

**CANNING BASIN PROJECT STAGE II -
GEOHISTORY MODELLING**

Record 1994/67

by

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Abstract

Thirty wells in the Stage I and Stage II study areas of AGSO's Canning Basin Project have been modelled using the WinBury 1.4 geohistory analysis program, which includes single well, cross-section and basin mode capabilities. The wells were modelled on the basis of sequence stratigraphic units (Supersequences) interpreted from well-log and seismic data, and where necessary were modelled below TD to basement using seismic data.

Geohistory analysis of the multiphase Canning Basin succession proved to be an extremely complex and reiterative task, and requires a thorough regional understanding of the stratigraphic and tectonic development of the basin, and of the evolution of the basin's petroleum systems. Recent studies undertaken during AGSO's Canning Basin Project (1990-1994) have gone a long way to develop such an understanding, and have underpinned the geohistory analysis.

Subsidence/uplift models developed for the basin provide a much improved understanding of the magnitude and extent of the major tectonic events that controlled the structural and stratigraphic evolution of the basin. These events (Samphire Marsh Extension, Prices Creek Movement, Pillara Extension, Meda Transpression, Point Moody Extension and Fitzroy Transpression) resulted in three major subsidence-sag phases, each terminated by a major phase of uplift, and had a profound impact on the maturation history of six identified source intervals. Palaeo-heatflow models are developed that are consistent with palaeo-tectonic settings and observed maturity data.

Significant spatial and temporal variations in original source richness and kerogen types are now recognised within the four identified Ordovician source intervals in the basin. The lower A1 Supersequence (Willara-Nambeet) and lower A2 Supersequence (lower Goldwyer) source intervals probably had significantly less generative potential than the rich, oil-prone, *G.prisca*-dominated upper A2 Supersequence (upper Goldwyer) source interval. The recently identified, oil-prone, lower B1 Supersequence (Bongabinni) source interval has considerable generative potential, but is immature. Accurate modelling of the maturation history of these intervals can only be achieved if these variations are understood. New kerogen kinetic data is presented for some of these intervals.

Hydrocarbon generation and expulsion from the lower A1 Supersequence (Nambeet-Willara) source interval is probably limited to the Dampier-Jurgurra Terrace, outer Barbwire Terrace, and the northern portion of the Fitzroy Trough. Peak generation from these terraces probably occurred during the Devonian - Early Carboniferous depositional cycle (prior to the Meda Transpression), whereas peak generation from the Fitzroy Trough occurred in the Middle Ordovician (prior to the Prices Creek Movement). It is unlikely that this interval generated large amounts of oil on the Broome Platform either during the Ordovician-Silurian depositional cycle, or during subsequent depositional cycles.

Hydrocarbon generation and expulsion from the lower A2 Supersequence (lower Goldwyer) source interval is probably limited to the Dampier-Jurgurra Terrace, deeply buried portions of the outer Barbwire Terrace, and probably portions of the Fitzroy Trough. This source interval is not as extensive as previously mapped; it does not extend into the Kidson Sub-basin. Peak generation from the Jurgurra Terrace probably occurred during the Devonian - Early Carboniferous depositional cycle (prior to the Meda Transpression), whereas peak generation from the shallower Dampier Terrace probably occurred in the Triassic (prior to the Fitzroy Transpression). Minor generation with little or no expulsion probably occurred in deeper portions of the Barbwire Terrace during the Devonian - Early Carboniferous depositional cycle, and provided suitable source facies are present, significant generation may have occurred from the southern Fitzroy Trough at this time. Again it is unlikely that this interval generated large amounts of oil on the Broome Platform either during the Ordovician-Silurian depositional cycle, or during subsequent depositional cycles.

Hydrocarbon generation and expulsion from the upper A2 Supersequence (upper Goldwyer) source interval is probably limited to the Jurgurra Terrace, deeply buried portions of the Barbwire Terrace, and possibly portions of the Fitzroy Trough. Peak generation from the Fitzroy Trough probably occurred during the Devonian - Early Carboniferous depositional cycle (prior to the Meda

Transpression), whereas peak generation from the Jurgurra and Barbwire Terraces (and, if present, the Kidson sub-basin) probably occurred in the Triassic, prior to the Fitzroy Transpression.

The lower B1 supersequence (Bongabinni) source interval is immature in the Admiral Bay Fault Zone, the only area where it has been identified. It probably requires burial of about 2000 m to generate hydrocarbons in this area. Local maturation of this source by migrating hydrothermal fluids may explain the occurrence of numerous oil shows in this area, including the oil recovered in Leo-1 and Great Sandy-1.

Oil (and minor gas) generation and expulsion from the lower D (lower Pillara, Gogo, Mellinjerie, Mirbelia, Boab) source interval occurred throughout the Fitzroy Trough in the Late Devonian - Early Carboniferous, prior to the Meda Transpression. Significant generation also occurred on the Laurel Downs and Jurgurra Terraces at this time, and again during the Permian-Triassic prior to the Fitzroy Transpression. Peak generation on the Lennard Shelf and Dampier-Barbwire Terraces also occurred during the Permian-Triassic.

Oil and gas generation from the lower F Supersequence (lower Laurel) source interval occurred in the southern and central Fitzroy Trough during the Early Carboniferous, prior to the Meda Transpression, and generation probably also commenced on the Jurgurra Terrace at that time. Peak generation from the northern Fitzroy Trough and Jurgurra Terrace possibly occurred in the Triassic, immediately prior to the Fitzroy Transpression. Thus the large anticlinal structures formed during the Fitzroy Transpression, which have previously been regarded as prospective traps, are unlikely to be charged by this source.

All of the recognised source intervals (excluding the immature lower B1 Bongabinni interval) attained peak maturity and expelled the bulk of their generated hydrocarbons during major subsidence-sag phases in either the Ordovician - Silurian, Middle Devonian - Early Carboniferous, or Early Permian - Triassic. Successful exploration for accumulation of hydrocarbons generated from these sources thus depends on suitable traps being in place at these times, and, perhaps more significantly, adequate seal integrity since that time.

Maturation modelling has highlighted the need for more reliable maturity parameters throughout the Canning Basin succession, especially within the Ordovician-Silurian Megasequence. To date, Conodont Colour Alteration Index has proved to be the most reliable maturity parameter. We recommend that other maturity techniques, such as biomarker studies and fluorescence alteration of multiple macerals (FAMM) should be applied to the Canning Basin succession.

Introduction

This record comprises geohistory models for 30 wells in the Stage I and Stage II study areas of AGSO's Canning Basin Project. The wells were modelled using the WinBury¹ 1.4 geohistory analysis program, which includes single well, cross-section and basin mode capabilities.

The wells were modelled on the basis of sequence stratigraphic units (Supersequences) interpreted from well-log and seismic data as described in Kennard et al (1994); these sequence stratigraphic units are shown on the composite well logs and log-log cross-sections compiled by Southgate et al. (in prep). All wells were modelled below TD to basement based on seismic stratigraphic interpretations (see Zeilinger et al., in prep). Additional well data was compiled from well completion reports, well logs and unpublished company and laboratory reports examined during Stages I and II of the Project. All well, cross-section and basin data files used for this study are available in digital format; a copy of WinBury is required to access this digital data.

AGSO Canning Basin Project

Recent studies in the Canning Basin by AGSO have been undertaken in two stages:

Stage I (1990-92) was a detailed sequence stratigraphic interpretation of the evolution of the Devonian sequences of the Lennard Shelf, along the northern margin of the Fitzroy Trough. This part of the basin has undergone the most intense petroleum exploration to date and contains several small producing fields. The basic data from that study were issued in three folios - a seismic folio of interpreted seismic line displays; a map folio of structure contour and isopach maps at 1:100 000 and 1:250 000 scale, and a well folio containing revised composite well logs of 18 wells from the area (Jackson et al., 1992a; Jackson et al., 1993). Implications for petroleum exploration were published in Jackson et al. (1992b); details of the sequence evolution were presented in Kennard et al. (1992) and Southgate et al. (1993).

Stage II of the project (1993-94) consisted of a comprehensive review of the stratigraphic and tectonic evolution of the western two-thirds of the basin to provide a better regional understanding of the evolution of the basin's petroleum systems. The results have been published in two papers in the West Australian Basins Symposium Volume (Purcell & Purcell eds, 1994). The basin's main depositional sequences and their associated petroleum systems are described and analysed in a paper by Kennard et al. (1994), while the structural and sequence evolution of the Ordovician to Silurian basin phase is analysed in detail in a paper by Romine et al. (1994).

This geohistory modelling record, together with four associated compilations - Geochemical and Porosity/Permeability Data (Jackson et al., 1994), Tectonic Framework and Structural Elements Map (Shaw et al., 1994), Summary Well Logs (Southgate et al., in prep), and Structure Contour Maps (Zeilinger et al., in prep), contain the basic data that was used in the two interpretive papers. Most of the information in these four data compilation Records is also available in digital format.

Table 1 shows Canning Basin wells used in AGSO's Stage II study. Wells included in this geohistory modelling study are identified in the 5th column of Table 1, and their locations are shown in Figure 1b. Wells included in the geochemical study of Ordovician source rocks (Appendix F) are identified in the 6th column of Table 1.

¹ WinBury is a Windows-based Burial and Thermal Geohistory modelling program released by Paltech Pty Ltd: contact Ian Deighton, Ph/Fax (064) 927 201.

CANNING BASIN WELLS - STAGE II STUDY					
WELL NAME	Geochem data	Por/perme data	Summary LOG	GEOHISTORY WINBURY	ORDOVICIAN GEOCHEMICAL STUDY (APP F)
Abuttlon 1					
Acacia 1	Y	Y			Y
Acacia 2		Y	Y	Y	
Anna Plains 1	Y				
Antares 1	Y	Y			
Aquanita 1	Y		Y		
Aquila 1	Y		Y	Y	Y
Aristida 1A	Y	Y			
Atrax1					
Auld 1					
Babrongan 1		Y			
Barbwire 1	Y		Y		
Barlee 1	Y		Y		
Bedout 1					
Bindi 1		Y			
Blackstone 1	Y		Y	Y	
Blina 1	Y		Y	Y	
Blina 2 to 8					
Boab 1	Y	Y	Y		
Booran 1					
Boronla 1	Y	Y			
Boundary 1					
Brooke 1			Y	Y	
Brooking Springs 1					
Caladenia 1	Y	Y			
Calamia 1	Y		Y	Y	
Calytrix 1					
Cane Grass 1					
Canopus 1	Y	Y	Y		Y
Capparis 1					
Carina 1	Y	Y			
Cassia 1		Y			
Chestnut 1					
Chirup1					
Cilianthus 1					
Contention Heights 1		Y			
Cossigny 1					
Cow Bore 1	Y		Y		
Crab Creek 1					
Crimson Lake 1					
Crossland 1,2,3					
Crystal Creek 1	Y		Y		Y
Cudalgarra 1	Y	Y			
Cudalgarra 2	Y				
Cudalgarra North 1					
Curringa 1					
Cycas 1					
Dampier Downs 1			Y		
Dampiera 1A	Y	Y			
Darriwell 1	Y	Y			
Delambre 1					
Depuch 1					
Dodonea 1	Y		Y	Y	Y
Dodonea 2		Y			
Doran 1					
Drosara 1					
East Crab Creek 1	Y		Y	Y	
East Merald 1					
East Yeeda 1					
Edgar Range 1	Y		Y	Y	Y

WELL NAME	Geochem data	Por/perme data	Summary LOG	GEOHISTORY WINBURY	ORDOVICIAN GEOCHEMICAL STUDY (APP F)
Ellendale 1	Y				
Eremophila 1	Y	Y			
Eremophila 2,3					
Ficus 1		Y			
Fitzroy River 1					
Frankania 1					
Frankenstein 1	Y	Y	Y	Y	Y
Fraser River 1					
Frenay 1					
Frome Rocks 1					
Frome Rocks 2		Y			
Gap Creek 1	Y	Y			
Gingerah Hill 1	Y				
Goldwyer 1			Y		
Goodenia 1					
Goorda 1					
Grant Range 1	Y	Y			
Great Sandy 1	Y	Y			
Great Sandy 2					
Grevillea 1	Y	Y			
Hakea 1	Y	Y			
Halgania 1					
Hangover 1	Y	Y			
Harold 1					
Hawkstone Peak1					
Hedonia 1	Y	Y	Y	Y	Y
Hibiscus 1					
Hilltop 1	Y	Y	Y	Y	Y
Hoya 1					
Janpam 1	Y				
Janpam North 1		Y			
Jarman 1					
Jones Range 1	Y				
Jum Jum 1					
Juno 1	Y				
Justago 1	Y				
Kambara 1	Y				
Katy 1	Y	Y	Y		
Kemp Field 1	Y		Y		
Kennedia 1	Y	Y			
Kidson 1	Y	Y	Y	Y	Y
Kilang Kilang 1	Y	Y			
Kora 1					
Kunzea 1	Y	Y			
Lacepede 1A					
Lake Betty 1	Y	Y			
Langoora 1	Y		Y	Y	
Laurel Downs 1					
Leo 1	Y	Y	Y	Y	
Lloyd 1	Y	Y			
Lloyd 2		Y			
Logue 1	Y		Y		
Lovell's Pocket 1					
Lukins 1		Y	Y		
Mangaloo 1					
Margaret 1					
Mariana 1		Y	Y		
Matches Spring 1	Y		Y	Y	Y
May River 1		Y	Y		
McLarty 1	Y		Y	Y	Y
Meda 1	Y		Y	Y	
Meda 2	Y				
Melaleuca 1					
Mellany 1		Y			

WELL NAME	Geochem data	Por/perme data	Summary LOG	GEOHISTORY WINBURY	ORDOVICIAN GEOCHEMICAL STUDY (APP F)
Mimosa 1	Y		Y	Y	
Minilya 1					
Minjin 1					
Mirbella 1					
Mirbella 2					
Moogana 1		Y			
Mowla 1					
Mt Alexander 1					
Mt Hardman 1	Y	Y			
Munda 1			Y		
Munro 1	Y	Y	Y		
Musca 1	Y	Y	Y		
Myroodah 1				Y	
Napier 1 to 5					
Needle Eye Rocks 1					
Nerrima 1 (AFO)					
Ngalti 1	Y				
Nita Downs 1	Y	Y	Y		
Nollamara 1					
Notabillis 1	Y	Y			
Nuytsia 1					
Olios 1	Y	Y			
Orange Pool 1	Y	Y			
Oscar Hill 1					
Padilpa 1					
Palm Spring 1					
Pandorea 1		Y	Y		
Panicum 1					
Parda 1	Y		Y	Y	
Patience 1					
Pearl 1					
Pegasus 1	Y		Y	Y	
Pender 1					
Percival 1	Y	Y	Y	Y	
Perindi 1	Y				
Petaluma 1					
Phillydum 1	Y	Y			
Picard 1					
Pictor 1	Y	Y	Y	Y	Y
Point Moody 1	Y				
Point Torment 1					
Pralla 1					
Puratie 1					
Roebuck Bay 1					
Runthrough 1					
Sahara 1	Y		Y	Y	
Samphire Marsh 1					
Santalum 1A	Y	Y			Y
Scarpia 1					
Selenops 1					
Setaria 1	Y				
Solanum 1	Y	Y			Y
South Auld 1					
St George Range 1	Y				
Sundown 1	Y	Y	Y		
Sundown 2					
Sundown 3,4					
Sunup 1		Y			
Tandalgoo 1,2,3					
Tappers Inlet 1	Y	Y			
Terrace 1		Y	Y		
Thangoo 1	Y		Y	Y	
Thangoo 1A,2					
The Sisters 1					

WELL NAME	Geochem data	Por/perme data	Summary LOG	GEOHISTORY WINBURY	ORDOVICIAN GEOCHEMICAL STUDY (APP F)
<i>Thompsons 1</i>					
<i>Triodia 1</i>					
<i>Twin Buttes 1</i>					
<i>Typha 1</i>					
Vela 1	Y	Y	Y	Y	
Wamac 1	Y				
<i>Wattle 1</i>					
West Blackstone 1		Y			
<i>West Kora 1</i>					
West Phlydrum 1	Y	Y			
West Terrace 1	Y	Y			
<i>West Terrace 2</i>					
White Hills 1	Y				
<i>Whitewell 1</i>		Y			
Willara 1	Y	Y	Y	Y	
<i>Willara Hills 1</i>					
Wilson Cliffs 1	Y	Y	Y	Y	Y
Wood Hills 1		Y	Y		
Yarrada 1	Y	Y	Y		
Yulleroo 1	Y	Y		Y	

Table 1. List of all wells in the onshore Canning Basin, together with some nearby offshore-wells (total of 215 wells), showing wells used in AGSO's Stage II study. Wells included in the present geohistory analysis are indicated in the 5th column, and their locations are shown in Figure 1b. Wells included in the geochemical study of Ordovician source rocks (Appendix F) are identified in the 6th column. Well names shown in bold type contain information in the associated Stage II data records. Well names in italics indicate that we were either unable to obtain data for these wells or did not include them in our studies. List compiled from various sources of data including the Bureau of Resource Science's PEDIN database (print out 27-10-93), the Western Australian Department of Mines & Energy WAPEX database (print out 22/10/92) and lists of wells from various Company reports. Some shallow stratigraphic BMR wells (for example Jurgurra Creek, Laurel Downs, Prices Creek, Wallal) and other shallow wells with little data, have been omitted from the list.

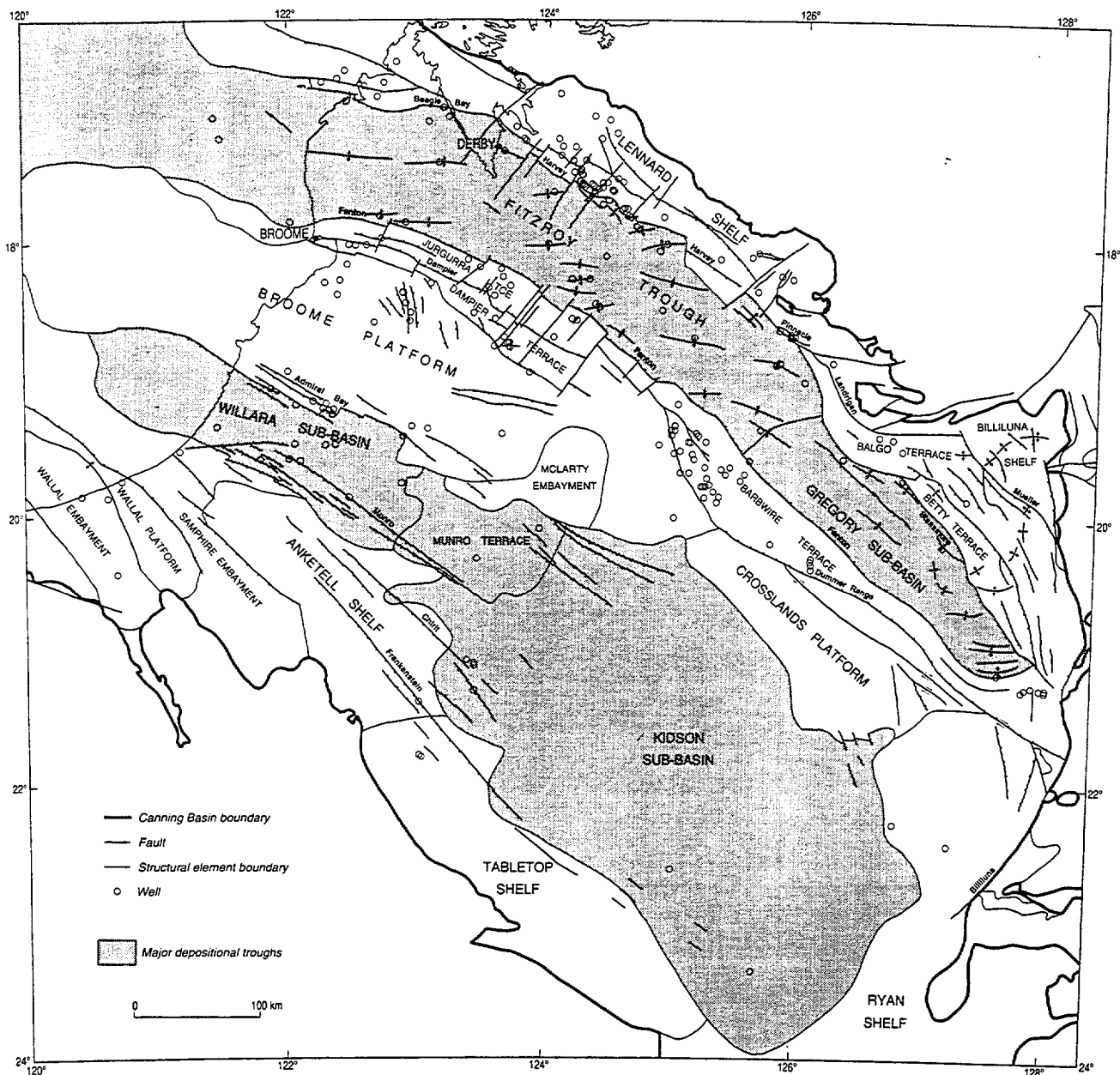


Figure 1a. Structural Subdivisions of the Canning Basin (from Kennard et al., 1994).

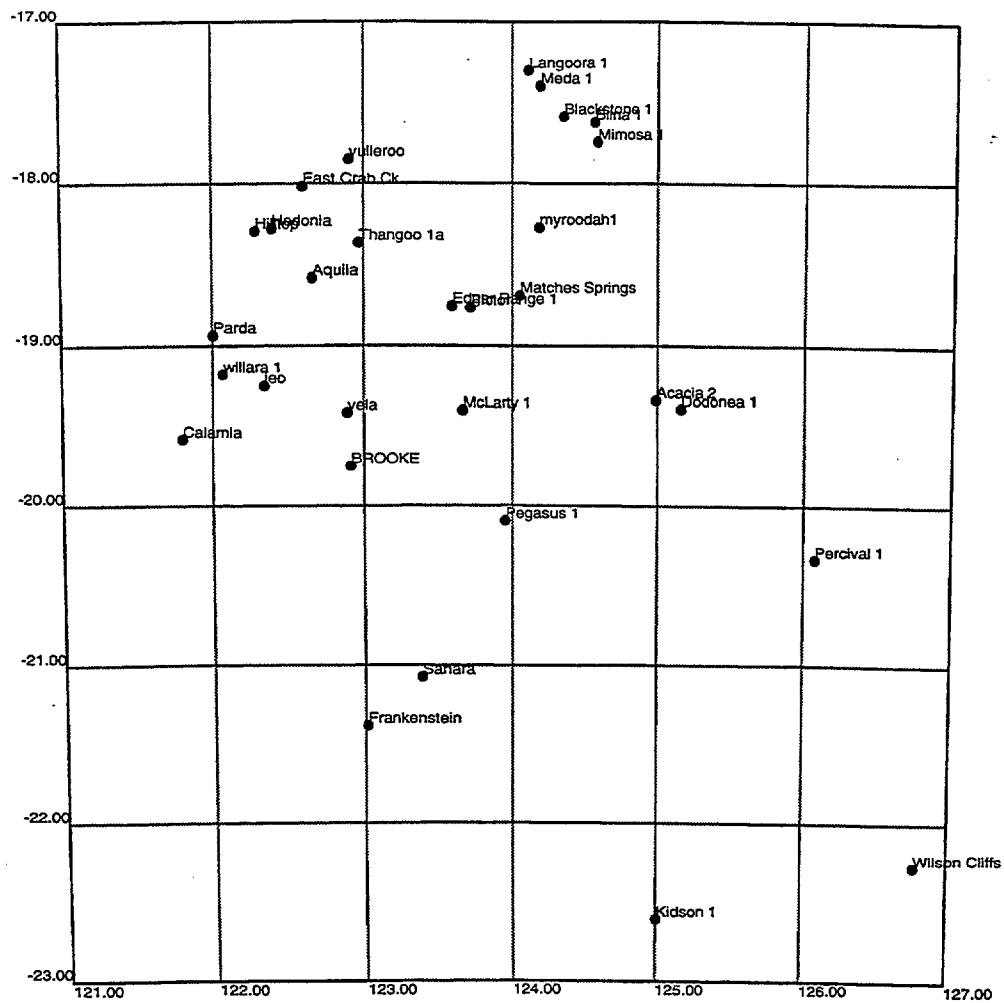


Figure 1b. Location of wells modelled in this study.

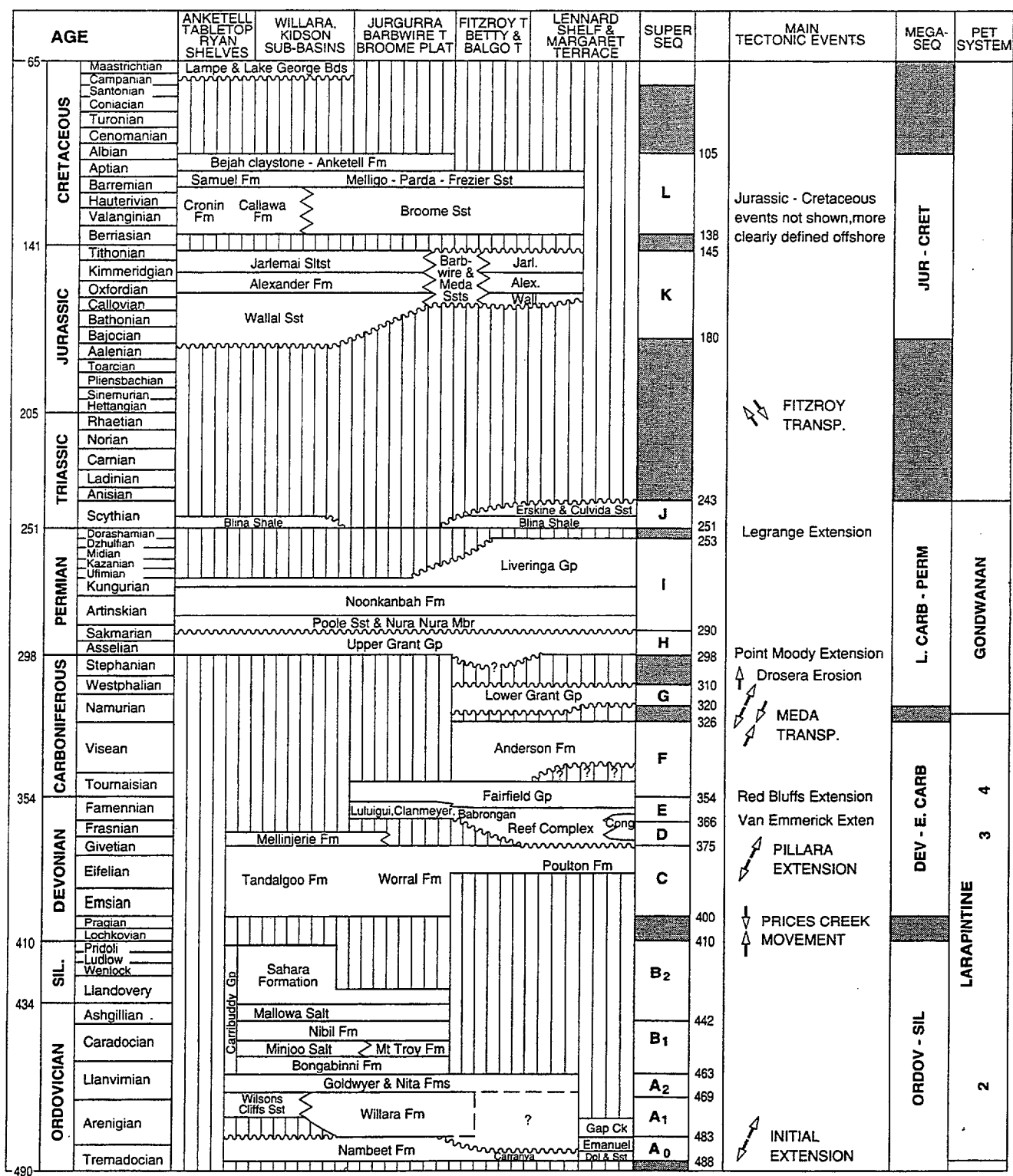


Figure 2. Canning Basin stratigraphic column showing lithostratigraphy, main tectonic events, megasequences, supersequences and petroleum systems (from Kennard et al., 1994).

Data Input

Extensive use has been made of Deighton's (1992) Burial and Thermal Geohistory Analysis short course notes, and the comprehensive on-line help system provided by WinBury for all data input and manipulation, including on-line geohistory theory and illustrations which assist modelling and interpretation of the data. Porosity and thermal conductivity data were not entered for any wells - the WinBury program uses default values for these parameters based on lithological data. Fluid inclusion and fission track data were not available for any of the wells studied.

Horizon data for each well are presented in Appendix A. Specific aspects of critical data input are discussed below.

Global Lookup Paths/Tables

Chronostratigraphy: A chronostratigraphic look-up table was not utilised for this study.

Chronostratigraphic ages are based on the AGSO Timescale (Jones et al, 1994), and the age of the supersequence stratigraphic units are shown in Figure 2.

Sea Level: The default Exxon87 sea level curve has been used for the Mesozoic. A Palaeozoic sea-level curve has not been entered; Palaeozoic sea-level is thus assumed to be constant at the present day level.

Maturity Conversion: The default TAI (Thermal Alteration Index), SCI (Spore Colour Index) and Tmax (from Rock-Eval Pyrolysis) WinBury maturity conversion files have been used. CAI (Conodont Colour Alteration Index) values have been converted to Ro (Vitrinite Reflectance) values following Epstein et al. (1977, fig. 11).

Lithology Definitions: The default Lithologic Parameter File, which defines the compaction rate constants and matrix conductivity and density values based on the Falvey and Middleton relationships, was used.

Kinetic Definitions: The default Kinetic Parameter File which defines the reaction constants and rates for the reaction of different types of kerogen was used for Kerogen Types IIb and IIIb (source units within Supersequences D, E and F). Kinetic data for the Ordovician source units were defined by kerogen kinetic analyses (see Appendix F), and WinBury input kerogen kinetic data for all modelled kerogen types is given in Appendix G.

Options: All data were converted to the following standard units: Depth-metres, Heatflow-milliwatts, Temperature-centigrade.

Heat Flow Mode - Relative to present day value.

Processing Option - Sweeney (easy Ro)

Well Header Data

Surface Temperature: 25°C for all wells.

Bottom Hole Temperature: Corrected bottom hole temperatures have been used where available; otherwise maximum measured log temperature + $\leq 10\%$ depending on time from circulation, and available DST or FT temperature data have been used. In the event that reliable bottom-hole, log or DST temperatures were not available, temperature data was estimated from adjacent wells (within the same structural element and with comparable stratigraphic successions) such that the calculated present-day heatflows of comparable wells are similar. The bottom hole temperatures entered for each well are shown in Table 2.

Basement Depth: Interpreted from seismic data if below TD (see Zeilinger et al., in prep).

Horizon Data (Appendix A)

Stratigraphic Unit/Event: Supersequences as described by Kennard et al. (1994; see Fig. 2) and shown on composite well logs and log-log cross-sections compiled by Southgate et al. (in prep).

Hiatuses/Unconformities: Estimations of the thickness, lithology and age of eroded sections and hiatuses were based on understandings gained from regional seismic stratigraphic interpretations and well-well cross-sections (see Kennard et. al, 1994; Romine et al., 1994), and a recent review of the tectonic framework of the Canning Basin (Shaw et al., 1994). For this purpose, hiatuses and unconformities were initially assessed for wells within a common structural element (eg., northern or southern Broome Platform), and were modified where necessary to achieve the best match between

WELL	BOTTOM HOLE TEMPERATURE (°C)	BOTTOM HOLE DEPTH (m)
Acacia-2	78	1572.00
Aquila-1	106	1735.00
Blackstone-1	120	3049.00
Blina-1	99	2498.00
Brooke-1	83	1770.00
Calamia-1	90	1696.00
Dodonea-1	92	2215.00
East Crab Ck-1	104	2809.00
Edgar Range-1	100	1966.90
Frankenstein-1	106.2	2792.00
Hedonia-1	92	1543.00
Hilltop-1	94	1737.00
Kidson-1	134	4429.41
Langoora-1	80	1615.00
Leo-1	117	2411.00
Matches Spring-1	100	2832.24
McLarty-1	105	2590.80
Meda-1	114	2683.00
Mimosa-1	146	4111.00
Myroodah-1	72	1829.00
Parda-1	95	1905.63
Pegasus-1	100	2590.80
Percival-1	106	2445.50
Pictor-1	99.4	2130.00
Sahara-1	86	2071.75
Thangoo-1A	84	1654.00
Vela-1	88	1908.00
Willara-1	160	3903.00
Wilson Cliffs-1	126	3721.60
Yulleroo-1	124	4572.00

Table 2. Bottom hole temperatures of wells modelled in this study.

modelled and observed maturity data. Three major unconformities have significantly controlled the geohistory and thermal maturation of the basin succession - the Early Devonian Prices Creek Movement, the mid-Carboniferous (Namurian) Meda Transpression, and the Early Jurassic Fitzroy Transpression. These movements and their resultant unconformities are discussed separately in results.

Depth to top of Unit: Based on well-log picks of Supersequence boundaries as shown on Summary Well logs (Southgate et al., in prep).

Age: Ages of Supersequences based on AGSO timescale and as summarised in Figure 2.

Min/Max/Modelled Water Depth: Estimates of palaeo-water depth at top of Supersequence units based on lithofacies, palaeoenvironmental interpretations, and sequence stratigraphic concepts.

Sea Bed Temperature: Estimated from lithofacies and palaeo-latitude position of Canning Basin as follows: Steady at 25°C from 488-469 Ma; increasing from 25°C at 469 Ma to 30°C at 455 Ma; steady at 30°C from 455-375 Ma; decreasing from 30°C at 375 Ma to 10°C at 310 Ma; steady at 10°C from 310-253 Ma; increasing from 10°C at 253 Ma to 25°C at 2 Ma (base Quaternary).

Heatflow: WinBury calculates present-day heatflows from observed/estimated bottom-hole temperatures, the thermal conductivity of the well lithologies, and the present day surface temperature. Palaeo-heatflows were modelled by a combination of two approaches; uniformitarian and graphical. In the uniformitarian approach, present day heatflows for specific tectonic settings (eg., rifts, post-rift passive margins) were used to guide estimates of heatflows for Canning Basin successions deposited in similar tectonic settings. In the graphical approach, theoretical heatflow curves in basins formed by differing amounts of crustal extension were used as a guide to model palaeo-heatflow in individual, and groups of comparable, wells. Based on the present-day heatflow, the palaeo-tectonic setting and the tectonic subsidence curve for each well, an appropriate "bell-shaped" cool-down curve was modelled for each well. This palaeo-heatflow model was validated, and re-modelled as necessary, against observed maturity data. See "Establishment of Heatflow Curve" discussion in Results section for more details.

Lithology Data: Lithological data was based on well completion report and composite well logs. It is important to note that the default Lithological Parameter file is based on pure end-member "matrix lithologies". Thus a 'sandstone' is a pure quartz arenite with a density of 2.65 gm/cc, conductivity of 16 mcal/cm.sec°C, initial porosity of 40%, and a porosity/depth factor of 0.40. A specific sandstone with a variety of framework grain types, and minor interstitial argillaceous material (inter-framework matrix) should be entered as sandstone-shale mixture (eg., sandstone 80%, shale 20%); similarly a calcareous siltstone with silt-sized quartz grains and interstitial calcareous and argillaceous material must be entered as a sandstone-shale-limestone mixture. It was found that the gamma log can generally be used as a guide to determine the proportion of 'matrix lithologies'.

Kerogen Data: Five major source beds have been modelled (see Kennard et al., 1994, for discussion of source distribution and geochemical data): lower part of Supersequence A1 (upper Nambett and lower Willara Formations), lower part of Supersequence A2 (lower Goldwyer Formation), upper part of Supersequence A2 (upper Goldwyer Formation), lower part of Supersequence D (lower Pillara Cylce, incorporating the Gogo Formation, Mellinjerie Formation, Mirbelia Dolomite, and Boab Sandstone), and lower part of Supersequence F (lower Laurel Shale). In addition, 'algal coals' within the lower portion of Supersequence B1 (Bongabinni Formation) have been modelled in Leo-1 well. Kerogen kinetic data for all modelled source beds are given in Appendix G.

Variable Beds: Halokinetic movements, such as salt diapirs, have not been modelled. Dissolution of salt deposits within Supersequences B1 and B2 (Mallowa Salt, Carribuddy Group) has been modelled as surface or near-surface erosion during either the Prices Creek Movement or Meda Transpression.

Observed Maturity Data

Observed maturity data is used to calibrate the well models by constraining the maturity profile predicted by the model. Five maturity parameters have been used: Ro (Vitrinite Reflectance), TAI (Thermal Alteration Index), SCI (Spore Colour Index), Tmax (from Rock-Eval Pyrolysis) and CAI (Conodont Colour Alteration Index = Ro equivalent). The source of this maturity data is identified in an associated flag table.

Observed Temperature Data

Observed temperature data is used to help calibrate the bottom hole temperature (and hence in turn the present-day heatflow), and the temperature profile predicted by the model. Maximum recorded log temperatures, and DST/FT temperature data have been used. The source of this temperature data is identified in an associated flag table.

Data Output

Selected data outputs are compiled in the Appendices. A complete copy of the data is available in digital format; a copy of WinBury is required to access this digital data.

Within the basin mode, the 30 project wells have been grouped into 6 structural provinces (see Fig. 1a): Broome Platform, Dampier-Barbwire Terrace, Fitzroy Trough, Kidson Sub-basin, Lennard Shelf, and Willara Sub-basin.

Since true vitrinite does not occur within the Ordovician source beds (Supersequences A1, A2, B1), maturity plots of all source beds in cross-section and basin mode are presented as temperature, rather than an equivalent vitrinite reflectance (Ro) value.

Single Well Mode (see Appendix A)

For each well the following data is presented: Table of Horizon Data, Matrix Lithology, Observed Temperature Data, Present Factors Correlation, Observed Maturity Data, Geohistory Plot, Heatflow and Tectonic Subsidence Plot, and Observed versus Computed Maturity. The wells are compiled in alphabetical order.

Cross-Section Mode (see Appendix B)

Seven cross-sections with present maturity (temperature) overlays are presented.

Basin Mode (see Appendix C, D, & E)

Stripped Basement versus Time Plots for all wells in each structural province are presented in Appendix C.

A present-day Heatflow Map based on the 30 project wells is presented as Figure 3. A Heatflow versus Time Plot for all wells in each structural province is presented in Appendix D. Palaeo-heatflow Maps at the modelled peaks of the heating events associated with the Samphire Marsh and Pillara Extensional events (*ca* 469 Ma and 350 Ma, respectively) are also presented in Appendix D.

Hydrocarbon Generation Plots for each source unit in a well, and Maturity (temperature) Maps for each source unit are presented in Appendix E. These maps are presented at the times of major basin structuring, namely: 410 Ma (start of the Prices Creek Movement), 326 Ma (start of the Meda Transpression), 200 Ma (start of the Fitzroy Transpression), and 0 Ma (present-day).

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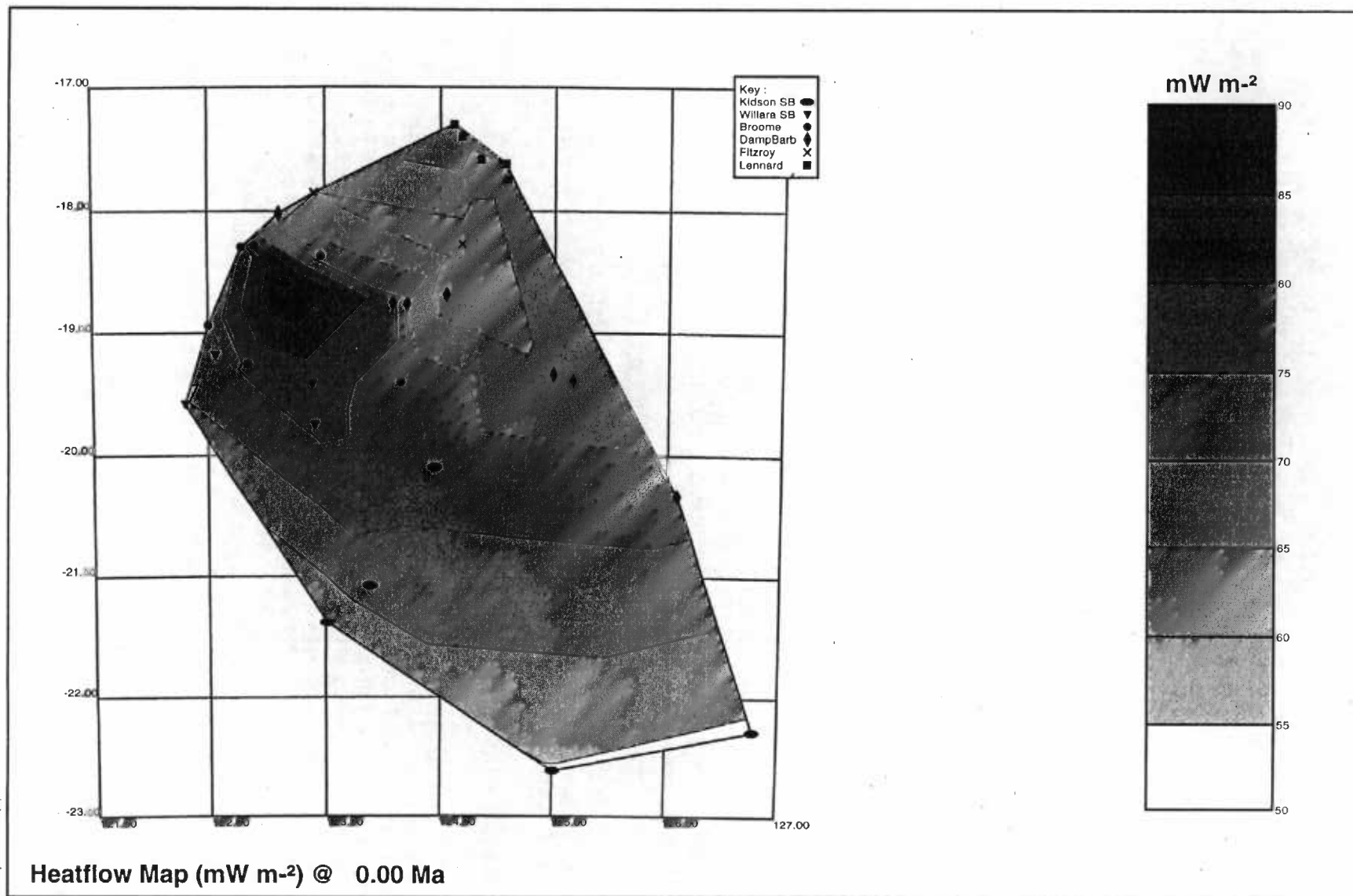


Figure 3. Present-day heatflow of the western and southern Canning Basin based on the 30 wells modelled in this study

Results - Subsidence/Uplift History

Three major subsidence-sag phases are clearly evident within most wells (see Appendix C): Early Ordovician (Tremadocian) to Silurian, Middle Devonian (Givetian) - Early Carboniferous (Visean), and Early Permian (Asselian) - Early Jurassic (?Sinemurian). These subsidence-sag phases are initiated by the Samphire Marsh, Pillara and Point Moody Extensional Events, respectively (see Kennard et al., 1994; Shaw et al., 1994; Fig. 2; the Samphire Marsh Extension is labelled Initial Extension on Figure 2). Two additional minor subsidence phases, the Early-Middle Devonian (Esmian-Eifelian) Tandalgoo Sag Phase (Shaw et al., 1994), and a Middle Jurassic - Early Cretaceous phase, are evident in some wells.

Each major subsidence-sag phase is preceded by an uplift-erosional phase (see Kennard et al., 1994; Shaw et al., 1994; Fig. 2): the Spielers Event (*ca* 500-510 Ma) which involved basement-thrusting prior to deposition in the basin, the Prices Creek Movement (410-400 Ma), the Meda Transpression (326-320 Ma), and the Fitzroy Transpression (200-180 Ma). The amount of section eroded in each well during each of these events is shown in Table 3.

These uplift-erosional and subsequent subsidence-sag phases have controlled the deposition of four Megasequences within the basin as described by Kennard et al. (1994): the Ordovician-Silurian, Devonian to Early Carboniferous, Late Carboniferous to Permian, and Jurassic-Cretaceous Megasequences.

Samphire Marsh Subsidence-Sag Phase (Early Ordovician-Silurian)

Rapid subsidence at the beginning of this phase occurs in all wells (0.6 - 1.2 km tectonic subsidence), and is very rapid (1.5 - 2.3 km tectonic subsidence) in wells in the northern Willara Sub-basin (Willara-1, Brooke-1, Vela-1), the central Kidson Sub-basin (Kidson-1, Sahara-1), and at the southern margin of the Lennard Shelf (Blackstone-1 and Mimosa-1) (see Appendix C). Subsidence in these latter wells is controlled by major southwest-dipping growth faults (see Romine et al., 1994; Shaw et al., 1994). The sag stage of this phase incorporates thick halite deposits which appear to have been deposited essentially basinwide with depocentres near or adjacent to these growth faults (see Romine et al., 1994, fig.15).

Any record of this subsidence event on the inner portion of the Lennard Shelf has since been removed by subsequent erosion during the Prices Creek Movement and/or the Meda Transpression and base-Grant glacial erosion.

Prices Creek Uplift-Erosion Phase (Early Devonian)

Extensive uplift and erosion of the Ordovician-Silurian Megasequence occurred in all wells except those in the Kidson Sub-basin, eastern Willara Sub-basin and McLarty-1 on the eastern Broome Platform (see Table 3). This event, the Prices Creek Movement, was most pronounced on the outer margin of the Lennard Shelf (eg., Blackstone-1, Mimosa-1) and the northern Broome Platform (eg., Hedonia-1, Hilltop-1, Thangoo-1A) where at least 700 m of the Ordovician-Silurian Megasequences was eroded. This Megasequence was probably also widely distributed across the Lennard Shelf, but was subsequently completely eroded during the Prices Creek Movement. On the Dampier-Barbwire Terraces, generally about 200-350 m of the Ordovician-Silurian sag deposits were eroded during this event (possibly up to 600 m eroded in the west in East Crab Creek-1, and less than 100 m in the east in Percival-1). Extensive uplift, gentle folding and erosion during this event is also recorded in outcrop and wells (Grevillea-1, Gap Creek-1) in the Prices Creek area (outside study area; see Shaw et al., 1994).

Thick halite deposits within Supersequence B2 (Carribuddy Mallowa Salt) are modelled to have been eroded/dissolved on the Broome Platform, Dampier-Barbwire Terraces and Lennard Shelf during the Prices Creek Movement. Locally, salt dissolution continued to occur during deposition of Supersequence C (that is, during the subsequent Tandalgoo Sag Phase) since Sombrero structures ("turtles") occur within these deposits (Romine et al., 1994; for example, Musca-1). In contrast, the widespread occurrence of interpreted salt structures on the Jurgurra Terrace (Begg, 1987), and the confirmed preservation of Carribuddy salt in Frome Rocks-1 (not modelled in this study), suggest

PROVINCE	WELL	PRICES CREEK	MEDA	FITZROY
Lennard Shelf	Langoora-1	?	200	200
	Meda-1	?	300	400
	Blackstone-1	750 s	400	250
	Blina-1	?	300	250
	Mimosa-1	700 s	400	500
Fitzroy Trough	Myroodah-1	?	250	850
	Yulleroo-1	?	250	2600
Dampier/Barbwire	East Crab Ck-1	600 s	300	700
	Edgar Range-1	350 s	300	850
	Pictor-1	350 s	300	400
	Matches Spring-1	350 s	250	650
	Acacia-2	200 ?s	200	400
	Dodonea-1	200 ?s	350	450
	Percival-1	?	150	700
Broome Platform	Thangoo-1A	700 s	200	1200
	Hedonia-1	800 s	150	1000
	Hilltop-1	800 s	150	1000
	Aquila-1	400 s	150	950
	Parda-1	400 s	200	500
	Leo-1	300 s	150	500
	McLarty-1	150 s	150	450
Willara Sub-basin	Willara-1	300 (s)	250	650
	Calamia-1	NIL	800 s	600
	Vela-1	50	100	600
	Brooke-1	10	60	600
Kidson Sub-basin	Pegasus-1	NIL	250	450
	Sahara-1	NIL	250	400
	Frankenstein-1	NIL	100	450
	Kidson-1	NIL	300	400
	Wilson Cliffs-1	20	150	250

Table 3. Estimated amount of uplift and erosion during the Prices Creek Movement, Meda Transpression and Fitzroy Transpression. Dissolution or erosion of Carribuddy Salt denoted by s.



that the Jurgurra Terrace was not uplifted and eroded during the Prices Creek Movement. Salt is similarly preserved in parts of the Barbwire Terrace (Ficus-1, not modelled in this study), and may be preserved in parts of the Gregory Sub-basin and northern portion of the Fitzroy Trough which probably also suffered little or no uplift during the Prices Creek Movement.

Tandalgoo Sag Phase (Early-Middle Devonian)

A phase of minor subsidence is recorded in most wells immediately prior to the rapid subsidence associated with the Pillara extension (see Appendix C). This subsidence is recorded by the widespread deposition of Supersequence C (Tandalgoo Sandstone and Poulton Formation). Shaw et al. (1994) termed this event the Tandalgoo Sag Phase, and speculated that it reflects a thermal response to lower crustal or sub-crustal lithospheric extension. Burial modelling and well-well cross-sections (see Romine et al, 1994; Southgate et al., in prep.) suggest that Supersequence C was originally deposited as an extensive, blanket-like, 200-400 m thick deposit across the basin. Subsequent erosion of this sequence is attributed to the Meda Transpression or base-grant glacial erosion.

Pillara Subsidence-Sag Phase (Middle Devonian - Early Carboniferous)

Rapid subsidence of the Fitzroy Trough and the flanking shelves and terraces occurred in response to upper crustal extension initiated in the mid-Givetian (~375 Ma, Kennard et al., 1994). Shaw et al. (1994) recognise three extensional pulses during this phase: the mid-Givetian Gogo, latest Frasnian Van Emmerick, and latest Famennian-Tournaisian Red Bluffs Extensional Events. Tilting and block faulting associated with these extensional pulses are marked by the influx of clastic fans, and locally spectacular boulder conglomerates, on the Laurel Downs Terrace and outer margins of the Lennard Shelf (eg., Mimosa-1, Blina-1, and the Van Emmerick Conglomerate in Meda-1).

Tectonic subsidence during this phase ranges from at least 3.5-4 km at the southern margin of the Fitzroy Trough (Myroodah-1 and Yulleroo-1 sub TD), to 1.5-2 km on the Laurel Downs Terrace (Blina-1, Mimosa-1), 900 m on the outer margin of the Lennard Shelf (Meda-1), 500-700 m on the outer margin of the Dampier Terrace (East Crab Creek-1, Matches Springs-1), and less than 500 m in other wells on the Lennard Shelf, Dampier-Barbwire Terraces and Kidson Sub-basin (see Appendix C). This subsidence phase is not recognised in wells on the Broome Platform and Willara Sub-basin.

Meda Transpression (Mid Carboniferous; Namurian)

Uplift and about 200-300 m erosion at the base of the Grant Group (Supersequences G and H) appears to have occurred in all the modelled wells (Table 3). This event, clearly marked by a seismic unconformity on the outer margin of the Lennard Shelf near Meda-1 (Jackson et al., 1993, plate 35), is termed the Meda Transpression and probably represents the peak of the Alice Springs Orogeny in Central Australia (Kennard et al., 1994; Shaw et al., 1994). The relative magnitude of this event in different parts of the basin is generally difficult to assess on the basis of burial and maturation modelling since varying the amount of modelled erosion at this time by plus or minus 100% (ie., within the range 100-400 m) has little effect on the predicted maturation levels. Shaw et al. (1994), however, suggest that uplift and erosion was probably focussed on inverted fault structures ('flower structures') along the northern margin of the Fitzroy Trough.

Extensive uplift and erosion (800 m) during the Meda Transpression is modelled in Calamia-1 in the southern Willara Sub-basin; the magnitude of this event appears to be well constrained by an excellent match between observed and modelled maturity data in this well (see Appendix A). Dissolution of the Carribuddy salt occurred in this area at about this time, as verified by the occurrence of sombrero structures ('turtles') within the Grant Group in the Calamia-1, Juno-1 and Anna Plains-1 area. Well-well cross-sections and seismic data (see Southgate et al., in prep; Zeilinger et al., in prep) suggest that the amount of uplift and erosion increases markedly towards the southern margin of the basin

(that is, to the south of wells modelled in this study); for example, extensive base-Grant erosion of the Ordovician-Silurian Supersequence is clearly evident on seismic data on the Anketell-Tabletop Shelf.

Drosera Erosion (Late Carboniferous)

An hiatus from 310-298 Ma has been modelled in all wells to explain the apparent biostratigraphic gap between the Lower 'pre-glacial' Grant Group (Supersequence G) and the Upper Grant Group (Supersequence H) (see Jones & Young, 1993; Kennard et al., 1994). This hiatus, termed the Drosera Erosion Event (Shaw et al., 1994), has little effect on the modelled maturity of the wells studied.

Point Moody Subsidence-Sag Phase (Early Permian - Triassic)

Rapid subsidence at the beginning of this phase (corresponding to deposition of the Upper Grant Group, Supersequence H) occurs in all wells (see Appendix C). Tectonic subsidence during this phase ranges from about 300-600 m in wells on the Lennard Shelf, Dampier-Barbwire Terraces, southern Broome Platform, Willara Sub-basin and Kidson Sub-basin, to 600-800 m in wells on the northern Broome Platform (Thangoo-1A, Hedonia-1, Hilltop-1, Aquila-1), and about 600 m in Yulleroo-1 and 1100 m in Myroodah-1 in the Fitzroy Trough. The apparent subsidence maximum at Myroodah-1 is attributed to Early Permian growth on the Fenton Fault as imaged on BMR deep seismic Line 88.03 (see Shaw et al., 1994). The extent of subsidence on the northern Broome Platform is somewhat poorly constrained due to extensive uplift and erosion in this area during the subsequent Fitzroy Transpression. However available maturity data in Aquila-1 and Thangoo-1A help constrain the subsidence/uplift model; in contrast the wildly scattered maturity data for Hedonia-1 and Hilltop-1 appear to defy a consistent interpretation (Horstman, 1988; see following maturation history section).

This subsidence phase probably results from lower crustal extension on the Northwest Shelf (see AGSO North West Shelf Study Group, 1994), an event that initiated the Westralian Superbasin.

Fitzroy Transpression (Early Jurassic)

Substantial uplift and erosion of the Late Carboniferous-Permian Megasequence occurs in all wells, especially those on the Broome Platform and within the Fitzroy Trough (Table 3). This event, the Fitzroy Transpression, produced large divergent anticlines and synclines in the central region of the Fitzroy Trough; Rattigan (1967) and Smith (1968) ascribed these structures to regional dextral wrench movements of the 'cratonic' blocks bounding the trough.

Uplift and erosion of about 2600 m of Early Permian - Early Triassic strata is estimated to have occurred at the crest of the anticline at Yulleroo-1, and about 800 m of Late Permian - Early Triassic strata has been eroded from the anticline at Myroodah-1. Although these estimates are poorly constrained by maturity data (see Appendix A), structuring and erosion are clearly imaged on seismic data in the Yulleroo-1 area, and the amount of eroded section is relatively well constrained by seismic interpretations (see Zeilinger et al., in prep.).

About 1000-1200 m of Permo-Triassic section is modelled to have been eroded from the northern Broome Platform (Thangoo-1A, Hedonia-1, Hilltop-1, Aquila-1) during this event, and about 400-700 m from wells on the southern Broome Platform, Willara and Kidson Sub-basins, and Dampier-Barbwire Terraces. On the Lennard Shelf and Laurel Downs Terrace, about 200-500 m of Triassic strata was eroded during the Fitzroy Transpression.

Previous estimates of the amount of uplift and erosion during the Fitzroy Transpression (Horstman, 1984) were based on projection of vitrinite reflectance data of the Permian strata to an original (now eroded) surface, or, where data was inadequate for projection, vitrinite reflectance data was converted to an equivalent depth of burial using present geothermal gradients. Horstman concluded that approximately 500-1000 m of probable Triassic (post-Erskine Sandstone) section has been completely eroded from the basin prior to the deposition of the Wallal Sandstone. Horstman's

estimates of the amount of erosion during the Fitzroy Movement (his fig.7) are compared with the estimates based on the present WinBury model in Table 4. Horstman's estimates are similar to the WinBury estimates for Blackstone-1, Thangoo-1A and Yulleroo-1, but are significantly higher for all other wells. Possible errors in Horstman's estimates arise from; i) unreliable vitrinite reflectance data (see Maturation section below), ii) "questionable vitrinite reflectance curves" for projection to the surface, and iii) the use of present-day rather than palaeo-geothermal gradients. In contrast, estimates based on the present WinBury models are preferentially based on apparently more consistent and reliable CAI maturity data (see Maturation section below), substantially revised sequence stratigraphic and biostratigraphic interpretations of seismic and well data, and estimates of palaeo-heatflows that are significantly different to present-day heatflows (eg., heatflows at 200 Ma, the beginning of the Fitzroy Transpression, are modelled to be 15-20% higher than present day heatflows).

In order to more objectively compare Horstman's and the present WinBury estimates of erosion during the Fitzroy Movement, Horstman's estimates were entered into the WinBury models for the wells that he concluded have a much thicker eroded section (Kidson-1, Matches Springs-1, Meda-1, Mimosa-1, Sahara-1, Willara-1 and Wilson Cliffs-1). In all cases the 'match' between predicted versus observed maturity trends was significantly decreased, and the altered tectonic subsidence plot commonly assumed a convex-upward pattern for the Permian-Triassic section, a pattern that is more typical of a foreland basin setting. On this basis, the lower WinBury estimates of the amount of erosion during the Fitzroy Movement are considered more reasonable than those suggested by Horstman.

Estimates of the amount of uplift during the Fitzroy Transpression have also been made by Arne et al. (1989) on the basis of combining fission track data from Grevillea-1 (located on the Margaret River Embayment) and Kennedia-1 (located 2.5 km east of Mimosa-1 on the outer margin of the Laurel Downs Terrace). Their data suggests that prior to uplift commencing at *ca* 200 Ma, palaeo-temperatures were about 50°C higher than those currently prevailing. Assuming a geothermal gradient similar to the present value of 30°C/km, they concluded that approximately 1500 m of uplift occurred during the Fitzroy Movement. This estimate is somewhat greater than the estimate of 1200 m for Mimosa-1 suggested by Horstman (1984), and is significantly greater than the 500 m uplift proposed in the present WinBury model. If Arne et al's higher value is entered into the present WinBury model for Mimosa-1, the 'match' between predicted versus observed maturity trends is decreased further still than that based on Horstman's estimate. Thus again the present lower estimate of about 500 m uplift during the Fitzroy Movement at Mimosa-1 is preferred. Possible errors in Arne et al's estimate are; i) combining fission track data from two wells, that are over 100 km apart and within different structural provinces, to construct a composite temperature versus fission track age profile, and ii) their use of present-day, rather than higher palaeo-, geothermal gradients to estimate the amount of erosion.

Jurassic-Cretaceous Subsidence Phase

A phase of mild Jurassic-Cretaceous tectonic subsidence (100-200 m) is apparent in wells in the Willara Sub-basin, Broome Platform, and western portions of the Dampier Terrace (East Crab Creek-1) and Fitzroy Trough (Yulleroo-1); elsewhere sediments of this age are either very thin (less than 200 m) or absent (see Appendix C). Much of the Jurassic sediments were derived from areas uplifted during the preceding Fitzroy Transpression, and subsidence is thought to be related to thermal cooling following the onset of sea-floor spreading in the Argo Abyssal Plain at *ca* 155 Ma (see AGSO North West Shelf Study Group, 1994).

The extent of Jurassic-Cretaceous subsidence is generally poorly constrained by maturity data; maturity data for these sediments is restricted to 5 wells (Aquila-1, East Crab Creek-1, Hedonia-1, Hilltop-1 and Willara-1), and appears to be internally consistent and reliable in only Willara-1 and Hilltop-1 (see observed maturity plots in Appendix A).

WELL	UPLIFT & EROSION Horstman (1984)	UPLIFT & EROSION This study
Blackstone-1	300	250
Kidson-1	2500	400
Matches Spring-1	1900+	650
Meda-1	900	400
Mimosa-1	1200	500
Sahara-1	1200	400
Thangoo-1A	1400	1200
Willara-1	1500+	650
Wilson Cliffs-1	1600	250
Yulleroo-1	2900+	2600

Table 4. Comparison of the amount of uplift and erosion during the Fitzroy Transpression estimated by Horstman (1984) and this study.

Results - Maturation History

There are two critical factors in modelling the maturation history of the wells: 1) the selection of reliable (and rejection of unreliable) maturity parameters, and 2) the establishment of palaeo-heatflow curves.

Reliability of Maturity Parameters

Plots of observed maturity parameters (Ro, TAI, SCI, Tmax and CAI) versus depth for each well (Appendix A) commonly indicate that some parameters are internally inconsistent (that is, they do not show an expected progressive increase in maturity down the well), or that the maturity indicated by one parameter contradicts that indicated by another parameter(s). The most obviously consistent maturity parameter in all wells is CAI; these values were converted to an equivalent Ro value based on the data presented in Epstein et al. (1977, fig. 11). CAI maturity data was thus preferentially selected and 'honoured' in all stages of maturation modelling. Wherever possible, other internally consistent maturity data was also 'honoured' provided it did not contradict available CAI data, or when CAI data was not available.

Vitrinite Reflectance: The level of maturity indicated by Ro values may be subject to several sources of error, including oxidation (either in the laboratory or in nature) and oil staining of the organic matter, and contamination by cavings. More significantly, 'vitrinite' reflectance values determined on pre-Silurian kerogens derived from either chitinozoans, acritarchs, graptolites or marine algae (eg., *G.prisca*), cannot be equated with Ro determinations on younger woody vitrinite. Based on organic petrology studies and 'vitrinite' reflectance measurements of Ordovician cores from Santalum-1A and Acacia-1, Foster et al., (1986) concluded that Ro measurements were of limited application for maturity evaluation of the Ordovician sediments.

In the present study Ro values show an apparent wide range of reliability (see observed maturity plots in Appendix A), ranging from: highly variable (Matches Springs-1, Mimosa-1), internally inconsistent (Blackstone-1, East Crab Creek-1, Sahara-1), reasonably consistent with CAI data (Aquila-1, Edgar Range-1, Meda-1, Thangoo-1A, Willara-1), and inconsistent with CAI data (Wilson Cliffs-1). The Ro values for the Permian section in Willara-1 are interesting in that they show a rapidly increasing 'maturity pulse' within the Grant Group, whereas maturity values in the deeper Ordovician section show a lower, and more gradual maturity trend. This 'maturity pulse' may be caused by hydrothermal fluids emanating from the nearby Admiral Bay Fault Zone, such that fluid-migration preferentially occurred within permeable sandstones of the Grant Group; in this case, this 'maturity pulse' may have important implications for the timing of mineralization and/or hydrocarbon migration in this area (see McCracken, 1994).

