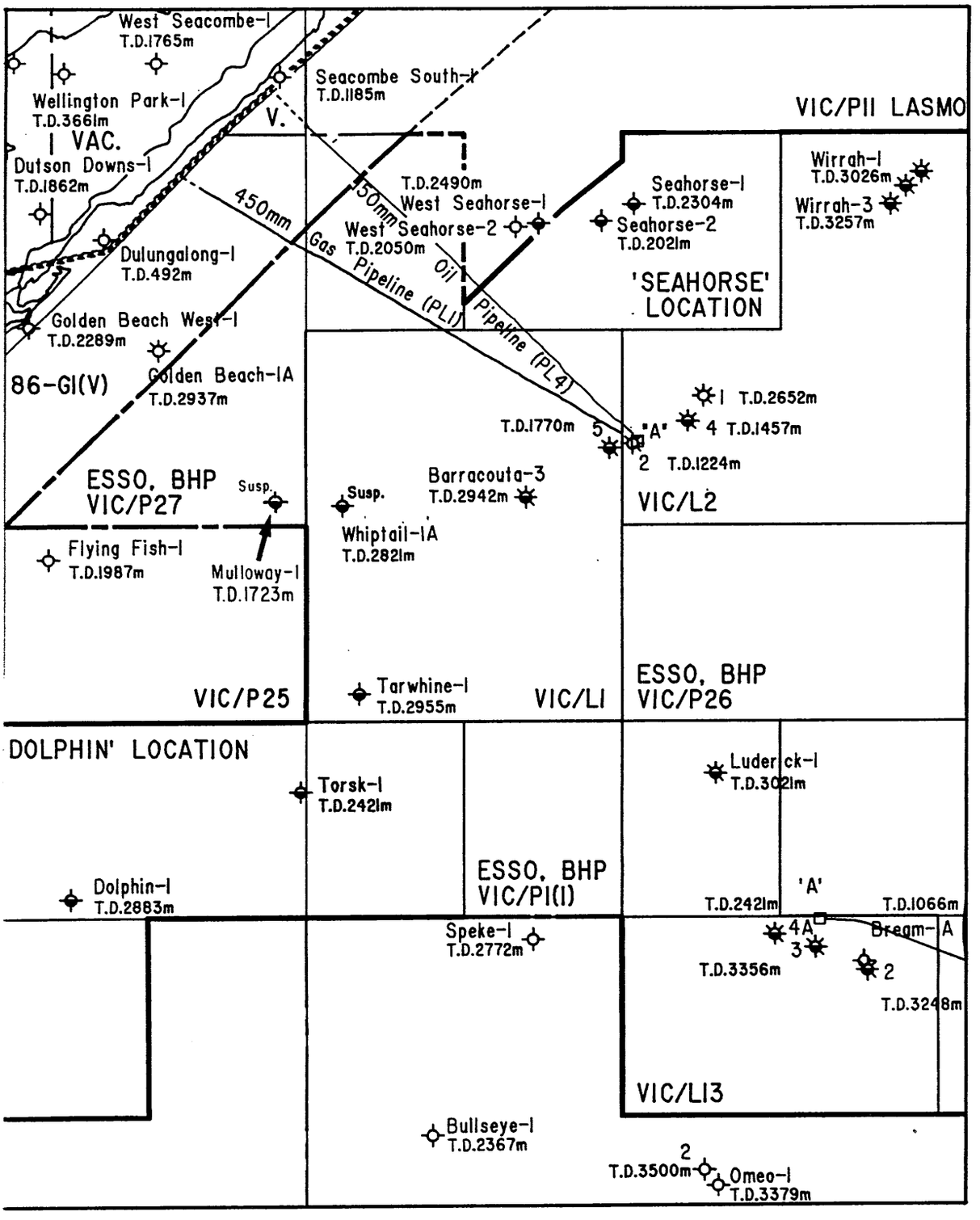

FIGURE 1

Dwg. 2425/OP/4

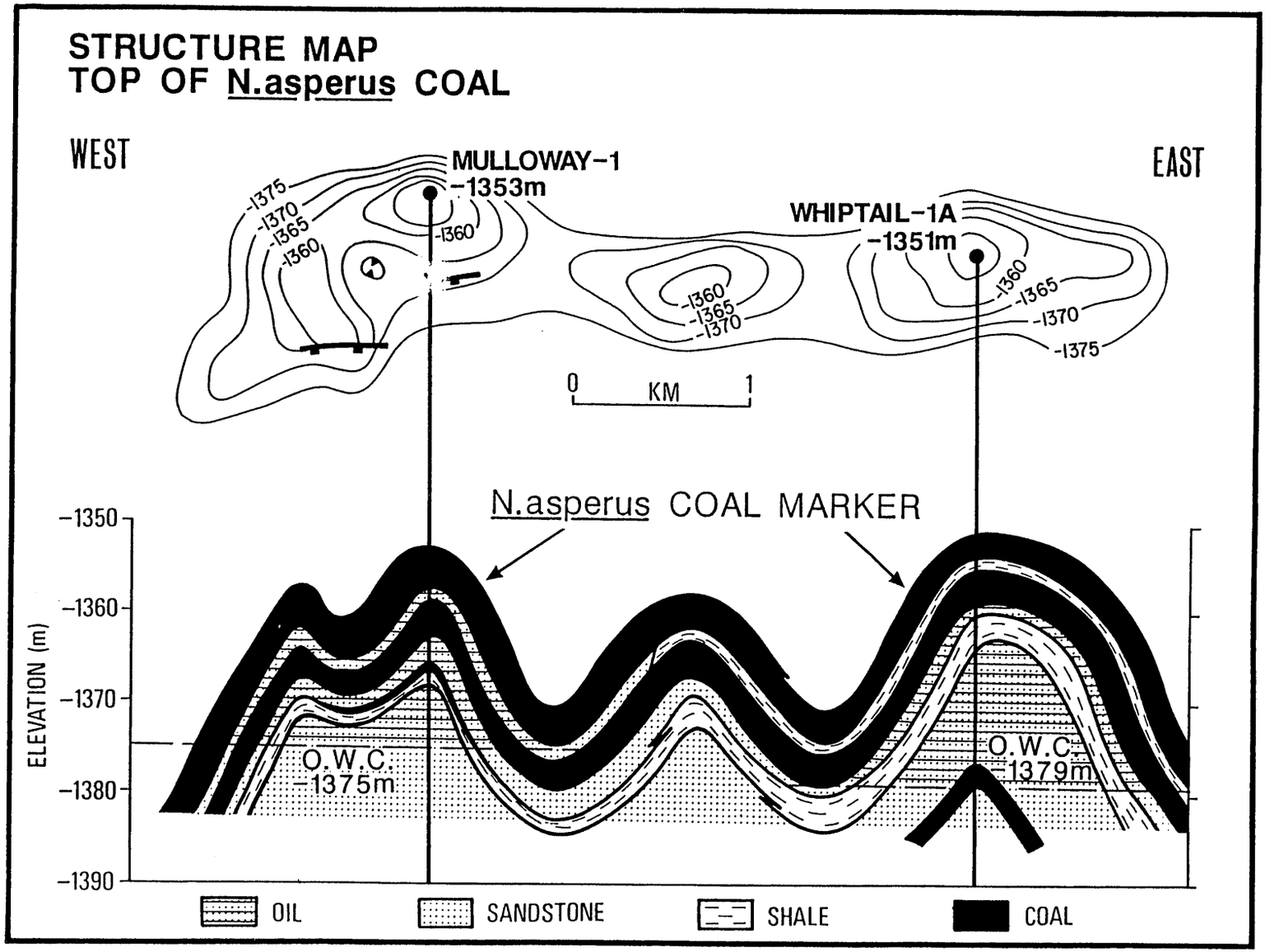

FIGURE 2

1320/V/2658 3/89

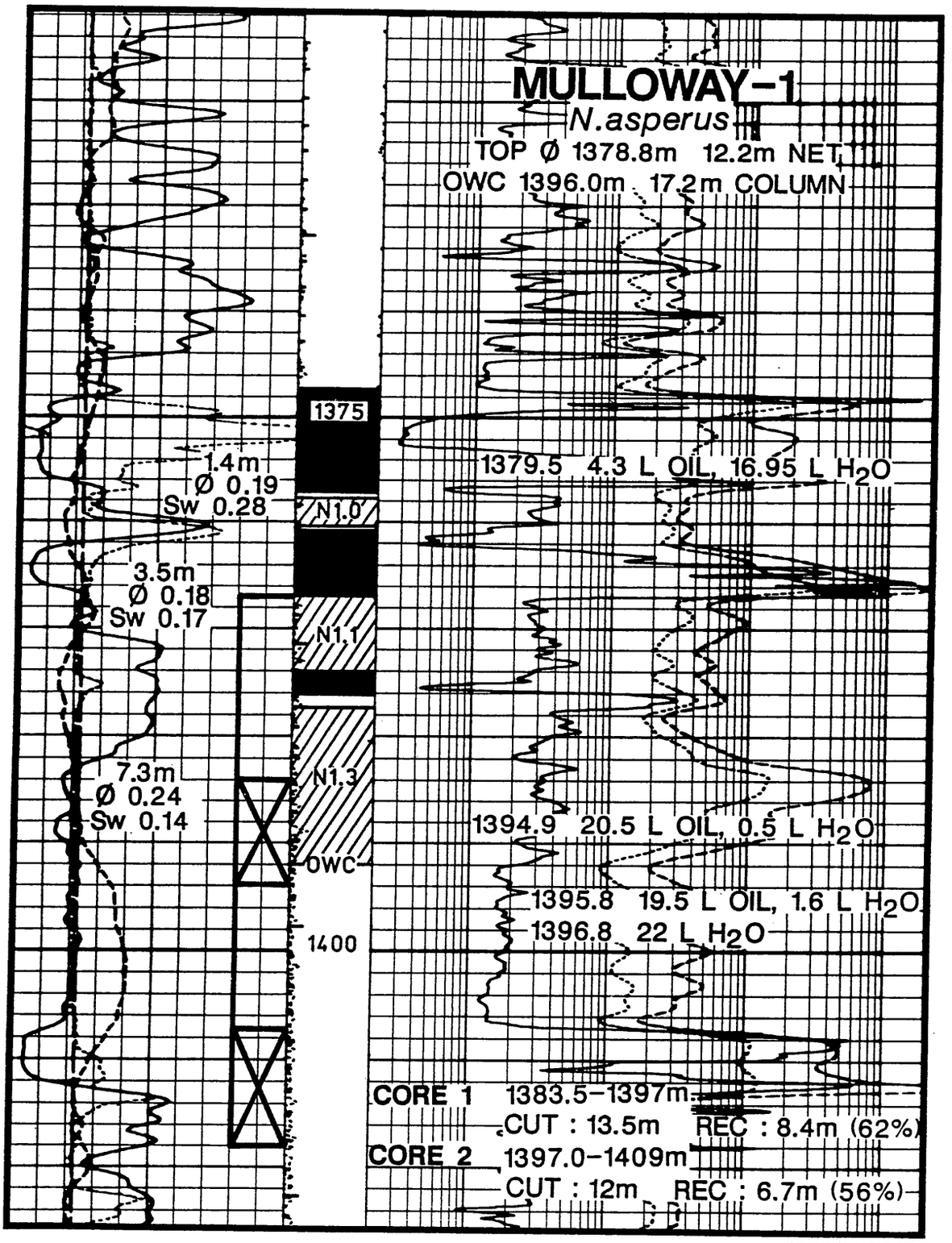

FIGURE 3

1320/V/2722

Appendix 1

Palynology

APPENDIX-1

PALYNOLOGICAL ANALYSIS OF MULLOWAY-1, GIPPSLAND BASIN.

by

M.J. HANNAH

Esso Australia Ltd.
Palaeontology Report 1989/16

November, 1989

INTERPRETED DATA

INTRODUCTION

Twenty-four sidewall cores from Mulloway-1 were processed and their spore-pollen and dinoflagellate content examined. The section sampled appears to be continuous and ranges in age from Late Paleocene to Late Eocene.

Palynomorph preservation was, in general, fair to good. Only one sample was barren (see Basic Data Summary). Spore-pollen yield and diversity was almost uniformly moderate to high. Microplankton yield, on the other hand, was variable with the highest yielding samples coming from the Middle *Nothofagidites asperus* Zone.

SUMMARY DATA - MULLOWAY-1

AGE	UNIT	SPORE-POLLEN ZONES (MICROPLANKTON ZONES)	DEPTH (mKB)
Oligocene	Seaspray Group	Not sampled	
	1127 m		
Late Eocene	Gurnard Formation	Middle *N. asperus* (*C. incompositum*)	1137.1-1233.0 (1149.0-1137.1)
	1170 m		
Middle Eocene		Lower *N. asperus*	1252.2-1369.5
Early Eocene	Latrobe Group	*P. asperopolus*	1415.5
		Upper *M. diversus*	1439.3-1496.6
		Middle *M. diversus*	1565.0
		Lower *M. diversus*	1580.7-1634.6
Late Paleocene		Upper *L balmei*	1696.5
	TD 1723 m		

GEOLOGICAL COMMENTS

(1) The well bottomed in Late Paleocene Upper *Lygistepollenites balmei* Zone sediments. The sampled section ranges in age up to Late Eocene (Middle *Nothofagidites asperus* Zone).

(2) The base of the Middle *Nothofagidites asperus* Zone is placed at 1233.0m (sidewall core 22) based on the presence of two poor speciments of *Triorites magnificus*. This represents a thicker Middle *Nothofagidites asperus* Zone than was recorded in Whiptail-1 and may indicate that some of the Lower *Nothofagidites asperus* Zone recorded in this latter well may be in fact Middle *Nothofagidites asperus* Zone in age.

(3) Sidewall core 30 (at 1137.0m) and sidewall core 29 (at 1199.9m), both from the Gurnard facies, were the only samples to contain both a moderately diverse dinoflagellate assemblage and high dinoflagellate numbers.

Two other samples, sidewall cores 22 and 10 at 1233.0m and 1496.6m respectively, contain a low diversity assemblage with low dinoflagellate numbers.

BIOSTRATIGRAPHY

The zone boundaries have been established using the criteria of Stover & Partridge (1973). The author citations for most spore-pollen species recorded can be sourced from this publication or other references cited herein. Species names followed by "ms" are unpublished manuscript names. Author citations for microplankton can be found in Lentin & Williams (1985, 1989), or in Marshall and Partridge (1988).

UPPER *LYGISTEPOLLENITES BALMEI* ZONE

SWC 1 (1696.5m)

The presence of frequent *Lygistepollenites balmei* indicates that the sample is no younger than the *Lygistepollenites balmei* Zone in age. The presence of *Cupanieidites orthoteichus* and *Malvacipollis subtilis* further restricts the age to the Upper *Lygistepollenites balmei* Zone.

LOWER *MALVACIPOLLIS DIVERSUS* ZONE
SWC 4 to SWC 6
(1634.6m to 1580.7m)

A *Malvacipollis diversus* Zone assignment is indicated by the presence of *Malvacipollis diversus*, *Malvacipollis subtilis* and *Proteacidites grandis* and the lack of any *Lygistepollenites balmei* Zone indicators. The absence of any younger indicators such as *Myrtaceidites tenuis* and *Proteacidites tuberculiformis* is indicative of the Lower *Malvacipollis diversus* Zone.

MIDDLE *MALVACIPOLLIS DIVERSUS* ZONE
SWC 7 (1565.0m)

The assemblage recovered from this sample is characterised by common *Malvacipollis diversus* and *Malvacipollis subtilis*, frequent *Haloragacidites harrisii* and *Cyathidites splendens*, together with *Proteacidites grandis* all consistent with broad *M. diversus* Zone. This sample is restricted to the Middle *Malvacipollis diversus* Zone on the on the first appearance, upsection, of *Proteacidites tuberculiformis*.

UPPER *MALVACIPOLLIS DIVERSUS* ZONE
SWC 10 and SWC 12
(1496.6m and 1439.3m)

Two samples are assigned to this zone. The lower, (sidewall core 10 at 1496.6m) contains a typical Upper *Malvacipollis diversus* Zone assemblage: common *Malvacipollis diversus* and *Malvacipollis subtilis*, frequent *Cupanieidites orthoteichus* and *Haloragacidites harrisii* together with *Proteacidites grandis*, *Proteacidites pachypolus* and *Myrtaceidites tenuis*. Also common in this sample were *Micrhystridium sp.* plus other unidentified acritarchs and algal cysts indcating a lacustrine environment of deposition.

The upper sample (sidewall core 12 at 1439.3m) contains a similar spore/pollen assemblage. Significantly, however, the numbers of *Proteacidites pachypolus* in the sample are very high. Formally, samples with such a high count of this species were referred to the *Proteacidites asperopolus* Zone. Here, however, this assemblage is referred to the Upper *Malvacipollis diversus* Zone because it lacks typical *Proteacidites asperopolus* Zone indicators such as *Clavastephanocolporites melosus ms*,

Conbaculites apiculatus ms, *Proteacidites asperopolus* and *Sapotaceoidaepollenites rotundus*. Supporting this zonal assignment is the recognition of *Santalumidites cainozoicus* whose first appearance datum is in the upper part of the Upper *M. diversus* Zone. No acritarch species were recovered.

PROTEACIDITES ASPEROPOLUS ZONE
SWC 13 (1415.5m)

The assemblage from this sample is marked by the presence of *Sapotaceoidaepollenites rotundus*, *Myrtaceidites tenuis*, frequent *Proteacidites asperopolus*, *Proteacidites leightonii* common *Cupanieidites orthoteichus* and common *Haloragacidites harrisii* this assemblage is indicative of the *Proteacidites asperopolus* Zone.

LOWER *NOTHOFAGIDITES ASPERUS* ZONE
SWC 14 to SWC 21
(1369.5m to 1252.2m)

Samples assigned to the *Nothofagidites asperus* Zone are characterised by an abundance of *Nothofagidites* species particularly of the *brassi/fusca* groups.

The basal sample from this interval (sidewall core 14 at 1369.5m) marks the first appearance upsection of several key zone species including *Nothofagidites asperus*, *Gothanipollis bassensis*, *Tricolpites thomasii*, and *Tricolporites leuros*.

Sidewall core 16 at 1320.0m marks the first appearance, upsection, of *Proteacidites recavus* and *Proteacidites leightonii*. Upsection, key indicator species became rare or absent and the samples assigned to the Lower *Nothofagidites asperus* Zone from this interval carry a lower degree of confidence.

Abundance of *Proteacidites asperopolus* fluctuate throughout the zone with samples from 1629.5m, 1320.9m and 1285.3m containing significant numbers of this species.

MIDDLE *NOTHOFAGIDITES ASPERUS* ZONE
SWC 22 to SWC 13
(1233.0m to 1137.0m)

The base of this zone is based on the first appearance of *Triorites magnificus* in sidewall core 22 at 1233.0m. Further occurrences of this and other key species such as *Proteacidites crassus* and *Proteacidites recavus* are sporatic over this interval leading to variable degrees of confidence.

The only significant occurrence of dinoflagellate species occurs within the Middle *Nothofagidites asperus* Zone. Sidewall cores 29 and 30 (at 1149.0m and 1137.0m respectively) both contain *Phthanoperidinium comatum*, *Corrudinium incompositum* and *Spiniferites ramosus*. In addition sidewall core 29 contained frequent occurrences of *Tritonites spinosus*. Both samples are assigned to the *Corrudinium incompositum* microplankton Zone.

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LENTIN, J.K. & WILLIAMS, G.L., 1985. Fossil dinoflagellates: Index to genera and species, 1985 Edition. *Canadian Tech. Rep. Hydrog. Ocean Sci. 60*, 1-451.

LENTIN, J.K. & WILLIAMS, G.L., 1989. Fossil dinoflagellates: Index to genera and species, 1989, Edition. *AASP Contribution series No. 20*, 1-417.

MARSHALL, N.G. & PARTRIDGE, A.D., 1988. The Eocene acritarch *Tritonites* gen. nov. and the age of the Marlin Channel, Gippsland Basin, southeastern Australia. *Mem. Ass. Australas. Palaeontols 5*, 239-257.

STOVER, L.E. & PARTRIDGE, A.D., 1973. Tertiary and Late Cretaceous spores and pollen from the Gippsland Basin, southeastern Australia. *Proc. R. Soc. Vict. 85*, 237-286.

TABLE-1
INTERPRETED DATA SUMMARY MULLOWAY-1

SAMPLE NO.	DEPTH (M)	SPORE-POLLEN ZONE	AGE	CONFIDENCE RATING	COMMENTS
SWC 30	1137.1	Middle *N. asperus* (*C. incompositum**)	Late Eocene	0	Abundant dinoflagellates
SWC 29	1149.0	Middle *N. asperus* (*C. incompositum**)	Late Eocene	0	Common dinoflagellates
SWC 27	1167.5	Middle *N. asperus*	Late Eocene	1	
SWC 26	1172.6	Middle *N. asperus*	Late Eocene	1	Good *Triorites magnificus*
SWC 25	1176.0	*N. asperus*	Late Eocene	2	
SWC 24	1180.5	*N. asperus*	Late Eocene	2	
SWC 22	1233.0	Middle *N. asperus*	Late Eocene	2	Poor *Triorites magnificus*
SWC 21	1252.2	Lower *N. asperus*	Middle Eocene	2	
SWC 20	1259.0	Lower *N. asperus*	Middle Eocene	1	
SWC 19	1271.8	Lower *N. asperus*	Middle Eocene	2	
SWC 18	1285.3	Lower *N. asperus*	Middle Eocene	1	
SWC 17	1295.0	Lower *N. asperus*	Middle Eocene	1	
SWC 16	1320.0	Lower *N. asperus*	Middle Eocene	1	Very diverse assemblage
SWC 15	1348.3	Lower *N. asperus*	Middle Eocene	2	
SWC 14	1369.5	Lower *N. asperus*	Middle Eocene	1	*Nothofagidites* abundant

SAMPLE NO.	DEPTH (M)	SPORE-POLLEN ZONE	AGE	CONFIDENCE RATING	COMMENTS
SWC 13	1415.5	*P. asperopolus*	Early Eocene	1	f.a. upsection *Sapotaceoidaepollenites rotundus*
SWC 12	1439.3	Upper *M. diversus*	Early Eocene	2	frequent *Proteacidites pachypollus*
SWC 10	1496.6	Upper *M. diversus*	Early Eocene	1	f.a. upseciton of *Myrtaceidites tenius*
SWC 8	1557.0	Indeterminate	?		Barren
SWC 7	1565.0	Middle *M. diversus*	Early Eocene	1	f.a. upsection of *Proteacidites tuberculiformis*
SWC 6	1580.7	Lower *M. diversus*	Early Eocene	2	
SWC 5	1603.0	Lower *M. diversus*	Early Eocene	1	
SWC 4	1634.6	Lower *M. diversus*	Early Eocene	1	
SWC 1	1696.5	Upper *L. balmei*	Late Paleocene/	1	Frequent *Lygistepollenites balmei*

* Dinoflagellate Zone

FAD = First appearance datum

PALYNOLOGY DATA SHEET

A S I N: *Gippsland* ELEVATION: KB: *21.0m* GL: *-37.0m*

LL NAME: *Mulloway-1* TOTAL DEPTH: *1723.0m*

PALYNOLOGICAL ZONES	HIGHEST DATA					LOWEST DATA				
	Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time	Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time
T. pleistocenicus										
M. lipsis										
C. bifurcatus										
T. bellus										
P. tuberculatus										
Upper *N. asperus*										
Mid *N. asperus*	*1137.1*	*0*				*1233.0*	*2*	*1172.6*	*1*	
Lower *N. asperus*	*1252.2*	*2*	*1259.0*	*1*		*1369.5*	*1*			
P. asperopolus	*1415.5*	*1*								
Upper *M. diversus*	*1439.3*	*2*				*1496.6*	*1*			
Mid *M. diversus*						*1565.0*	*1*			
Lower *M. diversus*	*1580.7*	*2*	*1603.0*	*1*		*1634.6*	*1*			
Upper *L. balmei*	*1696.5*	*1*								
Lower *L. balmei*										
Upper *R. longus*										
Lower *R. longus*										
T. lilliei										
N. senectus										
T. apoxyexinus										
P. mawsonii										
A. distocarinatus										
P. pannosus										
C. paradoxa										
C. striatus										
C. hughesi										
F. wonthaggiensis										
C. australiensis										

MMENTS: *All depths in metres. The following dinoflagellate zone was recorded:*
C. incompositum Zone: 1149.0m to 1137.1m

NFIDENCE RATING:
- 0: SWC or Core, Excellent Confidence, assemblage with zone species of spores, pollen and microplankton.
- 1: SWC or Core, Good Confidence, assemblage with zone species of spores and pollen or microplankton.
- 2: SWC or Core, Poor Confidence, assemblage with non-diagnostic spores, pollen and/or microplankton.
- 3: Cuttings, Fair Confidence, assemblage with zone species of either spores and pollen or microplankton, or both.
- 4: Cuttings, No Confidence, assemblage with non-diagnostic spores, pollen and/or microplankton.

TE: If an entry is given a 3 or 4 confidence rating, an alternative depth with a better confidence rating should be entered, if possible. If a sample cannot be assigned to one particular zone, then no entry should be made, unless a range of zones is given where the highest possible limit will appear in one zone and the lowest possible limit in another.

TA RECORDED BY: *M. Hannah* DATE: *August 1989*

TA REVISED BY: _____ DATE: _____

BASIC DATA

BASIC DATA SUMMARY

PALYNOMORPH DISTRIBUTION CHART

MULLOWAY-1 - BASIC DATA SUMMARY

SAMPLE NO.	DEPTH (M)	LAB CODE	PALYNOMORPH PRESERVATION	SPORE/POLLEN YIELD	SPORE/POLLEN DIVERSITY*	MICROPLANKTON YIELD	MICROPLANKTON NO. OF SPECIES
SWC 30	1137.0	78227D	Good	Moderate	High	High	6
SWC 29	1149.0	78227C	Fair	Moderate	Moderate	Low	10
SWC 27	1167.5	78227A	Fair	Moderate	Moderate	Low	5
SWC 26	1172.6	78226Z	Good	High	Moderate	Low	3
SWC 25	1176.0	78226Y	Fair	High	High	Nil	-
SWC 24	1180.5	78226X	Good	High	High	Low	2
SWC 22	1233.0	78226V	Good	Moderate	High	Low	5
SWC 21	1252.2	78226U	Poor	Low	Moderate	Low	1
SWC 20	1259.0	78226T			Low	Nil	-
SWC 19	1271.8	78226S	Good	Moderate	Moderate	Nil	-
SWC 18	1285.3	78226R	Fair	Moderate	High	Nil	-
SWC 17	1295.0	78226Q	Good	High	High	Very Low	1
SWC 16	1320.9	78226P	Good	High	High	Nil	-
SWC 15	1348.3	78226Q	Fair	Low	Low	Nil	-
SWC 14	1369.5	78226N	Good	High	High	Nil	-

SAMPLE NO.	DEPTH (M)	LAB CODE	PALYNOMORPH PRESERVATION	SPORE/POLLEN YIELD	SPORE/POLLEN DIVERSITY*	MICROPLANKTON YIELD	MICROPLANKTON NO. OF SPECIES
SWC 13	1415.5	78226M	Fair	High	High	Nil	-
SWC 12	1439.3	78226L	Good	High	High	Nil	-
SWC 10	1496.6	78226J	Good	High	High	Moderate	6
SWC 8	1557.0	78226H	-	Barren	-	Nil	-
SWC 7	1565.0	78226G	Fair	Moderate	Moderate	Nil	-
SWC 6	1580.7	78226F	Fair	Moderate	Moderate	Nil	-
SWC 5	1603.0	78226E	Fair/Good	Moderate	High	Nil	-
SWC 4	1634.6	78226D	Fair/Good	Moderate	Moderate	Nil	-
SWC 1	1696.5	78226A	Fair/Poor	Moderate	High	Nil	-

* Diversity: Very Low = 1-5 species
Low = 6-10 species
Moderate = 11=23 species
High = 26-74 species
Very High = 75+ species

(mh78)

Appendix 2

Quantitative Log Analysis

MULLOWAY-1

QUANTITATIVE LOG ANALYSIS

Interval : 1165 - 1720 MDKB
Analyst : A. A. MILLS
Date : May, 1989

TABLE 1

Tortuosity; 'a'	: 1.00
Cementation factor; 'm'	: 2.00
Saturation exponent; 'n'	: 2.00
Fluid density	: 1.00
Gamma Ray value in clean formation (grmin)	: 25
Gamma Ray value in shale (grmax)	: 160
Apparent bulk density of shale	: 2.500
Apparent neutron porosity of shale	: 0.350
Apparent shale resistivity	:40.00
Input hydrocarbon density	: 0.90
Lower limit of grain density	: 2.645
Upper limit of grain density	: 2.675

Formation water expressed in salinity
Formation water salinity input as a log from the database

Measured Rmf	: 0.193
Temperature at which Rmf measured	:28.3

Temperature measured in degrees Celsius
Downhole temperature calculated from BHT

Logged TD	: 1720
Logged bottom hole temperature	: 64
Est. sea bed temperature	: 10
Water depth	: 37
KB height	: 21
Irreducible water saturation	: 0.025
Vsh upper limit for effective porosity	: 0.65

MULLOWAY-1: QUANTITATIVE LOG ANALYSIS

Wireline log data from the Mulloway-1 exploration well have been quantitatively analysed over the interval 1165-1720mMDKB, for effective porosity and effective water saturation. Results are presented in full as a depth plot (MD) and tabular listing, and are summarised and discussed below.

LOGS USED:

GR (gamma ray)
LLD (deep laterolog)
RHOB (bulk density)
NPHI (neutron porosity)
CALI (caliper)
DT (sonic transit time)

RHOB and NPHI data were corrected at net/non-net boundaries to allow for tool response, and noise spikes caused by bad hole conditions were numerically edited out of the RHOB curve. Log calibrations were checked and found to be within allowed tolerances.

ANALYSIS METHODOLOGY

Porosities and water saturations were calculated using an iterative technique which converges into a preselected grain density window by appropriately incrementing or decrementing shale volume. Initial shale volume was calculated from the gamma ray response. The model incorporates porosity calculation from density-neutron crossplot algorithms, water saturation from the dual water relationship, hydrocarbon corrections to the porosity logs where applicable, and convergence upon the preselected grain density window (calculated from hydrocarbon and shale corrected density and neutron logs) by shale volume adjustment. Where bad hole conditions resulted in an over estimation of total porosity using the neutron-density algorithm, a value calculated from the sonic log via the Raiga-Clemenceau algorithm was used. Similarly, the shale volume calculated from the gamma ray was used where bad hole conditions resulted in the under-estimation of shale volume by the neutron-density algorithm. Algorithms used are shown in Appendix 1 .

ANALYSIS PARAMETERS

Parameters used in the analysis are tabulated below in Table 1. Formation water salinity was estimated in two ways. As Mulloway lies above the fresh water wedge, a value of 20,000ppm NaCleq. was used in the oil sands between 1378.8 and 1396.0mMDKB the same as was derived from the unflushed water sands below 2315mMDKB in nearby Whiptail-A1. Within the freshwater flushed sands the Rwa method was used to construct a salinity curve which had an average salinity of about 1000ppm.

SUMMARY OF RESULTS

Quantitative log analysis indicates 12.2m of oil pay between 1378.5 to 1396.0m MDKB with an OWC mapped at 1396m MDKB (Table 2).

TABLE 2

MULLOWAY_1

ANALYSIS SUMMARY.

Net porosity cut-off.....: 0.100 volume per volume
Net water saturation cut-off..: 0.500 volume per volume

Net sand based on Porosity cut-off only.
Both Porosity and Sw cut-offs invoked when generating Hydrocarbon-Metres.

INTERVAL (mRKB) (top) -(base)	Gross (mtrs)	NET SAND Net (mtrs)	Net to Gross	Average Porosity	(Std.) (Dev.)	Average Sw	(Std.) (Dev.)	HYDRO-CARBON METRES
1182.9-1185.2	2.3	2.3	100 %	0.280	(0.014)	0.990	(0.047)	0.000
1190.2-1214.6	24.4	24.4	100 %	0.264	(0.021)	0.999	(0.054)	0.000
1222.7-1237.9	15.3	9.5	62 %	0.179	(0.049)	1.000	(0.397)	0.000
1242.3-1251.2	8.9	8.9	100 %	0.281	(0.020)	1.000	(0.063)	0.000
1259.2-1268.3	9.1	8.3	91 %	0.279	(0.044)	1.000	(0.273)	0.000
1273.4-1289.1	15.7	14.8	95 %	0.259	(0.039)	1.000	(0.275)	0.000
1301.3-1307.9	6.6	6.3	95 %	0.226	(0.047)	1.000	(0.296)	0.000
1315.3-1326.6	11.3	10.0	89 %	0.228	(0.043)	1.000	(0.328)	0.000
1329.9-1366.4	36.5	33.1	91 %	0.232	(0.045)	1.000	(0.310)	0.000
1378.5-1380.6	2.1	1.4	68 %	0.191	(0.043)	0.275	(0.034)	0.194
1383.4-1387.2	3.8	3.5	93 %	0.182	(0.037)	0.172	(0.042)	0.532
1388.4-1396.0	7.6	7.3	97 %	0.242	(0.055)	0.140	(0.092)	1.555
1396.2-1402.9	6.8	6.8	100 %	0.260	(0.013)	1.000	(0.213)	0.000
1409.4-1414.9	5.5	4.9	90 %	0.204	(0.053)	1.000	(0.442)	0.000
1421.9-1435.9	14.0	13.2	95 %	0.237	(0.031)	1.000	(0.228)	0.000
1439.8-1466.3	26.5	26.5	100 %	0.218	(0.037)	1.000	(0.335)	0.000
1467.6-1476.6	9.0	8.6	96 %	0.201	(0.036)	1.000	(0.401)	0.000
1483.9-1555.6	71.6	60.6	85 %	0.192	(0.036)	1.000	(0.406)	0.000
1557.7-1563.9	6.3	6.3	100 %	0.227	(0.017)	1.000	(0.323)	0.000
1568.0-1577.9	9.9	9.5	96 %	0.215	(0.036)	1.000	(0.357)	0.000
1583.8-1602.5	18.7	17.8	96 %	0.221	(0.030)	1.000	(0.355)	0.000
1605.3-1633.6	28.3	22.4	79 %	0.193	(0.039)	1.000	(0.343)	0.000
1643.3-1648.2	4.9	4.9	100 %	0.218	(0.029)	1.000	(0.230)	0.000
1654.2-1695.3	41.2	39.7	96 %	0.211	(0.033)	1.000	(0.340)	0.000
1701.1-1712.6	11.5	11.3	99 %	0.208	(0.032)	1.000	(0.449)	0.000

APPENDIX 1
ALGORITHMS AND LOGIC USED IN THE QUANTITATIVE ANALYSIS

Initial shale volume calculated from GR response.

```
vsh = (gr-grmin)/(grmax-grmin)
vsh = (1.7-sqrt(3.38-((vshgr+0.7)**2)))
```

Apparent shale porosity calculated from density-neutron crossplot algorithm using apparent bulk density of shale and apparent neutron porosity (limestone matrix) of shale.

```
h = 2.71 - rhobsh + Ønsh*(rhof-2.71)
if (h.le.0)then
 rhoma = 2.71 - 0.64*h
else
 rhoma = 2.71 - 0.5*h
endif
Øsh = (rhoma-rhobsh)/(rhoma-rhof)
```

Apparent water resistivity (Rwa) of the flushed sandstones was derived as follows:

$$Rwa = Rt * PHIT^{m} \quad (m=2)$$

Bound water resistivity (rwb) calculated via Archie, using apparent shale porosity and apparent shale resistivity.

```
rwb = (rsh*(Øsh**m))/a
```

Initial estimate of total porosity from density-neutron crossplot algorithms, using bulk density and neutron porosity (limestone matrix, decimal p.u.) log values.

```
h = 2.71 - rhob + nphi*(rhof-2.71)
if (h.lt.0)then
 rhoma = 2.71 - 0.64*h
else
 rhoma = 2.71 - 0.5*h
endif
Øt = (rhoma-rhob)/(rhoma-rhof)
```

Water saturation (total) calculated using dual water relationship:

```
1/rt=(swt**n)*(Øt**m)/(a*rw)+swt**(n-1)*(swb*(Øt**m)/a)*((1/rwb)-(1/rw))
      This is solved for Sw by Newtons solution
      exsw=0
      sw  =0.9
      aa  =((Øt**m)/(a*rw))
      bb  =((Øt**m)*swb/a)*((1/rwb)-(1/rw))
      dowhile(exsw.le.5)
       fx1=(aa*(sw**n))+(bb*(sw**(n-1)))-(1/rt)
       fx2=(n*aa*(sw**(n-1)))+((n-1)*bb*(sw**(n-2)))
        if((abs(fx2)).lt.0.0001)then
         fx2=0.0001
        endif
      swp=sw
      sw =swp-(fx1/fx2)
      if((abs(sw-swp)).le.0.01)then
       exitdo
```

```
endif
exsw=exsw+1
enddo
swt=sw
        [ where:swb = bound water saturation          ]
        [           = max(0,(min(1,(vsh*Øsh/Øt))))    ]
```

If appropriate, invaded zone saturation (Sxo) is then calculated using the same algorithms, replacing Rt with Rxo, and Rw with Rmfi (resistivity of mud filtrate at formation temperature),where:

```
rmfi= rmf*((trmf+6.77)/(ti+6.77))
 where: [ ti = temperature at zone of interest (degrees F)  ]
        [    = ((bht-sbt)/(td-wd-kb))*(depth-wd-kb) + sbt   ]
        [ rmf= measured rmf value                           ]
        [trmf= temperature(F) at which rmf was measured     ]
```

Alternatively, if no Rxo log is available, Sxo is estimated by the relationship Sxo = Sw**Z, where Z is an analyst input.

The bulk density and neutron porosity log responses are then corrected for hydrocarbon effects, using the following algorithms, which incorporate calculated Sxo and analyst input hydrocarbon density (rhoh).

```
rhobh=rhob+1.07*Øt*(1-sxot)*((1.11-0.1*p)*rhof-1.15*rhoh)
Ønh=nphi+(1.3*Øt*(1-sxot)*(rhof*(1-p)-1.5*rhoh+0.2))/(rhof*(1-p))
          where:[  p = mud filtrate salinity in parts per unity ]
                [    = 0.1778*(3/(rmf*(trmf+7)-1))**(1.05)      ]
```

Total porosity is then recalculated from the density-neutron crossplot algorithm, using the hydrocarbon corrected porosity logs, Sw and Sxo recalculated, and replacement hydrocarbon corrections calculated using the latest Sxo. This process is repeated until the latest total porosity calculated is within 0.008pu (0.8% porosity) of the previously calculated value. At this stage, clay corrections are made to the hydrocarbon corrected bulk density and neutron porosity logs, and apparent matrix density calculated from the density-neutron crossplot algorithm.

```
rhobc = (rhobh - vsh*rhobsh)/(1 - vsh)
Ønc   = (Ønh - vsh*Ønsh)/(1 - vsh)
h  = 2.71 - rhobc + Ønc*(rhof-2.71)
if (h.lt.0)then
 rhogc= 2.71 - 0.64*h
else
 rhogc = 2.71 - 0.5*h
endif
```

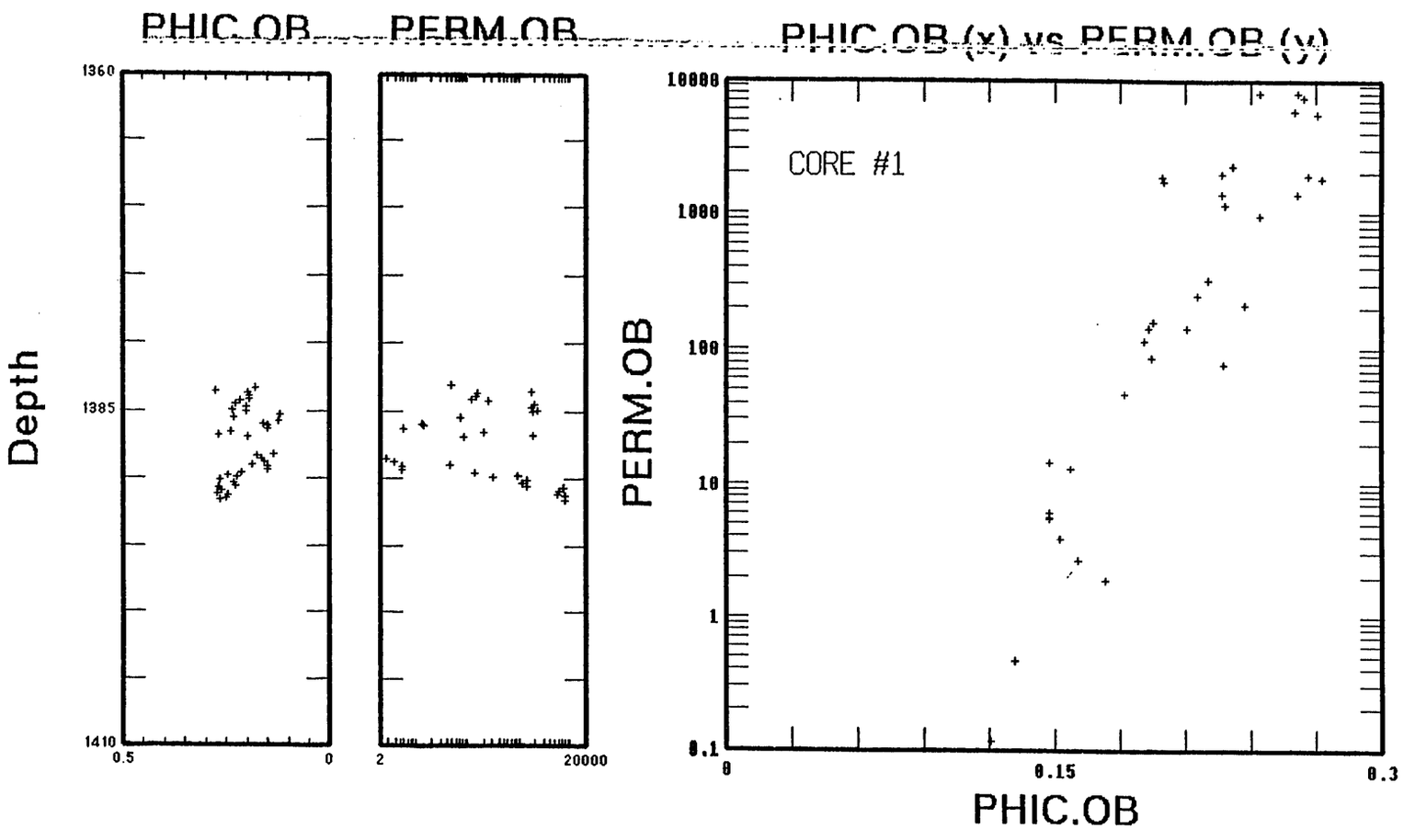
The apparent matrix density is compared to the analyst input grain density window. If it falls within this window, effective porosity and water saturation are calculated, and the processing sequence finished. If it falls outside the specified grain density window, shale volume is incremented or decremented, and the whole processing sequence repeated, until the calculated grain density falls within the grain density window.