Spore Colour Index and Thermal Alteration Index: SCI and TAI values (based on spore discolouration) are fairly subjective, but are routinely equated with Ro values. However there are no spores in pre-Silurian sediments, and colour changes in non-spore material (chitinozoans and acritarchs) cannot be equated with spore colours. In some wells SCI or TAI data is apparently reliable (eg., Calamia-1) or reasonably consistent with CAI data (eg., Edgar Range-1, Matches Springs-1, Thangoo-1A, Wilson Cliffs-1), but in other wells it is either non-specific (eg., Aquila-1) or contradicts CAI data (eg., Hedonia-1). In some wells (Edgar Range-1, Matches Spring-1) TAI and Ro data are inconsistent for Permian strata, whilst an apparent TAI maturity reversal is noted in Yulleroo-1.

Tmax: Tmax, the temperature at which maximum generation of pyrolysate (S_2) occurs, is widely used as an indicator of maturity, and is commonly plotted against the Hydrogen Index (HI) in a standard Van Krevelan diagram that purports to identify the generic type and origin of the organic matter (eg., alga, wood etc.). This parameter might be expected to systematically increase with depth down a well, whereas this is seldom the case for the majority of wells studied here. Similarly, Foster et al. (1986) noted that there is no correlation of Tmax and depth for the Ordovician section in Acacia-1 and Solanum-1. In contrast, they found that Tmax correlated directly with the percentage of alga present in the sediments, and is thus an unreliable indicator of maturity.

Although Tmax data is reasonably consistent with some other maturity parameters in some wells, it was not used to assist maturation modelling in this study.

Conodont Colour Alteration: CAI data for the Ordovician and Devonian successions was taken from the recent compilations by Nicoll (1993) and (Klapper & Nicoll, unpublished), respectively. In some wells this data was supplemented by CAI data in unpublished company reports. Although this parameter is semi-qualitative (based on a visual comparison of conodont colour with a standard colour index), it was considered to be the most reliable measure of maturity in all wells. For a discussion of this technique see Epstein et al., (1977); for previous application of CAI data in the Canning Basin, see Nicoll & Gorter (1984a, b).

Based on the approach outlined above and the following discussion on palaeo-heatflow curves, a reasonable match between observed and modelled maturity parameters was achieved for all wells except Hilltop-1 and Hedonia-1 (see Appendix A). Available 'vitrinite' reflectance and TAI data in these wells suggests a major increase in maturity at the base Grant unconformity. This apparent Ro and TAI maturity offset can be 'matched' if about 1800 m erosion of the Ordovician-Silurian Megasequence is modelled during the Prices Creek Movement. However this scenario is rejected for several reasons:

- 1) Regional geological, well and seismic data (see Bently, 1984; Karajas & Kernick, 1984; Romine et al., 1994, figs 9, 12; Zeilinger et al. in prep) indicate that during the Nita-Carribuddy time the northern Broome Platform (encompassing the Hilltop-Hedonia-Golldwyer-Thangoo-Aquila wells area) was a structural high characterised by shallow marine to emergent depositional conditions, and that the B1-B2 Supersequences probably thinned across this high. Thus a maximum of about 700-800 m of eroded upper A2, B1 and B2 Supersequences is indicated in this area; erosion of 1800 m of this section implies rapid local thickening of the Carribuddy salt across this structural high, for which there is no geological evidence.

- 2) CAI maturity data in Hedonia-1 (see Appendix A) contradicts the Ro and TAI data, and is consistent with a moderate amount of erosion (about 800 m) during the Prices Creek Movement.
- 3) CAI, Ro and TAI maturity data in the nearby Aquila-1 and Thangoo-1a wells are also consistent with a moderate amount of erosion (500-700 m) during the Prices Creek Movement.
- 4) Horstman (1988) concluded that the maturity data in Hilltop-1 "defies a confident interpretation", and based on data from nearby wells also opted for little or no maturity offset at the base Grant unconformity.

Palaeo-Heatflow Curves

The establishment of a palaeo-heatflow curve for each well was a reiterative process based initially on present-day heatflows, and successive attempts to match observed and predicted maturity data. It quickly became obvious that elevated palaeo-heatflows were required to achieve a match with observed maturity data, especially for the older Ordovician-Silurian Megasequence. This conclusion is supported by the recognition of unusually condensed CAI intervals in the Ordovician succession compared with those in the Devonian-Carboniferous section (Nicoll & Gorter, 1984a, b; Taylor, 1992).

Two separate heating episodes have been modelled in the basin, coinciding with the Samphire Marsh and Pillara Extensional Events as identified on the tectonic subsidence plots. The peak values of the heating episodes were compared to present day heatflows in comparable tectonic settings (eg. rifts, post-rift sag basins), and the shape of the heating and subsequent cool-down curves were modelled from theoretical heatflow curves corresponding to different amounts of crustal extension (see Deighton, 1992; WinBury on-line help plots). For this purpose the wells were grouped into structural provinces of similar structural and depositional history, namely: Broome Platform, Dampier-Barbwire Terrace, Fitzroy Trough, Kidson Sub-basin, Lennard Shelf, and Willara Sub-basin. Wells within each structural province were assumed to have a similar heatflow history, and modelled heatflow curves were validated against observed maturity data in each well, and modified as necessary to achieve a best match between observed and modelled maturity trends.

Attempts to similarly model a heating event related to the younger Point Moody Extension resulted in a poor match of observed versus modelled maturity plots. It is concluded that any heating episode related to this phase was far removed from the area of study; this subsidence phase probably largely results from lower crustal extension beneath the Northwest Shelf (see AGSO North West Shelf Study Group, 1994).

On the basis of fission track analysis, Gleadow & Duddy (1984) documented a Late Permian (*ca* 255-275 Ma) thermal event associated with the emplacement of dolerite sills in the northwest portion of the Canning Basin. This event produced elevated temperatures over a considerable area, extending from Perindi-1 and Fraser River-1 to Kambara-1, and diminishing to Wamac-1 and Curringa-1. These intrusives have been mapped on seismic and magnetic data in the northwest onshore and nearshore portions of the Canning Basin, and had a profound effect on the maturity of source material in that region (Reeckmann & Mebberson, 1984). However, no thermal effect is evident at Barlee-1 (Gleadow & Duddy, 1984; approx. 20 km west of Yulleroo-1) where 2 small dolerite intrusions are intersected. Attempts to model this heating event in Yulleroo-1 and nearby wells on the Dampier Terrace and Broome Platform, resulted in a poorer match of observed and modelled maturity data. It is possible, however, that an apparent reversal of TAI maturity data within the Anderson Formation in Yulleroo-1 could reflect a minor thermal pulse related to emplacement of nearby local intrusions.

A present-day heatflow map based on the 30 project wells is presented as Figure 3. The heatflow has a maximum value of 80-85 mW m⁻² in the northern Broome Platform (Aquila-1, Hedonia-1), decreasing to 65-75 mW m⁻² in the southern Broome Platform, Willara Sub-basin, Dampier-Barbwire Terraces and Lennard Shelf, and 50-60 mW m⁻² in the Fitzroy Trough and southern Kidson Sub-basin.

The modelled heatflows for each well within the six structural provinces are presented in Appendix D. The initial heating event associated with the Early Ordovician Samphire Marsh Extension has been

modelled in all wells, whereas that associated with the Givetian Pillara Extension is restricted to wells in the Fitzroy Trough and flanking shelves and terraces (this younger heating event does not appear to have affected maturity levels in the Willara and Kidson Sub-basins, or the Broome Platform).

During the Samphire Marsh Extension, modelled heatflows peaked at 110-120 mW m⁻² in the Broome Arch and Willara Sub-basin wells, and 105-110 mW m⁻² in Blackstone-1 and Mimosa-1 (Appendix D, Fig. 7). During the subsequent Pillara Extension, modelled heatflows peaked at 100-110 mW m⁻² in the Broome Arch, Willara Sub-basin and Lennard Shelf wells (Appendix D, Fig. 8). These heatflows are considerably higher than present-day heatflows in the Canning Basin (Fig. 3), and slightly exceed heatflows typical of modern rift settings (70-110 mW m⁻², average 80 mW m⁻²; Allen & Allen, 1990).

Source Bed Maturation Models

Kennard et al. (1994) identified 5 major source units in the basin:

- Lower part of Supersequence A1 (upper Nambett and lower Willara Formations),
- Lower part of Supersequence A2 (lower Goldwyer Formation),
- Upper part of Supersequence A2 (upper Goldwyer Formation),
- Lower part of Supersequence D (lower Pillara Cylce, incorporating the Gogo Formation, Mellinjerie Formation, Mirbelia Dolomite, and Boab Sandstone), and
- Lower part of Supersequence F (lower Laurel Shale).

In addition, 'algal coals' within the lower portion of Supersequence B1 (Bongabinni Formation) have considerable local source potential (Kennard et al., 1994; McCracken, 1994).

The nature, quality and distribution of these source units are discussed in detail in Kennard et al. (1994), together with brief comments on their maturation level and history. Since that compilation was undertaken, additional geochemical studies have shown that the apparent source richness of the lower A2 (lower Goldwyer Formation) interval in Kidson-1 and Wilson Cliffs-1, and the lower and upper A2 (lower and upper Goldwyer Formation) interval in McLarty-1, are due to contamination of cutting samples from diesel added to the drilling mud (see Appendix F).

Modelled hydrocarbon generation plots for the source beds within each well (including those below TD) are presented in Appendix E. The modelled ages of these source beds are 478 Ma (lower A1), 467 Ma (lower A2), 463 Ma (upper A2), 460 Ma (lower B1 algal coal in Leo-1), 373 Ma (lower D), and 351 Ma (Lower F). Modelled maturation (temperature) maps for each source bed are also presented in Appendix E. These maturation plots apply to the times of major structuring in the basin, namely at the beginning of the Prices Creek Movement (*ca* 410 Ma), the Meda Transpression (*ca* 326 Ma) and the Fitzroy Transpression (*ca* 200 Ma). Note that these maturation plots are based on the modelled age of each source bed, and that they thus include data from all wells where strata of that age occur, irrespective of whether that strata is a source bed. These maturity plots should thus be compared with the source-rock distribution maps presented in Kennard et al. (1994).

Additional geochemical studies of the A1 and A2 source units were undertaken to assess the effects of mineral matrix and original kerogen type on apparent source richness (see Appendix F) which includes plots of S₂ versus TOC, Depth versus Production Index and Depth versus Tmax for selected wells). Kerogen kinetic data used for modelling the source units are presented in Appendix G.

Ordovician Source Rocks

A detailed assessment of the source potential of the Ordovician sediments of the Canning Basin is presented by Taylor (1992). Taylor notes that for source rocks dominated by Type 1 kerogens, it is difficult to distinguish variations in original source quality from maturation induced changes, and that standard Rock-Eval techniques rarely yield unequivocal data for an estimate of either original source richness or the degree of maturity reached. Taylor approached this problem in two ways. Firstly, he applied a method presented by Cooles et al. (1986) whereby the degree of transformation of kerogen

to hydrocarbon and the amount of oil expelled is estimated by comparing partially matured source rocks to immature equivalents in other parts of the basin, or other basins. In this case Taylor assumed that the Nambett and lower Goldwyer sources originally contained similar kerogen types to those in the immature upper Goldwyer Formation, and the variously mature to immature Horn Valley Siltstone in the Amadeus Basin. Secondly, he used CAI data as an independent measure of maturity to cross-check the Rock-Eval data. However, as noted by Taylor, there are two major limitations with this technique:

- The use of Hydrogen Index (HI) values determined from standard Rock-Eval pyrolysis to determine the Transformation Ratio (TR) takes no account of 'mineral matrix effects', that is, the suppression of Rock-Eval pyrolysis yields due to the absorption of heavier hydrocarbons on active mineral sites. Mineral matrix effects can be readily determined from plots of S_2 versus TOC, and, as shown in Appendix F, virtually all of the available Rock-Eval data of the Ordovician source rocks have significantly suppressed S_2 , and hence HI, values. Thus calculations of TR based on the uncorrected HI values will be erroneously high.
- A second reservation results from the uncertainty of the kerogen type represented in some of the samples. For example, R. Summons and C. Boreham pointed out (Taylor, 1992, p. 9) that if these samples contain Type II as well as Type I kerogens, or a significant proportion of oxidised Type I kerogens, then Taylor's estimates of the transformation ratios will again be too high.

Taylor used the data from the upper Goldwyer Formation in Solanum-1, Santalum-1 and Kunzea-1 (see Foster et al., 1986), to define the standard immature source relationships for all Ordovician source intervals in the basin, including the lower Goldwyer and Nambett source intervals. However when available source rock data is reviewed in the light of the current WinBury maturation models, it is immediately apparent that different maturity levels of a uniform source facies cannot adequately explain the observed variation in Rock-Eval data of the Ordovician source intervals. For example, WinBury maturation models of the lower Goldwyer source interval (Appendix E-2) and for several wells containing the A1 Willara-Nambett source interval (Appendix E-1) suggest that they have not been sufficiently buried to mature *G. prisca*-dominated kerogen which requires temperatures of about 140°C for maturation. In contrast, Taylor (1992) argued that the observed lower HI values of the lower Goldwyer and Nambett samples in these wells results from partial maturation of a precursor *G. prisca*-dominated kerogen, and used the present HI values to estimate the degree of transformation of kerogen to hydrocarbons.

WinBury maturation models of Acacia-2 (see Appendix E-2, Fig. 1, and Appendix E-3, Fig. 1), and by inference the shallower and thinner section intersected in the nearby Solanum-1 well, suggest that both the lower and upper Goldwyer units have not experienced temperatures in excess of 80°C, and that irrespective of the type of kerogen, these intervals are immature. These Winbury estimates of maturity are significantly different to those calculated by Taylor (1992; table 4), namely; TR = 0.65-0.68 for the upper Goldwyer Formation in Acacia-1, and TR = 0.85 for the lower Goldwyer Formation in Solanum-1.

In order to more objectively evaluate the original source richness and maturity estimates for the lower Goldwyer Formation in these wells, whole rock kerogen kinetic analyses were obtained for samples of both the upper and lower Goldwyer Formation in Solanum-1. This data is presented in Appendix F and clearly indicates that a uniform source facies cannot be assumed for the upper and lower Goldwyer source intervals. The present lower generative potential of the lower Goldwyer interval in this well is apparently due solely to a different original kerogen facies, not to higher maturity and partial expulsion from a *G. prisca*-dominated kerogen similar to that within the Upper Goldwyer interval.

Kinetics data was also obtained for a kerogen extract from the 'algal coals' in the Bongabinni Formation (Appendix F). Again this data indicates significantly different kerogen type to that in the upper Goldwyer Formation.

This study suggests significant spatial and temporal variations in original source richness and kerogen types within the four recognised Ordovician source intervals. Accurate modelling of the maturation history of these intervals can only be achieved if these variations are understood. The following

discussions are based on a limited understanding of original source variations; greater understanding can only be achieved by obtaining kerogen kinetic data for each source interval from a variety of areas in the basin

Lower Supersequence A1 (upper Nambeet - lower Willara)

Organic-rich marine calcareous shales and siltstones within Supersequence A1 (upper Nambeet and lower Willara formations) occur on the northern Broome Platform, the Dampier-Jurgurra-Barbwire Terraces, and locally on the southern margin of the Lennard Shelf (Tappers Inlet-1, Gap Creek-1; Kennard et al., 1994, fig.4). These source facies probably also occur at depth below the northern portion of the Fitzroy Trough, but appear to be non-source units in the Kidson and Willara Sub-basins. Oil believed to have been generated from this interval has been recovered in Tappers Inlet-1, and minor oil shows probably generated from this interval have been recorded in Acacia-1, 2, Dodonea-1, Edgar Range-1, Goldwyer-1, Hedonia-1, Leo-1, Pictor-1, Tappers Inlet-1, Thangoo-1A, 2, and Willara-1.

This source interval has been modelled in the following wells: Acacia-2, Aquila-1, Blackstone-1 (sub TD), Dodonea-1, East Crab Creek-1 (sub TD), Edgar Range-1, Hedonia-1, Hilltop-1, Matches Springs-1, Mimosa-1 (sub TD), Pegasus-1, Pictor-1 and Thangoo-1A. Hydrocarbon generation plots for these wells are presented in Appendix E-1.

The original source richness and kinetic data for this source interval has yet to be determined. Taylor (1992) assumed a comparable kerogen type and richness to the immature *G. prisca*-dominated source rocks in the upper Goldwyer Formation; in the following discussion it is assumed that the Nambeet-Willara source interval is more comparable to the lower Goldwyer source interval, and hence its maturation history has been modelled using the kinetic data obtained from the lower Goldwyer Formation in Solanum-1 (see Appendix F and G). This kerogen type has a modelled genetic potential of 300 mg/gm TOC, and requires a temperature of about 120-125 °C for significant generation to commence. This kerogen is oil prone, and produces minor amounts of gas.

WinBury modelling suggests that the Nambeet-Willara source interval is marginally mature in Acacia-2, Aquila-1, Dodonea-1, Hedonia-1, Hilltop-1, Pegasus-1, Pictor-1 and Thangoo-1A, and over mature in Blackstone-1 (sub TD), East Crab Creek-1 (sub TD), Edgar Range-1, Matches Springs-1 and Mimosa-1 (sub TD) (see Appendix E-1).

In the immature well sections, the modelled maturity ($TR < 0.5$) and organic richness ($TOC = 1-2\%$, $HI = 300$) of this interval are insufficient to result in expulsion of hydrocarbons (Appendix E-1). In all these wells generation commenced during deposition of the Ordovician-Silurian Megasequence, and for those wells with a preserved Late Devonian section (Dodonea-1, Pegasus-1, Pictor-1), generation re-commenced during the Devonian-Early Carboniferous depositional cycle. Minor generation also occurred in the Triassic prior to the Fitzroy Transpression.

In Blackstone-1 and Mimosa-1, modelled generation and expulsion of oil and gas from the Nambeet-Willara interval (both sub TD) occurred during rapid subsidence and burial in the the Middle Ordovician, and its generative potential was exhausted at that time (Appendix E-1, Figs 3, 10). Generation and initial expulsion of oil also occurred during the Middle Ordovician at East Crab Creek-1 and Edgar Range-1, but in wells in this region the major phase of oil expulsion occurred during either the Late Devonian (East Crab Creek-1 and Matches Springs-1) or the Triassic (Edgar Range-1) (see Appendix E-1, Figs 5, 6, 9).

Maturity (temperature) maps for the Nambeet-Willara A1 source interval immediately prior to times of major basin structuring (410 Ma, 326 Ma and 200 Ma) and present day maturity (0 Ma) are also shown in Appendix E-1. In the half-grabens at the northern margin of the present Fitzroy Trough, northern Willara Sub-basin and central Kidson Sub-basin, the A1 interval passed through the oil generative window prior to the Prices Creek Movement (Appendix E-1, Fig. 14), and probably exhausted its generative potential by that time. On the Broome Platform and adjacent Dampier-Jurgurra Terraces, minor generation also commenced prior to this movement, but peak maturity occurred on the Dampier-Jurgurra Terraces in the Late Devonian - Early Carboniferous prior to the

Meda Transpression. On the Broome Platform generation re-commenced in the Triassic prior to the Fitzroy Transpression (Appendix E-1, Fig. 16), but as noted above, maturity and richness were probably insufficient for significant expulsion of oil to occur. The present-day maturity map (Appendix E-1, Fig. 17) indicates that this interval remains immature on the Broome Platform, but this map is a poor guide to the maturation history of this interval since peak maturity was attained during earlier depositional cycles in all areas.

On the basis of this analysis, significant hydrocarbon generation and expulsion from the Nambeet-Willara A1 source interval is probably limited to the Dampier-Jurgurra Terrace, outer Barbwire Terrace, and the northern portion of the Fitzroy Trough. Peak generation from the southern Terraces probably occurred during the Devonian - Early Carboniferous depositional cycle (that is, prior to the Meda Transpression), whereas peak generation from the Fitzroy Trough occurred in the Middle Ordovician prior to the Prices Creek Movement. In contrast to Taylor (1992), we conclude that it is unlikely that this interval generated large amounts of oil on the Broome Platform during the Ordovician-Silurian depositional cycle; initial generation with little or no expulsion probably occurred in this area at that time, and minor generation and expulsion subsequently occurred during the Triassic (that is, prior to the Fitzroy Transpression). Generally, however, this interval has remained immature on the Broome Platform throughout the history of the basin.

Lower Supersequence A2 (lower Goldwyer)

Organic-rich marine shales within the Lower Goldwyer Formation occur throughout the northern Broome Platform and the Dampier-Jurgurra-Barbwire Terraces. The apparent source richness of this interval in the Kidson sub-basin (Kidson-1, Wilson Cliffs-1 and McLarty-1; see Kennard et al., 1994), is due to contamination of cutting samples from diesel added to the drilling mud (see Appendix F). Minor oil shows believed to have been generated from this interval have been recorded in Acacia-1, 2, Aquila-1, Crystal Creek-1, Dodonea-1, Goldwyer-1, Hedonia-1, Leo-1, McLarty-1, Parda-1, Pictor-1, Thangoo-1A and Willara-1.

This source interval has been modelled in the following wells: Acacia-2, Aquila-1, Dodonea-1, East Crab Creek-1 (sub TD), Edgar Range-1, Hedonia-1, Hilltop-1, Matches Springs-1, Pictor-1 and Thangoo-1A. Hydrocarbon generation plots for these wells are presented in Appendix E-2

Maturation modelling of this source is based on kerogen kinetic data obtained from a whole rock sample from Solanum-1 (AGSO Sample 8052, see Appendix F). Rock-Eval data for this sample (Appendix F, Table 4) indicates a Hydrogen Index of 105 mg/gm TOC, yet a previous analysis of a sample from this depth by Foster et al. (1986) gave a HI of 215 mg/gm TOC. Variation in HI is probably in part due to mineral matrix effects, but mineral matrix effects are difficult to determine for the Lower Goldwyer interval in this well due to insufficient data to define a TOC vs S_2 trend-line (see Appendix F, Fig. 19b). On the basis of corrected HI values for mineral matrix effects for this source interval in other wells (Appendix F, Table 3), a genetic potential of 300 mg/gm TOC has been used to model the maturation of this interval. This kerogen type requires a temperature of about 120-125 °C for significant generation to commence; it is oil prone, and produces minor amounts of gas. No allowance has been made for spatial variations in source richness or kerogen kinetic data within this source interval.

WinBury modelling suggests that the lower Goldwyer source interval is marginally mature in Acacia-2, Aquila-1, Dodonea-1, Edgar Range-1, Hedonia-1, Hilltop-1, Pictor-1 and Thangoo-1A, mature in Matches Springs-1, and over mature in East Crab Creek-1 (sub TD) (see Appendix E-2).

In the marginally mature well sections, the modelled maturity ($TR < 0.14$) and organic richness ($TOC = 2-3\%$, $HI = 300$) of this interval are insufficient to result in expulsion of hydrocarbons (Appendix E-2). In all these wells generation commenced during deposition of the Ordovician-Silurian Megasequence. Minor generation with little or no expulsion also occurred during the Devonian-Early Carboniferous depositional cycle in Dodonea-1, and in the Triassic (that is, prior to the Fitzroy Transpression) in Aquila-1, Edgar Range-1, and Dodonea-1.

In Matches Springs-1 and East Crab Creek-1 (sub TD), generation also commenced during deposition of the Ordovician-Silurian Megasequence, but peak expulsion of oil did not commence until the Early Carboniferous (East Crab Creek-1; Appendix E-2, Fig. 4) or the Triassic (Matches Springs-1; Appendix E-2, Fig. 8).

Maturity (temperature) maps for the Lower Goldwyer source interval immediately prior to times of major basin structuring (410 Ma, 326 Ma and 200 Ma) and present day maturity (0 Ma) are also shown in Appendix E-2. Prior to the Prices Creek Movement (Appendix E-2, Fig. 11), only the half-grabens at the northern margin of the present Fitzroy Trough, northern Willara Sub-basin and central Kidson Sub-basin attained sufficient maturity for significant generation of hydrocarbons from the lower Goldwyer Formation, but this unit is not a source facies in these areas. In the Fitzroy Trough and Jurgurra Terrace, maturation of the lower Goldwyer source interval occurred during the Devonian - Early Carboniferous depositional cycle, prior to the Meda Transpression (Appendix E-2, Fig. 12). On the shallower Dampier Terrace, peak maturation appears to have commenced in the Triassic, prior to the Fitzroy Transpression (Appendix E-2, Fig. 13). Throughout the Barbwire Terrace and Broome Platform, this source interval was never buried sufficiently to generate significant amounts of hydrocarbons, and is currently immature (Appendix E-2, Fig. 14).

On the basis of this analysis, significant hydrocarbon generation and expulsion from the lower Goldwyer source interval is probably limited to the Dampier-Jurgurra Terrace, deeply buried portions of the outer Barbwire Shelf, and probably portions of the Fitzroy Trough. Peak generation from the Jurgurra Terrace probably occurred during the Devonian - Early Carboniferous depositional cycle (that is, prior to the Meda Transpression), whereas peak generation from the shallower Dampier Terrace probably occurred in the Triassic, prior to the Fitzroy Transpression. In contrast to Taylor (1992), we conclude that it is unlikely that this interval ever generated large amounts of oil on the Broome Platform. Minor generation with little or no expulsion probably occurred in deeper portions of the Barbwire Terrace during the Devonian - Early Carboniferous depositional cycle, and provided suitable source facies are present, significant generation may have occurred from the southern Fitzroy Trough at this time.

Upper Supersequence A2 (upper Goldwyer)

Very rich, oil-prone marine shales dominated by the alga *Gloeocapsamorpha prisca* occur within the Upper Goldwyer Formation on the Barbwire Terrace (Foster et al., 1986). This source interval has also been intersected in the eastern portion of the Dampier Terrace (Matches Springs-1, Crystal Creek-1); the previously reported occurrence on the eastern Broome Platform (McLarty-1, Kennard et al., 1994) is probably due to contamination of analysed samples with diesel added to the drilling mud (See Appendix F). Oils believed to have been generated from this interval have been recovered in Dodonea-1, Edgar Range-1, Great Sandy-1, Percival-1, Pictor-1 and Solanum-1, and minor oil shows generated from this interval occur in numerous wells.

This source interval has been modelled in the following wells: Acacia-2, Dodonea-1 and Matches Springs-1. Hydrocarbon generation plots for these wells are presented in Appendix E-3.

Maturation modelling of this source on the Barbwire Terrace (Acacia-2, Dodonea-1) is based on kerogen kinetic data obtained from Solanum-1 (AGSO No. 3599, genetic potential 849.4 mg/gm TOC, Boreham, unpublished data; see Appendix G). In both wells the source is presently immature, but reached a maximum burial temperature of about 120 °C during the early Carboniferous in Dodonea-1 (*G.prisca*-dominated source rocks require a temperature of approximately 135-140 °C for generation to commence). Thus this source will only be mature in more deeply buried portions of the Barbwire Shelf. This kerogen is oil prone, and produces negligible amounts of gas. Under optimum maturation conditions, Foster et al. (1986) conservatively estimated that on the Barbwire Terrace this source has the potential to generate 61×10^9 barrels of liquid hydrocarbons.

The upper Goldwyer source interval in Matches Springs-1 on the Dampier Terrace, has been modelled using 50% *G.prisca* and 50% Type IIB kerogen; this mixed organic material has a reduced genetic potential of 632 mg/gm TOC. This kerogen type was selected to match the HI value corrected

for mineral matrix effects of 517 mg/gm TOC (see Appendix F, Fig. 16a) with the WinBury modelled TR value of about 0.2 (Appendix E-3, Fig. 3); that is the transformation of organic material with an original genetic potential of 632 mg/gm TOC to material with a current genetic potential of 517 mg/gm TOC represents a transformation ratio of about 0.2. Broadly similar HI values are recorded in this source unit further to the west in Crystal Creek-1 which has a similar stratigraphic record and inferred burial/maturation history to Matches Springs-1 (see Appendix F, Table 3, although limited analyses preclude the accurate determination of mineral matrix effects). This limited data suggests a reduced generative potential of the upper Goldwyer source unit throughout the Dampier (and possibly the Jurgurra) Terrace. This interval has not been intersected in wells on the Jurgurra Terrace.

In Matches Springs-1, maturation of the upper Goldwyer source interval commenced in the Early Carboniferous, and continued in the Permian-Triassic, but on both occasions generation was insufficient to expell oil (Appendix E-3, Fig. 3). Subsequent burial has been insufficient for further generation/expulsion. With as little as 150 m extra burial during the Devonian-Early Carboniferous basin phase, however, WinBury modelling suggests that expulsion of oil from this source interval would have commenced in the Triassic. Thus on the Jurgurra Terrace where thicker Devonian-Early Carboniferous sections were deposited, this source interval is predicted to have generated and expelled liquid hydrocarbons.

Maturity (temperature) maps for the upper Goldwyer source interval immediately prior to times of major basin structuring (410 Ma, 326 Ma and 200 Ma) and present day maturity (0 Ma) are also shown in Appendix E-3. This source interval remained immature throughout the Ordovician-Silurian basin phase, and first matured in the Fitzroy Trough in the early stages of the Devonian - Early Carboniferous depositional cycle (Appendix E-3, Figs 4,5). On the Jurgurra Terrace it probably began to expell hydrocarbons in the later stages of this depositional cycle, and further expulsion occurred during the later stage of the Permian-Triassic depositional phase (Appendix E-3, Fig.6). Elsewhere the upper Goldwyer source interval is immature (Appendix E-3, Fig.7), except possibly in portions of the Barbwire Terrace deeper than that modelled in Dodonea-1 and Acacia-2. For example, although this interval is not a recognised source facies in Percival-1, the upper Goldwyer Formation attained temperatures sufficient for hydrocarbon maturation and expulsion in this area prior to the Fitzroy Transpression. The upper Goldwyer Formation is not a recognised source interval in the Kidson Basin, but WinBury models suggest that if this source occurs within the undrilled portions of the basin, it probably matured and began to expell hydrocarbons in the Triassic, prior to the Fitzroy Transpression (Appendix E-3, Fig.6).

On the basis of this analysis, significant hydrocarbon generation and expulsion from the upper Goldwyer source interval is probably limited to the Jurgurra Terrace, deeply buried portions of the Barbwire Terrace, and possibly portions of the Fitzroy Trough. Peak generation from the Fitzroy Trough probably occurred during the Devonian - Early Carboniferous depositional cycle (that is, prior to the Meda Transpression), whereas peak generation from the Jurgurra and Barbwire Terraces (and, if present, the Kidson sub-basin) probably occurred in the Triassic, prior to the Fitzroy Transpression.

Lower Supersequence B1 (Bongabinni Formation)

'Algal coals' in the Bongabinni Formation have been intersected in mineral and petroleum exploration wells in the Admiral Bay Fault Zone at the northern margin of the Willara Sub-basin (Kennard et al., 1994; McCracken, 1994). Kinetic data was obtained for a kerogen isolate from this unit (CRA Mineral Exploration hole DD 88559; Appendix F-1). This kerogen is an oil-prone Type I marine algae, has a genetic potential of about 400 mg/gm TOC, and requires a temperature of about 130 °C for generation to commence.

The Bongabinni source interval has only been modelled in the Leo-1 well (Appendix E-4, Fig. 1). This interval is immature, and modelling indicates that it requires burial of about 2000 m to commence to generate hydrocarbons in this area. Local maturation of this source by migrating hydrothermal fluids may explain the occurrence of numerous oil shows in this area, including the oil recovered in Leo-1 (AMDEL, 1988) and Great Sandy-1. If future studies extend the known

distribution of this source interval beyond the Admiral Bay Fault Zone, its maturation history can be estimated from Appendix E-4, Figs 2-5).

Lower Supersequence D (Gogo, Mellinjerie, Mirbelia & Boab)

This source unit is characterised by Givetian-Frasnian marine shales of the Gogo Formation, and time equivalent lagoon-sabkha facies of the Mellinjerie Formation, Mirbelia Dolomite and Boab Sandstone (Kennard et al., 1994). It occurs throughout the Fitzroy Trough and Gregory Sub-basin, but has only been intersected on the flanking Laurel Downs, Jurgurra and Barbwire Terraces. A single sample from the Mellinjerie Formation in Sahara-1 suggests that this source interval also occurs within parts of the Kidson Sub-basin. Hydrocarbons derived from this interval include the Blina Field, and recoveries/flows in Boronia-1, Ellendale-1, Janpam North-1, Meda-1 (gas only) and Mirbelia-1.

The lower Supersequence D source rocks are characterised by a significant algal component, and have been modelled with the default WinBury Type IIB kerogen which has a genetic potential of 415 mg/gm TOC. This type of kerogen is oil prone, but also produces significant amounts of gas, and requires a temperature of about 100 °C for generation to commence. This source interval has been modelled in the following wells: Blina-1, Dodonea-1, Matches Springs-1, Mimosa-1, Myroodah-1 (below TD), Percival-1, Sahara-1, and Yulleroo-1 (below TD). Hydrocarbon generation plots for these wells are presented in Appendix E-5.

This source interval is immature in Dodonea-1, Matches Springs-1 and Sahara-1, mature in Percival-1, mature to overmature in Blina-1, and overmature in Mimosa-1 and beneath Myroodah-1 and Yulleroo-1.

In Percival-1, hydrocarbon generation and expulsion of oil and gas from the D source interval occurred in the Permian-Triassic (TR = 0.7), and subsequent burial has been insufficient for further generation/expulsion (Appendix E-5, Fig. 7). A similar scenario is predicted for the outer, deeply buried, portions of the Barbwire Terrace, and for the Jurgurra Terrace.

In Blina-1, the upper portion of Supersequence D is marginally mature to mature (ranging from TR = 0.3 at the top of Supersequence D to TR = 0.75 at TD), whereas the richer source interval in the lower portion of Supersequence D (modelled at about 1800 m below TD) is overmature and exhausted its generative potential during the Late Devonian (Appendix E-5, Figs 1, 2). This modelling thus suggests considerable oil and minor gas expulsion from the deeply buried portion of Supersequence D prior to the Meda Transpression, and moderate generation and expulsion from the upper portion of Supersequence D after this movement, but prior to the Fitzroy Transpression.

In Mimosa-1, and throughout the Fitzroy Trough (eg. sub TD at Myroodah-1, Yulleroo-1), all source intervals within Supersequence D exhausted their oil and gas generative potential during the Late Devonian (Appendix E-5, Figs 5, 6, 9).

Maturity (temperature) maps for the lower D source interval immediately prior to times of major basin structuring (326 Ma and 200 Ma) and present day maturity (0 Ma) are also shown in Appendix E-5. In the Fitzroy Trough this interval passed through the oil generative window in the Late Devonian - Early Carboniferous, and considerable generation probably occurred on the Laurel Downs and Jurgurra Terraces at this time (Appendix E-5, Fig. 10). The major phase of generation from this interval on the Lennard Shelf and Jurgurra-Dampier-Barbwire Terraces, however, occurred during the Permian-Triassic (Appendix E-5, Fig. 11). Little or no generation has occurred in these areas since that event.

On the basis of this analysis, significant oil (and minor gas) generation and expulsion from the lower D source interval occurred throughout the Fitzroy Trough in the Late Devonian - Early Carboniferous, prior to the Meda Transpression. Significant generation also occurred on the Laurel Downs and Jurgurra Terraces at this time, and again during the Permian-Triassic prior to the Fitzroy Transpression. Peak generation on the Lennard Shelf and Dampier-Barbwire Terraces also occurred during the Permian-Triassic.

Lower Supersequence F (lower Laurel Formation)

This source interval comprises marine shales of the lower Laurel Formation, and occurs throughout the Fitzroy Trough, Gregory Sub-basin and deeper portions of the Laurel Downs, Jurgurra, and possibly the Betty, Terraces. Source rock data indicates that these organic-rich facies are dominated by marine organic material with a large but variable terrestrial component, and that oils derived from this interval (eg. Lloyd-1, West Kora-1, Sundown-1) are broadly similar to derived those from the lower D source interval (Alexander et al., 1985; R. Summons, AGSO, personal communication, April 1994). The gas discovery in the Anderson Formation at Point Torment-1, the largest gas flow yet recorded in the basin, is probably generated from either the Laurel or the Anderson Formations (Kennard et al., 1994).

The lower Laurel source interval has been modelled with 50% Type IIB and 50% Type IIIB kerogen; this mixed organic material has a reduced genetic potential of 270.6 mg/gm TOC, and is more gas-prone than older source intervals. This type of kerogen also requires a temperature of about 100 °C for generation to commence. It has been modelled in the following wells; Blackstone-1, Blina-1, Meda-1, Myroodah-1 (sub TD) and Yulleroo-1. Hydrocarbon generation plots for these wells are presented in Appendix E-6

This interval is immature in Blackstone-1 and Blina-1, marginal mature in Meda-1, and overmature in Myroodah-1 and Yulleroo-1. Maturation commenced in Meda-1 in the Triassic, but was probably insufficient for expulsion to occur; subsequent burial was insufficient for further generation/expulsion (Appendix E-6, Fig. 3).

In Myroodah-1 and Yulleroo-1, the lower Laurel source interval passed rapidly through the hydrocarbon generative window during the early Carboniferous (Appendix E-6, Figs 4, 5). Considerable quantities of oil and moderate amounts of gas would have been expelled at this time. The Myroodah-1 and Yulleroo-1 wells occur on the crest of wrench anticlines within the Fitzroy Trough. Well data is not available for these synclinal structures in the Fitzroy Trough, and their maturation history has yet to be determined.

Maturity (temperature) maps for the lower F source interval immediately prior to times of major basin structuring (326 Ma and 200 Ma) and present day maturity (0 Ma) are also shown in Appendix E-6. The deep southern and central (anticlinal) portions of the Fitzroy Trough passed through the hydrocarbon generative window prior to the Meda Transpression, and maturation of the lower F source on the Jurgurra Terrace may have commenced at about this time (Appendix E-6, Fig. 6). The shallow northern portion of the Fitzroy Trough and the Jurgurra Terrace probable produced the bulk of their hydrocarbons immediately prior to the Fitzroy Movement, and the outer margin of the Lennard Shelf entered the oil window at this time (Appendix E-6, Fig. 7). In all modelled wells, subsequent burial after the Fitzroy Transpression was apparently insufficient for further generation/expulsion (Appendix E-6, Fig. 8).

On the basis of this analysis, significant oil and gas generation from the lower Laurel source interval occurred in the southern and central (anticlinal) Fitzroy Trough during the Early Carboniferous, prior to the Meda Transpression, and generation probably also commenced on the Jurgurra Terrace at that time. Peak generation from the northern Fitzroy Trough and Jurgurra Terrace possibly occurred immediately prior to the Fitzroy Transpression. Thus the large anticlinal structures formed during the Fitzroy Transpression are unlikely to be charged by this source; this conclusion is supported by the lack of exploration success to date for these traps, but assumes a similar maturation history for the anticlinal and synclinal structures in this area.

Conclusion and Further Studies

Geohistory analysis of the multiphase Canning Basin succession is an extremely complex and reiterative task, and requires a thorough regional understanding of the stratigraphic and tectonic development of the basin, and of the evolution of the basin's petroleum systems. Recent studies undertaken during AGSO's Canning Basin Project (?refs) have gone a long way to develop such an understanding, and have underpinned the present study.

Based on subsidence and maturation modelling of 30 wells in basin, the following data and conclusions have been presented:

- Subsidence/uplift models have been developed for the basin that provide a much improved understanding of the magnitude and extent of the major tectonic events that controlled the structural and stratigraphic evolution of the basin. These events (Samphire Marsh Extension, Prices Creek Movement, Pillara Extension, Meda Transpression, Point Moody Extension and Fitzroy Transpression) resulted in three major subsidence-sag phases, each terminated by a major phase of uplift, and had a profound impact on the maturation history of the six identified source intervals.
- Palaeo-heatflow models have been developed for the basin that are consistent with palaeo-tectonic settings and observed maturity data.
- Significant spatial and temporal variations in original source richness and kerogen types are now recognised within the five identified Ordovician source intervals in the basin. The Willara-Nambeet (lower A1) and lower Goldwyer (lower A2) source intervals probably had significantly less generative potential than the rich, oil-prone, *G. prisca*-dominated Upper Goldwyer (upper A2) source interval. Thus Taylor's (1992) conclusion "that if the source beds within both the Nambeet Formation and the lower Goldwyer Formation were of comparable kerogen type and richness to the immature, *G. prisca*-dominated source rocks in the upper Goldwyer Formation, then they would have generated large amounts of oil during the Ordovician-Silurian depositional cycle" is rejected. Accurate modelling of the maturation history of these intervals can only be achieved if these variations are understood.
- Hydrocarbon generation and expulsion from the Nambeet-Willara (lower A1) source interval is probably limited to the Dampier-Jurgurra Terrace, outer Barbwire Terrace, and the northern portion of the Fitzroy Trough. Peak generation from these terraces probably occurred during the Devonian - Early Carboniferous depositional cycle (prior to the Meda Transpression), whereas peak generation from the Fitzroy Trough occurred in the Middle Ordovician (prior to the Prices Creek Movement). It is unlikely that this interval generated large amounts of oil on the Broome Platform either during the Ordovician-Silurian depositional cycle, or during subsequent depositional cycles.
- Hydrocarbon generation and expulsion from the lower Goldwyer (lower A2) source interval is probably limited to the Dampier-Jurgurra Terrace, deeply buried portions of the outer Barbwire Terrace, and probably portions of the Fitzroy Trough. This source interval is not as extensive as previously mapped by Kennard et al. (1994); apparent source richness in samples from Kidson-1 and Wilson Cliffs-1 has been shown to be due to contamination of cutting samples with deisel added to the drilling mud. Peak generation from the Jurgurra Terrace probably occurred during the Devonian - Early Carboniferous depositional cycle (prior to the Meda Transpression), whereas peak generation from the shallower Dampier Terrace probably occurred in the Triassic (prior to the Fitzroy Transpression). Minor generation with little or no expulsion probably occurred in deeper portions of the Barbwire Terrace during the Devonian - Early Carboniferous depositional cycle, and provided suitable source facies are present, significant generation may have occurred from the southern Fitzroy Trough at this time. Again it is unlikely that this interval generated large amounts of oil on the Broome Platform either during the Ordovician-Silurian depositional cycle, or during subsequent depositional cycles.

- Hydrocarbon generation and expulsion from the upper Goldwyer (upper A2) source interval is probably limited to the Jurgurra Terrace, deeply buried portions of the Barbwire Terrace, and possibly portions of the Fitzroy Trough. Peak generation from the Fitzroy Trough probably occurred during the Devonian - Early Carboniferous depositional cycle (that is, prior to the Meda Transpression), whereas peak generation from the Jurgurra and Barbwire Terraces (and, if present, the Kidson sub-basin) probably occurred in the Triassic, prior to the Fitzroy Transpression.
- The Bongabinni (lower B1) source interval is immature in the Admiral Bay Fault Zone, and probably requires burial of about 2000 m to generate hydrocarbons in this area. Local maturation of this source by migrating hydrothermal fluids may explain the occurrence of numerous oil shows in this area, including the oil recovered in Leo-1 and Great Sandy-1.
- Oil (and minor gas) generation and expulsion from the lower Pillara-Gogo-Millinjerie-Mirbelia-Boab (lower D) source interval occurred throughout the Fitzroy Trough in the Late Devonian - Early Carboniferous, prior to the Meda Transpression. Significant generation also occurred on the Laurel Downs and Jurgurra Terraces at this time, and again during the Permian-Triassic prior to the Fitzroy Transpression. Peak generation on the Lennard Shelf and Dampier-Barbwire Terraces also occurred during the Permian-Triassic.
- Oil and gas generation from the lower Laurel (lower F) source interval occurred in the southern and central Fitzroy Trough during the Early Carboniferous, prior to the Meda Transpression, and generation probably also commenced on the Jurgurra Terrace at that time. Peak generation from the northern Fitzroy Trough and Jurgurra Terrace possibly occurred immediately prior to the Fitzroy Transpression. Thus the large anticlinal structures formed during the Fitzroy Transpression are unlikely to be charged by this source; this conclusion is supported by the lack of exploration success to date for these traps.
- All of the recognised source intervals (excluding the immature lower B1 Bongabinni interval) attained peak maturity and expelled the bulk of their generated hydrocarbons during major subsidence-sag phases in either the Ordovician - Silurian, Middle Devonian - Early Carboniferous, or Early Permian - Triassic; that is, prior to the Early Jurassic Fitzroy Transpression. Successful exploration for accumulation of hydrocarbons generated from these sources thus depends on suitable traps being in place at these times, and, perhaps more significantly, adequate seal integrity since that time.
- The only areas where significant hydrocarbon generation could have occurred since the the Early Jurassic Fitzroy Transpression are those that record a sufficiently thick Jurassic-Cretaceous depositional section such that any of the older source intervals attain temperatures that firstly, are sufficient for hydrocarbon generation, and secondly, are equal to or in excess of temperatures attained during earlier subsidence-sag phase(s). The first criterion is not met by any of the modelled wells, but the second criterion is met in the Leo-1 and Parda-1 wells where the Jurassic-Cretaceous section is thickest (> 550 m). Since the Jurassic-Cretaceous section progressively thickens offshore, then it is likely (provided the source intervals extend offshore) that hydrocarbon generation in these areas occurred after the Early Jurassic Fitzroy Transpression.

Maturation modelling has highlighted the need for more reliable maturity parameters throughout the Canning Basin succession, especially within the Ordovician-Silurian Megasequence. To date, Conodont Colour Alteration Index is the most reliable maturity parameter. We recommend that other maturity techniques, such as biomarker studies and fluorescent alteration of multiple macerals (FAMM, developed by CSIRO, see Wilkins et al., 1992a, b), should be applied to the Canning Basin succession. Additional fission track studies are also recommended to help constrain the amount of uplift and erosion associated with the Fitzroy Transpression.

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APPENDIX A: Well Data

This appendix comprises the following data for the 30 project wells:

- a) Horizon Data
- b) Matrix Lithology
- c) Observed Temperature Data (see legend on Present Factors Correlation)
- d) Present Factors Correlation
- e) Observed Maturity Data (see legend on Observed versus computed Maturity Plot)
- f) Geohistory Plot
- g) Heatflow & Tectonic Subsidence Plot
- h) Observed versus Computed Maturity Plot

The wells are numbered and listed in alphabetical order:

Acacia-2	Figure 1
Aquila-1	Figure 2
Blackstone-1	Figure 3
Blina-1	Figure 4
Brooke-1	Figure 5
Calamia-1	Figure 6
Dodonea-1	Figure 7
East Crab Ck-1	Figure 8
Edgar Range-1	Figure 9
Frankenstein-1	Figure 10
Hedonia-1	Figure 11
Hilltop-1	Figure 12
Kidson-1	Figure 13
Langoora-1	Figure 14
Leo-1	Figure 15
Matches Spring-1	Figure 16
McLarty-1	Figure 17
Meda-1	Figure 18
Mimosa-1	Figure 19
Myroodah-1	Figure 20
Parda-1	Figure 21
Pegasus-1	Figure 22
Percival-1	Figure 23
Pictor-1	Figure 24
Sahara-1	Figure 25
Thangoo-1A	Figure 26
Vela-1	Figure 27
Willara-1	Figure 28
Wilson Cliffs-1	Figure 29
Yulleroo-1	Figure 30

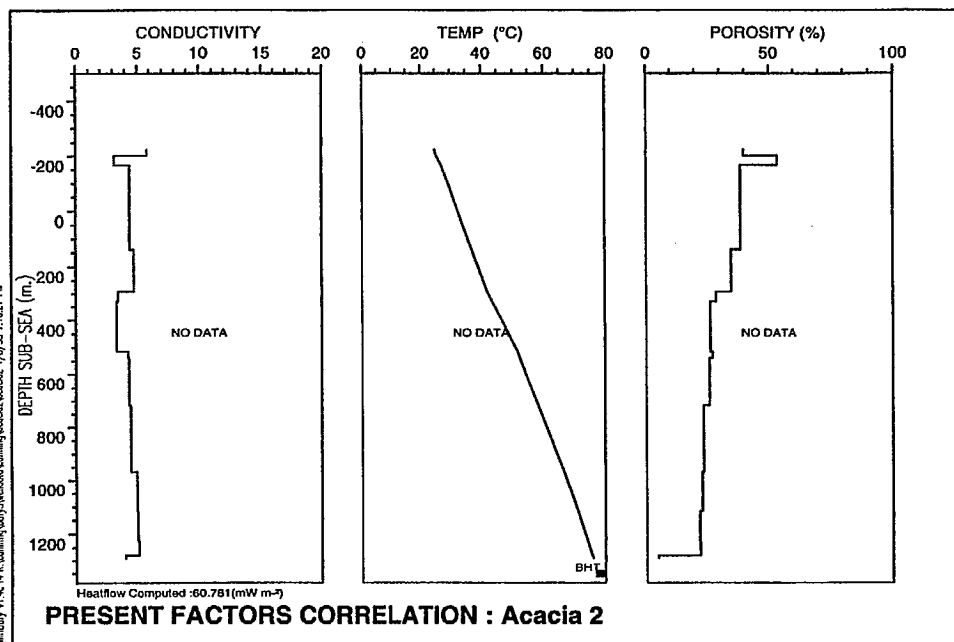
Each Table/Plot is referred to by a Figure number and Letter; for example, the Observed Temperature Data (c) for Edgar Range (Well number 9) is referred to as Figure 9c.

	Stratigraphic Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum WtdPth	Maximum WtdPth	Modelled WtdPth	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	Quaternary	N	0.00	0.00	-223.00	-223.00	-223.00	25.00	0.00			
2	Hiatus	H	22.00	2.00	-200.00	0.00	-142.77	25.00	0.09			
3	?K	N	22.00	145.00	-20.00	0.00	-20.00	20.00	8.44			
4	FITZROY	E	56.00	180.00	-20.00	20.00	15.00	15.00	11.31			
5	Hiatus 2	E	(400.00)	200.00	-10.00	60.00	26.41	15.00	13.04			
6	Upper H-I	E	(300.00)	270.00	0.00	80.00	36.26	10.00	20.58			
7	H	N	56.00	293.00	0.00	100.00	26.90	10.00	23.53			
8	Drosera	H	360.00	298.00	-20.00	10.00	-11.40	10.00	24.57			
9	MEDA	E	360.00	320.00	-20.00	10.00	-11.40	12.00	28.04			
10	Hiatus (?And Dep)	E	(200.00)	326.00	-10.00	10.00	1.30	15.00	29.78			
11	Upper ?E- Hiatus	E	(150.00)	354.00	5.00	30.00	5.01	22.00	32.21			
12	Dep D	E	(100.00)	366.00	5.00	30.00	5.01	28.00	31.51			
13	C	N	360.00	375.00	-20.00	10.00	-17.90	28.00	25.31			
14	PRICES CK	E	515.00	400.00	-20.00	10.00	5.70	30.00	28.39			
15	Upper B2	E	(200.00)	410.00	-20.00	10.00	-16.13	30.00	29.78			
16	B2	N	515.00	445.00	-10.00	10.00	1.79	30.00	34.90			
17	B1	N	554.00	455.00	-10.00	10.00	-9.99	30.00	36.54			
18	A2	N	737.00	463.00	0.00	100.00	5.00	28.00	36.39			
19	A2 UGoldwyer Source	N	760.00	464.00	20.00	100.00	20.00	28.00	36.39		GPRISCA	
20	A2 LGoldwyer Source	N	940.00	467.00	20.00	100.00	20.00	28.00	36.39		LOWGOLD	
21	A1	N	1190.00	469.00	10.00	100.00	90.08	25.00	36.29			
22	A1 Source	N	1340.00	478.00	10.00	100.00	91.22	25.00	34.56		LOWGOLD	
23	AO	N	1450.00	483.00	0.00	30.00	10.00	25.00	30.82			
24	Basement	N	1502.50	488.00	0.00	0.00	0.00	25.00	27.19			
25	Dummy	N	1512.50	489.00	0.00	10.00	10.00	25.00	26.81			

HORIZON DATA : ACACIA2

	Stratigraphic Unit/Event	SHALE	SAND	CHALK	LST	COAL	HAUT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Conductivity	Density
1	Quaternary		100								0.400	0.400	16.000	2.650
2	Hiatus	50	50								0.550	1.420	8.580	2.730
3	?K	50	50								0.550	1.420	8.580	2.730
4	FITZROY	60	40								0.580	1.620	7.570	2.740
5	Hiatus 2	60	40								0.580	1.620	7.570	2.740
6	Upper H-I	60	40								0.580	1.620	7.570	2.740
7	H	40	60								0.520	1.210	9.720	2.710
8	Drosera	10			90						0.430	1.320	9.250	2.750
9	MEDA	10			90						0.430	1.320	9.250	2.750
10	Hiatus (?And Dep)	40	40		20						0.520	1.370	8.850	2.730
11	Upper ?E- Hiatus	20			80						0.460	1.450	8.560	2.760
12	Dep D	20			80						0.460	1.450	8.560	2.760
13	C	40	60								0.520	1.210	9.720	2.710
14	PRICES CK	95			5						0.690	2.370	4.780	2.800
15	Upper B2	20					80				0.180	0.890	9.910	2.320
16	B2	85			15						0.660	2.250	5.170	2.790
17	B1	95			5						0.690	2.370	4.780	2.800
18	A2	60	20		20						0.580	1.780	6.890	2.760
19	A2 UGoldwyer Source	60	20		20						0.580	1.780	6.890	2.760
20	A2 LGoldwyer Source	60	20		20						0.580	1.780	6.890	2.760
21	A1	45	25		30						0.530	1.550	7.930	2.750
22	A1 Source	45	25		30						0.530	1.550	7.930	2.750
23	AO	50	40		10						0.550	1.500	8.190	2.740
24	Basement							100			0.050	0.500	4.500	2.760
25	Dummy		70		30						0.400	0.640	13.900	2.680

HORIZON DATA : ACACIA2 - MATRIX LITHOLOGY



	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
1	511.00	0	0.20	0.20	0.80	5
2	519.00	0	0.20	0.20	0.80	5
3	754.00	0	0.20	0.20	0.80	5
4	763.00	0	0.20	0.20	0.80	5
5	818.00	0	0.20	0.20	0.80	5
6	896.00	0	0.20	0.20	0.80	5
7	953.00	0	0.20	0.20	0.80	5
8	994.00	0	0.20	0.20	0.80	5
9	1043.00	0	0.20	0.20	0.80	5
10	1098.00	0	0.20	0.20	0.80	5
11	1101.00	0	0.20	0.20	0.85	5
12	1158.00	0	0.20	0.20	0.85	5
13	1197.00	0	0.70	0.70	0.85	5
14	1207.00	0	0.70	0.70	0.85	5

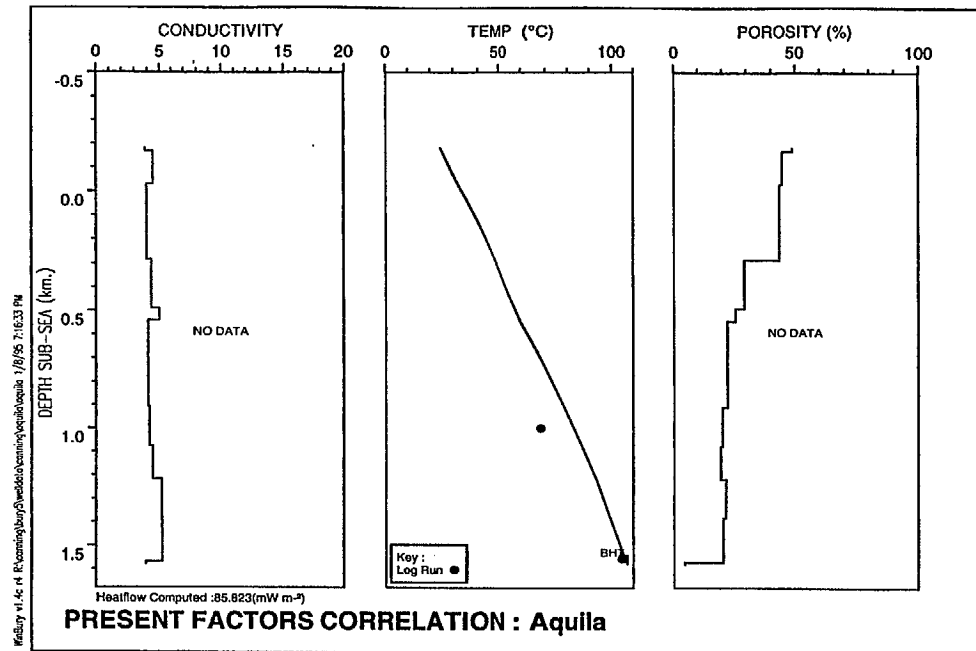
MATURITY DATA : ACACIA2

	Stratigraph. Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum WtdDpth	Maximum WtdDpth	Modelled WtdDpth	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	QUATERNARY	N	3.00	0.00	-180.00	-180.00	-180.00	25.00	0.00			
2	HIATUS 4	H	15.00	2.00	-120.00	0.00	-85.43	25.00	0.05			
3	L	N	15.00	123.00	-20.00	0.00	-19.99	20.00	2.69			
4	HIATUS 3	H	163.00	138.00	-10.00	50.00	33.49	20.00	3.38			
5	K	N	163.00	145.00	-10.00	50.00	10.00	20.00	3.73			
6	FITZROY TRANS	E	467.00	180.00	10.00	100.00	77.64	17.00	5.46			
7	HIATUS 2	E	(950.00)	200.00	10.00	100.00	12.67	15.00	6.85			
8	Dep Upper H-I	E	(750.00)	272.00	10.00	100.00	10.77	10.00	11.02			
9	H	N	467.00	293.00	10.00	100.00	62.36	10.00	12.75			
10	MEDA + DROSERA	H	672.00	298.00	-10.00	10.00	5.70	10.00	13.10			
11	MEDA	E	672.00	320.00	-10.00	10.00	0.00	12.00	15.18			
12	Carb ?Uplift	E	(150.00)	326.00	-10.00	10.00	0.00	15.00	15.87			
13	Nulara ?Uplift	E	(150.00)	354.00	-10.00	10.00	0.00	25.00	18.65			
14	Pillara ?Uplift	E	(150.00)	366.00	-10.00	10.00	-9.99	28.00	20.73			
15	DEP C	E	(150.00)	375.00	-20.00	10.00	-19.99	30.00	21.77			
16	Prices Ck ?mnr	E	(10.00)	400.00	-20.00	10.00	0.00	30.00	25.46			
17	Dep B2	E	(500.00)	410.00	-10.00	10.00	-9.99	30.00	27.55			
18	Upper B1	E	(150.00)	458.00	-10.00	10.00	3.25	30.00	32.06			
19	B1	N	672.00	462.00	-10.00	10.00	-0.44	30.00	32.40			
20	A2	N	725.00	463.00	10.00	100.00	10.01	28.00	32.05			
21	A2 LGoldwyer Source	N	1090.00	467.00	10.00	100.00	30.42	27.00	32.40		LOWGOLD	
22	A1	N	1260.00	469.00	10.00	100.00	76.12	25.00	31.71			
23	A1 Source	N	1400.00	478.00	10.00	30.00	15.00	25.00	27.89		LOWGOLD	
24	A0	N	1565.00	483.00	10.00	30.00	15.00	25.00	22.83			
25	BASEMENT	N	1750.00	488.00	0.00	0.00	0.00	25.00	16.79			
26	Dummy	N	1760.00	489.00	0.00	0.00	0.00	25.00	16.79			

HORIZON DATA : AQUILA

	Stratigraph. Unit/Event	SHALE	SAND	CHALK	LST	COAL	HALIT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Conductivity	Density
1	QUATERNARY	30	70								0.490	1.010	11.010	2.690
2	HIATUS 4	30	70								0.490	1.010	11.010	2.690
3	L	20	80								0.460	0.810	12.470	2.680
4	HIATUS 3	50	50								0.550	1.420	8.580	2.730
5	K	40	60								0.520	1.210	9.720	2.710
6	FITZROY TRANS	60	40								0.580	1.620	7.570	2.740
7	HIATUS 2	60	40								0.580	1.620	7.570	2.740
8	Dep Upper H-I	60	40								0.580	1.620	7.570	2.740
9	H	60	40								0.580	1.620	7.570	2.740
10	MEDA + DROSERA		100								0.400	0.400	16.000	2.650
11	MEDA		100								0.400	0.400	16.000	2.650
12	Carb ?Uplift		100								0.400	0.400	16.000	2.650
13	Nulara ?Uplift		100								0.400	0.400	16.000	2.650
14	Pillara ?Uplift		100								0.400	0.400	16.000	2.650
15	DEP C		100								0.400	0.400	16.000	2.650
16	Prices Ck ?mnr	50					50				0.380	1.470	7.430	2.500
17	Dep B2	50					50				0.380	1.470	7.430	2.500
18	Upper B1	50					50				0.380	1.470	7.430	2.500
19	B1	20			80						0.460	1.450	8.560	2.760
20	A2	65			35						0.600	2.000	6.040	2.780
21	A2 LGoldwyer Source	70	10		20						0.610	1.980	6.090	2.770
22	A1	60	10		30						0.580	1.860	6.580	2.770
23	A1 Source	50	50								0.550	1.420	8.580	2.730
24	A0	50	50								0.550	1.420	8.580	2.730
25	BASEMENT							100			0.050	0.500	4.500	2.760
26	Dummy							100			0.050	0.500	4.500	2.760

HORIZON DATA : AQUILA - MATRIX LITHOLOGY

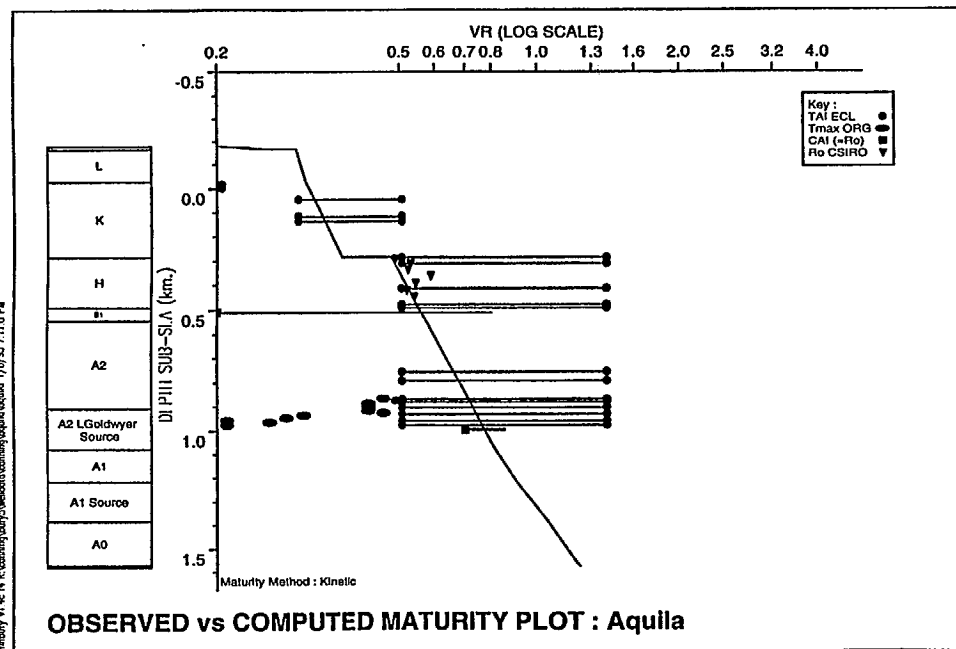
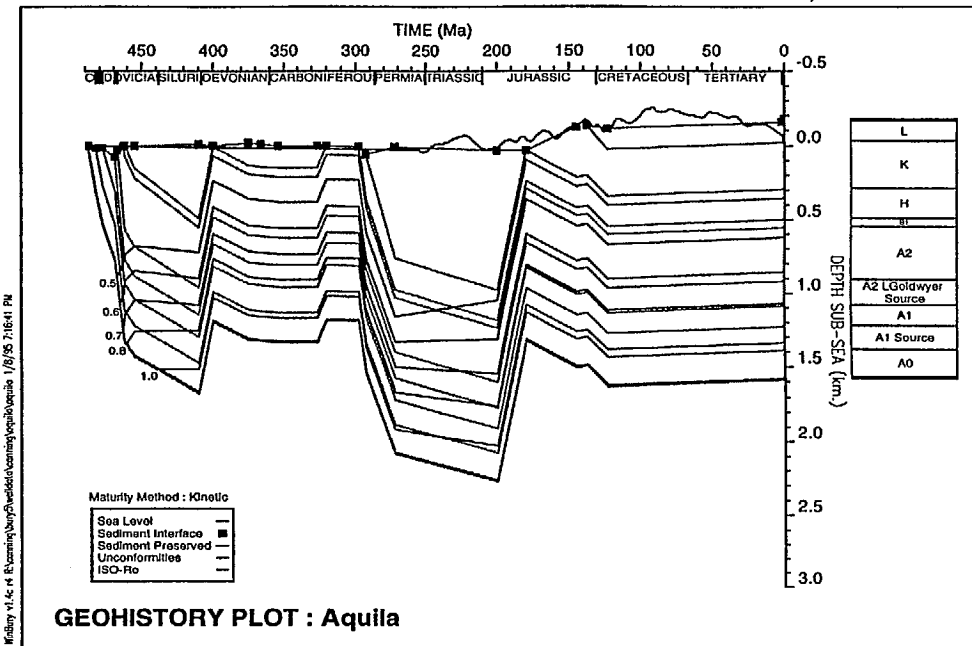
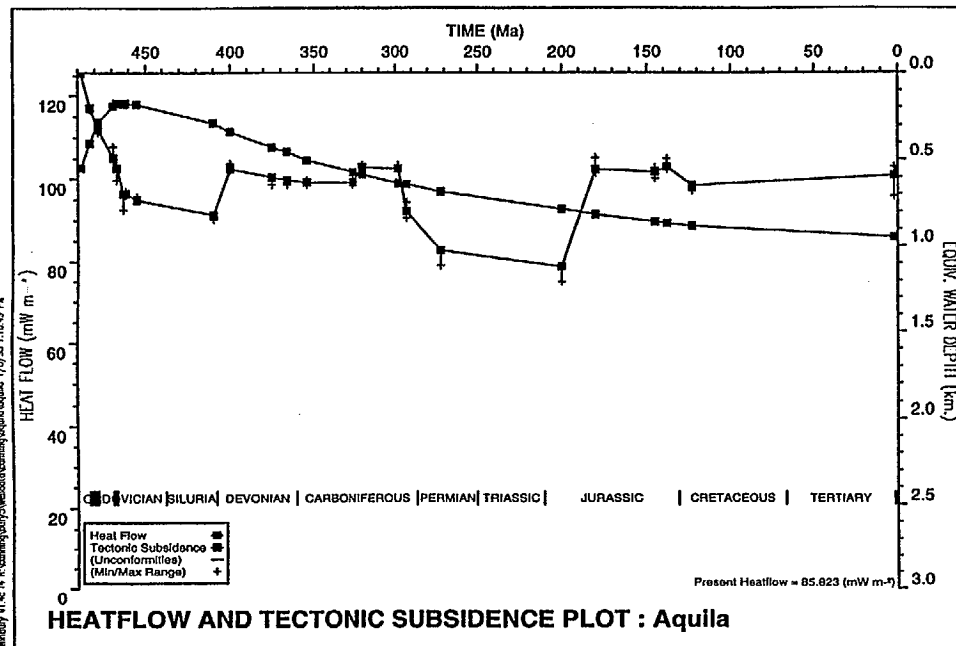


	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	1182.00	0	68.00	0.00	68.00	0
2	1735.00	0	104.40	0.00	104.40	0

TEMPERATURE DATA : AQUILA

	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity
1	165.00	1	1.00	1.00	1.30
2	180.00	1	1.00	1.00	1.30
3	230.00	1	2.00	2.00	2.50
4	300.00	1	2.00	2.00	2.50
5	320.00	1	2.00	2.00	2.50
6	470.00	1	2.50	2.50	3.50
7	475.00	0	0.49		
8	495.00	0	0.53		
9	495.00	1	2.50	2.50	3.50
10	520.00	0	0.52		
11	545.00	0	0.59		
12	575.00	0	0.55		
13	595.00	1	2.50	2.50	3.50
14	605.00	0	0.52		
15	630.00	0	0.54		
16	660.00	1	2.50	2.50	3.50
17	675.00	1	2.50	2.50	3.50
18	693.00	0	0.20	0.20	0.80
19	940.00	1	2.50	2.50	3.50
20	977.00	1	2.50	2.50	3.50
21	1050.00	2	436.00		
22	1053.00	1	2.50	2.50	3.50
23	1060.00	2	437.00		
24	1065.00	1	2.50	2.50	3.50
25	1070.00	2	435.00		
26	1080.00	2	435.00		
27	1088.00	1	2.50	2.50	3.50
28	1090.00	2	435.00		
29	1100.00	2	435.00		
30	1110.00	2	436.00		
31	1115.00	1	2.50	2.50	3.50
32	1120.00	2	431.00		
33	1130.00	2	430.00		
34	1140.00	2	426.00		
35	1141.00	1	2.50	2.50	3.50

MATURITY DATA : AQUILA



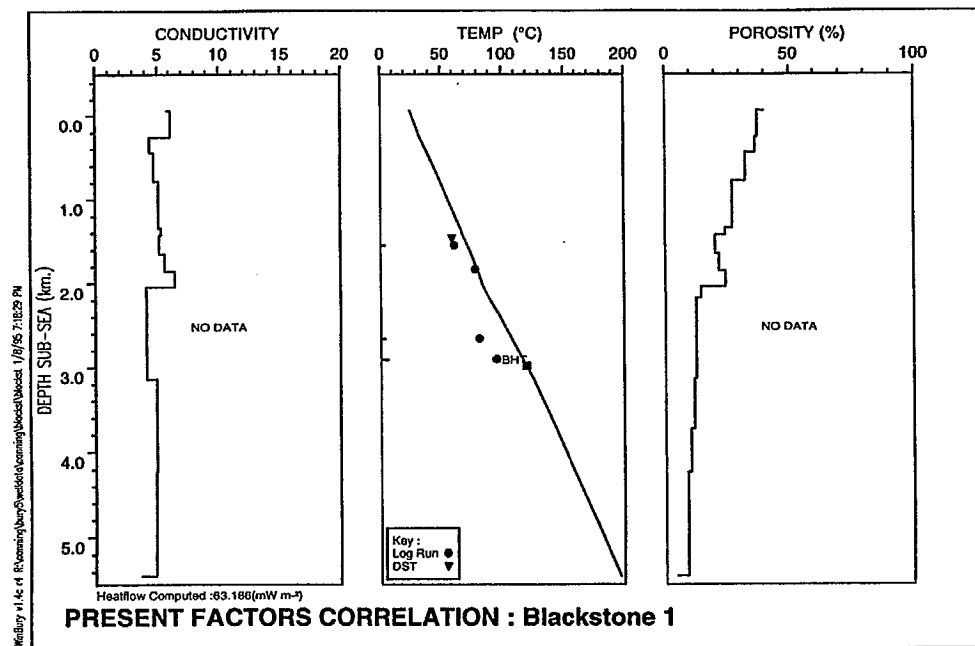
	Stratigraph. Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum WitDpth	Maximum WitDpth	Modelled WitDpth	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	Quaternary	N	3.35	0.00	-61.57	-61.57	-61.56	25.00	0.00			
2	Base Q	H	5.00	2.00	0.00	0.00	0.01	25.00	0.09			
3	FITZROY	E	5.00	180.00	0.00	20.00	20.00	15.00	11.68			
4	Upper J	E	(250.00)	200.00	0.00	30.00	3.65	15.00	13.76			
5	J	N	5.00	246.00	10.00	60.00	39.62	11.00	19.31			
6	I (Jv)	N	325.00	253.00	-20.00	60.00	28.54	10.00	20.35			
7	I (Noon)	N	510.00	272.00	-20.00	60.00	48.28	10.00	23.82			
8	H	N	843.00	290.00	-20.00	100.00	-8.32	10.00	27.99			
9	Drosera	H	1408.00	298.00	-20.00	10.00	0.00	10.00	30.41			
10	G	N	1408.00	310.00	-20.00	10.00	0.00	10.00	33.64			
11	MEDA	E	1487.00	320.00	-10.00	30.00	30.00	12.00	36.66			
12	Upper F And	E	(400.00)	326.00	5.00	30.00	16.69	15.00	38.39			
13	Upper F Laurel	E	(200.00)	346.00	5.00	30.00	21.54	22.00	42.21			
14	F Source	N	1487.00	351.00	5.00	50.00	5.01	24.00	42.21			
15	E	N	1712.00	354.00	10.00	30.00	10.01	25.00	42.21			
16	Van Emmerick	E	1916.00	360.00	10.00	60.00	48.70	26.50	41.52			
17	D	E	(60.00)	366.00	10.00	60.00	10.01	28.00	38.39			
18	C	N	1916.00	376.16	-20.00	10.00	-19.99	30.00	29.03			
19	Prices Ck	E	2108.00	400.00	-10.00	10.00	10.00	30.00	30.41			
20	B2	E	(750.00)	410.00	-10.00	10.00	-9.99	30.00	33.64			
21	Lower B1	N	2108.00	460.00	-10.00	20.00	14.86	30.00	46.37			
22	A2	N	2240.00	463.00	5.00	60.00	37.46	28.00	46.72			
23	A1	N	3200.00	469.00	10.00	100.00	56.72	25.00	46.72			
24	A1 Source	N	3800.00	478.00	10.00	30.00	30.00	25.00	45.68		LOWGOLD	
25	7A0	N	4300.00	483.00	10.00	100.00	37.83	25.00	43.25			
26	Basement	N	5500.00	488.00	0.00	0.00	0.00	25.00	36.23			
27	Dummy	N	5510.00	489.00	0.00	0.00	0.00	25.00	34.49			

HORIZON DATA : BLACKST

	Stratigraph. Unit/Event	SHALE	SAND	CHALK	LST	COAL	HALIT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Porosity	Density
1	Quaternary		100								0.400	0.400	16.000	2.650
2	Base Q		100								0.400	0.400	16.000	2.650
3	FITZROY	45	55								0.530	1.310	9.130	2.720
4	Upper J	45	55								0.530	1.310	9.130	2.720
5	J		100								0.400	0.400	16.000	2.650
6	I (Jv)	45	55								0.530	1.310	9.130	2.720
7	I (Noon)	45	55								0.530	1.310	9.130	2.720
8	H	45	55								0.530	1.310	9.130	2.720
9	Drosera	45	55								0.530	1.310	9.130	2.720
10	G	45	55								0.530	1.310	9.130	2.720
11	MEDA	30			70						0.490	1.570	7.920	2.760
12	Upper F And	30			70						0.490	1.570	7.920	2.760
13	Upper F Laurel	30			70						0.490	1.570	7.920	2.760
14	F Source	30			70						0.490	1.570	7.920	2.760
15	E	40	60		10						0.520	1.290	9.270	2.720
16	Van Emmerick		60		40						0.400	0.720	13.260	2.690
17	D		60		40						0.400	0.720	13.260	2.690
18	C	15	70		15						0.450	0.820	12.370	2.690
19	Prices Ck	80			20						0.640	2.180	5.370	2.790
20	B2	25					75				0.210	0.980	9.440	2.350
21	Lower B1	80			20						0.640	2.180	5.370	2.790
22	A2	80			20						0.640	2.180	5.370	2.790
23	A1	50			50						0.550	1.820	6.780	2.780
24	A1 Source	50			50						0.550	1.820	6.780	2.780
25	7A0	50			50						0.550	1.820	6.780	2.780
26	Basement						100				0.050	0.500	4.500	2.760
27	Dummy						100				0.050	0.500	4.500	2.760

HORIZON DATA : BLACKST - MATRIX LITHOLOGY

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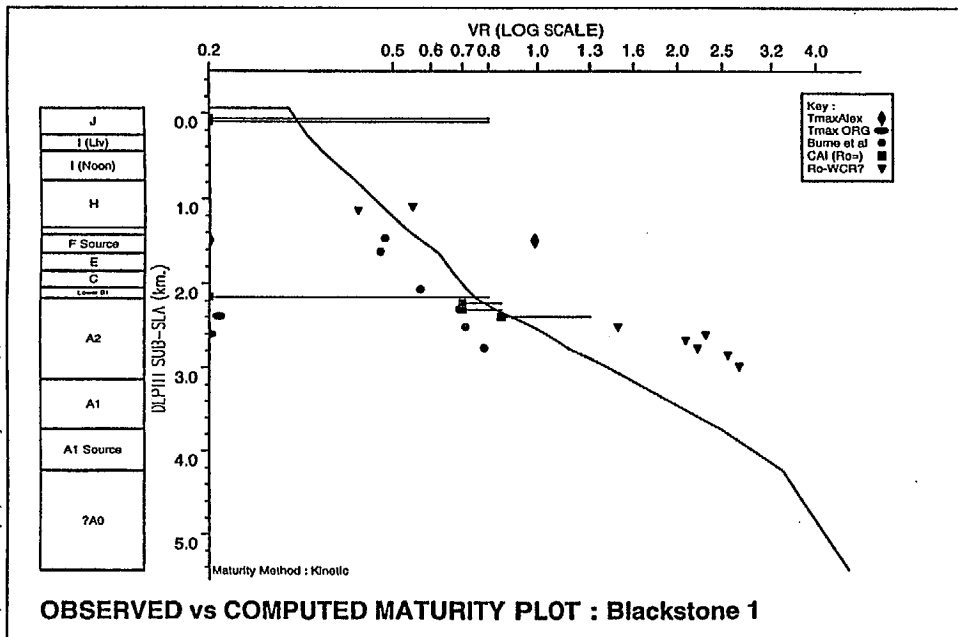
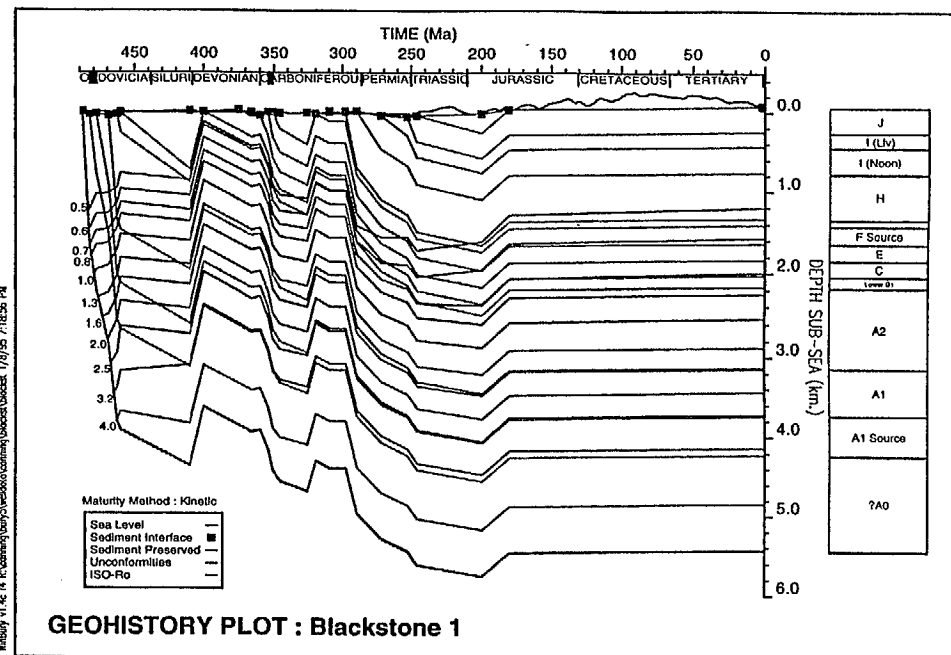
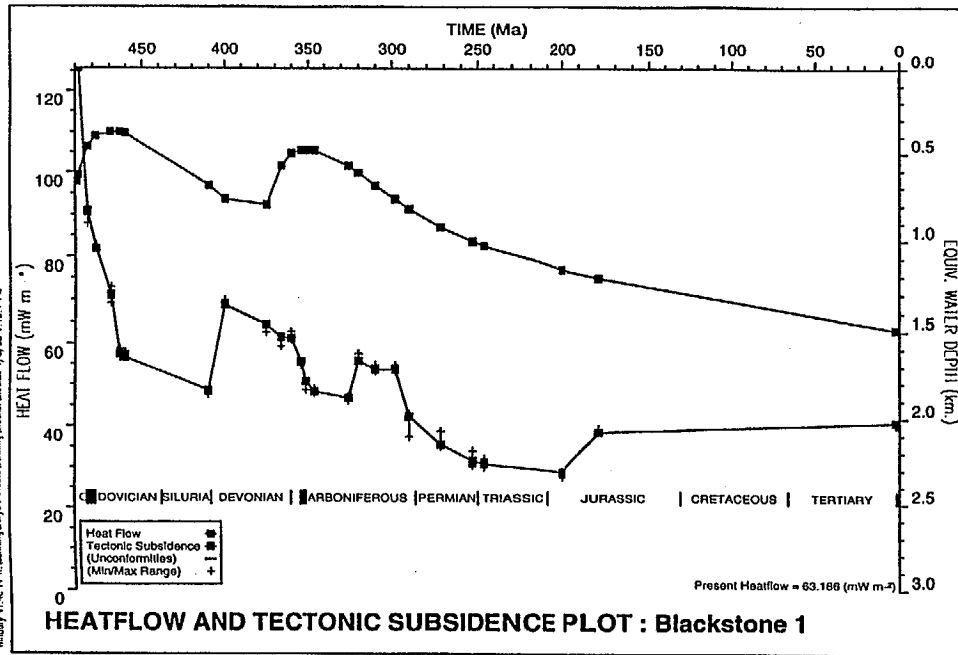


	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	1532.00	1	60.00	0.00	60.00	1
2	1613.00	0	61.60	4.00	61.60	0
3	1900.00	0	78.80	0.00	78.80	0
4	2732.00	0	82.20	4.00	82.20	0
5	2975.00	0	96.10	6.00	96.10	0

TEMPERATURE DATA : BLACKST

	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
1	128.00	0	0.20	0.20	0.80	5
2	155.00	0	0.20	0.20	0.80	5
3	164.00	0	0.20	0.20	0.80	5
4	1157.00	0	0.55			8
5	1202.00	0	0.42			8
6	1536.00	0	0.48			4
7	1556.00	2	452.00			2
8	1556.00	2	425.00			2
9	1690.00	0	0.47			4
10	2129.00	0	0.57			4
11	2221.00	0	0.20	0.20	0.80	5
12	2290.00	0	0.70	0.70	0.85	5
13	2369.00	0	0.69			4
14	2369.00	0	0.70	0.70	0.85	5
15	2456.00	2	426.00			3
16	2459.00	0	0.85	0.85	1.30	5
17	2582.60	0	0.71			4
18	2582.70	0	1.48			8
19	2674.00	2	335.00			3
20	2678.00	0	2.30			8
21	2742.00	0	2.08			8
22	2834.00	0	0.78			4
23	2836.00	0	2.21			8
24	2914.00	0	2.67			8
25	3049.00	0	2.72			8

MATURITY DATA : BLACKST

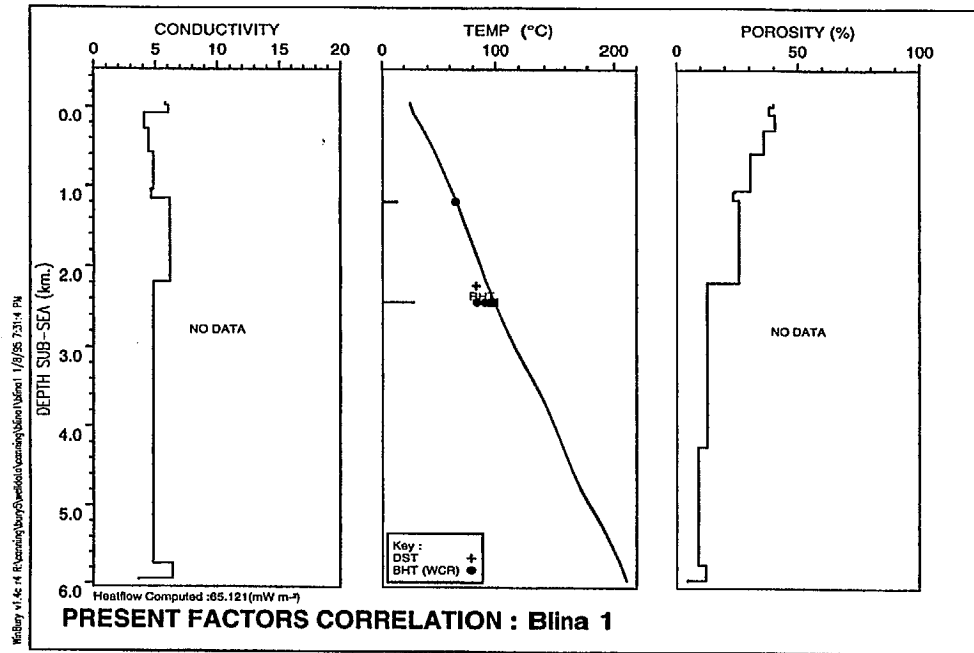


	Stratigraphic Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum WtDpth	Maximum WtDpth	Modelled WtDpth	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	Quaternary	N	5.30	0.00	-56.90	-56.89	-56.89	25.00	0.00			
2	Base Q	H	30.00	2.00	-30.00	30.00	19.00	25.00	0.43			
3	FITZROY	E	30.00	180.00	-20.00	20.00	-10.43	15.00	9.10			
4	Upper J	E	(250.00)	200.00	0.00	20.00	0.23	15.00	10.89			
5	J	N	30.00	248.00	10.00	70.00	46.85	11.00	16.46			
6	I (Lv)	N	133.00	253.00	10.00	50.00	10.98	10.00	17.15			
7	I (Poole+Noon)	N	332.00	272.00	10.00	50.00	40.84	10.00	20.62			
8	H	N	635.00	290.00	-10.00	60.00	10.65	10.00	25.12			
9	Drosera Hiatus	H	1104.00	298.00	5.00	30.00	15.00	10.00	26.85			
10	Meda Movement	E	1104.00	320.00	10.00	30.00	15.00	12.00	32.06			
11	Stillstand	E	(300.00)	326.00	10.00	30.00	14.78	15.00	34.14			
12	(Upper F)	E	(200.00)	340.00	10.00	30.00	18.32	20.00	36.57			
13	F (Laurel)	N	1104.00	350.00	10.00	50.00	13.57	25.00	37.61			
14	F Source	N	1115.00	351.00	10.00	50.00	30.00	25.00	37.26		TYPE IIB	
15	E	N	1215.00	354.00	10.00	30.00	20.00	25.00	37.61			
16	Van Emmerick	E	2243.00	360.00	50.00	150.00	142.86	28.00	37.21			
17	Upper Fras Clastics	E	(100.00)	363.00	50.00	150.00	57.78	27.00	36.51			
18	D Top	N	2243.00	366.00	50.00	150.00	50.01	28.00	35.13		TYPE IIB	
19	D Source	N	4300.00	373.00	50.00	150.00	104.43	28.00	32.00		TYPE IIB	
20	C	N	5800.00	375.00	-20.00	30.00	10.00	30.00	25.46			
21	Basement	N	6000.00	400.00	0.00	0.00	0.00	30.00	24.77			
22	Dummy	N	6010.00	489.00	0.00	0.00	0.00	25.00	24.77			

HORIZON DATA : BLINA1

	Stratigraphic Unit/Event	SHALE	SAND	CHALK	LST	COAL	HAUT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Conductivity	Density
1	Quaternary		100								0.400	0.400	16.000	2.650
2	Base Q		100								0.400	0.400	16.000	2.650
3	FITZROY	45	55								0.530	1.310	9.130	2.720
4	Upper J	45	55								0.530	1.310	9.130	2.720
5	J		100								0.400	0.400	16.000	2.650
6	I (Lv)	45	55								0.530	1.310	9.130	2.720
7	I (Poole+Noon)	45	55								0.530	1.310	9.130	2.720
8	H	45	55								0.530	1.310	9.130	2.720
9	Drosera Hiatus	10			90						0.430	1.320	9.250	2.750
10	Meda Movement	10			90						0.430	1.320	9.250	2.750
11	Stillstand	10			90						0.430	1.320	9.250	2.750
12	(Upper F)	40			60						0.520	1.690	7.330	2.770
13	F (Laurel)	40			60						0.520	1.690	7.330	2.770
14	F Source	40			60						0.520	1.690	7.330	2.770
15	E	20	70		10						0.460	0.890	11.900	2.690
16	Van Emmerick	70	30								0.610	1.820	6.690	2.760
17	Upper Fras Clastics	70	30								0.610	1.820	6.690	2.760
18	D Top	70	30								0.610	1.820	6.690	2.760
19	D Source	70	30								0.610	1.820	6.690	2.760
20	C	30	70								0.490	1.010	11.010	2.690
21	Basement							100			0.050	0.500	4.500	2.760
22	Dummy							100			0.050	0.500	4.500	2.760

HORIZON DATA : BLINA1 - MATRIX LITHOLOGY



	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
1	2482.90	2	439.00			2
2	2484.10	2	442.00			2
3	2484.70	2	439.00			2
4	2486.10	2	434.00			2
5	2487.40	2	442.00			2
6	2487.80	2	447.00			2
7	2490.00	2	437.00			2

MATURITY DATA : BLINA1

	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	1255.00	0	65.50	14.00	65.50	1
2	2290.00	0	82.20	0.00	82.20	0
3	2498.00	0	90.00	9.50	90.00	1
4	2498.00	0	93.30	14.50	93.30	1
5	2498.00	0	95.00	19.00	95.00	1
6	2498.00	0	97.70	21.50	97.70	1
7	2498.00	0	98.80	28.00	98.80	1

TEMPERATURE DATA : BLINA1

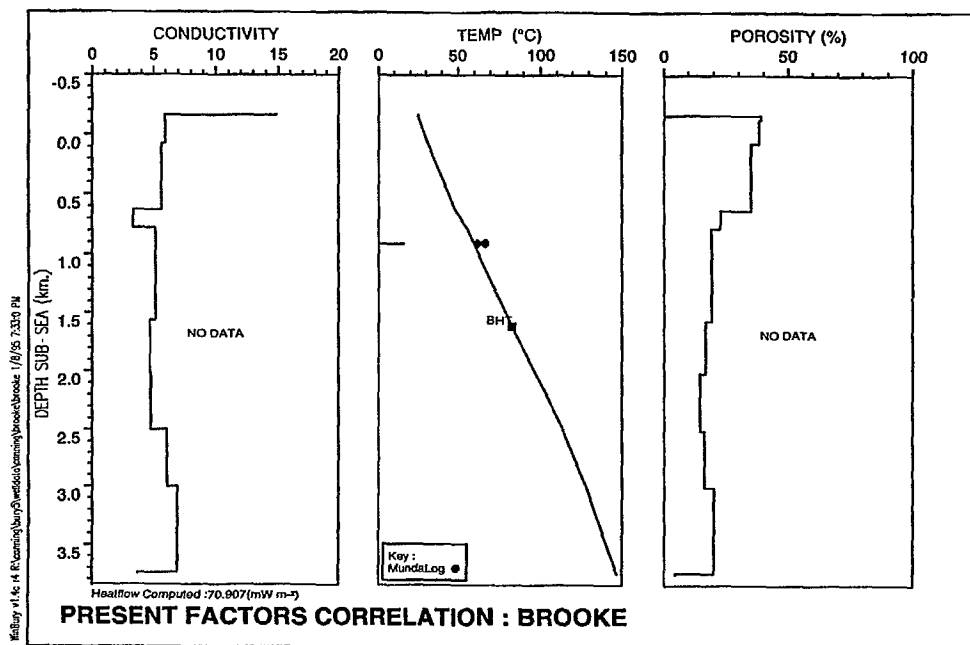
	Stratigraphic Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum WtDpth	Maximum WtDpth	Modelled WtDpth	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	MOD EROSION	E	0.00	0.00	-160.00	-160.00	-160.00	25.00	0.00			
2	Upper L	E	(150.00)	105.00	-20.00	10.00	-18.68	22.00	2.50			
3	L	N	0.00	135.00	-20.00	10.00	-4.82	20.00	3.55			
4	HIATUS 3	H	35.00	138.00	-20.00	30.00	21.02	20.00	3.55			
5	K	N	35.00	150.00	-20.00	30.00	-13.10	18.00	4.24			
6	FITZROY MOVEMENT	E	230.80	180.00	-50.00	0.00	-23.76	15.00	5.63			
7	HIATUS 2	E	(600.00)	200.00	-10.00	10.00	-9.99	15.00	7.02			
8	Dep H-I	E	(500.00)	272.00	10.00	100.00	23.57	10.00	11.53			
9	H	N	230.80	293.00	10.00	100.00	40.24	10.00	12.91			
10	?DROSERIA	H	787.00	298.00	-20.00	10.00	-20.00	10.00	13.61			
11	MEDA	E	787.00	320.00	-20.00	10.00	-20.00	12.00	16.04			
12	HIATUS 1	E	(50.00)	326.00	-20.00	10.00	-1.76	15.00	16.73			
13	Upper C	E	(50.00)	375.00	-20.00	0.00	-20.00	30.00	22.63			
14	C	N	787.00	380.00	-20.00	10.00	-19.99	30.00	23.32			
15	PRICES CK MOVEMENT	E	937.00	400.00	-10.00	10.00	-9.99	30.00	26.79			
16	Upper B2	E	(10.00)	410.00	-10.00	10.00	-9.99	30.00	28.53			
17	B2	N	937.00	412.00	-10.00	10.00	-9.99	30.00	28.87			
18	B1	N	1720.00	455.00	-10.00	10.00	6.35	30.00	32.69			
19	A2	N	2170.00	463.00	10.00	100.00	47.66	28.00	33.39			
20	A1	N	2660.00	469.00	10.00	100.00	50.69	25.00	33.04			
21	A0	N	3160.00	483.00	10.00	30.00	10.15	25.00	26.10			
22	BASEMENT	N	3900.00	488.00	0.00	0.00	0.00	25.00	20.55			
23	DUMMY	N	3910.00	489.00	0.00	0.00	0.00	25.00	17.42			

HORIZON DATA : BROOKE

	Stratigraphic Unit/Event	SHALE	SAND	CHALK	LST	COAL	HAUT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	conductivity	Density
1	MOD EROSION		100								0.400	0.400	16.000	2.650
2	Upper L		100								0.400	0.400	16.000	2.650
3	L		100								0.400	0.400	16.000	2.650
4	HIATUS 3		100								0.400	0.400	16.000	2.650
5	K		100								0.400	0.400	16.000	2.650
6	FITZROY MOVEMENT		100								0.400	0.400	16.000	2.650
7	HIATUS 2		100								0.400	0.400	16.000	2.650
8	Dep H-I	30	70								0.490	1.010	11.010	2.690
9	H	16	84								0.450	0.720	13.110	2.670
10	?DROSERIA		100								0.400	0.400	16.000	2.650
11	MEDA		100								0.400	0.400	16.000	2.650
12	HIATUS 1		100								0.400	0.400	16.000	2.650
13	Upper C		100								0.400	0.400	16.000	2.650
14	C	100									0.700	2.430	4.600	2.800
15	PRICES CK MOVEMENT	45					55				0.340	1.370	7.790	2.470
16	Upper B2	45					55				0.340	1.370	7.790	2.470
17	B2	45					55				0.340	1.370	7.790	2.470
18	B1	50			50						0.550	1.820	6.780	2.780
19	A2	50			50						0.550	1.820	6.780	2.780
20	A1	20	30		50						0.450	1.210	9.860	2.730
21	A0	10	80		10						0.430	0.680	13.480	2.680
22	BASEMENT							100			0.050	0.500	4.500	2.760
23	DUMMY							100			0.050	0.500	4.500	2.760

HORIZON DATA : BROOKE - MATRIX LITHOLOGY

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	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	1067.00	0	62.00	16.00	67.00	1

TEMPERATURE DATA : BROOKE

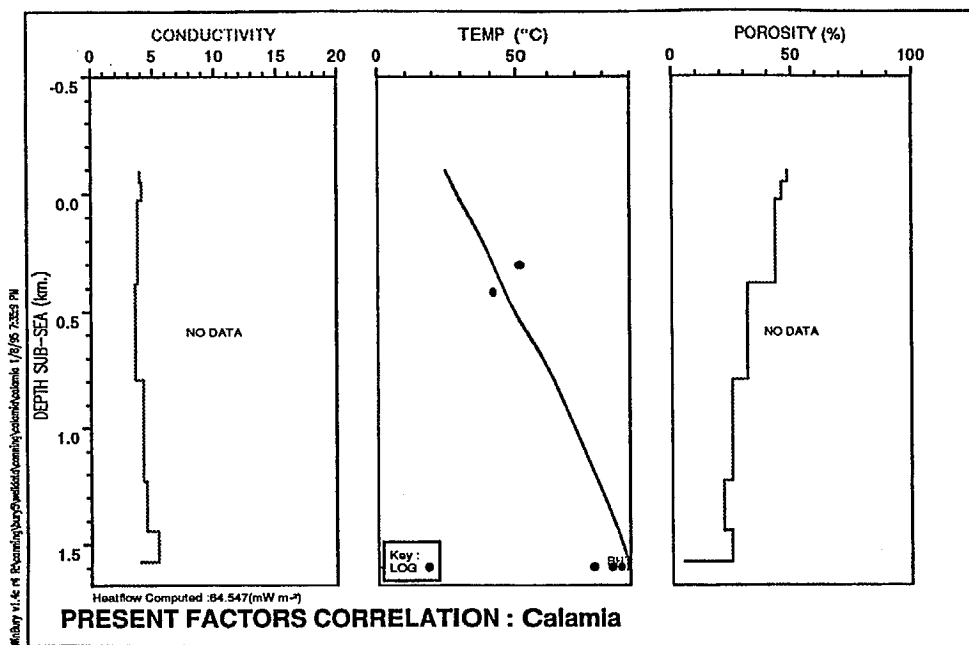
	Stratigraph. Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum Wtdpth	Maximum Wtdpth	Modelled Wtdpth	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	QUATERNARY	N	4.57	0.00	-94.05	-94.05	-94.05	25.00	0.00			
2	HIATUS 4	E	50.90	2.00	-20.00	0.00	-1.61	25.00	0.08			
3	Upper L	E	(100.00)	105.00	-20.00	0.00	-0.01	22.00	3.90			
4	L	N	50.90	130.00	-20.00	0.00	-7.00	20.00	4.81			
5	HIATUS 3	H	125.00	138.00	-10.00	30.00	21.21	20.00	5.54			
6	K	N	125.00	145.00	-10.00	30.00	-5.77	18.00	6.24			
7	FITZROY TRANS	E	477.40	180.00	10.00	60.00	39.35	15.00	9.32			
8	HIATUS 2	E	(600.00)	200.00	10.00	60.00	21.32	15.00	11.40			
9	DEP H-I	E	(500.00)	272.00	10.00	60.00	20.13	10.00	20.46			
10	H	N	477.40	293.00	10.00	100.00	24.60	10.00	24.07			
11	DROSERA	H	888.20	298.00	-10.00	10.00	0.00	10.00	25.11			
12	MEDA	E	888.20	320.00	-10.00	10.00	0.00	12.00	27.75			
13	HIATUS	E	(800.00)	326.00	-10.00	10.00	-9.99	15.00	28.79			
14	DEP C	E	(750.00)	376.00	-10.00	10.00	-9.99	30.00	37.12			
15	PRICES CREEK	E	(550.00)	400.00	-10.00	10.00	-2.28	30.00	41.97			
16	B2	E	(550.00)	410.00	-10.00	10.00	-8.09	30.00	44.40			
17	B1	E	(250.00)	455.00	-10.00	10.00	-1.53	30.00	48.66			
18	A2	N	888.20	463.00	10.00	100.00	12.68	28.00	47.97			
19	A1	N	1328.00	469.00	10.00	100.00	69.13	25.00	46.58			
20	A0	N	1540.00	483.00	10.00	30.00	15.00	25.00	37.91			
21	BASEMENT	N	1671.40	488.00	0.00	0.00	0.00	25.00	32.70			
22	Dummy	N	1675.00	489.00	0.00	0.00	0.00	25.00	31.31			

HORIZON DATA : CALAMIA

	Stratigraph. Unit/Event	SHALE	SAND	CHALK	LST	COAL	HALT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Conductivity	Density
1	QUATERNARY	30	70								0.490	1.010	11.010	2.690
2	HIATUS 4	30	70								0.490	1.010	11.010	2.690
3	Upper L	30	70								0.490	1.010	11.010	2.690
4	L	30	70								0.490	1.010	11.010	2.690
5	HIATUS 3	50	50								0.550	1.420	8.580	2.730
6	K	50	50								0.550	1.420	8.580	2.730
7	FITZROY TRANS	60	40								0.580	1.620	7.570	2.740
8	HIATUS 2	60	40								0.580	1.620	7.570	2.740
9	DEP H-I	60	40								0.580	1.620	7.570	2.740
10	H	80	20								0.640	2.020	5.900	2.770
11	DROSERA		100								0.400	0.400	16.000	2.650
12	MEDA		100								0.400	0.400	16.000	2.650
13	HIATUS		100								0.400	0.400	16.000	2.650
14	DEP C		100								0.400	0.400	16.000	2.650
15	PRICES CREEK		100								0.400	0.400	16.000	2.650
16	B2	20					80				0.180	0.890	9.910	2.320
17	B1	70			20		10				0.570	1.990	5.910	2.730
18	A2	60	10		30						0.580	1.860	6.580	2.770
19	A1	50			50						0.550	1.820	6.780	2.780
20	A0	40	60								0.520	1.210	9.720	2.710
21	BASEMENT							100			0.050	0.500	4.500	2.760
22	Dummy							100			0.050	0.500	4.500	2.760

HORIZON DATA : CALAMIA - MATRIX LITHOLOGY

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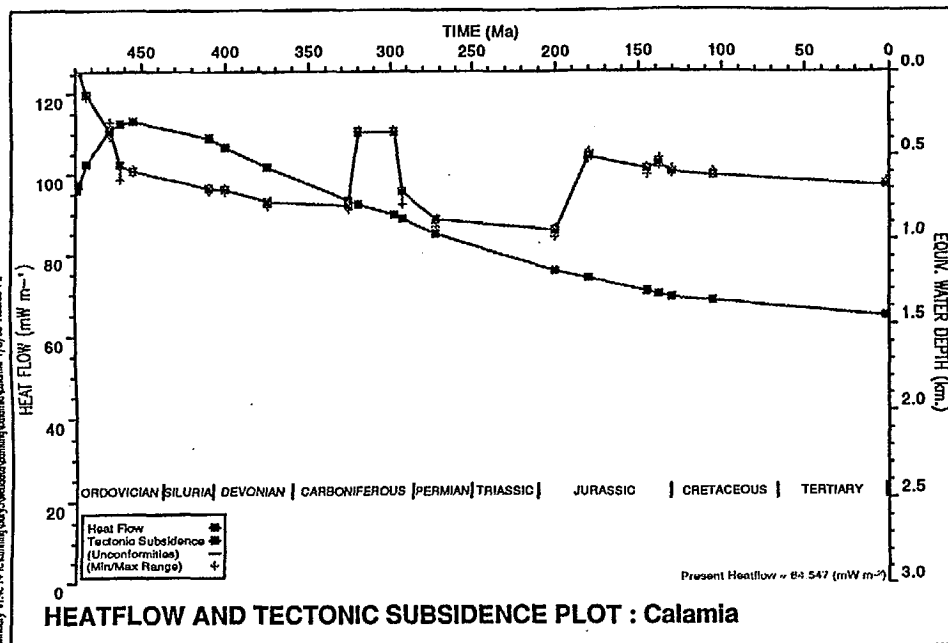
	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	403.40	0	51.11	0.00	51.11	0
2	519.70	0	41.11	0.00	41.11	0
3	1696.00	0	76.67	3.50	90.00	0
4	1696.00	0	83.33	8.00	90.00	0
5	1696.00	0	86.67	13.20	90.00	0

TEMPERATURE DATA : CALAMIA

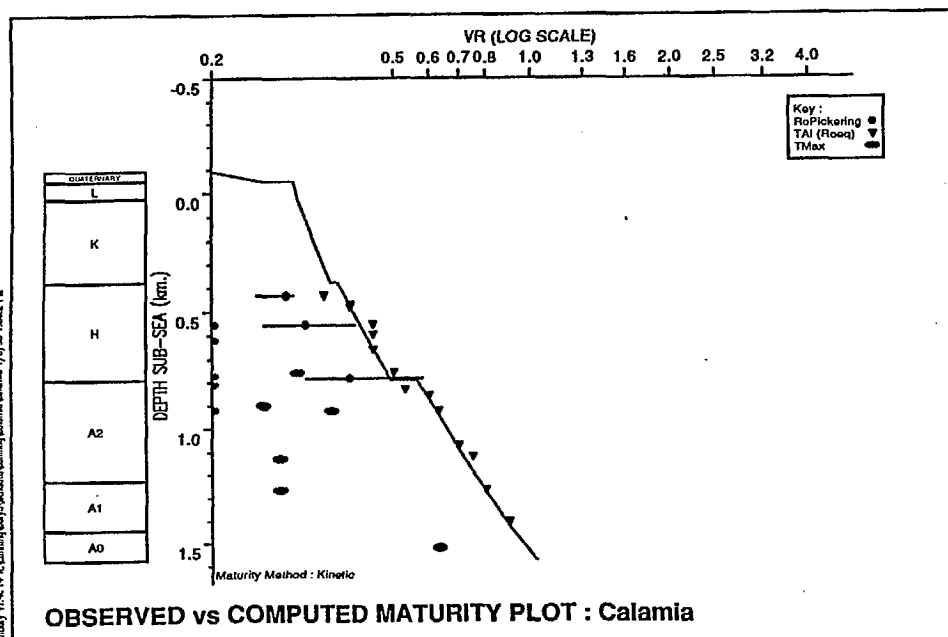
	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
1	532.00	0	0.35			1
2	532.00	0	0.29	0.25	0.30	0
3	572.00	0	0.40			1
4	581.00	0	0.40			1
5	654.00	0	0.45			1
6	654.00	0	0.32	0.26	0.41	0
7	654.00	2	418.00			2
8	697.00	0	0.45			1
9	720.00	2	400.00			2
10	760.00	0	0.45			1
11	860.00	2	431.00			2
12	860.00	0	0.50			1
13	870.00	2	364.00			2
14	882.00	0	0.40	0.32	0.58	0
15	910.00	2	365.00			2
16	932.00	0	0.53			1
17	958.00	0	0.60			1
18	1002.00	2	429.00			2
19	1020.00	2	392.00			2
20	1027.00	2	433.00			2
21	1027.00	0	0.63			1
22	1176.00	0	0.70			1
23	1225.00	0	0.75			1
24	1230.00	2	430.00			2
25	1369.00	2	430.00			2
26	1369.00	0	0.80			1
27	1508.00	0	0.90			1
28	1624.00	2	441.00			2

MATURITY DATA : CALAMIA

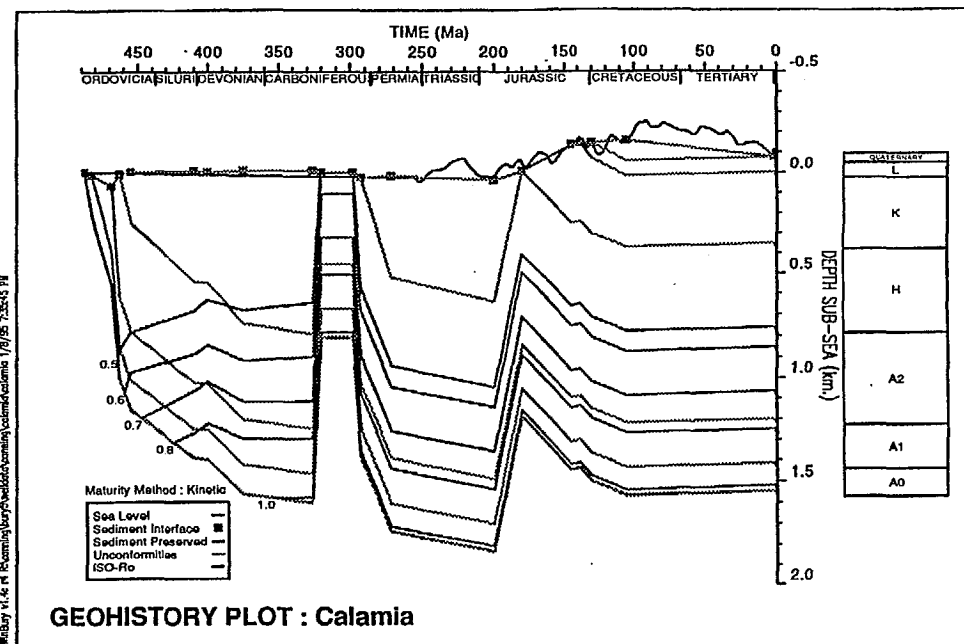
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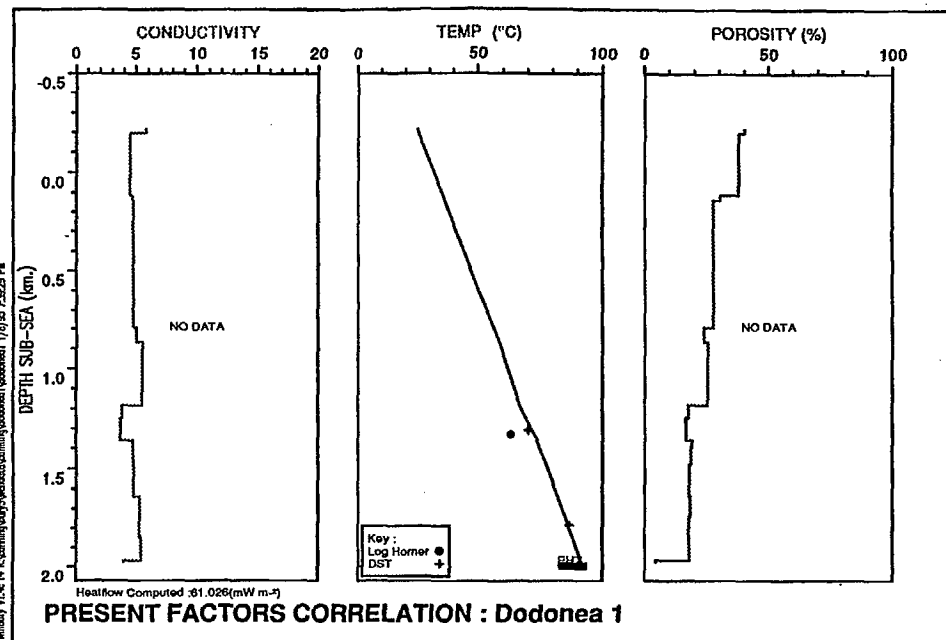


	Stratigraphic Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum WtdDpth	Maximum WtdDpth	Modelled WtdDpth	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	Quaternary	N	5.30	0.00	-213.60	-213.60	-213.60	25.00	0.00			
2	Hiatus 3+ 4	H	22.00	2.00	-200.00	0.00	-125.15	25.00	0.09			
3	FITZROY	E	22.00	180.00	-20.00	20.00	15.00	15.00	11.31			
4	Hiatus 2	E	(450.00)	200.00	-10.00	60.00	53.61	15.00	13.04			
5	Upper H-I	E	(350.00)	270.00	0.00	80.00	53.66	10.00	19.29			
6	H	N	22.00	293.00	0.00	100.00	48.84	10.00	23.11			
7	Drosera	H	334.00	298.00	-20.00	10.00	10.00	10.00	23.64			
8	MEDA	E	334.00	320.00	-20.00	10.00	10.00	12.00	27.11			
9	Hiatus (?And Dep)	E	(350.00)	326.00	-10.00	10.00	6.34	15.00	29.01			
10	Upper E - 7F	E	(250.00)	346.00	5.00	30.00	7.17	25.00	31.78			
11	E	N	334.00	364.00	5.00	30.00	20.64	27.00	32.13			
12	D	N	360.00	366.00	5.00	30.00	15.00	28.00	31.44			
13	D Source	N	1010.00	373.00	5.00	30.00	24.99	29.00	28.66		TYPE IIB	
14	C	N	1086.00	375.00	-20.00	10.00	-19.99	30.00	26.23			
15	PRICES CK	E	1403.00	400.00	-20.00	10.00	5.70	30.00	28.31			
16	Upper B2	E	(200.00)	410.00	-20.00	10.00	-17.55	30.00	29.70			
17	B2	N	1403.00	445.00	-10.00	10.00	4.26	30.00	34.90			
18	B1	N	1468.00	455.00	-10.00	10.00	-0.56	30.00	36.74			
19	A2	N	1578.00	463.00	0.00	100.00	2.01	28.00	36.39			
20	A2 UGoldwyer Source	N	1615.00	464.00	20.00	100.00	20.00	28.00	36.39		GPRISCA	
21	A2 LGoldwyer Source	N	1700.00	467.00	20.00	100.00	20.00	28.00	36.39		LOWGOLD	
22	A1	N	1858.00	469.00	10.00	100.00	90.06	25.00	34.29			
23	A1 Source	N	1960.00	478.00	10.00	100.00	91.22	25.00	34.56		LOWGOLD	
24	AO	N	2068.00	483.00	0.00	30.00	10.00	25.00	29.91			
25	Basement	N	2185.00	488.00	0.00	10.00	10.00	25.00	27.19			
26	Dummy	N	2195.00	489.00	0.00	10.00	10.00	25.00	26.81			

HORIZON DATA : DODONEA1

	Stratigraphic Unit/Event	SHALE	SAND	CHALK	LST	COAL	HAUT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Contam.	Density
1	Quaternary		100								0.400	-0.400	16.000	2.650
2	Hiatus 3+ 4	50	50								0.550	1.420	8.580	2.730
3	FITZROY	60	40								0.580	1.620	7.570	2.740
4	Hiatus 2	60	40								0.580	1.620	7.570	2.740
5	Upper H-I	60	40								0.580	1.620	7.570	2.740
6	H	40	60								0.520	1.210	9.720	2.710
7	Drosera	10			90						0.430	1.320	9.250	2.750
8	MEDA	10			90						0.430	1.320	9.250	2.750
9	Hiatus (?And Dep)	40	40		20						0.520	1.370	8.850	2.730
10	Upper E - 7F	20			80						0.460	1.450	8.560	2.760
11	E	20			80						0.460	1.450	8.560	2.760
12	D	35	15		50						0.510	1.510	8.180	2.750
13	D Source	35	15		50						0.510	1.510	8.180	2.750
14	C	40	60								0.520	1.210	9.720	2.710
15	PRICES CK	95			5						0.690	2.370	4.780	2.800
16	Upper B2	20					80				0.180	0.890	9.910	2.320
17	B2	85			15						0.660	2.250	5.170	2.790
18	B1	95			5						0.690	2.370	4.780	2.800
19	A2	60	20		20						0.580	1.780	6.890	2.760
20	A2 UGoldwyer Source	60	20		20						0.580	1.780	6.890	2.760
21	A2 LGoldwyer Source	60	20		20						0.580	1.780	6.890	2.760
22	A1	45	25		30						0.530	1.550	7.930	2.750
23	A1 Source	45	25		30						0.530	1.550	7.930	2.750
24	AO	50	40		10						0.550	1.500	8.190	2.740
25	Basement							100			0.050	0.500	4.500	2.760
26	Dummy		70		30						0.400	0.640	13.900	2.680

HORIZON DATA : DODONEA1 - MATRIX LITHOLOGY

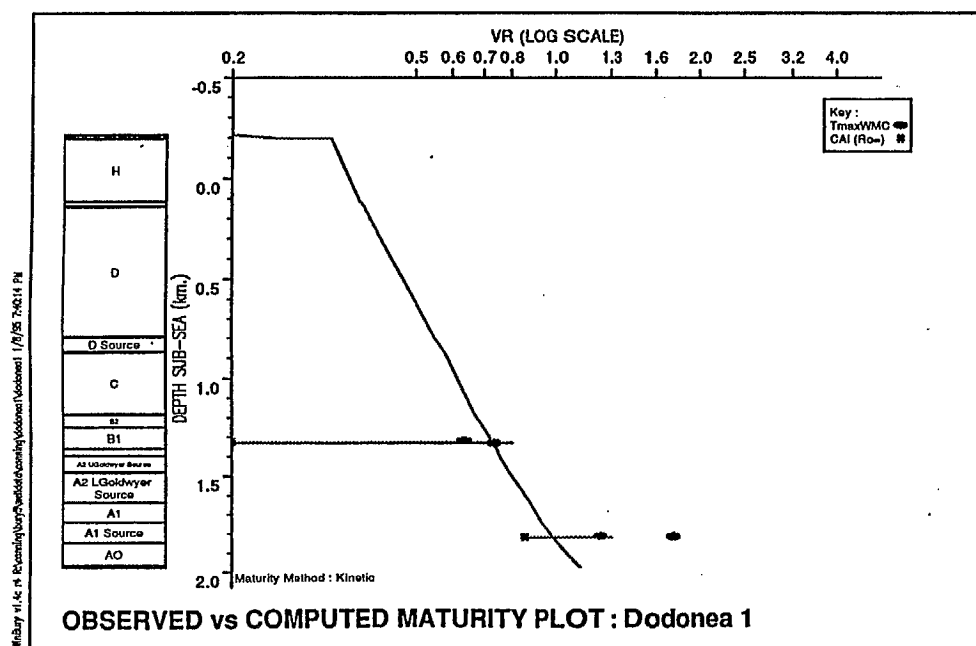
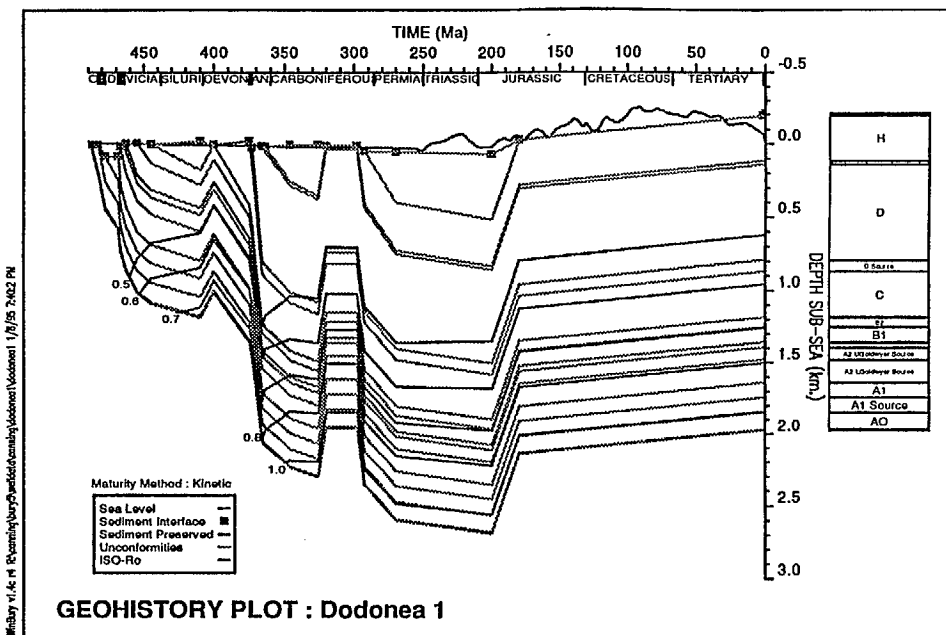
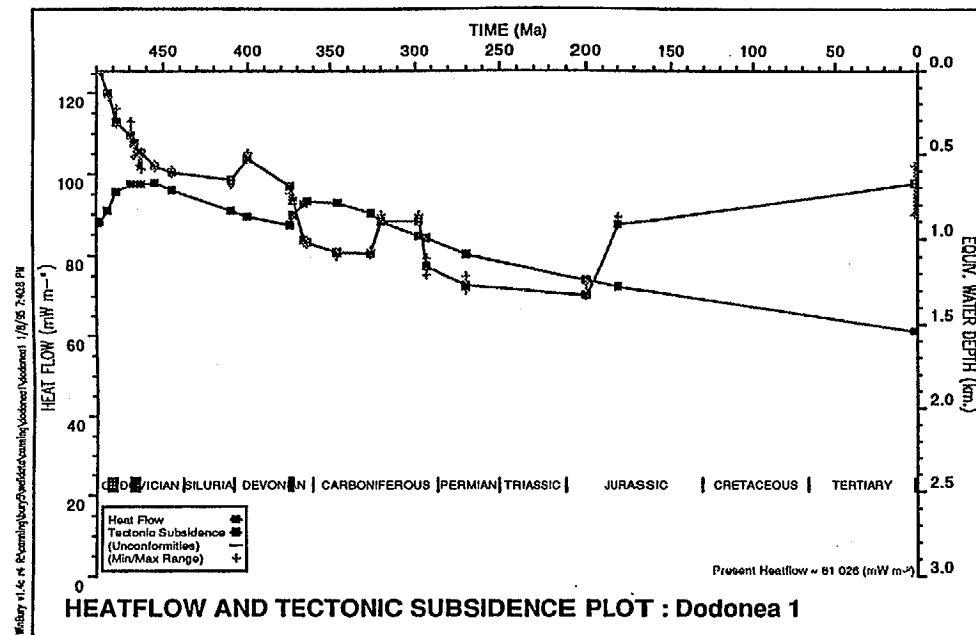


	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	1528.00	0	70.00	0.00	70.00	1
2	1551.00	0	63.00	0.00	63.00	0
3	2005.00	0	86.60	0.00	86.60	1
4	2215.00	0	84.00	5.50	90.00	0
5	2215.00	0	86.00	10.00	90.00	0
6	2215.00	0	87.50	16.00	90.00	0

TEMPERATURE DATA : DODONEA1

	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
1	1537.80	2	441.00			3
2	1544.00	0	0.20	0.20	0.80	5
3	1548.00	0	0.20	0.20	0.80	5
4	1548.24	2	444.00			3
5	2034.20	2	461.00			3
6	2038.00	2	491.00			3
7	2040.00	0	0.85	0.85	1.30	5

MATURITY DATA : DODONEA1

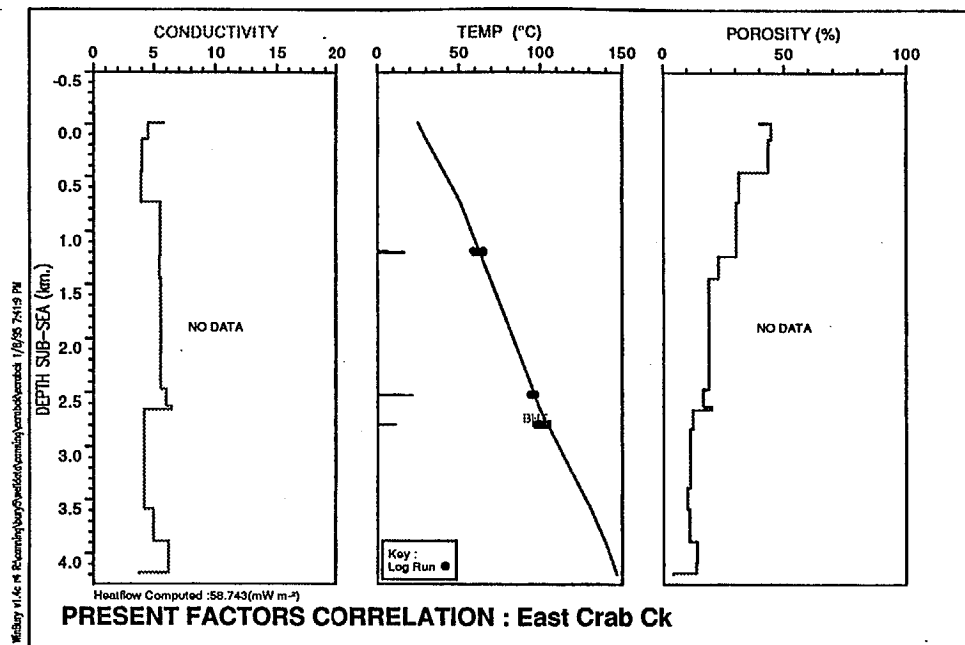


	Stratigraphic Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum WtdDpth	Maximum WtdDpth	Modelled WtdDpth	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	Cret-Quat	N	6.00	0.00	-11.60	-11.60	-11.60	25.00	0.00			
2	L	N	7.00	123.00	-10.00	30.00	-2.00	20.00	7.53			
3	Hiatus 3	H	158.00	138.00	-10.00	30.00	3.51	20.00	8.57			
4	K	N	158.00	145.00	-10.00	30.00	-9.99	20.00	9.26			
5	FITZROY	E	477.00	180.00	0.00	60.00	38.78	15.00	12.04			
6	Dep J	E	(700.00)	200.00	0.00	60.00	3.21	15.00	13.77			
7	Upper I	E	(450.00)	253.00	0.00	60.00	3.57	10.00	19.33			
8	I	N	477.00	275.00	0.00	60.00	48.14	10.00	21.75			
9	H	N	758.50	290.00	-20.00	100.00	13.67	10.00	23.49			
10	Drosera	H	1252.00	298.00	5.00	50.00	15.00	10.00	25.22			
11	MEDA	E	1252.00	320.00	5.00	50.00	15.00	12.00	28.69			
12	Upper F	E	(300.00)	326.00	5.00	50.00	5.01	15.00	30.43			
13	F	N	1252.00	350.00	5.00	50.00	37.77	24.00	34.25			
14	E	N	1457.00	354.00	5.00	50.00	6.14	25.00	34.59			
15	D	N	2485.00	366.00	5.00	30.00	6.60	28.00	34.25			
16	C	N	2644.00	375.00	-20.00	10.00	0.00	30.00	29.39			
17	PRICES CK	E	2671.00	400.00	-20.00	10.00	3.51	30.00	31.47			
18	Upper B1-B2	E	(600.00)	410.00	-20.00	10.00	-19.99	30.00	32.51			
19	B1	N	2671.00	455.00	-5.00	10.00	4.58	30.00	38.49			
20	A2	N	2850.00	463.00	10.00	100.00	10.01	28.00	38.49			
21	A2 LGoldwyer Source	N	3400.00	467.00	10.00	100.00	90.80	28.00	38.14		LOWGOLD	
22	A1	N	3600.00	469.00	10.00	100.00	92.81	25.00	37.40			
23	A1 Source	N	3900.00	478.00	0.00	30.00	10.00	25.00	34.28		LOWGOLD	
24	AO	N	4100.00	483.00	0.00	30.00	10.00	25.00	29.81			
25	Basement	N	4200.00	488.00	0.00	0.00	0.00	25.00	27.04			
26	Dummy	N	4210.00	489.00	0.00	0.00	0.00	25.00	25.31			