Effective porosity and water saturation are derived from calculated total porosity and water saturation as follows:

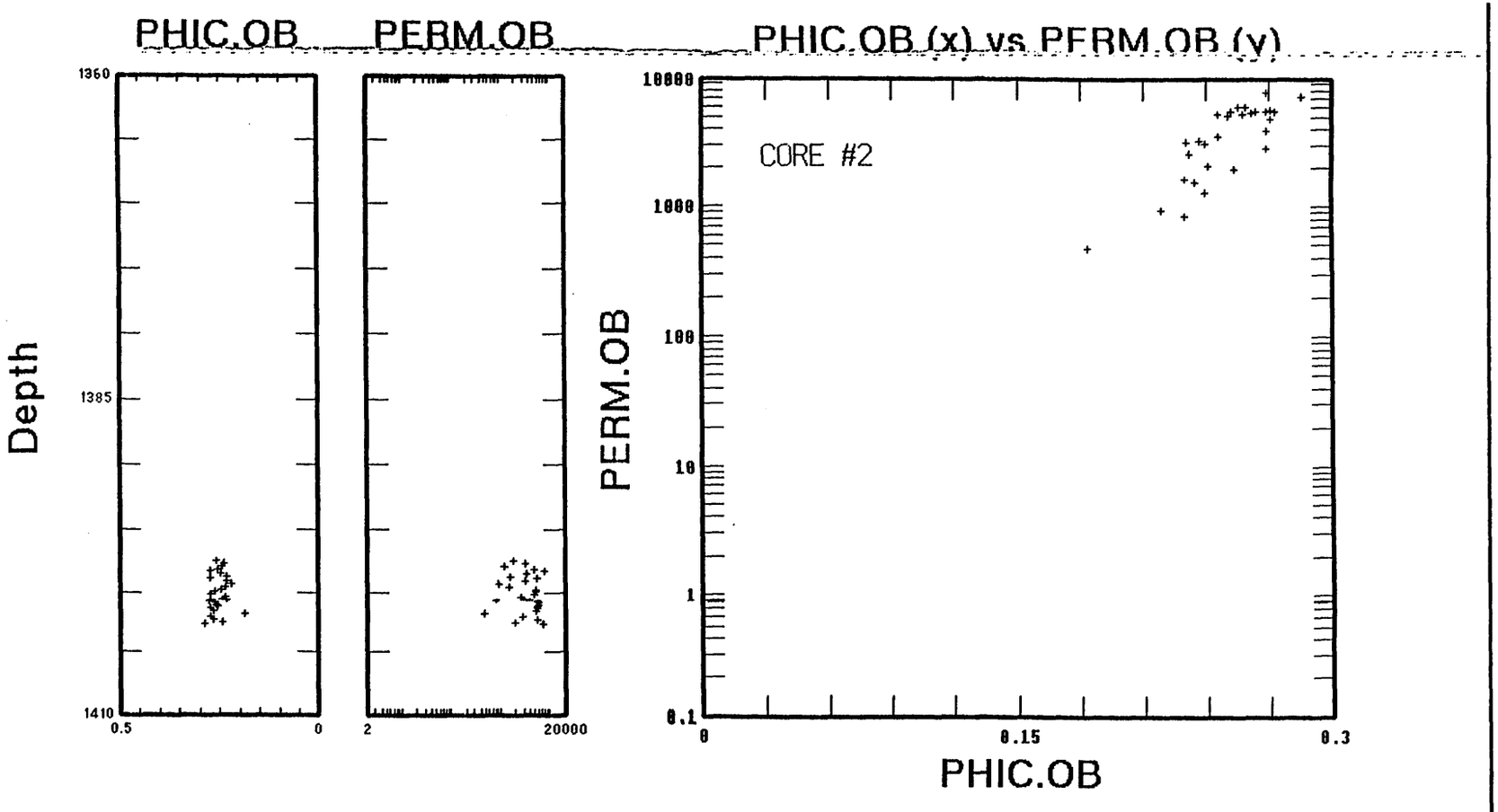
```
phie= Øt-(vsh*Øsh)
swe =1 - ((Øt/phie)*(1-swt))
sxo =1 - ((Øt/phie)*(1-sxot))
sxo = min(sxo,swe,1)
if (vsh.gt.0.4)then
 phie= phie*((0.6-vsh)/0.2)
 swe = 1-((1-swe)*((0.6-vsh)/0.2))
 sxo = 1-((1-sxo)*((0.6-vsh)/0.2))
if (vsh.gt.0.6)then
 phie=0
 swe =1
 sxoe=1
```

Sonic porosity, if used, is calculated as follows:

```
phis = 1-((dtma/dt)**(1/x))
     where, in clastics,
     dtma = 182.1 (microseconds/metre)
        x = 1.6
     (Raiga-Clemenceau et al.(paper G, 1986 SPWLA trans.))
```



MULLOWAY_1
Tuesday, May 9, 1989
12:03:42 pm (AEST)



MULLOWAY_1
Tuesday, May 9, 1989
3:32:29 pm (AEST)

aam

MULLOWAY_1

Well Data Listing

Depth (mRKB)	GR api	RT ohmm	RHOB g/cc	NPHI frac	DT us/m	VSH frac	PHIE frac	SWE frac
1170.0	82	10.5	2.439	0.242	297	0.473	0.032	1.000
1170.2	75	9.5	2.406	0.220	291	0.377	0.068	1.000
1170.4	76	8.4	2.368	0.210	294	0.277	0.108	1.000
1170.6	81	7.7	2.346	0.235	297	0.297	0.120	1.000
1170.8	86	6.9	2.313	0.268	307	Coal		
1171.0	94	7.3	2.266	0.338	325	Coal		
1171.2	108	8.9	2.226	0.406	350	Coal		
1171.4	123	12.3	2.222	0.420	379	Coal		
1171.6	115	15.7	2.241	0.373	377	Coal		
1171.8	101	14.0	2.274	0.317	346	Coal		
1172.0	118	11.4	2.299	0.266	318	0.306	0.145	1.000
1172.2	179	9.1	2.303	0.266	310	0.315	0.141	1.000
1172.4	243	8.2	2.283	0.304	319	0.402	0.134	1.000
1172.6	252	7.6	2.271	0.306	329	0.386	0.145	1.000
1172.8	226	7.3	2.283	0.295	337	0.372	0.140	1.000
1173.0	179	8.4	2.283	0.334	343	Coal		
1173.2	145	10.5	2.220	0.412	369	Coal		
1173.4	127	14.4	2.140	0.448	394	Coal		
1173.6	120	17.6	2.110	0.449	414	Coal		
1173.8	109	12.7	2.148	0.410	398	Coal		
1174.0	105	9.3	2.189	0.360	373	0.403	0.188	1.000
1174.2	112	9.2	2.173	0.359	366	Coal		
1174.4	117	10.9	2.130	0.374	375	Coal		
1174.6	110	15.7	1.942	0.404	401	Coal		
1174.8	103	18.3	1.729	0.459	422	Coal		
1175.0	107	16.4	1.741	0.481	415	Coal		
1175.2	108	15.2	1.945	0.437	419	Coal		
1175.4	106	16.1	2.127	0.382	385	Coal		
1175.6	108	17.2	2.265	0.324	357	Coal		
1175.8	114	20.7	2.358	0.293	322	Coal		
1176.0	121	23.9	2.352	0.303	299	0.541	0.035	1.000
1176.2	118	20.7	2.328	0.310	302	0.514	0.057	1.000
1176.4	116	16.4	2.295	0.319	313	0.480	0.094	1.000
1176.6	116	13.4	2.270	0.309	322	0.396	0.143	1.000
1176.8	113	12.5	2.269	0.295	332	0.345	0.154	1.000
1177.0	111	12.2	2.276	0.306	331	0.396	0.139	1.000
1177.2	109	12.1	2.275	0.311	332	0.410	0.137	1.000
1177.4	106	10.8	2.260	0.298	335	0.334	0.162	1.000
1177.6	112	11.3	2.250	0.318	334	0.381	0.158	1.000
1177.8	117	11.7	2.257	0.338	338	0.465	0.125	1.000
1178.0	123	12.1	2.259	0.315	337	0.391	0.150	1.000
1178.2	123	12.3	2.261	0.308	339	0.372	0.153	1.000
1178.4	123	13.8	2.269	0.306	339	0.380	0.147	1.000
1178.6	123	16.7	2.276	0.310	342	0.410	0.136	1.000
1178.8	121	17.6	2.277	0.310	344	0.411	0.135	1.000
1179.0	118	16.7	2.279	0.307	343	0.405	0.135	1.000
1179.2	119	15.9	2.279	0.321	344	0.452	0.124	1.000
1179.4	126	15.8	2.264	0.330	345	0.451	0.134	1.000
1179.6	124	15.6	2.247	0.312	345	0.355	0.165	1.000
1179.8	121	13.9	2.239	0.297	345	0.292	0.183	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1180.0	121	13.1	2.240	0.313	345	0.347	0.171	1.000
1180.2	126	13.0	2.247	0.305	344	0.333	0.170	1.000
1180.4	129	13.3	2.257	0.297	344	0.326	0.165	1.000
1180.6	127	14.5	2.260	0.299	344	0.339	0.161	1.000
1180.8	127	13.6	2.246	0.307	344	Coal		
1181.0	121	13.6	2.162	0.339	349	Coal		

1181.2	106	16.8	1.838	0.392	364	Coal		
1181.4	83	21.0	1.527	0.491	444	Coal		
1181.6	65	28.3	1.380	0.529	491	Coal		
1181.8	59	28.8	1.360	0.561	490	Coal		
1182.0	71	25.2	1.478	0.567	486	Coal		
1182.2	83	25.6	1.788	0.497	462	Coal		
1182.4	74	26.6	2.073	0.385	424	Coal		
1182.6	49	33.4	2.157	0.299	382	Coal		
1182.8	34	39.5	2.147	0.281	371	Coal		
1183.0	32	45.4	2.147	0.274	374	0.063	0.287	1.000
1183.2	31	57.9	2.168	0.245	376	0.000	0.291	1.000
1183.4	33	53.2	2.185	0.231	375	0.000	0.280	0.982
1183.6	31	52.8	2.194	0.232	368	0.000	0.276	0.993
1183.8	30	51.2	2.200	0.251	369	0.047	0.265	0.997
1184.0	29	51.3	2.198	0.260	371	0.048	0.269	1.000
1184.2	30	51.5	2.186	0.269	377	0.047	0.276	1.000
1184.4	30	51.8	2.168	0.272	381	0.050	0.284	1.000
1184.6	29	51.6	2.158	0.281	382	0.043	0.293	0.991
1184.8	27	49.0	2.153	0.293	386	0.032	0.303	0.969
1185.0	26	42.8	2.157	0.299	385	0.088	0.284	0.949
1185.2	26	28.2	2.164	0.307	384	0.123	0.272	0.822
1185.4	30	11.6	2.157	0.318	381	0.143	0.272	0.905
1185.6	39	8.5	2.018	0.371	396	Coal		
1185.8	49	8.8	1.659	0.478	405	Coal		
1186.0	56	11.9	1.415	0.578	442	Coal		
1186.2	61	32.0	1.368	0.615	457	Coal		
1186.4	70	54.9	1.443	0.559	470	Coal		
1186.6	75	42.2	1.579	0.458	469	Coal		
1186.8	77	36.7	1.661	0.430	461	Coal		
1187.0	74	43.7	1.545	0.482	452	Coal		
1187.2	69	51.2	1.421	0.524	448	Coal		
1187.4	70	40.5	1.444	0.508	471	Coal		
1187.6	75	25.3	1.590	0.484	497	Coal		
1187.8	78	21.2	1.673	0.526	502	Coal		
1188.0	63	26.9	1.552	0.547	481	Coal		
1188.2	44	39.0	1.363	0.549	463	Coal		
1188.4	36	76.3	1.263	0.543	461	Coal		
1188.6	42	101.6	1.346	0.503	467	Coal		
1188.8	48	89.2	1.633	0.423	440	Coal		
1189.0	43	53.8	2.065	0.350	401	Coal		
1189.2	42	35.3	2.175	0.323	373	Coal		
1189.4	43	33.5	2.185	0.311	366	Coal		
1189.6	45	44.5	2.196	0.296	378	Coal		
1189.8	40	82.2	2.184	0.273	380	Coal		
1190.0	35	99.0	2.174	0.250	385	Coal		

MULLOWAY 1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1190.2	35	85.9	2.179	0.235	379	0.000	0.283	0.921
1190.4	40	6[illegible]	2.194	0.255	372	0.077	0.257	0.940
1190.6	39	5[illegible]	2.182	0.267	372	0.102	0.258	1.000
1190.8	38	58.0	2.178	0.270	373	0.093	0.264	1.000
1191.0	37	61.8	2.177	0.266	378	0.091	0.264	1.000
1191.2	37	60.7	2.172	0.270	378	0.088	0.268	0.945
1191.4	37	50.6	2.179	0.277	379	0.095	0.266	0.952
1191.6	40	44.2	2.181	0.281	378	0.107	0.262	0.997
1191.8	38	43.7	2.187	0.261	376	0.099	0.255	1.000
1192.0	37	51.2	2.190	0.260	374	0.091	0.256	1.000
1192.2	38	67.3	2.170	0.289	375	0.095	0.274	1.000
1192.4	36	76.3	2.160	0.293	379	0.080	0.284	0.971
1192.6	34	71.2	2.165	0.268	382	0.074	0.275	0.943
1192.8	35	61.9	2.187	0.274	379	0.081	0.266	0.960
1193.0	36	56.1	2.194	0.281	378	0.084	0.265	0.987
1193.2	35	55.2	2.182	0.275	378	0.078	0.270	1.000
1193.4	35	59.2	2.189	0.272	380	0.077	0.266	1.000
1193.6	35	59.7	2.202	0.277	373	0.107	0.252	0.939

1193.8	37	42.8	2.200	0.280	372	0.094	0.259	0.861
1194.0	46	28.9	2.198	0.282	371	0.166	0.235	1.000
1194.2	52	30.1	2.191	0.285	373	0.190	0.230	1.000
1194.4	50	40.2	2.188	0.277	368	0.151	0.242	1.000
1194.6	54	61.8	2.215	0.271	354	0.166	0.224	1.000
1194.8	65	61.1	2.223	0.272	345	0.206	0.208	1.000
1195.0	57	65.3	2.192	0.274	346	0.149	0.241	1.000
1195.2	42	78.1	2.179	0.278	353	0.102	0.261	1.000
1195.4	33	107.5	2.202	0.253	357	0.068	0.257	1.000
1195.6	33	111.1	2.218	0.251	351	0.066	0.251	0.903
1195.8	31	80.2	2.225	0.245	346	0.051	0.252	0.879
1196.0	29	56.6	2.223	0.229	344	0.044	0.249	0.940
1196.2	30	48.2	2.216	0.230	345	0.051	0.250	1.000
1196.4	31	50.9	2.213	0.239	342	0.058	0.252	1.000
1196.6	32	58.1	2.204	0.233	344	0.032	0.262	1.000
1196.8	32	50.1	2.196	0.216	326	0.000	0.270	0.927
1197.0	30	37.3	2.178	0.214	324	0.000	0.276	0.855
1197.2	31	22.1	2.155	0.228	344	0.000	0.290	0.882
1197.4	34	17.6	2.127	0.264	379	0.000	0.315	0.998
1197.6	38	17.9	2.122	0.272	411	0.004	0.318	0.996
1197.8	36	17.2	2.149	0.252	401	0.000	0.301	0.979
1198.0	39	17.0	2.182	0.260	353	0.089	0.260	1.000
1198.2	50	18.6	2.171	0.292	320	0.162	0.243	1.000
1198.4	54	22.6	2.142	0.318	328	0.184	0.238	1.000
1198.6	53	33.1	2.131	0.303	352	0.106	0.288	1.000
1198.8	50	44.2	2.137	0.284	359	0.056	0.298	1.000
1199.0	46	64.0	2.133	0.294	360	0.086	0.290	1.000
1199.2	41	104.4	2.135	0.295	360	0.106	0.285	1.000
1199.4	36	120.3	2.146	0.264	358	0.027	0.298	0.965
1199.6	37	110.3	2.152	0.253	354	0.002	0.300	0.976
1199.8	41	101.2	2.160	0.245	346	0.000	0.295	0.972
1200.0	39	90.7	2.156	0.268	347	0.039	0.291	0.966
1200.2	36	88.0	2.148	0.276	347	0.048	0.294	0.971

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1200.4	31	87.0	2.152	0.270	352	0.053	0.289	0.985
1200.6	32	91.2	2.166	0.271	354	0.061	0.280	0.986
1200.8	35	93.5	2.189	0.262	355	0.083	0.260	0.965
1201.0	38	90.3	2.200	0.252	352	0.098	0.247	0.944
1201.2	38	75.8	2.200	0.274	346	0.093	0.257	0.910
1201.4	35	58.2	2.199	0.268	341	0.078	0.261	0.961
1201.6	34	51.9	2.201	0.264	337	0.070	0.261	0.967
1201.8	35	49.2	2.200	0.260	338	0.078	0.257	1.000
1202.0	33	52.8	2.208	0.247	337	0.062	0.255	1.000
1202.2	30	59.6	2.221	0.223	330	0.015	0.257	1.000
1202.4	30	66.3	2.223	0.214	322	0.000	0.259	1.000
1202.6	30	63.9	2.232	0.216	319	0.014	0.251	0.974
1202.8	28	57.8	2.249	0.213	319	0.037	0.235	0.989
1203.0	30	54.1	2.261	0.209	319	0.053	0.224	0.991
1203.2	33	48.9	2.266	0.209	320	0.064	0.218	0.999
1203.4	32	46.5	2.262	0.217	316	0.059	0.224	1.000
1203.6	33	45.5	2.241	0.249	326	0.066	0.241	1.000
1203.8	33	50.2	2.227	0.268	322	0.098	0.242	1.000
1204.0	35	57.7	2.245	0.258	322	0.110	0.227	1.000
1204.2	38	68.7	2.243	0.250	316	0.105	0.226	1.000
1204.4	41	64.1	2.209	0.255	322	0.086	0.248	0.952
1204.6	41	51.7	2.172	0.267	333	0.084	0.267	0.969
1204.8	39	46.6	2.143	0.283	346	0.070	0.289	0.981
1205.0	34	43.6	2.132	0.286	357	0.067	0.296	0.996
1205.2	31	42.8	2.131	0.281	360	0.054	0.299	1.000
1205.4	31	42.8	2.149	0.272	357	0.058	0.288	1.000
1205.6	34	45.0	2.168	0.268	351	0.073	0.275	1.000
1205.8	33	47.2	2.173	0.260	346	0.069	0.271	0.991
1206.0	34	42.3	2.166	0.250	343	0.013	0.289	0.948
1206.2	38	35.6	2.147	0.247	345	0.000	0.301	0.961

1206.4	40	31.3	2.139	0.281	349	0.053	0.297	1.000
1206.6	42	32.0	2.139	0.307	351	0.120	0.283	1.000
1206.8	45	37.9	2.141	0.301	348	0.119	0.280	1.000
1207.0	45	48.7	2.141	0.286	346	0.080	0.289	1.000
1207.2	40	59.3	2.144	0.310	343	0.105	0.287	1.000
1207.4	36	65.1	2.152	0.304	340	0.077	0.291	1.000
1207.6	33	70.9	2.164	0.296	334	0.097	0.278	0.991
1207.8	32	73.7	2.173	0.304	331	0.122	0.268	0.979
1208.0	32	78.3	2.172	0.310	328	0.150	0.256	0.979
1208.2	30	81.6	2.174	0.313	327	0.169	0.248	0.959
1208.4	28	83.7	2.191	0.293	323	0.127	0.255	0.966
1208.6	27	87.5	2.214	0.268	316	0.094	0.249	0.983
1208.8	28	90.3	2.224	0.237	310	0.041	0.253	1.000
1209.0	30	94.8	2.219	0.255	310	0.052	0.257	0.961
1209.2	32	80.2	2.202	0.255	314	0.064	0.259	0.905
1209.4	34	53.2	2.175	0.249	314	0.012	0.286	0.849
1209.6	35	36.2	2.156	0.267	312	0.052	0.268	1.000
1209.8	38	32.0	2.154	0.275	315	0.070	0.264	1.000
1210.0	39	33.1	2.160	0.273	325	0.074	0.271	1.000
1210.2	39	39.5	2.167	0.278	333	0.100	0.268	1.000
1210.4	36	43.2	2.167	0.268	334	0.081	0.272	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1210.6	32	50.4	2.170	0.267	329	0.054	0.279	1.000
1210.8	29	53.0	2.178	0.284	323	0.074	0.276	1.000
1211.0	30	56.9	2.167	0.289	323	0.051	0.283	1.000
1211.2	34	63.0	2.167	0.272	322	0.077	0.272	1.000
1211.4	35	69.8	2.177	0.253	322	0.046	0.275	1.000
1211.6	33	75.9	2.174	0.253	322	0.030	0.282	1.000
1211.8	29	85.5	2.175	0.259	320	0.042	0.279	1.000
1212.0	27	95.5	2.181	0.262	315	0.033	0.281	1.000
1212.2	25	103.0	2.187	0.280	314	0.085	0.260	0.989
1212.4	24	104.4	2.187	0.292	312	0.104	0.249	0.992
1212.6	23	99.9	2.182	0.282	309	0.077	0.256	0.994
1212.8	25	91.4	2.182	0.257	308	0.030	0.270	0.998
1213.0	28	80.1	2.195	0.248	303	0.041	0.261	0.940
1213.2	27	58.8	2.216	0.229	300	0.034	0.255	0.903
1213.4	26	44.2	2.243	0.219	296	0.032	0.242	0.965
1213.6	28	40.1	2.274	0.228	290	0.071	0.220	1.000
1213.8	27	43.8	2.271	0.232	291	0.060	0.226	1.000
1214.0	23	51.1	2.249	0.229	288	0.013	0.246	1.000
1214.2	22	54.7	2.253	0.219	293	0.010	0.246	0.954
1214.4	22	40.5	2.264	0.217	289	0.012	0.240	0.857
1214.6	22	23.8	2.283	0.223	288	0.073	0.214	0.903
1214.8	26	15.1	2.230	0.274	289	Coal		
1215.0	29	17.8	1.810	0.396	340	Coal		
1215.2	30	31.3	1.412	0.504	399	Coal		
1215.4	25	101.8	1.252	0.506	457	Coal		
1215.6	21	331.7	1.232	0.524	478	Coal		
1215.8	17	158.6	1.217	0.522	485	Coal		
1216.0	14	106.8	1.206	0.531	486	Coal		
1216.2	15	86.0	1.229	0.546	481	Coal		
1216.4	15	77.4	1.278	0.547	471	Coal		
1216.6	15	77.3	1.296	0.611	468	Coal		
1216.8	17	79.0	1.277	0.570	467	Coal		
1217.0	16	77.8	1.260	0.493	486	Coal		
1217.2	14	66.3	1.263	0.522	487	Coal		
1217.4	16	57.1	1.304	0.578	477	Coal		
1217.6	18	54.2	1.386	0.578	463	Coal		
1217.8	21	56.1	1.468	0.559	470	Coal		
1218.0	29	63.1	1.523	0.549	462	Coal		
1218.2	44	64.4	1.550	0.547	450	Coal		
1218.4	66	53.5	1.619	0.517	454	Coal		
1218.6	86	40.8	1.790	0.438	427	Coal		
1218.8	82	37.1	1.942	0.426	407	Coal		

1219.0	59	41.9	1.698	0.535	425		Coal	
1219.2	41	56.6	1.356	0.591	447		Coal	
1219.4	25	80.7	1.215	0.586	471		Coal	
1219.6	17	90.2	1.182	0.543	460		Coal	
1219.8	13	99.3	1.192	0.534	456		Coal	
1220.0	12	111.0	1.201	0.505	465		Coal	
1220.2	13	123.7	1.204	0.499	472		Coal	
1220.4	20	160.6	1.212	0.548	470		Coal	
1220.6	34	178.8	1.273	0.563	469		Coal	

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1220.8	51	70.0	1.507	0.468	440		Coal	
1221.0	65	35.7	1.972	0.326	388		Coal	
1221.2	70	30.7	2.342	0.273	348		Coal	
1221.4	77	30.3	2.442	0.245	304		Coal	
1221.6	84	33.5	2.462	0.237	293	0.512	0.009	1.000
1221.8	80	32.3	2.459	0.237	301	0.493	0.016	1.000
1222.0	80	31.6	2.451	0.252	302	0.543	0.007	1.000
1222.2	83	32.3	2.439	0.256	302	0.523	0.015	1.000
1222.4	87	34.4	2.442	0.250	304	0.545	0.007	1.000
1222.6	86	37.5	2.446	0.252	302	0.547	0.006	1.000
1222.8	83	37.8	2.446	0.242	301	0.489	0.022	1.000
1223.0	80	36.8	2.434	0.221	301	0.432	0.041	1.000
1223.2	82	37.1	2.420	0.216	300	0.387	0.058	1.000
1223.4	84	36.3	2.376	0.248	312	0.405	0.080	1.000
1223.6	87	36.0	2.341	0.274	318	0.418	0.098	1.000
1223.8	85	34.2	2.382	0.285	320	0.539	0.027	1.000
1224.0	84	28.4	2.395	0.276	318	0.502	0.040	1.000
1224.2	80	25.0	2.372	0.275	313	0.467	0.066	1.000
1224.4	80	24.3	2.365	0.258	316	0.417	0.084	1.000
1224.6	82	27.7	2.377	0.242	317	0.384	0.084	1.000
1224.8	79	31.2	2.348	0.258	315	0.382	0.101	1.000
1225.0	70	28.9	2.312	0.272	319	0.352	0.128	1.000
1225.2	68	25.1	2.300	0.275	315	0.338	0.138	1.000
1225.4	70	25.7	2.311	0.267	314	0.334	0.132	1.000
1225.6	69	27.2	2.317	0.261	315	0.341	0.125	1.000
1225.8	65	27.3	2.303	0.259	316	0.298	0.144	1.000
1226.0	59	25.7	2.285	0.256	318	0.243	0.167	1.000
1226.2	57	23.8	2.276	0.260	322	0.238	0.174	1.000
1226.4	60	26.0	2.285	0.262	317	0.267	0.161	1.000
1226.6	64	29.5	2.304	0.253	314	0.297	0.141	1.000
1226.8	65	31.2	2.301	0.232	309	0.212	0.162	1.000
1227.0	60	27.9	2.264	0.246	314	0.185	0.191	1.000
1227.2	50	24.3	2.236	0.272	318	0.164	0.218	1.000
1227.4	49	21.4	2.220	0.269	325	0.187	0.215	1.000
1227.6	61	26.4	2.269	0.254	321	0.235	0.174	1.000
1227.8	68	35.8	2.328	0.232	311	0.279	0.130	1.000
1228.0	60	37.5	2.331	0.217	299	0.217	0.144	1.000
1228.2	51	28.3	2.305	0.217	295	0.181	0.166	1.000
1228.4	55	24.3	2.312	0.241	300	0.238	0.153	1.000
1228.6	67	27.7	2.351	0.275	308	0.407	0.099	1.000
1228.8	75	29.0	2.304	0.296	323	0.411	0.121	1.000
1229.0	76	31.1	2.280	0.308	331	0.419	0.130	1.000
1229.2	72	27.8	2.279	0.303	335	0.361	0.149	1.000
1229.4	67	22.8	2.273	0.305	336	0.354	0.155	1.000
1229.6	70	22.6	2.273	0.330	336	0.444	0.134	1.000
1229.8	79	24.5	2.292	0.341	338	0.532	0.060	1.000
1230.0	76	27.4	2.283	0.351	335	0.537	0.061	1.000
1230.2	57	23.5	2.229	0.313	336	0.298	0.191	1.000
1230.4	41	21.4	2.194	0.282	331	0.097	0.261	1.000
1230.6	38	21.4	2.189	0.281	328	0.100	0.262	1.000
1230.8	43	23.4	2.197	0.273	325	0.132	0.244	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1231.0	48	26.4	2.208	0.259	322	0.114	0.241	1.000

1231.2	59	27.1	2.232	0.250	326	0.130	0.223	1.000
1231.4	74	26.1	2.262	0.289	328	0.328	0.160	1.000
1231.6	80	21.8	2.291	0.316	328	0.461	0.110	1.000
1231.8	86	20.1	2.319	0.321	328	0.534	0.049	1.000
1232.0	97	20.2	2.355	0.316	323	0.591	0.016	1.000
1232.2	111	25.5	2.374	0.344	326	0.722	0.000	1.000
1232.4	119	33.8	2.361	0.396	332	0.937	0.000	1.000
1232.6	119	42.5	2.347	0.374	336	0.885	0.000	1.000
1232.8	118	39.0	2.380	0.325	335	0.670	0.000	1.000
1233.0	114	38.1	2.416	0.319	324	0.725	0.000	1.000
1233.2	117	40.0	2.416	0.319	314	0.723	0.000	1.000
1233.4	117	50.1	2.404	0.311	312	0.643	0.001	1.000
1233.6	113	48.6	2.397	0.304	315	0.635	0.001	1.000
1233.8	106	36.4	2.376	0.299	314	0.577	0.016	1.000
1234.0	94	25.7	2.337	0.289	316	0.462	0.085	1.000
1234.2	87	19.0	2.308	0.281	312	0.376	0.125	1.000
1234.4	90	18.4	2.311	0.265	309	0.329	0.134	1.000
1234.6	100	22.8	2.335	0.274	306	0.408	0.103	1.000
1234.8	111	26.9	2.371	0.284	307	0.516	0.040	1.000
1235.0	113	36.9	2.387	0.310	310	0.636	0.002	1.000
1235.2	102	46.8	2.390	0.304	307	0.619	0.004	1.000
1235.4	81	42.5	2.366	0.255	299	0.402	0.087	1.000
1235.6	64	32.4	2.308	0.218	297	0.185	0.164	1.000
1235.8	56	25.6	2.253	0.275	317	0.222	0.193	1.000
1236.0	47	25.9	2.230	0.285	335	0.198	0.214	1.000
1236.2	34	23.1	2.229	0.244	351	0.059	0.247	0.934
1236.4	27	17.7	2.231	0.242	350	0.040	0.252	0.992
1236.6	30	17.7	2.234	0.270	349	0.137	0.228	1.000
1236.8	27	21.4	2.240	0.282	342	0.181	0.215	1.000
1237.0	23	35.3	2.231	0.261	344	0.101	0.238	1.000
1237.2	21	37.8	2.230	0.252	341	0.066	0.247	0.951
1237.4	23	26.9	2.228	0.240	342	0.018	0.260	0.905
1237.6	28	19.5	2.232	0.229	339	0.039	0.247	0.964
1237.8	28	16.2	2.246	0.219	337	0.039	0.239	1.000
1238.0	29	16.0	2.265	0.213	329	0.051	0.225	1.000
1238.2	34	17.9	2.200	0.261	320	Coal		
1238.4	38	24.0	1.919	0.358	341	Coal		
1238.6	35	41.0	1.551	0.474	379	Coal		
1238.8	31	92.2	1.337	0.543	437	Coal		
1239.0	26	172.8	1.256	0.521	471	Coal		
1239.2	21	167.5	1.241	0.519	484	Coal		
1239.4	18	137.5	1.233	0.559	487	Coal		
1239.6	15	127.7	1.231	0.585	476	Coal		
1239.8	14	129.2	1.233	0.564	461	Coal		
1240.0	15	134.2	1.250	0.564	458	Coal		
1240.2	20	164.0	1.282	0.546	464	Coal		
1240.4	32	105.3	1.319	0.533	471	Coal		
1240.6	59	24.7	1.461	0.501	458	Coal		
1240.8	92	20.0	1.786	0.458	439	Coal		
1241.0	102	23.9	2.186	0.412	382	Coal		

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1241.2	86	22.6	2.305	0.342	350	Coal		
1241.4	69	17.3	2.305	0.265	322	Coal		
1241.6	63	13.6	2.301	0.245	321	Coal		
1241.8	67	14.1	2.314	0.265	315	Coal		
1242.0	53	20.2	2.312	0.247	313	0.234	0.158	1.000
1242.2	33	35.7	2.280	0.202	315	0.061	0.211	1.000
1242.4	27	53.1	2.270	0.199	317	0.028	0.225	1.000
1242.6	21	69.4	2.256	0.216	325	0.001	0.246	0.987
1242.8	17	61.5	2.213	0.237	338	0.000	0.271	0.953
1243.0	20	51.1	2.176	0.247	347	0.002	0.288	0.945
1243.2	23	42.5	2.183	0.250	346	0.016	0.282	0.984
1243.4	25	42.5	2.211	0.248	336	0.024	0.267	1.000
1243.6	25	43.7	2.234	0.232	329	0.019	0.255	1.000

1243.8	24	44.1	2.237	0.232	325	0.019	0.253	1.000
1244.0	22	42.7	2.224	0.235	329	0.011	0.262	0.970
1244.2	23	39.1	2.217	0.239	332	0.010	0.267	0.982
1244.4	21	35.1	2.210	0.240	335	0.009	0.270	0.948
1244.6	21	29.2	2.202	0.228	335	0.001	0.271	0.960
1244.8	21	23.6	2.200	0.225	336	0.002	0.271	0.930
1245.0	21	17.9	2.190	0.243	336	0.008	0.280	0.977
1245.2	22	17.4	2.168	0.254	339	0.008	0.292	1.000
1245.4	22	18.1	2.151	0.258	341	0.009	0.300	1.000
1245.6	21	18.5	2.159	0.267	340	0.004	0.302	1.000
1245.8	20	22.9	2.187	0.258	339	0.002	0.288	1.000
1246.0	21	28.7	2.197	0.234	340	0.006	0.274	1.000
1246.2	21	47.2	2.187	0.245	344	0.005	0.282	1.000
1246.4	22	63.6	2.174	0.255	353	0.014	0.287	1.000
1246.6	23	72.0	2.170	0.262	359	0.014	0.292	1.000
1246.8	21	77.3	2.167	0.261	360	0.000	0.298	1.000
1247.0	19	76.9	2.160	0.264	359	0.000	0.301	0.954
1247.2	19	59.7	2.160	0.262	360	0.000	0.301	0.914
1247.4	19	44.2	2.166	0.259	360	0.000	0.297	0.944
1247.6	20	37.1	2.175	0.254	359	0.002	0.291	0.978
1247.8	23	36.1	2.174	0.255	360	0.016	0.287	1.000
1248.0	24	38.9	2.169	0.278	362	0.015	0.297	1.000
1248.2	22	37.2	2.173	0.279	364	0.036	0.289	0.967
1248.4	20	29.3	2.178	0.261	364	0.000	0.294	0.894
1248.6	20	19.1	2.170	0.264	362	0.000	0.297	0.910
1248.8	23	14.6	2.161	0.290	362	0.048	0.293	1.000
1249.0	25	13.8	2.157	0.302	360	0.085	0.286	1.000
1249.2	24	13.2	2.140	0.309	354	0.078	0.298	1.000
1249.4	22	17.0	2.127	0.299	356	0.009	0.324	1.000
1249.6	22	22.8	2.141	0.266	355	0.007	0.307	1.000
1249.8	24	51.9	2.162	0.267	357	0.016	0.296	1.000
1250.0	23	75.7	2.157	0.293	357	0.046	0.295	0.989
1250.2	24	69.5	2.167	0.292	364	0.077	0.280	0.966
1250.4	26	65.4	2.201	0.263	369	0.026	0.276	0.995
1250.6	24	65.0	2.227	0.255	366	0.079	0.245	0.995
1250.8	25	63.0	2.225	0.254	362	0.052	0.254	0.997
1251.0	26	55.2	2.213	0.241	360	0.029	0.262	0.918
1251.2	24	31.0	2.206	0.241	358	0.026	0.266	0.812

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1251.4	34	13.6	2.149	0.296	360		Coal	
1251.6	56	13.9	1.987	0.383	376		Coal	
1251.8	77	14.3	1.923	0.388	372		Coal	
1252.0	86	19.3	2.070	0.303	367		Coal	
1252.2	101	21.6	2.212	0.312	341	0.288	0.200	1.000
1252.4	124	21.9	2.155	0.410	337		Coal	
1252.6	113	32.4	1.840	0.502	369		Coal	
1252.8	91	41.5	1.766	0.466	399		Coal	
1253.0	89	3[illegible]	2.002	0.372	403		Coal	
1253.2	98	2[illegible].4	2.256	0.348	339		Coal	
1253.4	108	26.7	2.265	0.406	334	0.682	0.000	1.000
1253.6	103	37.1	1.918	0.462	378		Coal	
1253.8	92	40.9	1.710	0.508	415		Coal	
1254.0	98	51.9	1.818	0.489	430		Coal	
1254.2	95	43.2	2.042	0.415	418		Coal	
1254.4	75	26.4	2.103	0.361	381		Coal	
1254.6	61	21.1	2.122	0.331	368	0.195	0.271	0.997
1254.8	63	17.3	2.154	0.316	357	0.214	0.247	1.000
1255.0	91	16.9	2.172	0.316	353	0.218	0.239	1.000
1255.2	125	17.5	2.178	0.361	354	0.383	0.199	1.000
1255.4	127	23.8	2.207	0.397	357	0.562	0.062	1.000
1255.6	99	40.0	2.212	0.352	353	0.389	0.174	1.000
1255.8	63	76.8	2.186	0.290	350	0.155	0.242	1.000
1256.0	42	72.0	2.180	0.302	345	0.134	0.259	0.863
1256.2	39	44.1	2.183	0.318	342		Coal	

1256.4	43	21.4	2.145	0.336	346	Coal		
1256.6	48	16.4	1.928	0.407	365	Coal		
1256.8	54	19.9	1.604	0.493	398	Coal		
1257.0	71	22.6	1.513	0.515	436	Coal		
1257.2	89	27.1	1.683	0.453	442	Coal		
1257.4	104	24.9	2.010	0.394	396	Coal		
1257.6	118	24.6	2.335	0.356	350	Coal		
1257.8	129	27.6	2.463	0.355	306	0.970	0.000	1.000
1258.0	134	27.7	2.465	0.341	294	0.949	0.000	1.000
1258.2	142	29.5	2.466	0.365	296	0.991	0.000	1.000
1258.4	143	32.9	2.467	0.367	288	0.994	0.000	1.000
1258.6	143	36.9	2.477	0.351	288	0.977	0.000	1.000
1258.8	147	40.0	2.481	0.342	287	0.967	0.000	1.000
1259.0	150	35.7	2.455	0.324	287	0.910	0.000	1.000
1259.2	153	25.5	2.416	0.304	294	0.673	0.000	1.000
1259.4	152	17.2	2.363	0.297	307	0.544	0.031	1.000
1259.6	151	14.3	2.314	0.315	316	0.505	0.068	1.000
1259.8	143	15.8	2.302	0.331	319	0.533	0.055	1.000
1260.0	134	18.2	2.302	0.315	320	0.481	0.089	1.000
1260.2	132	21.1	2.282	0.288	323	0.348	0.146	1.000
1260.4	125	21.7	2.245	0.297	329	0.302	0.178	1.000
1260.6	118	22.5	2.203	0.318	342	0.287	0.206	1.000
1260.8	116	23.5	2.157	0.318	351	0.194	0.253	1.000
1261.0	111	27.3	2.139	0.324	357	0.177	0.269	1.000
1261.2	99	32.0	2.131	0.327	360	0.171	0.275	1.000
1261.4	87	31.0	2.131	0.321	362	0.153	0.279	0.991

MULLOWAY 1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1261.6	82	26.8	2.129	0.306	364	0.096	0.295	1.000
1261.8	80	26.0	2.131	0.304	363	0.093	0.294	1.000
1262.0	77	27.0	2.128	0.316	366	0.142	0.282	1.000
1262.2	69	28.1	2.118	0.315	366	0.148	0.284	1.000
1262.4	73	28.2	2.117	0.297	367	0.063	0.308	1.000
1262.6	76	26.4	2.118	0.299	368	0.075	0.304	0.990
1262.8	68	23.5	2.115	0.309	367	0.111	0.296	1.000
1263.0	62	24.3	2.120	0.319	367	0.149	0.284	1.000
1263.2	58	28.8	2.117	0.329	367	0.176	0.279	1.000
1263.4	56	34.1	2.105	0.326	369	0.138	0.296	1.000
1263.6	55	34.7	2.099	0.339	385	0.180	0.288	0.917
1263.8	51	24.1	2.098	0.367	387	0.213	0.287	0.953
1264.0	51	18.3	2.102	0.388	391	0.281	0.270	1.000
1264.2	51	17.2	2.097	0.365	395	0.181	0.298	1.000
1264.4	44	21.5	2.061	0.326	400	0.068	0.338	1.000
1264.6	38	34.3	2.015	0.335	401	0.012	0.380	1.000
1264.8	42	44.7	2.042	0.343	407	0.067	0.351	0.991
1265.0	42	42.1	2.076	0.331	403	0.091	0.325	0.968
1265.2	43	37.7	2.090	0.323	397	0.098	0.314	0.986
1265.4	42	35.7	2.111	0.312	387	0.123	0.294	1.000
1265.6	39	39.8	2.133	0.284	379	0.068	0.295	1.000
1265.8	37	42.6	2.150	0.277	367	0.060	0.288	1.000
1266.0	36	43.7	2.178	0.263	362	0.085	0.264	1.000
1266.2	36	45.9	2.192	0.250	360	0.056	0.263	1.000
1266.4	35	51.3	2.192	0.261	357	0.078	0.260	0.992
1266.6	33	56.9	2.196	0.258	353	0.065	0.262	1.000
1266.8	30	65.4	2.199	0.274	349	0.081	0.260	1.000
1267.0	31	63.3	2.210	0.268	346	0.057	0.263	0.929
1267.2	31	45.3	2.212	0.245	342	0.057	0.254	0.913
1267.4	32	29.0	2.170	0.229	336	0.000	0.285	0.899
1267.6	34	20.3	2.076	0.231	325	0.000	0.309	0.999
1267.8	35	16.3	1.983	0.260	315	0.000	0.294	1.000
1268.0	36	13.9	1.960	0.297	316	0.000	0.298	1.000
1268.2	36	12.3	1.944	0.348	312	0.000	0.283	1.000
1268.4	37	11.2	1.906	0.382	313	Coal		
1268.6	41	10.5	1.951	0.372	311	Coal		
1268.8	56	10.9	2.040	0.372	343	Coal		

1269.0	79	12.6	2.045	0.353	372	Coal		
1269.2	105	16.2	2.090	0.330	359	Coal		
1269.4	127	19.5	2.165	0.318	334	Coal		
1269.6	142	21.9	2.183	0.320	328	Coal		
1269.8	135	25.1	2.130	0.387	338	Coal		
1270.0	119	35.9	1.867	0.452	377	Coal		
1270.2	110	43.5	1.772	0.432	429	Coal		
1270.4	115	47.7	1.988	0.371	409	Coal		
1270.6	120	40.0	2.308	0.359	355	Coal		
1270.8	124	36.6	2.482	0.352	295	0.984	0.000	1.000
1271.0	132	35.6	2.495	0.337	274	0.972	0.000	1.000
1271.2	135	37.9	2.496	0.299	273	0.910	0.000	1.000
1271.4	144	32.0	2.477	0.289	275	0.749	0.000	1.000
1271.6	152	30.2	2.450	0.306	275	0.875	0.000	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1271.8	157	28.4	2.431	0.331	284	0.898	0.000	1.000
1272.0	151	30.7	2.395	0.362	295	0.913	0.000	1.000
1272.2	136	35.9	2.367	0.395	307	0.940	0.000	1.000
1272.4	129	38.3	2.351	0.408	318	0.946	0.000	1.000
1272.6	127	38.3	2.354	0.384	328	0.909	0.000	1.000
1272.8	133	37.5	2.364	0.358	328	0.876	0.000	1.000
1273.0	144	38.4	2.371	0.360	327	0.886	0.000	1.000
1273.2	142	41.7	2.332	0.361	325	0.665	0.000	1.000
1273.4	117	46.5	2.205	0.312	332	0.271	0.204	1.000
1273.6	76	48.8	2.092	0.295	345	0.006	0.321	1.000
1273.8	51	46.2	2.064	0.313	361	0.235	0.262	0.971
1274.0	41	39.1	2.065	0.350	368	0.132	0.307	1.000
1274.2	38	37.0	2.075	0.351	369	0.101	0.321	1.000
1274.4	40	34.4	2.119	0.316	369	0.106	0.299	0.982
1274.6	38	30.4	2.134	0.279	367	0.106	0.279	0.995
1274.8	35	26.6	2.040	0.311	357	0.084	0.319	1.000
1275.0	35	23.2	1.984	0.367	361	0.068	0.321	1.000
1275.2	35	22.3	1.891	0.410	365	0.083	0.324	1.000
1275.4	34	22.4	1.840	0.422	374	0.069	0.333	1.000
1275.6	36	22.3	1.976	0.374	363	0.075	0.328	1.000
1275.8	39	22.5	2.152	0.299	351	0.099	0.282	1.000
1276.0	41	22.6	2.224	0.239	340	0.116	0.227	1.000
1276.2	44	22.8	2.240	0.227	337	0.134	0.210	1.000
1276.4	46	21.0	2.230	0.211	329	0.156	0.200	1.000
1276.6	45	18.8	2.193	0.225	329	0.151	0.221	1.000
1276.8	43	16.6	2.122	0.249	320	0.136	0.253	1.000
1277.0	43	17.3	2.109	0.256	317	0.133	0.248	1.000
1277.2	44	20.8	2.173	0.276	304	0.135	0.236	1.000
1277.4	44	31.5	2.101	0.314	310	0.141	0.229	1.000
1277.6	42	42.7	1.985	0.348	321	0.137	0.244	1.000
1277.8	37	46.5	1.989	0.353	333	0.097	0.277	1.000
1278.0	34	45.8	2.110	0.323	331	0.073	0.289	1.000
1278.2	33	41.3	2.200	0.290	323	0.065	0.273	0.967
1278.4	31	34.5	2.124	0.300	326	0.052	0.285	1.000
1278.6	31	28.7	2.092	0.313	328	0.039	0.294	1.000
1278.8	34	22.3	2.175	0.273	327	0.053	0.280	0.980
1279.0	40	19.7	2.193	0.264	313	0.098	0.254	1.000
1279.2	47	18.9	2.193	0.281	310	0.141	0.232	1.000
1279.4	51	20.7	2.214	0.288	312	0.181	0.222	1.000
1279.6	51	32.0	2.224	0.285	310	0.180	0.218	1.000
1279.8	45	45.6	2.214	0.283	314	0.137	0.239	1.000
1280.0	40	63.6	2.200	0.298	324	0.170	0.238	1.000
1280.2	40	71.8	2.189	0.313	332	0.199	0.238	0.935
1280.4	41	67.6	2.173	0.307	331	0.149	0.259	0.944
1280.6	42	60.7	2.164	0.312	332	0.156	0.257	0.966
1280.8	41	54.6	2.175	0.302	333	0.113	0.270	0.995
1281.0	37	54.3	2.182	0.293	331	0.119	0.262	0.991
1281.2	36	52.6	2.178	0.298	331	0.118	0.265	0.991
1281.4	38	50.8	2.173	0.278	331	0.097	0.268	0.995

1281.6	40	49.3	2.179	0.263	332	0.086	0.264	1.000
1281.8	41	47.6	2.189	0.262	331	0.088	0.259	0.996

MULLOWAY 1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1282.0	40	43.8	2.192	0.258	329	0.080	0.259	0.990
1282.2	40	39.9	2.194	0.248	328	0.052	0.264	0.992
1282.4	41	37.2	2.190	0.246	329	0.058	0.263	1.000
1282.6	43	35.5	2.177	0.247	333	0.013	0.284	1.000
1282.8	44	35.7	2.163	0.260	334	0.044	0.284	1.000
1283.0	39	36.6	2.167	0.281	335	0.098	0.270	1.000
1283.2	34	38.2	2.184	0.300	338	0.135	0.258	1.000
1283.4	34	35.5	2.184	0.292	342	0.105	0.265	0.997
1283.6	38	29.3	2.149	0.280	333	0.071	0.286	0.928
1283.8	38	18.7	2.089	0.268	328	0.000	0.308	0.982
1284.0	42	15.5	2.069	0.255	341	0.000	0.317	1.000
1284.2	47	14.8	2.084	0.293	358	0.000	0.339	0.991
1284.4	54	13.8	2.113	0.346	367	0.225	0.269	1.000
1284.6	70	12.7	2.137	0.369	370	0.347	0.228	1.000
1284.8	100	14.4	2.166	0.386	362	0.443	0.192	1.000
1285.0	129	18.5	2.227	0.381	346	0.547	0.069	1.000
1285.2	147	25.6	2.277	0.361	332	0.581	0.033	1.000
1285.4	152	28.0	2.278	0.353	317	0.557	0.046	1.000
1285.6	143	26.9	2.279	0.339	320	0.512	0.077	1.000
1285.8	126	29.5	2.268	0.346	327	0.513	0.079	1.000
1286.0	97	37.7	2.222	0.342	333	0.407	0.163	1.000
1286.2	60	49.0	2.186	0.322	338	0.217	0.233	1.000
1286.4	40	49.3	2.197	0.302	337	0.159	0.244	0.998
1286.6	34	46.7	2.200	0.293	330	0.130	0.250	1.000
1286.8	34	48.6	2.188	0.275	326	0.073	0.268	1.000
1287.0	36	52.0	2.163	0.258	329	0.023	0.290	0.997
1287.2	36	47.4	2.156	0.265	329	0.051	0.285	0.947
1287.4	37	37.4	2.186	0.296	323	0.120	0.261	0.970
1287.6	39	32.6	2.220	0.314	319	0.257	0.206	1.000
1287.8	42	32.5	2.216	0.277	313	0.122	0.242	1.000
1288.0	43	38.7	2.202	0.222	306	0.000	0.270	1.000
1288.2	44	43.1	2.204	0.207	297	0.000	0.263	1.000
1288.4	44	43.0	2.242	0.214	295	0.042	0.236	0.986
1288.6	42	35.7	2.303	0.222	289	0.121	0.189	0.981
1288.8	42	26.4	2.296	0.235	288	0.154	0.186	1.000
1289.0	46	21.5	2.300	0.217	288	0.164	0.174	1.000
1289.2	59	23.2	2.297	0.175	274	0.012	0.211	1.000
1289.4	77	29.7	2.032	0.265	286	Coal		
1289.6	92	42.1	1.652	0.437	364	Coal		
1289.8	95	63.6	1.619	0.467	414	Coal		
1290.0	87	48.6	1.899	0.362	402	Coal		
1290.2	69	29.8	2.221	0.259	350	Coal		
1290.4	56	22.8	2.236	0.244	320	0.134	0.218	1.000
1290.6	56	24.6	2.228	0.233	328	0.078	0.236	1.000
1290.8	61	25.3	2.220	0.255	342	0.119	0.233	1.000
1291.0	65	21.5	2.189	0.261	345	0.086	0.259	1.000
1291.2	84	20.1	2.193	0.289	342	0.375	0.166	1.000
1291.4	111	22.6	2.238	0.363	332	0.576	0.042	1.000
1291.6	124	30.6	2.235	0.382	324	0.715	0.000	1.000
1291.8	120	47.1	2.020	0.416	339	Coal		
1292.0	114	41.8	1.900	0.435	358	Coal		

MULLOWAY 1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1292.2	106	26.2	2.053	0.365	360	Coal		
1292.4	106	23.6	2.208	0.328	348	0.604	0.023	1.000
1292.6	103	24.9	2.026	0.355	343	Coal		
1292.8	100	29.5	1.893	0.382	358	Coal		
1293.0	104	31.9	1.975	0.400	362	Coal		
1293.2	112	32.5	2.114	0.397	361	Coal		
1293.4	110	36.3	2.153	0.397	361	0.644	0.004	1.000
1293.6	100	42.7	1.945	0.416	374	Coal		

1293.8	91	28.2	1.642	0.472	403	Coal		
1294.0	95	20.8	1.589	0.463	411	Coal		
1294.2	100	18.5	1.638	0.436	396	Coal		
1294.4	105	22.6	1.668	0.419	358	0.567	0.068	1.000
1294.6	117	27.3	1.839	0.371	343	0.654	0.000	1.000
1294.8	133	18.7	2.111	0.317	333	0.772	0.000	1.000
1295.0	134	18.2	2.170	0.350	341	0.821	0.000	1.000
1295.2	122	18.6	2.081	0.399	355	0.757	0.000	1.000
1295.4	105	21.0	1.881	0.391	378	Coal		
1295.6	97	25.0	1.720	0.435	394	Coal		
1295.8	95	19.2	1.732	0.454	400	Coal		
1296.0	93	16.8	1.916	0.407	379	Coal		
1296.2	94	15.1	1.977	0.418	377	0.526	0.113	1.000
1296.4	82	15.1	1.656	0.499	389	Coal		
1296.6	58	20.3	1.385	0.564	418	Coal		
1296.8	35	36.8	1.275	0.584	443	Coal		
1297.0	29	97.3	1.250	0.586	458	Coal		
1297.2	41	188.8	1.326	0.557	460	Coal		
1297.4	65	168.0	1.569	0.428	439	Coal		
1297.6	90	36.5	1.920	0.316	384	Coal		
1297.8	109	26.5	2.085	0.316	360	0.586	0.046	1.000
1298.0	101	27.0	1.884	0.455	343	Coal		
1298.2	62	48.8	1.511	0.547	385	Coal		
1298.4	28	170.1	1.283	0.549	441	Coal		
1298.6	16	212.1	1.208	0.536	453	Coal		
1298.8	14	181.1	1.212	0.551	456	Coal		
1299.0	16	168.7	1.216	0.528	477	Coal		
1299.2	28	164.7	1.243	0.553	484	Coal		
1299.4	57	97.8	1.395	0.543	490	Coal		
1299.6	91	43.1	1.626	0.510	428	Coal		
1299.8	121	30.6	1.856	0.424	355	Coal		
1300.0	144	27.5	2.077	0.347	327	0.859	0.000	1.000
1300.2	141	32.7	2.033	0.370	298	0.884	0.000	1.000
1300.4	121	41.0	1.685	0.452	320	Coal		
1300.6	117	49.1	1.549	0.501	385	Coal		
1300.8	124	56.7	1.720	0.433	397	Coal		
1301.0	112	48.5	2.070	0.324	361	Coal		
1301.2	83	34.5	2.242	0.266	329	Coal		
1301.4	59	25.7	2.237	0.246	326	0.135	0.218	1.000
1301.6	43	28.1	2.217	0.235	344	0.059	0.248	1.000
1301.8	36	38.1	2.191	0.243	353	0.053	0.263	1.000
1302.0	36	44.6	2.176	0.251	361	0.024	0.282	1.000
1302.2	38	53.5	2.174	0.257	363	0.040	0.280	1.000