HORIZON DATA : ECRABCK

	Stratigraphic Unit/Event	SHALE	SAND	CHALK	LST	COAL	HAUT	VOLCS	CONV	GV/ANH	Initial Porosity	Por/Depth Factor	Conductivity	Density
1	Cret-Quat		100								0.400	0.400	16.000	2.650
2	L	20	80								0.460	0.810	12.470	2.680
3	Hiatus 3	40	60								0.520	1.210	9.720	2.710
4	K	40	60								0.520	1.210	9.720	2.710
5	FITZROY	45	55								0.530	1.310	9.130	2.720
6	Dep J	45	55								0.530	1.310	9.130	2.720
7	Upper I	50	50								0.550	1.420	8.580	2.730
8	I	70	30								0.610	1.820	6.690	2.760
9	H	30	70								0.490	1.010	11.010	2.690
10	Drosera	80	20								0.640	2.020	5.900	2.770
11	MEDA	80	20								0.640	2.020	5.900	2.770
12	Upper F	70	10		20						0.610	1.980	6.090	2.770
13	F	20	10		70						0.460	1.370	8.970	2.750
14	E	20			80						0.460	1.450	8.540	2.760
15	D	10			90						0.430	1.320	9.250	2.750
16	C	30	70								0.490	1.010	11.010	2.690
17	PRICES CK				40		60				0.190	0.780	11.160	2.420
18	Upper B1-B2	40					60				0.310	1.270	8.180	2.440
19	B1	80			20						0.640	2.180	5.370	2.790
20	A2	80			20						0.640	2.180	5.370	2.790
21	A2 LGoldwyer Source	80			20						0.640	2.180	5.370	2.790
22	A1	50			50						0.550	1.820	6.780	2.780
23	A1 Source	40	60								0.520	1.210	9.720	2.710
24	AO	40	60								0.520	1.210	9.720	2.710
25	Basement						100				0.050	0.500	4.500	2.760
26	Dummy						100				0.050	0.500	4.500	2.760

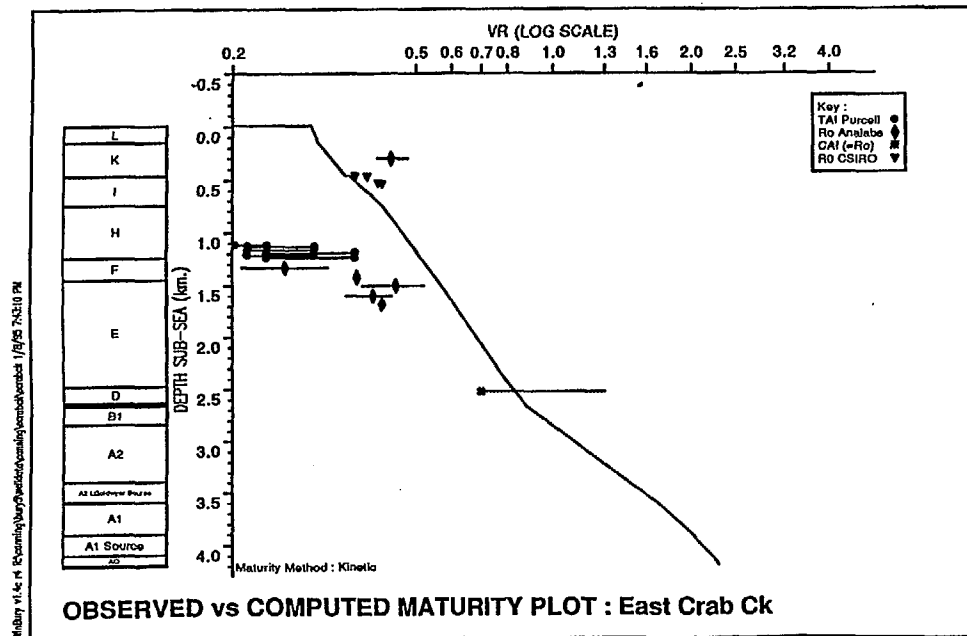
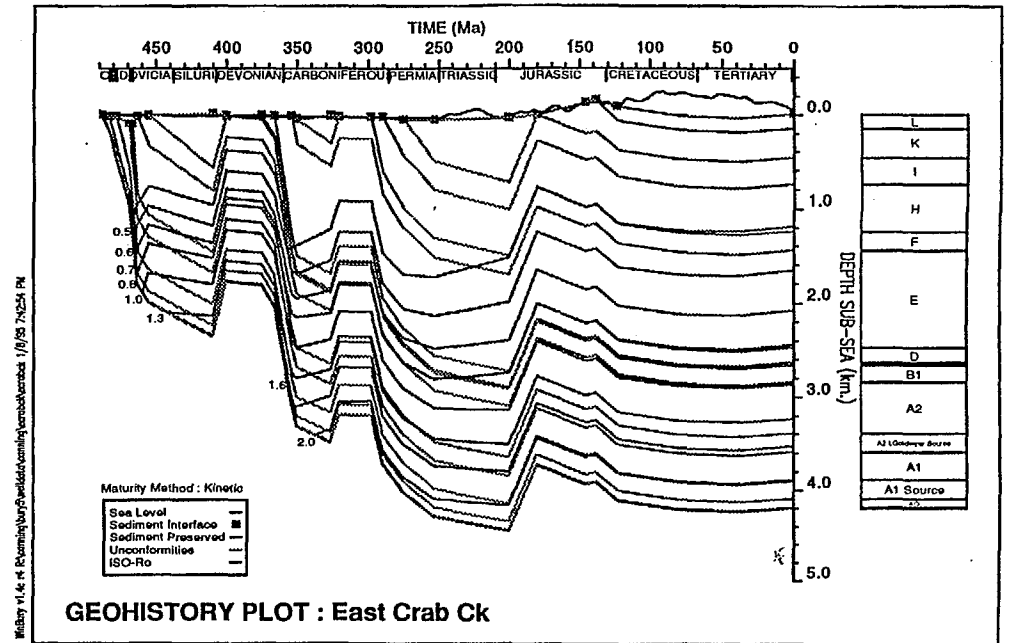
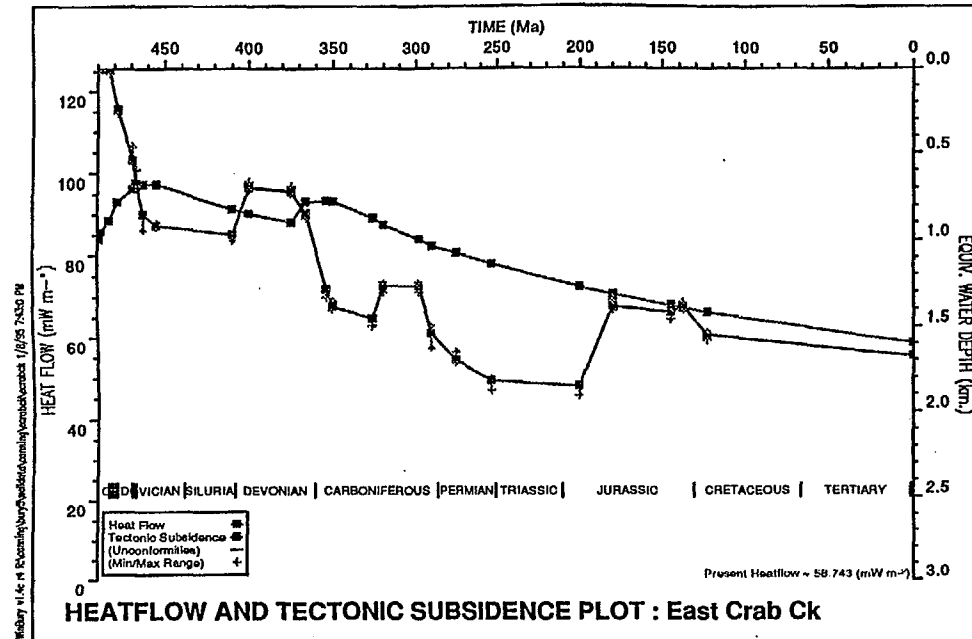
HORIZON DATA : ECRABCK - MATRIX LITHOLOGY



	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity
1	315.00	0	0.44	0.41	0.48
2	485.00	0	0.37		
3	490.00	0	0.39		
4	550.00	0	0.41		
5	561.00	0	0.42		
6	1133.00	1		1.20	1.70
7	1149.00	1		1.50	2.00
8	1182.00	1		1.50	2.00
9	1212.00	1		1.70	2.20
10	1230.00	1		1.50	2.00
11	1252.00	1		1.70	2.20
12	1347.00	0	0.26	0.21	0.32
13	1437.00	0	0.37		
14	1518.00	0	0.45	0.38	0.52
15	1617.00	0	0.40	0.35	0.44
16	1698.00	0	0.42		
17	2540.00	0	0.70	0.70	1.30

Maturity Data : ECRABCK

	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	1207.00	0	59.00	6.45	65.00	0
2	1217.00	0	60.00	11.15	65.00	0
3	1218.00	0	62.00	16.25	65.00	0
4	2537.00	0	94.40	14.50	97.00	0
5	2540.00	0	96.10	21.30	97.00	0
6	2540.00	0	96.70	10.05	97.00	0
7	2541.00	0	94.40	8.45	97.00	0
8	2809.00	0	97.80	11.00	100.00	0
9	2811.00	0	98.90	8.30	100.00	0

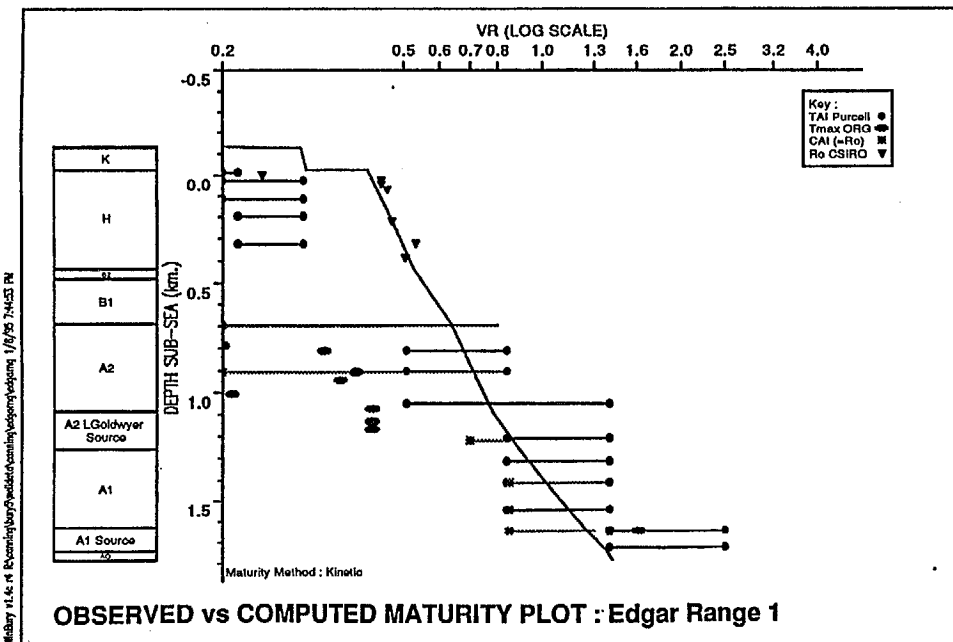
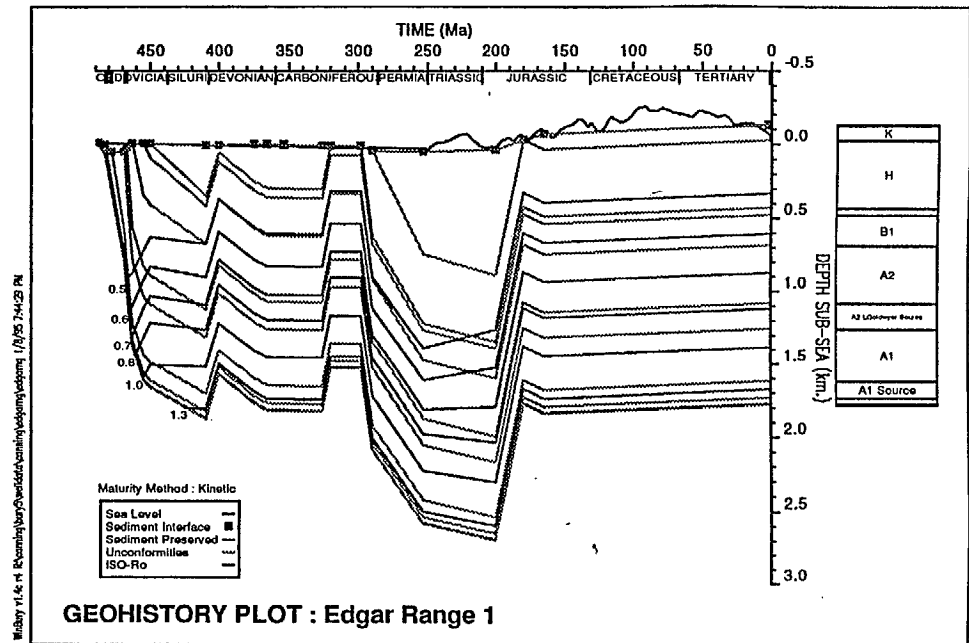
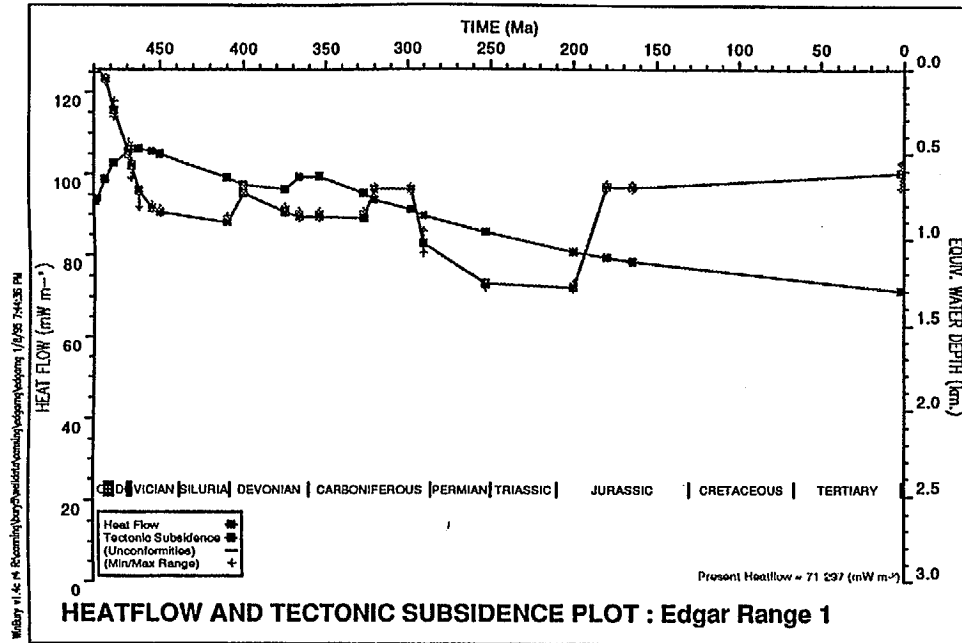


	Stratigraphic Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum WtdDph	Maximum WtdDph	Modelled WtdDph	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	Quaternary	N	4.34	0.00	-131.90	-131.90	-131.90	25.00	0.00			
2	Base Q	H	9.14	2.00	-100.00	0.00	-82.09	25.00	0.00			
3	K	N	9.14	165.00	10.00	30.00	25.00	17.00	7.15			
4	FITZROY	E	112.78	180.00	0.00	30.00	15.00	15.00	8.16			
5	Hiatus 4	E	(850.00)	200.00	0.00	30.00	23.41	15.00	9.55			
6	Upper H-I	E	(700.00)	253.00	0.00	30.00	5.74	10.00	14.40			
7	H	N	112.78	290.00	-20.00	100.00	47.85	10.00	18.57			
8	Drosera	H	571.51	298.00	5.00	30.00	15.00	10.00	19.96			
9	MEDA	E	571.51	320.00	5.00	30.00	15.00	12.00	22.39			
10	Hiatus 3	E	(300.00)	325.00	-20.00	10.00	10.00	15.00	23.91			
11	Dep ?E	E	(300.00)	354.00	-20.00	10.00	4.22	20.00	28.07			
12	Dep ?D	E	(300.00)	366.00	-20.00	10.00	1.55	20.00	27.95			
13	C Dep	E	(250.00)	375.00	-20.00	10.00	2.88	30.00	24.95			
14	PRICES CK	E	(50.00)	400.00	-20.00	10.00	10.00	30.00	25.99			
15	Upper B2	E	(350.00)	410.00	-20.00	10.00	10.00	30.00	27.73			
16	B2	N	571.51	450.00	-10.00	10.00	3.39	30.00	33.49			
17	B1	N	617.53	455.00	-10.00	10.00	3.39	30.00	34.18			
18	A2	N	825.32	463.00	2.00	100.00	2.01	28.00	34.88			
19	A2 LGoldwyer Source	N	1220.00	467.00	2.00	100.00	27.18	28.00	34.88		LOWGOLD	
20	A1	N	1392.95	469.00	10.00	100.00	62.61	25.00	34.18			
21	A1 Source	N	1760.00	478.00	10.00	100.00	62.61	25.00	31.41		LOWGOLD	
22	AO	N	1874.54	483.00	0.00	30.00	10.00	25.00	27.38			
23	Basement	N	1916.00	488.00	0.00	0.00	0.00	25.00	22.59			
24	Dummy	N	1920.26	489.00	0.00	0.00	0.00	25.00	21.90			

HORIZON DATA : EDGARNG

	Stratigraphic Unit/Event	SHALE	SAND	CHALK	LST	COAL	HALIT	VOLCS	CONV	GV/ANH	Initial Porosity	Por/Depth Factor	Porosity	Density
1	Quaternary		100								0.400	0.400	16.000	2.650
2	Base Q	20	80								0.460	0.810	12.470	2.680
3	K	20	80								0.460	0.810	12.470	2.680
4	FITZROY	70	30								0.610	1.820	6.690	2.760
5	Hiatus 4	70	30								0.610	1.820	6.690	2.760
6	Upper H-I	60	40								0.580	1.620	7.570	2.740
7	H	45	55								0.530	1.310	9.130	2.720
8	Drosera	10	90								0.430	0.600	14.120	2.670
9	MEDA	10	90								0.430	0.600	14.120	2.670
10	Hiatus 3	10	90								0.430	0.600	14.120	2.670
11	Dep ?E	10	90								0.430	0.600	14.120	2.670
12	Dep ?D	10	90								0.430	0.600	14.120	2.670
13	C Dep	10	90								0.430	0.600	14.120	2.670
14	PRICES CK	50					50				0.380	1.470	7.430	2.500
15	Upper B2	50					50				0.380	1.470	7.430	2.500
16	B2	95			5						0.690	2.370	4.780	2.800
17	B1	85			15						0.660	2.250	5.170	2.790
18	A2	60			40						0.580	1.940	6.280	2.780
19	A2 LGoldwyer Source	80			20						0.640	2.180	5.370	2.790
20	A1	50			50						0.550	1.820	6.780	2.780
21	A1 Source	70			30						0.610	2.060	5.810	2.780
22	AO	45	45		10						0.530	1.300	8.710	2.730
23	Basement							100			0.050	0.500	4.500	2.760
24	Dummy							100			0.050	0.500	4.500	2.760

HORIZON DATA : EDGARNG - MATRIX LITHOLOGY

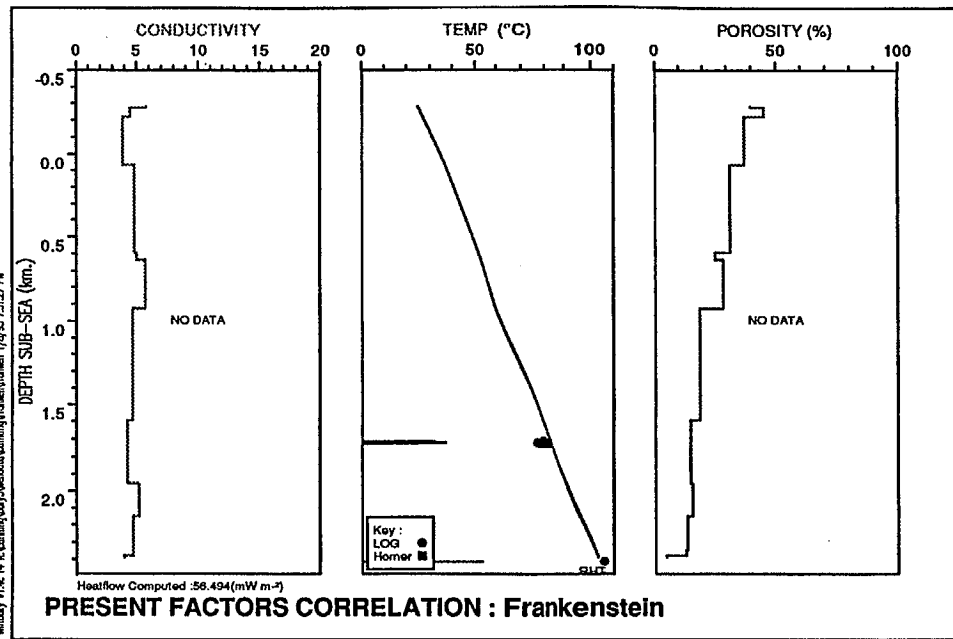


	Stratigraphic Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum Wit/Dpth	Maximum Wit/Dpth	Modelled Wit/Dpth	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	Quaternary	N	6.97	0.00	-280.30	-280.30	-280.29	25.00	0.00			
2	Hiatus 3+4	H	11.50	2.00	-200.00	0.00	-199.99	25.00	0.00			
3	K	N	11.50	165.00	-10.00	30.00	10.01	17.00	7.00			
4	FITZROY	E	69.00	180.00	0.00	30.00	1.81	15.00	7.70			
5	?H-J Hiatus 2	E	(450.00)	200.00	-10.00	30.00	11.78	15.00	8.74			
6	Upper I	E	(200.00)	253.00	0.00	30.00	2.67	12.00	11.95			
7	I	N	69.00	280.00	0.00	60.00	27.00	10.00	14.64			
8	H	N	356.00	290.00	0.00	100.00	42.40	10.00	15.33			
9	Drosera	H	880.00	298.00	0.00	30.00	15.00	10.00	16.11			
10	G	N	880.00	310.00	0.00	30.00	0.01	10.00	17.65			
11	MEDA	E	925.00	320.00	0.00	30.00	15.00	12.00	18.80			
12	Hiatus I	E	(100.00)	326.00	0.00	30.00	0.01	15.00	19.84			
13	?D	E	(50.00)	366.00	0.00	30.00	0.01	28.00	24.00			
14	C	N	925.00	375.00	-20.00	10.00	-19.99	30.00	25.30			
15	PRICES CK ?Hiatus	H	1213.00	400.00	-20.00	10.00	-11.57	30.00	29.56			
16	B2	N	1213.00	410.00	-10.00	10.00	-3.23	30.00	30.94			
17	B1	N	1880.00	455.00	-10.00	10.00	-5.90	30.00	36.93			
18	A2	N	2240.00	463.00	10.00	100.00	38.34	28.00	37.19			
19	A1	N	2434.00	469.00	10.00	100.00	44.57	25.00	36.15			
20	A0	N	2635.00	483.00	0.00	30.00	10.00	25.00	30.69			
21	Basement	N	2666.00	488.00	0.00	10.00	10.00	25.00	26.52			
22	Dummy	N	2676.00	489.00	0.00	10.00	10.00	25.00	23.75			

HORIZON DATA : FRANKEN

	Stratigraphic Unit/Event	SHALE	SAND	CHALK	LST	COAL	HALT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Conductivity	Density
1	Quaternary		100								0.400	0.400	16.000	2.650
2	Hiatus 3+4	20	80								0.460	0.810	12.470	2.680
3	K	20	80								0.460	0.810	12.470	2.680
4	FITZROY	45	55								0.530	1.310	9.130	2.720
5	?H-J Hiatus 2	45	55								0.530	1.310	9.130	2.720
6	Upper I	45	55								0.530	1.310	9.130	2.720
7	I	60	40								0.580	1.620	7.570	2.740
8	H	45	55								0.530	1.310	9.130	2.720
9	Drosera	30	10		60						0.490	1.490	8.300	2.750
10	G	30	10		60						0.490	1.490	8.300	2.750
11	MEDA	30	10		60						0.490	1.490	8.300	2.750
12	Hiatus I	30	10		60						0.490	1.490	8.300	2.750
13	?D	30	10		60						0.490	1.490	8.300	2.750
14	C	30	70								0.490	1.010	11.010	2.690
15	PRICES CK ?Hiatus	65	10				25				0.510	1.740	6.620	2.630
16	B2	65	10				25				0.510	1.740	6.620	2.630
17	B1	80					20				0.570	2.040	5.570	2.680
18	A2	50	20		30						0.550	1.660	7.450	2.750
19	A1	60			40						0.580	1.940	6.280	2.780
20	A0	60			40						0.580	1.940	6.280	2.780
21	Basement							100			0.050	0.500	4.500	2.760
22	Dummy							100			0.050	0.500	4.500	2.750

HORIZON DATA : FRANKEN - MATRIX LITHOLOGY

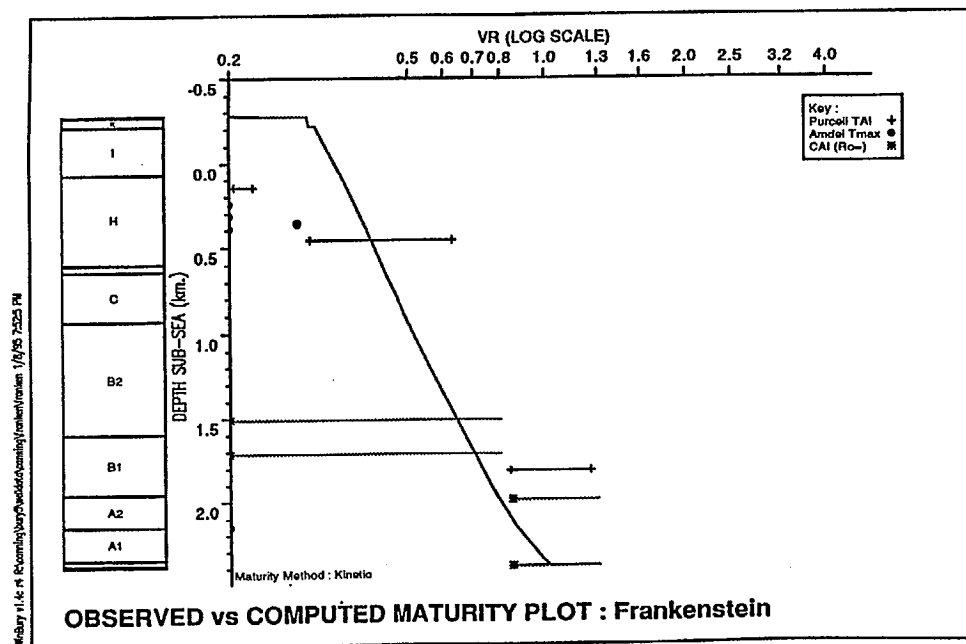
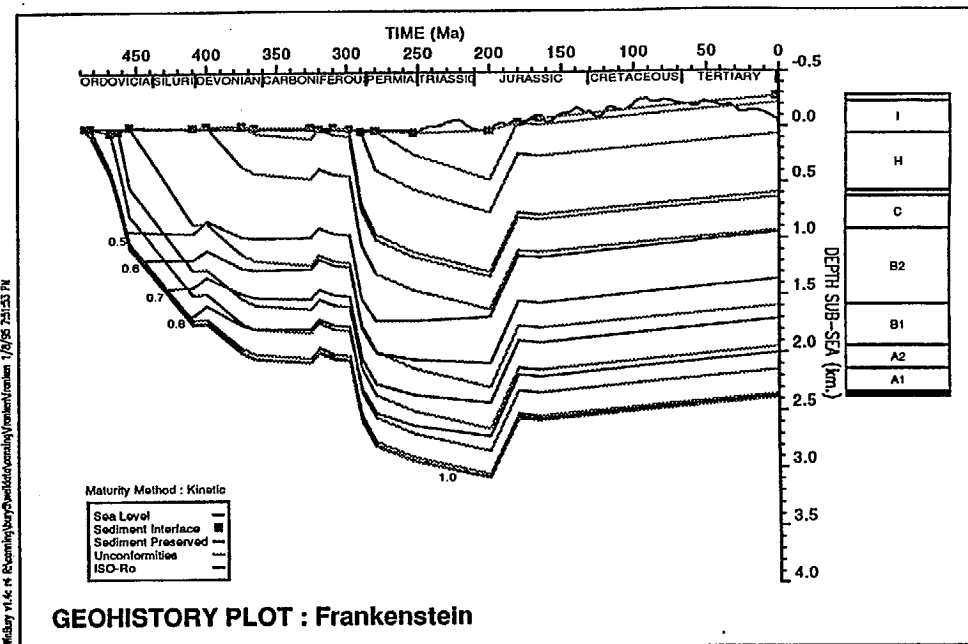
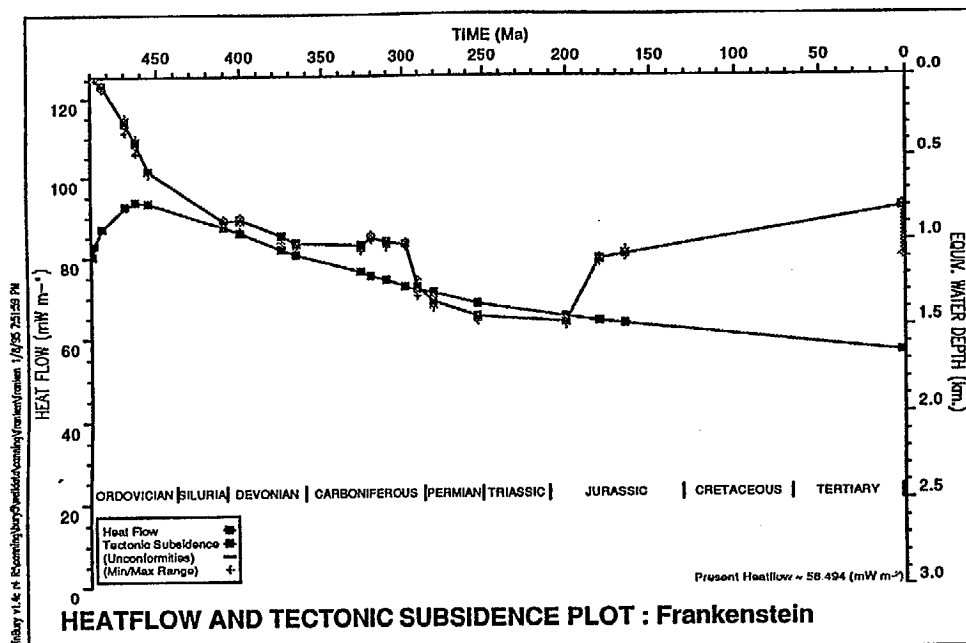


	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
1	435.00	1		1.30	1.60	1
2	530.00	2	392.00			2
3	603.00	2	423.00			2
4	650.00	2	430.00			2
5	680.00	2	350.00			2
6	742.00	1		2.00	2.70	1
7	1795.00	0	0.20	0.20	0.80	5
8	2000.00	0	0.20	0.20	0.80	5
9	2101.00	1		3.00	3.40	1
10	2279.00	0	0.85	0.85	1.30	5
11	2441.00	2	419.00			2
12	2675.00	0	0.85	0.85	1.30	5

MATURITY DATA : FRANKEN

	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	2002.00	0	79.40	32.00	79.40	0
2	2010.00	0	81.10	37.00	81.10	0
3	2011.00	0	76.70	10.10	76.70	0
4	2012.00	0	79.40	24.50	79.40	0
5	2014.00	0	78.90	17.50	81.80	1
6	2700.00	0	105.60	53.20	105.60	0
7	2785.00	0	105.60	44.75	105.60	0
8	2790.00	0	98.30	12.90	98.30	0
9	2791.00	0	104.40	33.00	104.40	0
10	2792.00	0	102.20	25.75	106.20	1

TEMPERATURE DATA : FRANKEN



	Stratigraphic Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum WtdDpth	Maximum WtdDpth	Modelled WtdDpth	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	QUATERNARY	N	4.00	0.00	-44.70	-44.70	-44.70	25.00	0.00			
2	HIATUS 4	H	16.70	2.00	-30.00	50.00	45.71	25.00	0.02			
3	L	N	16.70	123.00	-20.00	10.00	-10.00	22.00	5.92			
4	HIATUS 3	H	116.00	138.00	-10.00	50.00	41.44	20.00	6.96			
5	K	N	116.00	145.00	-10.00	50.00	10.00	20.00	7.31			
6	FITZROY TRANS	E	488.50	180.00	10.00	100.00	81.41	17.00	9.39			
7	HIATUS 2	E	(1000.00)	200.00	10.00	100.00	29.76	15.00	10.73			
8	Dep Upper H-1	E	(900.00)	272.00	10.00	100.00	10.01	10.00	15.58			
9	H	N	488.50	293.00	10.00	100.00	76.46	10.00	17.32			
10	DROSERIA HIATUS	H	802.00	298.00	-10.00	20.00	-9.99	10.00	18.01			
11	G	N	802.00	310.00	-10.00	20.00	-9.99	11.00	19.40			
12	MEDA	E	915.50	320.00	-20.00	0.00	-6.66	12.00	20.79			
13	CARB ?UPLIFT	E	(150.00)	326.00	-20.00	0.00	-8.42	15.00	21.48			
14	NULLARA ?UPLIFT	E	(150.00)	354.00	-20.00	0.00	-19.99	25.00	25.00			
15	PILLARA ?UPLIFT	E	(150.00)	366.00	-20.00	0.00	-18.39	28.00	26.39			
16	DEP C	E	(150.00)	376.00	-20.00	0.00	-19.00	30.00	28.13			
17	PRICES CK EROSION	E	(10.00)	400.00	-20.00	10.00	-8.38	30.00	32.29			
18	Dep B2	E	(800.00)	410.00	-20.00	10.00	-19.99	30.00	34.37			
19	Dep B1	E	(530.00)	455.00	-10.00	10.00	-0.49	30.00	39.92			
20	Dep Upper A2	E	(330.00)	463.00	5.00	30.00	5.01	28.00	40.27			
21	A2 - LGold Source	N	915.50	467.00	10.00	100.00	22.27	27.00	40.27		LOWGOLD	
22	A1	N	1091.00	469.00	10.00	100.00	60.63	25.00	39.87			
23	A1 Source	N	1325.00	478.00	10.00	100.00	66.94	25.00	38.83		LOWGOLD	
24	A0	N	1500.00	483.00	10.00	30.00	15.00	25.00	35.02			
25	BASEMENT	N	1531.00	488.00	0.00	0.00	0.00	25.00	30.21			
26	Dummy	N	1541.00	489.00	0.00	0.00	0.00	25.00	28.42			

HORIZON DATA : HEDONIA

	Stratigraphic Unit/Event	SHALE	SAND	CHALK	LST	COAL	HAUT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Corrosion	Density
1	QUATERNARY	30	70								0.490	1.010	11.010	2.690
2	HIATUS 4	30	70								0.490	1.010	11.010	2.690
3	L	15	85								0.450	0.700	13.270	2.670
4	HIATUS 3	50	50								0.550	1.420	8.580	2.730
5	K	40	60								0.520	1.210	9.720	2.710
6	FITZROY TRANS	60	40								0.580	1.620	7.570	2.740
7	HIATUS 2	60	40								0.580	1.620	7.570	2.740
8	Dep Upper H-1	60	40								0.580	1.620	7.570	2.740
9	H	40	60								0.520	1.210	9.720	2.710
10	DROSERIA HIATUS	40	60								0.520	1.210	9.720	2.710
11	G	40	60								0.520	1.210	9.720	2.710
12	MEDA		100								0.400	0.400	16.000	2.650
13	CARB ?UPLIFT	60	40								0.580	1.620	7.570	2.740
14	NULLARA ?UPLIFT	60	40								0.580	1.620	7.570	2.740
15	PILLARA ?UPLIFT	60	40								0.580	1.620	7.570	2.740
16	DEP C	40	60								0.520	1.210	9.720	2.710
17	PRICES CK EROSION	60	40								0.580	1.620	7.570	2.740
18	Dep B2	20			5		75				0.200	0.920	9.820	2.350
19	Dep B1	80			10		10				0.600	2.110	5.470	2.740
20	Dep Upper A2	60			40						0.580	1.940	6.280	2.780
21	A2 - LGold Source	80			20						0.440	2.180	5.370	2.790
22	A1	50			50						0.550	1.820	6.780	2.780
23	A1 Source	50			50						0.550	1.820	6.780	2.780
24	A0	90			10						0.670	2.310	4.970	2.800
25	BASEMENT							100			0.050	0.500	4.500	2.760
26	Dummy							100			0.050	0.500	4.500	2.760

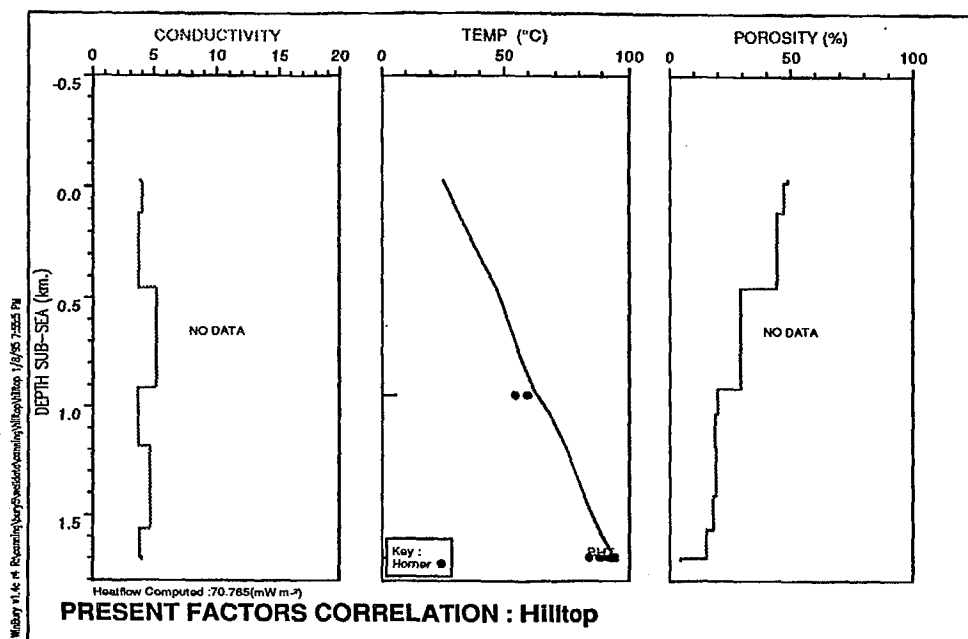
HORIZON DATA : HEDONIA - MATRIX LITHOLOGY

	Stratigraphic Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum WitDpth	Maximum WitDpth	Modelled WitDpth	Sea Bed Temp.	Heatflow	Uthology Data	Kerogen Data	Variable Beds
1	QUATERNARY	N	7.70	0.00	-31.58	-31.58	-31.57	25.00	0.00			
2	HIATUS 4	H	20.00	2.00	-30.00	50.00	45.71	25.00	0.20			
3	L	N	20.00	123.00	-20.00	10.00	-19.99	22.00	7.30			
4	HIATUS 3	H	157.00	138.00	-10.00	50.00	38.80	20.00	7.65			
5	K	N	157.00	145.00	-10.00	50.00	-9.23	20.00	8.34			
6	FITZROY TRANS	E	492.00	180.00	10.00	100.00	81.41	17.00	10.43			
7	HIATUS 2	E	(1000.00)	200.00	10.00	100.00	79.73	15.00	11.81			
8	Dep Upper H4	E	(900.00)	272.00	10.00	100.00	30.00	10.00	17.09			
9	H	N	492.00	290.00	10.00	100.00	76.46	10.00	19.10			
10	DROSERIA HIATUS	H	953.00	298.00	10.00	100.00	59.76	10.00	19.79			
11	MEDA	E	953.00	320.00	-20.00	10.00	-19.99	10.00	22.92			
12	CARB UPLIFT	E	(150.00)	326.00	-20.00	10.00	-7.63	15.00	24.41			
13	NULLARA UPLIFT	E	(150.00)	354.00	-20.00	10.00	-14.59	25.00	28.77			
14	PILLARA UPLIFT	E	(150.00)	366.00	-20.00	10.00	-14.04	28.00	30.62			
15	DEP C	E	(150.00)	375.00	-20.00	10.00	-19.99	30.00	33.05			
16	PRICES CK EROSION	E	(10.00)	400.00	-20.00	10.00	-8.38	30.00	37.84			
17	Dep B2	E	(800.00)	410.00	-10.00	10.00	-8.38	30.00	39.57			
18	Dep B1	E	(450.00)	455.00	-10.00	10.00	-0.60	30.00	45.54			
19	Dep Upper A2	E	(250.00)	463.00	-10.00	10.00	-8.38	28.00	45.54			
20	A2	N	953.00	465.00	5.00	30.00	10.01	27.00	45.54			
21	A2 LGoldwyer Source	N	1070.00	467.00	10.00	100.00	10.01	27.00	45.54		LOWGOLD	
22	A1	N	1225.00	469.00	10.00	100.00	100.00	25.00	45.19			
23	A1 Source	N	1450.00	478.00	10.00	100.00	99.99	25.00	43.11		LOWGOLD	
24	A0	N	1604.00	483.00	10.00	30.00	15.00	25.00	38.60			
25	BASEMENT	N	1736.00	488.00	0.00	0.00	0.00	25.00	33.74			
26	Dummy	N	1746.00	499.00	0.00	0.00	0.00	25.00	32.01			

HORIZON DATA : HILLTOP

	Stratigraphic Unit/Event	SHALE	SAND	CHALK	LST	COAL	HAUT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	conductivity	Density
1	QUATERNARY	30	70								0.490	1.010	11.010	2.690
2	HIATUS 4	30	70								0.490	1.010	11.010	2.690
3	L	30	70								0.490	1.010	11.010	2.690
4	HIATUS 3	50	50								0.550	1.420	8.580	2.730
5	K	50	50								0.550	1.420	8.580	2.730
6	FITZROY TRANS	60	40								0.580	1.620	7.570	2.740
7	HIATUS 2	60	40								0.580	1.620	7.570	2.740
8	Dep Upper H4	60	40								0.580	1.620	7.570	2.740
9	H	40	60								0.520	1.210	9.720	2.710
10	DROSERIA HIATUS	40	60								0.520	1.210	9.720	2.710
11	MEDA		100								0.400	0.400	16.000	2.650
12	CARB UPLIFT	60	40								0.580	1.620	7.570	2.740
13	NULLARA UPLIFT	60	40								0.580	1.620	7.570	2.740
14	PILLARA UPLIFT	60	40								0.580	1.620	7.570	2.740
15	DEP C	60	40								0.580	1.620	7.570	2.740
16	PRICES CK EROSION	60	40								0.580	1.620	7.570	2.740
17	Dep B2	40					60				0.310	1.270	8.180	2.440
18	Dep B1	60			30		10				0.550	1.870	6.390	2.730
19	Dep Upper A2	60			40						0.580	1.940	6.280	2.780
20	A2	90			10						0.670	2.310	4.970	2.800
21	A2 LGoldwyer Source	90			10						0.670	2.310	4.970	2.800
22	A1	50			50						0.550	1.820	6.780	2.780
23	A1 Source	50			50						0.550	1.820	6.780	2.780
24	A0	90			10						0.670	2.310	4.970	2.800
25	BASEMENT							100			0.050	0.500	4.500	2.760
26	Dummy							100			0.050	0.500	4.500	2.760

HORIZON DATA : HILLTOP - MATRIX LITHOLOGY



	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	984.50	0	55.00	6.00	60.00	0
2	1735.00	0	85.00	4.66	94.00	0
3	1737.00	0	88.90	9.00	94.00	0
4	1737.00	0	92.20	14.75	94.00	0

	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity
1	205.00	0	0.31	0.25	0.40
2	310.00	0	0.31	0.21	0.41
3	395.00	0	0.34	0.22	0.42
4	770.00	0	0.37	0.32	0.46
5	810.00	0	0.43	0.36	0.51
6	915.00	1	1.75	1.50	2.00
7	930.00	1	2.00	1.50	2.50
8	945.00	1	2.00	1.50	2.50
9	960.00	1		3.00	3.50
10	975.00	1		3.00	3.50
11	986.00	1		3.00	3.50
12	996.00	1		3.00	3.50
13	1002.00	1		3.00	3.50
14	1032.00	1		3.00	3.50
15	1053.00	0	1.51	1.17	1.68
16	1053.00	2	433.00		3
17	1075.00	1		3.00	3.50
18	1079.00	2	438.00		3
19	1098.00	0	1.57	1.23	1.78
20	1098.00	2	432.00		3
21	1128.00	2	438.00		3
22	1170.00	2	447.00		3
23	1182.00	1		3.00	4.00
24	1286.00	2	399.00		3
25	1353.00	2	424.00		3
26	1353.00	1		3.50	4.00
27	1421.00	2	433.00		3
28	1421.00	0	2.30	2.09	2.39
29	1436.00	1		3.50	4.00
30	1436.00	2	462.00		3
31	1484.00	2	395.00		3
32	1505.00	0	2.35	2.06	2.80
33	1505.00	2	330.00		3
34	1538.00	2	335.00		3
35	1570.00	1		3.50	4.00
36	1605.00	2	345.00		3

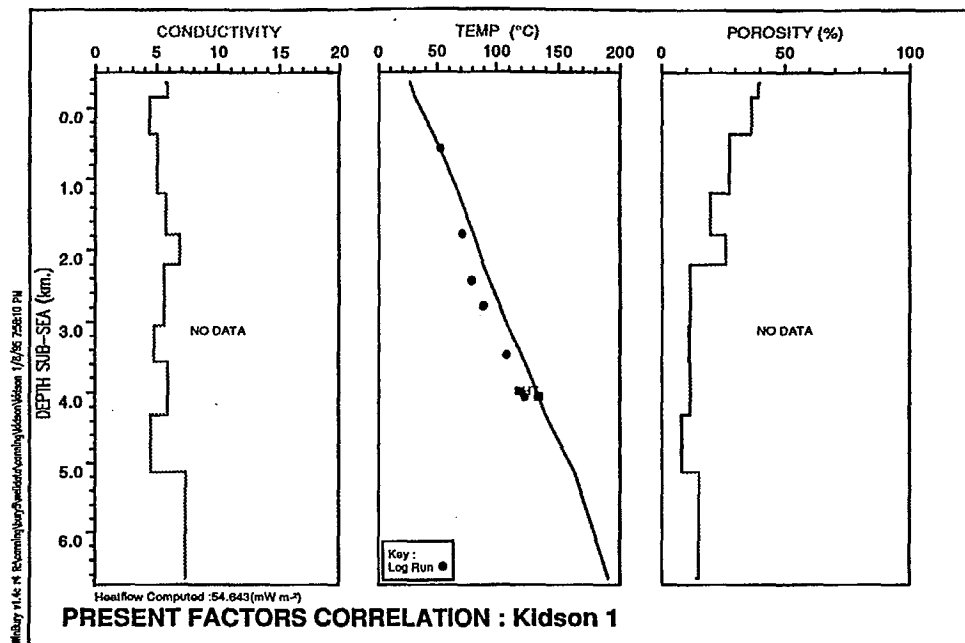
	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity
37	1610.00	0	3.25	2.52	5.00
38	1630.00	2	331.00		

	Stratigraphic Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum Wit/Dpth	Maximum Wit/Dpth	Modified Wit/Dpth	Sea Bed Temp.	Heatflow	Uithology Data	Kerogen Data	Variable Beds
1	Quaternary	N	4.87	0.00	-355.10	-355.10	-355.09	26.67	0.00			
2	Hiatus 4	H	18.29	2.00	-300.00	0.00	-258.15	25.00	0.00			
3	L	N	18.29	130.00	-10.00	30.00	-0.18	20.00	4.57			
4	?Hiatus 3	H	212.00	138.00	10.00	30.00	20.83	20.00	5.24			
5	FITZROY	E	212.00	180.00	-30.00	10.00	-29.99	17.00	6.89			
6	Dep ?J	E	(400.00)	200.00	-20.00	10.00	-1.88	17.24	7.81			
7	Upper I	E	(100.00)	253.00	0.00	60.00	0.01	12.00	10.69			
8	I	N	212.00	270.00	0.00	100.00	47.05	10.00	12.44			
9	H	N	736.10	290.00	0.00	100.00	46.44	10.00	14.49			
10	Drosera	H	1570.65	298.00	-10.00	30.00	14.91	10.00	15.41			
11	MEDA	E	1570.65	320.00	-10.00	30.00	-7.19	12.00	17.73			
12	Hiatus 2	E	(300.00)	326.00	0.00	30.00	16.52	15.00	18.65			
13	?E	E	(250.00)	354.00	0.00	30.00	16.34	28.00	21.69			
14	Upper D	E	(150.00)	366.00	0.00	30.00	17.60	28.00	23.74			
15	D	N	1570.65	370.00	5.00	30.00	7.39	28.00	24.20			
16	C	N	2148.87	375.00	-20.00	10.00	9.55	30.00	24.67			
17	PRICES CK ?Hiatus	H	2570.10	400.00	-10.00	10.00	-1.07	30.00	28.83			
18	B2	N	2570.10	410.00	-10.00	10.00	-8.96	30.00	30.68			
19	B1	N	3418.98	442.00	-10.00	10.00	-0.86	30.00	36.23			
20	A2	N	3933.49	463.00	0.00	100.00	54.25	28.00	38.08			
21	A1	N	4678.74	469.00	10.00	100.00	79.68	25.00	36.69			
22	A0	N	5500.00	483.00	0.00	30.00	10.00	25.00	28.83			
23	Basement	N	7010.49	488.00	0.00	0.00	0.00	25.00	20.50			
24	Dummy	N	7020.00	489.00	0.00	0.00	0.00	25.00	20.04			

HORIZON DATA : KIDSON

	Stratigraphic Unit/Event	SHALE	SAND	CHALK	LST	COAL	HAUT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Conductivity	Density
1	Quaternary		100								0.400	0.400	16.000	2.650
2	Hiatus 4		100								0.400	0.400	16.000	2.650
3	L		100								0.400	0.400	16.000	2.650
4	?Hiatus 3		100								0.400	0.400	16.000	2.650
5	FITZROY		55								0.630	1.310	9.130	2.720
6	Dep ?J		55								0.530	1.310	9.130	2.720
7	Upper I		55								0.530	1.310	9.130	2.720
8	I		55								0.530	1.310	9.130	2.720
9	H		55								0.530	1.310	9.130	2.720
10	Drosera				70						0.490	1.570	7.920	2.760
11	MEDA				70						0.490	1.570	7.920	2.760
12	Hiatus 2				70						0.490	1.570	7.920	2.760
13	?E				70						0.490	1.570	7.920	2.760
14	Upper D				70						0.490	1.570	7.920	2.760
15	D				90						0.430	1.320	9.250	2.750
16	C	10	90								0.430	0.600	14.120	2.670
17	PRICES CK ?Hiatus	80			20						0.640	2.180	5.370	2.790
18	B2	45			10		40			5	0.400	1.910	7.700	2.560
19	B1	65	5		15		15				0.540	1.850	6.350	2.690
20	A2				80						0.460	1.450	8.560	2.760
21	A1		20								0.640	2.020	5.900	2.770
22	A0		70		30						0.400	0.640	13.900	2.680
23	Basement		70		30						0.400	0.640	13.900	2.680
24	Dummy		70		30						0.400	0.640	13.900	2.680

HORIZON DATA : KIDSON - MATRIX LITHOLOGY

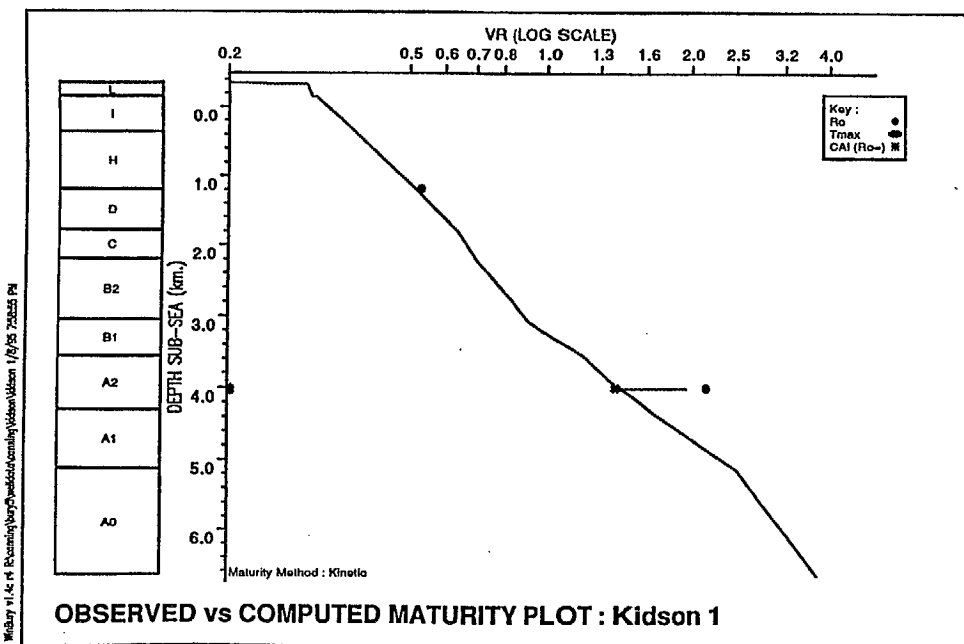
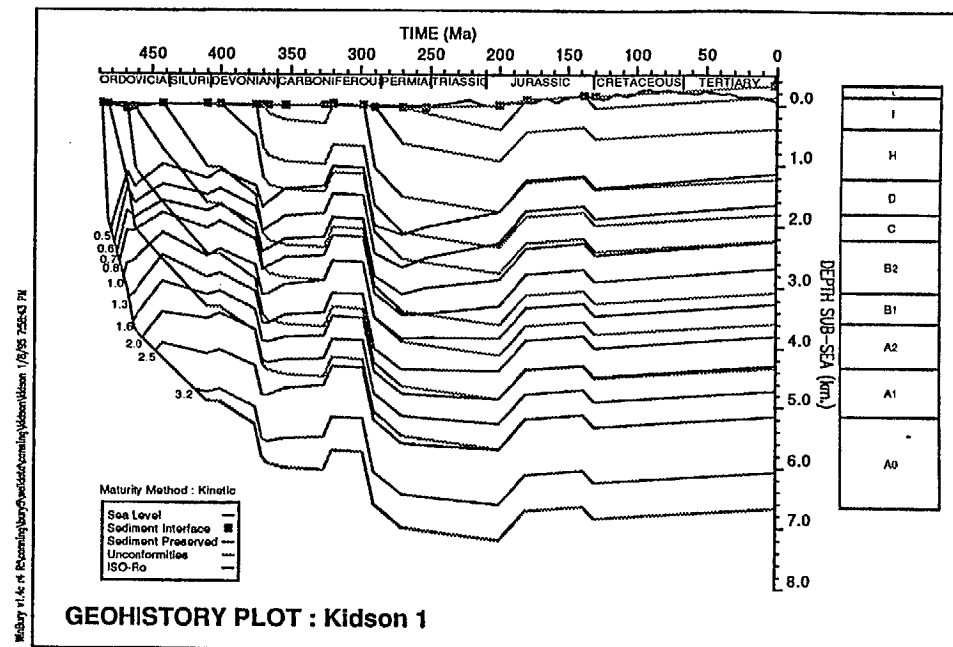
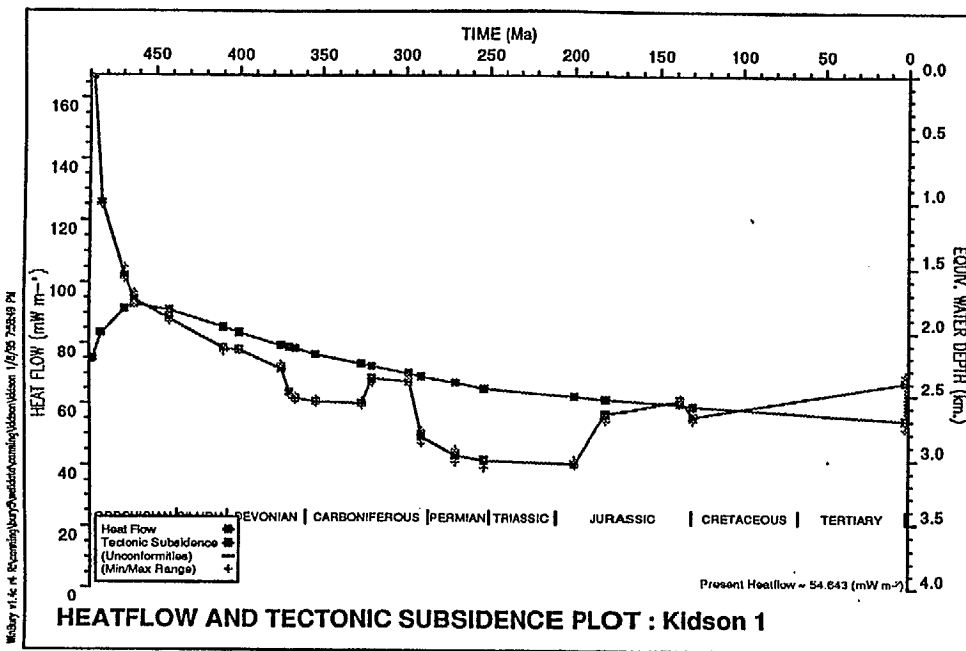


	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
1	1554.00	0	0.53			0
2	4364.00	2	380.00			3
3	4367.00	0	2.16			0
4	4367.00	0	1.40	1.40	1.95	5
5	4368.00	2	364.00			3
6	4426.00	2	323.00			3

MATURITY DATA : KIDSON

	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	944.59	0	53.33	0.00	53.33	0
2	2133.32	0	72.22	0.00	72.22	0
3	2803.28	0	80.00	0.00	80.00	0
4	3146.18	0	90.00	0.00	90.00	0
5	3834.73	0	108.89	0.00	108.89	0
6	4365.09	0	120.00	0.00	120.00	0
7	4429.41	0	123.33	0.00	134.00	0

TEMPERATURE DATA : KIDSON



	Stratigraph. Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum Wtdpth	Maximum Wtdpth	Modelled Wtdpth	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	Quaternary	N	2.80	0.00	-21.00	-21.00	-21.00	25.00	0.00			
2	Base Q	H	32.00	2.00	0.00	60.00	53.72	25.00	0.00			
3	FITZROY	E	32.00	180.00	-10.00	10.00	5.79	16.00	9.92			
4	Stisland2	E	(200.00)	200.00	-10.00	10.00	-9.99	15.00	11.30			
5	J (Blind)	N	32.00	246.00	10.00	40.00	35.16	11.00	15.75			
6	I (Lv)	N	128.00	253.00	10.00	30.00	14.10	10.00	17.14			
7	I (Poole+Noon)	N	275.00	272.00	10.00	50.00	48.38	10.00	19.92			
8	H	N	595.00	290.00	10.00	60.00	39.50	10.00	23.39			
9	Drosera\Glacial Eros	H	1098.00	298.00	-20.00	10.00	-13.79	10.00	25.10			
10	G	N	1098.00	310.00	-20.00	10.00	-19.99	10.00	28.10			
11	MEDA	E	1272.00	320.00	-10.00	10.00	10.00	12.00	31.08			
12	Upper F (And)	E	(200.00)	326.00	0.00	20.00	3.92	14.00	32.82			
13	F (And)	N	1272.00	344.00	10.00	40.00	40.00	20.00	35.94			
14	F (Laurel)	N	1308.00	346.00	10.00	40.00	40.00	22.00	36.63			
15	E	N	1484.00	354.00	0.00	20.00	20.00	25.00	36.63			
16	Basement 1	H	1597.00	360.00	0.00	0.00	0.00	27.00	35.59			
17	Basement 2	H	1597.00	366.00	0.00	0.00	0.00	28.00	32.47			
18	Basement 3	H	1597.00	375.00	0.00	0.00	0.00	30.00	23.79			
19	Basement	H	1597.00	400.00	0.00	0.00	0.00	30.00	22.75			
20	Basement 4	N	1597.00	489.00	0.00	0.00	0.00	30.00	22.75			

HORIZON DATA : LANGOORA

	Stratigraph. Unit/Event	SHALE	SAND	CHALK	LST	COAL	HALIT	VOLCS	CONV	GV/ANH	Initial Porosity	Por/Depth Factor	Conductivity	Density
1	Quaternary		100								0.400	0.400	16.000	2.650
2	Base Q	50	50								0.550	1.420	8.580	2.730
3	FITZROY	50	50								0.550	1.420	8.580	2.730
4	Stisland2	50	50								0.550	1.420	8.580	2.730
5	J (Blind)	70	30								0.610	1.820	6.690	2.760
6	I (Lv)	40	60								0.520	1.210	9.720	2.710
7	I (Poole+Noon)	60	40								0.580	1.620	7.570	2.740
8	H	25	75								0.480	0.910	11.720	2.690
9	Drosera\Glacial Eros	10	90								0.430	0.600	14.120	2.670
10	G	10	90								0.430	0.600	14.120	2.670
11	MEDA	40	60								0.520	1.210	9.720	2.710
12	Upper F (And)	40	60								0.520	1.210	9.720	2.710
13	F (And)	45	55								0.530	1.310	9.130	2.720
14	F (Laurel)	55	25		20						0.560	1.680	7.340	2.750
15	E	20	10		70						0.460	1.370	8.970	2.750
16	Basement 1							100			0.050	0.500	4.500	2.760
17	Basement 2							100			0.050	0.500	4.500	2.760
18	Basement 3							100			0.050	0.500	4.500	2.760
19	Basement							100			0.050	0.500	4.500	2.760
20	Basement 4							100			0.050	0.500	4.500	2.760

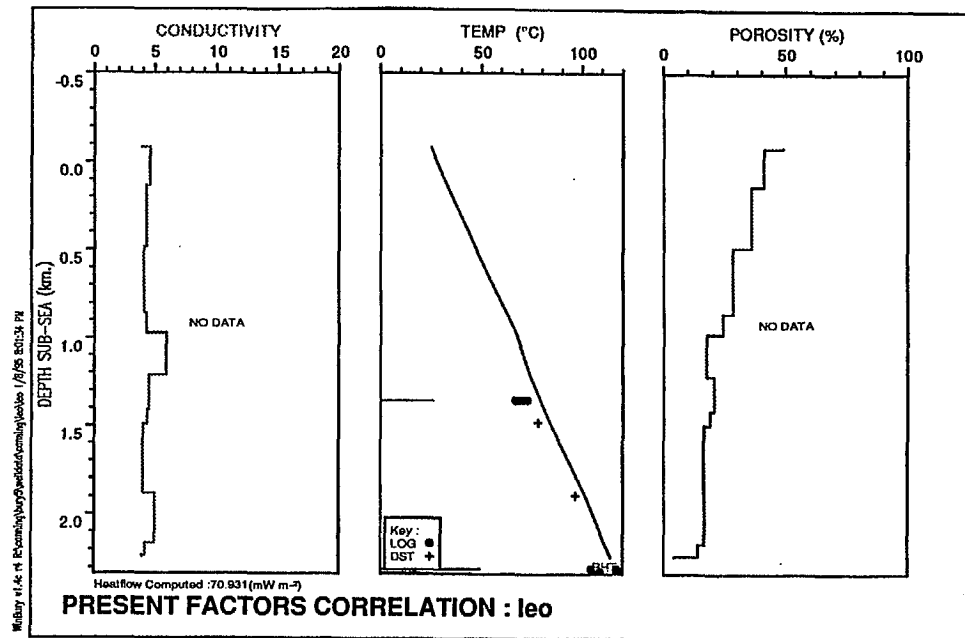
HORIZON DATA : LANGOORA - MATRIX LITHOLOGY

	Stratigraphic Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum Wt/Dpth	Maximum Wt/Dpth	Modelled Wt/Dpth	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	QUATERNARY	N	4.40	0.00	-83.58	-83.58	-83.58	25.00	0.00			
2	HIATUS 4	E	7.40	2.00	-20.00	0.00	-10.00	25.00	0.12			
3	Upper L	E	(300.00)	105.00	-20.00	0.00	-4.88	25.00	3.50			
4	L	N	7.40	125.00	-20.00	0.00	-19.99	22.00	4.54			
5	HIATUS 3	H	225.00	138.00	-10.00	50.00	33.18	20.00	5.24			
6	K	N	225.00	145.00	-10.00	50.00	10.00	20.00	6.37			
7	FITZROY TRANS	E	573.00	180.00	10.00	100.00	17.01	15.00	8.68			
8	Dep? or HIATUS 2	E	(500.00)	200.00	10.00	40.00	21.00	15.00	10.06			
9	DEP H-I	E	(400.00)	272.00	10.00	40.00	26.01	10.00	17.38			
10	H	N	573.00	293.00	10.00	100.00	10.01	10.00	20.82			
11	DROSENA	H	943.00	298.00	-10.00	10.00	3.35	10.00	21.89			
12	MEDA	E	943.00	320.00	-10.00	10.00	3.35	12.00	24.67			
13	HIATUS 1	E	(150.00)	326.00	-10.00	10.00	-9.99	15.00	25.71			
14	DEP UPPER C	E	(100.00)	375.00	-10.00	10.00	-9.99	30.00	34.73			
15	C	N	943.00	385.00	-20.00	10.00	-15.64	30.00	36.81			
16	PRICES CK MOVEMENT	E	1062.50	400.00	-10.00	10.00	0.00	30.00	39.93			
17	Upper B2	E	(300.00)	410.00	-10.00	10.00	-9.99	30.00	41.99			
18	B2	N	1062.50	450.00	-10.00	10.00	-9.99	30.00	45.46			
19	B1	N	1303.00	455.00	-10.00	10.00	2.33	30.00	45.80			
20	B1 Bongabinni Coal	N	1500.00	460.00	-10.00	10.00	2.33	30.00	45.80		BONG	
21	A2	N	1680.00	463.00	10.00	100.00	25.00	28.00	45.46			
22	A1	N	1972.00	469.00	10.00	100.00	100.00	25.00	44.41			
23	A0	N	2253.00	483.00	10.00	30.00	15.00	25.00	37.51			
24	BASEMENT	N	2319.50	488.00	0.00	0.00	0.00	25.00	30.88			
25	Dummy	N	2323.00	489.00	0.00	0.00	0.00	25.00	29.84			

HORIZON DATA : LEO

	Stratigraphic Unit/Event	SHALE	SAND	CHALK	LST	COAL	HAUT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Conductivity	Density
1	QUATERNARY	30	70								0.490	1.010	11.010	2.690
2	HIATUS 4	30	70								0.490	1.010	11.010	2.690
3	Upper L	30	70								0.490	1.010	11.010	2.690
4	L	30	70								0.490	1.010	11.010	2.690
5	HIATUS 3	50	50								0.550	1.420	8.580	2.730
6	K	50	50								0.550	1.420	8.580	2.730
7	FITZROY TRANS	60	40								0.580	1.620	7.570	2.740
8	Dep? or HIATUS 2	60	40								0.580	1.620	7.570	2.740
9	DEP H-I	60	40								0.580	1.620	7.570	2.740
10	H	70	30								0.610	1.820	6.690	2.760
11	DROSENA	50	50								0.550	1.420	8.580	2.730
12	MEDA	50	50								0.550	1.420	8.580	2.730
13	HIATUS 1	50	50								0.650	1.420	8.580	2.730
14	DEP UPPER C	50	50								0.550	1.420	8.580	2.730
15	C	60	10		30						0.580	1.860	6.580	2.770
16	PRICES CK MOVEMENT	30					70				0.240	1.080	9.000	2.380
17	Upper B2	30					70				0.240	1.080	9.000	2.380
18	B2	30					70				0.240	1.080	9.000	2.380
19	B1	60	10		20		10				0.550	1.790	6.700	2.720
20	B1 Bongabinni Coal	60			40						0.590	1.940	6.280	2.780
21	A2	80			20						0.640	2.180	5.370	2.790
22	A1	40			60						0.520	1.690	7.330	2.770
23	A0	80	10		10						0.640	2.100	5.630	2.780
24	BASEMENT							100			0.050	0.500	4.500	2.760
25	Dummy							100			0.050	0.500	4.500	2.760

HORIZON DATA : LEO - MATRIX LITHOLOGY



	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	1438.00	0	66.70	6.75	66.70	0
2	1438.00	0	68.90	13.25	68.90	0
3	1440.00	0	70.60	26.00	72.90	0
4	1566.00	1	77.78	0.00	77.78	1
5	1977.00	1	96.67	0.00	96.67	1
6	2391.00	0	104.40	11.80	104.40	0
7	2391.00	0	116.70	49.25	117.00	0
8	2408.00	0	108.90	20.00	108.90	0
9	2410.00	0	105.60	44.75	105.60	0

TEMPERATURE DATA : LEO

	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
1	660.00	2	426.00			1
2	680.00	2	430.00			1
3	700.00	2	306.00			1
4	705.00	1		1.00	1.25	0
5	720.00	2	430.00			1
6	740.00	2	426.00			1
7	760.00	2	426.00			1
8	780.00	2	322.00			1
9	820.00	2	336.00			1
10	992.00	1		2.00	2.50	0
11	1260.00	2	427.00			1
12	1280.00	2	410.00			1
13	1300.00	2	426.00			1
14	1418.00	1		2.50	3.00	0
15	1440.00	2	397.00			1
16	1526.00	0	0.99			3
17	1541.00	1		3.00	3.50	0
18	1565.00	2	403.00			1
19	1577.50	2	481.00			2
20	1578.00	2	336.00			2
21	1585.00	2	337.00			2
22	1739.00	0	0.85	0.85	1.30	5
23	1745.00	0	0.85	0.85	1.30	5
24	1953.00	0	1.08			3
25	1976.00	0	0.85	0.85	1.30	5
26	1994.00	0	0.85	0.85	1.30	5
27	2192.00	0	0.85	0.85	1.30	5

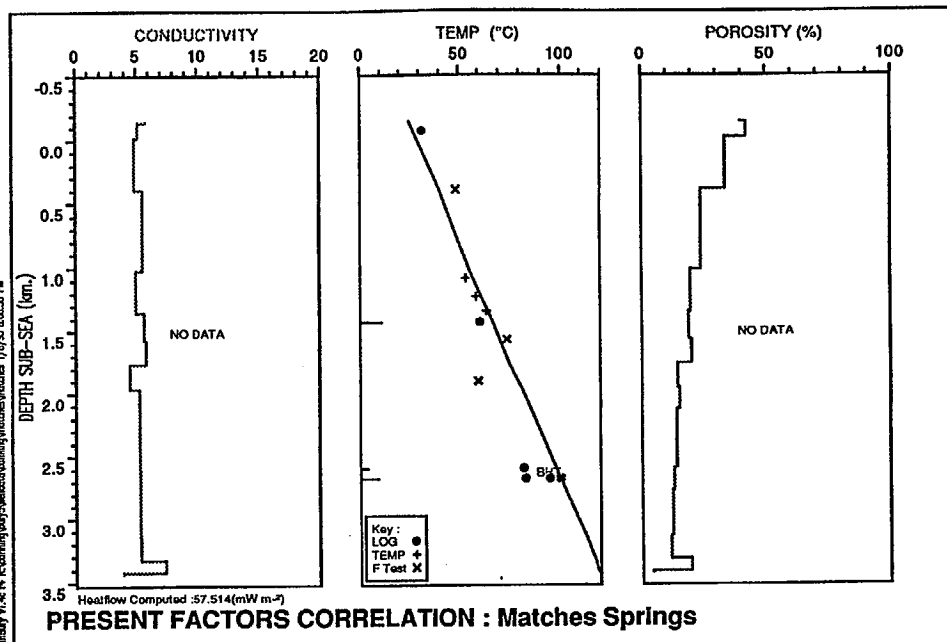
MATURITY DATA : LEO

	Stratigraphic Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum Wtdpth	Maximum Wtdpth	Modelled Wtdpth	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	Quaternary	N	4.27	0.00	-144.17	-144.17	-144.17	25.00	0.00			
2	Hiatus 3+4	H	9.14	2.00	-100.00	0.00	-63.54	25.00	0.09			
3	K	N	9.14	150.00	-10.00	30.00	19.25	20.00	6.68			
4	FITZROY	E	132.00	180.00	-10.00	30.00	24.42	15.00	8.41			
5	Hiatus 2	E	(650.00)	200.00	0.00	30.00	28.24	15.00	10.15			
6	Upper H-I	E	(450.00)	253.00	0.00	80.00	9.16	10.00	14.66			
7	H	N	132.00	290.00	-20.00	100.00	45.20	10.00	18.82			
8	Drosera	H	548.00	298.00	5.00	30.00	16.17	10.94	20.21			
9	MEDA	E	548.00	320.00	5.00	30.00	16.17	12.00	22.98			
10	Dep 7F	E	(250.00)	326.00	5.00	30.00	6.01	15.00	24.37			
11	E	N	548.00	354.00	5.00	30.00	20.42	25.00	28.19			
12	D	N	1173.49	366.00	5.00	60.00	53.84	28.00	27.84			
13	D Source	N	1500.00	373.00	5.00	60.00	40.00	28.00	26.45		TYPE IIB	
14	C	N	1720.01	375.00	-20.00	10.00	-19.99	30.00	22.98			
15	PRICES CK	E	1917.22	400.00	-20.00	10.00	0.74	30.00	25.41			
16	Dep B2	E	(350.00)	410.00	-20.00	10.00	3.20	30.00	26.80			
17	B1	N	1917.22	455.00	-10.00	10.00	6.99	30.00	33.06			
18	A2	N	2112.29	463.00	2.00	60.00	2.01	28.00	33.39			
19	A2 UGoldwyer Source	N	2280.00	464.00	2.00	60.00	2.01	28.00	33.74		TYPE IIB	
20	A2 LGoldwyer Source	N	2750.00	467.00	2.00	60.00	48.57	28.00	33.39		LOWGOLD	
21	A1	N	2926.12	469.00	10.00	100.00	63.94	25.00	33.06			
22	A1 Source	N	3300.00	478.00	10.00	100.00	63.94	25.00	30.27		LOWGOLD	
23	AO	N	3474.76	483.00	0.00	30.00	0.01	25.00	25.41			
24	Basement	N	3566.20	488.00	0.00	0.00	0.00	25.00	20.90			
25	Dummy	N	3581.44	489.00	0.00	0.00	0.00	25.00	18.82			

HORIZON DATA : MATCHES

	Stratigraphic Unit/Event	SHALE	SAND	CHALK	LST	COAL	HALIT	VLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Conductivity	Density
1	Quaternary		100								0.400	0.400	16.000	2.650
2	Hiatus 3+4	10	90								0.430	0.600	14.120	2.670
3	K	10	90								0.430	0.600	14.120	2.670
4	FITZROY	60	40								0.580	1.620	7.570	2.740
5	Hiatus 2	60	40								0.580	1.620	7.570	2.740
6	Upper H-I	60	40								0.580	1.620	7.570	2.740
7	H	40	60								0.520	1.210	9.720	2.710
8	Drosera	50			50						0.550	1.820	6.780	2.780
9	MEDA	50			50						0.550	1.820	6.780	2.780
10	Dep 7F	50			50						0.550	1.820	6.780	2.780
11	E	10			90						0.430	1.320	9.250	2.750
12	D	40			60						0.520	1.690	7.330	2.770
13	D Source	20			80						0.460	1.450	8.540	2.760
14	C	40	50		10						0.520	1.290	9.270	2.720
15	PRICES CK	70			30						0.610	2.060	5.810	2.780
16	Dep B2	30					70				0.240	1.080	9.000	2.380
17	B1	70			30						0.610	2.060	5.810	2.780
18	A2	40			60						0.520	1.690	7.330	2.770
19	A2 UGoldwyer Source	40			60						0.520	1.690	7.330	2.770
20	A2 LGoldwyer Source	40			60						0.520	1.690	7.330	2.770
21	A1	40			60						0.520	1.690	7.330	2.770
22	A1 Source	40			60						0.520	1.690	7.330	2.770
23	AO		70		30						0.400	0.640	13.900	2.680
24	Basement							100			0.050	0.500	4.500	2.760
25	Dummy							100			0.050	0.500	4.500	2.760

HORIZON DATA : MATCHES - MATRIX LITHOLOGY



	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	83.00	0	31.60	0.00	31.60	0
2	547.00	1	48.90	0.00	48.90	2
3	1234.40	0	63.90	0.00	63.90	1
4	1380.70	0	68.90	0.00	68.90	1
5	1493.50	0	63.90	0.00	63.90	1
6	1581.00	0	61.10	7.00	61.10	0
7	1583.00	0	61.10	11.00	61.10	0
8	1720.00	1	73.90	0.00	73.90	2
9	2054.00	1	60.00	0.00	60.00	2
10	2751.00	0	82.20	4.00	82.20	0
11	2830.00	0	83.30	4.00	83.30	0
12	2832.00	0	83.30	9.00	95.00	0

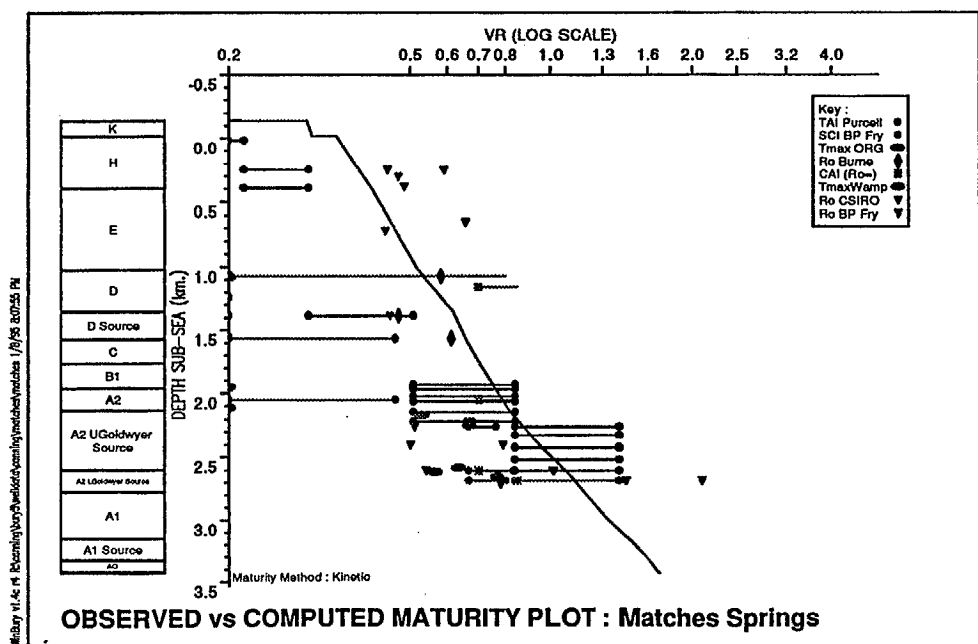
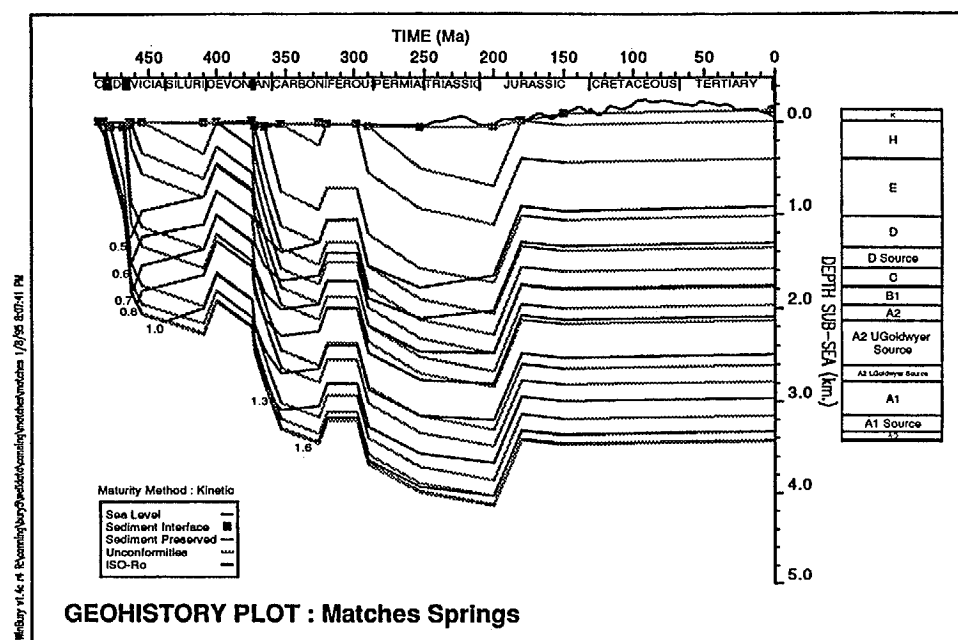
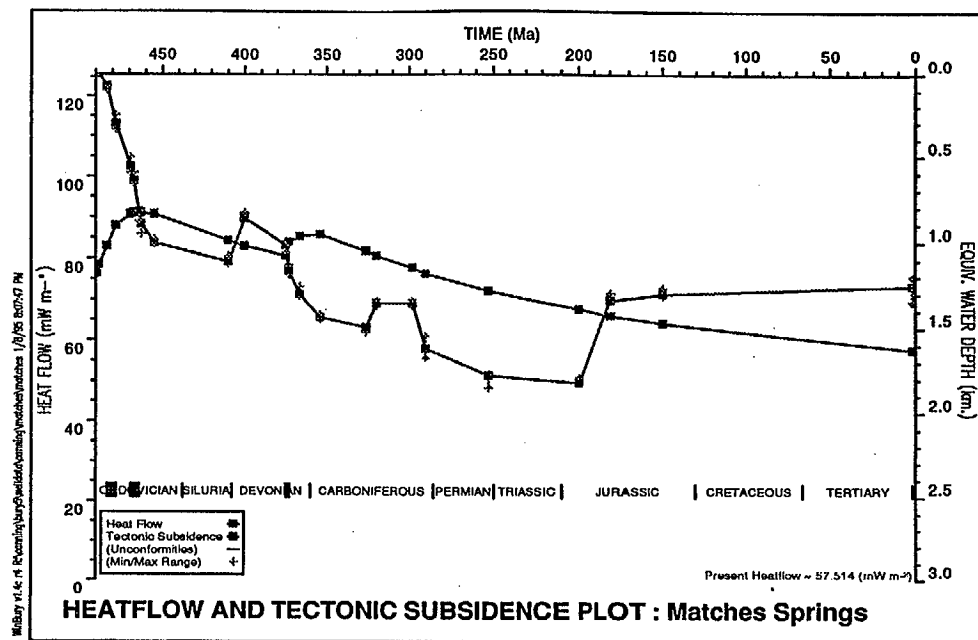
TEMPERATURE DATA : MATCHES

	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
1	166.00	1		1.00	1.50	1
2	397.00	0	0.45			8
3	398.00	1		1.50	2.00	1
4	400.80	0	0.59			9
5	451.00	0	0.47			9
6	533.40	0	0.49			8
7	542.00	1		1.50	2.00	1
8	806.20	0	0.65			8
9	868.70	0	0.44			9
10	1220.00	0	0.20	0.20	0.80	5
11	1221.00	0	0.58			4
12	1221.60	3		3.00	3.50	2
13	1232.00	2	425.00			7
14	1308.00	0	0.70	0.70	0.85	5
15	1388.00	3		3.00	4.00	2
16	1533.00	1		2.00	2.50	1
17	1533.80	3		3.00	3.50	2
18	1533.80	0	0.45			9
19	1535.00	0	0.47			4
20	1694.20	3		3.00	4.00	2
21	1710.60	3		3.00	4.50	2
22	1711.00	0	0.61			4
23	2081.00	1		2.50	3.00	1
24	2101.00	2	414.00			7
25	2115.00	1		2.50	3.00	1
26	2173.00	1		2.50	3.00	1
27	2200.00	3		3.00	4.50	2
28	2200.00	0	0.70	0.70	0.85	5
29	2208.00	1		2.50	3.00	1
30	2259.00	2	425.00			3
31	2295.00	1		2.50	3.00	1
32	2321.00	2	438.00			3
33	2367.00	2	442.00			3
34	2368.00	1		2.50	3.00	1
35	2399.00	2	442.00			3
36	2408.00	3		5.00	5.50	2

MATURITY DATA : MATCHES

	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
37	2408.00	1		3.00	3.50	1
38	2408.80	0	0.51			9
39	2472.00	1		3.00	3.50	1
40	2548.10	0	0.50			9
41	2548.10	0	0.79			9
42	2571.00	1		3.00	3.50	1
43	2669.00	1		3.00	3.50	1
44	2733.00	2	441.00			3
45	2754.00	1		3.00	3.50	1
46	2754.00	0	0.70	0.70	0.85	5
47	2764.30	3		5.00	6.50	2
48	2754.30	0	0.54			9
49	2754.30	0	1.01			9
50	2765.00	2	439.00			3
51	2801.00	2	445.00			3
52	2833.00	0	0.78			4
53	2833.00	1		3.00	3.50	1
54	2833.60	3		5.00	6.00	2
55	2833.80	0	1.44			9
56	2833.80	0	2.10			9
57	2835.00	0	0.85	0.85	1.30	5

MATURITY DATA : MATCHES

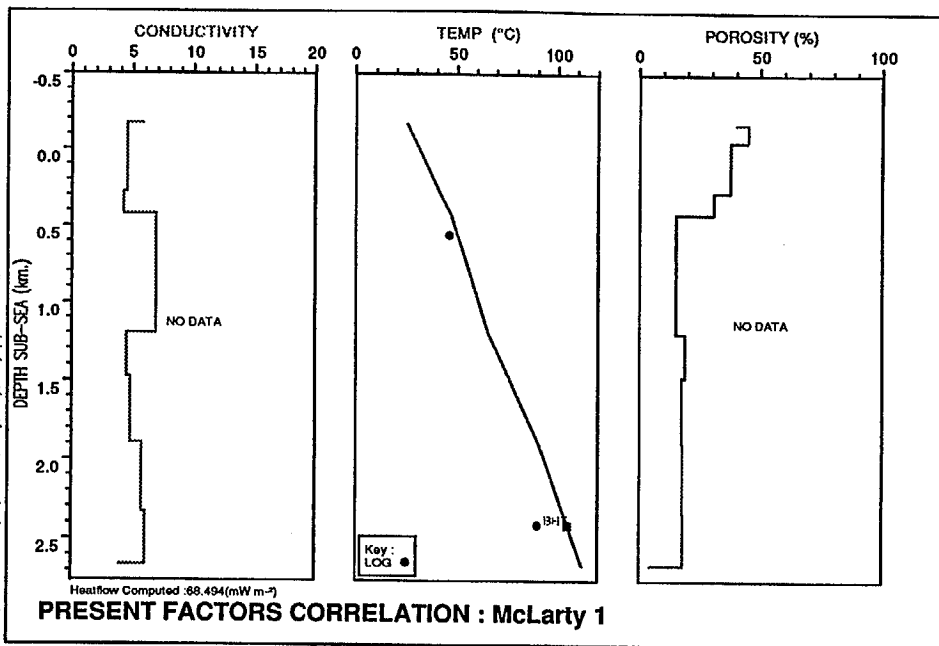


	Stratigraph. Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum WitDpth	Maximum WitDpth	Modelled WitDpth	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	MODEROSION	N	4.30	0.00	-170.00	-170.00	-170.00	25.00	0.00			
2	Hiatus 3+4	H	5.00	2.00	-150.00	0.00	-97.80	25.00	0.37			
3	K	N	5.00	148.00	-20.00	0.00	-10.00	20.00	6.55			
4	FITZROY MOVEMENT	E	125.60	180.00	-50.00	20.00	-9.13	15.00	7.59			
5	Hiatus 2	E	(450.00)	200.00	-50.00	20.00	13.65	15.00	8.98			
6	(H)-1 DEPOSITION	E	(350.00)	270.00	10.00	100.00	34.39	10.00	12.80			
7	H	N	125.60	293.00	10.00	100.00	45.13	10.00	14.18			
8	Drosera	H	452.00	298.00	-10.00	10.00	10.00	10.00	14.78			
9	MEDA	E	452.00	320.00	-10.00	10.00	10.00	12.00	16.51			
10	Hiatus 1	E	(150.00)	326.00	-10.00	30.00	-5.51	15.00	17.55			
11	Upper C - D	E	(100.00)	375.00	-10.00	30.00	-9.73	30.00	23.28			
12	C	N	452.00	385.00	-20.00	10.00	-19.99	30.00	25.43			
13	Price Ck Movement	E	594.00	400.00	-10.00	10.00	2.00	30.00	28.31			
14	Upper B2	E	(150.00)	410.00	-10.00	10.00	4.59	30.00	30.28			
15	B2	N	594.00	430.00	10.00	10.00	10.00	30.00	34.10			
16	B1	N	1372.00	455.00	-10.00	10.00	5.00	30.00	35.70			
17	A2	N	1650.00	463.00	10.00	100.00	36.34	28.00	36.04			
18	A1	N	2070.00	469.00	10.00	100.00	73.11	25.00	35.70			
19	A0	N	2505.00	483.00	10.00	30.00	10.33	25.00	28.49			
20	BASEMENT	N	2835.00	488.00	0.00	0.00	0.00	25.00	23.20			
21	Dummy	N	2840.00	489.00	0.00	0.00	0.00	25.00	23.20			

HORIZON DATA : MCLARTY

	Stratigraph. Unit/Event	SHALE	SAND	CHALK	LST	COAL	HALT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	conductivity	Density
1	MODEROSION		100								0.400	0.400	16.000	2.650
2	Hiatus 3+4	20	80								0.460	0.810	12.470	2.680
3	K	20	80								0.460	0.810	12.470	2.680
4	FITZROY MOVEMENT	60	40								0.580	1.620	7.570	2.740
5	Hiatus 2	60	40								0.580	1.620	7.570	2.740
6	(H)-1 DEPOSITION	60	40								0.580	1.620	7.570	2.740
7	H	40	60								0.520	1.210	9.720	2.710
8	Drosera	20			80						0.460	1.450	8.560	2.760
9	MEDA	20			80						0.460	1.450	8.560	2.760
10	Hiatus 1	20			80						0.460	1.450	8.560	2.760
11	Upper C - D	20			80						0.460	1.450	8.560	2.760
12	C	50	15		35						0.550	1.690	7.280	2.760
13	Price Ck Movement	95			5						0.690	2.370	4.780	2.800
14	Upper B2	95			5						0.690	2.370	4.780	2.800
15	B2	20					80				0.180	0.890	9.910	2.320
16	B1	65			10		25				0.510	1.820	6.320	2.650
17	A2	50			50						0.550	1.820	6.780	2.780
18	A1	30	25		45						0.490	1.370	8.910	2.740
19	A0	40	60								0.520	1.210	9.720	2.710
20	BASEMENT							100			0.050	0.500	4.500	2.760
21	Dummy							100			0.050	0.500	4.500	2.760

HORIZON DATA : MCLARTY - MATRIX LITHOLOGY



	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	733.60	0	46.60	0.00	46.60	0
2	2590.00	0	90.00	0.00	106.00	0

TEMPERATURE DATA : MCLARTY

	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
1	464.60	0	0.20	0.20	0.80	5
2	1496.30	0	0.20	0.20	0.80	5
3	1663.90	2	390.00			3
4	1664.30	0	0.20	0.20	0.80	5
5	1758.20	0	0.20	0.20	0.80	5
6	1759.00	2	338.00			3
7	1759.60	2	442.00			3
8	1760.40	0	0.20	0.20	0.80	5
9	1893.10	2	416.00			3
10	1893.30	0	0.70	0.70	0.85	5
11	1895.90	2	384.00			3
12	1917.20	2	428.00			3
13	1961.40	2	428.00			3
14	1998.00	2	428.00			3
15	2002.70	0	0.85	0.85	1.30	5
16	2002.84	2	433.00			3
17	2065.50	0	0.70	0.70	1.30	5
18	2157.70	2	440.00			3
19	2157.71	2	453.00			3
20	2157.90	0	0.85	0.85	1.30	5
21	2158.90	2	365.00			3
22	2158.92	2	442.00			3
23	2276.80	0	0.85	0.85	1.30	5
24	2487.00	2	472.00			7

MATURITY DATA : MCLARTY

	Stratigraphic Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum WtdDpth	Maximum WtdDpth	Modelled WtdDpth	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	Quaternary	N	3.70	0.00	-26.80	-26.80	-26.79	25.00	0.00			
2	Base Q	H	20.00	2.00	0.00	60.00	53.43	25.00	0.09			
3	FITZROY	E	20.00	180.00	0.00	30.00	0.01	15.00	9.91			
4	Stillstand2	E	(400.00)	200.00	0.00	30.00	0.65	15.00	11.65			
5	J	N	20.00	246.00	10.00	40.00	30.57	11.00	17.20			
6	J (LW)	N	231.00	253.00	10.00	40.00	31.93	10.00	18.59			
7	J (Pools+Noon)	N	397.00	272.00	10.00	60.00	48.38	10.00	21.36			
8	H	N	739.00	290.00	10.00	100.00	39.50	10.00	25.53			
9	Drosera\Glacial Eros	H	1145.00	298.00	-20.00	10.00	-0.56	10.00	27.61			
10	G	N	1145.00	310.00	-20.00	10.00	-19.99	10.00	31.08			
11	MEDA	E	1281.00	320.00	5.00	30.00	15.00	12.00	33.16			
12	Upper F (Upper And)	E	(300.00)	325.00	10.00	30.00	10.01	14.00	35.24			
13	F (And)	N	1281.00	340.00	10.00	60.00	35.79	20.00	37.67			
14	F (Laurel)	N	1602.00	346.00	10.00	60.00	47.90	22.00	38.03			
15	F Source	N	1630.00	351.00	10.00	60.00	32.54	24.00	38.37			
16	E	N	1715.00	354.00	10.00	30.00	30.00	25.00	38.37			
17	D	N	2302.00	365.00	10.00	30.00	10.00	28.00	34.90			
18	Basement 1	H	2641.00	375.00	0.00	0.00	0.01	29.00	24.49			
19	Basement	H	2641.00	400.00	0.00	0.00	0.00	30.00	22.76			
20	Basement 2	N	2641.00	489.00	0.00	0.00	0.00	25.00	22.76			

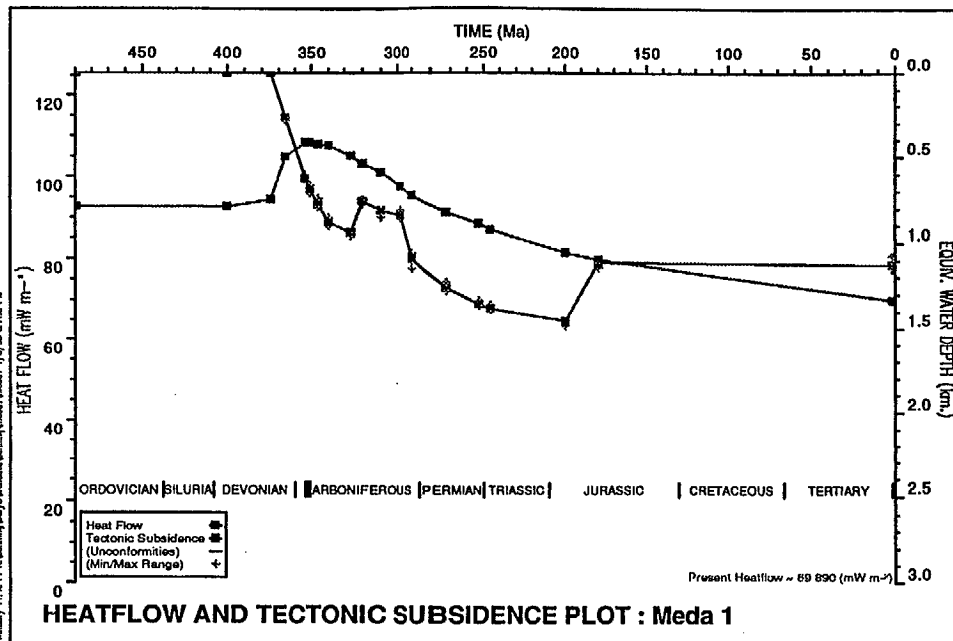
HORIZON DATA : MEDA1

	Stratigraphic Unit/Event	SHALE	SAND	CHALK	LST	COAL	HALT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Conductivity	Density
1	Quaternary		100								0.400	0.400	16.000	2.650
2	Base Q		100								0.400	0.400	16.000	2.650
3	FITZROY	50	50								0.550	1.420	8.580	2.730
4	Stillstand2	50	50								0.550	1.420	8.580	2.730
5	J	70	30								0.610	1.820	6.690	2.760
6	J (LW)	40	60								0.520	1.210	9.720	2.710
7	J (Pools+Noon)	65	35								0.600	1.720	7.120	2.750
8	H	30	70								0.490	1.010	11.010	2.690
9	Drosera\Glacial Eros	10									0.430	0.600	14.120	2.670
10	G	10	90								0.430	0.600	14.120	2.670
11	MEDA	40	60								0.520	1.210	9.720	2.710
12	Upper F (Upper And)	40	60								0.520	1.210	9.720	2.710
13	F (And)	55	35		10						0.560	1.600	7.740	2.740
14	F (Laurel)	65	35		10						0.560	1.600	7.740	2.740
15	F Source	55	35		10						0.560	1.600	7.740	2.740
16	E	20	10		70						0.460	1.370	8.970	2.750
17	D	15			85						0.450	1.380	8.900	2.760
18	Basement 1							100			0.050	0.500	4.500	2.760
19	Basement							100			0.050	0.500	4.500	2.760
20	Basement 2							100			0.050	0.500	4.500	2.760

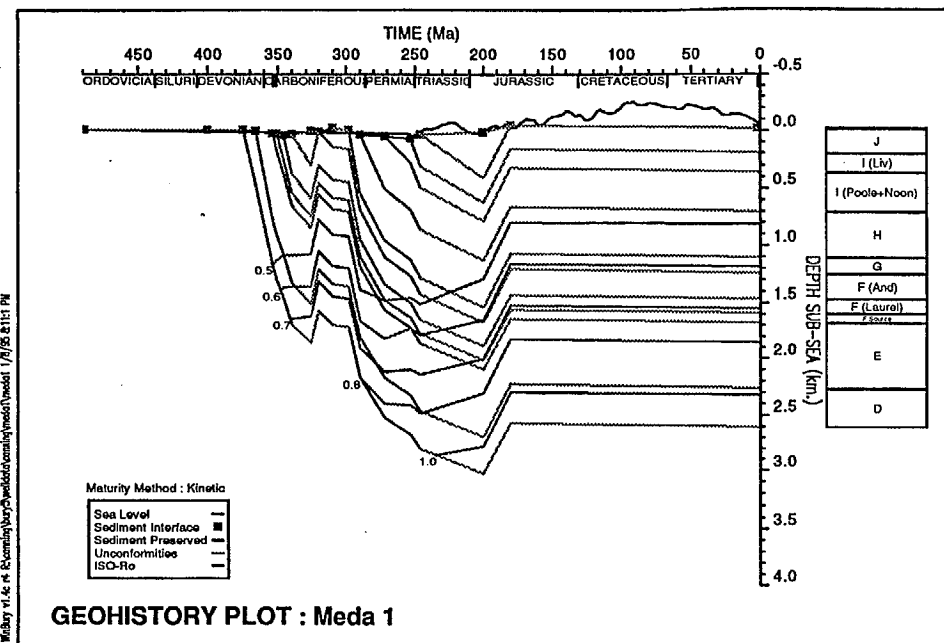
HORIZON DATA : MEDA1 - MATRIX LITHOLOGY

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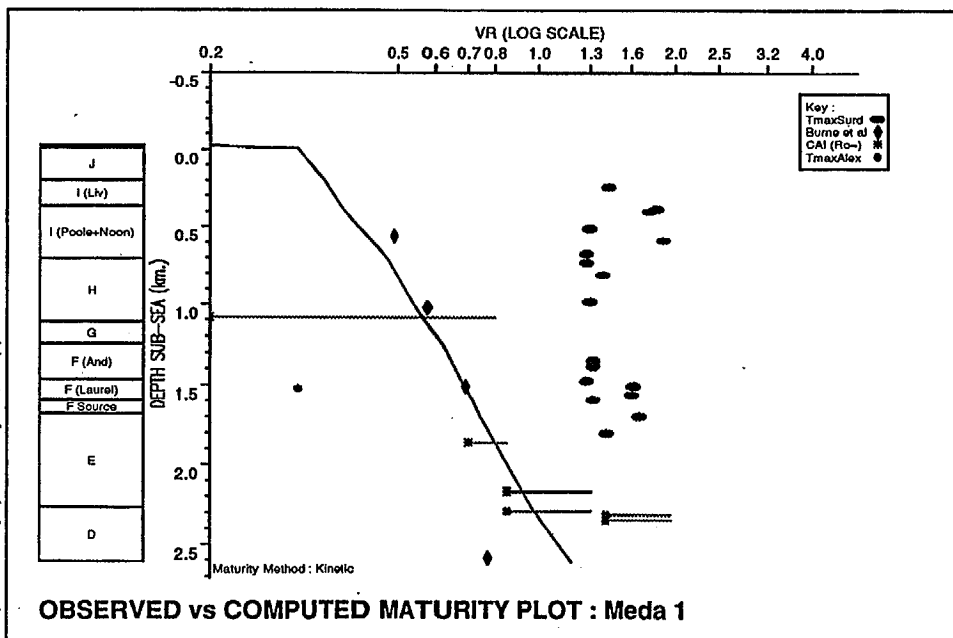
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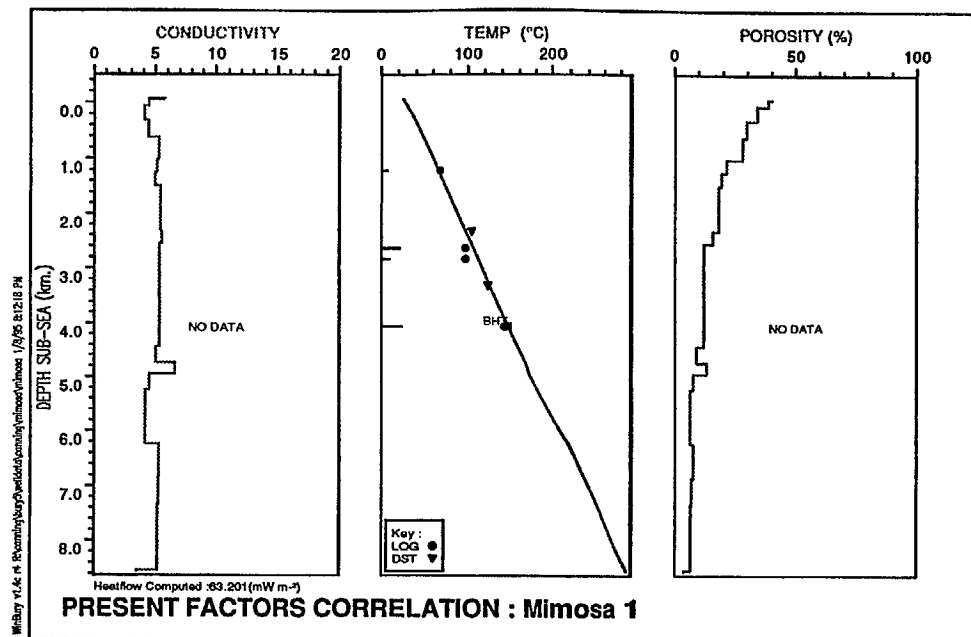


	Stratigraphic Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum WtdDpth	Maximum WtdDpth	Modelled WtdDpth	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	Quaternary	N	4.00	0.00	-54.00	-54.00	-54.00	25.00	0.00			
2	Base Q	H	5.00	2.00	0.00	0.00	0.01	25.00	0.09			
3	FITZROY	E	5.00	180.00	0.00	30.00	15.00	15.00	9.64			
4	Upper J	E	(500.00)	200.00	0.00	30.00	3.80	15.00	11.30			
5	J	N	5.00	248.00	10.00	60.00	46.40	12.00	16.59			
6	I (LV)	N	132.00	253.00	-20.00	60.00	15.64	10.00	17.52			
7	I (Poole+Noon)	N	382.00	272.00	-20.00	60.00	52.54	10.00	20.74			
8	H	N	675.00	290.00	-20.00	100.00	-4.87	10.00	24.44			
9	Drosera Hiatus	H	1088.00	298.00	5.00	30.00	15.00	10.00	26.77			
10	Meda	E	1088.00	320.00	5.00	50.00	15.00	12.00	32.77			
11	Upper F-7Anderson	E	(400.00)	326.00	5.00	50.00	37.41	15.00	34.62			
12	Upper F-Laurel	E	(300.00)	346.00	5.00	100.00	26.21	24.00	39.71			
13	F (Laurel)	N	1088.00	352.00	5.00	100.00	65.66	24.00	40.17			
14	E	N	1306.00	354.00	100.00	300.00	100.01	25.00	39.71			
15	E Clammyer Source	N	1550.00	356.00	100.00	300.00	100.01	25.00	40.17		TYPEIIB	
16	E Basal Source	N	2400.00	360.00	100.00	300.00	291.54	25.00	39.25		TYPEIIB	
17	D	N	2628.00	366.00	100.00	300.00	175.66	28.00	37.40			
18	D Source	N	4500.00	373.00	100.00	300.00	193.61	28.00	30.81		TYPEIIB	
19	C	N	4800.00	375.00	-20.00	10.00	0.00	30.00	27.68			
20	Prices Ck	E	5000.00	400.00	-20.00	10.00	3.39	30.00	29.53			
21	B2	E	(700.00)	410.00	-20.00	10.00	-19.99	30.00	31.84			
22	B1	N	5000.00	455.00	10.00	20.00	10.01	28.00	43.87			
23	A2	N	5300.00	463.00	10.00	60.00	13.88	28.00	46.19			
24	A1	N	6300.00	469.00	10.00	100.00	67.23	25.00	46.19			
25	A1 ?Source	N	6900.00	478.00	10.00	100.00	69.17	25.00	45.61		LOWGOLD	
26	7A0	N	7400.00	483.00	10.00	30.00	30.00	25.00	41.18			
27	Basement	N	8600.00	488.00	0.00	10.00	10.00	25.00	30.54			
28	Dummy	N	8610.00	489.00	0.00	10.00	10.00	25.00	29.31			

HORIZON DATA : MIMOSA

	Stratigraphic Unit/Event	SHALE	SAND	CHALK	LST	COAL	HAUT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Conductivity	Density
1	Quaternary		100								0.400	0.400	16.000	2.650
2	Base Q		100								0.400	0.400	16.000	2.650
3	FITZROY	45	55								0.530	1.310	9.130	2.720
4	Upper J	45	55								0.530	1.310	9.130	2.720
5	J	40	60								0.520	1.210	9.720	2.710
6	I (LV)	60	40								0.580	1.620	7.570	2.740
7	I (Poole+Noon)	60	40								0.580	1.620	7.570	2.740
8	H	40	60								0.520	1.210	9.720	2.710
9	Drosera Hiatus	100									0.700	2.430	4.600	2.800
10	Meda	70	30								0.610	1.820	6.690	2.760
11	Upper F-7Anderson	70	30								0.610	1.820	6.690	2.760
12	Upper F-Laurel	70			30						0.610	2.060	5.810	2.780
13	F (Laurel)	30			70						0.490	1.570	7.920	2.760
14	E	40			60						0.520	1.690	7.330	2.770
15	E Clammyer Source	50	40		10						0.550	1.500	8.190	2.740
16	E Basal Source	50	40		10						0.550	1.500	8.190	2.740
17	D	60	40								0.580	1.620	7.570	2.740
18	D Source	60	20		20						0.580	1.780	6.890	2.760
19	C	30	70								0.490	1.010	11.010	2.690
20	Prices Ck	95			5						0.690	2.370	4.780	2.800
21	B2	30					70				0.240	1.080	9.000	2.380
22	B1	70			20		10				0.570	1.990	5.910	2.730
23	A2	80			20						0.640	2.180	5.370	2.790
24	A1	50	30		20						0.550	1.580	7.810	2.740
25	A1 ?Source	50	30		20						0.550	1.580	7.810	2.740
26	7A0	50	30		20						0.550	1.580	7.810	2.740
27	Basement							100			0.050	0.500	4.500	2.760
28	Dummy							100			0.050	0.500	4.500	2.760

HORIZON DATA : MIMOSA - MATRIX LITHOLOGY



	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F
1	1273.00	0	68.00	7.00	68.30	0
2	2388.00	1	104.44	0.00	104.44	1
3	2700.00	0	98.00	21.00	98.00	0
4	2896.00	0	97.80	9.50	97.80	0
5	3368.00	1	123.89	0.00	123.89	1
6	4111.00	0	143.33	24.00	146.00	0

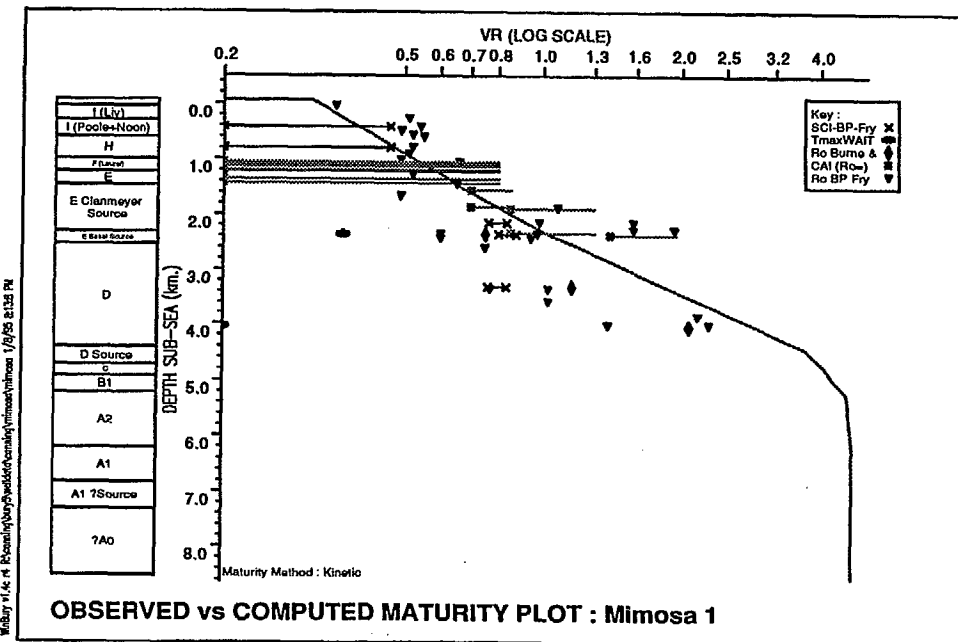
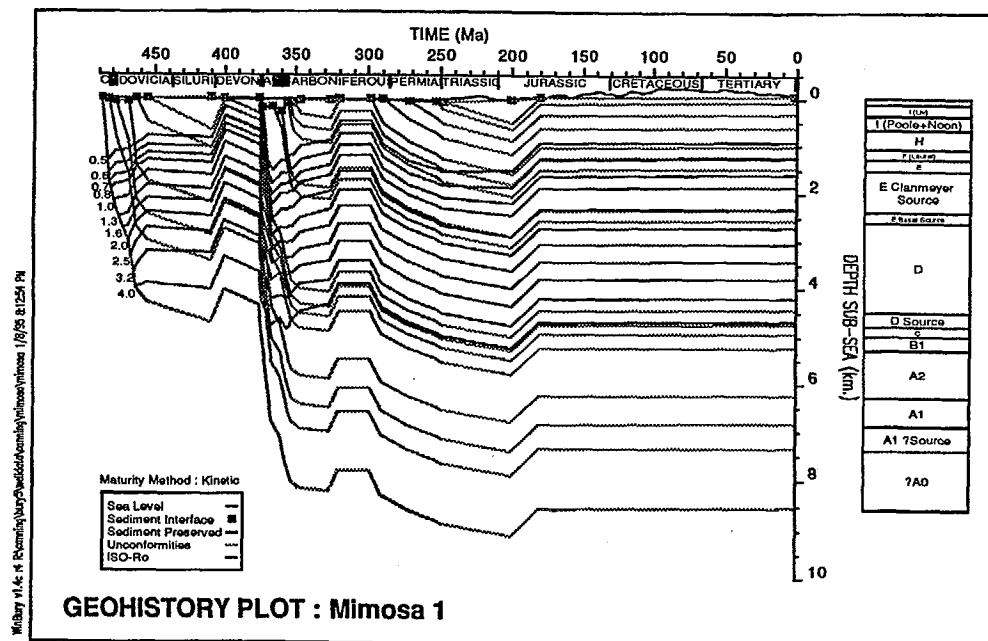
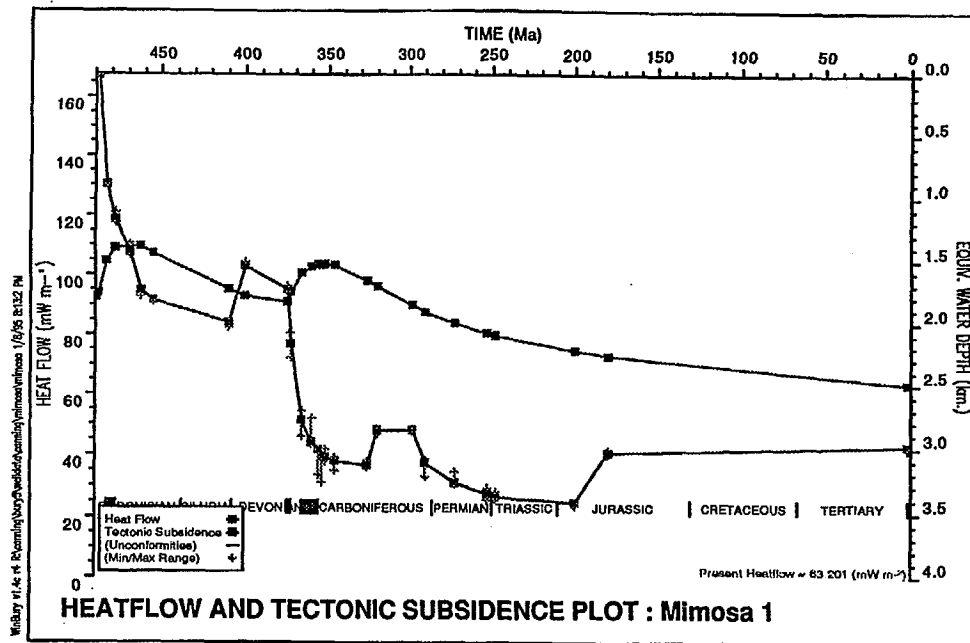
TEMPERATURE DATA : MIMOSA

	Sample Depth	T / P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
1	105.00	0	0.35			9
2	340.00	0	0.51			9
3	480.00	0	0.54			9
4	480.00	3		3.50	4.50	2
5	560.00	0	0.49			9
6	640.00	0	0.52			9
7	670.00	0	0.55			9
8	860.00	3		3.60	4.50	2
9	860.00	0	0.52			9
10	980.00	0	0.51			9
11	1085.00	0	0.49			9
12	1125.00	0	0.66			9
13	1125.00	0	0.20	0.20	0.80	5
14	1170.00	0	0.20	0.20	0.80	5
15	1200.00	0	0.20	0.20	0.80	5
16	1260.00	0	0.20	0.20	0.80	5
17	1290.00	0	0.20	0.20	0.80	5
18	1355.00	0	0.62			9
19	1425.00	0	0.20	0.20	0.80	5
20	1500.00	0	0.20	0.20	0.80	5
21	1615.00	0	0.65			9
22	1620.00	0	0.70	0.70	0.85	5
23	1730.00	0	0.49			9
24	1920.00	0	0.70	0.70	0.85	5
25	1945.00	0	1.08			9
26	1950.00	0	0.85	0.85	1.30	5
27	2215.00	3		5.50	6.50	2
28	2215.00	0	1.57			9
29	2215.00	0	0.98			9
30	2350.00	0	1.57			9
31	2350.00	0	1.93			9
32	2400.00	0	0.85	0.85	1.30	5
33	2426.00	0	0.75			4
34	2427.00	3		6.00	7.00	2
35	2427.50	0	0.97			9
36	2427.50	0	0.60			

MATURITY DATA : MIMOSA

	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity
37	2430.00	2	433.00		
38	2431.00	0	1.40	1.40	1.95
39	2500.00	0	0.60		
40	2500.00	0	0.94		
41	2675.00	0	0.75		
42	3372.75	3		5.50	6.50
43	3374.00	0	1.16		
44	3410.00	0	1.03		
45	3410.00	0	0.77		
46	3640.00	0	1.03		
47	3915.00	0	2.17		
48	4080.00	0	2.30		
49	4080.00	0	1.39		
50	4108.00	0	2.08		
51	4112.00	2	394.00		

MATURITY DATA : MIMOSA

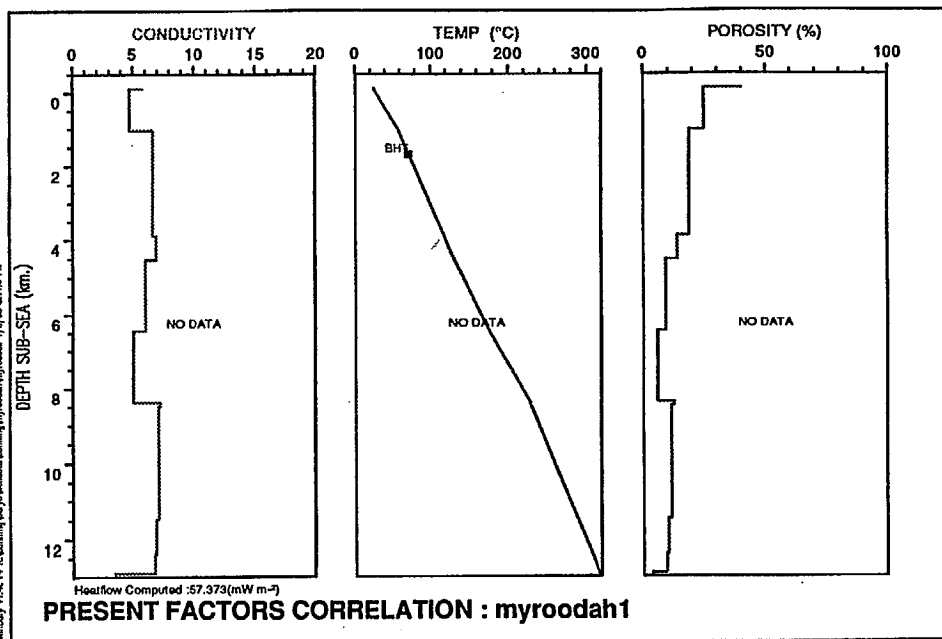


	Stratigraphic Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum WitDpth	Maximum WitDpth	Modelled WitDpth	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	Quaternary	N	3.00	0.00	-122.00	-122.00	-122.00	25.00	0.00			
2	K/T erosion	E	5.00	2.00	-80.00	20.00	-79.99	25.00	1.61			
3	?L	E	(100.00)	105.00	-10.00	30.00	22.83	22.00	5.08			
4	?K	E	(50.00)	145.00	-10.00	30.00	10.18	20.00	7.16			
5	Fitzroy Movement	E	(5.00)	180.00	-10.00	30.00	-9.99	15.00	10.63			
6	Hiatus	E	(850.00)	200.00	10.00	60.00	16.56	14.00	12.72			
7	(J)	E	(800.00)	243.00	10.00	60.00	29.99	14.00	18.96			
8	I	N	5.00	253.00	10.00	60.00	29.99	10.00	21.04			
9	H	N	1158.00	290.00	0.00	100.00	54.30	10.00	28.68			
10	?Drosera	H	4000.00	296.00	0.00	100.00	55.43	10.00	30.76			
11	G	N	4000.00	310.00	0.00	100.00	5.71	10.00	34.23			
12	Meda Movement	E	4665.00	320.00	5.00	100.00	73.53	12.00	37.70			
13	Upper And	E	(250.00)	326.00	5.00	30.00	14.18	15.00	39.78			
14	F (And)	N	4655.00	332.00	5.00	60.00	37.62	15.00	41.17			
15	F (Laurel)	N	6585.00	346.00	5.00	100.00	53.39	25.00	41.86			
16	F Source	N	8500.00	352.00	100.00	200.00	200.00	25.00	41.86		TYPE I	TYPE II
17	E	N	8600.00	354.00	100.00	200.00	150.53	25.00	41.86			
18	D	N	11600.00	366.00	100.00	200.00	200.00	28.00	39.09			
19	D ?Source	N	12500.00	373.00	100.00	200.00	200.00	28.00	30.76		TYPE II B	
20	Basement	H	13000.00	375.00	0.00	0.00	0.00	30.00	21.74			
21	Dummy 1	N	13000.00	400.00	0.00	0.00	0.00	30.00	21.74			
22	Dummy	N	13010.00	489.00	0.00	0.00	0.00	30.00	21.74			