MULLOWAY 1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1302.4	38	55.0	2.178	0.254	367	0.041	0.276	0.997
1302.6	40	52.6	2.181	0.240	370	0.016	0.279	0.971
1302.8	41	46.1	2.184	0.242	366	0.029	0.274	0.973
1303.0	38	41.0	2.183	0.272	360	0.098	0.262	1.000
1303.2	38	39.9	2.190	0.294	361	0.128	0.256	1.000
1303.4	38	41.9	2.181	0.286	361	0.097	0.267	1.000
1303.6	36	43.5	2.175	0.282	358	0.085	0.273	0.998
1303.8	37	38.7	2.170	0.279	357	0.088	0.272	0.973
1304.0	37	31.2	2.163	0.272	356	0.091	0.271	0.955
1304.2	37	20.7	2.165	0.276	353	0.091	0.272	0.909
1304.4	40	13.4	2.172	0.268	357	0.084	0.269	0.989
1304.6	47	12.1	2.196	0.273	351	0.140	0.242	1.000
1304.8	65	12.8	2.226	0.297	336	0.271	0.194	1.000
1305.0	81	18.5	2.252	0.291	319	0.295	0.175	1.000
1305.2	97	31.5	2.255	0.277	310	0.253	0.182	1.000
1305.4	105	37.2	2.254	0.278	305	0.256	0.182	1.000
1305.6	95	44.3	2.271	0.282	307	0.303	0.162	1.000
1305.8	74	44.6	2.262	0.272	315	0.252	0.177	1.000
1306.0	61	40.7	2.225	0.268	322	0.193	0.211	0.994
1306.2	67	34.8	2.208	0.297	332	0.252	0.206	1.000

1306.4	97	36.2	2.242	0.293	327	0.284	0.184	1.000
1306.6	125	43.9	2.282	0.315	315	0.441	0.126	1.000
1306.8	122	55.0	2.307	0.334	305	0.554	0.041	1.000
1307.0	91	51.8	2.297	0.291	305	0.389	0.128	1.000
1307.2	64	37.2	2.255	0.258	319	0.207	0.191	1.000
1307.4	55	26.6	2.213	0.265	329	0.168	0.223	0.982
1307.6	67	19.3	2.223	0.276	337	0.215	0.206	1.000
1307.8	92	17.8	2.251	0.297	329	0.314	0.172	1.000
1308.0	116	20.2	2.252	0.332	317	Coal		
1308.2	134	28.6	1.859	0.414	302	Coal		
1308.4	123	44.8	1.555	0.473	329	Coal		
1308.6	102	60.5	1.552	0.519	377	Coal		
1308.8	78	67.3	1.802	0.428	389	Coal		
1309.0	50	74.3	2.100	0.313	358	Coal		
1309.2	35	60.8	2.221	0.270	326	0.104	0.243	0.889
1309.4	41	31.2	2.217	0.249	322	0.110	0.236	0.873
1309.6	68	18.2	2.214	0.273	327	0.180	0.221	1.000
1309.8	102	16.2	2.142	0.339	319	Coal		
1310.0	107	22.6	1.807	0.432	363	Coal		
1310.2	83	43.4	1.488	0.506	389	Coal		
1310.4	60	112.7	1.335	0.541	423	Coal		
1310.6	49	284.2	1.266	0.524	426	Coal		
1310.8	56	234.6	1.236	0.510	428	Coal		
1311.0	76	107.1	1.342	0.496	440	Coal		
1311.2	86	49.5	1.631	0.393	418	Coal		
1311.4	77	22.0	2.040	0.294	395	Coal		
1311.6	67	15.8	2.184	0.270	335	0.325	0.181	1.000
1311.8	75	16.6	2.189	0.287	338	0.335	0.181	1.000
1312.0	96	24.3	2.167	0.314	322	0.476	0.123	1.000
1312.2	110	48.2	2.224	0.332	311	0.619	0.012	1.000
1312.4	109	78.5	2.317	0.339	311	0.637	0.003	0.971

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1312.6	94	29.5	2.282	0.322	321	0.547	0.047	0.951
1312.8	89	13.3	2.195	0.344	322	0.466	0.125	1.000
1313.0	98	12.2	2.095	0.383	323	0.508	0.088	1.000
1313.2	110	13.9	1.929	0.354	309	0.604	0.018	1.000
1313.4	116	23.1	1.906	0.372	286	0.663	0.000	1.000
1313.6	119	31.5	1.968	0.397	282	0.700	0.000	1.000
1313.8	116	29.1	1.924	0.448	287	Coal		
1314.0	112	28.0	1.852	0.448	288	Coal		
1314.2	117	29.6	1.821	0.432	291	Coal		
1314.4	123	32.8	1.814	0.458	305	Coal		
1314.6	132	36.7	1.852	0.441	334	Coal		
1314.8	146	41.3	1.963	0.434	346	Coal		
1315.0	146	49.5	2.078	0.459	359	Coal		
1315.2	121	60.9	2.082	0.478	345	0.519	0.099	0.970
1315.4	90	5[illegible]6	2.097	0.390	347	0.315	0.224	0.889
1315.6	67	2[illegible]6	2.133	0.321	337	0.176	0.262	0.997
1315.8	51	2[illegible]1	2.151	0.326	335	0.180	0.254	1.000
1316.0	44	20.6	2.143	0.316	340	0.131	0.276	1.000
1316.2	41	27.2	2.136	0.292	341	0.084	0.292	1.000
1316.4	42	33.3	2.134	0.276	343	0.035	0.304	1.000
1316.6	46	38.2	2.137	0.309	343	0.154	0.272	0.979
1316.8	48	31.0	2.142	0.345	342	0.225	0.247	1.000
1317.0	48	27.9	2.138	0.342	341	0.194	0.256	1.000
1317.2	48	23.4	2.133	0.353	342	0.233	0.244	1.000
1317.4	59	22.2	2.116	0.385	344	0.307	0.219	1.000
1317.6	85	23.9	2.076	0.405	354	0.323	0.222	1.000
1317.8	123	29.5	2.089	0.410	353	0.364	0.216	1.000
1318.0	146	35.3	2.221	0.386	328	0.524	0.084	1.000
1318.2	124	38.3	2.311	0.364	305	0.633	0.005	1.000
1318.4	76	42.8	2.270	0.351	316	0.477	0.100	1.000
1318.6	48	44.7	2.227	0.318	337	0.276	0.198	1.000
1318.8	45	41.1	2.239	0.275	347	0.170	0.216	0.961

1319.0	49	23.7	2.249	0.259	345	0.198	0.196	0.959
1319.2	73	16.0	2.206	0.297	345	0.237	0.213	1.000
1319.4	109	18.6	2.203	0.351	337	0.399	0.180	1.000
1319.6	129	26.7	2.286	0.373	327	0.641	0.003	1.000
1319.8	123	45.1	2.313	0.357	319	0.644	0.002	1.000
1320.0	101	36.3	2.252	0.333	320	0.436	0.136	1.000
1320.2	90	20.0	2.200	0.306	334	0.240	0.218	0.969
1320.4	113	16.3	2.230	0.308	331	0.309	0.185	1.000
1320.6	142	20.3	2.295	0.340	316	0.549	0.048	1.000
1320.8	137	28.9	2.271	0.364	322	0.581	0.032	1.000
1321.0	112	41.3	2.206	0.328	320	0.325	0.183	1.000
1321.2	98	43.4	2.212	0.289	331	0.207	0.216	1.000
1321.4	82	43.7	2.211	0.298	328	0.236	0.209	1.000
1321.6	62	58.1	2.179	0.295	333	0.170	0.246	1.000
1321.8	52	53.8	2.169	0.293	344	0.157	0.253	0.908
1322.0	47	38.8	2.155	0.299	347	0.157	0.261	0.986
1322.2	49	28.6	2.146	0.311	348	0.168	0.265	0.964
1322.4	48	23.5	2.164	0.317	341	0.168	0.259	1.000
1322.6	48	24.1	2.176	0.305	337	0.160	0.254	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1322.8	48	25.2	2.174	0.287	334	0.136	0.256	1.000
1323.0	48	27.7	2.170	0.282	337	0.135	0.256	1.000
1323.2	48	36.2	2.166	0.288	341	0.129	0.261	1.000
1323.4	51	47.6	2.161	0.295	339	0.124	0.266	1.000
1323.6	48	48.4	2.173	0.285	337	0.129	0.258	0.980
1323.8	43	40.2	2.178	0.293	335	0.122	0.262	0.979
1324.0	43	34.2	2.179	0.300	337	0.135	0.259	1.000
1324.2	47	32.3	2.200	0.296	336	0.165	0.240	1.000
1324.4	48	33.6	2.194	0.299	336	0.157	0.246	1.000
1324.6	42	37.6	2.161	0.323	334	0.176	0.256	1.000
1324.8	35	40.7	2.139	0.337	334	0.168	0.256	1.000
1325.0	35	32.1	2.145	0.334	339	0.173	0.262	0.972
1325.2	39	21.5	2.166	0.316	336	0.171	0.257	0.982
1325.4	51	16.4	2.205	0.296	330	0.222	0.218	1.000
1325.6	86	16.1	2.227	0.283	319	0.217	0.206	1.000
1325.8	124	25.2	2.217	0.336	330	0.375	0.172	1.000
1326.0	120	35.8	2.207	0.374	333	0.484	0.121	1.000
1326.2	87	32.2	2.213	0.341	345	0.386	0.176	1.000
1326.4	69	25.1	2.162	0.359	348	0.346	0.210	1.000
1326.6	70	27.5	2.019	0.399	369	Coal		
1326.8	73	39.2	1.844	0.464	392	Coal		
1327.0	67	70.0	1.688	0.512	412	Coal		
1327.2	53	155.2	1.472	0.498	429	Coal		
1327.4	40	232.7	1.309	0.493	438	Coal		
1327.6	38	564.8	1.260	0.546	455	Coal		
1327.8	46	1677.4	1.359	0.540	459	Coal		
1328.0	62	408.2	1.656	0.434	426	Coal		
1328.2	70	35.9	2.126	0.350	371	Coal		
1328.4	78	26.4	2.152	0.367	314	0.347	0.189	1.000
1328.6	91	27.3	1.924	0.438	327	Coal		
1328.8	95	51.8	1.787	0.480	365	Coal		
1329.0	91	65.0	1.769	0.501	388	Coal		
1329.2	89	45.6	1.789	0.471	403	Coal		
1329.4	84	32.0	1.920	0.436	369	Coal		
1329.6	76	35.6	2.144	0.376	333	Coal		
1329.8	62	40.6	2.300	0.327	320	0.302	0.174	1.000
1330.0	43	39.7	2.300	0.293	295	0.159	0.206	1.000
1330.2	36	33.6	2.210	0.291	319	0.093	0.250	1.000
1330.4	36	30.9	2.175	0.325	331	0.079	0.284	1.000
1330.6	36	32.8	2.180	0.324	338	0.079	0.289	1.000
1330.8	36	39.2	2.168	0.310	342	0.084	0.285	1.000
1331.0	37	47.7	2.166	0.284	345	0.085	0.276	1.000
1331.2	37	57.7	2.191	0.252	343	0.090	0.254	1.000
1331.4	39	65.3	2.216	0.226	338	0.097	0.232	0.996

1331.6	42	66.4	2.241	0.217	337	0.119	0.211	1.000
1331.8	43	70.6	2.259	0.201	337	0.130	0.195	1.000
1332.0	41	72.6	2.252	0.196	337	0.126	0.196	1.000
1332.2	40	80.2	2.256	0.188	333	0.110	0.198	1.000
1332.4	39	87.4	2.258	0.200	332	0.106	0.203	1.000
1332.6	38	87.0	2.251	0.218	328	0.100	0.214	1.000
1332.8	38	94.3	2.240	0.246	333	0.097	0.230	0.958

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1333.0	39	86.0	2.226	0.245	341	0.104	0.232	0.959
1333.2	40	77.2	2.222	0.247	343	0.106	0.234	0.977
1333.4	41	75.7	2.161	0.256	337	0.118	0.256	0.969
1333.6	41	72.3	2.130	0.260	334	0.117	0.271	0.951
1333.8	36	68.8	2.155	0.260	328	0.089	0.271	0.981
1334.0	35	67.0	2.167	0.273	328	0.072	0.275	0.978
1334.2	37	58.9	2.177	0.280	331	0.084	0.270	0.957
1334.4	38	51.9	2.196	0.283	337	0.095	0.260	0.976
1334.6	38	41.8	2.205	0.295	337	0.090	0.263	0.967
1334.8	40	34.6	2.207	0.318	335	0.106	0.267	1.000
1335.0	43	29.2	2.214	0.294	331	0.128	0.247	0.994
1335.2	42	24.0	2.128	0.301	331	0.124	0.265	1.000
1335.4	42	24.3	2.085	0.302	336	0.125	0.274	1.000
1335.6	44	26.6	2.141	0.285	339	0.134	0.269	1.000
1335.8	46	31.7	2.205	0.276	337	0.161	0.232	1.000
1336.0	43	48.2	2.221	0.264	335	0.140	0.229	1.000
1336.2	38	58.4	2.224	0.256	338	0.111	0.234	1.000
1336.4	36	74.1	2.203	0.250	342	0.090	0.248	1.000
1336.6	35	83.2	2.182	0.236	349	0.067	0.259	0.992
1336.8	38	86.1	2.154	0.230	360	0.089	0.260	0.975
1337.0	44	78.1	2.117	0.234	357	0.128	0.263	0.910
1337.2	46	57.2	2.071	0.260	366	0.151	0.283	0.890
1337.4	50	40.4	2.008	0.316	365	0.172	0.294	1.000
1337.6	58	33.6	2.000	0.344	363	0.227	0.272	1.000
1337.8	65	30.2	2.100	0.314	351	0.299	0.235	1.000
1338.0	62	30.2	2.158	0.274	337	0.284	0.206	1.000
1338.2	55	30.8	2.101	0.281	339	0.236	0.236	1.000
1338.4	58	34.6	2.132	0.296	336	0.242	0.235	1.000
1338.6	58	44.4	2.206	0.293	335	0.250	0.207	1.000
1338.8	48	61.1	2.183	0.272	336	0.193	0.226	1.000
1339.0	40	74.4	2.197	0.268	331	0.124	0.245	0.974
1339.2	39	69.0	2.217	0.299	342	0.100	0.258	0.956
1339.4	39	54.6	2.209	0.316	341	0.106	0.266	0.923
1339.6	42	37.5	2.176	0.328	346	0.112	0.280	0.955
1339.8	51	30.0	2.174	0.338	337	0.167	0.266	0.998
1340.0	61	26.2	2.184	0.306	323	0.249	0.217	1.000
1340.2	65	26.9	2.192	0.277	311	0.294	0.184	1.000
1340.4	56	32.3	2.116	0.276	317	0.252	0.200	1.000
1340.6	44	44.2	1.943	0.315	332	0.164	0.248	1.000
1340.8	37	58.7	1.809	0.353	342	0.101	0.288	1.000
1341.0	37	66.1	1.855	0.348	342	0.093	0.295	1.000
1341.2	37	64.4	1.991	0.345	340	0.084	0.294	1.000
1341.4	41	62.7	2.080	0.319	334	0.110	0.280	1.000
1341.6	44	58.4	2.190	0.290	333	0.130	0.254	0.987
1341.8	46	57.2	2.244	0.282	330	0.158	0.221	1.000
1342.0	44	53.4	2.215	0.288	332	0.142	0.239	0.987
1342.2	38	48.5	2.155	0.319	340	0.108	0.283	0.996
1342.4	34	43.3	2.119	0.348	343	0.072	0.298	0.997
1342.6	33	28.4	2.053	0.365	343	0.061	0.307	1.000
1342.8	36	23.0	1.943	0.374	342	0.074	0.298	1.000
1343.0	40	19.0	1.772	0.382	351	0.106	0.296	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1343.2	43	20.1	1.706	0.338	347	0.123	0.293	1.000
1343.4	46	24.6	1.835	0.293	327	0.152	0.258	1.000
1343.6	45	39.5	1.930	0.300	331	0.151	0.260	1.000

1343.8	40	57.3	1.924	0.335	339	0.125	0.274	1.000
1344.0	36	59.1	1.939	0.364	360	0.090	0.311	1.000
1344.2	34	57.3	1.953	0.353	346	0.066	0.318	1.000
1344.4	33	53.8	1.934	0.352	342	0.064	0.297	1.000
1344.6	32	46.7	1.999	0.371	344	0.053	0.310	1.000
1344.8	32	39.8	2.059	0.390	346	0.046	0.310	1.000
1345.0	35	32.3	2.059	0.399	361	0.064	0.320	1.000
1345.2	38	29.9	2.077	0.368	350	0.092	0.310	1.000
1345.4	43	28.2	2.103	0.362	352	0.125	0.295	1.000
1345.6	48	28.1	2.148	0.348	335	0.161	0.270	1.000
1345.8	51	27.7	2.174	0.318	329	0.191	0.241	1.000
1346.0	55	28.5	2.182	0.308	323	0.211	0.229	1.000
1346.2	63	29.3	2.190	0.298	319	0.256	0.206	1.000
1346.4	74	36.4	2.198	0.310	317	0.258	0.204	1.000
1346.6	78	42.1	2.201	0.310	322	0.255	0.210	1.000
1346.8	89	53.8	2.199	0.279	323	0.147	0.240	1.000
1347.0	105	65.2	2.225	0.255	326	0.122	0.230	1.000
1347.2	92	72.8	2.220	0.258	324	0.119	0.234	1.000
1347.4	71	70.7	2.190	0.267	330	0.115	0.251	0.945
1347.6	69	56.4	2.190	0.272	335	0.143	0.243	0.937
1347.8	83	44.9	2.197	0.276	329	0.135	0.244	0.999
1348.0	104	44.5	2.227	0.290	318	0.242	0.201	1.000
1348.2	121	41.9	2.239	0.319	312	0.365	0.158	1.000
1348.4	122	45.0	2.194	0.336	308	0.332	0.166	1.000
1348.6	101	49.4	2.203	0.298	302	0.222	0.194	1.000
1348.8	80	66.0	2.306	0.256	299	0.289	0.142	1.000
1349.0	64	64.1	2.303	0.251	296	0.257	0.152	1.000
1349.2	61	43.0	2.229	0.251	315	0.124	0.226	0.981
1349.4	64	37.3	2.198	0.259	324	0.115	0.245	1.000
1349.6	64	36.1	2.179	0.282	325	0.150	0.247	1.000
1349.8	72	39.5	2.192	0.274	325	0.128	0.248	1.000
1350.0	105	40.0	2.230	0.265	318	0.165	0.218	1.000
1350.2	134	45.0	2.263	0.000	302	0.000	0.150	1.000
1350.4	116	52.9	2.258	0.280	301	0.269	0.174	1.000
1350.6	72	49.4	2.218	0.287	306	0.234	0.193	1.000
1350.8	49	45.6	2.197	0.270	312	0.129	0.238	1.000
1351.0	47	47.8	2.194	0.259	315	0.101	0.251	1.000
1351.2	49	62.9	2.187	0.268	319	0.113	0.253	1.000
1351.4	50	84.1	2.177	0.270	323	0.089	0.266	0.999
1351.6	48	85.9	2.178	0.281	331	0.138	0.252	0.929
1351.8	51	76.0	2.178	0.292	330	0.184	0.240	0.898
1352.0	54	54.5	2.167	0.279	331	0.103	0.268	0.881
1352.2	64	35.1	2.179	0.259	330	0.071	0.267	0.969
1352.4	80	31.2	2.198	0.281	331	0.152	0.239	1.000
1352.6	88	31.6	2.229	0.292	320	0.252	0.198	1.000
1352.8	96	34.9	2.238	0.281	316	0.234	0.196	1.000
1353.0	102	42.9	2.220	0.275	316	0.178	0.220	1.000
1353.2	95	52.8	2.189	0.296	326	0.186	0.235	1.000

MULLOWAY 1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1353.4	77	60.6	2.171	0.297	332	0.173	0.248	1.000
1353.6	65	61.6	2.165	0.293	334	0.164	0.252	0.964
1353.8	68	56.8	2.168	0.275	335	0.103	0.266	0.984
1354.0	71	52.9	2.183	0.244	331	0.039	0.272	0.983
1354.2	72	49.2	2.202	0.260	321	0.125	0.240	1.000
1354.4	81	48.6	2.217	0.278	320	0.181	0.221	1.000
1354.6	89	49.2	2.211	0.282	321	0.183	0.224	1.000
1354.8	85	50.9	2.197	0.286	327	0.168	0.236	1.000
1355.0	77	46.4	2.173	0.291	327	0.164	0.247	0.998
1355.2	84	41.6	2.147	0.320	329	0.182	0.245	1.000
1355.4	115	38.6	2.156	0.337	327	0.256	0.218	1.000
1355.6	140	37.9	2.183	0.313	325	0.230	0.224	1.000
1355.8	153	40.7	2.200	0.304	322	0.234	0.217	1.000
1356.0	157	41.5	2.224	0.317	323	0.325	0.185	1.000
1356.2	157	43.2	2.252	0.320	318	0.396	0.150	1.000

1356.4	134	47.6	2.257	0.309	320	0.366	0.153	1.000
1356.6	96	48.1	2.251	0.322	323	0.400	0.148	1.000
1356.8	76	44.9	2.222	0.300	332	0.285	0.189	1.000
1357.0	84	44.6	2.201	0.289	328	0.185	0.230	1.000
1357.2	79	49.2	2.214	0.298	328	0.253	0.205	1.000
1357.4	65	45.3	2.224	0.300	329	0.279	0.192	1.000
1357.6	70	35.8	2.211	0.279	338	0.201	0.217	1.000
1357.8	89	31.3	2.221	0.296	334	0.250	0.203	1.000
1358.0	98	36.1	2.279	0.349	316	0.547	0.053	1.000
1358.2	82	52.8	2.364	0.307	269	0.544	0.019	1.000
1358.4	63	74.1	2.386	0.239	246	0.333	0.077	1.000
1358.6	55	87.6	2.391	0.221	238	0.304	0.043	1.000
1358.8	54	103.5	2.455	0.204	229	0.380	0.011	1.000
1359.0	49	190.3	2.483	0.158	214	0.233	0.018	1.000
1359.2	56	155.4	2.472	0.114	215	0.147	0.043	1.000
1359.4	67	70.8	2.370	0.142	244	0.035	0.133	1.000
1359.6	69	63.1	2.237	0.208	279	0.007	0.220	1.000
1359.8	61	58.7	2.188	0.265	305	0.083	0.236	1.000
1360.0	65	41.5	2.203	0.275	308	0.160	0.224	0.963
1360.2	95	27.3	2.218	0.266	309	0.144	0.229	1.000
1360.4	130	24.6	2.263	0.263	315	0.223	0.184	1.000
1360.6	148	27.3	2.310	0.313	311	0.487	0.082	1.000
1360.8	134	46.2	2.325	0.339	314	0.576	0.026	1.000
1361.0	107	52.9	2.270	0.319	317	0.426	0.131	1.000
1361.2	80	50.3	2.219	0.304	326	0.293	0.193	1.000
1361.4	65	54.4	2.194	0.298	336	0.238	0.217	0.997
1361.6	60	49.1	2.200	0.291	340	0.204	0.224	0.952
1361.8	64	35.3	2.198	0.277	343	0.162	0.235	0.975
1362.0	75	27.9	2.198	0.273	337	0.136	0.242	1.000
1362.2	95	25.3	2.209	0.284	333	0.185	0.225	1.000
1362.4	121	27.5	2.229	0.294	326	0.257	0.197	1.000
1362.6	140	30.0	2.270	0.287	316	0.322	0.159	1.000
1362.8	140	34.3	2.324	0.293	305	0.448	0.100	1.000
1363.0	136	44.9	2.273	0.321	319	0.440	0.127	1.000
1363.2	136	45.7	2.202	0.383	324	0.473	0.121	1.000
1363.4	118	48.7	2.219	0.384	335	0.514	0.089	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1363.6	84	38.0	2.264	0.370	330	0.543	0.061	1.000
1363.8	66	30.0	2.246	0.280	337	0.267	0.182	1.000
1364.0	97	26.0	2.256	0.258	336	0.193	0.195	1.000
1364.2	127	25.7	2.257	0.274	328	0.248	0.182	1.000
1364.4	137	27.2	2.240	0.343	329	0.447	0.148	1.000
1364.6	145	31.0	2.245	0.351	325	0.482	0.114	1.000
1364.8	145	34.6	2.287	0.346	320	0.553	0.048	1.000
1365.0	133	32.3	2.293	0.334	325	0.525	0.062	1.000
1365.2	124	30.7	2.253	0.345	326	0.480	0.112	1.000
1365.4	115	31.3	2.268	0.350	325	0.529	0.068	1.000
1365.6	95	36.5	2.343	0.334	302	0.628	0.005	1.000
1365.8	80	42.4	2.403	0.279	293	0.528	0.027	1.000
1366.0	72	37.9	2.385	0.254	297	0.419	0.075	1.000
1366.2	57	27.8	2.300	0.248	309	0.216	0.168	1.000
1366.4	41	23.3	2.233	0.268	325	0.116	0.234	1.000
1366.6	41	22.1	2.214	0.260	328	0.114	0.239	1.000
1366.8	45	20.7	0.000	0.250	329	0.000	0.000	1.000
1367.0	58	18.6	0.000	0.242	335	Coal		
1367.2	81	20.4	0.000	0.289	380	Coal		
1367.4	104	25.2	0.000	0.352	375	Coal		
1367.6	122	40.3	0.000	0.380	355	Coal		
1367.8	122	64.8	0.000	0.366	281	Coal		
1368.0	110	40.0	2.367	0.393	294	0.933	0.000	1.000
1368.2	116	28.8	2.310	0.354	310	0.628	0.007	1.000
1368.4	132	22.5	2.282	0.303	314	0.399	0.135	1.000
1368.6	135	21.8	2.242	0.302	325	0.314	0.177	1.000
1368.8	139	25.9	2.251	0.286	316	0.275	0.180	1.000

1369.0	151	28.5	2.305	0.271	311	0.337	0.135	1.000
1369.2	158	30.8	2.333	0.268	302	0.383	0.109	1.000
1369.4	167	25.3	2.301	0.282	305	0.367	0.131	1.000
1369.6	165	21.9	0.000	0.305	318	0.000	0.000	1.000
1369.8	149	26.4	0.000	0.312	337	Coal		
1370.0	125	41.5	0.000	0.367	376	Coal		
1370.2	114	56.9	0.000	0.474	422	Coal		
1370.4	119	59.0	0.000	0.510	411	Coal		
1370.6	128	52.8	0.000	0.483	351	Coal		
1370.8	139	52.0	2.335	0.393	300	Coal		
1371.0	135	26.8	2.335	0.383	314	0.888	0.000	1.000
1371.2	120	15.0	2.335	0.355	331	0.682	0.000	1.000
1371.4	110	11.0	0.000	0.394	355	Coal		
1371.6	116	11.7	0.000	0.450	426	Coal		
1371.8	121	21.7	0.000	0.508	442	Coal		
1372.0	106	38.9	0.000	0.521	421	Coal		
1372.2	67	45.6	0.000	0.441	347	Coal		
1372.4	46	36.4	2.199	0.381	325	Coal		
1372.6	40	28.1	2.175	0.340	317	0.257	0.200	1.000
1372.8	39	23.5	2.167	0.297	320	0.104	0.261	1.000
1373.0	39	21.0	2.168	0.287	317	0.105	0.259	1.000
1373.2	41	17.8	2.158	0.276	315	0.089	0.258	1.000
1373.4	51	15.9	0.000	0.271	314	0.000	0.000	1.000
1373.6	68	18.9	0.000	0.304	315	Coal		

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1373.8	70	38.1	0.000	0.355	346	Coal		
1374.0	49	127.0	0.000	0.437	394	Coal		
1374.2	28	623.1	0.000	0.457	443	Coal		
1374.4	19	555.7	0.000	0.478	454	Coal		
1374.6	18	298.9	0.000	0.472	456	Coal		
1374.8	22	152.1	0.000	0.461	448	Coal		
1375.0	27	100.6	0.000	0.432	449	Coal		
1375.2	25	94.8	0.000	0.463	449	Coal		
1375.4	17	107.1	0.000	0.505	454	Coal		
1375.6	13	168.3	0.000	0.493	456	Coal		
1375.8	12	206.3	0.000	0.514	458	Coal		
1376.0	13	205.1	0.000	0.513	459	Coal		
1376.2	14	193.8	0.000	0.495	454	Coal		
1376.4	14	172.7	0.000	0.563	455	Coal		
1376.6	15	152.4	0.000	0.616	460	Coal		
1376.8	12	134.3	0.000	0.545	461	Coal		
1377.0	11	135.9	0.000	0.507	460	Coal		
1377.2	13	154.2	0.000	0.516	460	Coal		
1377.4	14	196.3	0.000	0.514	464	Coal		
1377.6	14	218.8	0.000	0.501	461	Coal		
1377.8	19	296.9	0.000	0.498	462	Coal		
1378.0	30	409.3	0.000	0.517	441	Coal		
1378.2	46	16[illegible]	0.000	0.546	450	Coal		
1378.4	59	6[illegible]	0.000	0.575	436	Coal		
1378.6	60	40.5	2.278	0.277	404	Coal		
1378.8	60	32.3	2.278	0.277	345	0.254	0.171	0.240
1379.0	58	33.4	2.278	0.277	306	0.248	0.170	0.240
1379.2	55	35.0	2.256	0.232	316	0.094	0.213	0.271
1379.4	56	33.5	2.224	0.230	328	0.024	0.250	0.280
1379.6	76	29.9	2.226	0.238	340	0.065	0.240	0.281
1379.8	110	27.9	2.265	0.242	316	0.158	0.196	0.291
1380.0	135	31.6	2.323	0.267	303	0.360	0.118	0.281
1380.2	136	37.5	2.336	0.286	295	0.448	0.094	0.233
1380.4	126	35.6	2.336	0.286	325	0.448	0.094	0.243
1380.6	102	34.3	0.000	0.430	349	Coal		
1380.8	70	29.5	0.000	0.474	420	Coal		
1381.0	41	36.6	0.000	0.570	444	Coal		
1381.2	24	53.0	0.000	0.572	472	Coal		
1381.4	14	102.1	0.000	0.526	439	Coal		

1381.6	12	174.7	0.000	0.502	439	Coal		
1381.8	10	262.5	0.000	0.524	447	Coal		
1382.0	8	355.2	0.000	0.535	449	Coal		
1382.2	8	522.4	0.000	0.567	454	Coal		
1382.4	8	738.6	0.000	0.563	449	Coal		
1382.6	10	958.3	0.000	0.564	449	Coal		
1382.8	14	1251.3	0.000	0.569	454	Coal		
1383.0	20	3037.6	0.000	0.578	453	Coal		
1383.2	39	1352.6	0.000	0.634	447	Coal		
1383.4	49	175.5	0.000	0.639	410	Coal		
1383.6	46	65.3	2.271	0.291	357	0.269	0.172	0.116
1383.8	46	46.1	2.271	0.291	320	0.274	0.175	0.162

MULLOWAY 1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1384.0	52	51.1	2.266	0.229	306	0.111	0.207	0.210
1384.2	58	64.1	2.270	0.242	306	0.153	0.193	0.169
1384.4	51	82.2	2.258	0.268	310	0.177	0.202	0.121
1384.6	41	91.2	2.245	0.266	314	0.111	0.226	0.128
1384.8	37	92.6	2.224	0.263	309	0.089	0.239	0.129
1385.0	38	78.6	2.214	0.258	313	0.076	0.244	0.148
1385.2	49	68.8	2.237	0.248	317	0.102	0.225	0.160
1385.4	70	63.2	2.279	0.232	313	0.179	0.181	0.162
1385.6	91	53.4	2.301	0.236	309	0.209	0.160	0.188
1385.8	103	45.4	2.293	0.253	309	0.252	0.156	0.198
1386.0	105	40.7	2.285	0.257	310	0.250	0.163	0.209
1386.2	100	41.0	2.298	0.277	307	0.343	0.134	0.198
1386.4	102	49.8	2.322	0.297	293	0.458	0.095	0.190
1386.6	95	56.3	2.308	0.280	298	0.343	0.129	0.149
1386.8	84	55.0	2.250	0.266	309	0.178	0.197	0.167
1387.0	87	44.1	2.250	0.275	324	0.237	0.184	0.176
1387.2	98	41.8	0.000	0.275	323	0.000	0.000	1.000
1387.4	102	46.2	0.000	0.307	346	Coal		
1387.6	100	52.1	0.000	0.410	390	Coal		
1387.8	102	56.0	0.000	0.511	398	Coal		
1388.0	102	60.2	0.000	0.448	402	Coal		
1388.2	98	69.7	2.341	0.307	327	Coal		
1388.4	95	66.0	2.341	0.307	315	Coal		
1388.6	94	43.9	2.341	0.307	301	0.471	0.073	0.283
1388.8	92	30.2	2.317	0.269	293	0.325	0.128	0.280
1389.0	94	24.0	2.310	0.278	299	0.371	0.122	0.332
1389.2	98	23.9	2.300	0.277	301	0.315	0.140	0.327
1389.4	97	26.7	2.276	0.271	301	0.249	0.166	0.293
1389.6	96	30.1	2.252	0.291	312	0.268	0.175	0.240
1389.8	94	33.5	2.243	0.320	316	0.316	0.171	0.203
1390.0	91	39.1	2.245	0.315	314	0.334	0.168	0.170
1390.2	82	43.3	2.235	0.303	316	0.273	0.187	0.165
1390.4	72	53.8	2.231	0.304	318	0.287	0.185	0.132
1390.6	70	63.3	2.213	0.300	327	0.241	0.204	0.118
1390.8	72	76.6	2.194	0.294	333	0.182	0.230	0.110
1391.0	62	93.1	2.175	0.282	335	0.118	0.256	0.108
1391.2	51	120.4	2.156	0.278	336	0.028	0.289	0.121
1391.4	45	228.3	2.137	0.272	337	0.000	0.297	0.099
1391.6	38	459.7	2.119	0.276	338	0.000	0.306	0.069
1391.8	34	687.1	2.133	0.271	335	0.000	0.303	0.057
1392.0	33	769.8	2.153	0.279	332	0.009	0.295	0.050
1392.2	34	789.9	2.159	0.288	331	0.074	0.274	0.025
1392.4	34	734.8	2.166	0.281	333	0.043	0.280	0.036
1392.6	36	621.4	2.177	0.267	332	0.026	0.278	0.048
1392.8	37	451.7	2.184	0.290	331	0.096	0.260	0.032
1393.0	39	327.1	2.183	0.278	332	0.077	0.260	0.049
1393.2	44	183.5	2.184	0.241	333	0.000	0.272	0.114
1393.4	44	147.2	2.176	0.242	333	0.000	0.274	0.129
1393.6	38	142.6	2.143	0.271	336	0.000	0.296	0.122
1393.8	32	156.7	2.119	0.319	340	0.058	0.302	0.084
1394.0	29	177.6	2.121	0.275	343	0.000	0.309	0.105

MULLOWAY 1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1394.2	30	190.8	2.137	0.249	341	0.000	0.293	0.107
1394.4	28	191.2	2.144	0.311	341	0.040	0.297	0.083
1394.6	29	176.3	2.158	0.348	340	0.197	0.253	0.042
1394.8	33	121.6	2.181	0.339	340	0.223	0.236	0.057
1395.0	38	91.3	2.177	0.324	339	0.159	0.254	0.091
1395.2	39	66.4	2.177	0.294	336	0.103	0.262	0.138
1395.4	37	50.8	2.199	0.270	330	0.092	0.246	0.181
1395.6	39	33.2	2.235	0.248	323	0.104	0.223	0.254
1395.8	44	24.3	2.233	0.221	317	0.019	0.244	0.339
1396.0	48	20.1	2.217	0.245	316	0.074	0.243	0.343
1396.2	46	19.6	2.211	0.261	312	0.147	0.229	1.000
1396.4	42	22.0	2.208	0.255	313	0.093	0.247	1.000
1396.6	45	26.7	2.205	0.252	317	0.085	0.250	1.000
1396.8	46	30.8	2.195	0.271	320	0.125	0.246	1.000
1397.0	46	37.9	2.182	0.258	327	0.057	0.271	1.000
1397.2	42	42.7	2.173	0.248	328	0.031	0.280	1.000
1397.4	38	50.5	2.176	0.257	330	0.036	0.280	1.000
1397.6	38	46.2	2.182	0.237	332	0.008	0.280	0.955
1397.8	40	31.8	2.189	0.238	329	0.016	0.275	0.949
1398.0	40	26.2	2.200	0.258	319	0.108	0.246	1.000
1398.2	40	28.2	2.201	0.253	317	0.077	0.254	1.000
1398.4	38	40.5	2.195	0.245	318	0.034	0.269	1.000
1398.6	35	52.7	2.185	0.263	328	0.083	0.261	1.000
1398.8	39	49.3	2.193	0.256	326	0.079	0.258	0.960
1399.0	43	35.8	2.204	0.273	324	0.133	0.241	0.981
1399.2	47	30.2	2.209	0.263	315	0.127	0.237	1.000
1399.4	49	31.8	2.215	0.257	317	0.114	0.238	1.000
1399.6	47	40.1	2.208	0.268	320	0.156	0.228	1.000
1399.8	46	53.4	2.193	0.251	326	0.056	0.264	1.000
1400.0	43	56.6	2.189	0.250	331	0.036	0.272	0.982
1400.2	43	48.4	2.189	0.262	330	0.099	0.255	0.975
1400.4	42	39.5	2.191	0.242	330	0.038	0.268	0.967
1400.6	44	31.7	2.201	0.242	326	0.043	0.263	1.000
1400.8	45	30.3	2.206	0.246	319	0.083	0.248	1.000
1401.0	43	32.2	2.197	0.243	320	0.040	0.266	1.000
1401.2	43	38.3	2.185	0.253	322	0.067	0.264	1.000
1401.4	42	47.9	2.183	0.268	327	0.090	0.263	1.000
1401.6	41	50.6	2.177	0.253	325	0.055	0.272	0.986
1401.8	41	42.8	2.176	0.253	322	0.031	0.280	0.966
1402.0	43	34.3	2.164	0.269	321	0.073	0.276	0.979
1402.2	41	31.1	2.160	0.287	320	0.117	0.269	1.000
1402.4	39	32.0	2.181	0.286	317	0.100	0.266	1.000
1402.6	36	31.2	2.190	0.278	315	0.087	0.264	1.000
1402.8	37	24.9	2.188	0.276	321	0.090	0.264	0.967
1403.0	38	17.2	2.188	0.275	317	0.099	0.260	1.000
1403.2	37	16.9	0.000	0.270	322	Coal		
1403.4	33	23.0	0.000	0.267	353	Coal		
1403.6	24	43.8	0.000	0.343	394	Coal		
1403.8	14	163.8	0.000	0.448	440	Coal		
1404.0	9	371.5	0.000	0.528	458	Coal		
1404.2	9	449.9	0.000	0.537	457	Coal		

MULLOWAY 1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1404.4	9	466.9	0.000	0.568	457	Coal		
1404.6	9	485.1	0.000	0.568	460	Coal		
1404.8	8	456.6	0.000	0.563	459	Coal		
1405.0	8	368.5	0.000	0.512	461	Coal		
1405.2	8	334.3	0.000	0.512	464	Coal		
1405.4	9	345.0	0.000	0.538	464	Coal		
1405.6	11	425.5	0.000	0.566	462	Coal		
1405.8	15	620.7	0.000	0.566	454	Coal		
1406.0	24	995.8	0.000	0.529	448	Coal		
1406.2	44	8585.5	0.000	0.573	444	Coal		

1406.4	71	457.4	0.000	0.583	445	Coal		
1406.6	98	87.1	0.000	0.532	474	Coal		
1406.8	117	25.8	0.000	0.533	501	Coal		
1407.0	115	25.1	0.000	0.534	491	Coal		
1407.2	104	34.8	0.000	0.502	484	Coal		
1407.4	100	94.0	0.000	0.486	430	Coal		
1407.6	106	95.9	0.000	0.508	410	Coal		
1407.8	111	72.7	0.000	0.481	366	Coal		
1408.0	100	38.5	0.000	0.390	321	Coal		
1408.2	83	24.8	2.326	0.326	304	0.534	0.048	1.000
1408.4	89	23.8	2.303	0.263	307	0.307	0.143	1.000
1408.6	106	28.8	0.000	0.278	303	0.000	0.000	1.000
1408.8	107	40.9	0.000	0.362	317	Coal		
1409.0	98	46.5	1.972	0.433	344	Coal		
1409.2	81	36.9	2.058	0.351	368	Coal		
1409.4	68	30.4	2.203	0.275	357	Coal		
1409.6	58	26.5	2.217	0.277	325	0.204	0.213	1.000
1409.8	52	28.0	2.215	0.280	315	0.186	0.221	1.000
1410.0	54	28.5	2.214	0.255	317	0.134	0.231	1.000
1410.2	69	30.7	2.247	0.238	308	0.125	0.215	1.000
1410.4	81	30.8	2.275	0.262	309	0.244	0.173	1.000
1410.6	87	33.8	2.279	0.266	300	0.267	0.165	1.000
1410.8	86	30.3	2.297	0.256	305	0.269	0.154	1.000
1411.0	89	24.9	2.257	0.263	303	0.214	0.189	1.000
1411.2	97	25.2	2.155	0.277	317	0.050	0.270	1.000
1411.4	102	28.0	2.122	0.291	322	0.031	0.287	1.000
1411.6	105	33.5	2.126	0.309	327	0.100	0.270	1.000
1411.8	105	35.3	2.089	0.338	309	0.123	0.246	1.000
1412.0	102	35.3	2.054	0.367	306	0.147	0.226	1.000
1412.2	102	34.5	2.119	0.340	306	0.191	0.211	1.000
1412.4	105	34.6	2.157	0.301	307	0.138	0.230	1.000
1412.6	103	35.5	2.106	0.317	324	0.086	0.271	1.000
1412.8	90	28.0	2.095	0.292	323	0.000	0.302	1.000
1413.0	84	22.6	2.206	0.259	317	0.095	0.248	1.000
1413.2	89	24.1	2.282	0.280	301	0.320	0.152	1.000
1413.4	99	27.7	2.295	0.306	293	0.433	0.104	1.000
1413.6	105	27.8	2.329	0.311	295	0.521	0.050	1.000
1413.8	104	25.6	2.341	0.322	311	0.582	0.021	1.000
1414.0	94	26.7	2.326	0.273	310	0.387	0.113	1.000
1414.2	77	31.7	2.335	0.227	302	0.262	0.131	1.000
1414.4	66	30.8	2.300	0.254	291	0.288	0.146	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1414.6	69	26.6	2.245	0.286	293	0.296	0.148	1.000
1414.8	79	24.7	2.256	0.301	308	0.337	0.158	1.000
1415.0	92	29.9	2.315	0.303	307	0.465	0.094	1.000
1415.2	107	39.4	2.375	0.306	302	0.598	0.010	1.000
1415.4	108	42.4	2.389	0.290	295	0.573	0.014	1.000
1415.6	100	31.4	2.393	0.282	293	0.551	0.020	1.000
1415.8	102	21.9	2.344	0.299	297	Coal		
1416.0	103	19.0	2.076	0.345	309	Coal		
1416.2	105	18.2	1.852	0.376	334	Coal		
1416.4	100	19.7	1.881	0.368	338	Coal		
1416.6	102	19.9	2.011	0.356	355	Coal		
1416.8	105	22.9	2.051	0.362	343	Coal		
1417.0	102	27.0	2.087	0.386	350	Coal		
1417.2	106	29.8	2.150	0.367	347	Coal		
1417.4	113	31.5	2.155	0.317	340	Coal		
1417.6	119	33.8	2.168	0.311	334	Coal		
1417.8	118	32.6	2.221	0.317	324	Coal		
1418.0	106	28.6	2.268	0.273	325	Coal		
1418.2	84	22.1	2.325	0.204	315	Coal		
1418.4	71	20.2	2.395	0.190	307	0.255	0.098	1.000
1418.6	85	19.5	2.345	0.242	294	0.321	0.115	1.000
1418.8	105	21.8	2.199	0.336	292	0.339	0.135	1.000

1419.0	114	29.6	2.103	0.343	302	0.167	0.209	1.000
1419.2	111	29.6	2.122	0.316	313	Coal		
1419.4	110	20.1	2.129	0.327	360	Coal		
1419.6	111	11.7	2.083	0.403	371	Coal		
1419.8	119	9.6	2.004	0.429	374	Coal		
1420.0	128	9.9	1.953	0.438	347	Coal		
1420.2	137	11.8	1.929	0.453	362	Coal		
1420.4	131	13.2	2.028	0.420	366	Coal		
1420.6	120	21.5	2.237	0.347	368	Coal		
1420.8	108	23.6	2.393	0.285	311	Coal		
1421.0	94	20.5	2.402	0.260	287	Coal		
1421.2	101	20.1	2.421	0.254	289	Coal		
1421.4	121	21.6	2.465	0.253	279	0.603	0.000	1.000
1421.6	114	36.2	2.466	0.255	270	0.611	0.000	1.000
1421.8	86	58.6	2.367	0.264	280	0.439	0.073	1.000
1422.0	53	46.6	2.245	0.268	303	0.182	0.201	1.000
1422.2	36	28.9	2.196	0.249	316	0.052	0.264	0.979
1422.4	33	25.7	2.225	0.217	328	0.009	0.256	1.000
1422.6	35	28.0	2.238	0.203	325	0.000	0.249	1.000
1422.8	33	34.3	2.233	0.220	318	0.034	0.245	1.000
1423.0	31	40.7	2.228	0.231	316	0.056	0.243	1.000
1423.2	32	42.9	2.229	0.230	317	0.062	0.241	1.000
1423.4	33	38.9	2.231	0.243	329	0.067	0.243	1.000
1423.6	33	37.1	2.243	0.238	327	0.068	0.237	1.000
1423.8	34	37.5	2.232	0.244	326	0.072	0.241	1.000
1424.0	36	38.2	2.224	0.245	317	0.085	0.240	1.000
1424.2	35	37.1	2.226	0.230	319	0.048	0.247	1.000
1424.4	35	35.0	2.227	0.231	317	0.074	0.237	1.000
1424.6	36	34.8	2.226	0.245	318	0.081	0.240	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1424.8	34	38.6	2.226	0.249	319	0.075	0.245	1.000
1425.0	35	42.7	2.220	0.258	319	0.081	0.248	1.000
1425.2	35	46.7	2.223	0.255	316	0.080	0.246	1.000
1425.4	34	42.6	2.247	0.229	313	0.075	0.229	1.000
1425.6	34	38.0	2.266	0.223	309	0.074	0.220	1.000
1425.8	35	37.5	2.275	0.225	306	0.077	0.216	1.000
1426.0	30	36.0	2.270	0.229	302	0.052	0.229	1.000
1426.2	33	35.1	2.252	0.239	302	0.070	0.233	1.000
1426.4	39	34.0	2.243	0.242	302	0.105	0.225	1.000
1426.6	37	35.9	2.235	0.250	304	0.090	0.236	1.000
1426.8	35	42.3	2.239	0.232	303	0.076	0.233	1.000
1427.0	35	49.9	2.244	0.229	302	0.080	0.228	1.000
1427.2	35	55.4	2.251	0.229	299	0.078	0.226	1.000
1427.4	35	52.8	2.264	0.215	296	0.076	0.217	1.000
1427.6	32	46.9	2.275	0.199	295	0.061	0.212	1.000
1427.8	31	44.5	2.265	0.212	295	0.056	0.222	1.000
1428.0	32	45.0	2.230	0.234	297	0.062	0.242	1.000
1428.2	32	46.6	2.211	0.246	301	0.059	0.247	1.000
1428.4	29	47.3	2.221	0.250	304	0.046	0.257	1.000
1428.6	31	44.7	2.219	0.249	305	0.056	0.254	1.000
1428.8	34	42.9	2.208	0.248	306	0.075	0.251	1.000
1429.0	34	44.1	2.212	0.240	306	0.072	0.247	1.000
1429.2	31	46.8	2.223	0.239	305	0.058	0.248	1.000
1429.4	34	47.8	2.227	0.251	302	0.071	0.246	1.000
1429.6	34	46.3	2.240	0.263	299	0.134	0.220	1.000
1429.8	33	45.6	2.269	0.245	298	0.128	0.208	1.000
1430.0	34	45.7	2.279	0.200	297	0.074	0.206	1.000
1430.2	36	47.2	2.290	0.184	292	0.029	0.212	1.000
1430.4	37	47.1	2.278	0.216	285	0.085	0.209	1.000
1430.6	32	49.2	2.259	0.242	285	0.090	0.212	1.000
1430.8	29	49.8	2.232	0.228	288	0.043	0.233	1.000
1431.0	30	47.9	2.201	0.217	293	0.000	0.256	1.000
1431.2	30	45.4	2.194	0.233	298	0.020	0.256	1.000
1431.4	29	40.6	2.213	0.238	302	0.045	0.254	0.992