HORIZON DATA : MYROODAH

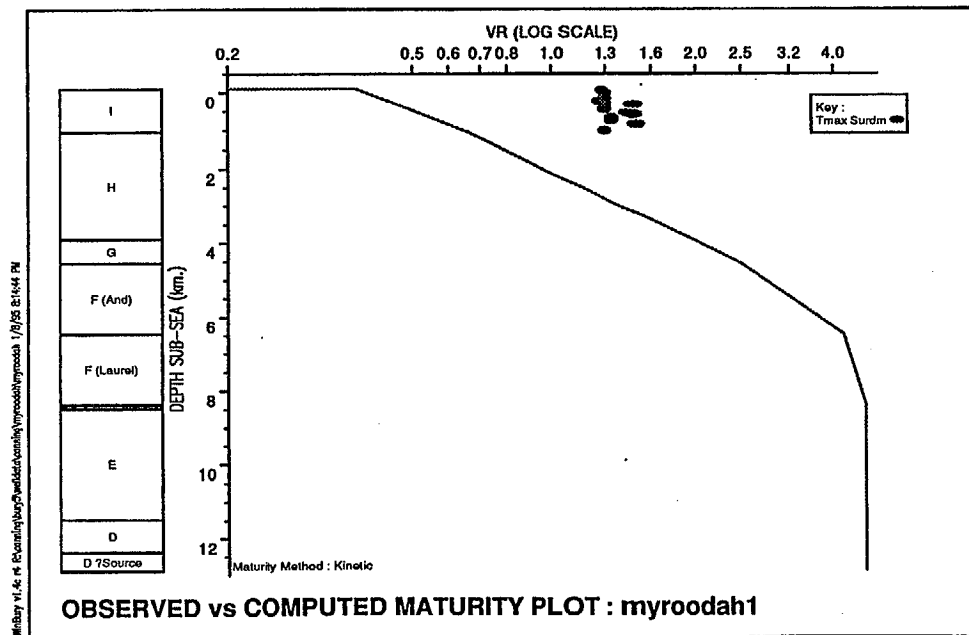
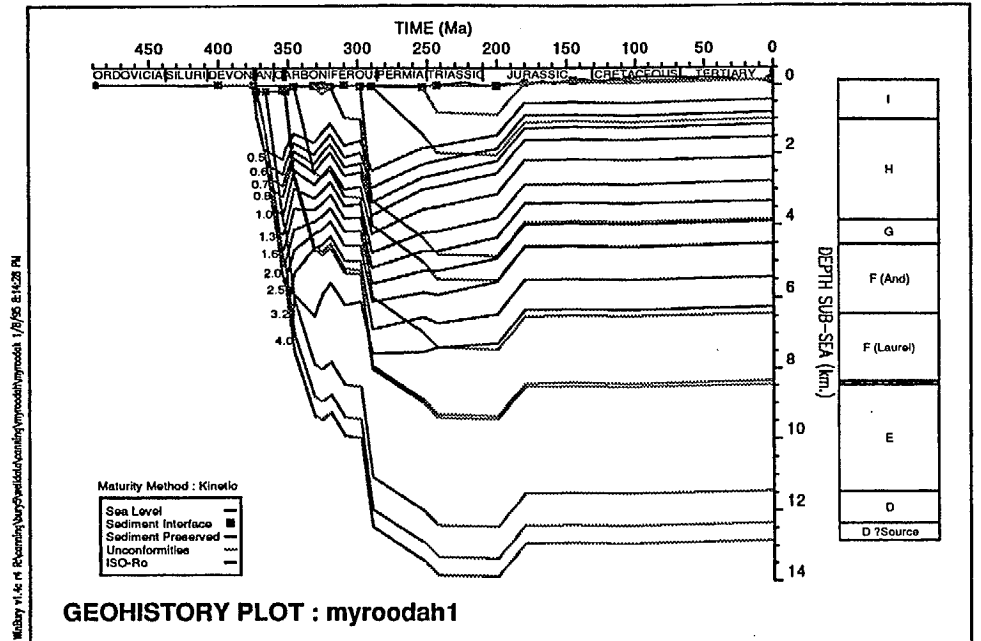
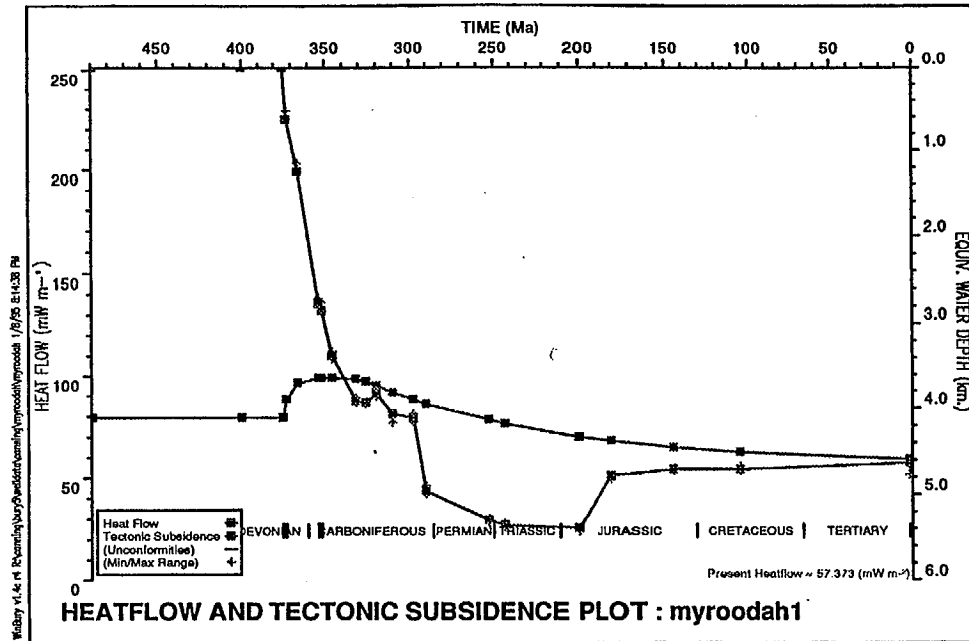
	Stratigraphic Unit/Event	SHALE	SAND	CHALK	LST	COAL	HALT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Conductivity	Density
1	Quaternary		100								0.400	0.400	16.000	2.650
2	K/T erosion	40	60								0.520	1.210	9.720	2.710
3	?L	40	60								0.520	1.210	9.720	2.710
4	?K	60	40								0.580	1.620	7.570	2.740
5	Fitzroy Movement	50	50								0.550	1.420	8.580	2.730
6	Hiatus	50	50								0.550	1.420	8.580	2.730
7	(J)	50	50								0.550	1.420	8.580	2.730
8	I	50	45			5					0.540	1.650	7.470	2.670
9	H	30	70								0.490	1.010	11.010	2.690
10	?Drosera	30	70								0.490	1.010	11.010	2.690
11	G	30	70								0.490	1.010	11.010	2.690
12	Meda Movement	50	50								0.550	1.420	8.580	2.730
13	Upper And	50	50								0.550	1.420	8.580	2.730
14	F (And)	50	50								0.550	1.420	8.580	2.730
15	F (Laurel)	60	20		20						0.580	1.780	6.890	2.760
16	F Source	10	90								0.430	0.600	14.120	2.670
17	E	10	90								0.430	0.600	14.120	2.670
18	D	10	90								0.430	0.600	14.120	2.670
19	D ?Source	10	90								0.430	0.600	14.120	2.670
20	Basement							100			0.050	0.500	4.500	2.760
21	Dummy 1							100			0.050	0.500	4.500	2.760
22	Dummy							100			0.050	0.500	4.500	2.760

HORIZON DATA : MYROODAH - MATRIX LITHOLOGY



	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
1	68.60	2	463.00			3
2	137.16	2	464.00			3
3	278.90	2	464.00			3
4	358.10	2	462.00			3
5	411.50	2	464.00			3
6	448.00	2	473.00			3
7	519.70	2	464.00			3
8	583.70	2	464.00			3
9	661.40	2	471.00			3
10	702.60	2	473.00			3
11	784.90	2	466.00			3
12	879.30	2	466.00			3
13	967.70	2	474.00			3
14	1135.40	2	464.00			3

MATURITY DATA : MYROODAH

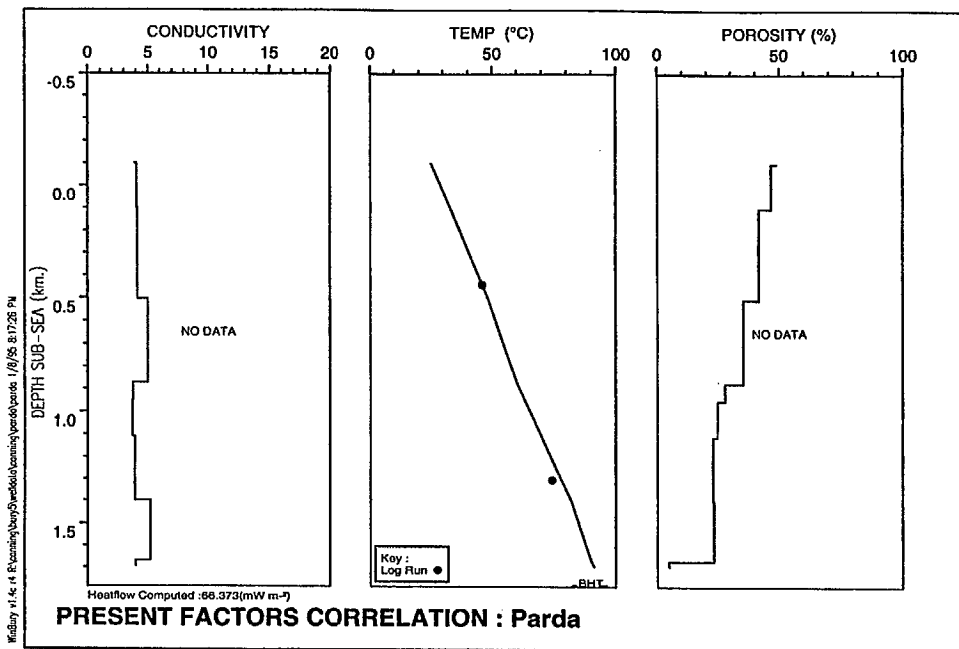


	Stratigraph. Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum WitDpth	Maximum WitDpth	Modelled WitDpth	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	QUATERNARY	N	4.88	0.00	-102.11	-102.11	-102.11	25.00	0.00			
2	HIATUS 4	H	6.10	2.00	-20.00	0.00	-19.99	25.00	0.24			
3	L	N	6.10	105.00	-20.00	0.00	-10.00	22.00	5.45			
4	HIATUS 3	H	207.27	138.00	-10.00	50.00	44.69	20.00	7.53			
5	K	N	207.27	145.00	-10.00	50.00	9.42	20.00	7.87			
6	FITZROY TRANS	E	611.74	180.00	10.00	100.00	39.36	15.00	9.96			
7	HIATUS 2	E	(500.00)	200.00	10.00	60.00	27.75	15.00	11.34			
8	DEP H-I	E	(400.00)	272.00	10.00	60.00	12.13	10.00	17.94			
9	H	N	611.74	293.00	10.00	100.00	30.70	10.00	19.67			
10	DROSERA	H	980.25	298.00	-10.00	10.00	0.00	10.00	20.37			
11	MEDA	E	980.25	320.00	-10.00	10.00	0.00	12.00	22.45			
12	HIATUS 1	E	(200.00)	325.00	-20.00	10.00	-19.99	15.00	23.60			
13	DEP C	E	(150.00)	375.00	-20.00	10.00	-19.48	30.00	31.59			
14	PRICES CK MOVEMENT	E	980.25	400.00	-20.00	10.00	-19.99	30.00	37.14			
15	UPPER B2	E	(400.00)	410.00	-10.00	10.00	-9.99	30.00	39.10			
16	B2	N	980.25	450.00	-10.00	10.00	-8.70	30.00	43.73			
17	B1	N	1067.67	455.00	-10.00	10.00	3.93	30.00	44.08			
18	A2	N	1216.17	463.00	10.00	100.00	25.00	28.00	43.73			
19	A1	N	1507.25	469.00	10.00	100.00	100.00	25.00	42.92			
20	A0	N	1775.00	483.00	10.00	30.00	15.00	25.00	35.29			
21	BASEMENT	N	1777.01	488.00	0.00	0.00	0.00	25.00	28.46			
22	Dummy	N	1800.00	489.00	0.00	0.00	0.00	25.00	26.79			

HORIZON DATA : PARDA

	Stratigraph. Unit/Event	SHALE	SAND	CHALK	LST	COAL	HAUT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	conductivity	Density
1	QUATERNARY	30	70								0.490	1.010	11.010	2.690
2	HIATUS 4	30	70								0.490	1.010	11.010	2.690
3	L	30	70								0.490	1.010	11.010	2.690
4	HIATUS 3	50	50								0.550	1.420	8.580	2.730
5	K	40	60								0.520	1.210	9.720	2.710
6	FITZROY TRANS	60	40								0.580	1.620	7.570	2.740
7	HIATUS 2	60	40								0.580	1.620	7.570	2.740
8	DEP H-I	60	40								0.580	1.620	7.570	2.740
9	H	30	70								0.490	1.010	11.010	2.690
10	DROSERA		100								0.400	0.400	16.000	2.650
11	MEDA		100								0.400	0.400	16.000	2.650
12	HIATUS 1		100								0.400	0.400	16.000	2.650
13	DEP C	20	80								0.460	0.810	12.470	2.680
14	PRICES CK MOVEMENT	20					80				0.180	0.890	9.910	2.320
15	UPPER B2	20					80				0.180	0.890	9.910	2.320
16	B2	80	20								0.640	2.020	5.900	2.770
17	B1	80			10		10				0.600	2.110	5.470	2.740
18	A2	70			30						0.610	2.060	5.810	2.780
19	A1	30	20		50						0.490	1.410	8.700	2.740
20	A0	70			30						0.610	2.060	5.810	2.780
21	BASEMENT							100			0.050	0.500	4.500	2.760
22	Dummy							100			0.050	0.500	4.500	2.760

HORIZON DATA : PARDA - MATRIX LITHOLOGY



	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	548.65	0	46.11	0.00	46.11	0
2	1409.41	0	74.44	0.00	74.44	0
3	1905.63	0	83.33	0.00	95.00	0

TEMPERATURE DATA : PARDA

	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity
1	1186.00	0	0.20	0.20	0.80
2	1287.00	2	424.00		
3	1311.00	2	434.00		
4	1315.00	2	426.00		
5	1316.00	0	0.20	0.20	0.80
6	1317.00	2	431.00		
7	1332.00	2	430.00		
8	1487.00	0	0.20	0.20	0.85
9	1660.00	0	0.70	0.70	0.85

MATURITY DATA : PARDA

	Stratigraphic Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum Wt/Dpth	Maximum Wt/Dpth	Modelled Wt/Dpth	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	Quaternary	N	5.00	0.00	-255.00	-255.00	-254.99	25.00	0.00			
2	Hiatus 3+4	H	15.00	2.00	-200.00	-50.00	-183.52	25.00	0.37			
3	K	N	15.00	148.00	-20.00	0.00	-3.17	18.00	3.23			
4	FITZROY MOVEMENT	E	85.00	180.00	-50.00	0.00	-49.99	15.00	3.88			
5	HIATUS 2 or DEP	E	(450.00)	200.00	-30.00	20.00	-4.33	15.00	4.57			
6	(H)-I DEPOSITION	E	(300.00)	270.00	10.00	60.00	23.69	10.00	7.69			
7	H	N	85.00	293.00	0.00	100.00	32.57	10.00	9.17			
8	Drosera	H	408.00	298.00	10.00	30.00	10.01	10.00	9.42			
9	MEDA	E	408.00	320.00	10.00	30.00	10.01	12.00	11.50			
10	HIATUS or DEP	E	(250.00)	326.00	10.00	30.00	16.05	15.00	12.20			
11	7E	E	(200.00)	354.00	10.00	30.00	10.01	25.00	14.97			
12	Upper D	E	(100.00)	366.00	10.00	30.00	10.01	27.00	16.36			
13	D	N	408.00	370.00	0.00	30.00	1.42	28.00	17.05			
14	C	N	732.00	375.00	-20.00	10.00	-19.99	30.00	18.10			
15	PRICES CK ?Hiatus	H	1018.00	400.00	-10.00	10.00	3.89	30.00	22.26			
16	B2	N	1018.00	410.00	-10.00	10.00	9.87	30.00	23.99			
17	B1	N	1997.00	455.00	-10.00	10.00	5.00	30.00	29.89			
18	A2	N	2303.00	463.00	10.00	60.00	13.35	28.00	30.24			
19	A1	N	2644.00	469.00	10.00	100.00	87.17	25.00	29.55			
20	A1 Source	N	2750.00	478.00	10.00	100.00	37.81	25.00	27.46		LOWGOLD	
21	A0	N	2955.00	483.00	10.00	30.00	30.00	25.00	22.95			
22	BASEMENT	N	3200.00	488.00	0.00	0.00	0.00	25.00	18.44			
23	Dummy	N	3210.00	489.00	0.00	0.00	0.00	25.00	16.36			

HORIZON DATA : PEGASUS

	Stratigraphic Unit/Event	SHALE	SAND	CHALK	LST	COAL	HALIT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Conductivity	Density
1	Quaternary		100								0.400	0.400	16.000	2.650
2	Hiatus 3+4		100								0.400	0.400	16.000	2.650
3	K		100								0.400	0.400	16.000	2.650
4	FITZROY MOVEMENT	60	40								0.580	1.620	7.570	2.740
5	HIATUS 2 or DEP	60	40								0.580	1.620	7.570	2.740
6	(H)-I DEPOSITION	60	40								0.580	1.620	7.570	2.740
7	H	35	65								0.510	1.110	10.340	2.700
8	Drosera	30			70						0.490	1.570	7.920	2.760
9	MEDA	30			70						0.490	1.570	7.920	2.760
10	HIATUS or DEP	30			70						0.490	1.570	7.920	2.760
11	7E	30			70						0.490	1.570	7.920	2.760
12	Upper D	30			70						0.490	1.570	7.920	2.760
13	D	10			80					10	0.440	2.200	9.530	2.770
14	C	10	90								0.430	0.600	14.120	2.670
15	PRICES CK ?Hiatus	15	5		10		70				0.200	0.850	10.350	2.370
16	B2	15	5		10		70				0.200	0.850	10.350	2.370
17	B1	70			10		20				0.540	1.920	6.020	2.670
18	A2	80			20						0.640	2.180	5.370	2.790
19	A1	40	10		50						0.520	1.610	7.680	2.760
20	A1 Source	40	10		50						0.520	1.610	7.680	2.760
21	A0	40	60								0.520	1.210	9.720	2.710
22	BASEMENT							100			0.050	0.500	4.500	2.760
23	Dummy							100			0.050	0.500	4.500	2.760

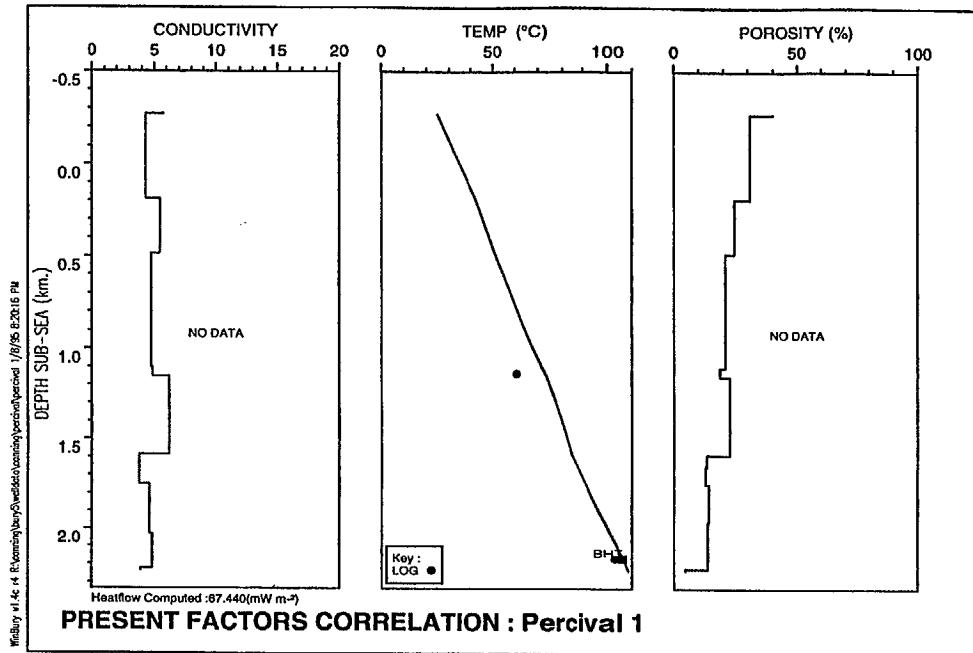
HORIZON DATA : PEGASUS - MATRIX LITHOLOGY

	Stratigraphic Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum WtdPth	Maximum WtdPth	Modelled WtdPth	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	Quaternary	N	5.00	0.00	-269.60	-269.60	-269.60	25.00	0.00			
2	Hiatus 3+4	H	5.20	2.00	-200.00	0.00	-180.04	25.00	0.09			
3	FITZROY	E	5.20	180.00	-50.00	30.00	-0.16	15.00	12.65			
4	Hiatus 2	E	(700.00)	200.00	-20.00	30.00	7.16	15.00	14.38			
5	Upper H-I	E	(500.00)	270.00	0.00	60.00	32.65	10.00	21.32			
6	H	N	5.20	293.00	-20.00	100.00	17.54	10.00	24.10			
7	Drosera	H	465.00	298.00	5.00	30.00	23.65	10.00	25.14			
8	MEDA	E	465.00	320.00	5.00	30.00	23.65	12.00	28.32			
9	Dep 7F	E	(150.00)	326.00	5.00	30.00	7.89	15.00	29.65			
10	E	N	465.00	354.00	5.00	30.00	18.83	27.00	33.12			
11	D	N	762.00	366.00	5.00	30.00	5.70	28.00	33.12			
12	D Source	N	1380.00	373.00	5.00	30.00	17.87	28.00	32.08		TYPEIIB	
13	C	N	1428.00	375.00	-20.00	10.00	-19.03	30.00	29.30			
14	PRICES CK	E	1860.00	400.00	-20.00	10.00	-12.32	30.00	30.34			
15	Upper B2	E	(80.00)	410.00	-10.00	10.00	-9.99	30.00	31.04			
16	B2	N	1860.00	425.00	-10.00	10.00	3.37	30.00	33.20			
17	B1	N	1930.00	455.00	-5.00	10.00	1.21	30.00	36.67			
18	A2	N	2025.00	463.00	2.00	100.00	31.53	28.00	37.36			
19	A1	N	2231.00	469.00	10.00	100.00	79.68	25.00	36.67			
20	AO	N	2305.00	483.00	0.00	30.00	10.00	25.00	32.85			
21	Basement	N	2500.00	488.00	0.00	10.00	10.00	25.00	28.61			
22	Dummy	N	2510.00	489.00	0.00	10.00	10.00	25.00	25.91			

HORIZON DATA : PERCIVAL

	Stratigraphic Unit/Event	SHALE	SAND	CHALK	LST	COAL	HAUT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Conductivity	Density
1	Quaternary		100								0.400	0.400	16.000	2.650
2	Hiatus 3+4	60	40								0.580	1.620	7.570	2.740
3	FITZROY	60	40								0.580	1.620	7.570	2.740
4	Hiatus 2	60	40								0.580	1.620	7.570	2.740
5	Upper H-I	60	40								0.580	1.620	7.570	2.740
6	H	60	40								0.580	1.620	7.570	2.740
7	Drosera	40			60						0.520	1.690	7.330	2.770
8	MEDA	40			60						0.520	1.690	7.330	2.770
9	Dep 7F	40			60						0.520	1.690	7.330	2.770
10	E	10			90						0.360	1.180	7.940	2.570
11	D	55	20		25						0.560	1.720	7.170	2.760
12	D Source	55	20		25						0.560	1.720	7.170	2.760
13	C	30	70								0.490	1.010	11.010	2.690
14	PRICES CK	95			5						0.690	2.370	4.780	2.800
15	Upper B2	95			5						0.690	2.370	4.780	2.800
16	B2	95			5						0.690	2.370	4.780	2.800
17	B1	95			5						0.690	2.370	4.780	2.800
18	A2	70	15		15						0.610	1.940	6.230	2.770
19	A1	75	25								0.630	1.920	6.280	2.760
20	AO	70	30								0.610	1.820	6.690	2.760
21	Basement							100			0.050	0.500	4.500	2.760
22	Dummy							100			0.050	0.500	4.500	2.760

HORIZON DATA : PERCIVAL - MATRIX LITHOLOGY

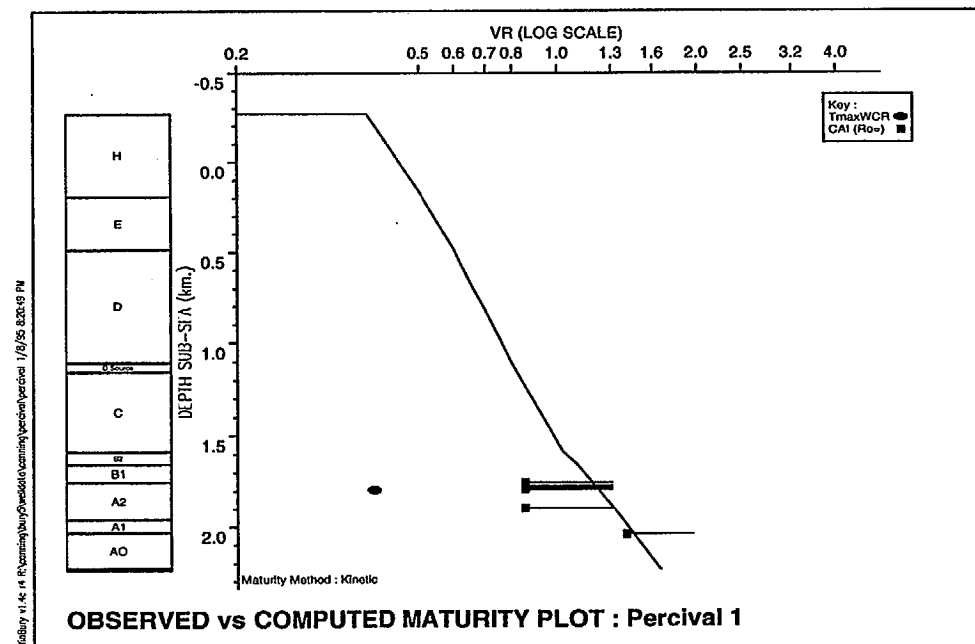
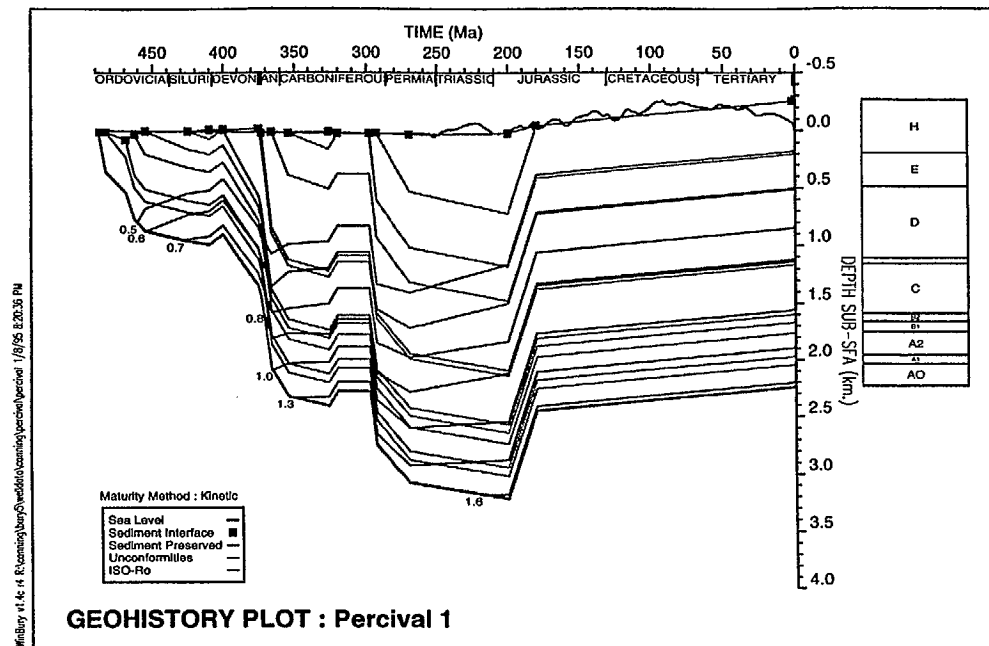
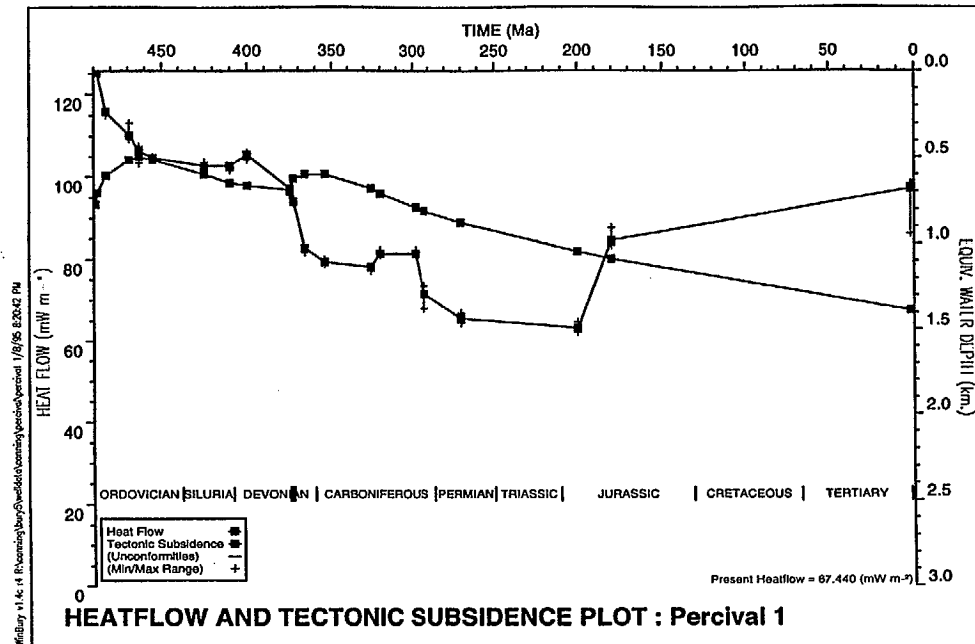


	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	1413.00	0	61.00	0.00	61.00	0
2	2446.00	0	103.00	0.00	103.00	0

TEMPERATURE DATA : PERCIVAL

	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
1	2028.00	0	0.85	0.85	1.30	5
2	2046.00	0	0.85	0.85	1.30	5
3	2056.00	0	0.85	0.85	1.30	5
4	2067.00	0	0.85	0.85	1.30	5
5	2067.90	2	434.00			3
6	2170.00	0	0.85	0.85	1.30	5
7	2316.00	0	1.40	1.40	1.95	5

MATURITY DATA : PERCIVAL

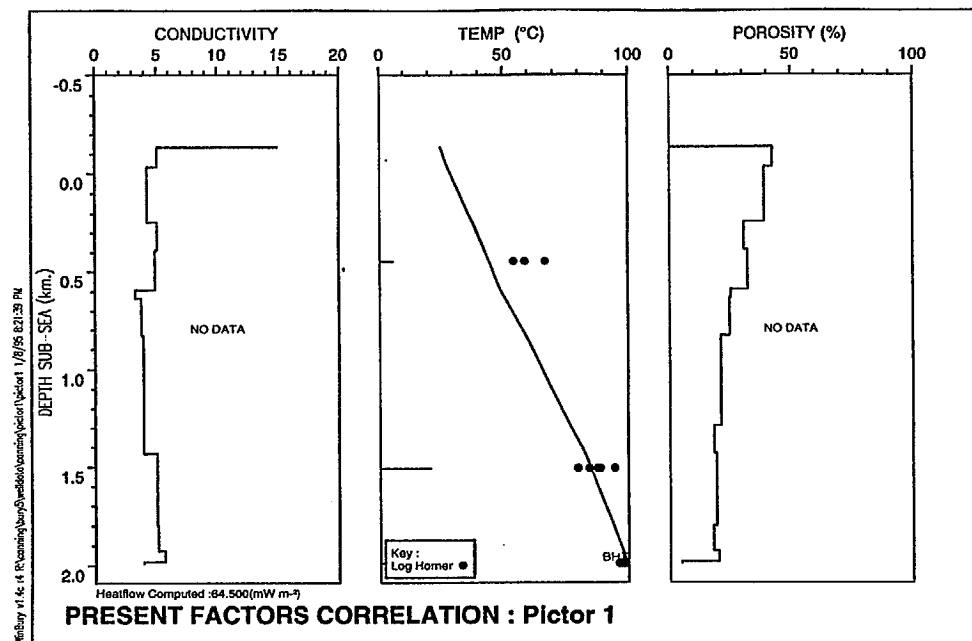


	Stratigraph. Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum WtDpth	Maximum WtDpth	Modelled WtDpth	Sea Bed Temp.	Heatflow	Uthology Data	Kerogen Data	Variable Beds
1	Quaternary	H	7.30	0.00	-133.00	-133.00	-133.00	25.00	0.00			
2	Hiatus 3+4	H	7.30	2.00	-100.00	0.00	-59.91	25.00	0.00			
3	K	N	7.30	160.00	0.00	60.00	10.01	18.00	6.28			
4	FITZROY	E	108.00	180.00	0.00	30.00	18.24	15.00	7.67			
5	Hiatus 2	E	(400.00)	200.00	0.00	30.00	20.66	15.00	9.06			
6	Upper H1	E	(300.00)	253.00	0.00	100.00	3.69	10.00	12.88			
7	H	N	108.00	290.00	0.00	100.00	40.69	10.00	17.73			
8	Drosera	H	385.00	298.00	5.00	50.00	12.25	10.00	19.12			
9	MEDA	E	385.00	320.00	5.00	50.00	12.25	12.00	22.59			
10	Dep F or Hiatus	E	(300.00)	325.00	5.00	50.00	31.44	15.00	24.33			
11	Dep E	E	(250.00)	354.00	5.00	50.00	39.32	20.00	28.14			
12	Upper D dep	E	(150.00)	366.00	5.00	50.00	17.70	28.00	27.79			
13	D	N	385.00	370.00	5.00	30.00	15.00	28.00	26.06			
14	C	N	530.00	375.00	-20.00	10.00	-19.99	30.00	22.59			
15	PRICES CK	E	733.00	400.00	-20.00	10.00	-4.99	30.00	25.02			
16	Upper B2	E	(350.00)	410.00	-20.00	10.00	-11.07	30.00	26.75			
17	B2	N	733.00	450.00	-10.00	10.00	-3.75	30.00	31.61			
18	B1	N	776.00	455.00	-10.00	10.00	2.83	30.00	31.96			
19	A2	N	970.00	463.00	2.00	80.00	3.50	28.00	31.96			
20	A2 LGoldwyer Source	N	1430.00	467.00	2.00	80.00	60.97	28.00	31.43		LOWGOLD	
21	A1	N	1572.00	469.00	10.00	100.00	51.89	25.00	30.74			
22	A1 Source	N	1940.00	478.00	10.00	100.00	93.33	25.00	27.27		LOWGOLD	
23	AO	N	2057.00	483.00	0.00	30.00	25.35	25.00	21.20			
24	Basement	N	2120.00	488.00	0.00	0.00	0.00	25.00	16.51			
25	Dummy	N	2130.00	489.00	0.00	0.00	0.00	25.00	16.16			

HORIZON DATA : PICTOR1

	Stratigraph. Unit/Event	SHALE	SAND	CHALK	LST	COAL	HAUT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	conductivity	Density
1	Quaternary		100								0.400	0.400	16.000	2.650
2	Hiatus 3+4	10	90								0.430	0.600	14.120	2.670
3	K	10	90								0.430	0.600	14.120	2.670
4	FITZROY	45	55								0.530	1.310	9.130	2.720
5	Hiatus 2	45	55								0.530	1.310	9.130	2.720
6	Upper H1	45	55								0.530	1.310	9.130	2.720
7	H	45	55								0.530	1.310	9.130	2.720
8	Drosera	10			90						0.430	1.320	9.250	2.750
9	MEDA	10			90						0.430	1.320	9.250	2.750
10	Dep F or Hiatus	10			90						0.430	1.320	9.250	2.750
11	Dep E	10			90						0.430	1.320	9.250	2.750
12	Upper D dep	10	10		80						0.430	1.240	9.700	2.740
13	D	10	10		80						0.430	1.240	9.700	2.740
14	C	35	50		15						0.510	1.230	9.640	2.720
15	PRICES CK	30					70				0.240	1.080	9.000	2.380
16	Upper B2	30					70				0.240	1.080	9.000	2.380
17	B2	100									0.700	2.430	4.600	2.800
18	B1	80	5		15						0.640	2.140	5.500	2.780
19	A2	75			25						0.630	2.120	5.590	2.790
20	A2 LGoldwyer Source	80			20						0.640	2.180	5.370	2.790
21	A1	40	10		50						0.520	1.610	7.680	2.760
22	A1 Source	40	10		50						0.520	1.610	7.680	2.760
23	AO	40	50		10						0.520	1.290	9.270	2.720
24	Basement							100			0.050	0.500	4.500	2.760
25	Dummy							100			0.050	0.500	4.500	2.760

HORIZON DATA : PICTOR1 - MATRIX LITHOLOGY



	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	590.00	0	54.40	3.00	67.00	0
2	590.00	0	58.80	5.62	67.00	0
3	1650.00	0	80.00	6.50	94.40	0
4	1650.00	0	84.40	11.30	94.40	0
5	1650.00	0	87.70	15.75	94.40	0
6	1650.00	0	88.80	21.00	94.40	0
7	2130.00	0	96.10	9.67	99.40	0
8	2130.00	0	97.40	20.50	99.40	0
9	2130.00	0	97.80	26.00	99.40	0
10	2130.00	0	97.80	31.75	99.40	0

TEMPERATURE DATA : PICTOR1

	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
1	221.00	1		1.00	1.50	1
2	510.00	1		1.00	1.50	1
3	900.00	0	0.20	0.20	0.80	5
4	950.00	0	0.20	0.20	0.80	5
5	1000.00	0	0.20	0.20	0.80	5
6	1050.00	0	0.20	0.20	0.80	5
7	1100.00	0	0.20	0.20	0.80	5
8	1140.00	1		2.50	3.00	1
9	1160.00	0	0.20	0.20	0.80	5
10	1200.00	0	0.20	0.20	0.80	5
11	1250.00	0	0.20	0.20	0.80	5
12	1300.00	0	0.20	0.20	0.80	5
13	1350.00	0	0.20	0.20	0.80	5
14	1400.00	0	0.70	0.70	0.85	5
15	1430.00	2	429.00			3
16	1445.00	2	434.00			3
17	1450.00	0	0.70	0.70	0.85	5
18	1460.00	2	435.00			3
19	1500.00	0	0.70	0.70	0.85	5
20	1550.00	0	0.70	0.70	0.85	5
21	1600.00	0	0.70	0.70	0.85	5
22	1650.00	0	0.70	0.70	0.85	5
23	1700.00	0	0.85	0.85	1.30	5
24	1750.00	0	0.85	0.85	1.30	5
25	1800.00	0	0.85	0.85	1.30	5
26	1850.00	0	0.85	0.85	1.30	5
27	1900.00	0	0.85	0.85	1.30	5
28	1925.00	1		4.00	5.00	1
29	1940.00	2	345.00			3
30	1950.00	0	0.85	0.85	1.30	5
31	1955.00	2	358.00			3
32	1970.00	2	439.00			3
33	1985.00	2	305.00			3
34	2000.00	0	0.85	0.85	1.30	5
35	2050.00	0	0.85	0.85	1.30	5

MATURITY DATA : PICTOR1

	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
36	2100.00	0	0.85	0.85	1.30	5
37	2150.00	0	0.85	0.85	1.30	6

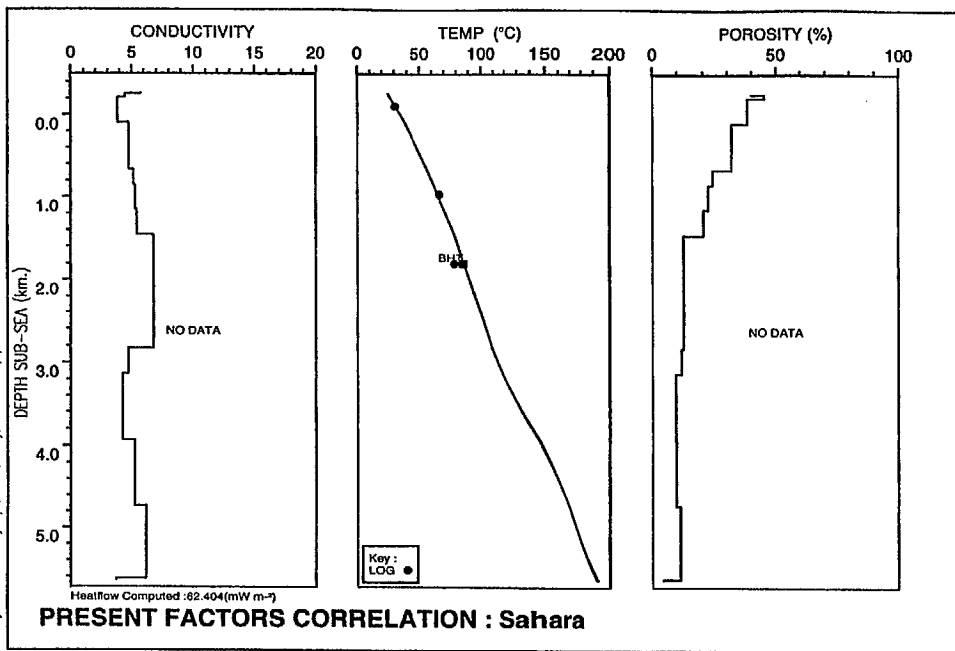
MATURITY DATA : PICTOR1

	Stratigraphic Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum Width	Maximum Width	Modelled Width	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	Quaternary	N	4.88	0.00	-264.57	-264.57	-264.56	25.00	0.00			
2	Hiatus 3+4	H	12.19	2.00	-200.00	0.00	-175.03	25.00	0.00			
3	K	N	12.19	165.00	-10.00	30.00	10.01	18.00	3.87			
4	FITZROY	E	59.44	180.00	-20.00	20.00	-6.98	15.00	4.04			
5	Hiatus 2	E	(400.00)	200.00	-10.00	30.00	-9.49	15.00	5.26			
6	Upper I	E	(100.00)	253.00	0.00	50.00	0.83	12.00	7.68			
7	I	N	59.44	275.00	10.00	60.00	27.15	10.00	9.42			
8	H	N	361.80	290.00	-10.00	100.00	15.44	10.00	10.46			
9	Drosera	H	931.18	298.00	0.00	30.00	23.18	10.00	11.15			
10	MEDA	E	931.18	320.00	0.00	30.00	23.18	12.00	12.89			
11	Hiatus 1	E	(250.00)	326.00	0.00	30.00	10.76	15.00	13.58			
12	E	E	(150.00)	354.00	0.00	30.00	22.06	25.00	16.53			
13	Upper D	E	(100.00)	366.00	0.00	30.00	2.60	28.00	18.27			
14	D	N	931.18	370.00	0.00	30.00	4.54	28.00	18.96			
15	D Source	N	1120.00	373.00	0.00	30.00	1.10	28.00	19.31		TYPE IIB	
16	C	N	1418.00	375.00	-10.00	30.00	-9.99	30.00	19.83			
17	PRICES CK ? Hiatus	H	1728.00	400.00	-10.00	10.00	5.14	30.00	22.96			
18	B2	N	1728.00	410.00	-10.00	10.00	-8.64	30.00	24.51			
19	B1	N	3100.00	455.00	-10.00	10.00	1.98	30.00	29.02			
20	A2	N	3400.00	463.00	0.00	60.00	4.10	28.00	29.37			
21	A1	N	4200.00	469.00	10.00	100.00	65.00	25.00	28.85			
22	A0	N	5000.00	483.00	0.00	30.00	0.89	25.00	21.56			
23	Basement	N	5900.00	488.00	0.00	10.00	10.00	25.00	15.15			
24	Dummy	N	5910.00	489.00	0.00	10.00	10.00	25.00	15.15			

HORIZON DATA : SAHARA

	Stratigraphic Unit/Event	SHALE	SAND	CHALK	LST	COAL	HAUT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Conductivity	Density
1	Quaternary		100								0.400	0.400	16.000	2.650
2	Hiatus 3+4	20	80								0.460	0.810	12.470	2.680
3	K	20	80								0.460	0.810	12.470	2.680
4	FITZROY	60	40								0.580	1.620	7.570	2.740
5	Hiatus 2	60	40								0.580	1.620	7.570	2.740
6	Upper I	60	40								0.580	1.620	7.570	2.740
7	I	60	40								0.580	1.620	7.570	2.740
8	H	45	55								0.530	1.310	9.130	2.720
9	Drosera	20			80						0.460	1.450	8.560	2.760
10	MEDA	20			80						0.460	1.450	8.560	2.760
11	Hiatus 1	20			80						0.460	1.450	8.560	2.760
12	E	20			80						0.460	1.450	8.560	2.760
13	Upper D	20			80						0.460	1.450	8.560	2.760
14	D	20			80						0.460	1.450	8.560	2.760
15	D Source	20			80						0.460	1.450	8.560	2.760
16	C	20			80						0.460	1.450	8.560	2.760
17	PRICES CK ? Hiatus	80	10				10				0.600	2.030	5.740	2.720
18	B2	20					80				0.180	0.890	9.910	2.320
19	B1	65			15		20				0.530	1.860	6.260	2.670
20	A2	80			20						0.640	2.180	5.370	2.790
21	A1	40			60						0.520	1.690	7.330	2.770
22	A0	40	60								0.520	1.210	9.720	2.710
23	Basement							100			0.050	0.500	4.500	2.760
24	Dummy							100			0.050	0.500	4.500	2.760

HORIZON DATA : SAHARA - MATRIX LITHOLOGY

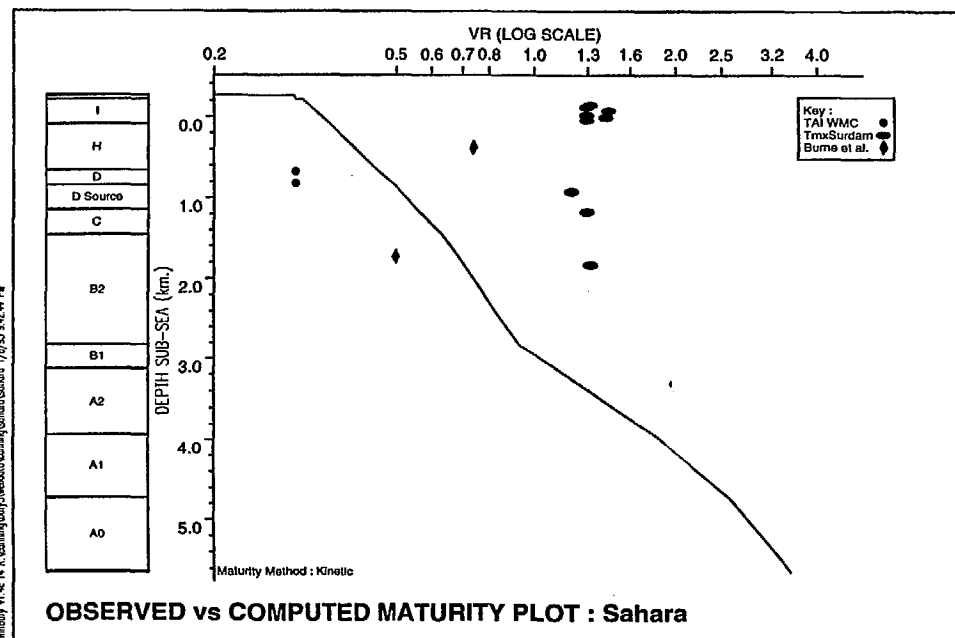
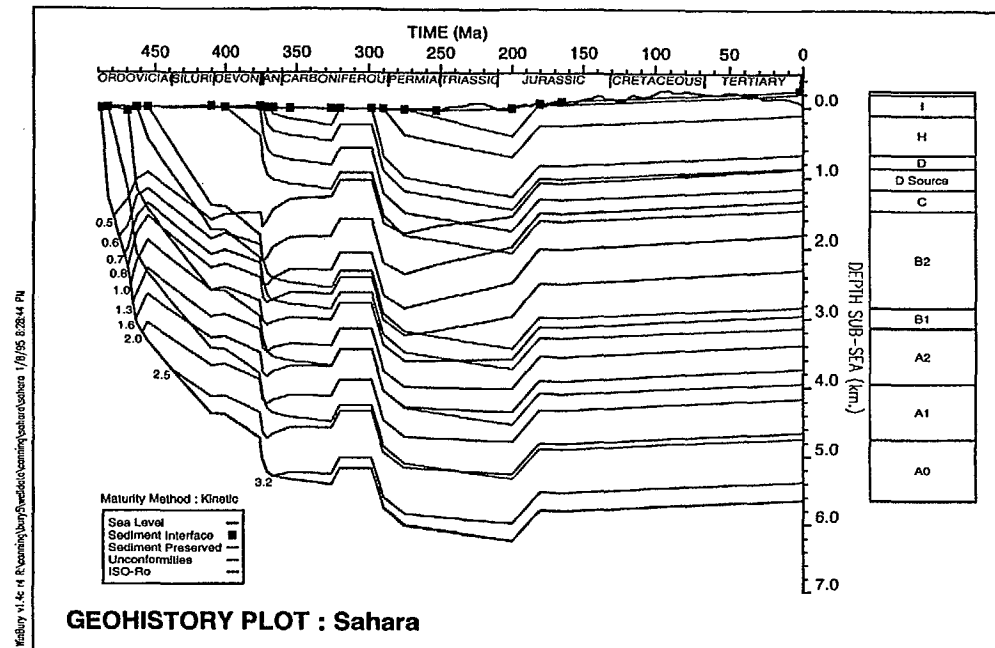
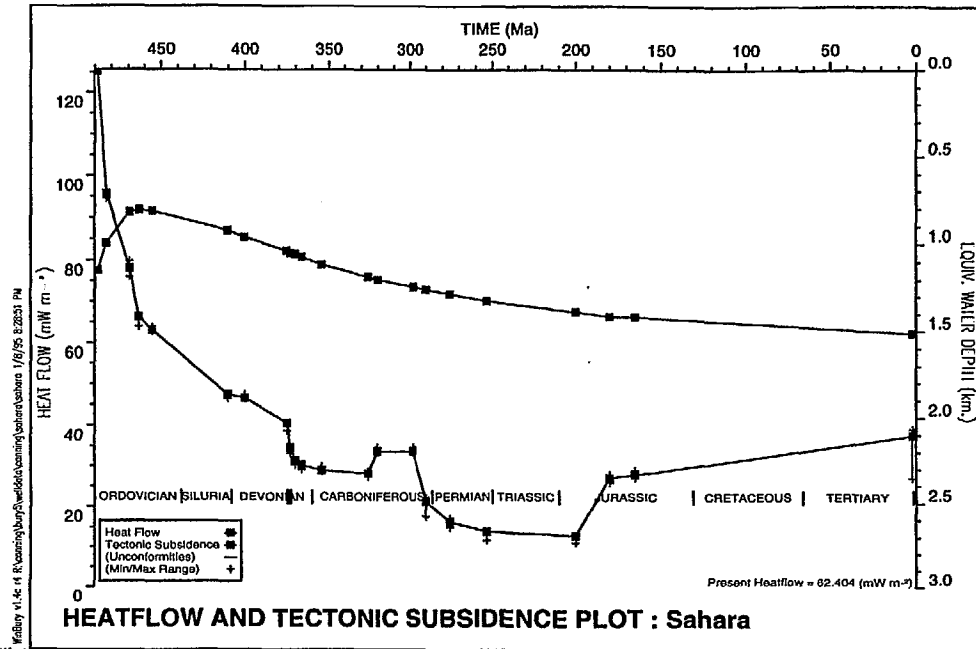


	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	162.00	0	31.00	0.00	31.00	0
2	1236.00	0	66.60	0.00	66.60	0
3	2071.00	0	78.80	0.00	86.00	0

TEMPERATURE DATA : SAHARA

	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
1	128.00	2	465.00			3
2	169.00	2	464.00			3
3	204.00	2	471.00			3
4	259.00	2	464.00			3
5	280.00	2	470.00			3
6	317.00	2	464.00			3
7	653.90	0	0.74			4
8	950.00	1	2.00	2.00	2.00	1
9	1100.00	1	2.00	2.00	2.00	1
10	1198.00	2	460.00			3
11	1445.00	2	464.00			3
12	2001.10	0	0.50			4
13	2101.00	2	465.00			3

MATURITY DATA : SAHARA

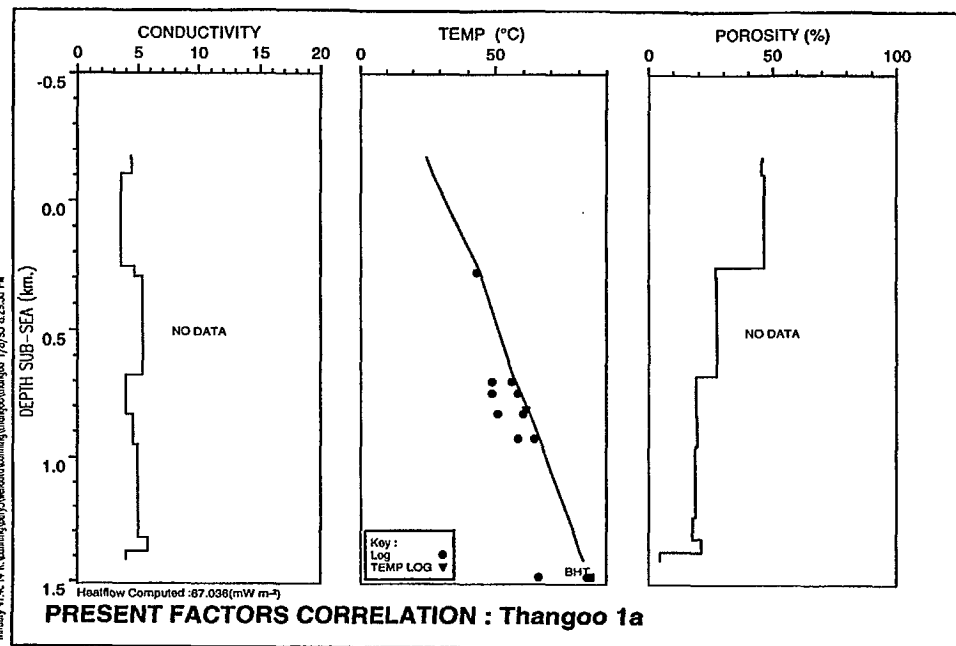


	Stratigraph. Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum WtrDpth	Maximum WtrDpth	Modelled WtrDpth	Sea Bed Temp.	Heatflow	Uthology Data	Kerogen Data	Variable Beds
1	QUATERNARY	N	2.74	0.00	-170.39	-170.39	-170.39	25.00	0.00			
2	HIATUS 4	H	11.89	2.00	-100.00	0.00	-91.03	25.00	0.30			
3	L	N	11.89	123.00	-20.00	0.00	-19.99	22.00	6.82			
4	HIATUS 3	H	67.67	138.00	-10.00	50.00	44.21	20.00	10.22			
5	K	N	67.67	145.00	-10.00	50.00	22.85	20.00	10.56			
6	FITZROY TRANS	E	428.25	180.00	10.00	30.00	23.03	17.00	13.33			
7	HIATUS 2	E	(1200.00)	200.00	10.00	30.00	11.78	15.00	15.37			
8	Dep Upper I	E	(850.00)	253.00	10.00	30.00	16.47	10.00	20.39			
9	I	N	428.25	289.00	10.00	30.00	24.90	10.00	24.55			
10	H	N	468.79	290.00	10.00	100.00	29.41	10.00	24.90			
11	MEDA + DROSERA	H	847.66	298.00	-20.00	10.00	0.00	10.00	25.82			
12	MEDA	E	847.66	320.00	-20.00	10.00	0.00	10.00	28.20			
13	Carb ?Uplift	E	(200.00)	326.00	-20.00	10.00	-7.43	15.00	28.90			
14	Nullara ?Uplift	E	(200.00)	354.00	-20.00	10.00	-3.55	25.00	32.88			
15	Pillara ?Uplift	E	(200.00)	366.00	-20.00	10.00	-6.88	28.00	34.62			
16	DEP C	E	(200.00)	375.00	-20.00	10.00	-19.99	30.00	36.70			
17	PRICES CK ?Mn	E	(10.00)	400.00	-20.00	10.00	-12.54	30.00	41.91			
18	Dep B2	E	(700.00)	410.00	-10.00	10.00	-9.99	30.00	43.99			
19	Dep B1	E	(400.00)	455.00	-10.00	10.00	2.54	30.00	48.15			
20	Dep Upper A2	E	(200.00)	463.00	-10.00	10.00	0.20	30.00	48.15			
21	A2	N	847.66	465.00	10.00	100.00	10.01	28.00	48.50			
22	A2 LGoldwyer Source	N	1005.00	467.00	10.00	100.00	23.54	28.00	48.84		LOWGOLD	
23	A1	N	1122.90	469.00	10.00	100.00	43.73	25.00	48.15			
24	A1 Source	N	1410.00	478.00	10.00	100.00	100.00	25.00	45.37		LOWGOLD	
25	A0	N	1500.55	483.00	10.00	30.00	13.86	25.00	40.55			
26	BASEMENT	N	1554.50	488.00	0.00	0.00	0.00	25.00	34.97			
27	Dummy	N	1584.98	489.00	0.00	0.00	0.00	25.00	33.58			

HORIZON DATA : THANGOO

	Stratigraph. Unit/Event	SHALE	SAND	CHALK	LST	COAL	HALIT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Conductivity	Density
1	QUATERNARY	20	80								0.460	0.810	12.470	2.680
2	HIATUS 4	20	80								0.460	0.810	12.470	2.680
3	L	20	80								0.460	0.810	12.470	2.680
4	HIATUS 3	50	50								0.550	1.420	8.580	2.730
5	K	50	50								0.550	1.420	8.580	2.730
6	FITZROY TRANS	60	40								0.580	1.620	7.570	2.740
7	HIATUS 2	60	40								0.580	1.620	7.570	2.740
8	Dep Upper I	60	40								0.580	1.620	7.570	2.740
9	I	50	30		20						0.550	1.580	7.810	2.740
10	H	40	60								0.520	1.210	9.720	2.710
11	MEDA + DROSERA		100								0.400	0.400	16.000	2.650
12	MEDA		100								0.400	0.400	16.000	2.650
13	Carb ?Uplift		100								0.400	0.400	16.000	2.650
14	Nullara ?Uplift		100								0.400	0.400	16.000	2.650
15	Pillara ?Uplift		100								0.400	0.400	16.000	2.650
16	DEP C		100								0.400	0.400	16.000	2.650
17	PRICES CK ?Mn	40			10		50				0.340	1.340	8.030	2.500
18	Dep B2	20			5		75				0.200	0.920	9.820	2.350
19	Dep B1	70			15		15				0.550	1.950	5.970	2.700
20	Dep Upper A2	60			40						0.580	1.940	6.280	2.780
21	A2	80			20						0.640	2.180	5.370	2.790
22	A2 LGoldwyer Source	60	10		30						0.580	1.850	6.580	2.770
23	A1	40			60						0.520	1.690	7.330	2.770
24	A1 Source	40			60						0.520	1.690	7.330	2.770
25	A0	40	60								0.520	1.210	9.720	2.710
26	BASEMENT							100			0.050	0.500	4.500	2.760
27	Dummy							100			0.050	0.500	4.500	2.760

HORIZON DATA : THANGOO - MATRIX LITHOLOGY

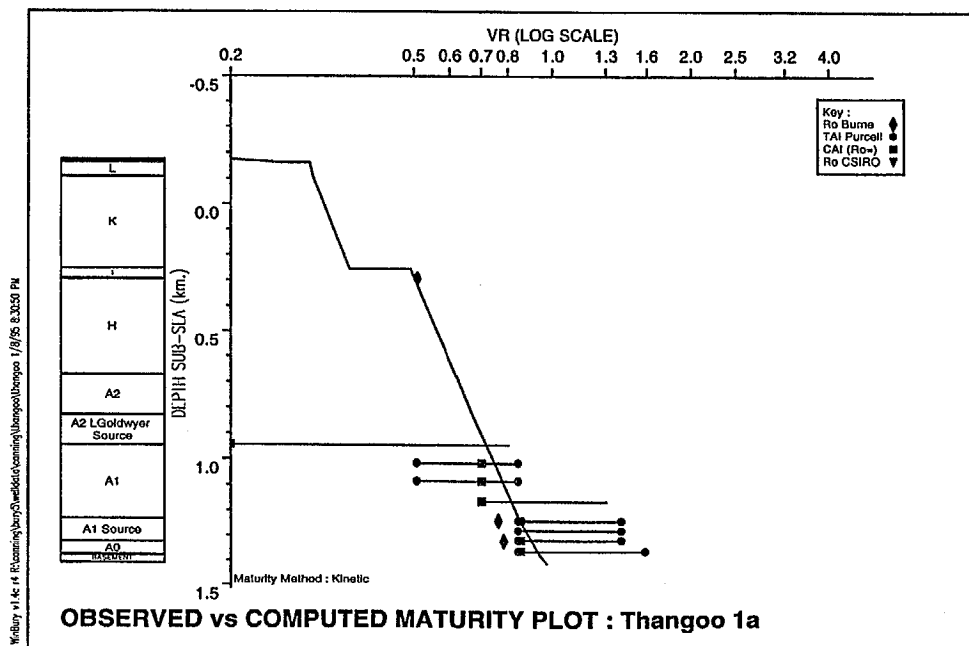
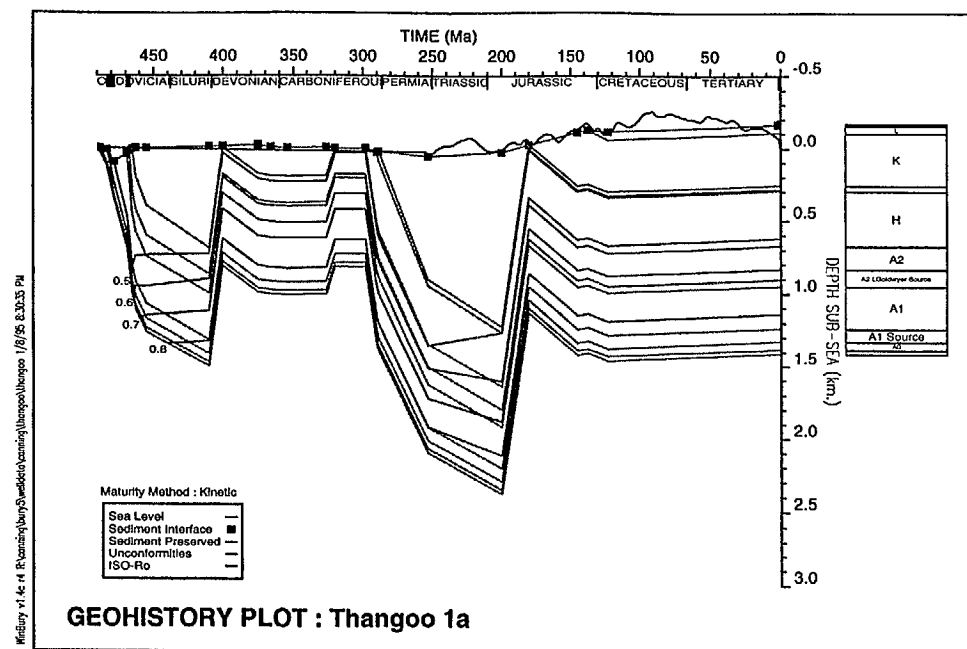
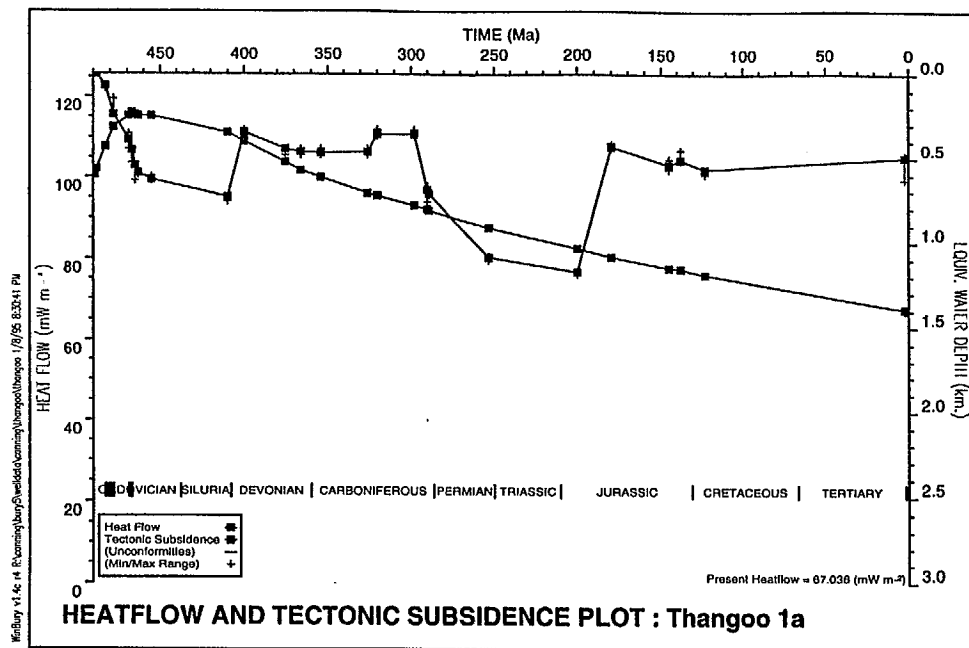