1431.6	30	35.7	2.244	0.230	303	0.050	0.239	0.996
1431.8	34	22.7	2.272	0.227	299	0.074	0.219	0.979
1432.0	40	17.5	2.275	0.252	297	0.144	0.203	1.000
1432.2	55	19.5	2.258	0.282	297	0.238	0.180	1.000
1432.4	79	32.9	2.241	0.323	312	0.380	0.148	1.000
1432.6	90	44.0	2.229	0.351	320	0.419	0.150	1.000
1432.8	84	51.8	2.210	0.344	342	0.360	0.183	0.993
1433.0	73	43.6	2.178	0.333	334	0.278	0.219	1.000
1433.2	59	37.0	2.127	0.349	338	Coal		
1433.4	47	38.2	2.075	0.361	341	Coal		
1433.6	36	44.0	2.085	0.330	343	Coal		
1433.8	28	55.1	2.147	0.285	363	Coal		
1434.0	24	43.5	2.177	0.270	347	0.017	0.291	0.905
1434.2	24	26.8	2.183	0.270	346	0.022	0.287	0.960
1434.4	29	24.8	2.176	0.260	320	0.046	0.278	1.000
1434.6	31	25.1	2.184	0.239	322	0.000	0.283	0.999
1434.8	30	27.3	2.169	0.234	333	0.000	0.287	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1435.0	29	28.3	2.129	0.242	331	0.000	0.306	0.980
1435.2	32	25.3	2.137	0.236	321	0.000	0.299	1.000
1435.4	32	27.9	2.158	0.240	323	0.000	0.293	1.000
1435.6	31	31.1	2.180	0.252	324	0.054	0.270	1.000
1435.8	33	29.9	2.193	0.261	325	0.068	0.264	1.000
1436.0	32	31.4	2.196	0.287	322	0.122	0.253	1.000
1436.2	30	36.9	2.058	0.303	323	Coal		
1436.4	26	61.2	1.712	0.373	329	Coal		
1436.6	24	152.0	1.433	0.485	380	Coal		
1436.8	20	254.2	1.273	0.545	436	Coal		
1437.0	14	359.8	1.214	0.565	472	Coal		
1437.2	13	379.9	1.214	0.572	469	Coal		
1437.4	14	382.2	1.225	0.577	467	Coal		
1437.6	15	385.4	1.238	0.563	463	Coal		
1437.8	18	314.2	1.243	0.552	463	Coal		
1438.0	23	109.4	1.256	0.560	452	Coal		
1438.2	40	27.8	1.363	0.527	463	Coal		
1438.4	64	19.2	1.594	0.483	459	Coal		
1438.6	88	20.2	1.882	0.464	415	Coal		
1438.8	105	28.2	2.112	0.422	367	Coal		
1439.0	117	46.7	2.316	0.353	323	Coal		
1439.2	117	54.7	2.398	0.297	276	Coal		
1439.4	94	41.3	2.346	0.257	262	Coal		
1439.6	58	31.8	2.275	0.238	279	0.189	0.158	1.000
1439.8	39	30.6	2.240	0.236	301	0.096	0.227	1.000
1440.0	32	37.0	2.216	0.236	306	0.059	0.249	1.000
1440.2	31	44.2	2.214	0.241	302	0.057	0.252	1.000
1440.4	31	57.0	2.238	0.230	296	0.055	0.239	1.000
1440.6	30	67.8	2.270	0.205	296	0.048	0.220	1.000
1440.8	29	7[illegible]	2.242	0.193	299	0.000	0.243	0.992
1441.0	31	6[illegible]	2.209	0.214	304	0.000	0.264	0.972
1441.2	36	55.6	2.184	0.241	304	0.000	0.274	1.000
1441.4	38	45.4	2.220	0.255	303	0.096	0.240	0.994
1441.6	40	37.5	2.246	0.229	301	0.084	0.227	1.000
1441.8	46	32.1	2.233	0.177	307	0.000	0.241	0.970
1442.0	53	29.1	2.204	0.160	314	0.000	0.244	0.989
1442.2	57	27.4	2.184	0.190	329	0.000	0.264	1.000
1442.4	61	29.4	2.188	0.240	337	0.033	0.270	1.000
1442.6	61	39.3	2.208	0.258	331	0.117	0.239	1.000
1442.8	57	48.8	2.218	0.262	314	0.137	0.230	1.000
1443.0	52	46.2	2.208	0.248	308	0.075	0.251	0.964
1443.2	49	33.8	2.196	0.239	311	0.020	0.271	0.964
1443.4	51	27.6	2.176	0.265	319	0.074	0.270	1.000
1443.6	55	31.0	2.233	0.261	314	0.191	0.205	1.000
1443.8	57	35.4	2.354	0.213	304	0.235	0.128	1.000
1444.0	56	55.5	2.381	0.185	284	0.225	0.111	1.000

1444.2	51	66.6	2.326	0.181	287	0.094	0.174	1.000
1444.4	45	65.6	2.251	0.197	294	0.000	0.242	0.992
1444.6	43	58.3	2.210	0.216	300	0.000	0.264	0.989
1444.8	44	54.6	2.230	0.216	309	0.012	0.252	0.988
1445.0	41	51.2	2.248	0.209	309	0.021	0.239	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1445.2	38	50.3	2.248	0.211	309	0.034	0.236	1.000
1445.4	36	46.9	2.246	0.213	307	0.055	0.231	1.000
1445.6	37	43.4	2.235	0.209	308	0.000	0.252	0.993
1445.8	38	41.8	2.233	0.211	307	0.006	0.252	0.997
1446.0	36	41.2	2.236	0.220	306	0.055	0.237	1.000
1446.2	34	43.1	2.248	0.243	307	0.073	0.235	1.000
1446.4	34	42.1	2.239	0.264	308	0.134	0.224	1.000
1446.6	37	39.7	2.226	0.248	316	0.092	0.238	1.000
1446.8	38	39.0	2.209	0.248	319	0.101	0.242	1.000
1447.0	41	37.7	2.219	0.272	311	0.117	0.241	1.000
1447.2	41	37.5	2.190	0.263	294	0.088	0.231	1.000
1447.4	40	37.8	2.170	0.241	285	0.000	0.247	1.000
1447.6	39	33.5	2.160	0.242	285	0.000	0.244	1.000
1447.8	37	28.9	2.174	0.253	305	0.028	0.259	1.000
1448.0	38	23.2	2.170	0.257	324	0.035	0.283	0.976
1448.2	42	20.2	2.174	0.250	326	0.038	0.278	1.000
1448.4	47	20.9	2.215	0.224	302	0.012	0.261	1.000
1448.6	54	24.9	2.321	0.196	289	0.125	0.171	1.000
1448.8	59	32.1	2.335	0.182	278	0.103	0.168	1.000
1449.0	56	42.4	2.318	0.177	279	0.067	0.185	1.000
1449.2	47	51.0	2.296	0.191	293	0.058	0.202	1.000
1449.4	40	48.2	2.281	0.195	303	0.046	0.213	0.978
1449.6	38	39.2	2.269	0.202	298	0.039	0.223	0.992
1449.8	42	34.6	2.233	0.242	295	0.123	0.218	1.000
1450.0	41	36.4	2.197	0.285	293	0.111	0.218	1.000
1450.2	40	43.4	2.161	0.292	296	0.112	0.221	1.000
1450.4	42	50.5	2.140	0.285	310	0.066	0.260	1.000
1450.6	44	49.4	2.167	0.239	311	0.000	0.283	1.000
1450.8	43	40.0	2.219	0.194	305	0.000	0.252	0.950
1451.0	45	23.7	2.248	0.196	296	0.000	0.242	0.968
1451.2	49	22.5	2.275	0.187	277	0.027	0.219	1.000
1451.4	52	27.5	2.349	0.169	260	0.101	0.159	1.000
1451.6	47	40.0	2.339	0.182	265	0.120	0.161	1.000
1451.8	42	68.3	2.260	0.205	283	0.029	0.220	1.000
1452.0	39	65.0	2.233	0.223	304	0.044	0.243	0.980
1452.2	36	53.5	2.232	0.247	311	0.086	0.238	0.985
1452.4	36	45.7	2.225	0.283	309	0.177	0.220	1.000
1452.6	36	40.5	2.209	0.292	309	0.147	0.230	1.000
1452.8	38	39.1	2.200	0.296	308	0.154	0.226	1.000
1453.0	39	38.0	2.199	0.296	307	0.167	0.220	1.000
1453.2	42	35.8	2.184	0.290	304	0.122	0.233	1.000
1453.4	42	32.7	2.173	0.285	307	0.124	0.233	1.000
1453.6	40	29.9	2.180	0.277	310	0.111	0.245	1.000
1453.8	43	29.2	2.196	0.262	308	0.103	0.243	1.000
1454.0	47	31.7	2.197	0.259	307	0.101	0.243	1.000
1454.2	43	36.5	2.216	0.238	307	0.064	0.248	1.000
1454.4	40	41.9	2.223	0.219	306	0.022	0.253	1.000
1454.6	41	40.7	2.215	0.230	311	0.028	0.258	0.995
1454.8	44	37.8	2.199	0.252	312	0.076	0.256	0.996
1455.0	44	31.0	2.190	0.273	313	0.140	0.239	1.000
1455.2	48	27.2	2.193	0.271	310	0.135	0.236	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1455.4	52	26.1	2.223	0.271	306	0.201	0.208	1.000
1455.6	55	27.6	2.220	0.291	294	0.214	0.188	1.000
1455.8	51	31.1	2.208	0.306	285	0.217	0.169	1.000
1456.0	45	32.9	2.248	0.263	283	0.144	0.191	1.000
1456.2	47	34.6	2.310	0.233	276	0.154	0.175	1.000

1456.4	46	37.3	2.323	0.231	280	0.180	0.166	1.000
1456.6	41	44.6	2.245	0.268	286	0.146	0.193	1.000
1456.8	40	52.3	2.189	0.293	299	0.110	0.226	1.000
1457.0	41	55.9	2.187	0.269	303	0.117	0.230	1.000
1457.2	41	56.4	2.211	0.217	301	0.000	0.264	1.000
1457.4	36	55.0	2.223	0.217	300	0.022	0.252	0.994
1457.6	35	50.3	2.216	0.242	300	0.078	0.242	1.000
1457.8	38	42.9	2.213	0.261	300	0.100	0.232	1.000
1458.0	39	35.7	2.214	0.263	297	0.102	0.228	1.000
1458.2	37	29.2	2.222	0.277	293	0.146	0.208	1.000
1458.4	37	26.6	2.249	0.259	288	0.125	0.206	1.000
1458.6	41	25.3	2.278	0.251	289	0.153	0.198	1.000
1458.8	49	24.9	2.290	0.243	287	0.181	0.181	1.000
1459.0	61	28.9	2.303	0.214	279	0.158	0.174	1.000
1459.2	68	41.1	2.319	0.203	277	0.144	0.168	1.000
1459.4	57	42.9	2.287	0.227	281	0.169	0.176	1.000
1459.6	51	41.2	2.238	0.229	293	0.092	0.219	1.000
1459.8	50	43.0	2.222	0.235	298	0.060	0.244	1.000
1460.0	47	49.2	2.222	0.242	298	0.091	0.233	1.000
1460.2	42	62.8	2.232	0.249	297	0.119	0.223	1.000
1460.4	40	58.0	2.231	0.252	291	0.111	0.218	1.000
1460.6	39	50.3	2.230	0.241	287	0.104	0.209	1.000
1460.8	40	44.5	2.232	0.245	290	0.112	0.213	1.000
1461.0	41	40.2	2.236	0.234	291	0.088	0.222	1.000
1461.2	42	29.5	2.249	0.208	291	0.038	0.233	0.983
1461.4	46	26.1	2.275	0.183	287	0.002	0.226	1.000
1461.6	48	28.3	2.312	0.166	268	0.017	0.200	1.000
1461.8	50	42.5	2.353	0.161	256	0.067	0.166	1.000
1462.0	59	56.7	2.366	0.174	257	0.136	0.142	1.000
1462.2	63	63.0	2.353	0.192	261	0.169	0.141	1.000
1462.4	56	63.2	2.302	0.205	268	0.128	0.168	1.000
1462.6	46	64.4	2.257	0.202	279	0.027	0.223	1.000
1462.8	43	63.2	2.252	0.198	284	0.009	0.238	0.978
1463.0	46	51.7	2.278	0.195	287	0.032	0.219	0.982
1463.2	48	46.0	2.293	0.207	284	0.103	0.193	1.000
1463.4	47	41.0	2.276	0.213	280	0.098	0.202	1.000
1463.6	46	41.4	2.254	0.216	277	0.059	0.212	1.000
1463.8	48	47.6	2.239	0.216	278	0.040	0.219	1.000
1464.0	45	52.8	2.249	0.217	275	0.050	0.210	1.000
1464.2	42	57.2	2.264	0.223	278	0.119	0.189	1.000
1464.4	36	54.3	2.264	0.260	284	0.147	0.185	1.000
1464.6	36	50.3	2.258	0.310	307	0.325	0.163	1.000
1464.8	43	42.0	2.255	0.316	311	0.346	0.164	1.000
1465.0	51	28.4	2.255	0.286	306	0.251	0.187	1.000
1465.2	54	26.9	2.294	0.249	296	0.212	0.172	1.000
1465.4	55	31.3	2.330	0.229	286	0.225	0.147	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1465.6	62	45.0	2.340	0.233	272	0.286	0.124	1.000
1465.8	66	58.2	2.341	0.253	272	0.316	0.115	1.000
1466.0	63	54.9	2.352	0.244	267	0.284	0.113	1.000
1466.2	58	55.0	2.361	0.226	261	0.237	0.121	1.000
1466.4	51	57.6	2.207	0.283	263	Coal		
1466.6	44	85.8	1.789	0.436	314	Coal		
1466.8	49	150.8	1.515	0.511	371	Coal		
1467.0	63	165.2	1.597	0.390	379	Coal		
1467.2	69	84.2	1.965	0.283	343	Coal		
1467.4	77	46.3	2.168	0.259	305	Coal		
1467.6	93	35.0	2.193	0.259	304	0.068	0.250	1.000
1467.8	87	36.5	2.217	0.254	300	0.102	0.234	1.000
1468.0	69	39.2	2.220	0.240	300	0.091	0.236	1.000
1468.2	58	38.0	2.221	0.235	304	0.059	0.246	1.000
1468.4	54	36.4	2.223	0.235	303	0.059	0.246	1.000
1468.6	49	39.6	2.215	0.235	303	0.048	0.253	1.000
1468.8	42	45.2	2.208	0.245	303	0.060	0.252	1.000

1469.0	39	50.8	2.199	0.251	297	0.069	0.241	1.000
1469.2	36	49.5	2.212	0.241	293	0.056	0.237	1.000
1469.4	39	42.7	2.228	0.233	290	0.075	0.228	1.000
1469.6	45	34.4	2.248	0.230	285	0.091	0.213	1.000
1469.8	55	28.8	2.243	0.215	285	0.041	0.229	1.000
1470.0	61	30.1	2.235	0.211	286	0.002	0.245	1.000
1470.2	57	32.3	2.252	0.209	282	0.051	0.222	1.000
1470.4	50	41.7	2.261	0.216	280	0.091	0.205	1.000
1470.6	47	52.8	2.249	0.230	281	0.097	0.203	1.000
1470.8	45	69.6	2.234	0.248	288	0.139	0.198	1.000
1471.0	41	66.9	2.217	0.248	292	0.084	0.227	1.000
1471.2	47	52.8	2.211	0.238	292	0.047	0.239	1.000
1471.4	68	35.7	2.223	0.214	292	0.000	0.255	0.970
1471.6	82	31.3	2.253	0.214	290	0.037	0.234	1.000
1471.8	76	33.3	2.261	0.230	290	0.143	0.200	1.000
1472.0	63	41.7	2.250	0.239	286	0.129	0.202	1.000
1472.2	58	44.1	2.259	0.252	290	0.184	0.186	1.000
1472.4	63	43.9	2.263	0.257	289	0.234	0.171	1.000
1472.6	66	49.4	2.255	0.264	294	0.225	0.178	1.000
1472.8	60	52.9	2.248	0.270	294	0.227	0.179	1.000
1473.0	55	53.5	2.233	0.280	294	0.214	0.184	1.000
1473.2	52	49.9	2.214	0.292	299	0.196	0.196	1.000
1473.4	51	46.4	2.227	0.280	297	0.181	0.201	1.000
1473.6	49	35.2	2.239	0.258	292	0.173	0.196	1.000
1473.8	53	33.1	2.281	0.232	280	0.172	0.181	1.000
1474.0	57	36.8	2.315	0.226	279	0.228	0.149	1.000
1474.2	51	38.9	2.307	0.221	282	0.182	0.166	1.000
1474.4	47	41.2	2.277	0.231	272	0.156	0.170	1.000
1474.6	51	37.0	2.230	0.256	272	0.163	0.165	1.000
1474.8	59	37.9	2.183	0.279	274	0.243	0.137	1.000
1475.0	59	39.6	2.186	0.258	280	0.254	0.146	1.000
1475.2	51	36.3	2.215	0.212	275	0.207	0.158	1.000
1475.4	46	27.9	2.260	0.190	276	0.154	0.176	1.000
1475.6	49	21.5	2.262	0.205	277	0.168	0.170	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1475.8	56	19.2	2.250	0.220	284	0.218	0.164	1.000
1476.0	64	18.3	2.213	0.241	282	0.271	0.145	1.000
1476.2	76	19.5	2.218	0.242	273	0.364	0.103	1.000
1476.4	95	22.4	2.270	0.236	259	0.485	0.026	1.000
1476.6	111	26.5	2.189	0.272	257	0.623	0.000	1.000
1476.8	115	28.4	2.087	0.300	261	0.680	0.000	1.000
1477.0	106	27.0	2.127	0.296	272	0.609	0.001	1.000
1477.2	101	23.2	2.047	0.295	277	0.559	0.016	1.000
1477.4	112	22.7	1.968	0.310	276	0.628	0.001	1.000
1477.6	118	21.6	1.968	0.316	279	0.687	0.000	1.000
1477.8	120	22.4	1.985	0.329	282	0.707	0.000	1.000
1478.0	117	22.4	2.048	0.320	285	0.680	0.000	1.000
1478.2	114	21.4	2.132	0.314	288	0.671	0.000	1.000
1478.4	112	20.8	2.096	0.303	292	0.644	0.001	1.000
1478.6	108	20.3	2.130	0.314	290	Coal		
1478.8	106	19.1	2.100	0.332	293	Coal		
1479.0	103	18.6	1.821	0.403	299	Coal		
1479.2	92	22.9	1.565	0.484	358	Coal		
1479.4	84	38.7	1.506	0.506	390	Coal		
1479.6	86	48.4	1.660	0.411	388	Coal		
1479.8	89	48.0	2.009	0.294	363	Coal		
1480.0	86	36.5	2.234	0.260	336	0.157	0.216	1.000
1480.2	87	31.3	2.260	0.264	323	0.220	0.186	1.000
1480.4	88	31.4	2.253	0.285	319	0.279	0.178	1.000
1480.6	91	32.6	2.267	0.323	318	0.436	0.134	1.000
1480.8	93	34.4	2.222	0.339	325	0.397	0.163	1.000
1481.0	88	31.4	2.117	0.307	323	0.075	0.276	1.000
1481.2	87	29.7	2.076	0.322	327	0.041	0.293	1.000
1481.4	93	27.2	2.106	0.366	331	0.250	0.222	1.000

1481.6	103	29.0	2.085	0.412	364	0.365	0.216	1.000
1481.8	101	32.6	2.045	0.421	377	Coal		
1482.0	86	41.2	1.769	0.460	395	Coal		
1482.2	66	72.8	1.442	0.523	403	Coal		
1482.4	63	55.7	1.396	0.491	421	Coal		
1482.6	86	35.0	1.658	0.427	402	Coal		
1482.8	113	22.8	2.077	0.389	353	Coal		
1483.0	126	20.3	2.338	0.390	307	Coal		
1483.2	134	24.4	2.488	0.338	276	0.968	0.000	1.000
1483.4	137	29.7	2.526	0.287	258	0.921	0.000	1.000
1483.6	137	32.3	2.511	0.282	255	0.897	0.000	1.000
1483.8	140	36.8	2.491	0.272	259	0.719	0.000	1.000
1484.0	147	37.8	2.459	0.254	259	0.594	0.000	1.000
1484.2	155	30.7	2.407	0.262	275	0.512	0.028	1.000
1484.4	153	26.9	2.385	0.271	274	0.499	0.037	1.000
1484.6	151	25.8	2.372	0.277	280	0.493	0.047	1.000
1484.8	149	28.9	2.323	0.296	275	0.458	0.067	1.000
1485.0	141	31.1	2.272	0.311	300	0.406	0.122	1.000
1485.2	126	34.3	2.244	0.302	310	0.317	0.170	1.000
1485.4	102	39.3	2.231	0.296	315	0.271	0.192	1.000
1485.6	73	43.4	2.220	0.307	317	0.314	0.183	1.000
1485.8	56	46.3	2.208	0.288	319	0.223	0.213	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1486.0	50	44.1	2.197	0.256	319	0.089	0.253	1.000
1486.2	53	37.8	2.193	0.258	322	0.078	0.259	1.000
1486.4	52	35.9	2.205	0.289	320	0.199	0.224	1.000
1486.6	49	37.3	2.201	0.298	321	0.168	0.238	1.000
1486.8	51	40.9	2.199	0.282	323	0.185	0.228	1.000
1487.0	50	40.8	2.181	0.274	321	0.120	0.254	1.000
1487.2	48	38.3	2.152	0.301	319	0.131	0.250	1.000
1487.4	45	35.9	2.144	0.297	314	0.108	0.252	1.000
1487.6	40	31.3	2.171	0.300	311	0.109	0.247	1.000
1487.8	37	25.2	2.210	0.297	309	0.178	0.220	1.000
1488.0	34	22.7	2.234	0.303	314	0.256	0.198	1.000
1488.2	37	19.6	2.270	0.292	318	0.304	0.167	1.000
1488.4	47	18.8	2.319	0.256	308	0.282	0.143	1.000
1488.6	68	19.1	2.288	0.245	297	0.239	0.163	1.000
1488.8	90	22.6	2.261	0.254	295	0.190	0.193	1.000
1489.0	107	27.6	2.280	0.243	286	0.192	0.179	1.000
1489.2	105	37.1	2.309	0.245	283	0.257	0.150	1.000
1489.4	89	42.9	2.265	0.256	283	0.203	0.164	1.000
1489.6	72	35.9	2.206	0.273	307	0.159	0.218	1.000
1489.8	61	32.2	2.169	0.289	319	0.144	0.242	1.000
1490.0	56	30.1	2.157	0.288	321	0.106	0.262	1.000
1490.2	59	29.2	2.189	0.293	313	0.196	0.217	1.000
1490.4	65	31.8	2.220	0.283	312	0.227	0.206	1.000
1490.6	70	37.8	2.237	0.261	310	0.179	0.208	1.000
1490.8	67	41.0	2.220	0.270	305	0.171	0.216	1.000
1491.0	62	37.8	2.207	0.264	311	0.121	0.239	1.000
1491.2	61	34.8	2.214	0.251	314	0.121	0.233	1.000
1491.4	60	34.8	2.212	0.262	307	0.143	0.229	1.000
1491.6	61	37.0	2.198	0.267	307	0.118	0.237	1.000
1491.8	63	35.6	2.194	0.258	312	0.083	0.255	1.000
1492.0	66	34.5	2.201	0.252	310	0.075	0.255	1.000
1492.2	65	35.4	2.222	0.255	307	0.128	0.229	1.000
1492.4	62	38.6	2.227	0.264	303	0.183	0.210	1.000
1492.6	52	39.0	2.205	0.263	303	0.133	0.226	1.000
1492.8	51	32.5	2.189	0.265	306	0.099	0.241	1.000
1493.0	57	30.4	2.192	0.262	309	0.088	0.250	1.000
1493.2	62	32.1	2.210	0.270	308	0.158	0.225	1.000
1493.4	63	37.4	2.203	0.278	306	0.168	0.218	1.000
1493.6	65	37.8	2.191	0.274	305	0.136	0.228	1.000
1493.8	70	32.8	2.184	0.277	310	0.146	0.231	1.000
1494.0	75	29.1	2.191	0.289	309	0.181	0.219	1.000

1494.2	90	29.8	2.230	0.284	305	0.227	0.197	1.000
1494.4	106	38.1	2.260	0.282	297	0.284	0.167	1.000
1494.6	93	49.4	2.263	0.271	290	0.252	0.165	1.000
1494.8	69	50.7	2.215	0.278	290	0.172	0.190	1.000
1495.0	53	43.8	2.171	0.278	299	0.223	0.186	1.000
1495.2	53	35.1	2.189	0.253	303	0.206	0.199	1.000
1495.4	51	29.1	2.106	0.225	307	0.201	0.208	1.000
1495.6	50	24.6	1.844	0.279	310	0.183	0.219	1.000
1495.8	55	20.6	1.744	0.357	312	0.199	0.216	1.000
1496.0	76	20.1	1.917	0.362	312	0.348	0.165	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1496.2	106	24.0	2.108	0.361	311	0.559	0.040	1.000
1496.4	133	32.6	2.043	0.419	320	0.780	0.000	1.000
1496.6	134	41.6	2.063	0.389	324	0.828	0.000	1.000
1496.8	109	40.1	2.206	0.291	320	0.665	0.000	1.000
1497.0	81	39.3	2.285	0.242	286	0.447	0.089	1.000
1497.2	63	34.3	2.275	0.234	286	0.296	0.143	1.000
1497.4	52	33.8	2.280	0.234	279	0.209	0.165	1.000
1497.6	44	34.3	2.279	0.224	284	0.148	0.187	1.000
1497.8	43	36.1	2.263	0.236	289	0.125	0.206	1.000
1498.0	41	37.0	2.256	0.234	296	0.115	0.213	1.000
1498.2	42	35.4	2.253	0.218	304	0.067	0.225	1.000
1498.4	45	34.5	2.239	0.218	305	0.054	0.235	1.000
1498.6	45	34.2	2.229	0.222	301	0.050	0.242	1.000
1498.8	44	36.0	2.244	0.231	297	0.110	0.219	1.000
1499.0	45	37.6	2.285	0.225	294	0.143	0.190	1.000
1499.2	42	37.4	2.309	0.206	294	0.117	0.182	1.000
1499.4	38	34.7	2.308	0.199	298	0.093	0.189	1.000
1499.6	36	28.0	2.296	0.211	301	0.088	0.199	1.000
1499.8	38	23.1	2.299	0.236	316	0.154	0.185	1.000
1500.0	41	20.7	2.299	0.258	321	0.238	0.166	1.000
1500.2	43	20.3	2.275	0.270	323	0.224	0.183	1.000
1500.4	45	22.5	2.264	0.267	300	0.203	0.193	1.000
1500.6	44	25.1	2.234	0.277	292	0.163	0.203	1.000
1500.8	42	27.2	2.193	0.265	298	0.122	0.219	1.000
1501.0	41	26.6	2.205	0.257	303	0.115	0.230	1.000
1501.2	41	24.2	2.222	0.264	308	0.116	0.237	1.000
1501.4	41	21.7	2.223	0.261	296	0.116	0.226	1.000
1501.6	43	20.0	2.220	0.251	297	0.129	0.216	1.000
1501.8	44	19.8	2.249	0.254	304	0.135	0.217	1.000
1502.0	42	20.9	2.304	0.254	306	0.242	0.161	1.000
1502.2	42	22.6	2.366	0.258	299	0.391	0.092	1.000
1502.4	41	22.4	2.375	0.249	295	0.357	0.098	1.000
1502.6	39	18.8	2.308	0.237	293	0.188	0.170	1.000
1502.8	38	14.4	2.219	0.276	295	0.126	0.218	1.000
1503.0	37	12.2	2.196	0.287	285	0.123	0.204	1.000
1503.2	38	12.1	2.192	0.280	280	0.099	0.202	1.000
1503.4	40	1[illegible]	2.206	0.304	286	0.205	0.172	1.000
1503.6	45	1[illegible]	2.210	0.311	299	0.232	0.183	1.000
1503.8	44	20.3	2.220	0.289	306	0.165	0.219	1.000
1504.0	42	18.8	2.255	0.282	307	0.213	0.199	1.000
1504.2	40	12.7	2.294	0.283	306	0.323	0.149	1.000
1504.4	40	9.0	2.341	0.297	301	0.471	0.080	1.000
1504.6	38	6.1	2.454	0.284	291	0.578	0.005	1.000
1504.8	44	4.5	2.593	0.253	272	0.627	0.000	1.000
1505.0	62	4.5	2.577	0.246	261	0.779	0.000	1.000
1505.2	77	6.6	2.451	0.251	264	0.537	0.008	1.000
1505.4	76	11.7	2.362	0.266	276	0.418	0.080	1.000
1505.6	69	28.7	2.315	0.277	281	0.348	0.115	1.000
1505.8	64	37.8	2.284	0.273	287	0.298	0.142	1.000
1506.0	58	39.9	2.261	0.280	290	0.238	0.168	1.000
1506.2	55	39.9	2.241	0.288	292	0.213	0.181	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE

1506.4	52	40.1	2.236	0.309	294	0.280	0.159	1.000
1506.6	46	38.4	2.236	0.323	296	0.329	0.146	1.000
1506.8	45	25.9	2.247	0.294	297	0.262	0.173	1.000
1507.0	43	11.4	2.313	0.286	294	0.365	0.130	1.000
1507.2	39	7.4	2.440	0.277	275	0.584	0.004	1.000
1507.4	39	7.2	2.460	0.281	270	0.582	0.003	1.000
1507.6	40	9.5	2.324	0.285	274	0.377	0.090	1.000
1507.8	39	18.4	2.243	0.294	287	0.251	0.156	1.000
1508.0	37	31.3	2.233	0.321	292	0.332	0.137	1.000
1508.2	38	34.3	2.220	0.321	300	0.274	0.172	1.000
1508.4	36	35.2	2.235	0.286	301	0.203	0.198	1.000
1508.6	35	34.9	2.256	0.273	300	0.201	0.198	1.000
1508.8	37	35.2	2.248	0.255	298	0.120	0.223	1.000
1509.0	37	32.3	2.240	0.249	298	0.093	0.232	1.000
1509.2	42	27.7	2.266	0.257	297	0.150	0.206	1.000
1509.4	43	24.1	2.291	0.282	294	0.309	0.151	1.000
1509.6	43	22.4	2.255	0.317	290	0.366	0.125	1.000
1509.8	42	23.0	2.228	0.311	289	0.273	0.156	1.000
1510.0	46	25.6	2.265	0.295	291	0.299	0.149	1.000
1510.2	50	25.9	2.274	0.331	292	0.451	0.097	1.000
1510.4	56	25.5	2.286	0.326	293	0.468	0.085	1.000
1510.6	65	21.4	2.313	0.265	284	0.315	0.137	1.000
1510.8	71	13.7	2.393	0.259	266	0.429	0.065	1.000
1511.0	61	5.6	2.527	0.290	249	0.744	0.000	1.000
1511.2	41	3.2	2.680	0.310	244	0.587	0.000	1.000
1511.4	30	2.7	2.724	0.285	242	0.527	0.001	1.000
1511.6	30	2.8	2.744	0.276	237	0.531	0.001	1.000
1511.8	33	3.4	2.707	0.269	241	0.547	0.001	1.000
1512.0	33	4.4	2.494	0.270	267	0.550	0.004	1.000
1512.2	34	4.9	2.371	0.256	283	0.375	0.096	1.000
1512.4	36	5.4	2.348	0.258	281	0.330	0.119	1.000
1512.6	45	7.1	2.320	0.228	266	0.181	0.150	1.000
1512.8	55	13.7	2.305	0.206	265	0.133	0.162	1.000
1513.0	55	27.0	2.300	0.222	267	0.182	0.148	1.000
1513.2	49	46.1	2.285	0.260	288	0.195	0.177	1.000
1513.4	45	54.5	2.272	0.280	303	0.230	0.184	1.000
1513.6	41	55.6	2.250	0.266	306	0.143	0.218	1.000
1513.8	40	46.8	2.242	0.219	306	0.046	0.237	0.979
1514.0	39	34.1	2.276	0.201	301	0.076	0.207	1.000
1514.2	41	26.7	2.321	0.223	293	0.144	0.175	1.000
1514.4	40	20.1	2.335	0.213	290	0.139	0.168	1.000
1514.6	41	17.6	2.366	0.205	280	0.180	0.140	1.000
1514.8	51	16.6	2.441	0.196	268	0.317	0.067	1.000
1515.0	60	17.4	2.454	0.181	255	0.296	0.063	1.000
1515.2	61	14.8	2.345	0.199	266	0.177	0.143	1.000
1515.4	64	15.0	2.273	0.232	278	0.158	0.176	1.000
1515.6	73	16.9	2.296	0.255	281	0.270	0.143	1.000
1515.8	70	22.3	2.329	0.284	280	0.405	0.095	1.000
1516.0	61	28.7	2.294	0.293	285	0.354	0.117	1.000
1516.2	59	30.7	2.252	0.290	300	0.248	0.178	1.000
1516.4	56	27.5	2.244	0.295	303	0.252	0.185	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1516.6	49	18.4	2.301	0.282	303	0.318	0.148	1.000
1516.8	44	13.2	2.397	0.268	292	0.493	0.042	1.000
1517.0	43	10.6	2.430	0.271	285	0.580	0.005	1.000
1517.2	44	10.9	2.378	0.265	292	0.433	0.078	1.000
1517.4	45	12.8	2.340	0.260	298	0.325	0.124	1.000
1517.6	49	15.3	2.373	0.274	300	0.444	0.079	1.000
1517.8	51	15.0	2.421	0.260	296	0.518	0.022	1.000
1518.0	53	13.9	2.420	0.257	293	0.501	0.028	1.000
1518.2	54	13.2	2.411	0.263	295	0.484	0.041	1.000
1518.4	57	14.0	2.394	0.264	297	0.474	0.051	1.000
1518.6	53	16.6	2.357	0.259	296	0.375	0.101	1.000
1518.8	45	19.1	2.319	0.260	297	0.292	0.141	1.000

1519.0	44	20.4	2.290	0.256	294	0.200	0.180	1.000
1519.2	48	22.2	2.265	0.245	297	0.165	0.197	1.000
1519.4	48	22.9	2.241	0.246	297	0.133	0.217	1.000
1519.6	47	26.3	2.233	0.259	292	0.158	0.202	1.000
1519.8	45	29.6	2.236	0.259	291	0.142	0.203	1.000
1520.0	43	29.6	2.274	0.239	291	0.128	0.204	1.000
1520.2	42	28.3	2.308	0.243	292	0.186	0.174	1.000
1520.4	42	26.4	2.312	0.246	292	0.213	0.164	1.000
1520.6	40	22.5	2.314	0.259	291	0.256	0.155	1.000
1520.8	38	12.1	2.360	0.261	287	0.365	0.105	1.000
1521.0	39	10.0	2.383	0.253	278	0.402	0.081	1.000
1521.2	40	10.5	2.360	0.228	279	0.258	0.126	1.000
1521.4	41	13.7	2.315	0.211	280	0.113	0.183	1.000
1521.6	41	23.0	2.263	0.198	292	0.024	0.229	1.000
1521.8	40	28.8	2.250	0.221	293	0.077	0.224	1.000
1522.0	38	26.8	2.296	0.252	299	0.218	0.171	1.000
1522.2	38	25.1	2.300	0.263	303	0.249	0.163	1.000
1522.4	39	22.1	2.230	0.273	306	0.132	0.230	1.000
1522.6	36	20.0	2.179	0.306	303	0.142	0.224	1.000
1522.8	35	19.3	2.095	0.328	300	0.079	0.242	1.000
1523.0	38	17.6	2.038	0.296	298	0.000	0.266	1.000
1523.2	40	15.2	2.132	0.263	294	0.000	0.260	1.000
1523.4	40	10.7	2.234	0.277	293	0.169	0.196	1.000
1523.6	41	6.1	2.271	0.265	294	0.184	0.194	1.000
1523.8	68	4.1	2.366	0.221	289	0.304	0.105	1.000
1524.0	100	4.8	2.475	0.241	275	0.582	0.000	1.000
1524.2	114	10.7	2.539	0.282	267	0.925	0.000	1.000
1524.4	110	25.9	2.553	0.299	271	0.962	0.000	1.000
1524.6	97	21.0	2.478	0.311	271	0.803	0.000	1.000
1524.8	72	23.1	2.383	0.285	283	0.512	0.040	1.000
1525.0	49	24.3	2.306	0.243	287	0.190	0.173	1.000
1525.2	43	32.2	2.221	0.227	298	0.038	0.250	1.000
1525.4	41	39.1	2.199	0.253	300	0.087	0.239	1.000
1525.6	39	34.3	2.231	0.247	295	0.103	0.226	1.000
1525.8	40	33.7	2.290	0.196	285	0.080	0.198	1.000
1526.0	39	29.1	2.367	0.146	281	0.045	0.162	1.000
1526.2	39	26.7	2.343	0.154	282	0.045	0.174	1.000
1526.4	39	25.3	2.340	0.194	280	0.106	0.171	1.000
1526.6	41	26.5	2.369	0.222	278	0.239	0.127	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1526.8	44	28.3	2.347	0.223	270	0.201	0.147	1.000
1527.0	47	33.2	2.301	0.238	270	0.160	0.162	1.000
1527.2	44	39.2	2.284	0.262	273	0.226	0.141	1.000
1527.4	41	42.9	2.264	0.276	287	0.207	0.171	1.000
1527.6	40	39.5	2.235	0.272	297	0.141	0.212	1.000
1527.8	42	34.4	2.204	0.255	299	0.097	0.234	1.000
1528.0	45	34.0	2.270	0.233	290	0.147	0.197	1.000
1528.2	46	33.8	2.309	0.220	283	0.153	0.175	1.000
1528.4	48	36.1	2.301	0.197	275	0.105	0.186	1.000
1528.6	47	36.6	2.290	0.193	276	0.067	0.202	1.000
1528.8	46	36.3	2.263	0.216	285	0.086	0.211	1.000
1529.0	45	34.9	2.230	0.266	298	0.146	0.211	1.000
1529.2	48	31.3	2.191	0.298	298	0.163	0.208	1.000
1529.4	48	32.0	2.178	0.293	296	0.168	0.203	1.000
1529.6	46	34.9	2.195	0.277	293	0.145	0.208	1.000
1529.8	43	43.3	2.214	0.247	297	0.097	0.229	1.000
1530.0	41	45.2	2.206	0.227	298	0.023	0.257	1.000
1530.2	41	42.6	2.171	0.232	295	0.000	0.261	1.000
1530.4	43	38.2	2.164	0.262	293	0.042	0.243	1.000
1530.6	42	37.9	2.200	0.262	295	0.122	0.217	1.000
1530.8	40	39.6	2.217	0.230	298	0.048	0.248	1.000
1531.0	38	39.8	2.219	0.211	299	0.000	0.259	0.999
1531.2	39	39.1	2.241	0.202	297	0.013	0.243	0.999
1531.4	41	35.6	2.248	0.191	294	0.000	0.240	0.985

1531.6	41	33.4	2.225	0.202	289	0.000	0.252	1.000
1531.8	41	33.4	2.241	0.215	286	0.052	0.228	1.000
1532.0	40	34.8	2.276	0.232	283	0.112	0.203	1.000
1532.2	40	33.9	2.240	0.244	284	0.108	0.205	1.000
1532.4	42	28.4	2.180	0.260	285	0.063	0.222	1.000
1532.6	46	27.2	2.067	0.249	284	0.000	0.243	1.000
1532.8	46	31.2	2.321	0.226	276	0.178	0.164	1.000
1533.0	42	45.0	2.297	0.218	271	0.124	0.177	1.000
1533.2	42	53.5	2.299	0.232	270	0.121	0.176	1.000
1533.4	44	50.7	2.295	0.236	269	0.139	0.168	1.000
1533.6	47	51.1	2.278	0.217	267	0.126	0.165	1.000
1533.8	48	46.9	2.245	0.213	275	0.048	0.209	1.000
1534.0	47	46.5	2.270	0.232	281	0.155	0.181	1.000
1534.2	44	45.8	2.275	0.238	285	0.133	0.199	1.000
1534.4	41	46.7	2.250	0.217	279	0.053	0.215	1.000
1534.6	40	47.8	2.260	0.228	281	0.111	0.198	1.000
1534.8	40	44.8	2.265	0.290	284	0.289	0.142	1.000
1535.0	42	38.3	2.255	0.283	283	0.217	0.165	1.000
1535.2	52	35.1	2.243	0.218	279	0.050	0.218	1.000
1535.4	58	35.0	2.309	0.165	280	0.006	0.205	1.000
1535.6	60	37.6	2.283	0.152	280	0.000	0.211	1.000
1535.8	57	41.5	2.236	0.145	282	0.000	0.226	0.998
1536.0	52	40.8	2.188	0.152	282	0.000	0.239	1.000
1536.2	45	39.1	2.154	0.187	281	0.000	0.237	1.000
1536.4	41	39.0	2.198	0.235	286	0.024	0.236	1.000
1536.6	41	34.6	2.281	0.272	288	0.235	0.167	1.000
1536.8	47	29.1	2.253	0.272	292	0.185	0.190	1.000

MULLOWAY 1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1537.0	49	29.3	2.235	0.276	295	0.175	0.200	1.000
1537.2	48	33.3	2.248	0.264	292	0.164	0.199	1.000
1537.4	46	43.0	2.264	0.248	293	0.149	0.203	1.000
1537.6	41	56.1	2.274	0.237	290	0.112	0.209	1.000
1537.8	38	56.2	2.263	0.252	288	0.128	0.205	1.000
1538.0	40	52.9	2.220	0.291	289	0.172	0.191	1.000
1538.2	42	51.4	2.190	0.296	289	0.123	0.207	1.000
1538.4	42	52.5	2.231	0.265	285	0.125	0.202	1.000
1538.6	42	57.9	2.292	0.221	281	0.121	0.193	1.000
1538.8	43	61.5	2.293	0.181	280	0.042	0.205	1.000
1539.0	44	59.3	2.275	0.171	280	0.000	0.222	0.992
1539.2	47	52.8	2.269	0.181	281	0.000	0.228	0.986
1539.4	43	47.5	2.281	0.194	281	0.040	0.215	1.000
1539.6	40	42.0	2.288	0.188	282	0.047	0.208	1.000
1539.8	43	32.5	2.300	0.188	281	0.072	0.194	1.000
1540.0	43	25.5	2.302	0.203	280	0.102	0.189	1.000
1540.2	47	22.8	2.290	0.205	279	0.096	0.197	1.000
1540.4	51	25.5	2.269	0.202	281	0.038	0.223	1.000
1540.6	54	32.8	2.239	0.224	284	0.057	0.221	1.000
1540.8	48	44.1	2.218	0.244	289	0.074	0.224	1.000
1541.0	42	40.6	2.226	0.235	291	0.061	0.233	1.000
1541.2	45	33.6	2.234	0.206	295	0.000	0.251	0.986
1541.4	52	32.2	2.238	0.205	293	0.000	0.249	1.000
1541.6	59	41.8	2.271	0.207	284	0.073	0.212	1.000
1541.8	57	51.6	2.323	0.212	278	0.202	0.150	1.000
1542.0	48	60.1	2.336	0.217	269	0.161	0.159	1.000
1542.2	43	60.6	2.323	0.222	272	0.156	0.167	1.000
1542.4	41	63.0	2.302	0.215	274	0.113	0.186	1.000
1542.6	36	62.2	2.286	0.218	275	0.083	0.199	1.000
1542.8	36	52.2	2.297	0.248	276	0.205	0.157	1.000
1543.0	38	34.2	2.320	0.271	276	0.341	0.110	1.000
1543.2	46	23.3	2.343	0.254	282	0.328	0.119	1.000
1543.4	46	22.6	2.327	0.234	285	0.208	0.156	1.000
1543.6	43	27.9	2.297	0.239	287	0.158	0.185	1.000
1543.8	44	34.3	2.273	0.255	287	0.166	0.189	1.000
1544.0	46	40.2	2.265	0.245	289	0.152	0.196	1.000

1544.2	48	45.7	2.255	0.224	291	0.104	0.214	1.000
1544.4	52	44.7	2.227	0.231	294	0.072	0.233	1.000
1544.6	54	46.4	2.208	0.227	297	0.030	0.252	1.000
1544.8	54	48.2	2.222	0.232	297	0.064	0.241	1.000
1545.0	57	50.2	2.230	0.243	299	0.115	0.226	1.000
1545.2	57	45.5	2.233	0.262	298	0.173	0.206	1.000
1545.4	55	39.2	2.239	0.256	295	0.158	0.205	1.000
1545.6	58	34.1	2.251	0.242	291	0.153	0.202	1.000
1545.8	64	21.5	2.272	0.232	293	0.157	0.192	1.000
1546.0	72	17.2	2.338	0.221	291	0.261	0.128	1.000
1546.2	79	16.6	2.428	0.232	289	0.456	0.038	1.000
1546.4	72	20.3	2.365	0.246	289	0.366	0.096	1.000
1546.6	59	32.7	2.271	0.257	295	0.243	0.171	1.000
1546.8	52	43.2	2.241	0.273	300	0.194	0.200	1.000
1547.0	53	43.9	2.244	0.240	298	0.118	0.219	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1547.2	55	44.2	2.264	0.216	296	0.096	0.210	1.000
1547.4	51	44.8	2.290	0.215	292	0.125	0.190	1.000
1547.6	48	42.2	2.303	0.218	291	0.164	0.173	1.000
1547.8	53	37.3	2.289	0.240	291	0.207	0.171	1.000
1548.0	59	35.5	2.270	0.266	292	0.258	0.165	1.000
1548.2	61	36.7	2.248	0.260	293	0.208	0.184	1.000
1548.4	56	43.8	2.233	0.267	294	0.196	0.191	1.000
1548.6	49	54.3	2.290	0.265	293	0.230	0.174	1.000
1548.8	43	55.8	2.310	0.242	288	0.187	0.173	1.000
1549.0	39	48.0	2.330	0.240	282	0.224	0.153	1.000
1549.2	44	41.8	2.376	0.236	273	0.318	0.105	1.000
1549.4	49	40.2	2.307	0.228	271	0.173	0.159	1.000
1549.6	47	42.2	2.299	0.228	269	0.152	0.164	1.000
1549.8	45	44.7	2.307	0.211	269	0.142	0.167	1.000
1550.0	47	44.8	2.322	0.197	268	0.125	0.172	1.000
1550.2	52	44.9	2.316	0.197	265	0.136	0.159	1.000
1550.4	53	49.2	2.298	0.221	276	0.175	0.167	1.000
1550.6	49	50.9	2.276	0.234	274	0.166	0.168	1.000
1550.8	43	48.2	2.274	0.225	277	0.129	0.185	1.000
1551.0	43	43.7	2.280	0.217	275	0.130	0.182	1.000
1551.2	48	41.0	2.288	0.225	274	0.164	0.168	1.000
1551.4	52	44.9	2.295	0.218	271	0.163	0.163	1.000
1551.6	51	54.5	2.284	0.198	273	0.064	0.201	1.000
1551.8	50	57.7	2.262	0.201	274	0.026	0.216	1.000
1552.0	52	54.2	2.263	0.207	278	0.046	0.216	1.000
1552.2	50	48.3	2.275	0.193	278	0.031	0.220	1.000
1552.4	51	51.6	2.284	0.181	276	0.008	0.220	1.000
1552.6	52	57.3	2.302	0.175	273	0.013	0.209	1.000
1552.8	51	64.0	2.342	0.148	259	0.009	0.185	1.000
1553.0	53	62.7	2.375	0.128	250	0.024	0.159	1.000
1553.2	53	66.0	2.367	0.140	248	0.049	0.157	1.000
1553.4	45	69.9	2.355	0.140	252	0.020	0.173	1.000
1553.6	43	76.5	2.384	0.139	252	0.071	0.144	1.000
1553.8	46	86.2	2.421	0.138	245	0.126	0.112	1.000
1554.0	47	96.4	2.438	0.147	239	0.156	0.099	1.000
1554.2	45	100.3	2.431	0.161	236	0.172	0.090	1.000
1554.4	43	95.7	2.427	0.161	235	0.161	0.092	1.000
1554.6	41	96.1	2.448	0.152	232	0.176	0.079	1.000
1554.8	44	103.0	2.459	0.139	232	0.132	0.093	1.000
1555.0	43	111.9	2.456	0.120	228	0.131	0.087	1.000
1555.2	42	119.2	2.454	0.112	225	0.120	0.081	1.000
1555.4	45	129.4	2.469	0.123	225	0.139	0.075	1.000
1555.6	44	123.7	2.484	0.139	220	0.197	0.045	1.000
1555.8	43	86.3	2.492	0.153	218	0.250	0.018	1.000
1556.0	46	54.3	2.385	0.263	225	Coal		
1556.2	45	52.0	1.914	0.432	284	Coal		
1556.4	59	50.2	1.669	0.507	319	Coal		
1556.6	86	50.0	1.845	0.434	354	Coal		

1556.8	122	43.8	2.366	0.312	310	Coal		
1557.0	136	32.4	2.540	0.259	269	Coal		
1557.2	117	27.0	2.439	0.251	263	0.543	0.007	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1557.4	86	26.2	2.314	0.254	292	0.299	0.138	1.000
1557.6	66	26.7	2.251	0.255	304	0.190	0.197	1.000
1557.8	61	32.8	2.233	0.255	310	0.149	0.218	1.000
1558.0	60	34.2	2.240	0.245	304	0.139	0.215	1.000
1558.2	58	35.8	2.250	0.235	304	0.125	0.212	1.000
1558.4	57	39.5	2.263	0.235	299	0.142	0.202	1.000
1558.6	56	43.4	2.269	0.226	294	0.137	0.198	1.000
1558.8	57	45.2	2.275	0.216	289	0.118	0.199	1.000
1559.0	60	46.2	2.276	0.205	288	0.086	0.205	1.000
1559.2	65	46.5	2.277	0.208	290	0.074	0.210	1.000
1559.4	67	46.0	2.260	0.216	291	0.083	0.216	1.000
1559.6	63	45.1	2.237	0.215	296	0.045	0.238	1.000
1559.8	57	46.1	2.223	0.211	296	0.000	0.257	1.000
1560.0	50	49.5	2.224	0.224	298	0.025	0.253	1.000
1560.2	45	51.1	2.229	0.234	299	0.082	0.235	1.000
1560.4	46	51.9	2.242	0.229	301	0.089	0.226	1.000
1560.6	47	49.0	2.243	0.226	301	0.067	0.232	1.000
1560.8	46	47.4	2.239	0.222	301	0.057	0.235	1.000
1561.0	46	46.8	2.236	0.221	303	0.056	0.237	1.000
1561.2	44	44.3	2.260	0.231	303	0.133	0.204	1.000
1561.4	43	40.5	2.233	0.256	307	0.126	0.226	1.000
1561.6	42	38.3	2.189	0.289	309	0.121	0.238	1.000
1561.8	42	37.6	2.178	0.289	306	0.120	0.236	1.000
1562.0	43	39.7	2.192	0.298	305	0.128	0.232	1.000
1562.2	44	43.0	2.219	0.297	307	0.193	0.211	1.000
1562.4	42	48.0	2.252	0.251	309	0.121	0.219	1.000
1562.6	40	47.1	2.253	0.193	308	0.000	0.239	0.993
1562.8	40	40.6	2.224	0.204	309	0.000	0.255	0.981
1563.0	43	32.2	2.155	0.256	305	0.011	0.271	1.000
1563.2	49	25.2	2.128	0.301	309	0.110	0.243	1.000
1563.4	50	23.8	2.142	0.294	309	0.122	0.238	1.000
1563.6	49	25.9	2.188	0.276	302	0.146	0.222	1.000
1563.8	52	33.3	2.253	0.229	295	0.107	0.215	1.000
1564.0	60	38.4	2.281	0.218	288	0.118	0.197	1.000
1564.2	79	39.7	2.294	0.263	286	0.286	0.145	1.000
1564.4	100	45.6	2.119	0.362	313	Coal		
1564.6	114	49.7	2.075	0.423	327	Coal		
1564.8	119	51.4	2.226	0.412	329	Coal		
1565.0	124	49.7	2.447	0.347	293	Coal		
1565.2	127	42.7	2.465	0.284	251	Coal		
1565.4	121	40.9	2.431	0.247	244	0.513	0.001	1.000
1565.6	111	37.1	2.387	0.245	256	0.415	0.041	1.000
1565.8	106	33.0	2.333	0.240	270	0.290	0.115	1.000
1566.0	109	32.[illegible]	2.306	0.236	286	0.219	0.159	1.000
1566.2	119	3[illegible]	2.338	0.246	278	0.318	0.120	1.000
1566.4	117	53.3	2.401	0.246	265	0.448	0.055	1.000
1566.6	106	59.8	2.381	0.239	262	0.384	0.068	1.000
1566.8	87	54.4	2.284	0.254	271	0.238	0.135	1.000
1567.0	69	38.7	2.214	0.278	290	Coal		
1567.2	57	28.9	2.043	0.330	305	Coal		
1567.4	52	21.9	1.851	0.383	307	Coal		

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1567.6	51	20.3	1.831	0.386	310	Coal		
1567.8	52	22.3	2.013	0.311	307	Coal		
1568.0	52	25.6	2.153	0.236	306	Coal		
1568.2	49	29.3	2.200	0.236	310	0.026	0.267	1.000
1568.4	49	31.3	2.222	0.234	308	0.054	0.248	1.000
1568.6	47	32.3	2.223	0.230	312	0.064	0.242	1.000
1568.8	47	33.1	2.217	0.232	313	0.063	0.245	1.000

1569.0	45	31.4	2.222	0.238	314	0.087	0.238	1.000
1569.2	44	27.0	2.225	0.244	311	0.108	0.232	1.000
1569.4	47	27.1	2.242	0.240	311	0.127	0.216	1.000
1569.6	52	26.3	2.215	0.245	312	0.075	0.247	1.000
1569.8	59	28.3	2.194	0.263	308	0.107	0.243	1.000
1570.0	66	29.8	2.235	0.255	302	0.173	0.209	1.000
1570.2	72	34.1	2.281	0.241	299	0.208	0.174	1.000
1570.4	79	44.0	2.297	0.232	286	0.187	0.172	1.000
1570.6	79	49.7	2.315	0.228	286	0.213	0.155	1.000
1570.8	71	52.5	2.264	0.250	290	0.181	0.189	1.000
1571.0	70	50.1	2.230	0.259	302	0.178	0.205	1.000
1571.2	69	50.3	2.233	0.272	309	0.200	0.205	1.000
1571.4	63	52.2	2.218	0.297	307	0.253	0.190	1.000
1571.6	50	49.3	2.196	0.303	310	0.175	0.222	1.000
1571.8	39	41.2	2.189	0.297	306	0.129	0.233	1.000
1572.0	39	35.0	2.201	0.260	308	0.101	0.245	1.000
1572.2	41	32.0	2.207	0.264	306	0.121	0.235	1.000
1572.4	47	29.7	2.217	0.279	303	0.162	0.217	1.000
1572.6	52	28.4	2.229	0.269	303	0.195	0.205	1.000
1572.8	57	30.5	2.263	0.237	293	0.143	0.202	1.000
1573.0	60	41.9	2.296	0.218	285	0.147	0.181	1.000
1573.2	67	47.7	2.299	0.217	278	0.159	0.175	1.000
1573.4	84	48.3	2.313	0.207	276	0.139	0.174	1.000
1573.6	100	49.8	2.362	0.217	268	0.271	0.115	1.000
1573.8	90	51.6	2.389	0.252	266	0.444	0.055	1.000
1574.0	67	52.5	2.313	0.270	272	0.317	0.109	1.000
1574.2	52	47.7	2.258	0.265	290	0.189	0.182	1.000
1574.4	43	44.0	2.248	0.256	300	0.123	0.222	1.000
1574.6	41	43.9	2.231	0.251	300	0.117	0.227	1.000
1574.8	42	47.4	2.243	0.237	297	0.124	0.216	1.000
1575.0	43	46.9	2.251	0.217	295	0.071	0.224	1.000
1575.2	43	32.9	2.234	0.201	296	0.000	0.249	0.979
1575.4	50	27.2	2.194	0.195	297	0.000	0.262	1.000
1575.6	57	28.3	2.150	0.198	296	0.000	0.263	1.000
1575.8	55	31.1	2.154	0.206	303	0.000	0.272	1.000
1576.0	46	37.5	2.185	0.202	304	0.000	0.269	0.993
1576.2	46	32.9	2.218	0.202	304	0.000	0.256	0.985
1576.4	54	29.3	2.227	0.212	298	0.005	0.254	0.999
1576.6	64	30.3	2.248	0.231	296	0.091	0.224	1.000
1576.8	68	35.9	2.242	0.240	293	0.127	0.214	1.000
1577.0	59	41.6	2.213	0.244	296	0.072	0.236	1.000
1577.2	56	26.4	2.201	0.251	298	0.075	0.238	1.000
1577.4	59	19.5	2.214	0.273	302	0.171	0.211	1.000
1577.6	75	14.5	2.210	0.309	304	0.297	0.169	1.000

MULLOWAY 1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1577.8	97	11.3	2.216	0.357	320	0.444	0.141	1.000
1578.0	108	11.4	2.238	0.382	321	0.574	0.037	1.000
1578.2	112	10.9	2.262	0.410	326	0.717	0.000	1.000
1578.4	116	11.0	2.295	0.426	314	0.919	0.000	1.000
1578.6	113	10.9	2.344	0.410	311	0.942	0.000	1.000
1578.8	110	11.3	2.398	0.383	313	0.951	0.000	1.000
1579.0	112	11.7	2.416	0.336	297	0.891	0.000	1.000
1579.2	106	12.4	2.418	0.365	300	0.887	0.000	1.000
1579.4	103	12.8	2.446	0.367	301	0.884	0.000	1.000
1579.6	104	13.4	2.507	0.350	298	0.926	0.000	1.000
1579.8	109	14.1	2.519	0.323	294	0.964	0.000	1.000
1580.0	110	15.4	2.507	0.297	290	0.917	0.000	1.000
1580.2	109	15.6	2.504	0.299	289	0.900	0.000	1.000
1580.4	111	15.8	2.498	0.307	288	0.927	0.000	1.000
1580.6	117	16.0	2.502	0.316	291	0.946	0.000	1.000
1580.8	113	17.7	2.513	0.311	288	0.947	0.000	1.000
1581.0	108	18.0	2.506	0.312	291	0.914	0.000	1.000
1581.2	104	17.9	2.495	0.340	287	0.911	0.000	1.000
1581.4	103	15.9	2.477	0.366	310	0.918	0.000	1.000

1581.6	110	14.4	2.442	0.395	322	0.995	0.000	1.000
1581.8	111	14.3	2.453	0.384	326	1.000	0.000	1.000
1582.0	112	14.8	2.490	0.346	322	0.984	0.000	1.000
1582.2	110	17.4	2.517	0.322	304	0.961	0.000	1.000
1582.4	106	20.0	2.523	0.286	295	0.870	0.000	1.000
1582.6	104	22.2	2.525	0.267	285	0.818	0.000	1.000
1582.8	105	21.2	2.522	0.272	283	0.829	0.000	1.000
1583.0	105	19.7	2.503	0.300	295	0.857	0.000	1.000
1583.2	106	19.5	2.493	0.318	300	0.885	0.000	1.000
1583.4	96	23.8	2.487	0.316	298	0.833	0.000	1.000
1583.6	78	27.2	2.368	0.306	296	0.550	0.029	1.000
1583.8	56	30.5	2.253	0.279	302	0.223	0.191	1.000
1584.0	42	28.8	2.222	0.255	309	0.115	0.234	1.000
1584.2	37	27.5	2.234	0.255	308	0.093	0.237	1.000
1584.4	40	27.7	2.253	0.244	302	0.110	0.220	1.000
1584.6	43	30.4	2.242	0.248	301	0.134	0.217	1.000
1584.8	43	34.5	2.208	0.258	303	0.101	0.236	1.000
1585.0	41	35.9	2.180	0.266	308	0.089	0.248	1.000
1585.2	42	38.5	2.186	0.262	308	0.089	0.248	1.000
1585.4	44	40.5	2.206	0.265	307	0.139	0.230	1.000
1585.6	46	42.5	2.216	0.273	302	0.152	0.218	1.000
1585.8	45	43.2	2.207	0.284	301	0.145	0.219	1.000
1586.0	40	43.4	2.202	0.314	301	0.227	0.190	1.000
1586.2	38	43.3	2.222	0.309	301	0.248	0.183	1.000
1586.4	41	37.3	2.250	0.271	300	0.176	0.207	1.000
1586.6	41	32.9	2.253	0.237	295	0.116	0.215	1.000
1586.8	40	29.1	2.241	0.249	297	0.111	0.225	1.000
1587.0	40	29.7	2.229	0.258	300	0.110	0.228	1.000
1587.2	41	28.2	2.221	0.252	303	0.118	0.231	1.000
1587.4	39	25.9	2.228	0.237	303	0.101	0.230	1.000
1587.6	39	27.5	2.253	0.221	293	0.077	0.223	1.000
1587.8	47	31.8	2.265	0.226	285	0.130	0.200	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1588.0	48	36.0	2.257	0.236	283	0.133	0.193	1.000
1588.2	44	45.8	2.239	0.223	290	0.073	0.225	1.000
1588.4	40	47.8	2.219	0.224	292	0.020	0.248	1.000
1588.6	40	47.9	2.207	0.243	295	0.049	0.242	1.000
1588.8	41	41.8	2.212	0.250	301	0.117	0.228	1.000
1589.0	41	42.1	2.220	0.245	302	0.088	0.240	1.000
1589.2	40	43.0	2.220	0.253	301	0.112	0.231	1.000
1589.4	41	38.9	2.215	0.274	304	0.118	0.231	1.000
1589.6	41	35.7	2.214	0.270	308	0.115	0.238	1.000
1589.8	41	34.1	2.222	0.255	307	0.114	0.235	1.000
1590.0	43	40.1	2.229	0.246	301	0.129	0.223	1.000
1590.2	45	44.6	2.220	0.244	298	0.082	0.237	1.000
1590.4	44	44.2	2.213	0.243	295	0.075	0.235	1.000
1590.6	44	40.0	2.223	0.218	301	0.015	0.255	0.998
1590.8	45	37.8	2.228	0.205	299	0.000	0.253	1.000
1591.0	46	43.9	2.230	0.206	301	0.000	0.253	1.000
1591.2	48	53.7	2.219	0.217	303	0.012	0.257	1.000
1591.4	45	56.6	2.208	0.232	307	0.022	0.263	1.000
1591.6	40	49.1	2.213	0.251	308	0.104	0.239	1.000
1591.8	38	41.7	2.225	0.278	305	0.130	0.231	1.000
1592.0	39	40.5	2.221	0.270	305	0.105	0.239	1.000
1592.2	39	38.0	2.208	0.246	304	0.072	0.249	1.000
1592.4	38	38.0	2.202	0.239	303	0.038	0.260	1.000
1592.6	35	41.9	2.215	0.226	300	0.017	0.260	1.000
1592.8	33	44.2	2.226	0.216	300	0.004	0.257	1.000
1593.0	32	37.8	2.234	0.213	298	0.032	0.243	0.992
1593.2	34	23.9	2.248	0.214	298	0.043	0.234	1.000
1593.4	38	22.2	2.276	0.205	296	0.068	0.211	1.000
1593.6	44	24.5	2.299	0.200	297	0.112	0.185	1.000
1593.8	50	32.1	2.267	0.218	296	0.091	0.212	1.000
1594.0	53	38.1	2.233	0.234	305	0.082	0.234	1.000

1594.2	57	35.5	2.219	0.232	307	0.058	0.246	1.000
1594.4	60	37.0	2.209	0.247	306	0.081	0.247	1.000
1594.6	58	44.8	2.218	0.256	306	0.119	0.234	1.000
1594.8	52	49.2	2.234	0.264	304	0.195	0.205	1.000
1595.0	53	48.6	2.237	0.274	302	0.204	0.201	1.000
1595.2	54	47.3	2.213	0.287	301	0.212	0.195	1.000
1595.4	54	48.2	2.206	0.291	300	0.206	0.196	1.000
1595.6	54	41.8	2.192	0.270	302	0.128	0.226	1.000
1595.8	67	36.5	2.193	0.279	302	0.156	0.216	1.000
1596.0	77	35.3	2.210	0.284	301	0.196	0.201	1.000
1596.2	73	39.9	2.219	0.282	298	0.209	0.192	1.000
1596.4	64	49.4	2.202	0.261	299	0.113	0.227	1.000
1596.6	55	53.1	2.201	0.242	302	0.036	0.258	1.000
1596.8	49	49.8	2.196	0.250	302	0.080	0.244	1.000
1597.0	48	46.0	2.200	0.256	306	0.103	0.240	1.000
1597.2	42	46.9	2.203	0.265	305	0.125	0.233	1.000
1597.4	40	48.1	2.211	0.267	305	0.106	0.238	1.000
1597.6	40	45.6	2.214	0.260	299	0.113	0.228	1.000
1597.8	43	42.5	2.213	0.250	298	0.101	0.229	1.000
1598.0	45	42.6	2.208	0.267	297	0.143	0.213	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1598.2	42	45.2	2.207	0.281	296	0.122	0.220	1.000
1598.4	42	43.5	2.226	0.263	290	0.127	0.208	1.000
1598.6	48	36.0	2.256	0.257	287	0.170	0.189	1.000
1598.8	57	32.8	2.279	0.266	286	0.243	0.160	1.000
1599.0	76	38.3	2.325	0.264	282	0.371	0.108	1.000
1599.2	87	46.6	2.343	0.255	287	0.358	0.109	1.000
1599.4	71	54.0	2.272	0.244	293	0.182	0.187	1.000
1599.6	48	52.0	2.200	0.261	309	0.099	0.246	1.000
1599.8	37	46.4	2.188	0.270	312	0.089	0.255	1.000
1600.0	35	39.1	2.193	0.287	307	0.110	0.241	1.000
1600.2	37	27.0	2.206	0.290	305	0.152	0.223	1.000
1600.4	42	21.6	2.256	0.237	300	0.125	0.211	1.000
1600.6	65	21.9	2.324	0.162	287	0.019	0.193	1.000
1600.8	110	27.5	2.404	0.155	269	0.147	0.118	1.000
1601.0	146	43.2	2.460	0.223	253	0.491	0.011	1.000
1601.2	145	60.8	2.413	0.303	263	0.636	0.000	1.000
1601.4	113	57.6	2.299	0.312	286	0.432	0.092	1.000
1601.6	78	43.6	2.254	0.267	304	0.230	0.185	1.000
1601.8	64	36.4	2.261	0.222	302	0.089	0.216	1.000
1602.0	68	32.1	2.277	0.203	301	0.070	0.210	1.000
1602.2	90	32.0	2.347	0.195	284	0.166	0.147	1.000
1602.4	124	32.9	2.444	0.197	268	0.370	0.048	1.000
1602.6	149	36.0	2.491	0.204	253	0.490	0.001	1.000
1602.8	144	38.0	2.481	0.216	252	0.509	0.001	1.000
1603.0	141	37.3	2.473	0.242	259	0.580	0.000	1.000
1603.2	138	37.0	2.475	0.259	261	0.643	0.000	1.000
1603.4	141	39.8	2.478	0.276	265	0.705	0.000	1.000
1603.6	141	42.9	2.442	0.346	271	Coal		
1603.8	132	47.0	2.349	0.419	308	Coal		
1604.0	126	51.5	2.263	0.409	328	Coal		
1604.2	121	45.4	2.293	0.350	325	Coal		
1604.4	118	41.4	2.391	0.287	303	Coal		
1604.6	117	35.8	2.427	0.262	271	Coal		
1604.8	114	33.6	2.423	0.256	266	0.524	0.017	1.000
1605.0	110	34.9	2.412	0.253	269	0.494	0.032	1.000
1605.2	100	35.9	2.396	0.272	273	0.526	0.024	1.000
1605.4	98	37.4	2.366	0.286	282	0.510	0.042	1.000
1605.6	93	38.8	2.332	0.285	288	0.439	0.095	1.000
1605.8	85	39.7	2.312	0.283	293	0.391	0.118	1.000
1606.0	90	40.0	2.319	0.286	292	0.414	0.110	1.000
1606.2	97	39.7	2.344	0.271	285	0.417	0.096	1.000
1606.4	102	39.6	2.358	0.267	280	0.432	0.084	1.000
1606.6	102	40.8	2.354	0.269	279	0.427	0.084	1.000

1606.8	98	41.3	2.348	0.289	280	0.487	0.053	1.000
1607.0	95	41.4	2.334	0.308	283	0.523	0.037	1.000
1607.2	94	41.2	2.322	0.304	285	0.484	0.062	1.000
1607.4	96	41.4	2.327	0.282	287	0.421	0.101	1.000
1607.6	96	41.7	2.341	0.249	286	0.336	0.115	1.000
1607.8	106	40.8	2.341	0.240	283	0.305	0.121	1.000
1608.0	119	37.8	2.340	0.255	283	0.356	0.111	1.000
1608.2	128	37.3	2.331	0.294	284	0.467	0.073	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1608.4	115	37.9	2.314	0.312	288	0.495	0.059	1.000
1608.6	92	41.6	2.293	0.313	296	0.452	0.102	1.000
1608.8	72	42.6	2.268	0.296	304	0.348	0.151	1.000
1609.0	64	44.0	2.254	0.294	304	0.293	0.171	1.000
1609.2	63	42.4	2.247	0.287	304	0.289	0.174	1.000
1609.4	62	46.0	2.235	0.281	302	0.221	0.194	1.000
1609.6	58	48.5	2.228	0.265	302	0.181	0.208	1.000
1609.8	53	50.6	2.227	0.234	300	0.085	0.234	1.000
1610.0	53	53.0	2.228	0.244	298	0.112	0.226	1.000
1610.2	50	51.5	2.221	0.262	294	0.145	0.209	1.000
1610.4	46	37.1	2.090	0.269	295	0.000	0.259	1.000
1610.6	44	30.6	2.220	0.244	293	0.107	0.222	1.000
1610.8	42	35.1	2.713	0.150	254	0.604	0.000	1.000
1611.0	38	47.6	2.930	0.040	208	0.573	0.000	0.624
1611.2	33	125.2	3.053	0.021	184	0.547	0.001	0.497
1611.4	33	334.1	2.757	0.024	172	0.365	0.001	1.000
1611.6	36	433.6	2.640	0.028	178	0.114	0.001	1.000
1611.8	38	297.8	2.515	0.065	179	0.067	0.001	1.000
1612.0	43	97.2	2.360	0.150	208	0.045	0.056	1.000
1612.2	51	61.7	2.259	0.222	260	0.102	0.154	1.000
1612.4	48	58.5	2.232	0.212	287	0.015	0.242	1.000
1612.6	41	63.9	2.230	0.183	283	0.000	0.241	1.000
1612.8	40	60.6	2.230	0.170	279	0.000	0.234	1.000
1613.0	39	52.5	2.233	0.172	273	0.000	0.223	1.000
1613.2	36	51.3	2.244	0.185	272	0.000	0.222	1.000
1613.4	34	54.5	2.263	0.199	270	0.041	0.204	1.000
1613.6	34	66.1	2.285	0.202	267	0.070	0.188	1.000
1613.8	32	59.9	2.290	0.198	263	0.064	0.185	1.000
1614.0	32	45.1	2.305	0.189	257	0.063	0.172	1.000
1614.2	36	42.2	2.323	0.190	255	0.084	0.160	1.000
1614.4	39	50.7	2.310	0.204	259	0.105	0.160	1.000
1614.6	37	76.5	2.294	0.219	262	0.090	0.172	1.000
1614.8	35	73.2	2.280	0.219	265	0.080	0.181	1.000
1615.0	42	47.9	2.265	0.229	267	0.127	0.167	1.000
1615.2	52	40.3	2.257	0.241	272	0.141	0.171	1.000
1615.4	58	40.2	2.254	0.239	279	0.155	0.179	1.000
1615.6	58	48.1	2.249	0.229	286	0.097	0.212	1.000
1615.8	54	60.7	2.250	0.228	289	0.087	0.220	1.000
1616.0	52	65.4	2.249	0.233	293	0.101	0.220	1.000
1616.2	49	58.3	2.239	0.223	291	0.055	0.234	1.000
1616.4	48	53.2	2.246	0.217	291	0.045	0.235	1.000
1616.6	48	55.3	2.261	0.224	290	0.104	0.212	1.000
1616.8	48	57.9	2.256	0.229	292	0.109	0.213	1.000
1617.0	50	60.4	2.240	0.231	294	0.087	0.227	1.000
1617.2	48	58.9	2.238	0.226	297	0.078	0.230	1.000
1617.4	48	57.1	2.231	0.230	297	0.071	0.236	1.000
1617.6	47	54.5	2.228	0.233	300	0.070	0.238	1.000
1617.8	50	49.9	2.233	0.227	302	0.065	0.237	1.000
1618.0	55	48.7	2.245	0.222	302	0.072	0.228	1.000
1618.2	54	48.8	2.247	0.212	302	0.031	0.237	1.000
1618.4	51	51.2	2.239	0.214	302	0.035	0.240	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1618.6	48	55.7	2.235	0.226	303	0.072	0.233	1.000
1618.8	47	53.6	2.241	0.228	299	0.096	0.223	1.000

1619.0	46	54.8	2.247	0.227	296	0.091	0.223	1.000
1619.2	44	53.9	2.249	0.230	293	0.108	0.216	1.000
1619.4	47	55.4	2.244	0.247	293	0.128	0.212	1.000
1619.6	51	57.6	2.233	0.238	292	0.094	0.222	1.000
1619.8	47	58.4	2.225	0.226	292	0.039	0.242	1.000
1620.0	45	56.2	2.250	0.220	291	0.054	0.231	1.000
1620.2	48	52.6	2.250	0.235	289	0.107	0.214	1.000
1620.4	52	48.4	2.250	0.239	295	0.139	0.208	1.000
1620.6	53	50.9	2.250	0.230	297	0.109	0.216	1.000
1620.8	51	55.2	2.244	0.225	296	0.066	0.231	1.000
1621.0	49	57.3	2.266	0.233	290	0.144	0.198	1.000
1621.2	47	59.8	2.277	0.234	285	0.153	0.191	1.000
1621.4	45	60.9	2.275	0.224	287	0.143	0.192	1.000
1621.6	44	62.7	2.268	0.216	286	0.079	0.214	1.000
1621.8	45	65.3	2.252	0.205	287	0.025	0.235	1.000
1622.0	47	64.5	2.241	0.215	288	0.036	0.237	1.000
1622.2	46	64.3	2.238	0.227	289	0.062	0.229	1.000
1622.4	47	63.3	2.261	0.227	288	0.126	0.205	1.000
1622.6	49	54.0	2.290	0.228	282	0.169	0.180	1.000
1622.8	47	53.3	2.359	0.183	272	0.156	0.142	1.000
1623.0	42	66.5	2.491	0.102	244	0.125	0.073	1.000
1623.2	40	90.3	2.571	0.064	212	0.110	0.035	1.000
1623.4	41	141.7	2.542	0.065	202	0.118	0.020	1.000
1623.6	43	171.9	2.545	0.050	207	0.096	0.041	1.000
1623.8	42	175.1	2.574	0.028	201	0.061	0.034	1.000
1624.0	40	264.8	2.599	0.015	195	0.079	0.013	1.000
1624.2	38	422.2	2.617	0.010	189	0.094	0.001	1.000
1624.4	36	1416.9	2.542	0.021	180	0.000	0.001	1.000
1624.6	37	206.2	2.378	0.115	207	0.000	0.067	1.000
1624.8	38	105.1	2.263	0.204	260	0.035	0.178	1.000
1625.0	39	70.5	2.223	0.228	300	0.046	0.248	0.977
1625.2	39	69.9	2.216	0.231	312	0.043	0.252	0.998
1625.4	39	59.4	2.221	0.231	313	0.043	0.251	0.988
1625.6	41	62.2	2.299	0.186	294	0.058	0.199	1.000
1625.8	46	88.1	2.461	0.107	264	0.121	0.086	1.000
1626.0	52	169.4	2.563	0.071	226	0.193	0.011	1.000
1626.2	54	241.9	2.479	0.111	205	0.153	0.020	1.000
1626.4	50	124.1	2.350	0.162	236	0.054	0.126	1.000
1626.6	44	85.9	2.282	0.183	265	0.015	0.199	1.000
1626.8	40	79.4	2.269	0.194	286	0.018	0.227	1.000
1627.0	40	78.9	2.278	0.201	282	0.077	0.206	1.000
1627.2	38	77.4	2.272	0.218	278	0.096	0.198	1.000
1627.4	37	75.6	2.268	0.226	281	0.089	0.206	1.000
1627.6	37	71.1	2.282	0.206	282	0.092	0.201	1.000
1627.8	39	59.0	2.310	0.188	278	0.072	0.191	1.000
1628.0	45	50.9	2.320	0.178	277	0.083	0.179	1.000
1628.2	52	52.9	2.316	0.186	281	0.077	0.186	1.000
1628.4	57	60.7	2.309	0.187	282	0.088	0.185	1.000
1628.6	58	66	2.284	0.187	285	0.030	0.214	1.000

MULL AY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1628.8	58	67.8	2.263	0.194	285	0.008	0.233	1.000
1629.0	63	63.8	2.277	0.209	284	0.076	0.210	1.000
1629.2	63	57.8	2.280	0.220	287	0.138	0.190	1.000
1629.4	59	54.0	2.245	0.230	294	0.099	0.221	1.000
1629.6	59	47.6	2.241	0.233	296	0.104	0.222	1.000
1629.8	60	50.8	2.304	0.223	288	0.175	0.170	1.000
1630.0	63	53.5	2.357	0.224	283	0.286	0.115	1.000
1630.2	65	54.2	2.358	0.237	282	0.312	0.111	1.000
1630.4	68	58.2	2.331	0.244	283	0.301	0.126	1.000
1630.6	67	60.9	2.326	0.241	288	0.294	0.129	1.000
1630.8	65	63.6	2.316	0.238	293	0.275	0.138	1.000
1631.0	61	64.4	2.310	0.234	292	0.235	0.151	1.000
1631.2	59	64.3	2.319	0.223	289	0.221	0.149	1.000
1631.4	59	60.6	2.325	0.219	284	0.223	0.145	1.000

1631.6	59	59.0	2.329	0.227	281	0.250	0.136	1.000
1631.8	61	58.8	2.327	0.213	281	0.212	0.146	1.000
1632.0	61	59.4	2.298	0.214	285	0.153	0.176	1.000
1632.2	57	65.2	2.269	0.233	288	0.147	0.195	1.000
1632.4	58	65.7	2.259	0.240	294	0.154	0.199	1.000
1632.6	63	62.9	2.270	0.224	294	0.112	0.205	1.000
1632.8	70	58.8	2.298	0.222	294	0.178	0.172	1.000
1633.0	69	49.8	2.304	0.220	290	0.169	0.171	1.000
1633.2	64	40.6	2.307	0.202	287	0.120	0.181	1.000
1633.4	66	37.5	2.356	0.178	276	0.146	0.144	1.000
1633.6	96	44.1	2.425	0.210	264	0.376	0.057	1.000
1633.8	124	49.0	2.473	0.250	259	0.607	0.000	1.000
1634.0	135	47.9	2.467	0.243	264	0.572	0.000	1.000
1634.2	141	46.0	2.429	0.238	264	0.481	0.029	1.000
1634.4	146	44.1	2.409	0.249	271	0.475	0.041	1.000
1634.6	148	45.0	2.412	0.257	272	0.507	0.028	1.000
1634.8	142	44.9	2.426	0.251	272	0.515	0.019	1.000
1635.0	134	44.9	2.425	0.249	267	0.508	0.022	1.000
1635.2	125	45.1	2.401	0.252	270	0.468	0.048	1.000
1635.4	125	48.8	2.370	0.241	273	0.367	0.091	1.000
1635.6	128	50.5	2.345	0.240	283	0.314	0.116	1.000
1635.8	125	50.9	2.329	0.249	288	0.313	0.125	1.000
1636.0	122	51.2	2.345	0.256	293	0.366	0.106	1.000
1636.2	123	49.6	2.363	0.262	283	0.425	0.083	1.000
1636.4	113	50.1	2.356	0.267	283	0.429	0.084	1.000
1636.6	92	47.9	2.319	0.267	290	Coal		
1636.8	93	48.9	2.209	0.316	305	Coal		
1637.0	106	54.1	2.134	0.359	324	Coal		
1637.2	117	51.8	2.206	0.338	318	Coal		
1637.4	121	51.2	2.401	0.317	306	Coal		
1637.6	122	41.7	2.514	0.326	271	Coal		
1637.8	123	39.7	2.533	0.300	252	0.950	0.000	1.000
1638.0	123	43.4	2.538	0.260	247	0.886	0.000	1.000
1638.2	119	49.5	2.494	0.229	242	0.582	0.000	1.000
1638.4	103	53.5	2.433	0.216	246	0.413	0.026	1.000
1638.6	80	49.6	2.367	0.220	261	0.291	0.095	1.000
1638.8	72	39.7	2.305	0.230	287	0.202	0.164	1.000

MULLOWAY 1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1639.0	83	37.9	2.281	0.257	303	0.240	0.169	1.000
1639.2	105	42.1	2.346	0.258	284	0.374	0.104	1.000
1639.4	115	46.1	2.398	0.251	268	0.460	0.052	1.000
1639.6	100	49.3	2.339	0.261	270	0.372	0.086	1.000
1639.8	80	49.1	2.251	0.255	290	Coal		
1640.0	77	49.8	2.250	0.252	306	Coal		
1640.2	73	52.4	2.250	0.266	308	Coal		
1640.4	66	50.4	2.243	0.263	306	0.202	0.198	1.000
1640.6	76	47.9	2.243	0.245	303	0.152	0.209	1.000
1640.8	86	46.7	2.244	0.241	298	0.111	0.221	1.000
1641.0	85	47.6	2.250	0.246	299	0.139	0.211	1.000
1641.2	83	47.5	2.255	0.262	304	0.204	0.191	1.000
1641.4	89	48.2	2.270	0.267	306	0.253	0.173	1.000
1641.6	97	45.0	2.294	0.268	300	0.303	0.148	1.000
1641.8	102	41.8	2.311	0.280	298	0.378	0.123	1.000
1642.0	109	49.1	2.203	0.333	300	Coal		
1642.2	111	62.7	1.926	0.394	338	Coal		
1642.4	117	100.1	1.868	0.379	342	Coal		
1642.6	122	88.7	2.136	0.316	326	Coal		
1642.8	118	63.1	2.357	0.285	278	Coal		
1643.0	105	50.8	2.338	0.279	272	0.429	0.071	1.000
1643.2	86	51.0	2.302	0.272	277	0.333	0.113	1.000
1643.4	73	55.3	2.288	0.271	288	0.296	0.144	1.000
1643.6	68	56.7	2.270	0.269	293	0.248	0.171	1.000
1643.8	68	57.7	2.248	0.262	299	0.188	0.199	1.000
1644.0	68	58.4	2.235	0.280	301	0.245	0.184	1.000

1644.2	61	60.1	2.231	0.298	301	0.268	0.176	1.000
1644.4	55	61.7	2.223	0.281	311	0.215	0.206	1.000
1644.6	54	57.9	2.217	0.265	314	0.154	0.224	1.000
1644.8	55	58.7	2.217	0.269	313	0.155	0.226	1.000
1645.0	51	59.2	2.222	0.257	306	0.125	0.230	1.000
1645.2	48	58.6	2.221	0.231	305	0.044	0.250	1.000
1645.4	48	54.3	2.214	0.205	303	0.000	0.259	0.996
1645.6	51	52.5	2.225	0.197	303	0.000	0.251	0.999
1645.8	54	52.3	2.246	0.217	300	0.064	0.228	1.000
1646.0	52	56.0	2.252	0.254	299	0.197	0.194	1.000
1646.2	48	63.0	2.240	0.258	298	0.167	0.207	1.000
1646.4	47	64.5	2.225	0.233	302	0.065	0.241	1.000
1646.6	46	61.3	2.225	0.212	303	0.001	0.256	0.995
1646.8	45	50.1	2.236	0.200	307	0.000	0.248	0.990
1647.0	45	39.7	2.252	0.197	307	0.000	0.241	0.992
1647.2	49	32.7	2.270	0.197	307	0.023	0.226	1.000
1647.4	57	36.5	2.291	0.197	299	0.091	0.195	1.000
1647.6	62	43.2	2.283	0.191	295	0.039	0.213	1.000
1647.8	59	48.1	2.254	0.178	295	0.000	0.233	1.000
1648.0	57	49.9	2.238	0.194	305	0.000	0.245	0.998
1648.2	58	47.4	2.249	0.211	309	0.033	0.236	1.000
1648.4	56	51.2	2.209	0.229	299	0.014	0.263	1.000
1648.6	45	63.6	1.837	0.316	329	Coal		
1648.8	30	80.1	1.420	0.482	393	Coal		
1649.0	20	99.8	1.252	0.542	444	Coal		

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1649.2	14	121.2	1.224	0.529	457	Coal		
1649.4	10	152.7	1.211	0.504	437	Coal		
1649.6	12	187.1	1.195	0.518	480	Coal		
1649.8	15	145.8	1.210	0.535	512	Coal		
1650.0	24	95.1	1.231	0.520	511	Coal		
1650.2	45	72.6	1.346	0.493	473	Coal		
1650.4	75	54.0	1.679	0.471	406	Coal		
1650.6	110	44.9	2.260	0.430	360	Coal		
1650.8	124	40.1	2.518	0.339	289	Coal		
1651.0	131	41.0	2.531	0.278	252	Coal		
1651.2	141	42.6	2.503	0.247	247	0.658	0.000	1.000
1651.4	150	48.5	2.496	0.247	243	0.645	0.000	1.000
1651.6	151	50.8	2.500	0.264	245	0.710	0.000	1.000
1651.8	152	54.7	2.492	0.266	254	0.699	0.000	1.000
1652.0	145	54.1	2.450	0.280	264	0.662	0.000	1.000
1652.2	121	37.6	2.387	0.293	270	0.578	0.005	1.000
1652.4	100	31.4	2.291	0.317	279	Coal		
1652.6	99	28.2	2.071	0.402	298	Coal		
1652.8	94	36.9	1.811	0.441	369	Coal		
1653.0	92	45.6	1.729	0.433	393	Coal		
1653.2	105	49.9	1.929	0.372	376	Coal		
1653.4	124	50.1	2.351	0.317	316	Coal		
1653.6	136	50.2	2.504	0.276	269	Coal		
1653.8	127	55.0	2.474	0.253	244	0.621	0.000	1.000
1654.0	94	46.3	2.385	0.244	265	0.409	0.063	1.000
1654.2	76	38.6	2.312	0.259	286	0.328	0.129	1.000
1654.4	80	33.3	2.278	0.261	302	0.250	0.169	1.000
1654.6	83	35.8	2.289	0.232	299	0.173	0.180	1.000
1654.8	80	38.4	2.316	0.219	290	0.185	0.162	1.000
1655.0	78	38.8	2.314	0.224	290	0.205	0.157	1.000
1655.2	72	36.4	2.278	0.229	291	0.169	0.184	1.000
1655.4	73	35.8	2.264	0.230	299	0.146	0.198	1.000
1655.6	79	36.9	2.265	0.235	300	0.136	0.203	1.000
1655.8	82	38.5	2.265	0.247	299	0.172	0.195	1.000
1656.0	82	39.7	2.263	0.260	298	0.215	0.185	1.000
1656.2	81	42.4	2.256	0.265	298	0.219	0.188	1.000
1656.4	82	43.8	2.267	0.263	295	0.230	0.179	1.000
1656.6	80	43.6	2.275	0.259	295	0.236	0.173	1.000

1656.8	78	42.0	2.271	0.242	293	0.176	0.189	1.000
1657.0	76	43.5	2.267	0.240	293	0.182	0.188	1.000
1657.2	71	47.8	2.241	0.256	297	0.183	0.200	1.000
1657.4	63	53.3	2.216	0.263	304	0.136	0.226	1.000
1657.6	58	55.8	2.203	0.271	314	0.154	0.231	1.000
1657.8	58	54.1	2.205	0.280	313	0.184	0.223	1.000
1658.0	59	53.6	2.215	0.266	312	0.158	0.224	1.000
1658.2	57	53.3	2.216	0.239	313	0.055	0.251	1.000
1658.4	55	51.0	2.213	0.237	314	0.066	0.247	1.000
1658.6	52	48.7	2.206	0.243	315	0.075	0.249	1.000
1658.8	51	45.7	2.211	0.243	313	0.067	0.250	1.000
1659.0	50	42.9	2.209	0.218	314	0.000	0.265	0.997
1659.2	49	39.7	2.226	0.200	310	0.000	0.252	0.999

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1659.4	47	39.3	2.242	0.203	307	0.008	0.244	1.000
1659.6	48	38.6	2.240	0.224	308	0.078	0.229	1.000
1659.8	51	42.4	2.216	0.224	312	0.035	0.252	1.000
1660.0	53	43.5	2.192	0.223	316	0.000	0.274	0.999
1660.2	53	38.0	2.187	0.215	323	0.000	0.273	0.993
1660.4	62	40.4	2.219	0.183	306	0.000	0.248	1.000
1660.6	71	42.9	2.276	0.173	282	0.000	0.222	1.000
1660.8	80	51.7	2.323	0.199	272	0.129	0.170	1.000
1661.0	82	56.8	2.311	0.232	275	0.218	0.149	1.000
1661.2	77	52.3	2.261	0.263	298	0.221	0.183	1.000
1661.4	74	49.0	2.264	0.269	306	0.245	0.177	1.000
1661.6	79	49.5	2.278	0.254	303	0.223	0.174	1.000
1661.8	82	53.3	2.265	0.238	297	0.146	0.200	1.000
1662.0	74	55.4	2.219	0.245	307	0.102	0.235	1.000
1662.2	68	53.3	2.181	0.250	318	0.036	0.275	1.000
1662.4	67	49.4	2.198	0.252	320	0.060	0.260	1.000
1662.6	68	48.5	2.231	0.272	313	0.184	0.211	1.000
1662.8	65	48.4	2.221	0.275	316	0.182	0.216	1.000
1663.0	65	45.4	2.230	0.268	313	0.192	0.208	1.000
1663.2	71	44.1	2.266	0.262	305	0.251	0.172	1.000
1663.4	67	44.6	2.279	0.266	298	0.269	0.163	1.000
1663.6	56	48.2	2.224	0.294	308	0.227	0.200	1.000
1663.8	56	51.9	2.207	0.286	319	0.194	0.221	1.000
1664.0	58	51.8	2.210	0.289	326	0.217	0.212	1.000
1664.2	60	48.8	2.203	0.300	324	0.234	0.213	1.000
1664.4	63	47.8	2.231	0.295	323	0.264	0.191	1.000
1664.6	66	46.8	2.259	0.284	317	0.285	0.171	1.000
1664.8	62	45.0	2.234	0.281	319	0.219	0.201	1.000
1665.0	66	43.7	2.212	0.297	317	0.229	0.211	1.000
1665.2	70	40.9	2.245	0.286	315	0.272	0.181	1.000
1665.4	69	42.0	2.288	0.271	304	0.317	0.146	1.000
1665.6	63	42.5	2.237	0.284	310	0.281	0.180	1.000
1665.8	52	44.0	2.212	0.304	317	0.204	0.221	1.000
1666.0	45	43.4	2.214	0.316	325	0.152	0.246	1.000
1666.2	42	42.3	2.267	0.321	326	0.129	0.242	1.000
1666.4	41	42.8	2.422	0.313	326	0.121	0.196	1.000
1666.6	42	41.4	2.182	0.299	319	0.127	0.251	1.000
1666.8	48	39.7	2.183	0.295	315	0.165	0.232	1.000
1667.0	56	38.3	2.216	0.273	309	0.173	0.222	1.000
1667.2	64	38.6	2.245	0.248	300	0.149	0.211	1.000
1667.4	63	41.3	2.243	0.257	299	0.172	0.206	1.000
1667.6	62	42.7	2.227	0.270	301	0.191	0.202	1.000
1667.8	64	38.6	2.207	0.251	304	0.091	0.243	1.000
1668.0	63	34.4	2.214	0.230	300	0.052	0.250	1.000
1668.2	67	31.6	2.249	0.219	289	0.061	0.229	1.000
1668.4	68	34.5	2.269	0.204	284	0.062	0.216	1.000
1668.6	58	41.1	2.268	0.203	288	0.065	0.215	1.000
1668.8	47	44.3	2.246	0.233	298	0.097	0.223	1.000
1669.0	43	42.4	2.239	0.242	303	0.129	0.217	1.000
1669.2	45	37.6	2.231	0.245	302	0.115	0.227	1.000

1669.4	48	33.6	2.218	0.254	300	0.136	0.220	1.000
		MULLOWAY_1						
Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1669.6	50	30.4	2.198	0.280	303	0.178	0.211	1.000
1669.8	51	28.5	2.201	0.281	308	0.191	0.213	1.000
1670.0	64	27.3	2.241	0.256	310	0.177	0.205	1.000
1670.2	78	28.8	2.303	0.219	300	0.173	0.170	1.000
1670.4	86	30.1	2.360	0.193	280	0.187	0.134	1.000
1670.6	89	31.8	2.350	0.197	280	0.180	0.142	1.000
1670.8	90	29.7	2.334	0.218	282	0.219	0.143	1.000
1671.0	95	29.3	2.387	0.234	286	0.379	0.079	1.000
1671.2	101	29.5	2.479	0.245	278	0.601	0.000	1.000
1671.4	99	32.3	2.530	0.245	270	0.708	0.000	1.000
1671.6	98	35.0	2.520	0.254	260	0.720	0.000	1.000
1671.8	89	32.5	2.434	0.250	263	0.531	0.011	1.000
1672.0	66	28.8	2.301	0.245	283	0.254	0.150	1.000
1672.2	50	26.8	2.219	0.263	305	0.150	0.222	1.000
1672.4	47	26.9	2.196	0.282	316	0.157	0.236	1.000
1672.6	50	30.1	2.202	0.279	314	0.179	0.226	1.000
1672.8	49	34.7	2.201	0.261	314	0.109	0.246	1.000
1673.0	41	36.8	2.200	0.256	313	0.083	0.254	1.000
1673.2	33	35.5	2.205	0.244	318	0.068	0.253	1.000
1673.4	32	34.0	2.209	0.242	315	0.060	0.253	1.000
1673.6	34	33.7	2.220	0.252	314	0.072	0.249	1.000
1673.8	38	32.6	2.225	0.257	318	0.098	0.240	1.000
1674.0	41	31.6	2.231	0.241	316	0.116	0.225	1.000
1674.2	40	32.2	2.245	0.237	313	0.109	0.221	1.000
1674.4	42	34.2	2.257	0.251	313	0.120	0.218	1.000
1674.6	45	39.3	2.259	0.256	313	0.141	0.211	1.000
1674.8	44	43.1	2.262	0.242	311	0.139	0.205	1.000
1675.0	46	45.0	2.266	0.230	308	0.147	0.197	1.000
1675.2	46	46.2	2.247	0.239	309	0.122	0.216	1.000
1675.4	46	42.8	2.228	0.244	314	0.119	0.226	1.000
1675.6	44	34.4	2.209	0.247	319	0.073	0.251	1.000
1675.8	43	26.2	2.196	0.249	320	0.069	0.258	1.000
1676.0	48	24.4	2.207	0.232	319	0.047	0.255	1.000
1676.2	58	27.4	2.235	0.223	313	0.063	0.236	1.000
1676.4	58	35.5	2.250	0.235	304	0.121	0.214	1.000
1676.6	54	51.2	2.228	0.238	302	0.090	0.234	1.000
1676.8	49	52.2	2.205	0.232	304	0.018	0.266	1.000
1677.0	44	45.0	2.214	0.237	306	0.048	0.254	1.000
1677.2	44	37.4	2.237	0.228	293	0.077	0.230	1.000
1677.4	43	33.7	2.256	0.211	284	0.070	0.218	1.000
1677.6	41	34.2	2.275	0.187	280	0.027	0.219	1.000
1677.8	38	38.3	2.261	0.179	285	0.000	0.230	1.000
1678.0	34	44.8	2.234	0.190	293	0.000	0.245	1.000
1678.2	33	44.1	2.214	0.211	302	0.000	0.261	0.996
1678.4	40	38.1	2.233	0.232	307	0.079	0.234	1.000
1678.6	48	38.3	2.272	0.243	301	0.165	0.194	1.000
1678.8	54	37.6	2.309	0.253	297	0.241	0.159	1.000
1679.0	56	41.7	2.267	0.255	299	0.227	0.177	1.000
1679.2	51	43.5	2.213	0.258	308	0.125	0.234	1.000
1679.4	44	42.7	2.188	0.262	317	0.076	0.263	1.000
1679.6	45	40.5	2.189	0.247	319	0.056	0.264	1.000
		MULLOWAY_1						
Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1679.8	46	36.2	2.197	0.254	317	0.090	0.252	1.000
1680.0	46	33.4	2.194	0.263	315	0.092	0.256	1.000
1680.2	43	31.3	2.189	0.271	313	0.131	0.242	1.000
1680.4	40	35.8	2.197	0.267	312	0.110	0.248	1.000
1680.6	35	38.3	2.209	0.249	311	0.078	0.249	1.000
1680.8	33	41.4	2.211	0.236	307	0.038	0.258	1.000
1681.0	35	36.8	2.207	0.226	305	0.018	0.263	1.000
1681.2	37	34.6	2.211	0.233	306	0.029	0.260	1.000
1681.4	38	35.2	2.224	0.235	306	0.067	0.243	1.000