	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	451.00	0	43.30	0.00	43.30	0
2	873.00	0	48.90	0.00	55.00	0
3	918.98	0	48.89	0.00	58.00	0
4	985.43	0	61.11	0.00	61.10	1
5	1000.00	0	51.00	0.00	60.00	0
6	1098.00	0	58.00	0.00	64.00	0
7	1654.00	0	65.56	0.00	83.00	0

TEMPERATURE DATA : THANGOO

	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
1	464.80	0	0.51			8
2	466.00	0	0.51			0
3	1118.00	0	0.20	0.20	0.80	5
4	1191.00	0	0.70	0.70	0.85	5
5	1191.00	1		2.50	3.00	1
6	1262.00	0	0.70	0.70	0.85	5
7	1262.00	1		2.50	3.00	1
8	1339.00	0	0.70	0.70	1.30	5
9	1416.00	0	0.76			0
10	1416.00	1		3.00	3.50	1
11	1416.00	0	0.85	0.85	1.30	5
12	1454.00	1		3.00	3.50	1
13	1492.00	0	0.85	0.85	1.30	5
14	1493.00	1		3.00	3.50	1
15	1496.00	0	0.78			0
16	1536.00	1		3.00	3.60	1
17	1536.10	0	0.85	0.85	1.30	5

MATURITY DATA : THANGOO



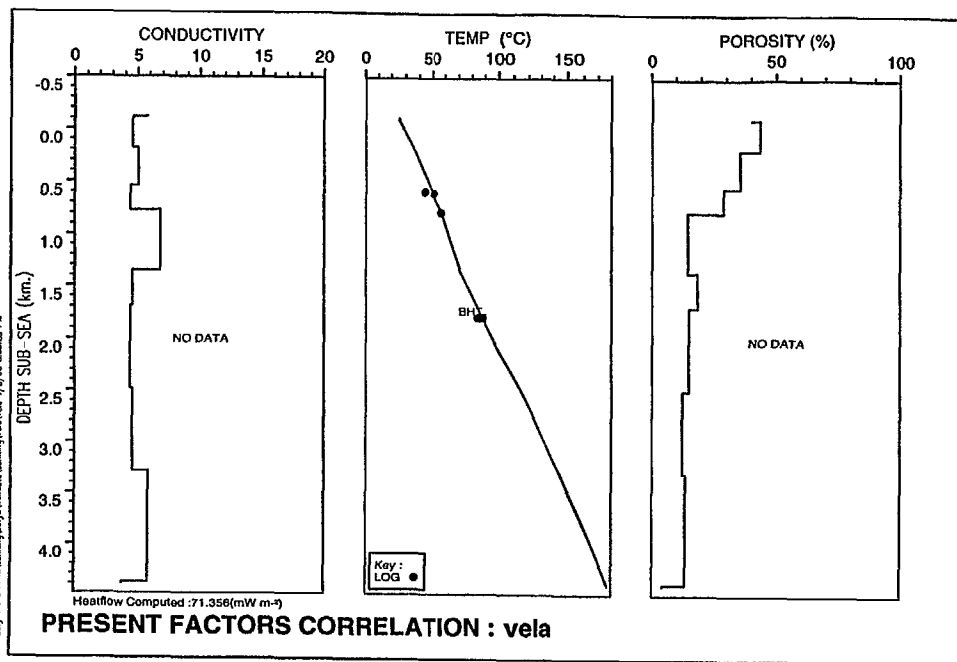
	Stratigraph. Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum Wtdpth	Maximum Wtdpth	Modelled Wtdpth	Sea Bed Temp.	Heatflow	Uthology Data	Kerogen Data	Variable Beds
1	QUATERNARY	N	5.20	0.00	-112.00	-112.00	-111.99	25.00	0.00			
2	HIATUS	H	6.00	2.00	-50.00	0.00	-51.35	25.00	0.00			
3	K-YOUNGER	N	6.00	145.00	-50.00	0.00	-20.00	25.00	3.82			
4	FITZROY MOVEMENT	E	302.20	180.00	-50.00	0.00	-20.15	15.00	5.21			
5	HIATUS 2	E	(600.00)	200.00	30.00	100.00	32.65	15.00	6.25			
6	Dep I	E	(500.00)	272.00	30.00	100.00	30.00	10.00	10.15			
7	H	N	302.20	293.00	10.00	100.00	58.50	10.00	11.81			
8	DROCSERSA	H	659.40	298.00	-20.00	0.00	-20.00	10.00	12.50			
9	MEDA	E	659.40	320.00	-20.00	0.00	-20.00	12.00	14.93			
10	HIATUS 1	E	(100.00)	326.00	-20.00	0.00	-17.44	15.00	15.97			
11	Upper 7C	E	(50.00)	375.00	-20.00	0.00	-20.00	30.00	21.98			
12	C	N	659.40	380.00	-20.00	0.00	-19.99	30.00	22.91			
13	PRICES CK	E	889.00	400.00	-10.00	0.00	0.00	30.00	26.73			
14	Upper B2	E	(50.00)	410.00	-10.00	0.00	-8.13	30.00	28.46			
15	B2	N	889.00	420.00	-10.00	10.00	3.50	30.00	29.96			
16	B1	N	1467.00	455.00	-10.00	10.00	-0.03	30.00	34.01			
17	A2	N	1807.00	463.00	30.00	100.00	32.84	28.00	34.36			
18	A1	N	2600.00	469.00	30.00	100.00	65.71	25.00	33.65			
19	A0	N	3400.00	483.00	10.00	30.00	20.00	25.00	27.42			
20	BASEMENT	N	4500.00	488.00	0.00	0.00	0.00	25.00	18.40			
21	Dummy	N	4510.00	489.00	0.00	0.00	0.00	25.00	18.74			

HORIZON DATA : VELA

	Stratigraph. Unit/Event	SHALE	SAND	CHALK	LST	COAL	HAUT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Conductivity	Density
1	QUATERNARY		100								0.400	0.400	16.000	2.650
2	HIATUS		100								0.400	0.400	16.000	2.650
3	K-YOUNGER	20	80								0.460	0.810	12.470	2.680
4	FITZROY MOVEMENT	30	70								0.490	1.010	11.010	2.690
5	HIATUS 2	30	70								0.490	1.010	11.010	2.690
6	Dep I	30	70								0.490	1.010	11.010	2.690
7	H	30	70								0.490	1.010	11.010	2.690
8	DROCSERSA	5	95								0.410	0.500	15.030	2.660
9	MEDA	5	95								0.410	0.500	15.030	2.660
10	HIATUS 1	5	95								0.410	0.500	15.030	2.660
11	Upper 7C	5	95								0.410	0.500	15.030	2.660
12	C	60	40								0.580	1.620	7.570	2.740
13	PRICES CK	75			25						0.630	2.120	5.590	2.790
14	Upper B2	50					50				0.380	1.470	7.430	2.500
15	B2	20					80				0.180	0.890	9.910	2.320
16	B1	60			15		25				0.490	1.760	6.570	2.640
17	A2	65			35						0.600	2.000	6.040	2.780
18	A1	60			40						0.580	1.940	6.280	2.780
19	A0	40	50		10						0.520	1.290	9.270	2.720
20	BASEMENT							100			0.050	0.500	4.500	2.760
21	Dummy							100			0.050	0.500	4.500	2.760

HORIZON DATA : VELA - MATRIX LITHOLOGY

Midbury v1.4c - 14 E:\seismic\img\2\vela\del\canary\vela\vela 1/8/95 8:33:23 PM



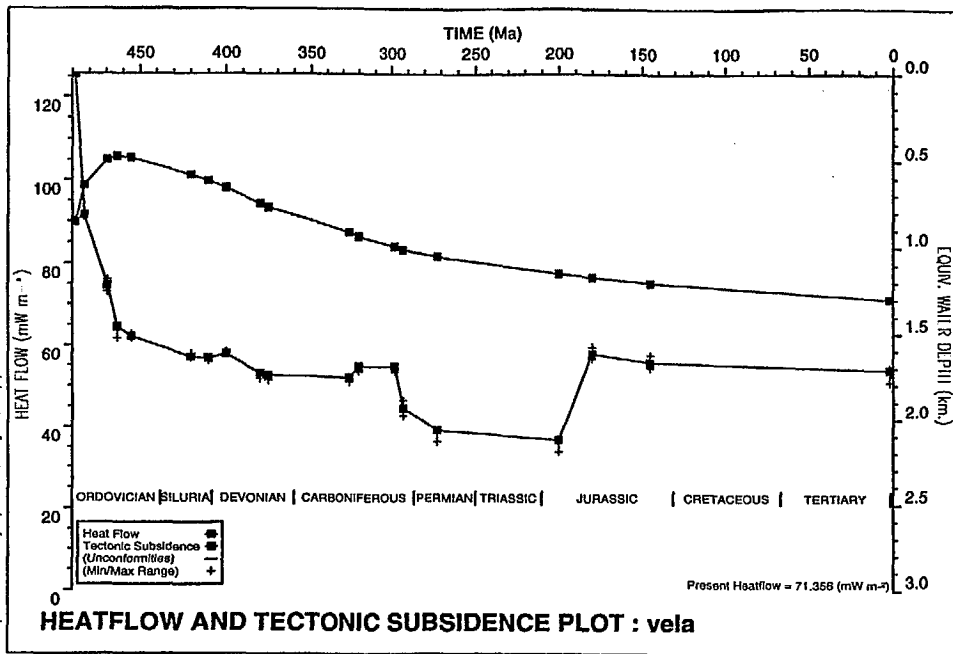
	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	707.00	0	44.00	0.00	44.00	0
2	721.00	0	51.00	0.00	51.00	0
3	903.00	0	57.00	0.00	57.00	0
4	1908.00	0	84.00	0.00	88.00	0

TEMPERATURE DATA : VELA

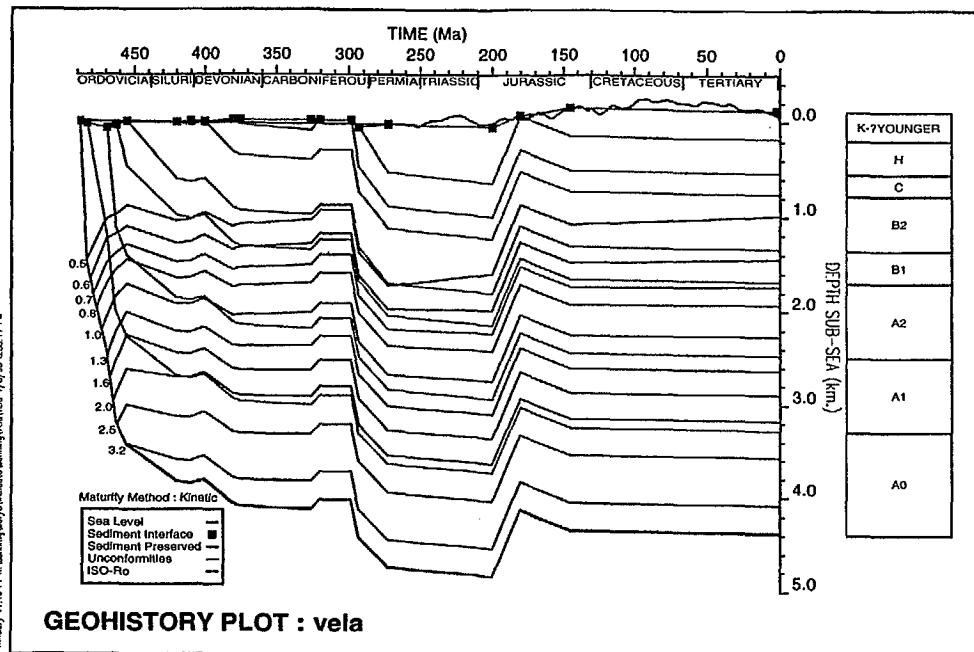
	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
1	340.00	2	429.00			3
2	380.00	2	430.00			3
3	1770.00	0	0.85	0.85	1.30	5
4	1770.00	0	0.85	0.85	1.30	5
5	1790.00	0	0.85	0.85	1.30	5
6	1850.00	0	0.85	0.85	1.30	5
7	1870.00	0	0.85	0.85	1.30	5
8	1900.00	0	0.85	0.85	1.30	5

MATURITY DATA : VELA

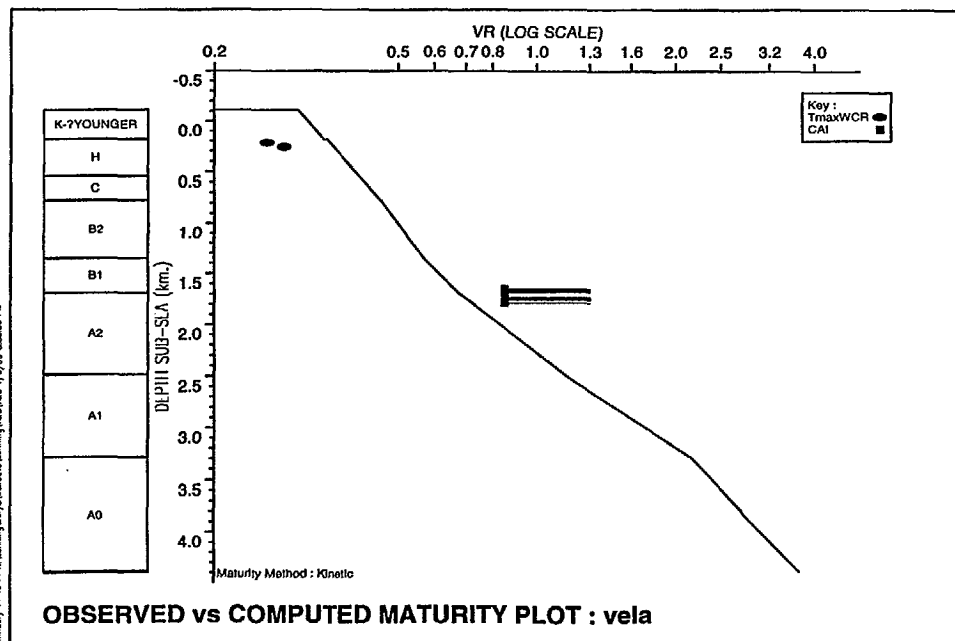
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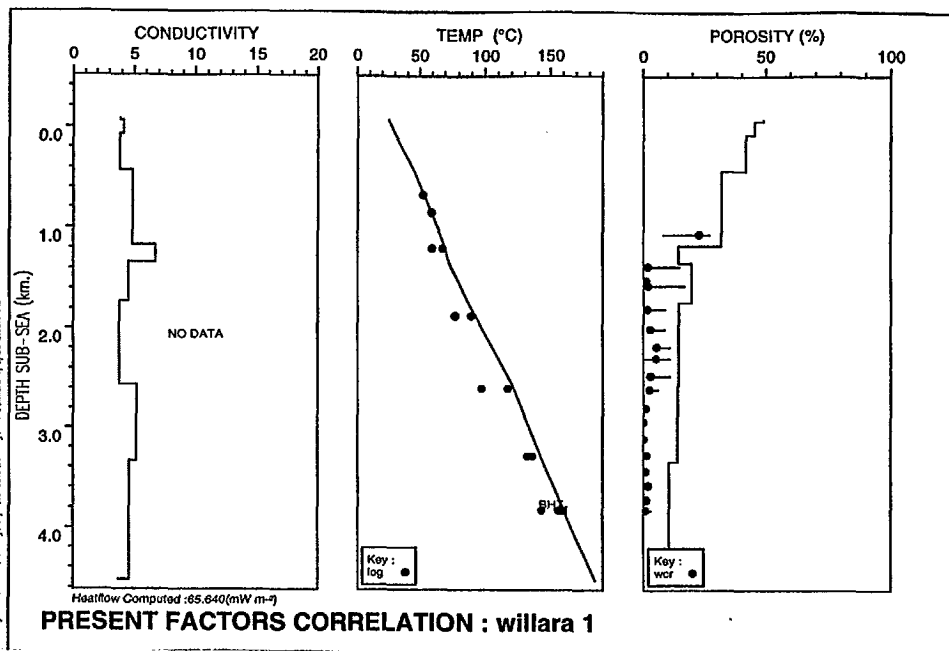
* R 9 4 0 6 7 0 4 *

	Stratigraphic Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum WtdDpth	Maximum WtdDpth	Modelled WtdDpth	Seal Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	QUATERNARY	N	4.87	0.00	-75.90	-75.90	-75.90	25.00	0.00			
2	EROSION	E	21.00	2.00	-20.00	0.00	-0.01	25.00	0.16			
3	UPPER L	E	(100.00)	105.00	-20.00	0.00	-0.50	22.00	5.88			
4	L	N	21.00	130.00	-20.00	0.00	-17.99	20.00	7.25			
5	HIATUS 3	H	152.00	138.00	-10.00	50.00	31.32	20.00	7.60			
6	K	N	152.00	145.00	-10.00	50.00	-3.95	20.00	8.64			
7	FITZROY TRANS	E	513.00	180.00	-10.00	30.00	30.00	15.00	11.71			
8	HIATUS 2	E	(650.00)	200.00	10.00	40.00	34.92	15.00	13.82			
9	DEP H-I	E	(500.00)	272.00	10.00	60.00	27.00	10.00	21.78			
10	H	N	513.00	293.00	10.00	100.00	10.01	10.00	24.92			
11	DROSERA	H	1256.00	298.00	-10.00	10.00	-8.78	10.00	25.61			
12	MEDA	E	1256.00	320.00	-10.00	10.00	-9.32	12.00	29.18			
13	HIATUS 1 or D-F	E	(250.00)	326.00	-10.00	10.00	-7.90	15.00	30.45			
14	DEP C	E	(200.00)	375.00	-10.00	10.00	-9.99	30.00	38.10			
15	PRICES CK MOVEMENT	E	1256.00	400.00	0.00	10.00	0.00	30.00	42.96			
16	UPPER B2	E	(300.00)	410.00	-10.00	10.00	2.00	30.00	45.39			
17	B2	N	1256.00	450.00	0.00	20.00	2.88	30.00	49.90			
18	B1	N	1422.00	455.00	-10.00	10.00	-0.44	30.00	49.90			
19	A2	N	1815.00	463.00	10.00	100.00	14.97	28.00	49.21			
20	A1	N	2644.00	469.00	10.00	100.00	76.76	25.00	48.51			
21	A0	N	3420.00	483.00	0.00	30.00	1.47	25.00	42.96			
22	BASEMENT	N	4600.00	488.00	0.00	0.00	0.00	25.00	36.02			
23	Dummy	N	4605.00	489.00	0.00	0.00	0.00	25.00	35.70			

HORIZON DATA : WILLARA

	Stratigraphic Unit/Event	SHALE	SAND	CHALK	LST	COAL	HALIT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Conductivity	Density
1	QUATERNARY	30	70								0.490	1.010	11.010	2.690
2	EROSION	30	70								0.490	1.010	11.010	2.690
3	UPPER L	30	70								0.490	1.010	11.010	2.690
4	L	30	70								0.490	1.010	11.010	2.690
5	HIATUS 3	50	50								0.550	1.420	8.580	2.730
6	K	50	50								0.550	1.420	8.580	2.730
7	FITZROY TRANS	60	40								0.580	1.620	7.570	2.740
8	HIATUS 2	60	40								0.580	1.620	7.570	2.740
9	DEP H-I	60	40								0.580	1.620	7.570	2.740
10	H	40	60								0.520	1.210	9.720	2.710
11	DROSERA		100								0.400	0.400	16.000	2.650
12	MEDA		100								0.400	0.400	16.000	2.650
13	HIATUS 1 or D-F		100								0.400	0.400	16.000	2.650
14	DEP C		100								0.400	0.400	16.000	2.650
15	PRICES CK MOVEMENT	20					80				0.180	0.890	9.910	2.320
16	UPPER B2	20					80				0.180	0.890	9.910	2.320
17	B2	20					80				0.180	0.890	9.910	2.320
18	B1	60	5		10		25				0.490	1.720	6.720	2.640
19	A2	90			10						0.670	2.310	4.970	2.800
20	A1	35			65						0.510	1.630	7.620	2.770
21	A0	70	20		10						0.610	1.900	6.380	2.760
22	BASEMENT							100			0.050	0.500	4.500	2.760
23	Dummy							100			0.050	0.500	4.500	2.760

HORIZON DATA : WILLARA - MATRIX LITHOLOGY



	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	757.00	0	52.20	0.00	52.20	0
2	938.00	0	59.00	0.00	59.00	0
3	1286.00	0	60.00	0.00	68.00	0
4	1955.00	0	77.00	0.00	89.00	0
5	2680.00	0	97.00	0.00	117.00	0
6	3367.00	0	132.20	0.00	136.00	0
7	3903.00	0	143.30	0.00	156.00	0

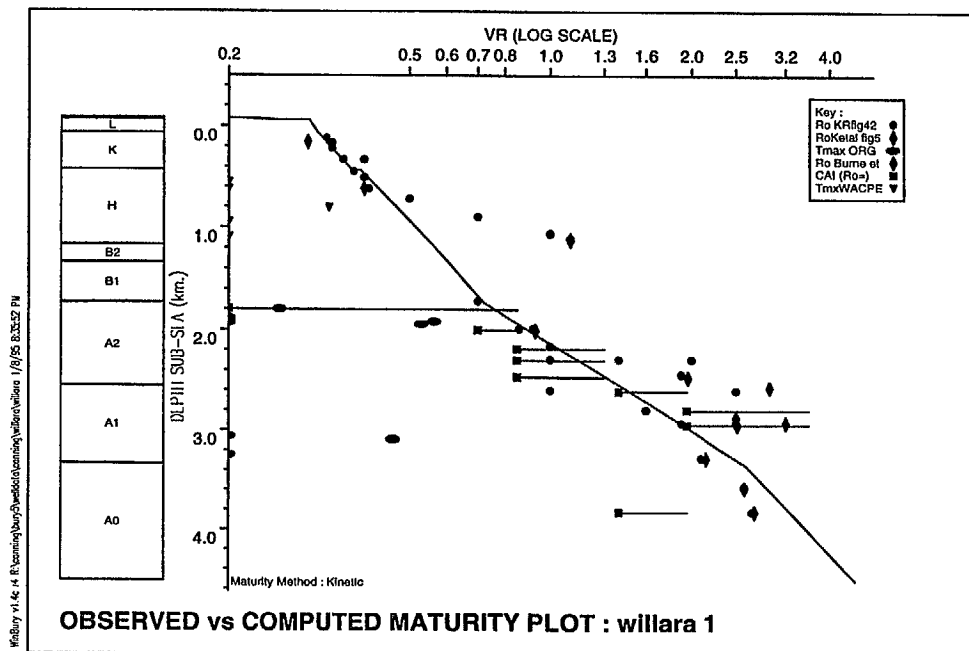
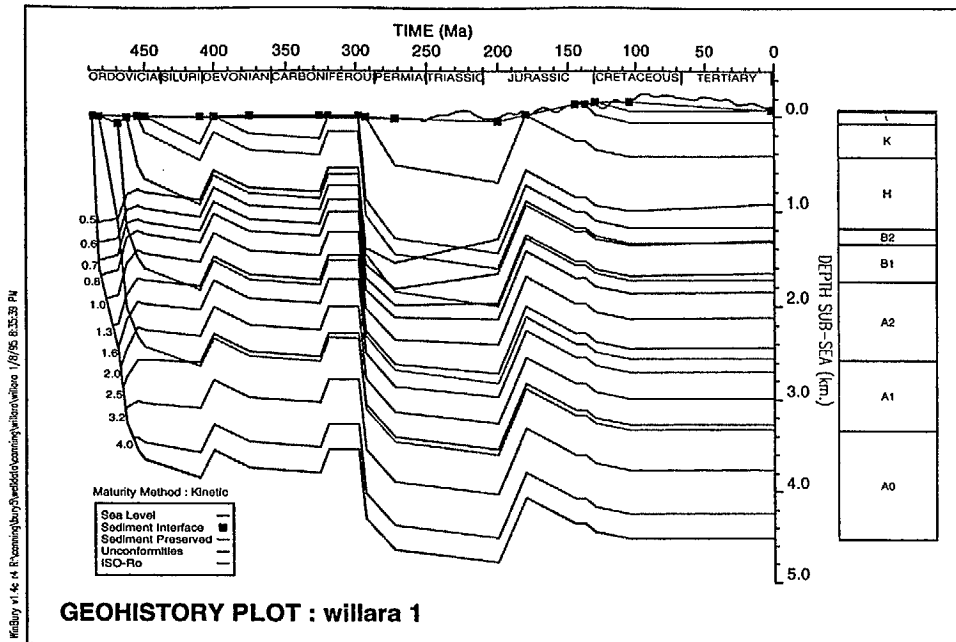
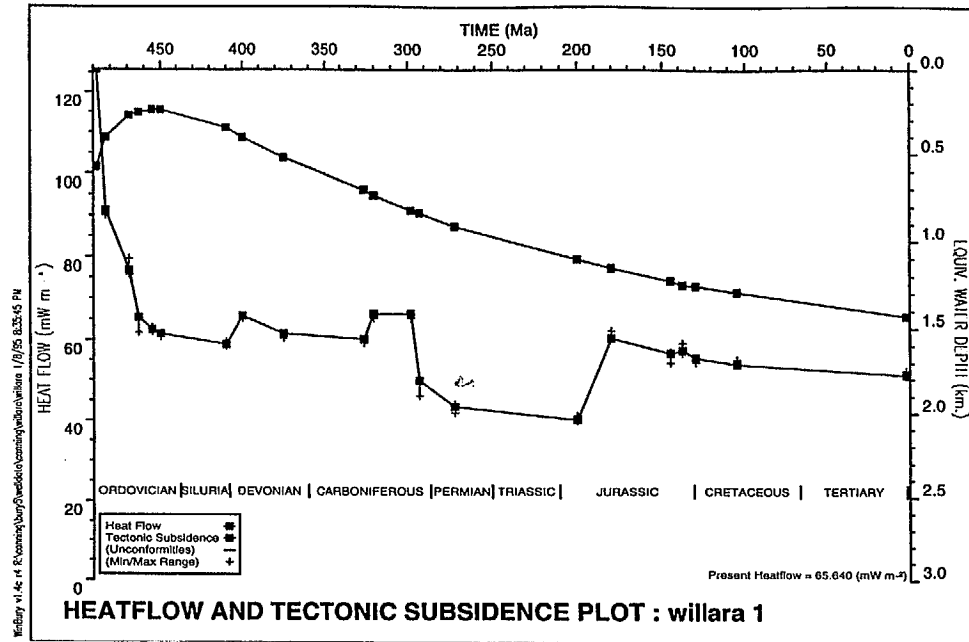
TEMPERATURE DATA : WILLARA

	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
1	200.00	0	0.33			0
2	240.00	0	0.30			2
3	250.00	0	0.34			0
4	300.00	0	0.34			0
5	410.00	0	0.36			0
6	410.00	0	0.40			0
7	530.00	0	0.38			0
8	590.00	0	0.40			0
9	640.00	2	421.00			9
10	700.00	0	0.40			2
11	700.00	0	0.41			0
12	704.00	2	413.00			9
13	800.00	0	0.50			0
14	887.00	2	432.00			9
15	980.00	0	0.70			0
16	1033.30	2	410.00			9
17	1140.00	0	1.00			0
18	1176.50	2	418.00			9
19	1190.00	0	1.10			0
20	1200.00	0	1.10			2
21	1800.00	0	0.70			0
22	1881.00	2	429.00			3
23	1881.00	0	0.20	0.20	0.85	5
24	1966.00	2	382.00			3
25	1981.00	2	359.00			3
26	2000.00	2	439.00			3
27	2015.00	2	408.00			3
28	2027.00	2	438.00			3
29	2070.00	0	0.86			0
30	2070.00	0	0.92			0
31	2083.00	0	0.70	0.70	0.85	5
32	2085.80	0	0.93			4
33	2240.00	0	1.00			0
34	2264.00	0	0.85	0.85	1.30	5
35	2370.00	0	1.00			0

MATURITY DATA : WILLARA

	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
36	2370.00	0	1.40			0
37	2370.00	0	2.00			0
38	2376.00	0	0.85	0.85	1.30	5
39	2520.00	0	1.90			0
40	2546.00	0	0.85	0.85	1.30	5
41	2548.20	0	1.96			4
42	2650.00	0	2.95			2
43	2680.00	0	1.00			0
44	2680.00	0	2.50			0
45	2685.00	0	1.40	1.40	1.95	5
46	2875.00	0	1.60			0
47	2876.50	0	1.95	1.95	3.60	5
48	2950.00	0	2.50			2
49	3005.00	0	1.90			0
50	3005.00	0	2.50			0
51	3005.00	0	3.20			2
52	3018.00	0	1.95	1.95	3.60	5
53	3018.80	0	2.51			4
54	3146.00	2	385.00			3
55	3173.00	2	436.00			3
56	3329.00	2	396.00			3
57	3350.00	0	2.10			0
58	3357.50	0	2.15			4
59	3640.00	0	2.60			0
60	3659.50	0	2.60			4
61	3900.00	0	2.70			0
62	3900.00	0	1.40	1.40	1.95	5
63	3900.90	0	2.73			4

MATURITY DATA : WILLARA

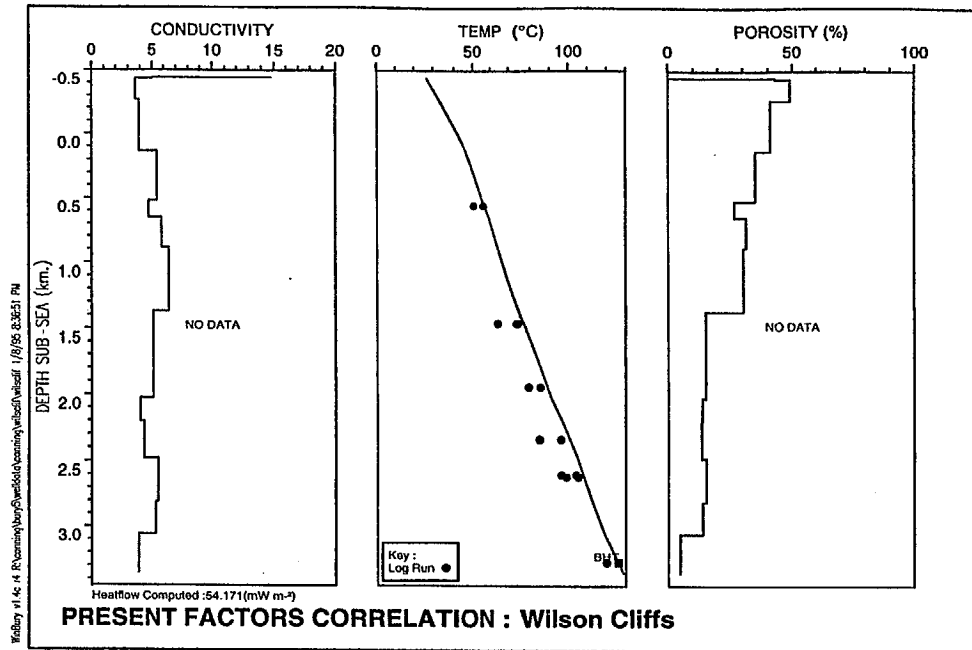


	Stratigraphic Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum Width	Maximum Width	Modelled Width	Sea Bed Temp.	Heatflow	Lithology Data	Kerogen Data	Variable Beds
1	Quaternary	H	5.00	0.00	-440.00	-440.00	-440.00	27.00	0.00			
2	Hiatus 4	H	5.00	2.00	-400.00	0.00	-347.11	25.00	0.00			
3	L	N	5.00	105.00	-30.00	20.00	-29.99	21.00	3.89			
4	Hiatus 3	H	12.19	138.00	-30.00	20.00	9.51	20.00	5.16			
5	K	N	12.19	145.00	-20.00	20.00	-9.98	20.00	6.51			
6	FITZROY	E	181.36	180.00	-30.00	100.00	14.63	15.00	7.59			
7	Hiatus 2	E	(250.00)	200.00	-30.00	100.00	66.10	15.00	8.63			
8	Upper I	E	(150.00)	253.00	-20.00	100.00	29.75	10.00	12.45			
9	I	N	181.36	270.00	-20.00	100.00	76.23	10.00	13.84			
10	H	N	579.13	290.00	-20.00	100.00	9.04	10.00	15.92			
11	Drosara	H	966.84	296.00	-20.00	30.00	12.00	10.00	16.26			
12	MEDA	E	966.84	320.00	-20.00	30.00	15.00	12.00	18.00			
13	Hiatus	E	(150.00)	326.00	-10.00	30.00	23.02	15.00	19.38			
14	Upper D	E	(100.00)	366.00	5.00	30.00	16.40	27.00	23.89			
15	D	N	966.84	370.00	5.00	30.00	12.36	28.00	24.59			
16	Upper C or D	N	1094.00	375.00	0.00	20.00	15.00	29.00	25.28			
17	C	N	1331.99	385.00	-20.00	10.00	-19.99	30.00	27.02			
18	PRICES CREEK	E	1818.15	400.00	-10.00	10.00	3.39	30.00	29.45			
19	Upper B2	E	(20.00)	410.00	-10.00	10.00	2.69	30.00	31.18			
20	B2	N	1818.15	412.00	-10.00	10.00	3.39	30.00	31.88			
21	B1	N	2468.91	455.00	-10.00	10.00	1.59	30.00	37.43			
22	A2	N	2648.74	463.00	0.00	100.00	29.78	28.00	37.77			
23	A1	N	2923.07	469.00	10.00	100.00	94.31	25.00	37.43			
24	A0	N	3252.26	483.00	0.00	30.00	10.00	25.00	30.83			
25	Basement	N	3503.41	488.00	0.00	10.00	10.00	25.00	21.47			
26	Dummy	N	3800.00	489.00	0.00	10.00	10.00	25.00	20.43			

HORIZON DATA : WILSCLIF

	Stratigraphic Unit/Event	SHALE	SAND	CHALK	LST	COAL	HALIT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Conductivity	Density
1	Quaternary		100								0.400	0.400	16.000	2.650
2	Hiatus 4	10	90								0.430	0.600	14.120	2.670
3	L	10	90								0.430	0.600	14.120	2.670
4	Hiatus 3	40	60								0.520	1.210	9.720	2.710
5	K	40	60								0.520	1.210	9.720	2.710
6	FITZROY	45	55								0.530	1.310	9.130	2.720
7	Hiatus 2	45	55								0.530	1.310	9.130	2.720
8	Upper I	45	55								0.530	1.310	9.130	2.720
9	I	50	50								0.550	1.420	8.580	2.730
10	H	20	80								0.460	0.810	12.470	2.680
11	Drosara	30			70						0.490	1.570	7.920	2.760
12	MEDA	30			70						0.490	1.570	7.920	2.760
13	Hiatus	30			70						0.490	1.570	7.920	2.760
14	Upper D	30			70						0.490	1.570	7.920	2.760
15	D	30			70						0.490	1.570	7.920	2.760
16	Upper C or D	20	80								0.460	0.810	12.470	2.680
17	C	10	90								0.430	0.600	14.120	2.670
18	PRICES CREEK	90			10						0.670	2.310	4.970	2.800
19	Upper B2	80	10				10				0.600	2.030	5.740	2.720
20	B2	55	10		15		15			5	0.510	2.130	7.130	2.690
21	B1	85			15						0.660	2.250	5.170	2.790
22	A2	75	5		20						0.630	2.080	5.720	2.780
23	A1	50	40		10						0.550	1.500	8.190	2.740
24	A0	60	40								0.580	1.620	7.570	2.740
25	Basement						100				0.050	0.500	4.500	2.760
26	Dummy						100				0.050	0.500	4.500	2.760

HORIZON DATA : WILSCLIF - MATRIX LITHOLOGY



	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	1005.55	0	50.56	0.00	56.00	0
2	1908.68	0	64.44	0.00	74.00	0
3	2387.53	0	78.89	0.00	85.00	0
4	2784.08	0	84.44	0.00	96.00	0
5	3047.12	0	96.11	0.00	104.00	0
6	3062.97	0	98.89	0.00	105.00	0
7	3721.65	0	120.00	0.00	126.00	0

TEMPERATURE DATA : WILSCLIF

	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
1	966.00	0	0.20	0.20	0.80	5
2	966.50	0	0.20	0.20	0.80	6
3	997.00	0	0.20	0.20	0.80	5
4	1014.00	0	0.52			4
5	2564.00	0	0.20	0.20	1.30	6
6	2564.00	0	0.20	0.20	0.80	5
7	2621.00	2	411.00			3
8	2625.00	0	0.20	0.20	1.30	6
9	2625.00	0	0.70	0.70	0.85	5
10	2655.00	0	0.70	0.70	0.85	5
11	2655.50	0	0.20	0.20	1.30	6
12	2681.20	0	1.35			4
13	2685.00	2	419.00			3
14	2686.00	0	0.85	0.85	1.30	6
15	2686.00	0	0.70	0.70	0.85	5
16	2716.00	0	0.70	0.70	0.85	5
17	2716.50	0	0.70	0.70	1.30	6
18	2734.00	2	415.00			3
19	2747.00	0	0.85	0.85	1.30	6
20	2747.00	0	0.70	0.70	0.85	5
21	2770.00	2	411.00			3
22	2777.40	0	0.85	0.85	1.30	6
23	2779.00	2	430.00			3
24	2807.90	0	0.85	0.85	1.30	6
25	2813.00	2	411.00			3
26	2838.40	0	0.85	0.85	1.30	6
27	2868.90	0	0.85	0.85	1.30	6
28	2869.00	0	0.70	0.70	0.85	5
29	2899.00	0	0.70	0.70	0.85	5
30	2899.40	0	0.85	0.85	1.30	6
31	2929.90	0	0.85	0.85	1.30	6
32	2930.00	0	0.70	0.70	0.85	5
33	2958.90	0	1.94			4
34	2960.40	0	0.85	0.85	1.30	6
35	3020.00	2	432.00			3

MATURITY DATA : WILSCLIF

	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
36	3023.00	2	433.00			3
37	3023.00	2	433.00			3
38	3051.00	0	0.70	0.70	0.85	5
39	3051.80	0	0.85	0.85	1.30	6
40	3128.00	0	0.85	0.85	1.30	6
41	3128.00	0	0.70	0.70	0.85	5
42	3158.00	0	0.70	0.70	0.85	5
43	3158.50	0	0.85	0.85	1.95	6
44	3189.00	0	0.85	0.85	1.30	6
45	3189.00	0	0.70	0.70	0.85	5
46	3219.00	0	0.70	0.70	0.85	5
47	3219.50	0	0.85	0.85	1.30	6
48	3262.40	0	2.61			4

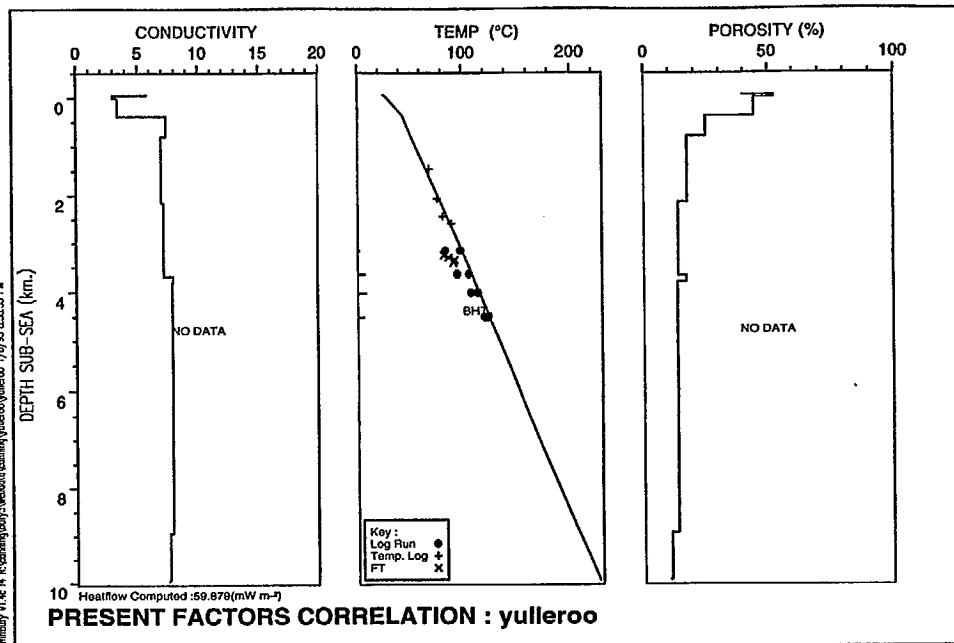
MATURITY DATA : WILSCLIF

	Stratigraph. Unit/Event	E V	Depth to Top of Unit	Age (Ma)	Minimum WtdDpth	Maximum WtdDpth	Modelled WtdDpth	Sea Bed Temp.	Heatflow	Uthology Data	Kerogen Data	Variable Beds
1	Quaternary	E	(5.61)	0.00	-55.60	-55.60	-55.60	25.00	0.00			
2	Cret-Q Erosion	E	6.10	2.00	10.00	30.00	29.99	25.00	-0.09			
3	Upper L	E	(50.00)	105.00	10.00	30.00	29.99	22.00	2.77			
4	L	N	6.10	130.00	10.00	30.00	10.01	20.00	4.50			
5	Hiatus K-L	H	65.84	138.00	10.00	30.00	26.14	20.00	4.50			
6	K	N	65.84	145.00	10.00	30.00	29.55	20.00	5.15			
7	FITZROY	E	442.58	180.00	10.00	30.00	29.99	15.00	7.99			
8	Hiatus	E	(2600.00)	200.00	-10.00	20.00	0.52	15.00	9.73			
9	J	E	(2600.00)	243.00	10.00	60.00	19.38	10.00	14.98			
10	I	E	(2100.00)	253.00	10.00	60.00	28.40	10.00	17.30			
11	H	E	(1400.00)	290.00	10.00	100.00	63.22	10.00	25.34			
12	?Drosara	H	442.58	298.78	-10.00	20.00	6.61	10.00	27.71			
13	G	N	442.58	310.00	-10.00	20.00	-9.99	10.00	31.70			
14	Meda Movement	E	853.45	320.00	-10.00	20.00	6.49	13.00	34.59			
15	Upper And	E	(250.00)	326.00	0.00	30.00	0.01	14.00	36.33			
16	F (And)	N	853.45	332.00	10.00	60.00	11.18	15.00	37.54			
17	F (Laurel)	N	2210.00	346.00	10.00	100.00	27.85	22.00	39.27			
18	F Source	N	3737.00	352.00	100.00	200.00	135.72	25.00	38.43		TYPEIIB	
19	E	N	3853.00	354.00	100.00	200.00	100.01	25.00	37.65			
20	D Source	N	9000.00	366.00	100.00	200.00	200.00	28.00	31.49		TYPEIIB	
21	Basement	H	10000.00	375.00	0.00	0.00	0.00	30.00	19.03			
22	Dummy 1	N	10000.00	400.00	0.00	0.00	0.00	30.00	19.03			
23	Dummy	N	10010.00	489.00	0.00	0.00	0.00	30.00	19.03			

HORIZON DATA : YULLEROO

	Stratigraph. Unit/Event	SHALE	SAND	CHALK	LST	COAL	HAUT	VOLCS	CONV	GY/ANH	Initial Porosity	Por/Depth Factor	Capacity	Density
1	Quaternary		100								0.400	0.400	16.000	2.650
2	Cret-Q Erosion	50	45			5					0.560	1.650	7.470	2.670
3	Upper L	50	45			5					0.560	1.650	7.470	2.670
4	L	50	45			5					0.560	1.650	7.470	2.670
5	Hiatus K-L	50	45			5					0.560	1.650	7.470	2.670
6	K	50	45			5					0.560	1.650	7.470	2.670
7	FITZROY	50	45			5					0.560	1.650	7.470	2.670
8	Hiatus	50	45			5					0.560	1.650	7.470	2.670
9	J	50	45			5					0.560	1.650	7.470	2.670
10	I	50	45			5					0.560	1.650	7.470	2.670
11	H	50	45			5					0.560	1.650	7.470	2.670
12	?Drosara	10	90								0.430	0.600	14.120	2.670
13	G	10	90								0.430	0.600	14.120	2.670
14	Meda Movement	30	70								0.490	1.010	11.010	2.690
15	Upper And	30	70								0.490	1.010	11.010	2.690
16	F (And)	30	70								0.490	1.010	11.010	2.690
17	F (Laurel)	30	70								0.490	1.010	11.010	2.690
18	F Source	10	90								0.430	0.600	14.120	2.670
19	E	10	90								0.430	0.600	14.120	2.670
20	D Source	10	90								0.430	0.600	14.120	2.670
21	Basement	10	90								0.430	0.600	14.120	2.670
22	Dummy 1	10	90								0.430	0.600	14.120	2.670
23	Dummy	10	90								0.430	0.600	14.120	2.670

HORIZON DATA : YULLEROO - MATRIX LITHOLOGY



	Sample Depth	T P	Observed Temp.	Circulation Time	Estimated Temp.	F L
1	1524.00	0	68.90	0.00	68.90	1
2	2133.60	0	76.70	0.00	76.70	1
3	2499.30	0	82.20	0.00	82.20	1
4	2661.79	0	90.00	0.00	90.00	1
5	3223.91	0	84.44	2.00	99.00	0
6	3306.00	1	83.30	0.00	83.30	2
7	3357.00	1	87.80	0.00	87.80	2
8	3407.00	1	93.30	0.00	93.30	2
9	3460.74	1	92.22	0.00	92.22	2
10	3698.00	0	96.00	7.00	107.00	0
11	4078.00	0	108.90	8.00	115.00	0
12	4572.06	0	121.11	6.00	124.00	0

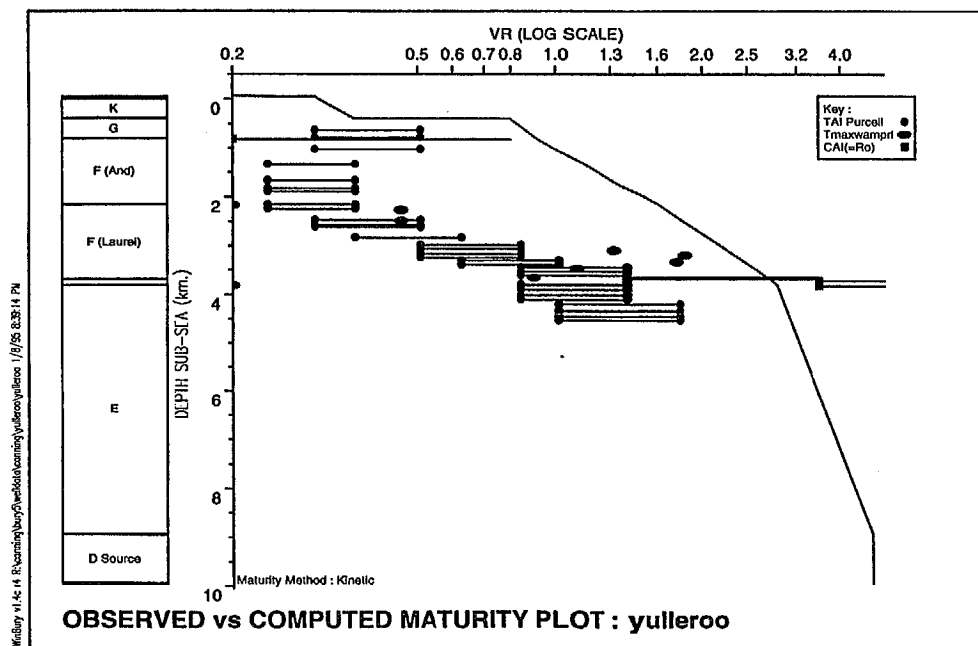
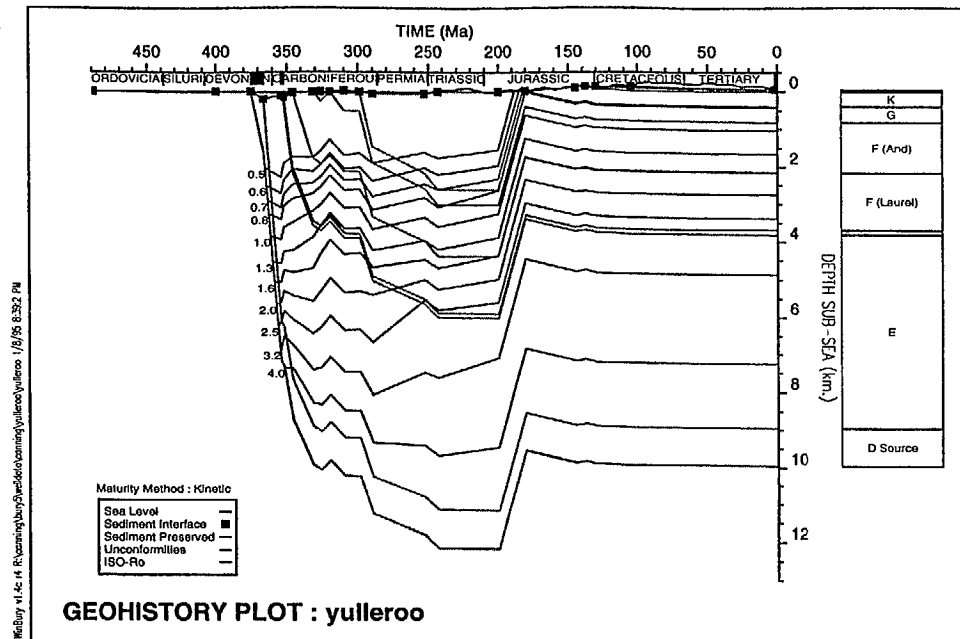
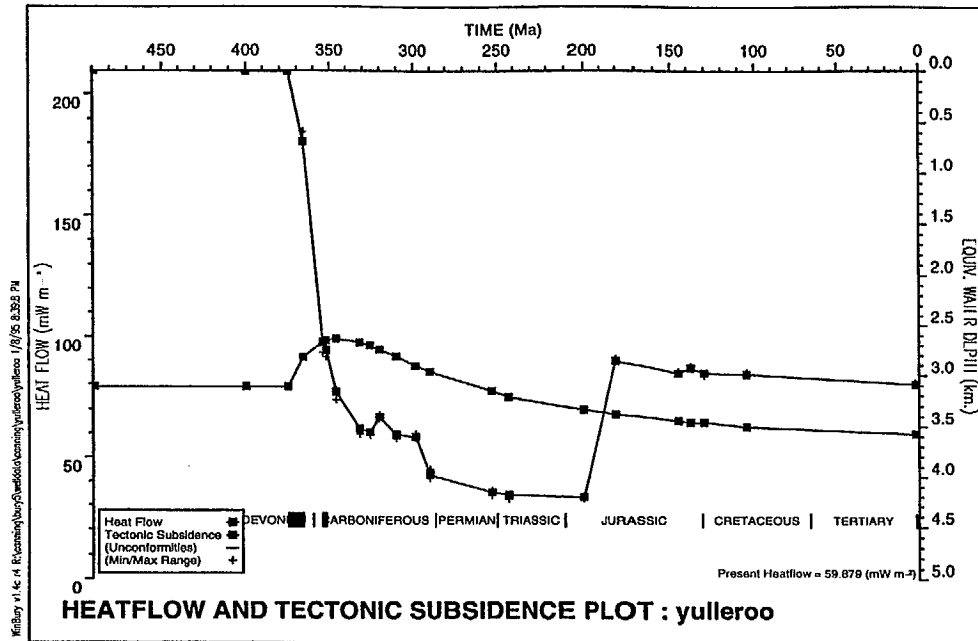
TEMPERATURE DATA : YULLEROO

	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
1	682.00	1	2.00	2.00	2.50	1
2	829.00	1	2.00	2.00	2.50	1
3	866.00	0	0.20	0.20	0.80	5
4	878.00	0	0.20	0.20	0.80	5
5	1073.00	1	2.00	2.00	2.50	1
6	1381.00	1	1.70	1.70	2.20	1
7	1719.00	1	1.70	1.70	2.20	1
8	1871.00	1	1.70	1.70	2.20	1
9	1938.00	1	1.70	1.70	2.20	1
10	2214.00	1	1.70	1.70	2.20	1
11	2235.00	2	356.00			3
12	2299.00	1	1.70	1.70	2.20	1
13	2321.00	2	436.00			3
14	2520.00	1	2.00	2.00	2.50	1
15	2548.00	2	436.00			3
16	2621.00	1	2.00	2.00	2.50	1
17	2663.00	1	2.00	2.00	2.50	1
18	2875.00	1	2.20	2.20	2.70	1
19	3028.00	1	2.50	2.50	3.00	1
20	3028.00	1	2.50	2.50	3.00	1
21	3111.00	1	2.50	2.50	3.00	1
22	3142.00	2	465.00			3
23	3206.00	1	2.50	2.50	3.00	1
24	3239.00	2	499.00			3
25	3294.00	1	2.50	2.50	3.00	1
26	3349.00	1	2.70	2.70	3.20	1
27	3381.00	2	492.00			3
28	3429.00	1	2.70	2.70	3.20	1
29	3490.00	1	3.00	3.00	3.50	1
30	3524.00	2	456.00			3
31	3583.00	1	3.00	3.00	3.50	1
32	3658.00	1	3.00	3.00	3.50	1
33	3687.00	0	1.40	1.40	3.60	5
34	3696.00	2	449.00			3
35	3729.00	0	1.40	1.40	3.60	5

MATURITY DATA : YULLEROO

	Sample Depth	T P	Average Maturity	Minimum Maturity	Maximum Maturity	F L
36	3768.00	0	3.60	3.60	5.00	5
37	3836.00	1	3.00	3.00	3.50	1
38	3853.00	1	3.00	3.00	3.50	1
39	3869.00	0	3.60	3.60	5.00	5
40	3873.00	2	377.00			3
41	3944.00	1	3.00	3.00	3.50	1
42	4056.00	1	3.00	3.00	3.50	1
43	4150.00	1	3.00	3.00	3.50	1
44	4247.00	1	3.30	3.20	3.70	1
45	4381.00	1	3.30	3.20	3.70	1
46	4489.00	1	3.30	3.20	3.70	1
47	4569.00	1	3.30	3.20	3.70	1

MATURITY DATA : YULLEROO



APPENDIX B: Maturity (Temperature) Cross-Sections

This Appendix comprises present-day (0 Ma) Maturity (Temperature) Cross-Section Plots for cross-sections shown in Figure 1.