1681.6	35	36.7	2.232	0.230	307	0.081	0.233	1.000
1681.8	32	36.1	2.226	0.237	307	0.059	0.245	1.000
1682.0	33	28.3	2.234	0.238	307	0.065	0.241	1.000
1682.2	35	23.9	2.234	0.227	308	0.079	0.232	1.000
1682.4	37	26.6	2.249	0.212	299	0.058	0.228	1.000
1682.6	36	30.2	2.274	0.200	291	0.057	0.214	1.000
1682.8	38	37.4	2.291	0.192	282	0.065	0.202	1.000
1683.0	40	47.5	2.291	0.194	282	0.080	0.197	1.000
1683.2	41	46.0	2.284	0.192	285	0.053	0.208	1.000
1683.4	41	45.8	2.282	0.179	287	0.000	0.223	1.000
1683.6	39	45.5	2.270	0.182	292	0.000	0.228	0.998
1683.8	41	41.2	2.262	0.197	293	0.025	0.228	1.000
1684.0	41	41.2	2.257	0.213	291	0.056	0.225	1.000
1684.2	42	42.9	2.261	0.207	290	0.063	0.220	1.000
1684.4	46	44.5	2.265	0.199	292	0.028	0.227	1.000
1684.6	48	46.4	2.259	0.213	293	0.071	0.220	1.000
1684.8	45	44.7	2.263	0.224	296	0.114	0.207	1.000
1685.0	43	43.5	2.270	0.215	296	0.098	0.206	1.000
1685.2	43	44.3	2.278	0.206	297	0.070	0.210	1.000
1685.4	42	45.9	2.277	0.209	298	0.091	0.204	1.000
1685.6	39	47.1	2.281	0.218	299	0.105	0.201	1.000
1685.8	38	44.6	2.306	0.222	299	0.125	0.187	1.000
1686.0	36	43.8	2.324	0.205	299	0.083	0.189	1.000
1686.2	31	40.8	2.322	0.208	298	0.088	0.189	1.000
1686.4	32	40.0	2.324	0.208	297	0.089	0.188	1.000
1686.6	31	38.6	2.329	0.195	295	0.056	0.192	1.000
1686.8	31	37.4	2.299	0.207	292	0.058	0.207	1.000
1687.0	33	37.3	2.270	0.235	294	0.096	0.215	1.000
1687.2	36	37.7	2.256	0.269	301	0.175	0.205	1.000
1687.4	36	36.0	2.245	0.282	304	0.204	0.203	1.000
1687.6	36	32.8	2.243	0.284	300	0.203	0.197	1.000
1687.8	35	29.4	2.250	0.277	291	0.200	0.184	1.000
1688.0	36	28.5	2.268	0.262	291	0.175	0.194	1.000
1688.2	36	30.7	2.284	0.262	289	0.207	0.178	1.000
1688.4	39	32.3	2.292	0.250	295	0.194	0.180	1.000
1688.6	45	26.2	2.317	0.239	287	0.206	0.162	1.000
1688.8	49	19.4	2.369	0.239	284	0.322	0.106	1.000
1689.0	50	18.6	2.380	0.257	277	0.422	0.077	1.000
1689.2	53	21.8	2.341	0.277	280	0.380	0.103	1.000
1689.4	57	28.7	2.304	0.275	288	0.292	0.146	1.000
1689.6	58	35.4	2.296	0.265	292	0.242	0.168	1.000
1689.8	55	40.0	2.288	0.277	294	0.276	0.162	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1690.0	51	39.5	2.274	0.290	291	0.276	0.157	1.000
1690.2	48	38.3	2.261	0.276	292	0.225	0.177	1.000
1690.4	46	37.4	2.263	0.263	293	0.179	0.194	1.000
1690.6	44	38.8	2.277	0.260	292	0.195	0.188	1.000
1690.8	45	4[illegible]	2.286	0.288	293	0.326	0.144	1.000
1691.0	49	3[illegible]	2.261	0.291	295	0.261	0.168	1.000
1691.2	46	39.1	2.226	0.269	299	0.147	0.214	1.000
1691.4	46	37.8	2.215	0.274	299	0.147	0.215	1.000
1691.6	46	37.3	2.226	0.278	301	0.149	0.218	1.000
1691.8	42	29.0	2.213	0.299	303	0.209	0.199	1.000
1692.0	36	19.7	2.075	0.349	309	0.084	0.252	1.000
1692.2	32	14.7	2.088	0.342	294	0.091	0.227	1.000
1692.4	32	12.7	2.321	0.261	280	0.299	0.132	1.000
1692.6	39	12.4	2.416	0.216	272	0.345	0.074	1.000
1692.8	53	14.7	2.324	0.201	281	0.142	0.166	1.000
1693.0	56	22.3	2.299	0.194	290	0.077	0.196	1.000
1693.2	54	28.1	2.312	0.206	293	0.147	0.171	1.000
1693.4	51	27.4	2.331	0.228	294	0.190	0.158	1.000
1693.6	52	25.0	2.332	0.244	298	0.254	0.143	1.000
1693.8	49	27.7	2.294	0.252	304	0.202	0.177	1.000
1694.0	48	31.7	2.256	0.257	307	0.165	0.205	1.000

1694.2	48	36.8	2.229	0.259	310	0.163	0.216	1.000
1694.4	46	35.5	2.218	0.251	313	0.119	0.232	1.000
1694.6	45	33.1	2.210	0.255	312	0.112	0.240	1.000
1694.8	45	31.4	2.195	0.255	313	0.083	0.256	1.000
1695.0	42	30.0	2.193	0.253	313	0.064	0.262	1.000
1695.2	43	22.6	2.201	0.271	316	0.133	0.242	1.000
1695.4	65	14.9	2.226	0.268	312	0.191	0.211	1.000
1695.6	99	13.7	2.337	0.254	298	0.346	0.115	1.000
1695.8	120	14.5	2.481	0.262	286	0.665	0.000	1.000
1696.0	124	16.4	2.521	0.279	281	0.903	0.000	1.000
1696.2	123	17.9	2.510	0.285	282	0.901	0.000	1.000
1696.4	123	20.3	2.507	0.297	282	0.917	0.000	1.000
1696.6	124	22.1	2.494	0.300	283	0.910	0.000	1.000
1696.8	128	27.9	2.467	0.305	282	0.890	0.000	1.000
1697.0	124	27.3	2.458	0.307	282	0.885	0.000	1.000
1697.2	120	27.4	2.462	0.292	282	0.728	0.000	1.000
1697.4	121	27.7	2.472	0.278	282	0.703	0.000	1.000
1697.6	123	27.2	2.465	0.276	282	0.679	0.000	1.000
1697.8	125	26.3	2.466	0.280	282	0.694	0.000	1.000
1698.0	122	26.1	2.477	0.302	282	0.896	0.000	1.000
1698.2	121	24.4	2.477	0.315	282	0.918	0.000	1.000
1698.4	123	24.3	2.460	0.325	282	0.917	0.000	1.000
1698.6	127	24.4	2.444	0.340	282	0.926	0.000	1.000
1698.8	123	24.9	2.446	0.331	282	0.913	0.000	1.000
1699.0	121	25.8	2.449	0.307	282	0.875	0.000	1.000
1699.2	125	26.1	2.453	0.301	282	0.739	0.000	1.000
1699.4	127	26.0	2.456	0.308	282	0.884	0.000	1.000
1699.6	127	23.0	2.461	0.309	282	0.891	0.000	1.000
1699.8	127	15.3	2.480	0.313	282	0.917	0.000	1.000
1700.0	127	12.9	2.493	0.305	282	0.918	0.000	1.000

MULLOWAY 1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1700.2	127	11.7	2.488	0.302	282	0.908	0.000	1.000
1700.4	127	11.3	2.489	0.289	282	0.886	0.000	1.000
1700.6	127	11.0	2.499	0.284	282	0.888	0.000	1.000
1700.8	127	9.8	2.501	0.287	282	0.895	0.000	1.000
1701.0	127	9.1	2.459	0.274	282	0.662	0.000	1.000
1701.2	127	9.8	2.382	0.256	282	0.442	0.069	1.000
1701.4	127	15.5	2.317	0.245	282	0.274	0.142	1.000
1701.6	127	23.1	2.271	0.256	282	0.216	0.163	1.000
1701.8	127	29.2	2.209	0.268	282	0.132	0.193	1.000
1702.0	127	29.5	2.188	0.260	282	0.062	0.217	1.000
1702.2	127	28.4	2.206	0.251	282	0.069	0.215	1.000
1702.4	127	30.3	2.214	0.246	282	0.066	0.216	1.000
1702.6	127	32.3	2.217	0.252	282	0.093	0.206	1.000
1702.8	127	32.6	2.208	0.253	282	0.078	0.211	1.000
1703.0	127	32.5	2.208	0.259	282	0.098	0.205	1.000
1703.2	127	29.7	2.209	0.250	282	0.071	0.214	1.000
1703.4	127	30.0	2.198	0.227	282	0.000	0.239	1.000
1703.6	127	31.0	2.201	0.214	282	0.000	0.239	1.000
1703.8	127	33.1	2.209	0.218	282	0.000	0.239	1.000
1704.0	127	36.0	2.224	0.224	282	0.015	0.234	1.000
1704.2	127	37.6	2.231	0.230	282	0.046	0.223	1.000
1704.4	127	37.3	2.228	0.220	282	0.008	0.236	1.000
1704.6	127	36.8	2.223	0.233	282	0.043	0.224	1.000
1704.8	127	36.9	2.217	0.243	282	0.062	0.217	1.000
1705.0	127	37.2	2.220	0.245	282	0.074	0.213	1.000
1705.2	127	36.3	2.218	0.239	282	0.053	0.220	1.000
1705.4	127	34.4	2.213	0.240	282	0.047	0.222	1.000
1705.6	127	32.1	2.216	0.245	282	0.067	0.215	1.000
1705.8	127	31.4	2.216	0.244	282	0.065	0.216	1.000
1706.0	127	32.3	2.218	0.252	282	0.098	0.205	1.000
1706.2	127	33.3	2.229	0.264	282	0.157	0.184	1.000
1706.4	127	27.6	2.246	0.272	282	0.220	0.162	1.000
1706.6	127	26.6	2.263	0.271	282	0.253	0.150	1.000

1706.8	127	26.6	2.283	0.276	282	0.310	0.130	1.000
1707.0	127	29.3	2.298	0.261	282	0.289	0.138	1.000
1707.2	127	33.4	2.290	0.255	282	0.253	0.150	1.000
1707.4	127	36.1	2.289	0.262	282	0.275	0.143	1.000
1707.6	127	38.3	2.279	0.272	282	0.288	0.138	1.000
1707.8	127	38.2	2.274	0.255	282	0.218	0.163	1.000
1708.0	127	37.5	2.283	0.229	282	0.148	0.187	1.000
1708.2	127	37.2	2.289	0.222	282	0.140	0.188	1.000
1708.4	127	36.8	2.265	0.222	282	0.091	0.207	1.000
1708.6	127	36.7	2.241	0.222	282	0.041	0.225	1.000
1708.8	127	34.8	2.233	0.222	282	0.025	0.230	1.000
1709.0	127	34.2	2.238	0.222	282	0.035	0.227	1.000
1709.2	127	33.5	2.237	0.222	282	0.033	0.227	1.000
1709.4	127	34.5	2.242	0.222	282	0.043	0.224	1.000
1709.6	127	36.4	2.245	0.222	282	0.051	0.221	1.000
1709.8	127	37.7	2.234	0.222	282	0.028	0.229	1.000
1710.0	127	38.0	2.227	0.222	282	0.013	0.234	1.000
1710.2	127	36.0	2.224	0.222	282	0.008	0.236	1.000

MULLOWAY_1

Depth	GR	RT	RHOB	NPHI	DT	VSH	PHIE	SWE
1710.4	127	36.3	2.239	0.222	282	0.038	0.226	1.000
1710.6	127	37.9	2.249	0.222	282	0.058	0.219	1.000
1710.8	127	38.0	2.234	0.222	282	0.027	0.229	1.000
1711.0	127	35.0	2.213	0.222	282	0.000	0.239	1.000
1711.2	127	32.5	2.212	0.222	282	0.000	0.239	1.000
1711.4	127	32.3	2.216	0.222	282	0.000	0.239	1.000
1711.6	127	34.5	2.216	0.222	282	0.000	0.239	1.000
1711.8	127	36.0	2.217	0.222	282	0.000	0.239	1.000
1712.0	127	36.7	2.224	0.222	282	0.008	0.236	1.000
1712.2	127	38.8	2.244	0.222	282	0.048	0.222	1.000
1712.4	127	43.6	2.266	0.222	282	0.093	0.206	1.000
1712.6	127	46.8	2.256	0.223	282	0.075	0.213	1.000
1712.8	127	42.4	2.219	0.223	282	0.000	0.239	1.000
1713.0	127	30.6	2.186	0.224	282	0.000	0.239	1.000
1713.2	127	25.6	2.162	0.225	282	0.000	0.239	1.000
1713.4	127	24.3	2.164	0.226	282	0.000	0.239	1.000
1713.6	127	25.7	2.183	0.226	282	0.000	0.239	1.000
1713.8	127	26.0	2.191	0.226	282	0.000	0.239	1.000
1714.0	127	27.4	2.192	0.226	282	0.000	0.239	1.000
1714.2	127	27.9	2.195	0.226	282	0.000	0.239	1.000
1714.4	127	28.1	2.197	0.226	282	0.000	0.239	1.000
1714.6	127	28.6	2.201	0.226	282	0.000	0.239	1.000
1714.8	127	31.6	2.201	0.226	282	0.000	0.239	1.000
1715.0	127	34.2	2.201	0.226	282	0.000	0.239	1.000
1715.2	127	35.4	2.201	0.226	282	0.000	0.239	1.000
1715.4	127	32.5	2.201	0.226	282	0.000	0.239	1.000
1715.6	127	28.0	2.201	0.226	282	0.000	0.239	1.000
1715.8	127	25.1	2.201	0.226	282	0.000	0.239	1.000
1716.0	127	24.4	2.201	0.226	282	0.000	0.239	1.000
1716.2	127	28.6	2.201	0.226	282	0.000	0.239	1.000
1716.4	127	32.2	2.201	0.226	282	0.000	0.239	1.000
1716.6	127	32.0	2.201	0.226	282	0.000	0.239	1.000
1716.8	127	28.6	2.201	0.226	282	0.000	0.239	1.000
1717.0	127	26.5	2.201	0.226	282	0.000	0.239	1.000
1717.2	127	25.8	2.201	0.226	282	0.000	0.239	1.000
1717.4	127	26.4	2.201	0.226	282	0.000	0.239	1.000
1717.6	127	27.9	2.201	0.226	282	0.000	0.239	1.000
1717.8	127	29.9	2.201	0.226	282	0.000	0.239	1.000
1718.0	127	30.5	2.201	0.226	282	0.000	0.239	1.000
1718.2	127	31.0	2.201	0.226	282	0.000	0.239	1.000
1718.4	127	32.0	2.201	0.226	282	0.000	0.239	1.000
1718.6	127	34.7	2.201	0.226	282	0.000	0.239	1.000
1718.8	127	28.8	2.201	0.226	282	0.000	0.239	1.000
1719.0	127	28.2	2.201	0.226	282	0.000	0.239	1.000
1719.2	127	27.8	2.201	0.226	282	0.000	0.239	1.000

1719.4	127	27.9	2.201	0.226	282	0.000	0.239	1.000
1719.6	127	27.8	2.201	0.226	282	0.000	0.239	1.000
1719.8	127	27.8	2.201	0.226	282	0.000	0.239	1.000
1720.0		N	Nul	Nul		1.000	0.000	1.000

Appendix 3

RFT Surveys

MULLOWAY-1

RFT SURVEYS

D. M. Braisted

I. D. Palmer

March 1989.

MULLOWAY-1 RFT SURVEYS

Summary:

Mulloway-1 was drilled in February 1989 to a total depth of 1700m SS. This well is located on a discrete closure 3.15 km due west of Whiptail-1A. Mulloway-1 was designed to test the lower N.asperus section and terminate below the equivalent M. diversus oil found in Barracouta. A secondary target was the 'Coarse Clastics' closure, which was water-wet at Whiptail-1A.

Drilling shows and log analysis indicated an oil accumulation in the lower N.asperus section. No other hydrocarbon shows were detected.

A series of 22 pretests and 4 sampling RFT runs were conducted on February 19, 1989. The test objectives were to confirm the presence of the N-1 oil zone, to locate the oil-water contact and to collect subsurface oil samples for PVT and compositional analysis.

The RFT pressure and sample tests confirmed the presence of a 17.2 meter gross oil column (12.2 meter net) from 1357.8m SS to an interpreted oil-water contact at 1375.0m SS. Three undersaturated crude samples were collected at 1358.5m, 1373.9m and 1374.8m SS. Of these, two were retained for laboratory PVT analysis. The fourth sample point taken at 1375.8m SS recovered only fresh formation water.

Test Procedure:

The 22 pretest RFT pressure survey and the 4 sample runs were made using the following tool configuration:

Pre-tests:	no sample chamber long nose probe standard rubber packer HP-C pressure gauge
Sample Runs:	6 gallon lower chamber 1 or 2.75 gallon segregated chamber Martineau probe reinforced packer with steel insert HP-C pressure gauge water cushions on both chambers (0.02" choke on upper and 0.04" choke on lower)

The pretest pressure survey was performed from top to bottom. A listing of the data from the 22 pretests is presented in Exhibit 1. Of the 22 pretest seats, all but four were successful in providing valid formation pressures. After analysis, two seats, 1-8 and 1-8A, are considered to be slightly supercharged. Of the other two pretest seats, one was tight and the other experienced a seal failure as indicated in Exhibit 1. Details of fluid recoveries for the four sampling runs are summarized in Exhibit 2.

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Pressure data from the Hewlett-Packard pressure gauge were used in the analysis of the data.

Results:

Exhibit 3 presents a plot of all the RFT pretest data. Superimposed on the data is a best fit line through the data using the Gippsland aquifer gradient of 1.42 psi/m. The measured pressures lie on this line. The dashed line represents the original Gippsland top of Latrobe aquifer pressure line. The pressure difference between the two lines indicates that the sands within the interval surveyed have been drawndown due to production from nearby oil and gas fields. Relative to the RFT survey conducted at Whiptail-1A, the pressures measured at Mulloway show an additional pressure drawdown of 4 psi. This occurred over a period of 3.5 years.

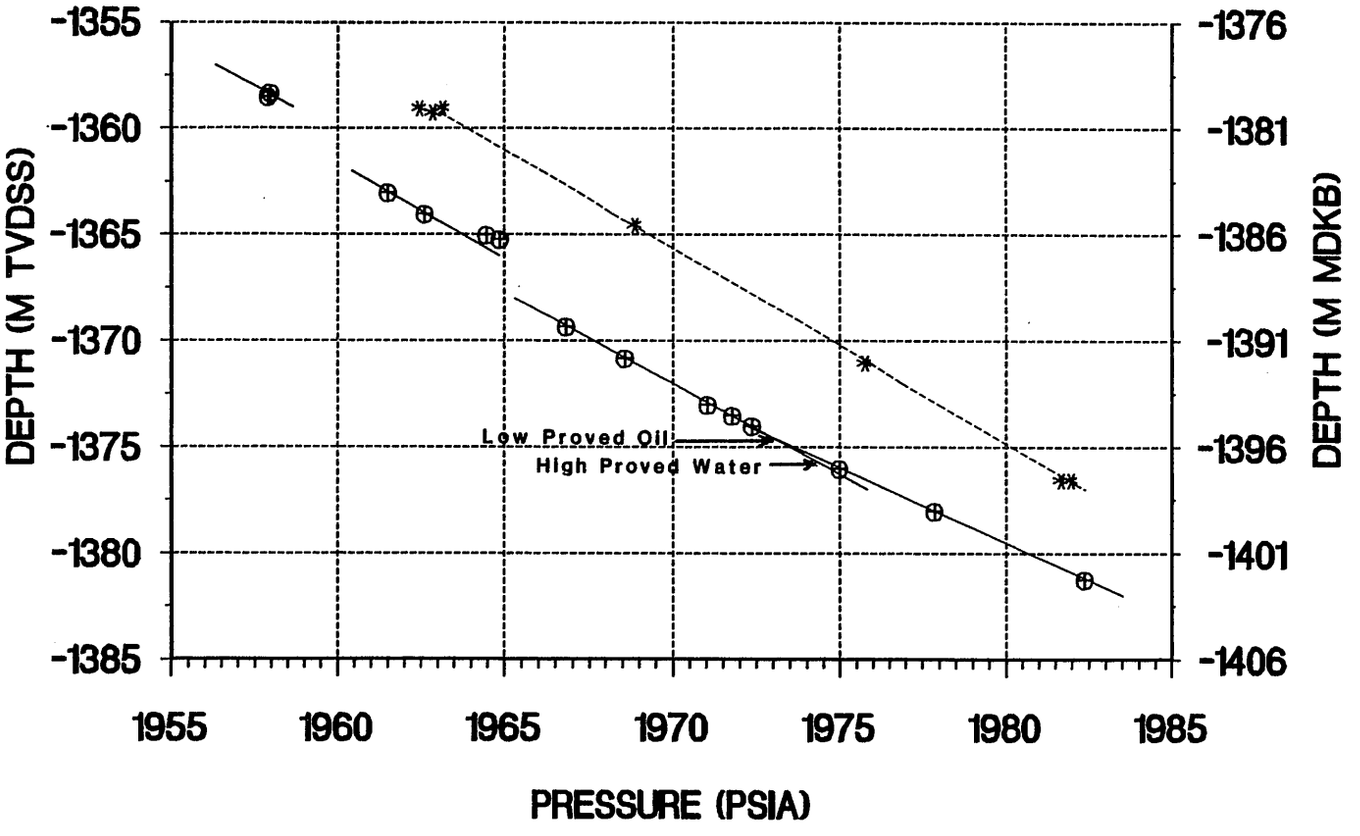
An expanded view of Exhibit 3 around the oil zone is given in Exhibit 4. The intersection between the water gradient and the oil gradient curves indicates the position of the oil-water contact. This occurs at 1374.5m SS, which is in good agreement with the 1375m SS OWC based on the fluid samples. Not shown on this figure is a 2.5 psi shift in the water gradients above and below the oil zone. A similar shift was observed in the Whiptail-1A RFT data. It also occurred below the correlatable reservoir sands. Since the Mulloway reservoir sand correlates directly the Whiptail reservoir, use of the lower water gradient at Whiptail is supported.

It can also be observed in Exhibit 4 that the formation pressures towards the top of the oil column do not fall on the oil gradient line. The formation pressures measured at these points are higher than would be expected if the system is in good vertical communication. There are at least three possible explanations for this behavior. They are: (1) three separate sands with different OWCs; (2) three separate sands with differing amounts of communication with the aquifer; and (3) supercharging effects. With regards to the possibility of supercharging, the data is too consistent for this to completely explain the measurements. That is not to say that supercharging did not occur. Consider the four points taken between 1363.0m and 1365.2m SS. If the upper two points are used to determine the oil gradient for this zone, a slope of 1.11 psi/m is calculated. This is close to the value of 1.16 psi/m calculated for the lower zone. If all four data points are considered, then the calculated slope increases to 1.55 psi/m, which is greater than the 1.42 psi/m water gradient. This strongly suggests that the lower two points are slightly supercharged. With regards to the upper zone, there is insufficient data to eliminate supercharging as the cause of the pressure differential.

Consider the Whiptail-1A RFT data in Exhibit 4. Notice that a similar offset in formation pressures is not observed. Because the Whiptail reservoir sand correlates directly with the Mulloway reservoir sand, It seems unlikely that a separate OWC would form in each of the zones at Mulloway. Therefore, the most reasonable explanation of the pressure differentials is to postulate reduced communication with the aquifer for the upper two zones. Another implication of this answer is that the coals that separate the three oil bearing sands must be laterally extensive and thus prevent vertical communication between the zones. It should be noted that the coal that separates the lower two zones is not present at Whiptail.

DMB0101/2

EXHIBIT 4: MULLOWAY-1 RFT DATA

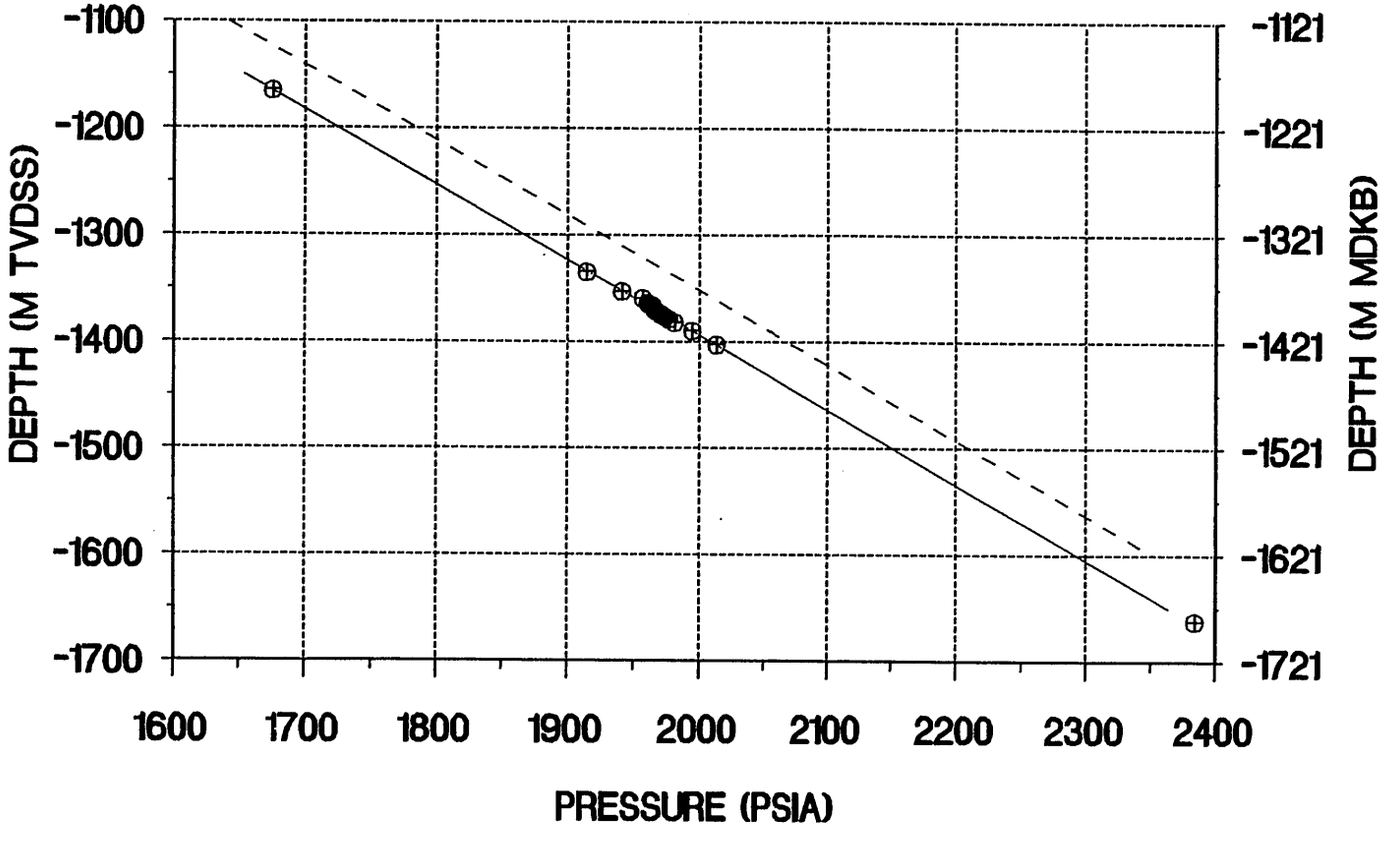


⊕ ⊕ ⊕ RFT: MULLOWAY
---------- WHIPTAIL
——— 1367.8–1375.0

* * * RFT: WHIPTAIL
——— 1357.5–1359.0

——— WATER GRADIENT
——— 1362.6–1366.0

EXHIBIT 3: MULLOWAY-1 RFT DATA



- - - - GIPPSLAND ——— MULLOWAY ⊕ ⊕ ⊕ RFT: MULLOWAY

MULLOWAY-1 RFT PRETEST PRESSURE DATA
Date: 19/2/89
Engineers: Ian Palmer and David Braisted
Tool: RFT-B
Quartz Gauge: HP-C

RFT No.	Depth m MDKB	Depth m TVDSS	Initial Hydrostatic Pressure HP (psia)	Initial Hydrostatic Pressure RFT (psig)	Time Set	Mimimum Flowing Pressure (psig)	Formation Pressure HP (psia)	Formation Pressure RFT (psig)	Temp. (deg F)	Time Retract	Final Hydrostatic Pressure HP (psia)	Final Hydrostatic Pressure RFT (psig)	Comments.....
1-1	1184.5	1163.5	1941.6	1932.2	1:56	6				2:01	1941.6		Tight
1-1A	1185.0	1164.0	1942.6	1930.5	2:05	1600	1676.60	1666.1	138.7	2:09	1942.9	1930.6	
1-2	1355.0	1334.0	2221.0	2208.1	2:25	1900	1915.50	1904.4	141.0	2:29	2221.1	2208.1	
1-3	1373.2	1352.2	2250.8	2238.0	2:36	1890	1941.86	1931.2	143.6	2:41	2250.7	2238.1	
1-4	1379.3	1358.3	2260.7	2247.7	2:46	535	1958.01	1945.3	144.4	2:50	2260.9	2247.9	
1-5	1379.5	1358.5	2261.1	2248.0	2:57	1526	1957.94	1946.5	145.0	3:01	2261.4	2248.1	
1-6	1384.0	1363.0	2268.9	2255.5	3:09	1470	1961.54	1950.4	145.4	3:14	2268.9	2255.6	
1-7	1385.0	1364.0	2270.7	2257.4	3:21	1908	1962.65	1951.6	145.7	3:24	2271.1	2257.6	
1-8	1386.2	1365.2	2272.8	2259.6	3:29	433	1964.91	1952.2	146.2	3:37	2272.9	2259.6	Suspect Supercharged
1-8A	1386.0	1365.0	2272.5	2259.1	3:45	1485	1964.51	1952.8	146.5	3:50	2272.4	2258.8	Suspect Supercharged
1-9	1390.3	1369.3	2279.6	2266.2	3:57	1507	1966.86	1955.1	146.7	4:02	2279.6	2266.0	
1-10	1391.8	1370.8	2282.0	2268.6	4:09	1951	1968.60	1957.5	147.0	4:13	2282.1	2268.5	
1-11	1394.0	1373.0	2285.5	2271.9	4:19	1955	1971.08	1959.9	147.2	4:24	2285.8	2272.2	
1-12	1395.0	1374.0	2287.5	2273.9	4:30	1470	1972.41	1960.7	147.4	4;35	2287.5	2273.9	
1-13	1397.0	1376.0	2290.8	2277.3	4:39	1902	1975.03	1963.7	147.7	4:44	2290.8	2277.3	
1-14	1399.0	1378.0	2294.2	2280.8	4:50	1833	1977.91	1966.6	148.1	4:54	2294.3	2280.7	
1-15	1402.2	1381.2	2299.4	2285.9	5:00	1881	1982.42	1971.1	148.3	5:05	2299.5	2285.8	
1-16	1412.0	1391.0	2315.4	2301.8	5:07	600							Lost Seal
1-16A	1410.0	1389.0	2312.2	2298.6	5:19	683	1995.88	1983.2	148.9	5:24	2312.2	2298.6	
1-17	1423.0	1402.0	2333.2	2319.7	5:30	1991	2014.42	2002.9	149.3	5:40	2333.7	2320.0	
1-18	1682.0	1661.0	2755.4	2741.3	5:52	2352	2385.92	2373.6	152.8	6:00	2755.4	2740.6	
1-19	1394.5	1373.5	2287.2	2274.6	6:16	1958	1971.82	1961.8	153.1	6:22	2287.6	2275.1	

Exhibit 1: Mulloway-1 Pretest RFT Pressure Survey

MULLOWAY-1 RFT SUBSURFACE FLUID SAMPLE DATA
Date: 19/2/89
Engineers: Ian Palmer and David Braisted
Tool: RFT-B
Quartz Gauge: HP-C

RFT No.	Depth m MDKB	Depth m TVDSS	Initial Hydrostatic Pressure HP (psia)	Initial Hydrostatic Pressure RFT (psig)	Mimimum Flowing Pressure (psig)	Formation Pressure HP (psia)	Formation Pressure RFT (psig)	Temp. (deg F)	Sample Recovery Chamber (gal)	Sample Recovery Oil (liters)	Sample Recovery Gas (m3)	Sample Recovery Formation Water (liters)	Sample Recovery Mud Filtrate (liters)	Comments.....
2-20	1395.0	1374.0	2289.2		1333			142.2	---	---	---	---	---	Seal Failure
2-20A	1394.9	1373.9	2289.2	2276.1	1858	1972.93	1962.4	146.9	6.0	20.5	neg.	0.0	0.5	opened on rig floor
									1.0					preserved
3-21	1379.5	1358.5	2262.8	2249.8				144.7	---	---	---	---	---	"Overspeed" Abort
3-21A	1379.5	1358.5	2262.7	2249.8	1571	1958.39	1947.4	146.6	6.0	4.3	neg.	0.0	17.0	opened of rig floor
									2.8	---	---	---	---	Seal Failure
4-22	1395.9	1374.9	2287.4	2274.5				146.2	---	---	---	---	---	"Overspeed" Abort
4-22A	1395.9	1374.9	2287.4	2274.2				147.6	---	---	---	---	---	Seal Failure
4-22B	1395.8	1374.8	2286.8	2273.6	1942	1972.68	1961.6	150.1	6.0	19.5	neg.	1.6	---	opened on rig floor
									1.0					preserved
5-23	1396.8	1375.8	2288.5	2276.4	1945	1975.04	1964.1	147.7	6.0	0.0	neg.	22.0	---	formation water
									1.0	0.0	neg.	4.0	---	opened on rig floor

Note: all 6 gal. samples and the non-preserved 1 gal. sample were sent to the Core Store

Exhibit 2: Mulloway-1 RFT Sample Run Fluid Recovery Data

RFT SAMPLE TEST REPORT

WELL : MULLOWAY # 1

OBSERVER : IAN PALMER, DAVE BRAISTED DATE : 19/2/89 RUN NO. : 2

	CHAMBER 1 (6 GAL		CHAMBER 2 (1 GAL)	
SEAT NO.	2-20A		2-20A	
DEPTH	1394.9 mMDKB		1394.9 m MDKB	
A.RECORDING TIMES				
Tool Set	08:53			
Pretest Open				
Time Open				
Chamber Open	09:00		09:15	
Chamber Full	09:06		09:17	
Fill Time	6 MIN		2 MIN	
Start Build up				
Finish Build up	09:08		09:19	
Build Up time	1-2 MIN		1-2 MIN	
Seal Chamber	09:11		09:20	
Tool Retract			09:30	
Total Time		hrs.	37 MIN	
B.SAMPLE PRESSURES HP	HP GAUGE		HP GAUGE	
IHP (PSIA)	2289.2	psia		psia
ISIP	1972.93			
Initial Flowing Press.	1908		1959.7	
Final Flowing Press.	1906		1958.6	
Sampling Press. Range	2 PSI		1 PSI	
FSIP	1972.58		1972.53	
FHP			2288.3	
Form.Press.(Horner)				
C.TEMPERATURE				
Depth Tool Reached		m		m
Max.Rec.Temp.	149.7	oF	149.9	oF
Time Circ. Stopped	12:30 18/2/89	hrs.		hrs.
Time since Circ.	21	hrs.		hrs.
Form.Temp.(Horner)		oC		oC
D.SAMPLE RECOVERY				
Surface Pressure	50 +	psig	PRESERVED	psig
Amt Gas	NEG	lit.	UNOPENED	lit.
Amt oil	20.5	lit.		lit.
Amt Water	0.5	lit.		lit.
Amt Others	FOAM OF MUD EMULSION	lit.		lit.
E.SAMPLE PROPERTIES				
Gas Composition				
C1	38	%		ppm
C2	.7	%		ppm
C3	.044	%		ppm
IC4/nC4	.048	%		ppm
C5	.001	%		ppm
C6+	NEG	%		ppm
CO2/H2S	5/1	%		ppm
Oil Properties	30.9 °API@ 60	°F	°API@	°C
Colour	BRONZEY GREENY			
Fluorescence				
GOR				
Water Properties				
Resistivity	@	°C	@	°C
NaCl Equivalent		ppm		ppm
Cl-titrated		ppm		ppm
Tritium(DPM)	2136 DPM *			ppm
Est.Water Type	FILTRATE			
Mud Properties				
Resistivity	@°C		@°C	
NaCl Equivalent		ppm		ppm
Cl- titrated		ppm		ppm
Calibration				
Calibration Press.		psig		psig
Calibration Temp.		°C		°C
Hewlett Packard No.				
Mud Weight				
Calc.Hydrostatic				
RFT Chokesize	.04"		.02"	
REMARKS	* DRILLING 3100 INCLUDE CHAMBER NUMBERS		RFS - AD 1122 INCLUDE CHAMBER NUMBERS	

RFT SAMPLE TEST REPORT

WELL : MULLOWAY

OBSERVER : IAN PALMER / DAVID BRAISTED DATE : 19/2/89 RUN NO. : 3

	CHAMBER 1 (6 GAL)		CHAMBER 2 (2.75 GAL)	
SEAT NO.	3-21		3-21	
DEPTH	1379.5 m MDKB		1379.5 m MDKB	
A.RECORDING TIMES			1ST ATTEMPT/SECOND ATTEMPT	
Tool Set	12:15		12:41	
Pretest Open				
Time Open				
Chamber Open	12:19		12:34 12:43	
Chamber Full	12:28			
Fill Time	9 MIN			
Start Build up				
Finish Build up	12:32			
Build Up time				
Seal Chamber	12:32			
Tool Retract			12:47	
Total Time		hrs.	32MIN	hrs.
B.SAMPLE PRESSURES HP	HP GAUGE		HP GAUGE	
IHP (PSIA)	2262.8	psia	2262.3	psia
ISIP	1958.39		1958.06 1958.6	
Initial Flowing Press.	974		SEAL FAILURE SEAL FAILURE	
Final Flowing Press.	1400			
Sampling Press. Range				
FSIP	1957.70			
FHP				
Form.Press.(Horner)				
C.TEMPERATURE				
Depth Tool Reached		m		m
Max.Rec.Temp.	149.5	°F		°F
Time Circ. Stopped		hrs.		hrs.
Time since Circ.		hrs.		hrs.
Form.Temp.(Horner)		°C		°C
D.SAMPLE RECOVERY				
Surface Pressure	120	psig		psig
Amt Gas	NEG	lit.		lit.
Amt oil	4.3	lit.		lit.
Amt Water	16.95	lit.		lit.
Amt Others		lit.	MUD FILT. 6.1	lit.
E.SAMPLE PROPERTIES				
Gas Composition				
C1	94.15/93.15/75.9	%		ppm
C2	2.9/3.38/1.58	%		ppm
C3	1.58/0.95/1.12	%		ppm
IC4/nC4	1.30/0.71/0.55	%		ppm
C5	0.021/0.10/0.08	%		ppm
C6+	- NEG -	%		ppm
CO2/H2S	4/1	%		ppm
Oil Properties	32.4 °API@ 60	°F	°API@	°C
Colour	SIM.TO RUN # 2			
Fluorescence				
GOR				
Water Properties				
Resistivity	@	°C	@	°C
NaCl Equivalent		ppm		ppm
Cl-titrated		ppm		ppm
Tritium(DPM)	2927 * DPM			ppm
Est.Water Type	FILTRATE			
Mud Properties				
Resistivity	43 @ 66°F		@°C	
NaCl Equivalent		ppm		ppm
Cl- titrated	16000	ppm		ppm
Calibration				
Calibration Press.		psig		psig
Calibration Temp.		°C		°C
Hewlett Packard No.				
Mud Weight				
Calc.Hydrostatic				
RFT Chokesize	.04		.02	
REMARKS	* 3050 WHILE DRILLING INCLUDE CHAMBER NUMBERS		INCLUDE CHAMBER NUMBERS	

11/07/08/199

RFT SAMPLE TEST REPORT

WELL : MULLOWAY #1

OBSERVER : IAN PALMER, DAVE BRAISTED DATE : 19/2/89 RUN NO. : 4

	CHAMBER 1 (6 GAL.)		CHAMBER 2 (1 GAL)	
SEAT NO. 4-22B	4-22B		4-22B	
DEPTH 1395.8 m MDKB	1395.8 m MDKB		1395.8 m MDKB	
A. RECORDING TIMES				
Tool Set	15:52			
Pretest Open				
Time Open				
Chamber Open	15:58		16:10	
Chamber Full	16:05		16:12	
Fill Time	7 MIN		2 MIN	
Start Build up				
Finish Build up				
Build Up time				
Seal Chamber	16:08		16:15	
Tool Retract			16:17	
Total Time		hrs.	25 min	
B. SAMPLE PRESSURES HP	HP GAUGE		HP GAUGE	
IHP PSIA	2286.8	psia		psia
ISIP	1972.68		1972.51	
Initial Flowing Press.	1953		1960	
Final Flowing Press.	1942			
Sampling Press. Range				
FSIP	1972.43		1972.43	
FHP			2286.9	
Form.Press.(Horner)				
C. TEMPERATURE				
Depth Tool Reached		m		m
Max.Rec.Temp.	151.6	°C / °F	151.4	°C / °F
Time Circ. Stopped		hrs.		hrs.
Time since Circ.		hrs.		hrs.
Form.Temp.(Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure	.50	psig		psig
Amt Gas	NEG	lit.	PRESERVED	lit.
Amt oil	19.5	lit.	UNOPENED	lit.
Amt Water	1.6	lit.		lit.
Amt Others		lit.		lit.
E. SAMPLE PROPERTIES				
Gas Composition		%		
C1	89.7/89.97/96.6	%		ppm
C2	2.81/2.25/2.7	%		ppm
C3	.16/.14/.15	%		ppm
IC4/nC4	.18/.14/.18	%		ppm
C5	.031/.030/.03	%		ppm
C6+	- NEG -	%		ppm
CO2/H2S		%		ppm
Oil Properties	29 °API@ 60 °F		°API@	°C
Colour				
Fluorescence				
GOR				
Water Properties				
Resistivity	@	°C	@	°C
NaCl Equivalent		ppm		ppm
Cl-titrated		ppm		ppm
Tritium(DPM)	953 DPM *	ppm		ppm
Est.Water Type				
Mud Properties				
Resistivity	@ °C		@ °C	
NaCl Equivalent		ppm		ppm
Cl- titrated	6000	ppm		ppm
Calibration				
Calibration Press.		psig		psig
Calibration Temp.		°C		°C
Hewlett Packard No.				
Mud Weight				
Calc.Hydrostatic				
RFT Chokesize	.04		.02	
REMARKS	* 3050 DPM WHEN DRILLING INCLUDE CHAMBER NUMBERS		RFS AD 1151 INCLUDE CHAMBER NUMBERS	

RFT SAMPLE TEST REPORT

WELL :... MULLOWAY.....

OBSERVER IAN PALMER/ DAVE BRAISTED ..... DATE : 19/2/89 ..... RUN NO.: 5 .....

	CHAMBER 1 (6 GAL)		CHAMBER 2 (1 GAL)	
SEAT NO. 5-23	5-23		5-23	
DEPTH 1396.8m MDKB	1396.8 m MDKB		1396.8 m MDKB	
A.RECORDING TIMES				
Tool Set				
Pretest Open	18:55			
Time Open				
Chamber Open	19:02		19:15	
Chamber Full	19:12		19:19	
Fill Time	10 MIN		4 MIN	
Start Build up				
Finish Build up				
Build Up time				
Seal Chamber	19:14		19:21	
Tool Retract				
Total Time		hrs.		hrs.
B.SAMPLE PRESSURES HP	HP GAUGE		HP GAUGE	
IHP (PSIA)	2285.5	psia		psia
ISIP	1975.04	psia	1974.68	psia
Initial Flowing Press.	1637		1935	psia
Final Flowing Press.			1934	psia
Sampling Press. Range				
FSIP	1974.61	psia	1974.57	psia
FHP			2288.9	psia
Form.Press.(Horner)				
C.TEMPERATURE				
Depth Tool Reached		m		m
Max.Rec.Temp.	148.5	°F	153	°F
Time Circ. Stopped		hrs.		hrs.
Time since Circ.		hrs.		hrs.
Form.Temp.(Horner)		°C		°C
D.SAMPLE RECOVERY				
Surface Pressure	0	psig	0	psig
Amt Gas	0	lit.	0	lit.
Amt oil	0	lit.	0	lit.
Amt Water	22	lit.	4	lit.
Amt Others		lit.		lit.
E.SAMPLE PROPERTIES				
Gas Composition				
C1		ppm		ppm
C2		ppm		ppm
C3		ppm		ppm
IC4/nC4		ppm		ppm
C5		ppm		ppm
C6+		ppm		ppm
CO2/H2S		ppm		ppm
Oil Properties	°API@	°C	°API@	°C
Colour				
Fluorescence				
GOR				
Water Properties				
Resistivity	@	°C	@	°C
NaCl Equivalent		ppm		ppm
Cl-titrated	8000	ppm		ppm
Tritium(DPM)	1526/1423	DPM		ppm
Est.Water Type				
Mud Properties				
Resistivity	@°C		@°C	
NaCl Equivalent		ppm		ppm
Cl- titrated		ppm		ppm
Calibration				
Calibration Press.		psig		psig
Calibration Temp.		°C		°C
Hewlett Packard No.				
Mud Weight				
Calc.Hydrostatic				
RFT Chokesize	.04		.02	
REMARKS	INCLUDE CHAMBER NUMBERS		INCLUDE CHAMBER NUMBERS	

Appendix 4

Geochemistry

GEOCHEMICAL REPORT

ON

MULLOWAY 1 WELL

GIPPSLAND BASIN

BY

B.J.BURNS

OCTOBER 1989

LIST OF TABLES AND FIGURES

INTRODUCTION

Mulloway 1 was a shallow well drilled near the basin margin and hence was expected to penetrate only a relatively young section of the Latrobe Group sediments which are too immature to be considered as significant source rocks for oil in the basin. No conventional Total Organic Carbon or Rockeval analyses were carried out.

Twenty one sidewall core samples from the Latrobe Group sediments were selected over the interval from 1137-1696.5m for palynological separation and were then examined for Kerogen Type, Fluorescence analysis and elemental analysis. Because of the anticipated low maturity of the samples, none were analysed for Vitrinite Reflectance determination.

Oil was recovered from the Lower *N. asperus* reservoir at 1379.5m in RFT 3-21A and two other crude oil samples were recovered from RFT 2-20A at 1394.9m and RFT 4-22B at 1395.8m. These latter two oils are essentially from the same interval, just above the oil/water contact at 1396m, and have identical chromatograms and compositions. Following some observed differences in the composition of the upper and lower oils it was decided to extract two samples of the oil-stained core over the intervening section. The three oils were analysed to determine their API Gravity and C_{12+} liquid chromatographic composition while the two core samples were extracted with pentane. All of the samples and extracts were further analysed using capilliary gas chromatography.

RESULTS

Kerogen organic matter descriptions and fluorescence characteristics are set out in Tables 1 & 2 and Figure 1. The kerogen type varies considerably but shows no correlation with the age of the section (cf Table 3). The Upper/Middle M.diversus interval from 1439.3m to 1565m shows an increase in the Amorphous category (up to 30%) and this, combined with 25-30% Biodegraded Terrestrial is indicative of good potential hydrocarbon source rocks. It is interesting that this interval also exhibits some of the best bright yellow fluorescence observed in the well (Table 2).

The H/C atomic ratios of the kerogens, as shown in the Van Krevelen Plot (Fig. 2, Table 3), indicate a predominance of Type III terrestrial organic matter over most of the Latrobe Group interval although several of the Middle N.asperus and Upper M.diversus samples show enriched hydrogen compositions with H/C ratios greater than 1.0. This is equivalent to intermediate Type II-III kerogen, and hence greater oil source potential, but it is clear from Figure 2 that these samples are still very immature.

The correlation between fluorescence and H/C Atomic Ratio is not well defined although there is a general tendancy for the samples with greater than 50% fluorescence to have H/C ratios greater than 0.9.

OIL SAMPLES

The shallowest oil from RFT 3-21A at 1379.5m has an API Gravity of 43.4 and its "Whole Oil" chromatogram (Fig. 3) shows a light oil with a bi-modal distribution of n-alkanes maximising at C_{10} and C_{16}. The slight dip in the n-alkane profile at C_{13} is believed to be due to the onset of bacterial degradation, the bacteria apparantly preferring this molecular size to commence their attack. The oil, although paraffinic, has only a small amount of C_{24+} waxes.

The two oil samples from RFT 2-20A, 1394.9m and RFT 4-22B, 1395.8m are essentially the same with API gravities of 32.0 and 31.9 degrees respectively (Table 4). From their "Whole Oil" chromatograms (Figs 4 and 5) both oils show evidence of fairly extensive biodegradation with virtually

all of the n-alkanes having been removed. The overall composition still shows a maximum in the light "gasoline" range with a smaller background "hump" developing around C_{14-16}. The predominance of these low-molecular weight hydrocarbons is the reason that the oil's API Gravity has retained such a relatively high value (considering the degree of biodegradation). The "original" oil, as seen at 1379.5m is very similar to the light oil from Whiptail 1A ,1397.5m (Fig. 6) rather than the waxier crudes from Seahorse or Wirrah. The saturate fractions of the samples near the oil/water contact (Figs 8 and 9) show a prominant "hump" around C_{14-16} but it is still not possible to identify the remaining iso-paraffins with any confidence and in this respect the base of the Mulloway oil column is slightly more degraded than Perch or Dolphin oils.

The Mulloway reservoir consists of three main sands separated by coal seams. The upper sand contains the oil from RFT 3-21A which shows only a trace of bacterial degradation while the lower sand has the oil with the most degraded appearance. The two oil-stained core samples were selected to test the vertical extent of the biodegradation within the oil column (see Fig. 10). The core sample from 1380.3m is in the base of the thin sand at the top of the oil column and its pentane-soluble extract (Fig. 11) is virtually the same as the recovered RFT oil. The second core extract is from the middle sand unit and exhibits a pattern of extensive biodegradation (Fig. 12) very similar to the oil recovered near the oil/water contact. This indicates that biodegradation has spread fairly evenly up through the first two sands above the oil/water contact (Fig. 10) but the top sand has been sufficiently protected by the coal seam so that it has been only slightly altered. This isolation of the upper sand may have implications when it comes to determining the most efficient production characteristics.

If the correlation from Mulloway to Whiptail (Fig. 13) is correct, then it is a little surprising that the oil just above the oil/water contact in Mulloway is fairly degraded while its counter-part in Whiptail shows only minor degradation.

SUMMARY

Mulloway is the first Gippsland field to exhibit a vertical variation in the extent of biodegradation (although this may be a function of the lack of previous multiple sampling intervals within reservoirs). The bulk of the oil has been moderately degraded except for the top sand which appears to have been isolated and protected from bacterial attack.

(BJB113)

Table 1

KEROGEN P.O.M.T. REPORT

BASIN - GIPPSLAND
WELL - MULLOWAY 1

SAMPLE NO	DEPTH (M)	YIELD	PARTICULATE ORGANIC MATTER TYPES											IF	TAI	% OIL PRONE	% FLUOR
			1.1	1.2	2.1	2.2	3.0	4.0	5.1	5.2	5.3	6.1	6.2				
78227 D	1137.00	L	5.0	-	-	10.0	15.0	-	-	25.0	30.0	15.0	-	5.0	-	30.0	-
78226 Z	1172.00	L	10.0	-	-	-	25.0	-	-	25.0	40.0	-	-	5.0	-	35.0	-
78226 Y	1176.00	L	20.0	-	-	-	55.0	-	-	10.0	15.0	-	-	-	-	75.0	-
78226 X	1180.50	M	5.0	-	-	-	30.0	-	-	45.0	20.0	-	-	5.0	-	35.0	-
78226 V	1233.00	M	10.0	-	-		20.0	-	-	50.0	20.0	-	-	10.0	-	30.0	-
78226 U	1252.20	M	15.0	-	-		25.0	-	-	40.0	20.0	-	-	15.0	-	40.0	-
78226 Q	1295.00	L	5.0	-	-	-	10.0	-	-	70.0	15.0	-	-	-	-	15.0	-
78226 P	1320.00	M	10.0	-	-	-	30.0	-	-	50.0	10.0	-	-	-	-	40.0	-
78226 N	1369.50	L	30.0	-	-	-	10.0	-	-	40.0	20.0	-	-	5.0	-	40.0	-
78226 L	1439.30	M	30.0	-	-	-	25.0	15.0	-	25.0	5.0	-	-	5.0	2.2	70.0	-
78226 J	1496.60	M	20.0	-	-	-	30.0	5.0	-	20.0	20.0	5.0	-	-	-	55.0	-
78226 G	1565.00	L	35.0	-	-	-	30.0	5.0	-	30.0	-	-	-	-	-	70.0	-
78226 D	1634.60	L	15.0	-	-	-	20.0	-	-	20.0	35.0	10.0	-	-	-	35.0	-
78226 A	1695.00	L	10.0	-	-	-	70.0	-	-	15.0	5.0	-	-	-	-	80.0	-

YIELD = (L)OW (M)EDIUM (H)IGH
AMORPHOUS = 1.1 - UNDIFFERENTIATED + 1.2 - AMORPHOUS/GREY
STRUCT.AQUEOUS = 2.1 - ALGAE + 2.2 - DINOFLAGELLETES/ACRITARCHS
BIODEG. TERR. = 3.0 - BIODEGRADED TERRESTRIAL
SPORE/POLLEN = 4.0 - SPORE/POLLEN
STRUCT. TERR. = 5.1 - LAMINAR + 5.2 - CELLULAR + 5.3 - SEMI-OPAQUE
INERT = 6.1 - OPAQUE + 6.2 - META-OPAQUE
INDET. FINES = IF - INDETERMINATE FINES (EXPRESSED AS A PERCENTAGE OF TOM, BUT EXCLUDED FROM POMT PERCENT COUNT)
TAI = THERMAL ALTERATION INDEX
OIL PRONE = SUM OF 1.1 THRU 4.0
FLUOR = PERCENT FLUORESCENT MATERIAL

Table 2a

Kerogen Fluorescence

BASIN - GIPPSLAND
WELL - MULLOWAY 1

SAMP NO.	DEPTH (M)	TYPE	AN	COLOUR	%	DESCRIPTOR	COMMENTS
78267 D	1137.00	CRSW	28	BRIGHT YELLOW	15	ALGAL/CELLULAR	IMMATURE.FLUORESCING MATERIAL DOMINANTLY DINOFLAGELLATES
				TOTAL	15		
78266 Z	1172.00	CRSW	28	WHITE YELLOW	5	CELLULAR	VERY LITTLE FLUORESCING MATERIAL
				TOTAL	5		
78266 Y	1176.00	CRSW	28	WHITE YELLOW	90	BIODEG. TERRESTRIAL/ CELLULAR	IMMATURE.VERY FINE CELLULAR MATERIAL.AMORPHOUS 'CLUMPS' CONTAINING FLUORESING CELLULAR MATERIAL. SOME SEMI-OPAQUE GRAINS CONTAIN FLUORESCING MATERIALS
				TOTAL	90		
78266 X	1180.50	CRSW	28	WHITE YELLOW	30	BIODEG. TERRESTRIAL/ CELLULAR	IMMATURE.ONLY WEAKLY FLUORESCING
				TOTAL	30		
78266 V	1233.00	CRSW	28	WHITE YELLOW	10	CELLULAR	IMMATURE.ONLY WEAKLY FLUORESCING
				TOTAL	10		
78266 U	1252.20	CRSW	28	WHITE YELLOW	10	CELLULAR/LAMELLAR	IMMATURE.FLUORESCING MATERIAL DOMINANTLY LAMELLAR SHEETS WITHIN SEMI OPAQUE GRAINS INVISABLE WITH TRANSMITTED LIGHT
				TOTAL	10		
78266 Q	1295.00	CRSW	28	BRIGHT YELLOW	20	CELLULAR	IMMATURE.
				TOTAL	20		
78266 P	1320.90	CRSW	28	WHITE YELLOW	70	CELLULAR/ BIODEG. TERREST	IMMATURE.
				TOTAL	70		
78266 N	1369.50	CRSW	28	WHITE YELLOW	80	CELLULAR/ BIODEG. TERREST/AMORPHOUS	IMMATURE.FLOURESCING CELLULAR MATERIAL OFTEN HAS HIGH BIREFRING-ENCE .AMORPHOUS MATERIAL ONLY WEAKLY FLUORESCING
				TOTAL	80		
78266 L	1439.30	CRSW	28	BRIGHT YELLOW	100	ALL RECORDED POMT TYPES	IMMATURE.COMMON LAMELLAR MATERIAL UNRECOGNISED IN TRANSMITTED LIGHT BIODEG. TERRESTRIAL AND AMORPHOUS MATERIAL FLUORESCE ONLY WEAKLY
				TOTAL	100		
78266 J	1496.65	CRSW	28	WHITE YELLOW	60	MINERAL MATTER	SAMPLE DOMINATED BY MINERAL MATTER
				BRIGHT YELLOW	5	CELLULAR	
				TOTAL	65		

Table 2b

Kerogen Fluorescence

BASIN - GIPPSLAND
WELL - MULLOWAY 1

SAMP NO.	DEPTH (M)	TYPE	AN	COLOUR	%	DESCRIPTOR	COMMENTS
78266 G	1565.00	CRSW	28	BRIGHT YELLOW	10	CELLULAR SPORE/POLLEN	IMMATURE. FLUORESCING MATERIAL OFTEN SHOWS HIGH BIREFRINGENCE IN TRANSMITTED LIGHT.NON-FLUORESCING AMORPHOUS MATERIAL PRESENT IN THE FORM OF DROPLET LIKE CLUMPS
				TOTAL	10		
78266 D	1634.60	CRSW	28	WHITE YELLOW	5	CELLULAR	IMMATURE
				BRIGHT YELLOW	20	CELLULAR/ BIODEG. TERRESTRIAL	
				TOTAL	25		
78266 A -	1696.50	CRSW	28	BRIGHT YELLOW	55	CELLULAR/ BIODEG. TERRESTRIAL	IMMATURE-BIODEG. TERRESTRIAL MATERIAL FLUORESCES ONLY WEAKLY
				TOTAL	55		

Table 3 KEROGEN ELEMENTAL ANALYSIS REPORT

BASIN - GIPPSLAND
WELL - MULLOWAY 1

SAMPLE NO.	DEPTH	SAMPLE TYPE	AGE	FORMATION	ATOMIC RATIOS H/C	O/C	N/C	COMMENTS
78227 D	1137.00	KEROGEN			.87	.32	.02	
78227 C	1149.00	KEROGEN			.94	.36	.02	HIGH ASH
78227 A	1167.50	KEROGEN			1.11	.51	.01	HIGH ASH
78226 Z	1172.60	KEROGEN			.97	.38	.01	HIGH ASH
78226 Y	1176.00	KEROGEN			1.22	.25	.01	
78226 X	1180.50	KEROGEN			1.01	.30	.01	HIGH ASH
78226 V	1233.00	KEROGEN	*Middle N.asperus*		.92	.41	.01	HIGH ASH
78226 U	1252.20	KEROGEN			.87	.37	.00	HIGH ASH
78226 S	1271.80	KEROGEN			.90	.19	.01	
78226 R	1285.30	KEROGEN			.89	.25	.01	
78226 Q	1295.00	KEROGEN	*Lower N.asperus*		.93	.39	.01	HIGH ASH
78226 P	1320.90	KEROGEN			.91	.26	.01	
78226 O	1348.30	KEROGEN			.87	.21	.01	HIGH ASH
78226 N	1369.50	KEROGEN			.97	.29	.01	
78226 M	1415.50	KEROGEN	*P.asperopolus*		.83	.47	.01	HIGH ASH
78226 L	1439.30	KEROGEN			1.34	.14	.00	
78226 J	1496.60	KEROGEN	*Upper M.diversus*		1.03	.54	.01	HIGH ASH
78226 G	1565.00	KEROGEN	*Middle M.diversus*		.82	.28	.01	HIGH ASH
78226 E	1603.00	KEROGEN			.97	.30	.01	HIGH ASH
78226 D	1634.60	KEROGEN	*Lower M.diversus*		.81	.22	.01	
78226 A	1696.50	KEROGEN	*L.balmei*		.99	.26	.01	HIGH ASH

SAMPLE NO.	DEPTH	SAMPLE TYPE	--- ELEMENTAL % (ASH FREE) --- N%	C%	H%	S%	O%	ASH%	COMMENTS
78227 D	1137.00	KEROGEN	1.16	65.66	4.75	.00	28.43	2.44	
78227 C	1149.00	KEROGEN	1.72	63.18	4.95	.00	30.14	14.17	HIGH ASH
78227 A	1167.50	KEROGEN	.89	55.97	5.16	.00	37.98	20.00	HIGH ASH
78226 Z	1172.60	KEROGEN	.55	62.49	5.06	.00	31.90	11.50	HIGH ASH
78226 Y	1176.00	KEROGEN	.41	69.49	7.05	.00	23.05	6.70	
78226 X	1180.50	KEROGEN	.67	67.10	5.67	.00	26.56	13.37	HIGH ASH
78226 V	1233.00	KEROGEN	.39	61.48	4.69	.00	33.44	15.32	HIGH ASH
78226 U	1252.20	KEROGEN	.33	63.51	4.59	.00	31.57	11.78	HIGH ASH
78226 S	1271.80	KEROGEN	.82	74.50	5.61	.00	19.08	5.90	
78226 R	1285.30	KEROGEN	.69	70.71	5.25	.00	23.35	9.56	
78226 Q	1295.00	KEROGEN	.64	62.22	4.82	.00	32.31	11.61	HIGH ASH
78226 P	1320.90	KEROGEN	.50	69.85	5.29	.00	24.36	1.75	
78226 O	1348.30	KEROGEN	.69	73.74	5.33	.00	20.24	11.50	HIGH ASH
78226 N	1369.50	KEROGEN	.63	67.65	5.45	.00	26.28	5.81	
78226 M	1415.50	KEROGEN	.70	58.33	4.04	.00	36.92	18.86	HIGH ASH
78226 L	1439.30	KEROGEN	.17	77.01	8.60	.00	14.22	7.43	
78226 J	1496.60	KEROGEN	.58	55.09	4.73	.00	39.60	22.15	HIGH ASH
78226 G	1565.00	KEROGEN	.59	68.64	4.70	.00	26.06	19.20	HIGH ASH
78226 E	1603.00	KEROGEN	.86	67.18	5.41	.00	26.55	11.49	HIGH ASH
78226 D	1634.60	KEROGEN	.44	72.97	4.91	.00	21.68	6.50	
78226 A	1696.50	KEROGEN	.91	69.10	5.68	.00	24.30	12.56	HIGH ASH

Table 4 API and C12+ Liquid Chromatography
Mulloway 1 Oils

Sample	Depth (m)	API Gravity	C12+ % Total oil	C12+ Hydrocarbons Sats %	Arom %	Total %	Asph %	C12+ Non-Hydrocarbons Eluted NSO %	Non-El NSO %	Total NSO %	Sulphur %	Total %	Ratios Sat/AromHC/Non-HC	
RFT 3-21A	1379.5	43.4	77.96	83.85	3.48	87.23	0.45	1.28	11.04	12.32	na	12.77		
RFT 2-20A	1394.9	32.0	78.51	87.08	4.57	91.65	0.21	1.43	6.71	8.14	na	8.35	19.1	11.0
RFT 4-22B	1395.8	31.9	78.16	85.17	4.7	89.87	0.10	1.36	8.67	10.03	na	10.13	18.1	8.9

Table 5 Oil Analysis - Hydrocarbon Ratios
Mulloway 1 Oils

Sample	Depth (m)	API Gravity	Pr/Ph	Pr/nC17	Ph/nC18	CPI
RFT 3-21A	1379.5	43.4	6.25	0.45	0.08	nd
RFT 2-20A	1394.4	32.0	nd	nd	nd	nd
RFT 4-22B	1395.8	31.9	nd	nd	nd	nd

Mulloway 1

Figure 1

Kerogen Types

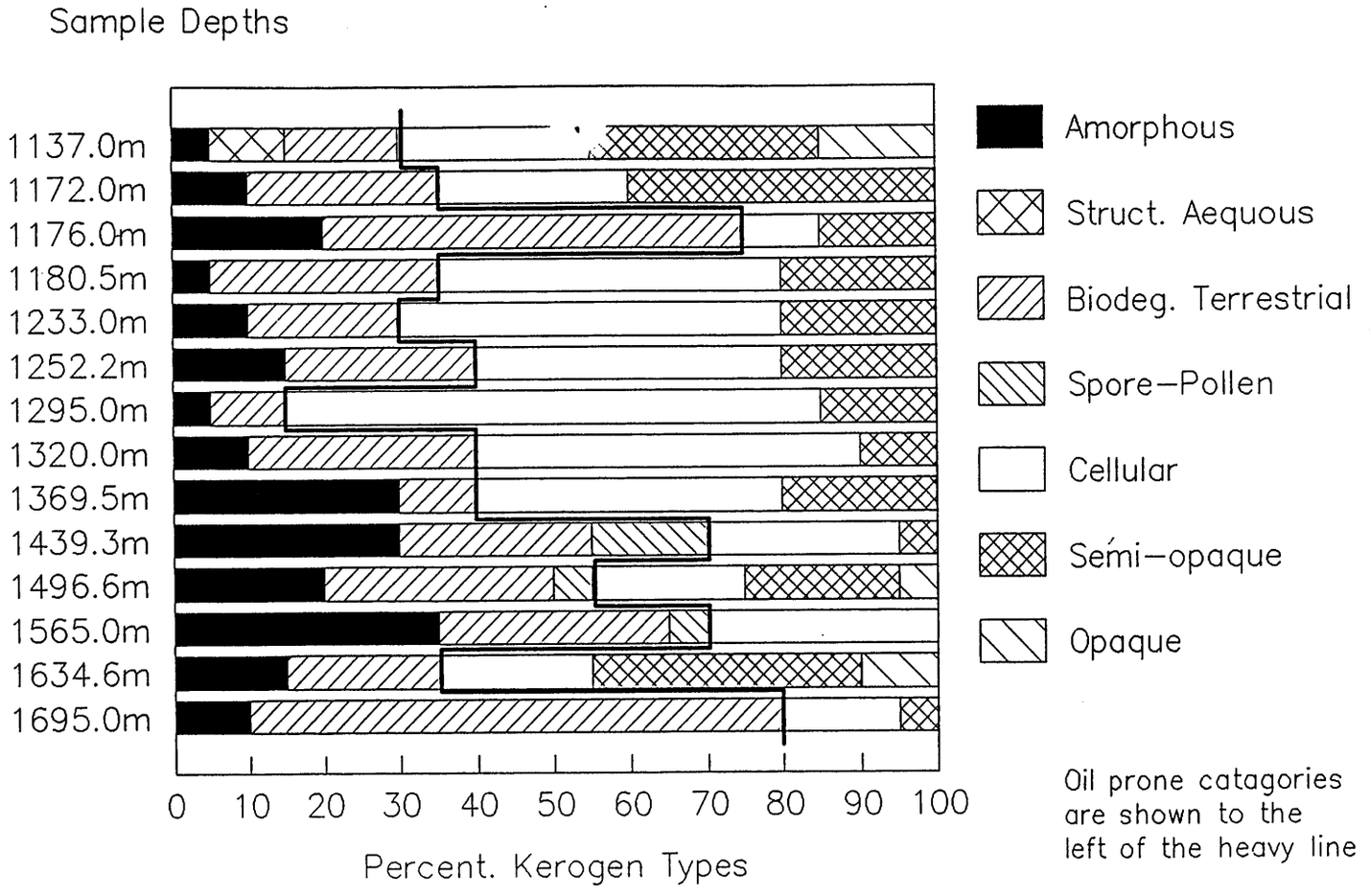
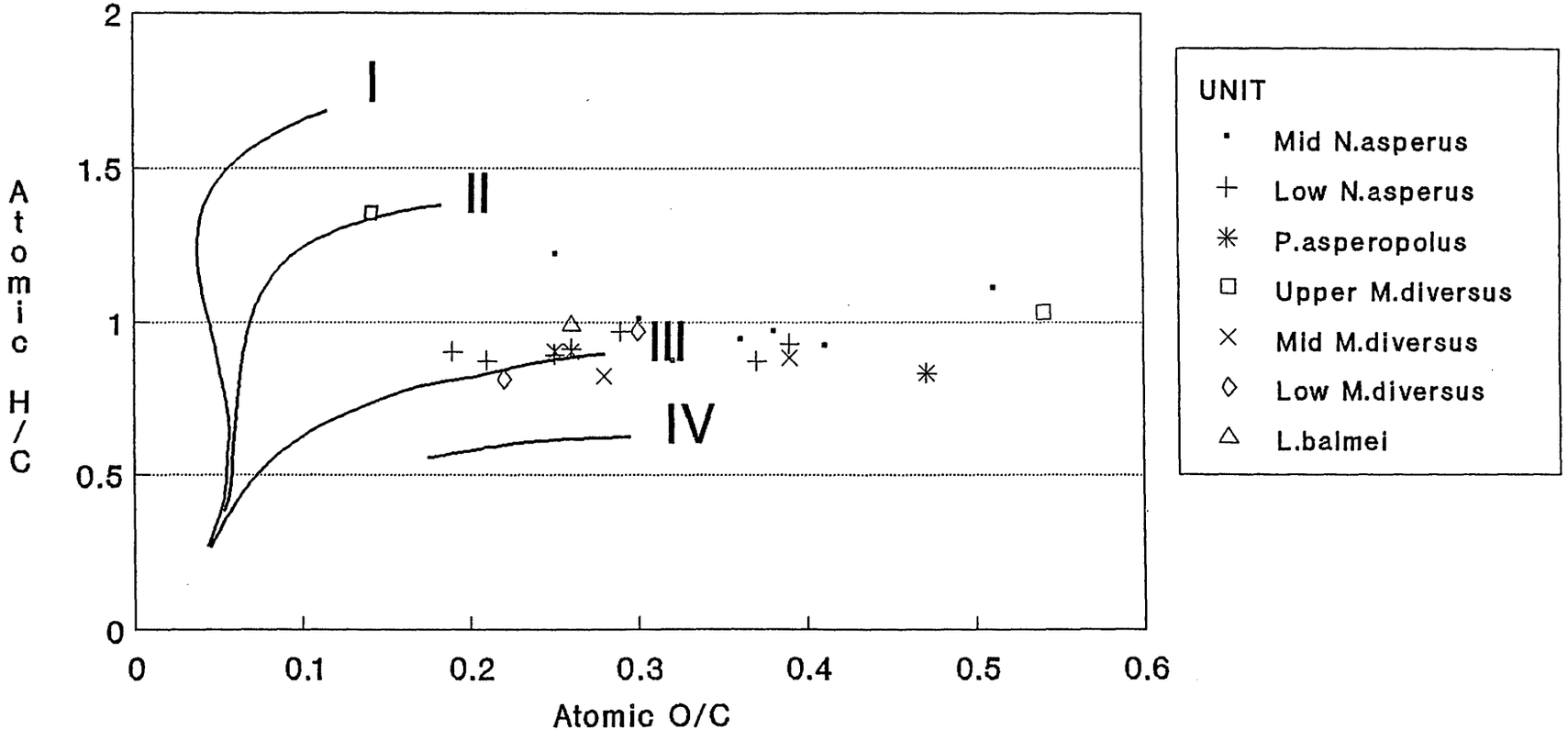


Figure 2

Mulloway 1



Van Krevelen Plot

Shimadzu 221-25412 706007A 002

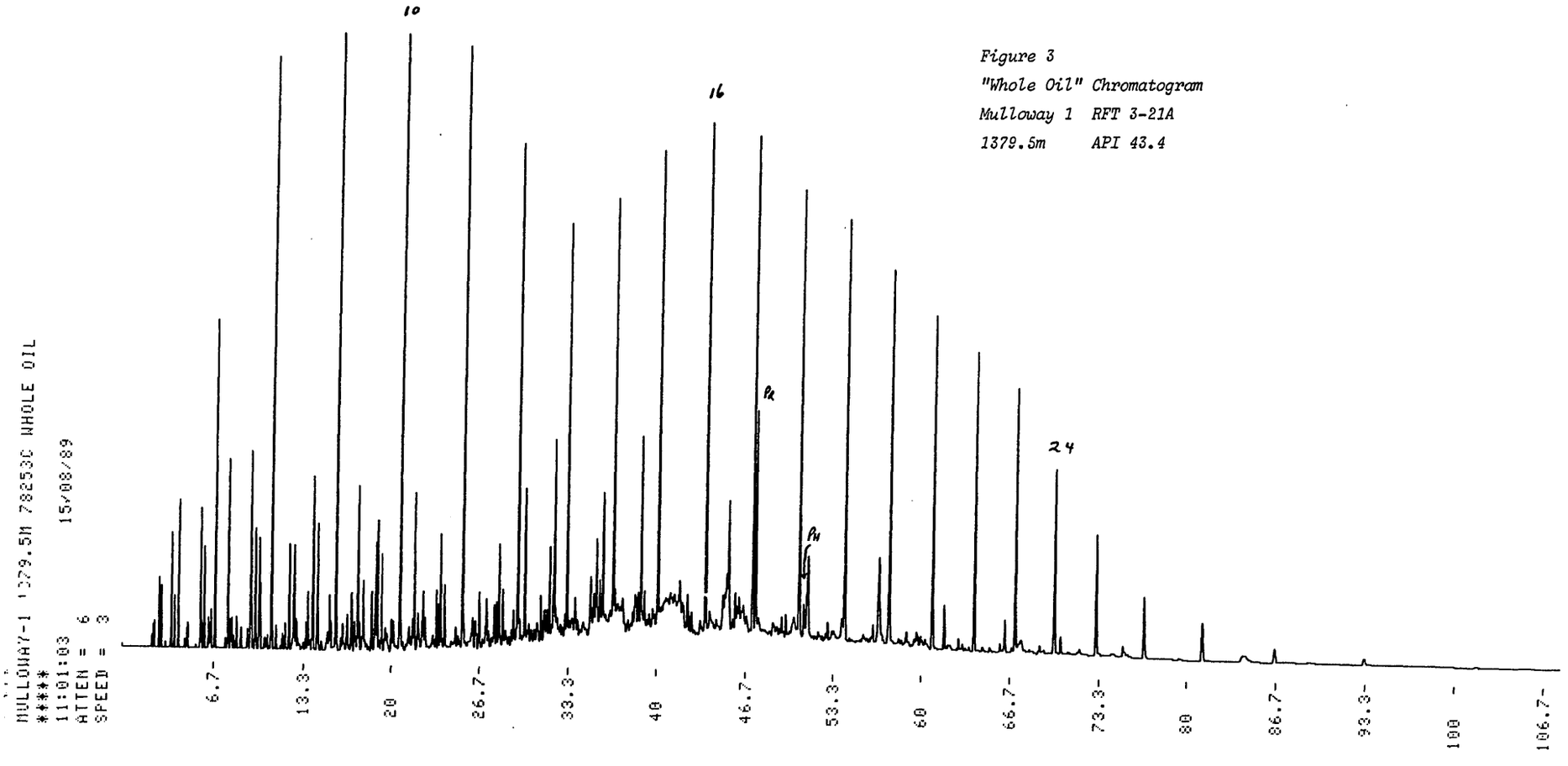


Figure 3
"Whole Oil" Chromatogram
Mulloway 1 RFT 3-21A
1379.5m API 43.4

Shimadzu 221-25412 706007A 037

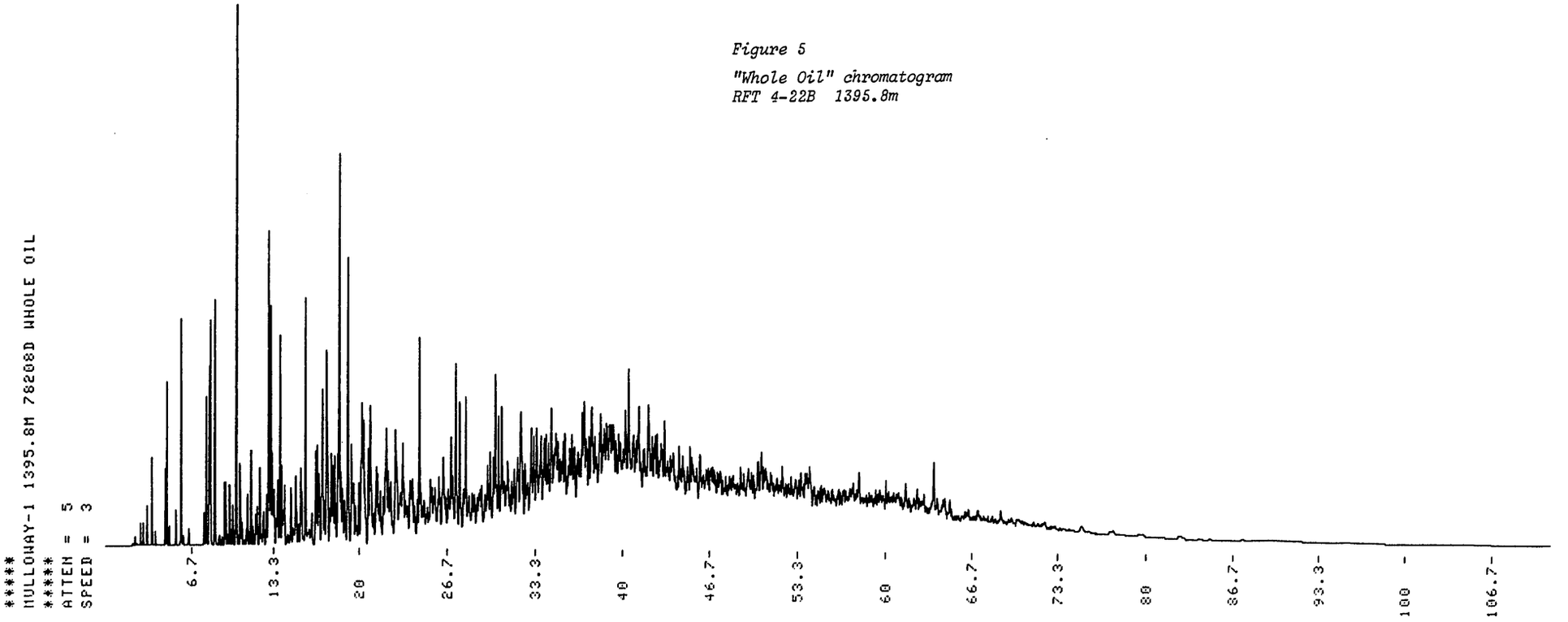


Figure 5

"Whole Oil" chromatogram
RFT 4-22B 1395.8m

Shimadzu 221-25412

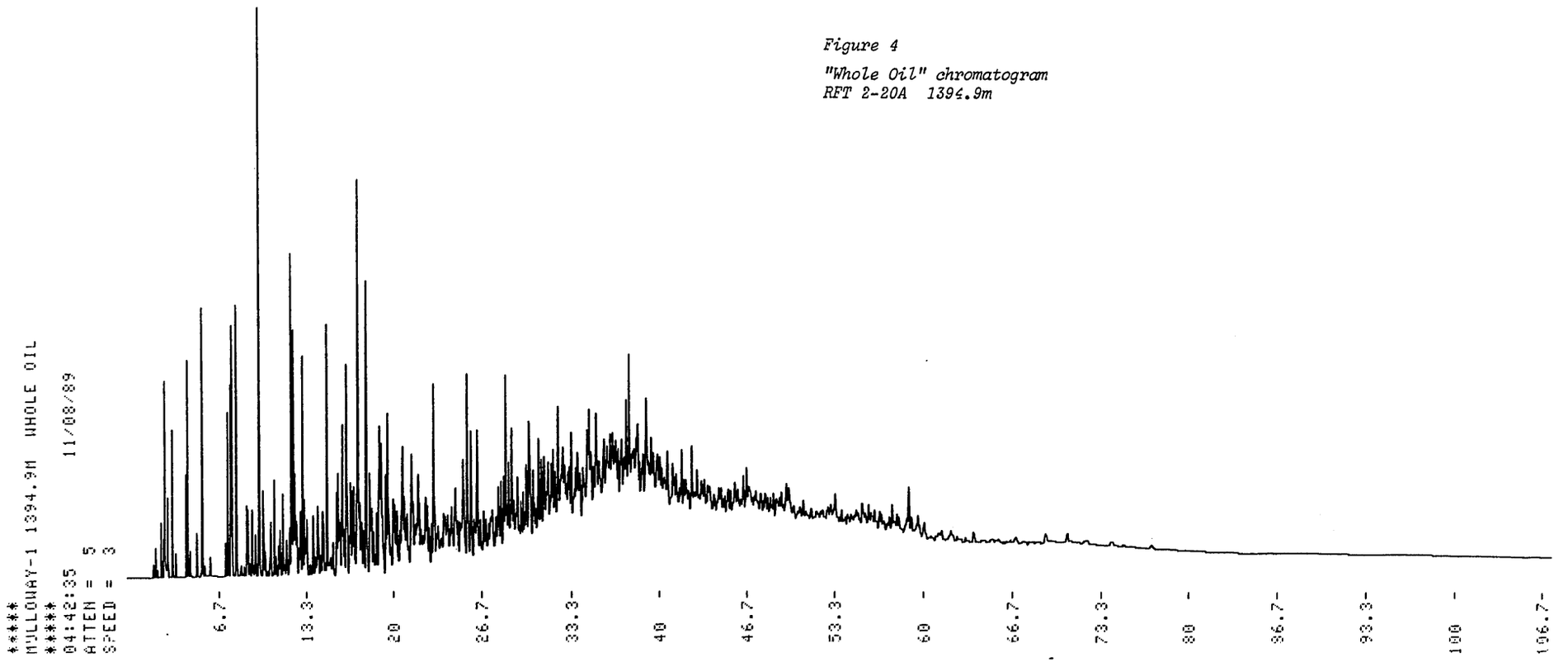
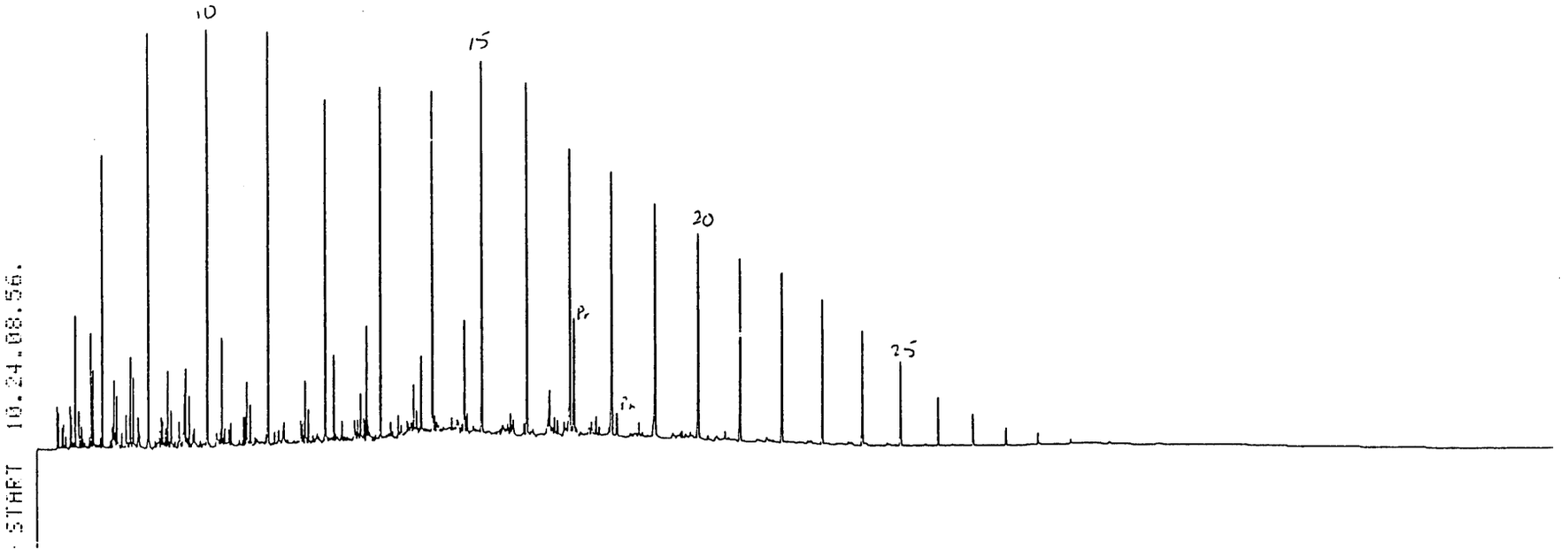


Figure 4

"Whole Oil" chromatogram
RFT 2-20A 1394.9m

Figure 6

"Whole Oil" chromatogram
Whiptail 1A 1379.5m



Shimadzu 221-25412 706007A 112

Shimao

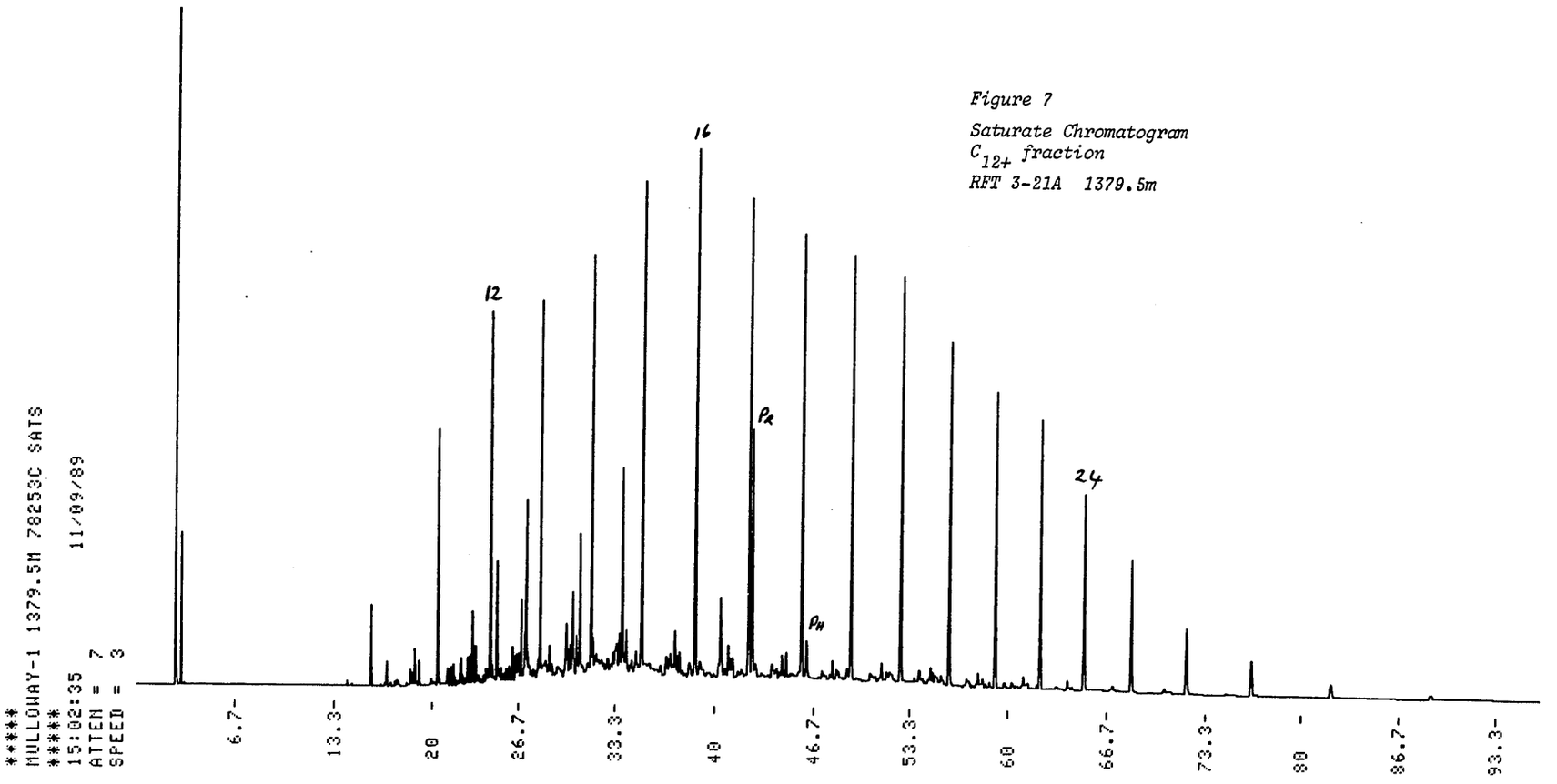


Figure 7

Saturate Chromatogram
C_{12+} fraction
RFT 3-21A 1379.5m

Shimadzu 221-25412 706007A 158

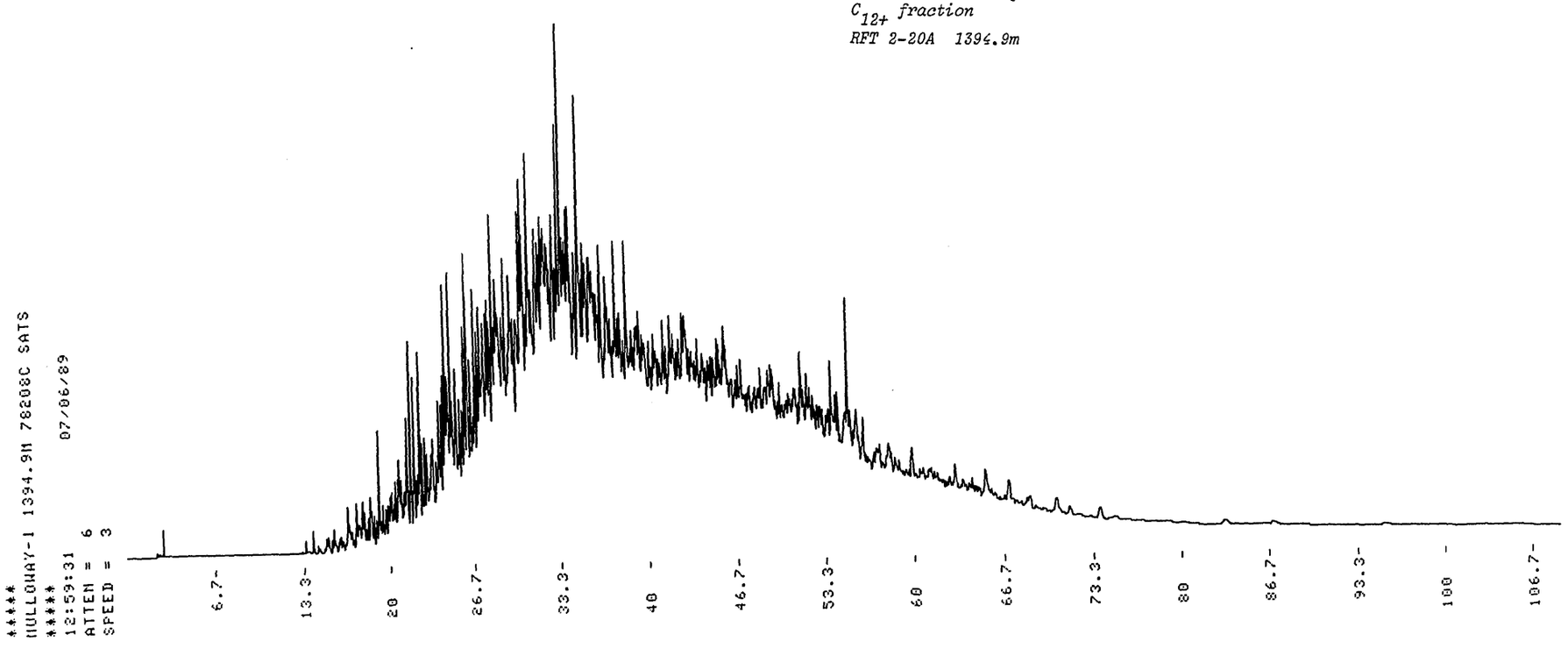
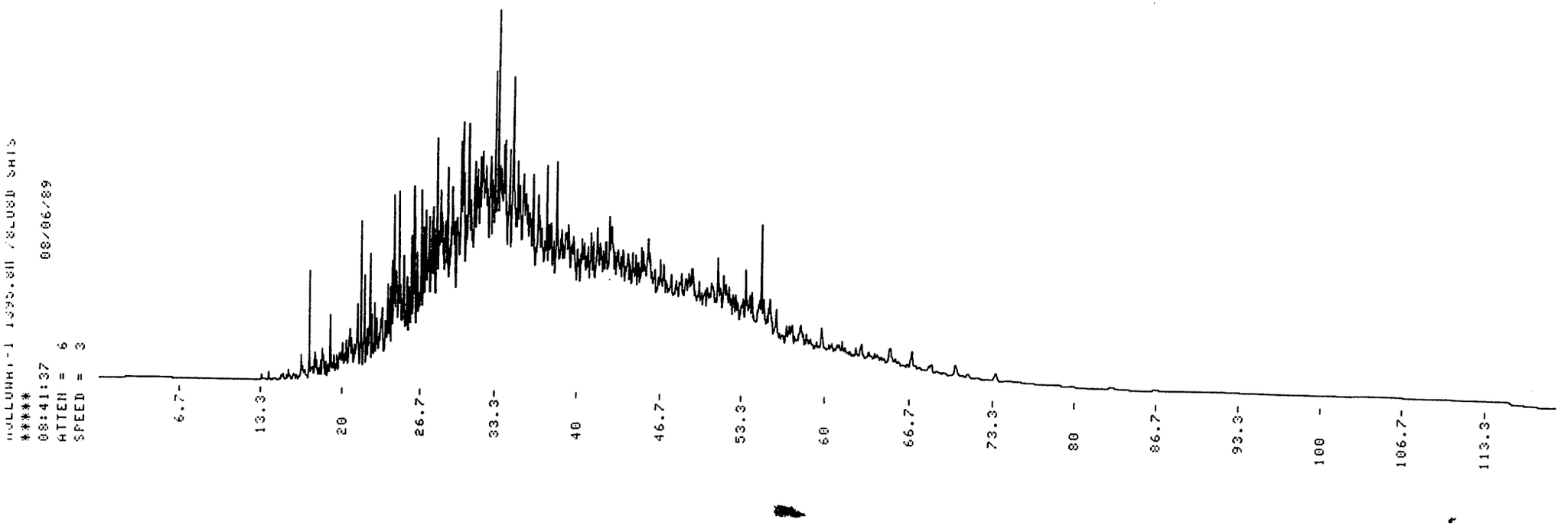


Figure 8

Saturate Chromatogram
C_{12+} fraction
RFT 2-20A 1394.9m

Figure 9

Saturate Chromatogram
C_{12+} fraction
RFT 4-22B 1395.4m



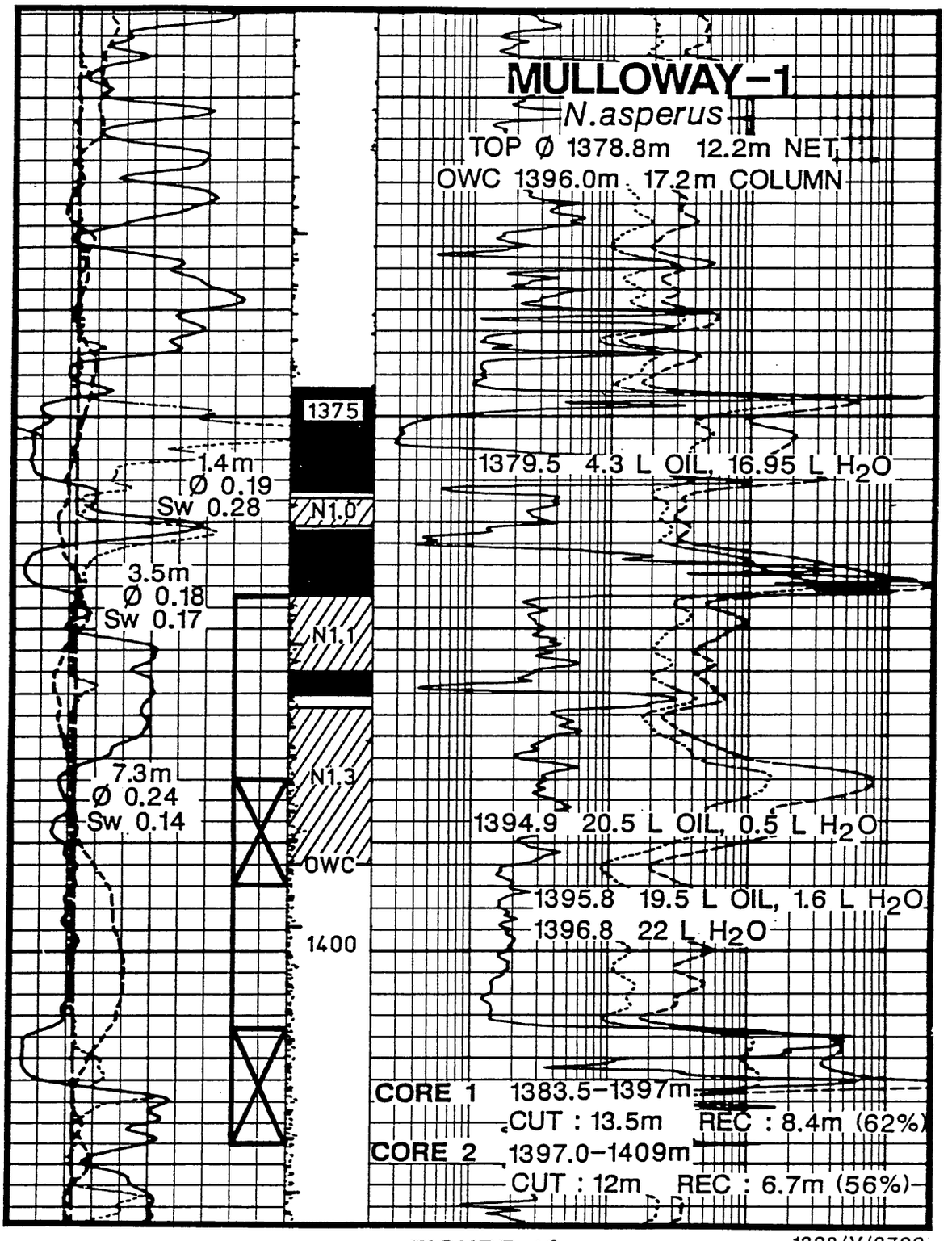


FIGURE 10

1320/V/2722

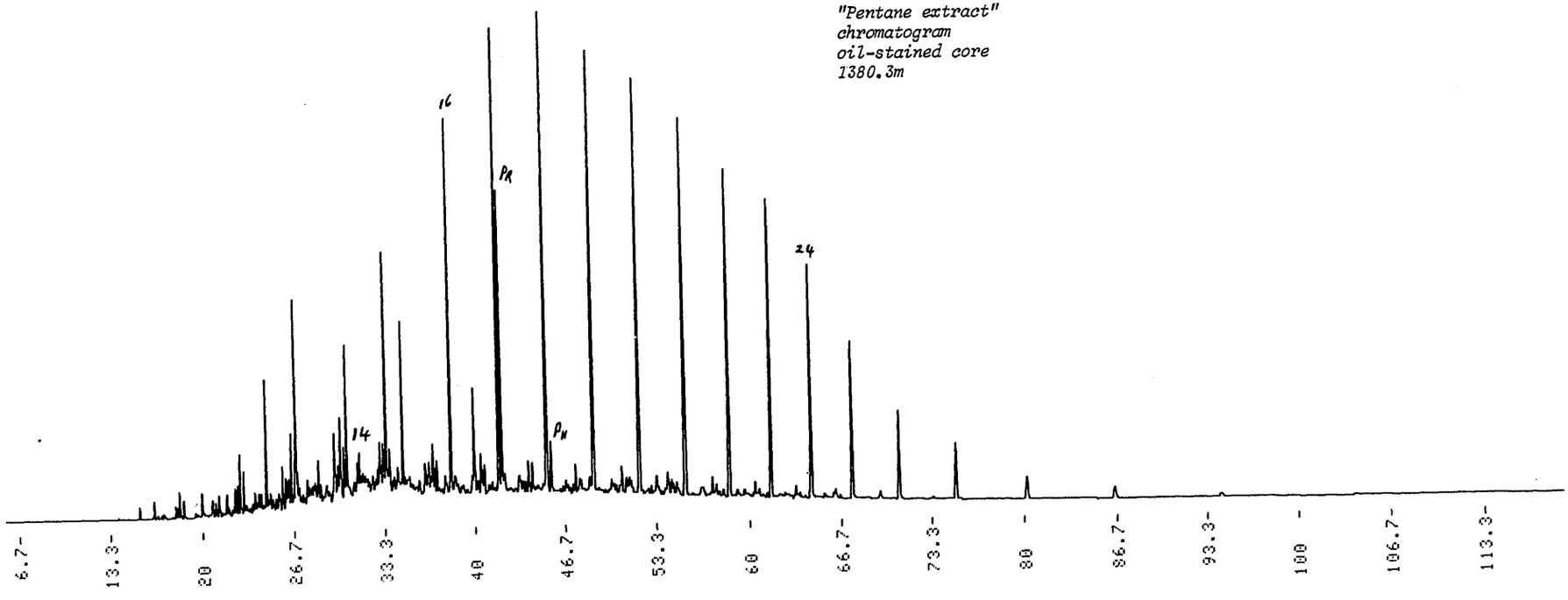
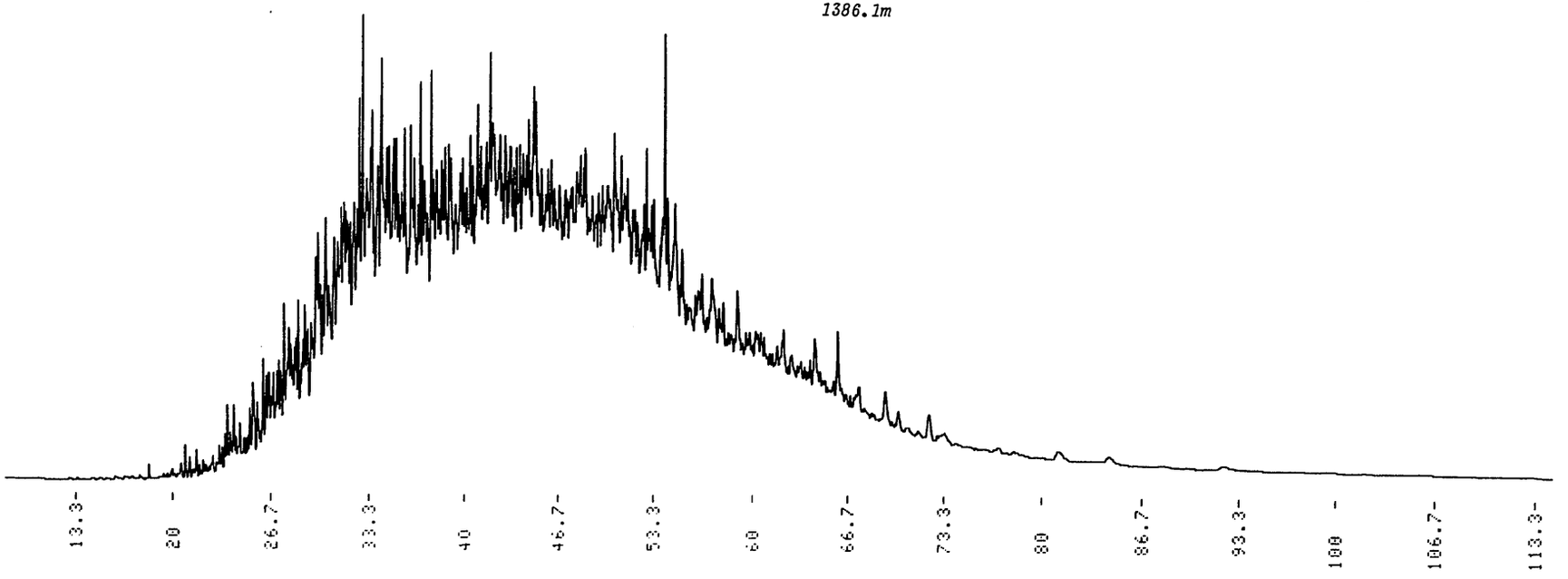


Figure 11

"Pentane extract" chromatogram oil-stained core 1380.3m

Figure 12

"Pentane extract"
chromatogram
oil-stained core
1386.1m



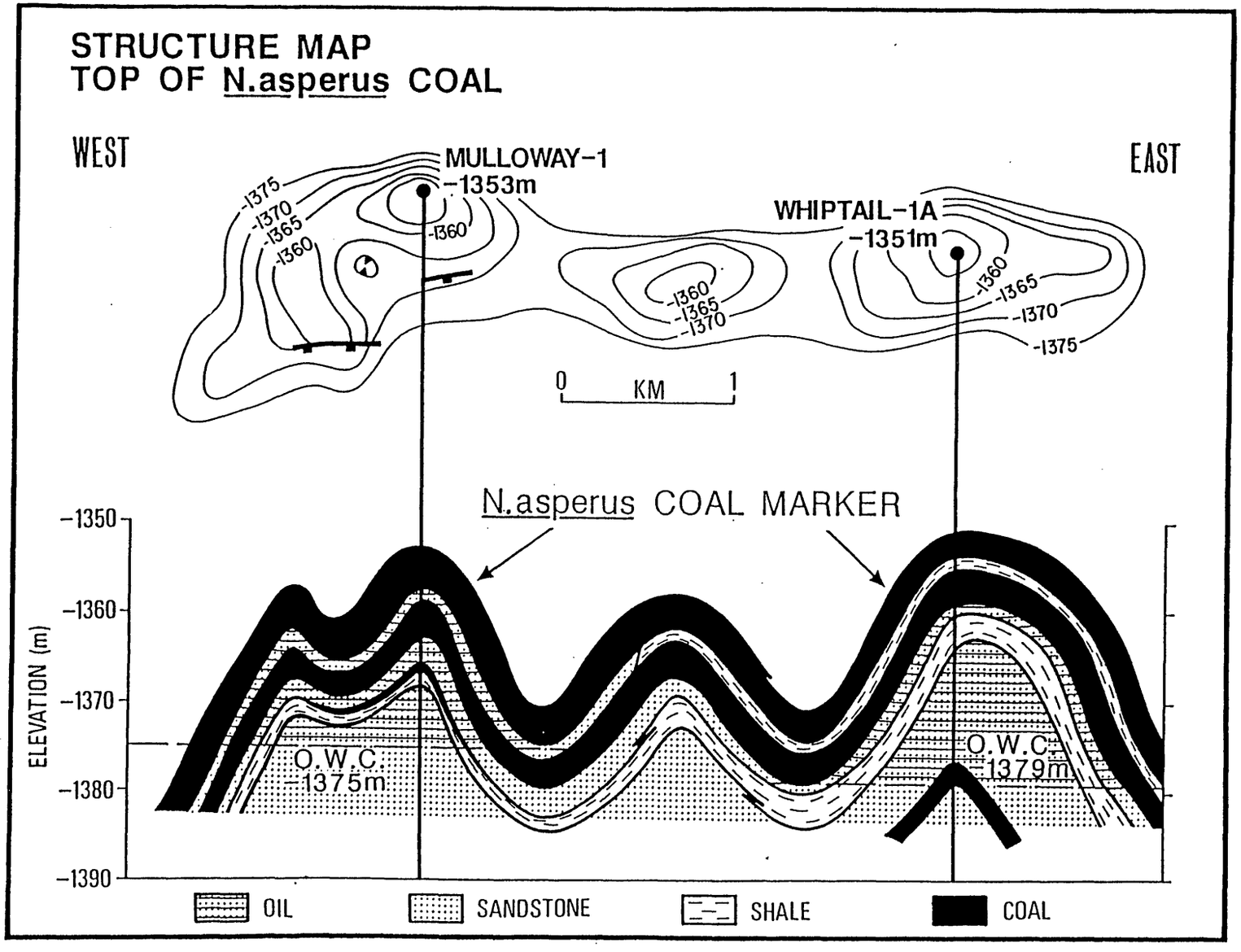


FIGURE 13.

1320/V/2658 3/89

Appendix 5

Core Analyses

amdel
technology and enterprise

Amdel
31 Flemington Street,
Frewville, S.A. 5063

Telephone: (08) 372 2700

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Eastwood, S.A. 5063

Telex: AA82520
Facsimile: (08) 79 6623

21st March 1989

Esso Australia
GPO Box 4047
SYDNEY NSW 2001

Attention: Mr A P Whittle

REPORT F 5165/89

CLIENT REF:	Verbal
TITLE:	Core Analysis
IDENTIFICATION:	Mulloway #1
MATERIAL:	Core Plugs
WORK REQUIRED:	Residual Fluids, Porosity and Air Permeability - ambient and overburden, Calculated and Absolute Grain Density, Lithological Description

Investigation and Report by: Russell R Martin

Manager, Petroleum Services Section: Dr Brian G. Steveson

Brian Steveson.

for Dr William G. Spencer
General Manager
Applied Sciences Group

apk

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1. INTRODUCTION

On the 2nd march 1989 samples were received from Esso Australia's Mulloway #1 well.

The following analysis were requested:

- Porosity at ambient and overburden conditions
- Permeability to air at ambient and overburden conditions
- Residual fluid saturations
- Calculated grain density
- Absolute grain density

2. RESIDUAL FLUIDS SATURATIONS

One inch diameter samples had been prepared by Esso Australia and samples including offcuts sent to Amdel Limited, Adelaide.

Samples were first placed in a Dean and Stark apparatus in which toluene, (boiling point 110 °C), vapour is condensed and collects in a calibrated side arm where it overflows and passes down onto the sample leaching the residual hydrocarbons and water. The toluene and water are continually refluxed and water collects in the side arm. After drying the extracted core plug the oil volume present is determined as the difference between the core plug weight loss and the weight of accumulated water. Oil volume present is corrected by assuming an oil specific gravity of 0.85.

After drying the plugs at 100 °C to complete Dean and Stark results all plugs were dried at 50 °C and 50% relative humidity prior to porosity and permeability to air determinatins.

3. HELIUM INJECTION POROSITY (Ambient and Overburden)

To determine ambient porosity the clean dry core plug is first placed in a matrix cup and grain volume determined by helium injection. Using this method a known volume of helium at a known pressure is expanded into an unknown volume and the resultant pressure is read and the unknown volume determined using Boyles law. Bulk volume is determined using mercury immersion on the samples not encapsulated in lead sleeves. The difference between the two values is the pore volume from which porosity is calculated and expressed as a percentage.

To determine porosity reduction at overburden pressure the samples were placed into a hydrostatic cell and pore volume determined at both ambient and the calculated reservoir overburden pressure of 2270 psi, by the helium injection technique. The pore volume reduction measured using this technique was then used to calculate the actual overburden pore volume and bulk volume and hence porosity.

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4. PERMEABILITY TO AIR (Ambient and Overburden)

Permeability is determined on the plug sample by placing the sample into a hydrostatic cell and a confining pressure of 150 psig (1035 kPa) applied. The confining pressure is applied to prevent any air bypassing around the sides of the sample. The differential pressure is then monitored at the downstream face of the sample using a calibrated orifice and graduated straight tube manometer.

After measurements of "ambient" permeability are completed, ambient pore volume is determined and the hydrostatic cell is then pressured to obtain the desired overburden pressure, 2270 psi (15,663 kPa). Air permeability is again measured in the same manner under applied overburden conditions.

5. ABSOLUTE GRAIN DENSITY

The sample offcuts were first extracted in a 3:1 chloroform/methanol mix to leach residual hydrocarbons and salts then placed in a humidity oven at 50 °C and 50% relative humidity to dry. The offcuts were then crushed to grain size using a mortar and pestle.

Approximately 15 grams of crushed sample is placed into an accurately calibrated pycnometer and weights recorded. Industrial grade metholated spirits of known specific gravity is then used to fill the pycnometer. A short vacuum is applied to expell all air and the pycnometer is filled to the top. Weight of the full pycnometer and temperature are recorded. Absolute grain density is then calculated at a standard temperature of 20 °C.

ROUTINE CORE ANALYSIS RESULTS

Company: Esso Australia
Well: Mulloway #1

Location: Bass Strait
Overburden Pressure: 2270 psi

File: F5165/89

Sample Number	Depth Metres	Permeability to air, md		Porosity		Grain Density		Residual		Bulk Dry Density		Bulk Volume	
		Ambient	NOBP	Ambient	NOBP	Calculated	Absolute	Sw%	So%	Ambient	NOBP	Ambient	NOBP
1	1380.02	58.1	47.8	18.3	17.8	2.65	2.65	53.7	26.8	2.17	2.18	19.91	19.78
4	1380.22	2361	1795	28.7	27.3	2.65	2.65	36.0	20.0	1.89	1.92	19.85	19.47
6	1380.41	222	156	21.1	19.6	2.64	2.65	54.6	15.2	2.08	2.12	19.96	19.60
9	1380.61	169	143	20.6	19.4	2.65	2.65	40.0	13.8	2.10	2.13	20.01	19.71
12	1380.81	136	116	20.7	19.2	2.62	2.63	47.9	26.3	2.08	2.12	19.87	19.50
15	1380.98	296	250	22.8	21.6	2.63	2.63	55.1	20.6	2.03	2.06	19.87	19.56
17	1381.19	2934	1980	24.5	22.7	2.63	2.64	27.2	17.2	1.99	2.04	20.05	19.57
20	1381.38	2847	1723	22.7	20.1	2.61	2.63	38.4	12.8	2.02	2.08	19.96	19.31
23	1381.62	3131	2249	24.7	23.2	2.64	2.62	38.3	22.0	1.99	2.03	20.08	19.68
25	1381.73	3145	1869	22.2	20.0	2.58	2.60	31.1	20.4	2.01	2.06	19.39	18.85
27	1382.00	0.89	0.06	12.5	11.8	2.63	2.64	79.4	14.4	2.30	2.32	19.80	19.64
30	1382.20	88.9	76.4	24.0	22.8	2.62	2.62	35.9	29.0	1.99	2.02	19.81	19.49
32	1382.39	0.39	0.12	13.0	12.1	2.61	2.63	60.6	25.6	2.27	2.30	19.60	19.41
36	1382.63	16.6	12.9	16.7	15.8	2.63	2.64	44.6	25.2	2.19	2.21	19.87	19.65

ROUTINE CORE ANALYSIS RESULTS

Company: Esso Australia
Well: Mulloway #1

Location: Bass Strait
Overburden Pressure: 2270 psi

Sample Number	Depth Metres	Permeability to air, md		Porosity		Grain Density		Residual		Bulk Dry Density		Bulk Volume	
		Ambient	NOBP	Ambient	NOBP	Calculated	Absolute	Sw%	So%	Ambient	NOBP	Ambient	NOBP
37	1382.78	18.6	14.3	15.8	14.8	2.61	2.62	44.0	25.0	2.19	2.22	20.08	19.83
40	1382.97	10.9	6.88	15.3	14.2	2.61	2.61	56.4	28.6	2.21	2.24	19.91	19.64
43	1383.19	255	208	25.8	23.8	2.64	2.64	39.1	34.3	1.96	2.01	19.88	19.37
47	1383.43	2500	1899	28.1	26.7	2.65	2.65	35.1	22.6	1.91	1.94	19.86	19.47
48	1383.59	104	85.9	20.6	19.5	2.64	2.65	51.7	15.6	2.10	2.13	19.92	19.66
52	1384.85	0.99	0.46	14.6	13.2	2.64	2.63	80.9	6.4	2.25	2.29	20.12	19.80
55	1385.00	3.18	1.87	18.5	17.4	2.59	2.60	72.2	9.4	2.11	2.14	19.86	19.60
58	1385.23	4.33	2.66	17.2	16.1	2.59	2.60	63.2	11.3	2.15	2.18	19.79	19.53
61	1385.43	5.37	3.87	16.3	15.3	2.58	2.59	62.7	8.8	2.16	2.18	20.01	19.76
62	1385.62	57.6	46.2	19.9	18.3	2.61	2.61	55.4	21.3	2.09	2.13	20.04	19.65
65	1385.79	8.60	5.50	16.4	14.8	2.43	2.46	65.6	12.8	2.03	2.07	19.84	19.47
67	1385.96	8.54	5.42	16.2	14.8	2.56	2.54	72.4	7.0	2.15	2.18	20.00	19.68
70	1386.23	176	141	22.5	21.1	2.62	2.64	51.2	14.0	2.03	2.07	19.96	19.61
73	1386.46	1307	956	26.1	24.5	2.64	2.63	40.2	26.3	1.95	1.99	19.80	19.39

ROUTINE CORE ANALYSIS RESULTS

Company: Esso Australia
Well: Mulloway #1

Location: Bass Strait
Overburden Pressure: 2270 psi

File: F5165/89

Sample Number	Depth Metres	Permeability to air, md		Porosity		Grain Density		Residual		Bulk Dry Density		Bulk Volume	
		Ambient	NOBP	Ambient	NOBP	Calculated	Absolute	Sw%	So%	Ambient	NOBP	Ambient	NOBP
76	1386.63	386	318	23.5	22.1	2.64	2.64	43.4	24.5	2.02	2.05	19.58	19.21
79	1386.84	1791	1396	27.7	26.2	2.63	2.61	41.3	23.2	1.90	1.94	20.08	19.65
82		1631	1141	24.6	22.9	2.56	2.58	33.6	27.2	1.93	1.97	19.70	19.25
84	1387.23	1943	1399	24.7	22.7	2.60	2.61	46.7	7.6	1.96	2.01	19.60	19.10
87	1387.42	>8000	7356	28.8	26.5	2.61	2.59	36.7	6.5	1.86	1.92	19.87	19.25
88	1387.58	>8000	5828	28.6	26.1	2.62	2.60	46.1	7.2	1.87	1.94	19.95	19.27
92	1387.81	7527	5556	29.0	27.1	2.63	2.64	53.0	9.0	1.87	1.92	19.76	19.23
94	1388.00	>8000	>8000	26.7	24.5	2.63	2.63	57.4	10.4	1.93	1.99	19.86	19.28
96	1388.14	5996	4085	27.5	24.7	2.63	2.62	38.0	15.4	1.91	1.98	19.65	18.93
99	1388.31	>8000	7918	28.2	26.2	2.66	2.65	68.9	4.8	1.91	1.96	19.84	19.31

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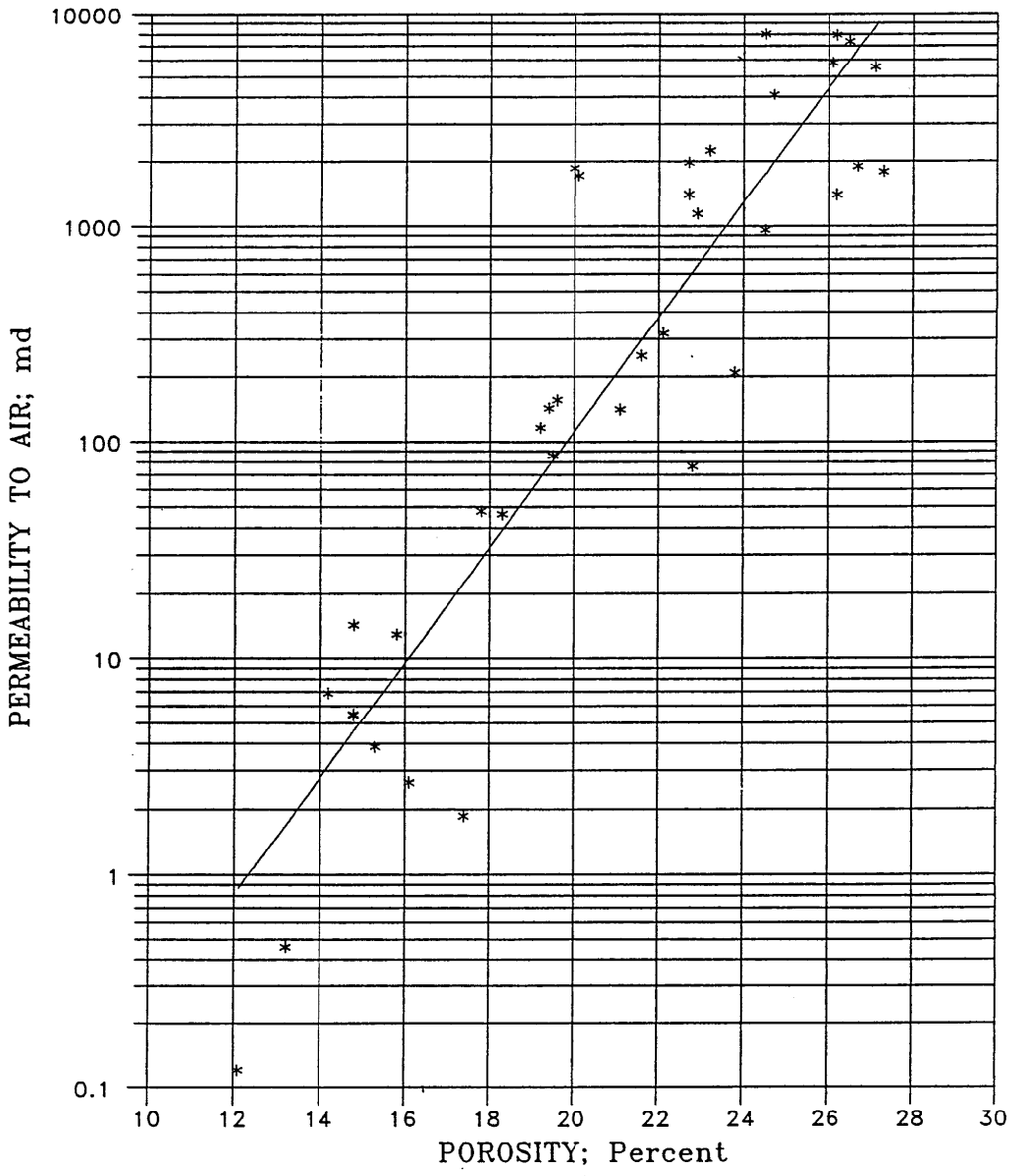
POROSITY vs PERMEABILITY

Company: Esso Australia Limited
Well : Mulloway No. 1

Y=EXP(0.6415X) * 0.0003 NOBP 2270 psi



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MULLOWAY #1

1. Sst gry fn-med occ crs gr, ang-sub ang, poorly srtd, mod-well ind, abun slt/cly mtx, tr pyrite, mica, carb streaks and lams non-calc

4. Sst, lt gry, predom med gr, occ crs, ang-sub ang, mod srtd, poorly ind. sparse slt/cly mtx, occ dissen carb matl, non-calc

6. Sst, lt gry, predom med gr, ang-sub ang, mod-well srtd, mod ind, slt/cly mtx, v occ carb/mica streaks non-calc

9. A/A but predom fn gr

12. A/A but predom fn gr abun carb lam w/assoc mica

15. Sst lt gry, predom fn gr, but occ v. crs grains, ang-sub ang, mod-well srtd well ind, abun sst/cly mtx, mod abun finely dissen carb matl, tr mica

17. Sst lt gry, fn - v. crs gr, ang-sub ang, poorly srtd, poorly ind. sparse slt/cly mtx, occ carb streaks, lams

20. A/A predom crs - v. crs gr

23. A/A predom crs - v. crs gr

25. A/A predom crs - v. crs gr

27. Sltst/v. fn gr Sst, gry, v. fn gr. w. srtd, w.ind, abun fine carb streaks w/- assoc mica, non-calc

30. Sst, lt gry v. fn - fn gr, ang-sub ang, w. srtd, mod-well ind, abun slt/cly mtx, occ fn carb streaks, non calc

32. Sst - Sltst gry, v. fn gr, w. srtd, w. ind, v. abun, fn carb streaks w/- assoc mica, abun mtx, non-calc

36. Sst lt gry - - occ v. crs, sub ang-ang. poorly srtd, mod - w. ind, v. abun slt/cly, mtx, non-calc

37. Sst - Sltst lt gry, v. fn gr, sub ang-ang, w. srtd, w. ind, v. abun slt/cly mtx abun fn carb smears/streaks, non-calc

40. A/A

43. Sst, lt gry, fn gr, sub ang-ang, v. well srtd, w. ind, slt/cly mtx occ fn carb streaks non-calc

47. Sst, lt gry fn - v. crs gr, ang-sub ang. poorly srtd, poorly ind, sparse slt/cly mtx, occ carb lams, non-calc

48. Sst, lt gry/brn, fn-crs gr, ang-sub ang, poorly srtd, w. ind. v. sparse mtx

52. Sst, lt gry/brn, fn - occ med gr, ang-sub ang, mod srtd mod, w. ind slt/cly mtx, carb streaks non-calc

55. A/A

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58. A/A but cleaner

61. A/A w/- abun carb streaks

62. Sst, lt gry, fn-med gr, ang - sub ang, poorly srtd, mod ind, slt/cly mtx, carb streaks/lams, non-calc

65. Sst, lt gry-brn, fn - occ med gr, ang-sub ang mod srtd, w. ind abun slt/cly mtx, v. abun carb streaks/lams non-calc

67. A/A less abun carb matl

70. Sst, lt gry, predom med gr, sub ang-ang, mod-well srtd, w. ind, slt/cly mtx occ finely dissen carb matl

73. Sst, lt gry, med-crs gr, sub ang-ang, mod srtd, mod ind, sparse slt/cly mtx, carb lams, non-calc

76. A/A but mod abun slt/cly mtx

79. Sst, lt gry, med v. crs gr, sub ang-ang, poorly srtd, poorly ind sparse mtx, occ carb streaks, non-calc

82. A/A

84. A/A but predom crs - v. crs gr

87. Sst, lt gry, crs - v. crs gr, ang-sub ang, mod srtd, v. poorly ind, sparse mtx, tr mica, tr carb matl

88. A/A

92. A/A

94. A/A

96. A/A but med - crs gr

91. A/A

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28 April 1989

Esso Australia
GPO Box 4047
SYDNEY NSW 2001

Attention: Mr A P Whittle

REPORT F 5200/89

CLIENT REF:	Verbal
TITLE:	Routine Core Analysis
IDENTIFICATION:	Mulloway #1 Core #2
MATERIAL:	Core Plugs
WORK REQUIRED:	Residual Fluid Saturations, Porosity and Air Permeability - Ambient & Overburden, Calculated and Absolute Grain Density, Lithological Description

Investigation and Report by: Russell R Martin

Manager, Petroleum Services Section: Dr Brian G. Steveson

for Dr William G. Spencer
General Manager
Applied Sciences Group

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1. INTRODUCTION

On the 16th April 1989, 29 samples were received from Esso Australia's Mulloway #1 well from Core #2.

The following analysis were requested:

- Porosity at ambient and overburden conditions
- Permeability to air at ambient and overburden conditions
- Residual fluid saturations
- Calculated grain density
- Absolute grain density

2. RESIDUAL FLUIDS SATURATIONS

One inch diameter samples had been prepared by Esso Australia and samples including offcuts sent to Amdel Limited, Adelaide.

Samples were first placed in a Dean and Stark apparatus in which toluene, (boiling point 110 °C), vapour is condensed and collects in a calibrated side arm where it overflows and passes down onto the sample leaching the residual hydrocarbons and water. The toluene and water are continually refluxed and water collects in the side arm. After drying the extracted core plug the oil volume present is determined as the difference between the core plug weight loss and the weight of accumulated water. Oil volume present is corrected by assuming an oil specific gravity of 0.85.

After drying the plugs at 100 °C to complete Dean and Stark results all plugs were dried at 50 °C and 50% relative humidity prior to porosity and permeability to air determinations.

3. HELIUM INJECTION POROSITY (Ambient and Overburden)

To determine ambient porosity the clean dry core plug is first placed in a matrix cup and grain volume determined by helium injection. Using this method a known volume of helium at a known pressure is expanded into an unknown volume and the resultant pressure is read and the unknown volume determined using Boyles law. Bulk volume is determined using mercury immersion on the samples not encapsulated in lead sleeves. The difference between the two values is the pore volume from which porosity is calculated and expressed as a percentage.

To determine porosity reduction at overburden pressure the samples were placed into a hydrostatic cell and pore volume determined at both ambient and the calculated reservoir overburden pressure of 2280 psi, by the helium injection technique. The pore volume reduction measured using this technique was then used to calculate the actual overburden pore volume and bulk volume and hence porosity.

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4. PERMEABILITY TO AIR (Ambient and Overburden)

Permeability is determined on the plug sample by placing the sample into a hydrostatic cell and a confining pressure of 150 psig (1035 kPa) applied. The confining pressure is applied to prevent any air bypassing around the sides of the sample. The differential pressure is then monitored at the downstream face of the sample using a calibrated orifice and graduated straight tube manometer.

After measurements of "ambient" permeability are completed, ambient pore volume is determined and the hydrostatic cell is then pressured to obtain the desired overburden pressure, 2280 psi (15,730 kPa). Air permeability is again measured in the same manner under applied overburden conditions.

5. ABSOLUTE GRAIN DENSITY

The sample offcuts were first extracted in a 3:1 chloroform/methanol mix to leach residual hydrocarbons and salts then placed in a humidity oven at 50 °C and 50% relative humidity to dry. The offcuts were then crushed to grain size using a mortar and pestle.

Approximately 15 grams of crushed sample is placed into an accurately calibrated pycnometer and weights recorded. Industrial grade methylated spirits of known specific gravity is then used to fill the pycnometer. A short vacuum is applied to expell all air and the pycnometer is filled to the top. Weight of the full pycnometer and temperature are recorded. Absolute grain density is then calculated at a standard temperature of 20 °C.

A brief lithological description concludes this report.

ROUTINE CORE ANALYSIS RESULTS

Company: Esso Australia
Well: Mulloway #1 Core #2

Location: Bass Strait
Overburden Pressure: 2280 psi

File: F5200/89

Sample Number	Depth metres	Permeability to air, md		Porosity percent		Grain Density gms/cc		Residual Fluids		Bulk Dry Density		Bulk Volume ccs	
		Ambient	NOBP	Ambient	NOBP	Calculated	Absolute	Sw%	So%	Ambient	NOBP	Ambient	NOBP
71	1393.59	3552	1931	27.3	25.4	2.68	2.66	50.9	1.5	1.95	2.00	22.71	22.11
74	1393.84	4854	3257	25.7	23.7	2.62	2.64	52.9	3.5	1.94	2.00	20.18	19.66
77	1394.03	1864	1276	25.6	24.0	2.63	2.61	63.6	1.9	1.96	2.00	20.48	20.05
80	1394.28	6679	5018	26.7	25.1	2.61	2.65	48.7	5.7	1.92	1.96	20.31	19.87
82	1394.42	>8000	7738	28.4	26.9	2.62	2.60	47.6	5.7	1.88	1.92	20.36	19.95
84	1394.62	4395	3508	25.7	24.6	2.64	2.63	53.7	3.4	1.96	1.99	20.39	20.07
86	1394.80	2244	1621	24.7	23.0	2.63	2.65	62.4	3.3	1.98	2.02	20.16	19.74
88	1394.94	6871	5525	28.6	26.9	2.55	2.56	60.6	2.4	1.82	1.86	20.70	20.22
92	1395.23	3814	3157	24.7	23.1	2.60	2.63	45.0	2.6	1.96	2.00	20.34	19.92
93	1395.46	1331	920	23.4	21.9	2.56	2.56	67.8	0.5	1.96	1.99	19.89	19.51
96	1395.63	2147	1554	25.4	23.5	2.63	2.65	66.9	1.4	1.96	2.01	20.46	19.94
99	1395.83	7060	5257	26.5	24.6	2.62	2.62	43.2	2.9	1.92	1.97	20.16	19.65
101	1396.03	6515	5247	27.4	25.8	2.62	2.64	59.7	1.7	1.91	1.95	20.50	20.06
103	1396.23	6178	4782	28.6	27.1	2.61	2.62	53.6	3.9	1.87	1.91	20.47	20.03
106	1396.43	3505	2562	25.1	23.2	2.61	2.62	58.3	1.8	1.95	2.00	20.06	19.56

ROUTINE CORE ANALYSIS RESULTS

Company: Esso Australia
Well: Mulloway #1 Core #2

Location: Bass Strait
Overburden Pressure: 2280 psi

Sample Number	Depth metres	Permeability to air, md		Porosity percent		Grain Density gms/cc		Residual Fluids		Bulk Dry Density		Bulk Volume ccs	
		Ambient	NOBP	Ambient	NOBP	Calculated	Absolute	Sw%	So%	Ambient	NOBP	Ambient	NOBP
109	1396.63	5024	3102	26.0	24.0	2.63	2.63	50.8	2.0	1.95	2.00	20.38	19.84
110	1396.80	4913	3877	28.6	26.9	2.61	2.64	59.1	1.8	1.86	1.91	20.31	19.84
113	1397.03	1432	828	25.1	23.0	2.62	2.62	84.7	0.4	1.96	2.02	20.07	19.52
116	1397.23	>8000	5916	27.8	25.9	2.61	2.61	54.7	1.1	1.88	1.93	20.42	19.89
119	1397.45	7649	6030	27.4	25.6	2.62	2.63	55.8	0.2	1.90	1.95	20.46	19.97
120	1397.59	6727	5452	27.0	25.2	2.63	2.63	54.1	0.1	1.92	1.96	20.57	20.09
122	1397.77	6908	5703	28.8	27.1	2.63	2.62	52.0	0.5	1.87	1.92	20.43	19.96
125	1398.00	7133	5344	28.5	26.2	2.61	2.61	57.7	1.2	1.87	1.93	20.37	19.72
127	1398.18	6498	5533	28.8	27.3	2.61	2.63	59.5	0.9	1.86	1.90	20.44	20.04
129	1398.41	3667	2826	28.9	26.9	2.62	2.63	81.8	0.6	1.86	1.91	40.40	19.85
132	1398.63	7167	5552	28.0	26.4	2.63	2.63	61.0	0.1	1.89	1.94	20.47	20.00
135	1398.83	3124	2051	26.5	24.1	2.59	2.62	62.2	0.8	1.90	1.96	18.50	17.93
138	1399.03	>8000	7182	30.7	28.6	2.62	2.64	58.5	1.3	1.82	1.87	20.61	20.01
139	1399.18	1100	461	20.7	18.4	2.63	2.62	80.6	0.9	2.09	2.15	20.41	19.83

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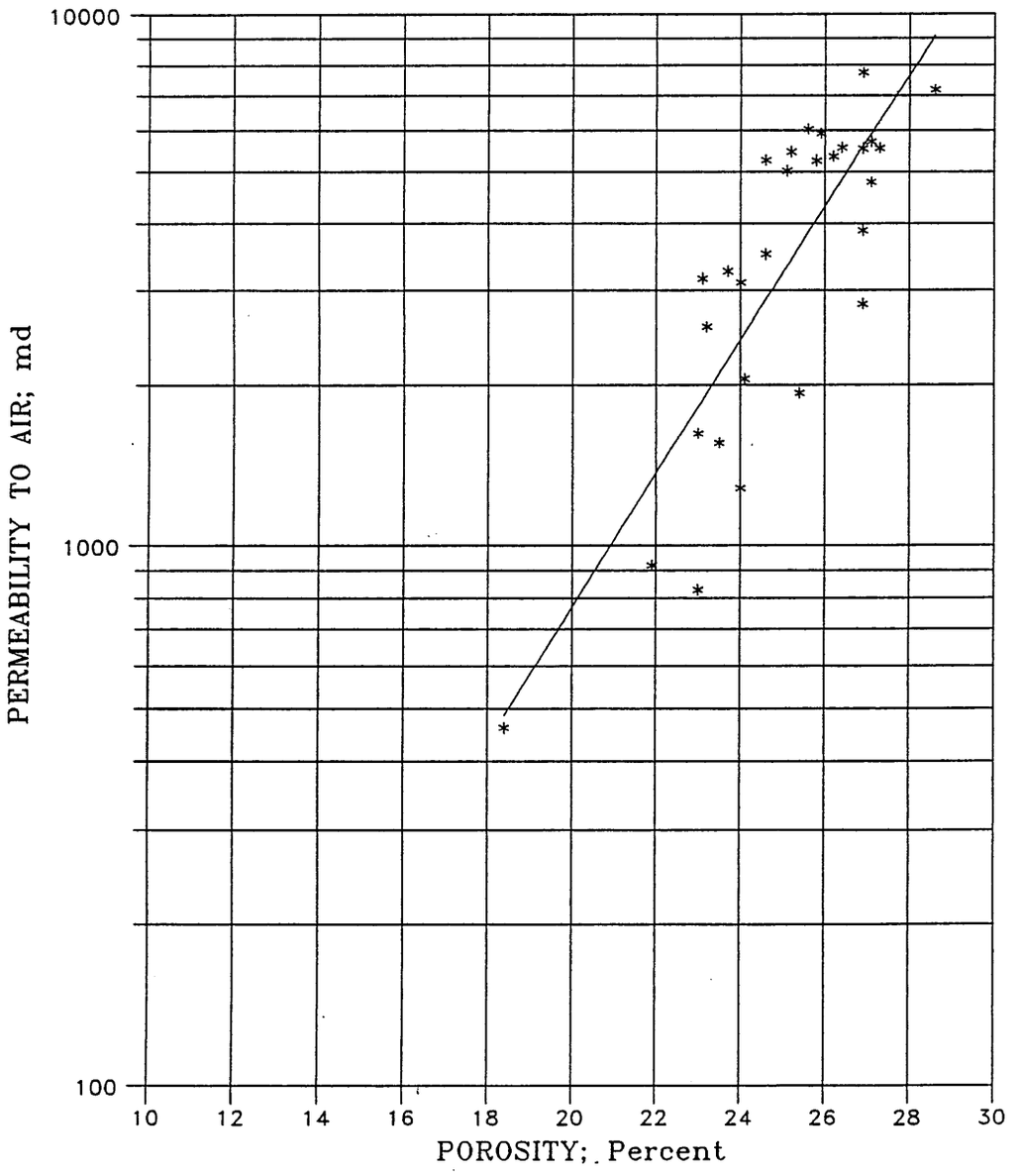
POROSITY vs PERMEABILITY

Company: Esso Australia Limited
Well : Mulloway No. 1 Core No. 2

Y=EXP(0.2873X) * 2.4567 NOBP 2280 psi



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Esso Australia
Mulloway #1 Core #2

File: F5200/89

071 Sst: lt gry - wh, f - dom crs gr, fri, p cmt, mod w srt, sbang - dom ang, mic - mic i/p, arg mtrx

074 Sst: a/a but mnr carb incl

077 Sst: lt gry - wh - clr, med - dom crs gr, fri, p cmt, mod srt, rr sbrndd gr dom sbang, mic mic i/p, arg mtrx

080 Sst: a/a

082 Sst: a/a

084 Sst: lt gry - clr, f - med gr, crs gr bdg, mod cmt, mod - w srt, sbrnd - sbang, mic mic i/p carb incl, abd arg mtrx

086 Sst: a/a dom med gr, mod - p cmt

088 Sst: lt gry - clr, f - dom med gr, occ crs gr, p cmt, p srt, sbrnd - sbang, mnr carb incl, ang mtrx

092 Sst: a/a

093 Sst: lt gry, wh - clr, f - occ crs gr, p cmt, p srt, sbrnd - sbang, carb lam, arg mtrx

096 Sst: lt gry - wh, clr, f - occ crs gr, p cmt, p srt, sbrnd - sbang, carb spk, arg mtrx

099 Sst: a/a but dom crs gr

101 Sst: lt gry, wh, clr, f - med gr, rr crs gr, fri, p cmt, mod w srt, sbrnd - sbang, arg mtrx

103 Sst: lt gry, wh, clr, f - crs gr, fri, p cmt, p srt, sbang - sbrnd, arg mtrx, carb spk, mic mic i/p

106 Sst: a/a

109 Sst: a/a but domf - med gr, occ crs gr

110 Sst: a/a but dom med gr

113 Sst: lt gry, wh, clr, f - v crs gr, mod cmt, mod srt, sbang, abd arg mtrx, occ carb incl, mic mic i/p

116 Sst: a/a

119 Sst: a/a but p cmt, fri

120 Sst: lt gry, wh, clr, f - crs gr, mod cmt, p srt, sbang - ang w crs gr, arg mtrx, occ carb spk, mic mic i/p

122 Sst: lt gry, wh, f - v crs gr, dom med gr, mod - w cmt, mod w srt, sbang, abd arg mtrx, mic mic i/p

125 Sst: lt gry, wh, clr, vr f - crs gr, dom med gr, mod - p cmt, mod srt, ang - sbang, arg mtrx

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127	Sst:	a/a
129	Sst:	lt gry, wh, clr, f - med gr, fri - p cmt, w srt, sbang, arg mtrx
132	Sst:	a/a dom med gr
135	Sst:	lt gry, wh, clr, f - crs gr, fri, p cmt, p srt, sbang, m.. carb spk, wk arg mtrx
138	Sst:	lt gry, wh, clr, f - dom med gr, v crs gr, fri, mod cmt, mod w srt, sbang, arg mtrx
139	Sst:	wh - clr, f - v crs gr, p srt, sbang, mod cmt, rr qtz ovgth, carb incl, abd cly mtrx

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27th July 1989

Esso Australia
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Attention: Mr A P Whittle

REPORT F 7606/89

CLIENT REFERENCE:	Let 27/6/89 61:KK/Kex/Gen:1
TITLE:	X-ray Diffraction
SAMPLE IDENTIFICATION:	Mulloway #1
MATERIAL:	Core Plug Offcuts
WORK REQUIRED:	X-ray Diffraction including -2 micron fraction

Investigation and Report by: Dr R Brown and R R Martin

Dr Brian G Steveson
Manager, Petroleum Services Section

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1. INTRODUCTION

Six samples were received by the Petroleum Services section of Amdel Limited from Esso Australia's Mulloway #1 well. Correspondence; (your ref: letter 27/6/89 61:KK/Kex/Gen:1) was also received requesting X-ray diffraction be conducted on the bulk rock and -2μ fraction on all six samples.

The results contained in this report conclude the analyses required. Should you have any questions concerning the data contained in this report, please contact Dr Roger Brown of Amdel Limited.

2. X-RAY DIFFRACTION

Procedure

A portion of each sample was powdered finely and used to prepare an X-ray diffractometer trace which was interpreted by standard procedures.

Further, weighed, lightly pre-ground subsamples were taken and dispersed in water with the aid of deflocculants and an electric blender, and allowed to sediment to produce -2 μm e.s.d. size fractions by the pipette method. The resulting dispersions were examined by plummet balance to determine their solids contents, and were then used to produce oriented clay preparations on ceramic plates. Two plates were prepared per sample, both being saturated with Mg^{++} ions, and one in addition being treated with glycerol. When air-dry, these were examined in the X-ray diffractometer.

Results

The results are given in Table 1, which lists the following:

(a) The mineralogy of the total sample, as derived from examination of the bulk material, with supporting evidence as available. The minerals found are listed in approximate order of decreasing abundance, using approximate percentage estimates. Minerals not seen in the bulk diffraction trace are given in brackets, and their presence is inferred from the clay fraction work.

(b) The proportion of the sample found to separate into the -2 μm fraction, given as in Section (a).

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TABLE 1

MINERALOGY OF 6 SAMPLES - MULLOWAY #1

Sample	9:1380.61		25:1381.73		32:1382.39		67:1385.96		79:1386.84		99:1388.31	
	Q	70	Q	89	Q	74	Q	60	Q	70	Q	84
	K	12	K	5	K	15	K	18	F'	16	(Sm)	4
	M	5	M	3	M	8	F'	14	K	9	To	4
	F'	3	F'	3	F'	3	M	8	M	5	F'	3
											K	2
											Cal?	2
											M	1
-2μm fract %	16		11		24		22		13		8	
	K	63	K	49	K	62	K	81	K	65	Q	60
	Q	25	Q	35	M	26	M	10	Q	16	K	17
	M	12	M	16	Q	12	Q	5	M	14	Sm*	12
							F'	4	F'	5	M	7
											F'	4

Mineral Key

Cal Calcite
F' K feldspar (orthoclase)
K Kaolinite
M Mica/illite
Q Quartz
Sm Smectite
To Tourmaline
* Insufficient smectite present for determination of any interstratification