SW-NE cross-section across the western Broome Platform: Figure 2
Calamia - Willara - Leo - Parda - Aquila - Thangoo - East Crab Creek

SW-NE cross-section across the western Kidson Sub-basin, eastern Broome Platform, and eastern Dampier Terrace: Figure 3
Frankenstein - Sahara - Pegasus - McLarty - Edgar Range - Pictor - Matches Springs

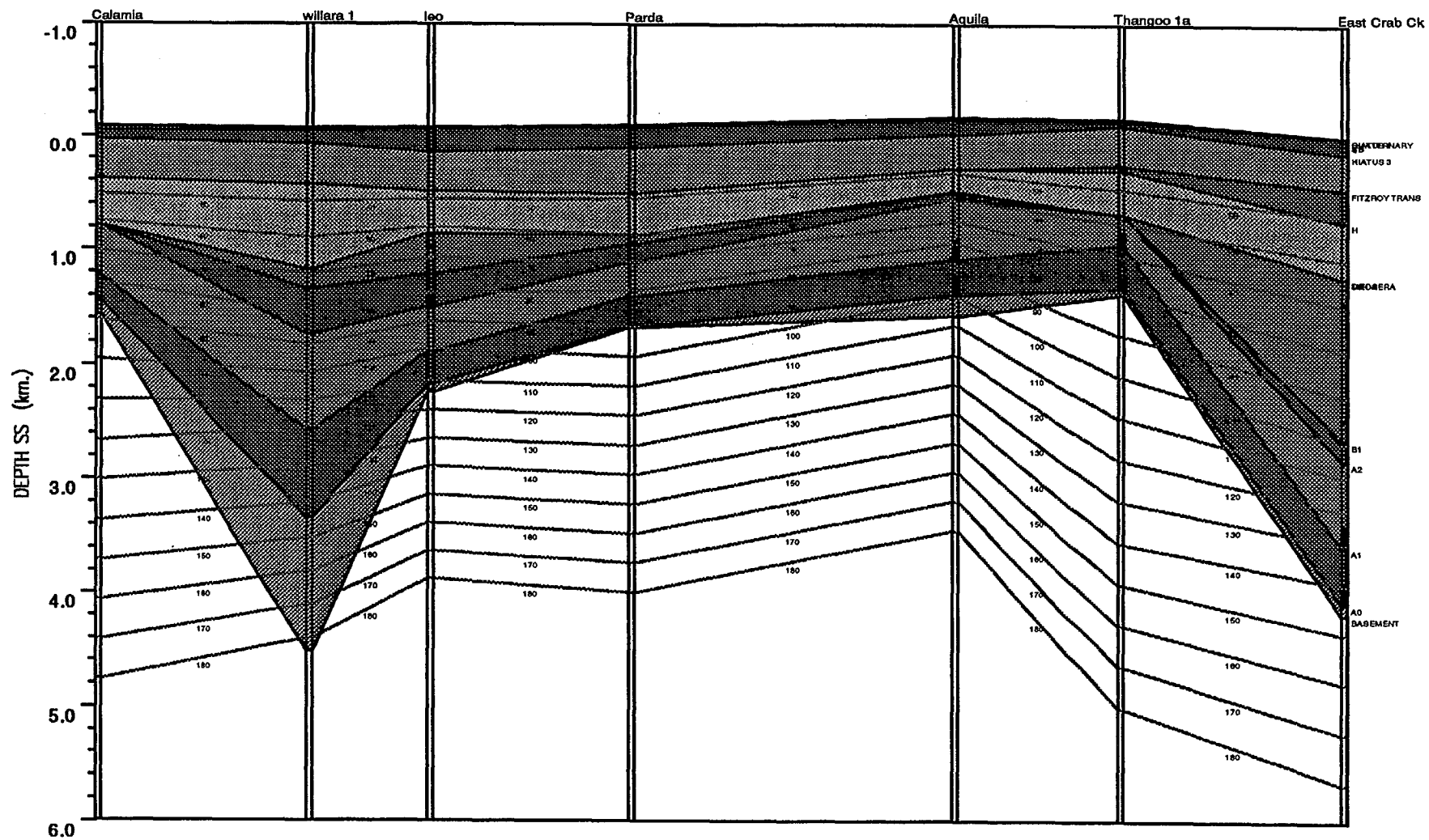
SW-NE cross-section across the eastern Kidson Sub-basin: Figure 4
Kidson - Wilson Cliffs - Percival

NW-SE cross-section across the Willara and southern Kidson Sub-basins: Figure 5
Willara - Brooke - Sahara - Kidson

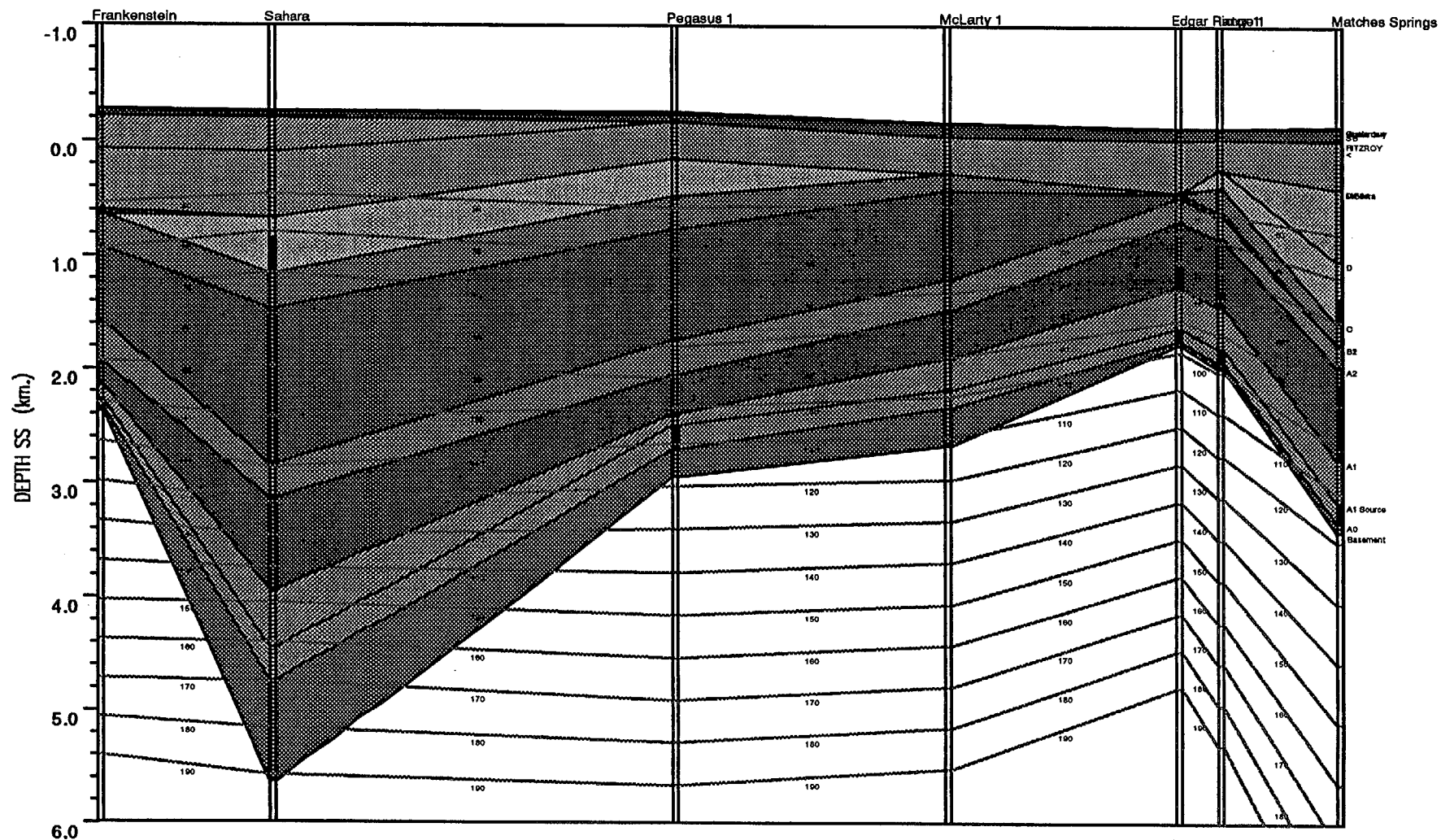
NW-SE cross-section across the Dampier and Barbwire Terraces: Figure 6
East Crab Creek - Pictor - Matches Springs - Acacia - Dodonea - Percival

NW-SE cross-section across the Fitzroy Trough: Figure 7
Yulleroo - Myroodah

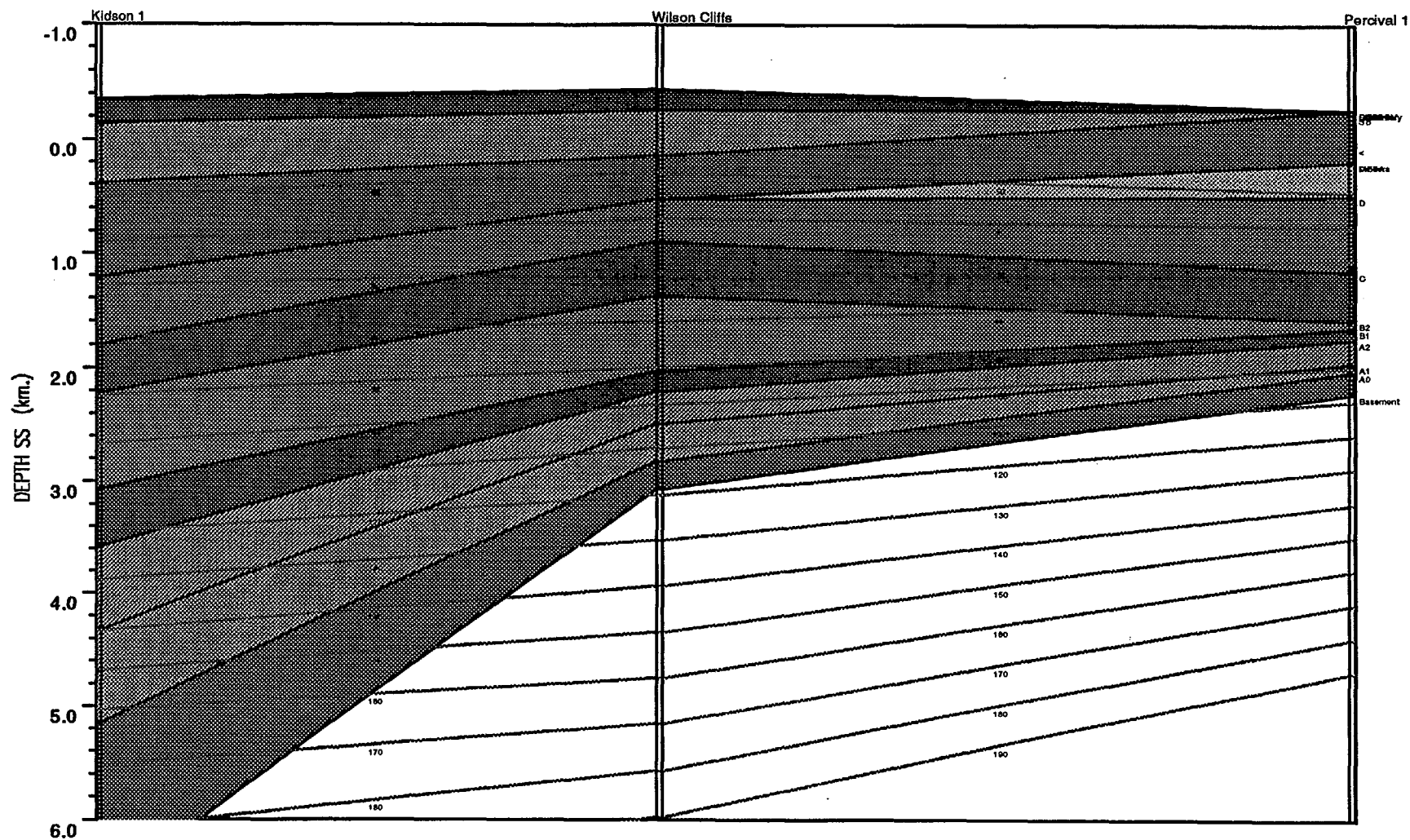
NW-SE cross-section across the Lennard Shelf and Laurel Downs Terrace: Figure 8
Langoora - Meda - Blina - Mimosa



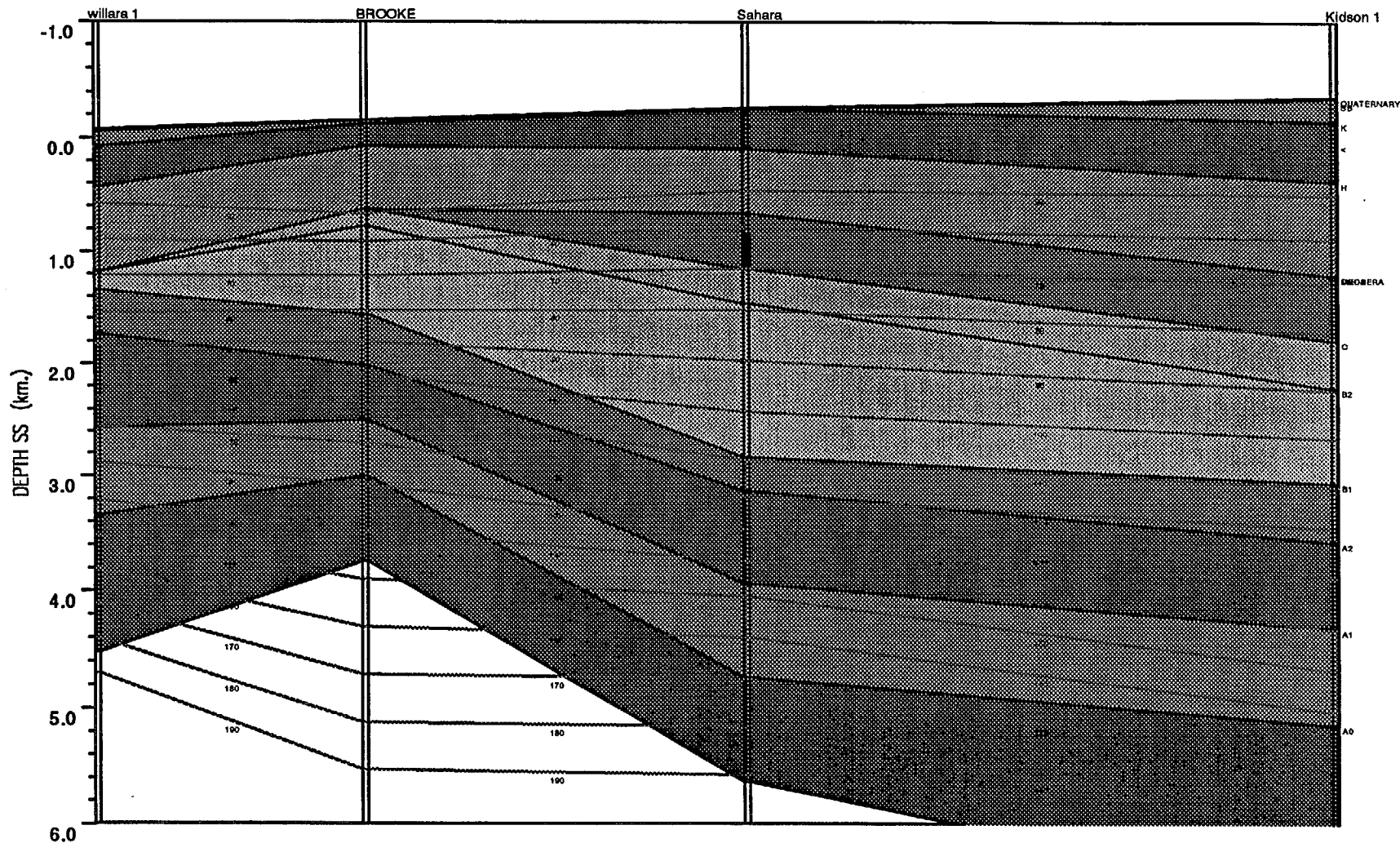
Cross-Section Temperature @ 0.00 Ma.
Appendix B, Figure 2



Cross-Section Temperature @ 0.00 Ma.
Appendix B, Figure 3

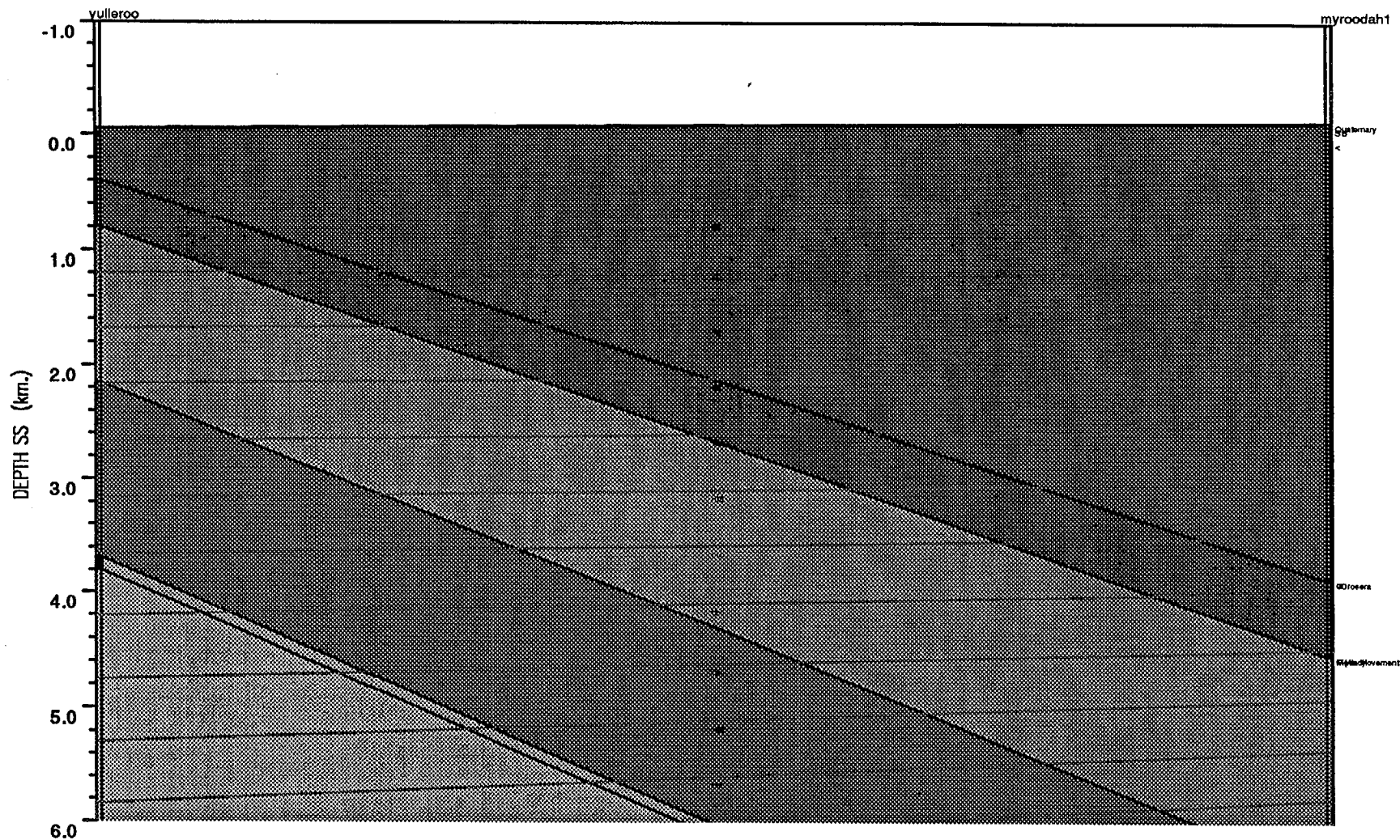


Cross-Section Temperature @ 0.00 Ma.
Appendix B, Figure 4



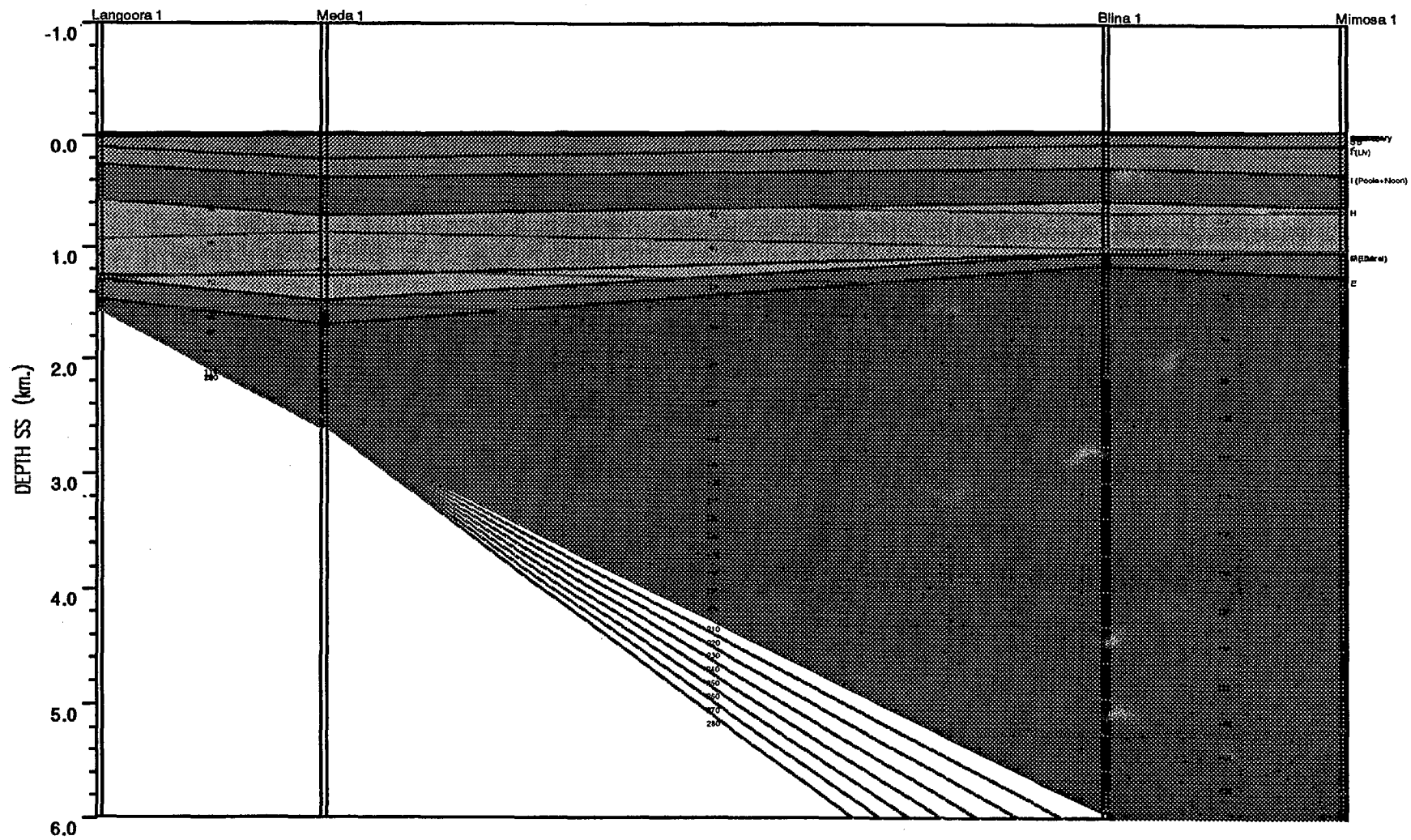
Cross-Section Temperature @ 0.00 Ma.
Appendix B, Figure 5

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Cross-Section Temperature @ 0.00 Ma.
Appendix B, Figure 7

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Cross-Section Temperature @ 0.00 Ma.
Appendix B, Figure 8

APPENDIX C: Stripped Basement versus Time Plots

This Appendix comprises stripped Basement versus Time Plots for wells in the following structural provinces:

Lennard Shelf: Figure 1

Blackstone
Blina
Langoora
Meda
Mimosa

Fitzroy Trough: Figure 2

Myroodah
Yulleroo

Dampier and Barbwire Terraces: Figure 3

Acacia
Dodonea
East Crab Creek
Edgar Range
Matches Springs
Percival
Pictor

Broome Platform: Figure 4

Aquila
Hedonia
Hilltop
Leo
McLarty
Parda
Thangoo

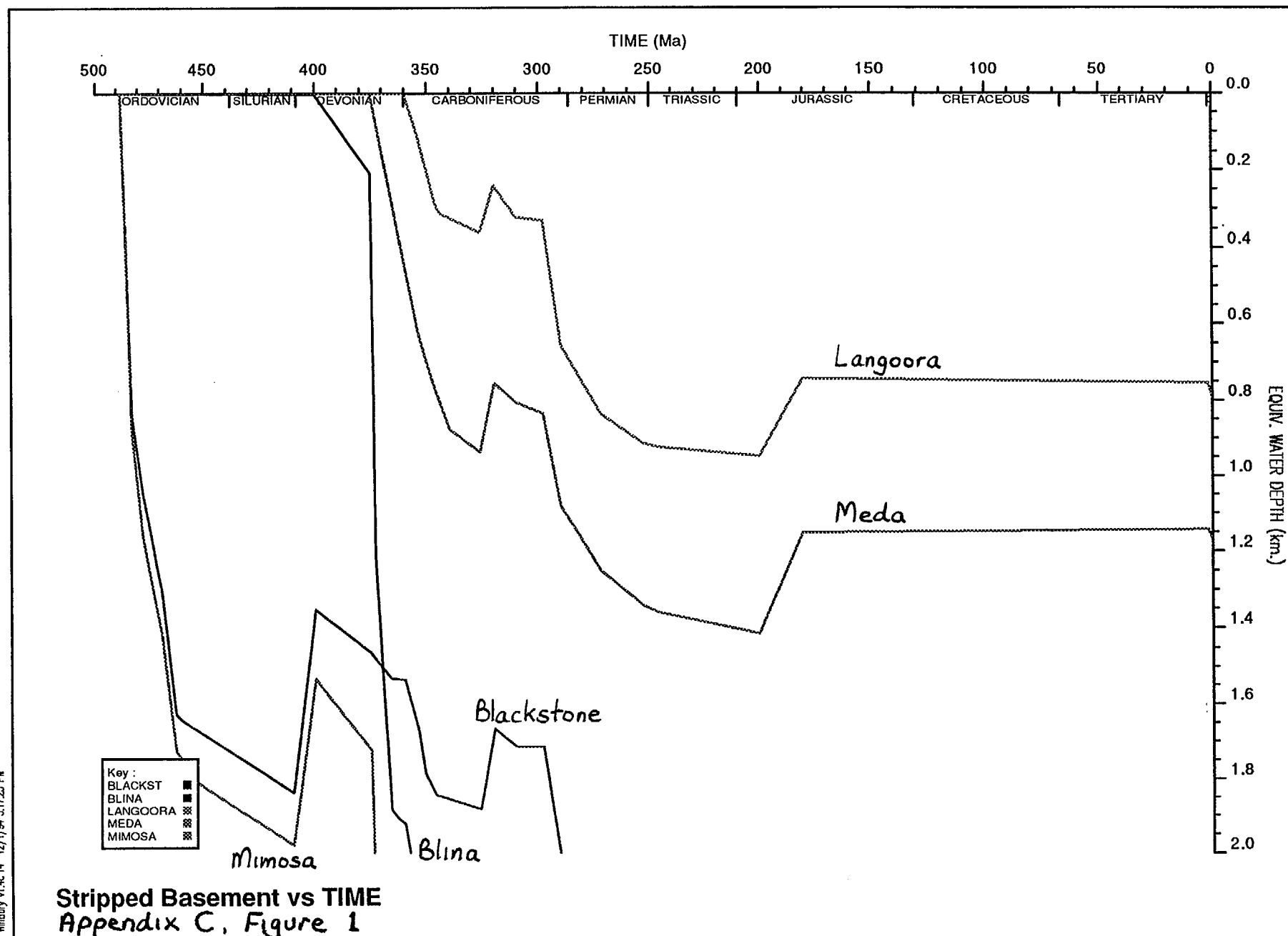
Willara Sub-basin: Figure 5

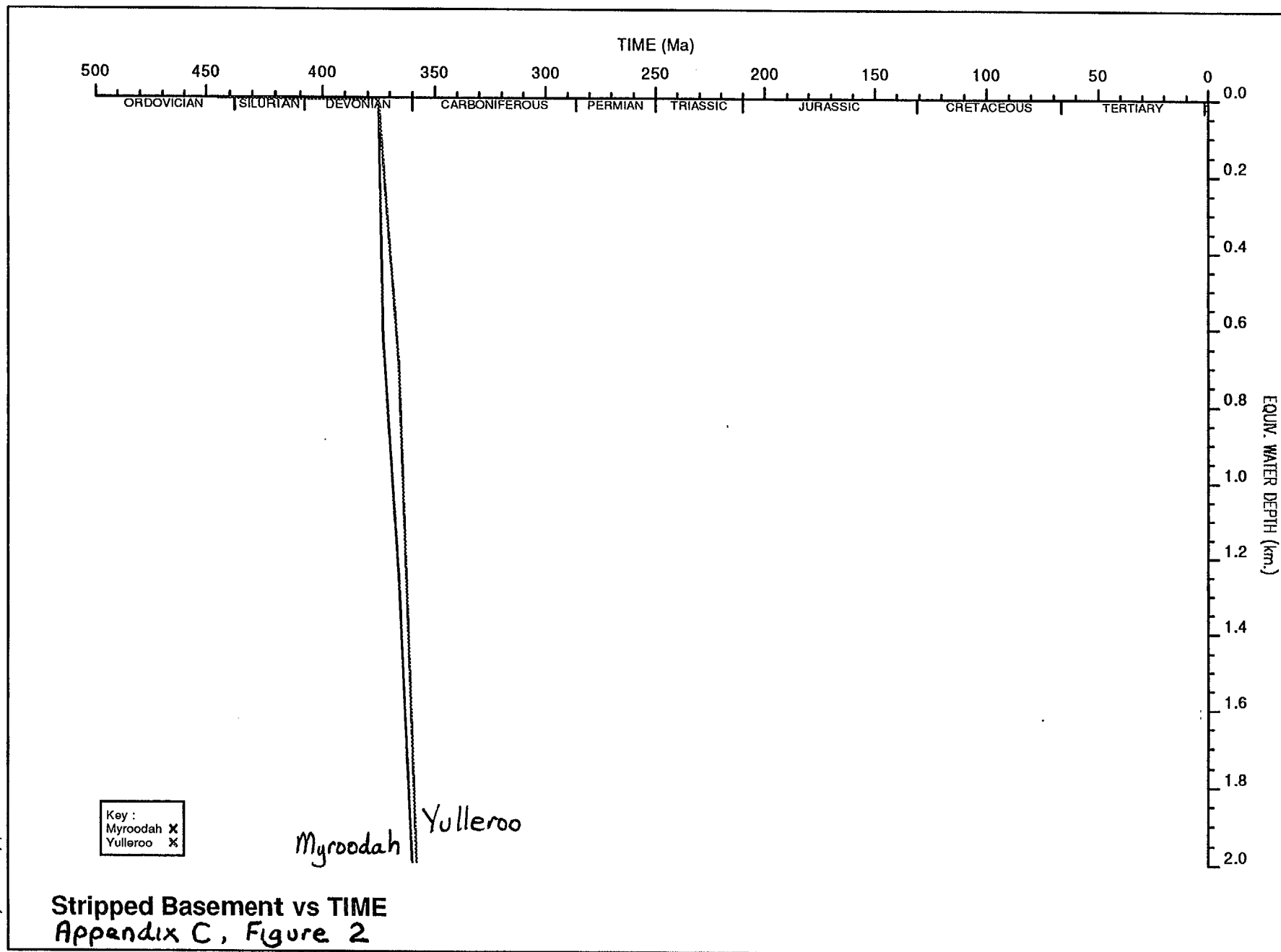
Brooke
Calamia
Vela
Willara

Kidson Sub-basin: Figure 6

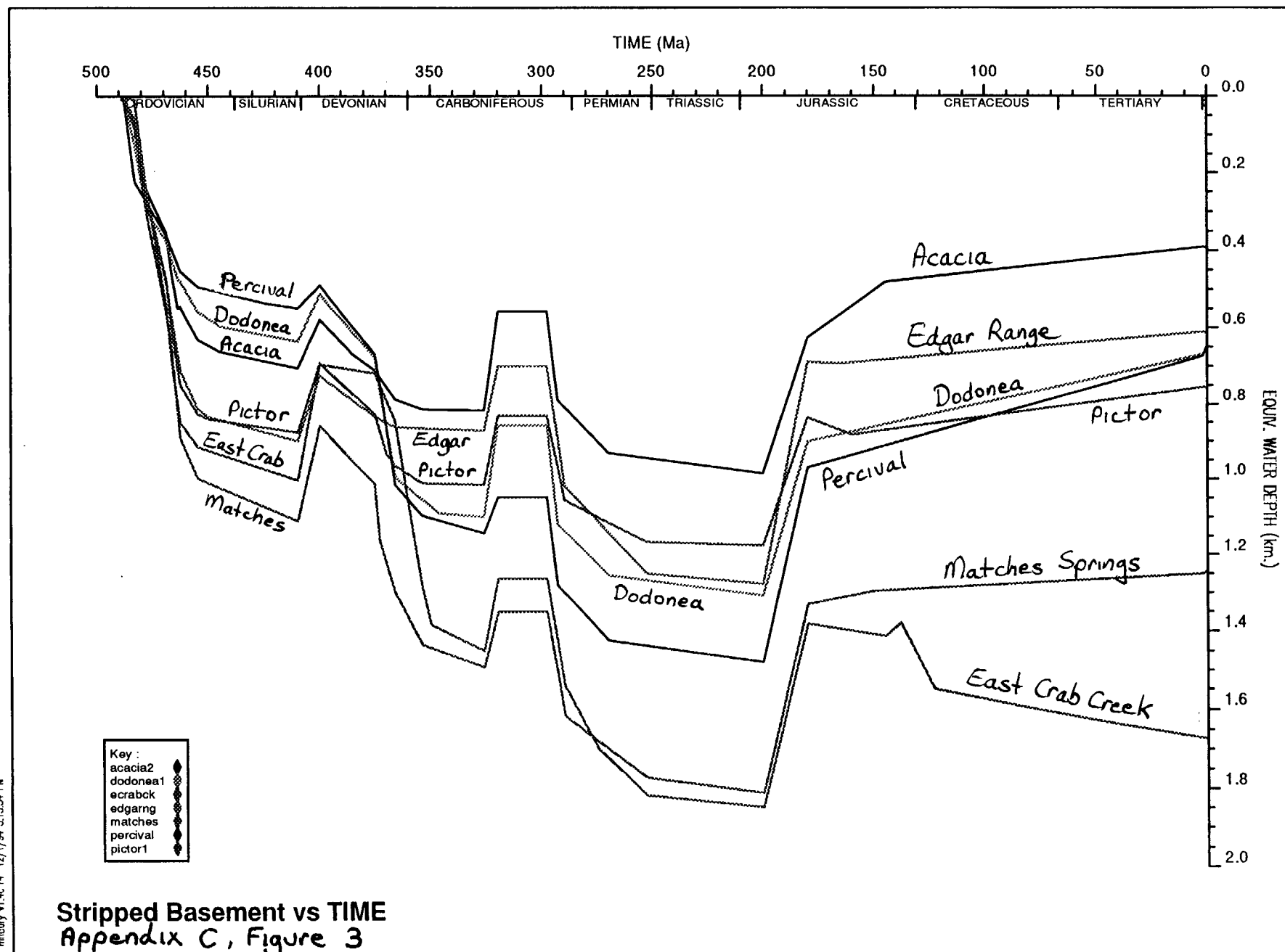
Frankenstein
Kidson
Pegasus
Sahara
Wilson Cliffs

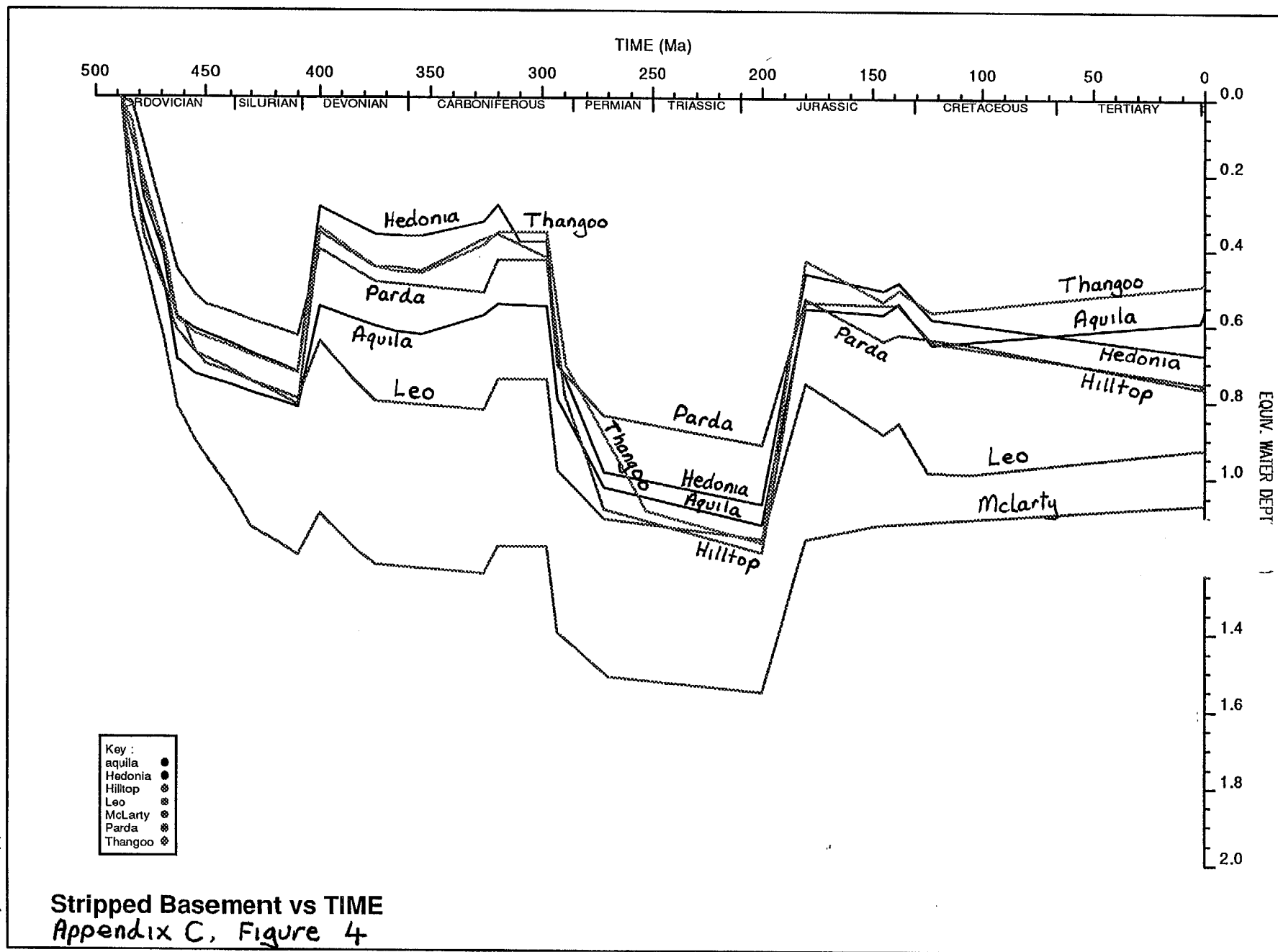
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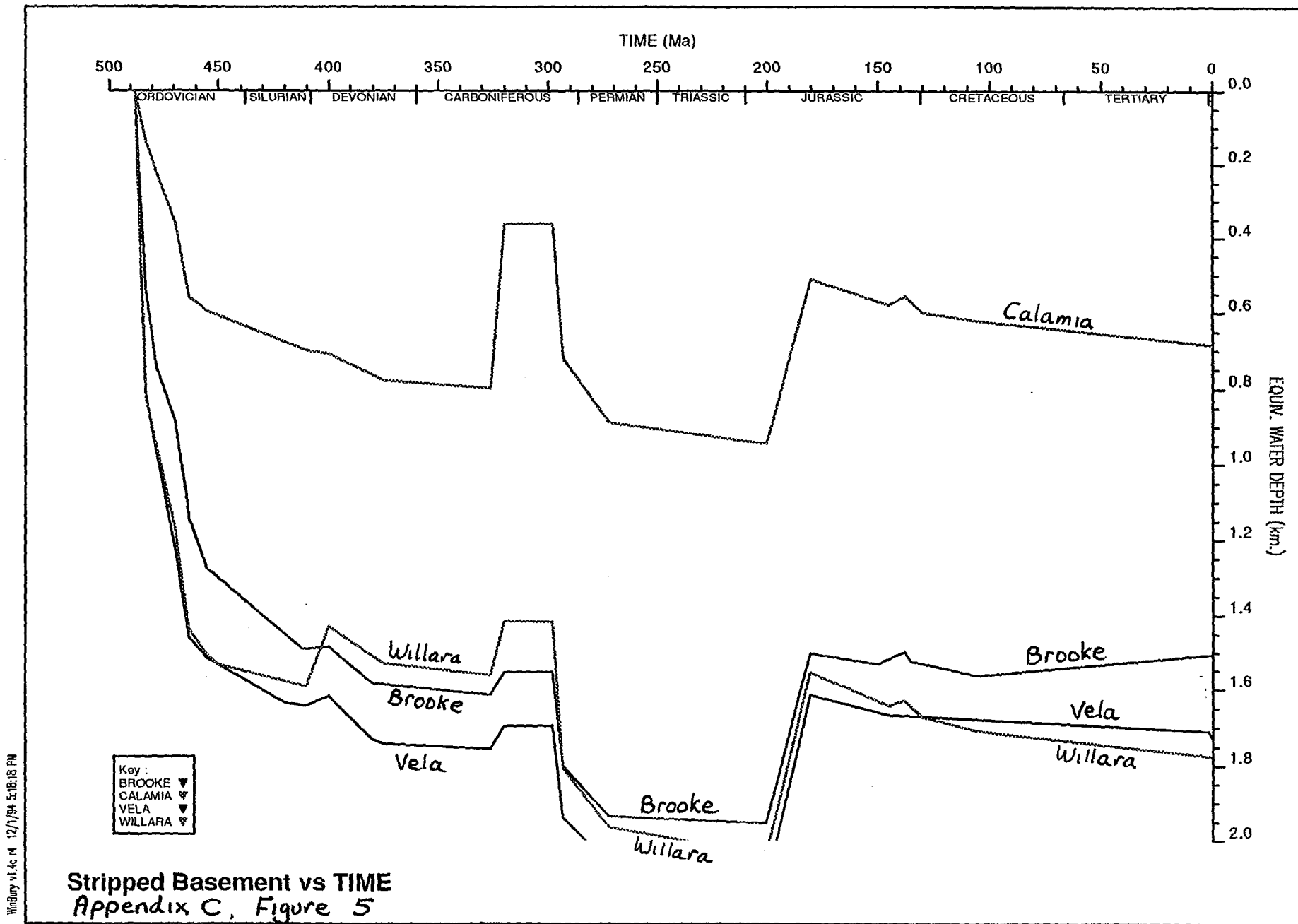


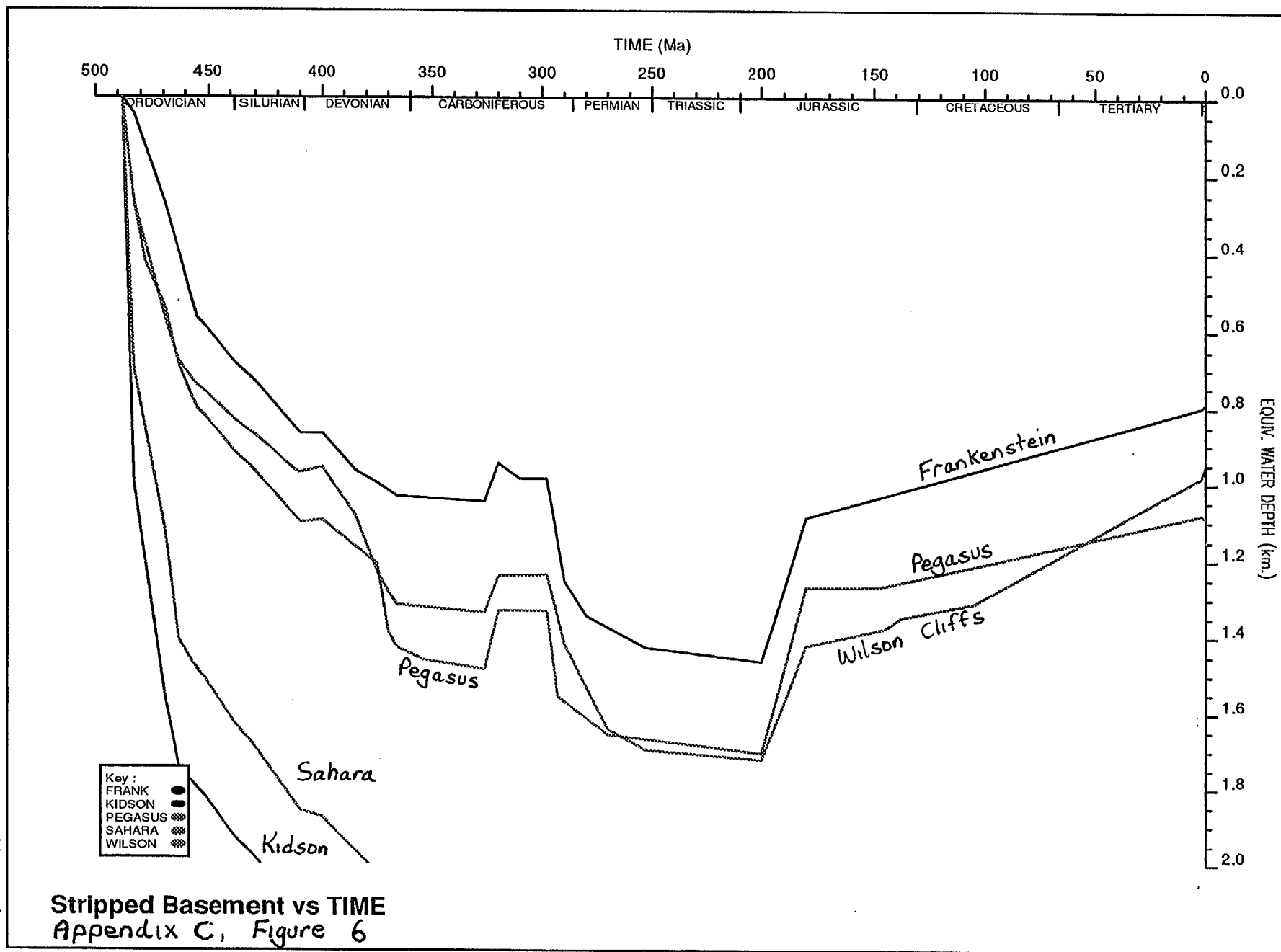


Winbury v1.4c r4 12/1/94 5:16:5 PM









APPENDIX D: Heatflow versus Time Plots

This Appendix comprises Heatflow versus Time Plots for wells in the following structural provinces:

Lennard Shelf: Figure 1

Blackstone
Blina
Langoora
Meda
Mimosa

Fitzroy Trough: Figure 2

Myroodah
Yulleroo

Dampier and Barbwire Terraces: Figure 3

Acacia
Dodonea
East Crab Creek
Edgar Range
Matches Springs
Percival
Pictor

Broome Platform: Figure 4

Aquila
Hedonia
Hilltop
Leo
McLarty
Parda
Thangoo

Willara Sub-basin: Figure 5

Brooke
Calamia
Vela
Willara

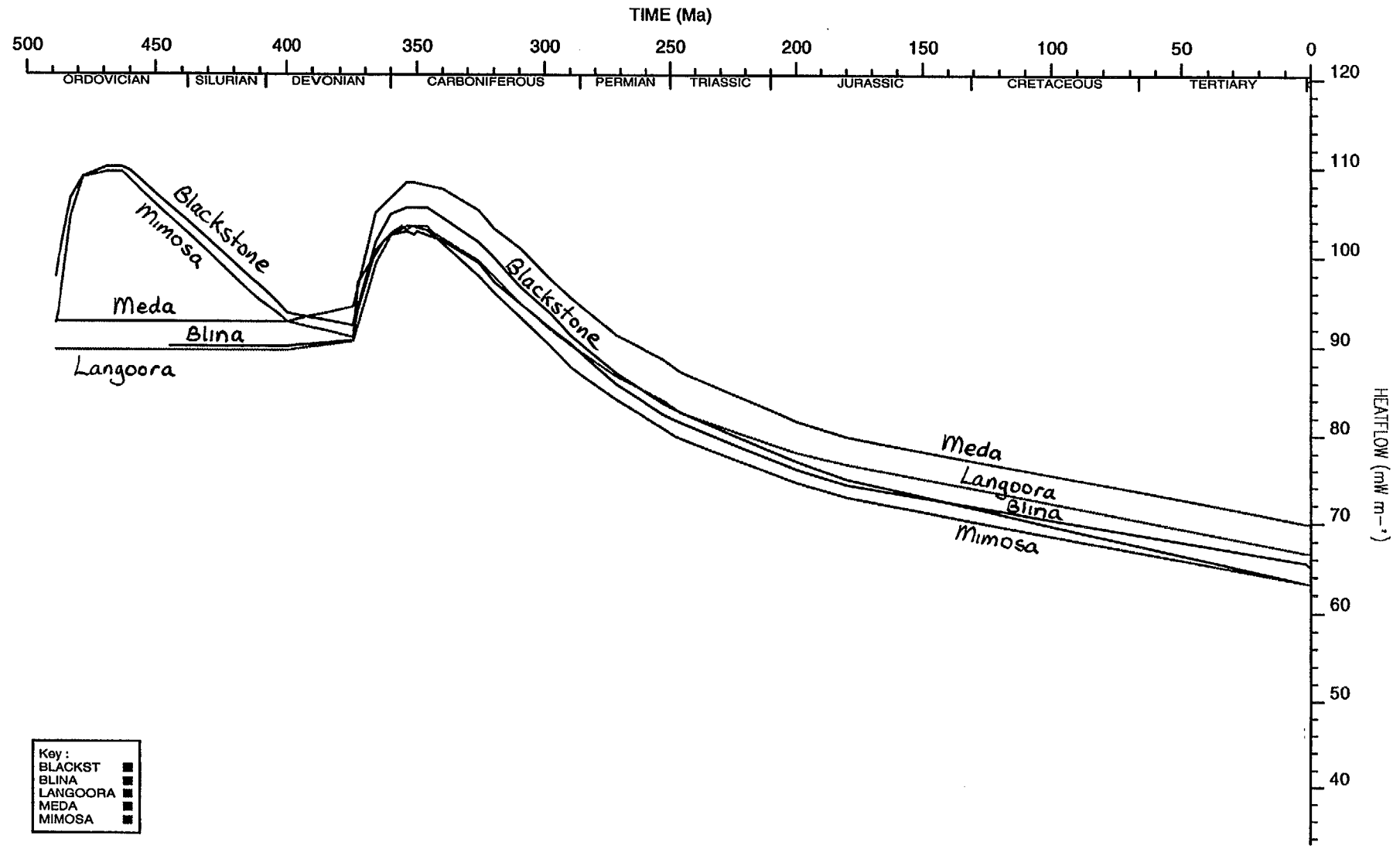
Kidson Sub-basin: Figure 6

Frankenstein
Kidson
Pegasus
Sahara
Wilson Cliffs

Palaeo-Heatflow Maps for the peak of the heating events associated with the Samphire Marsh and Pillara Extensions are also presented:

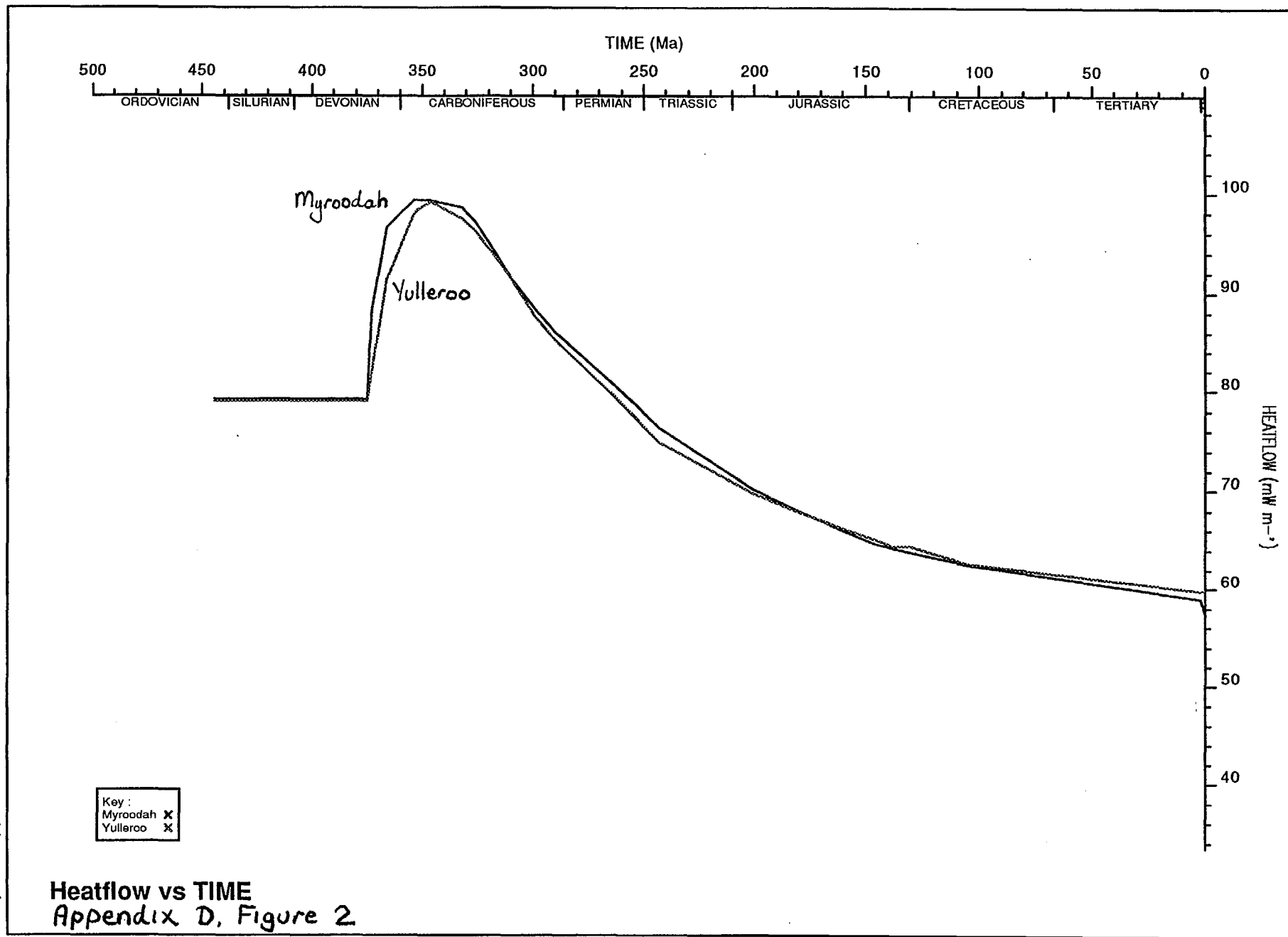
Heatflow Map 469 Ma (peak of Samphire Marsh heating event) Figure 7

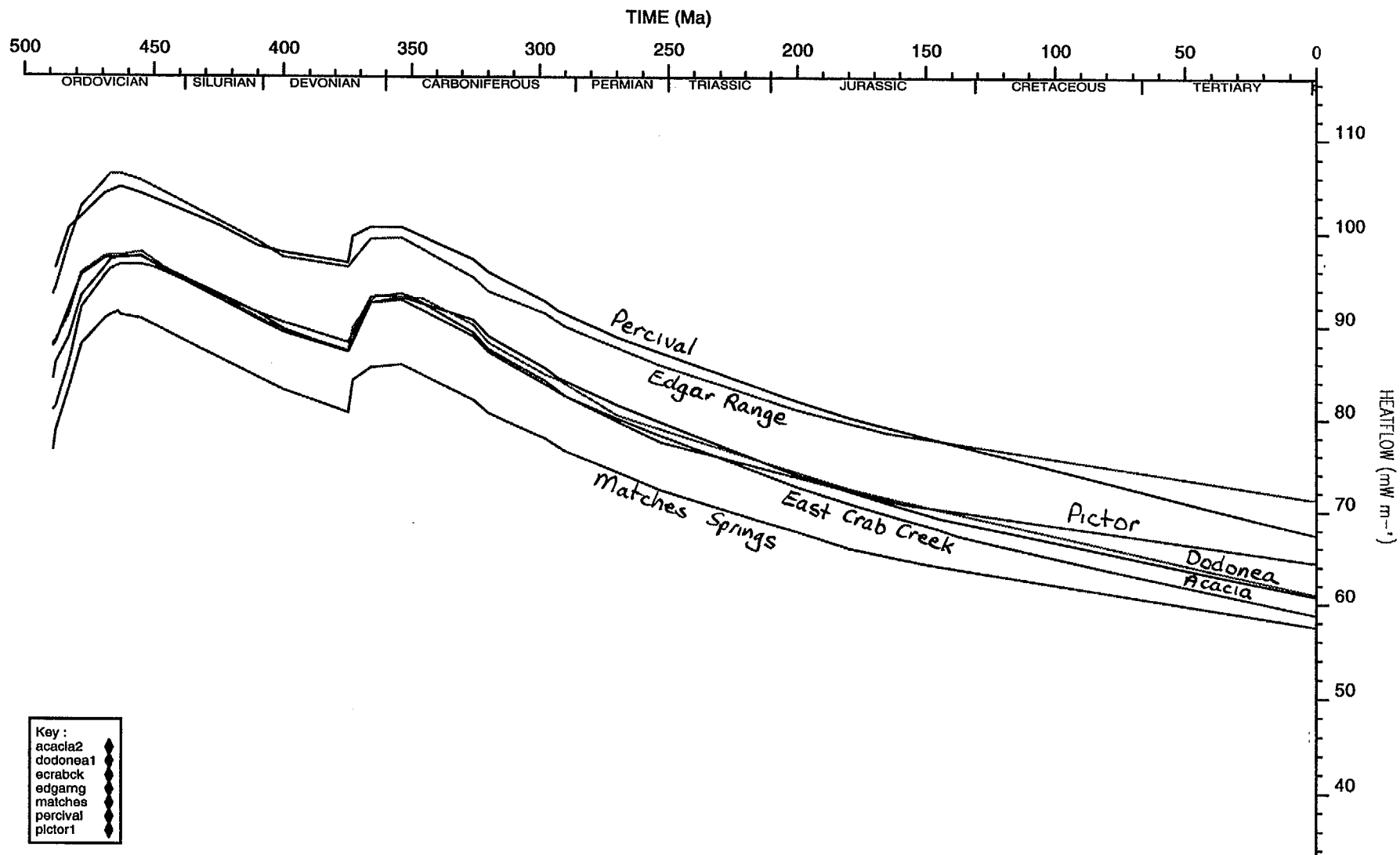
Heatflow Map 350 Ma (peak of Pillara heating event) Figure 8



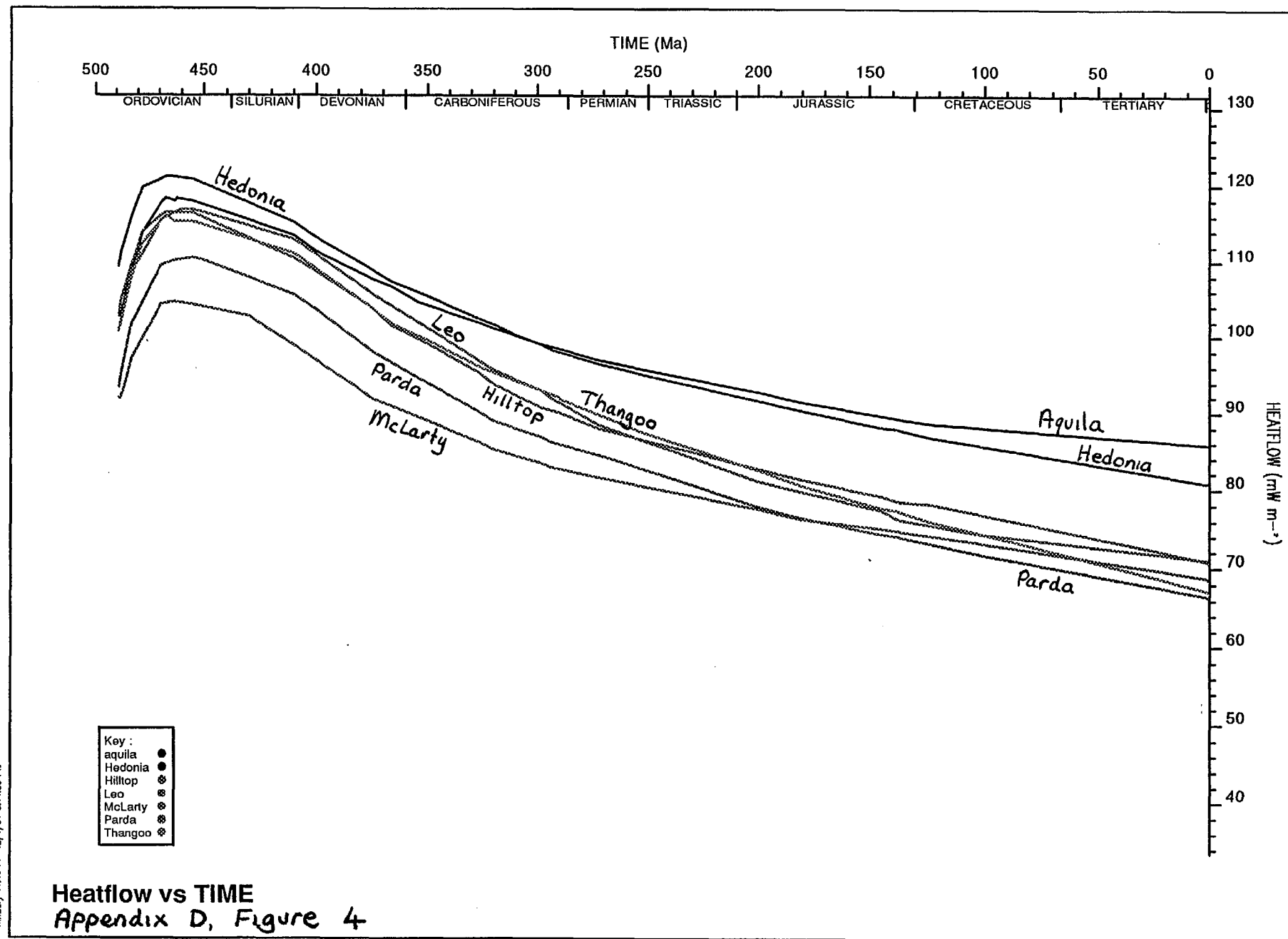
Heatflow vs TIME
Appendix D, Figure 1

Windbury v1.4c r4 12/1/94 5:15:00 PM

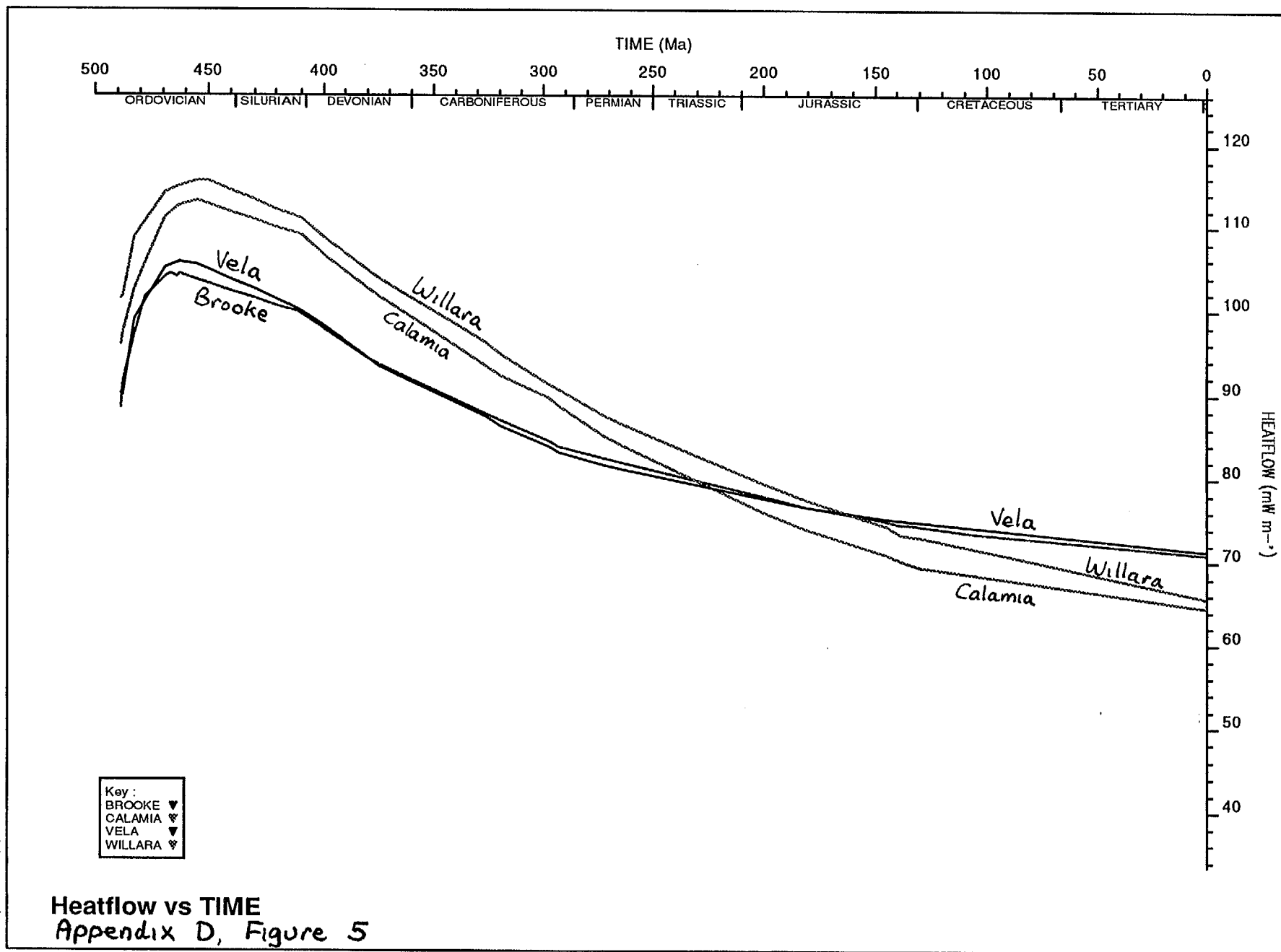




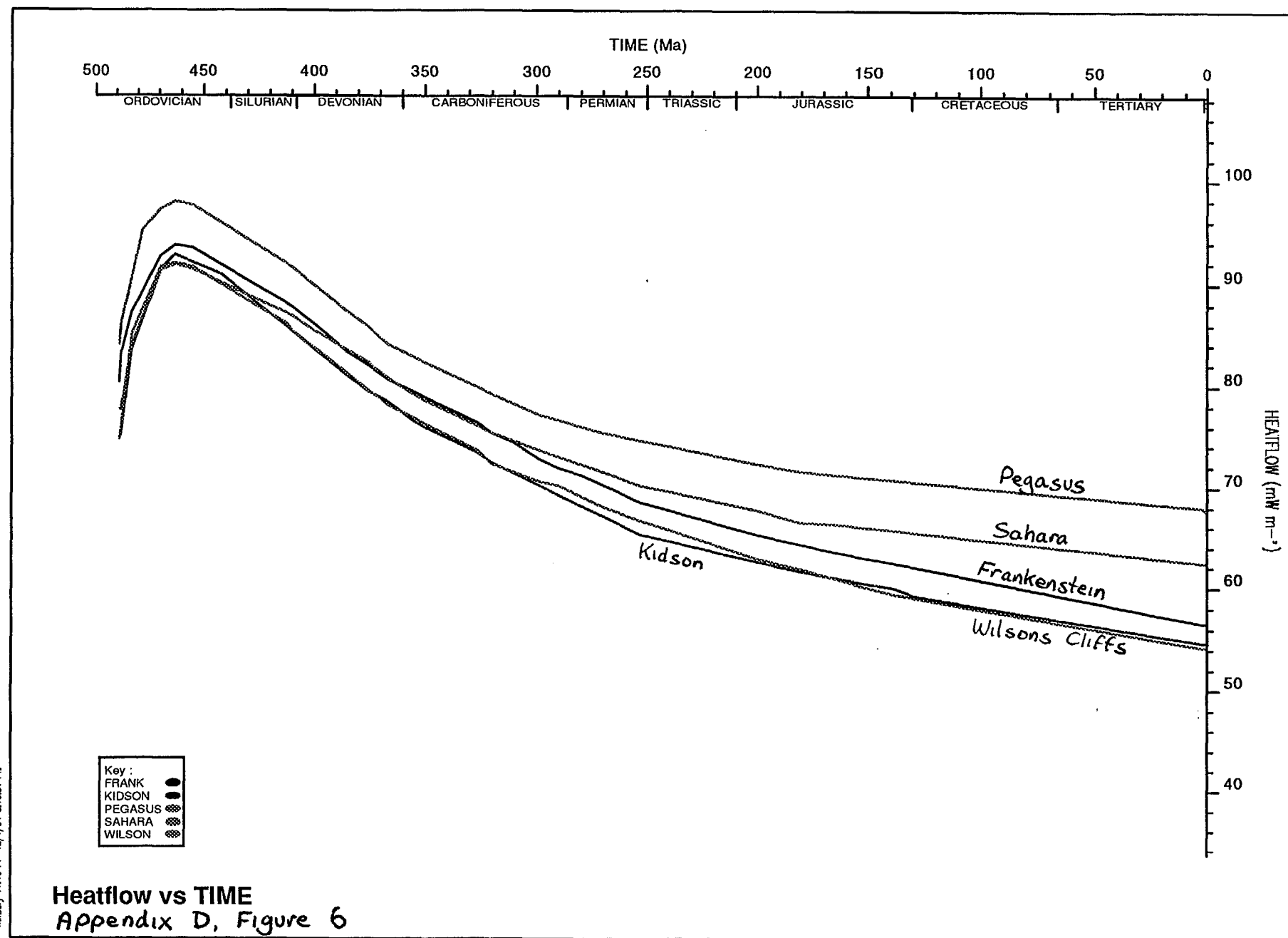
Heatflow vs TIME
Appendix D, Figure 3



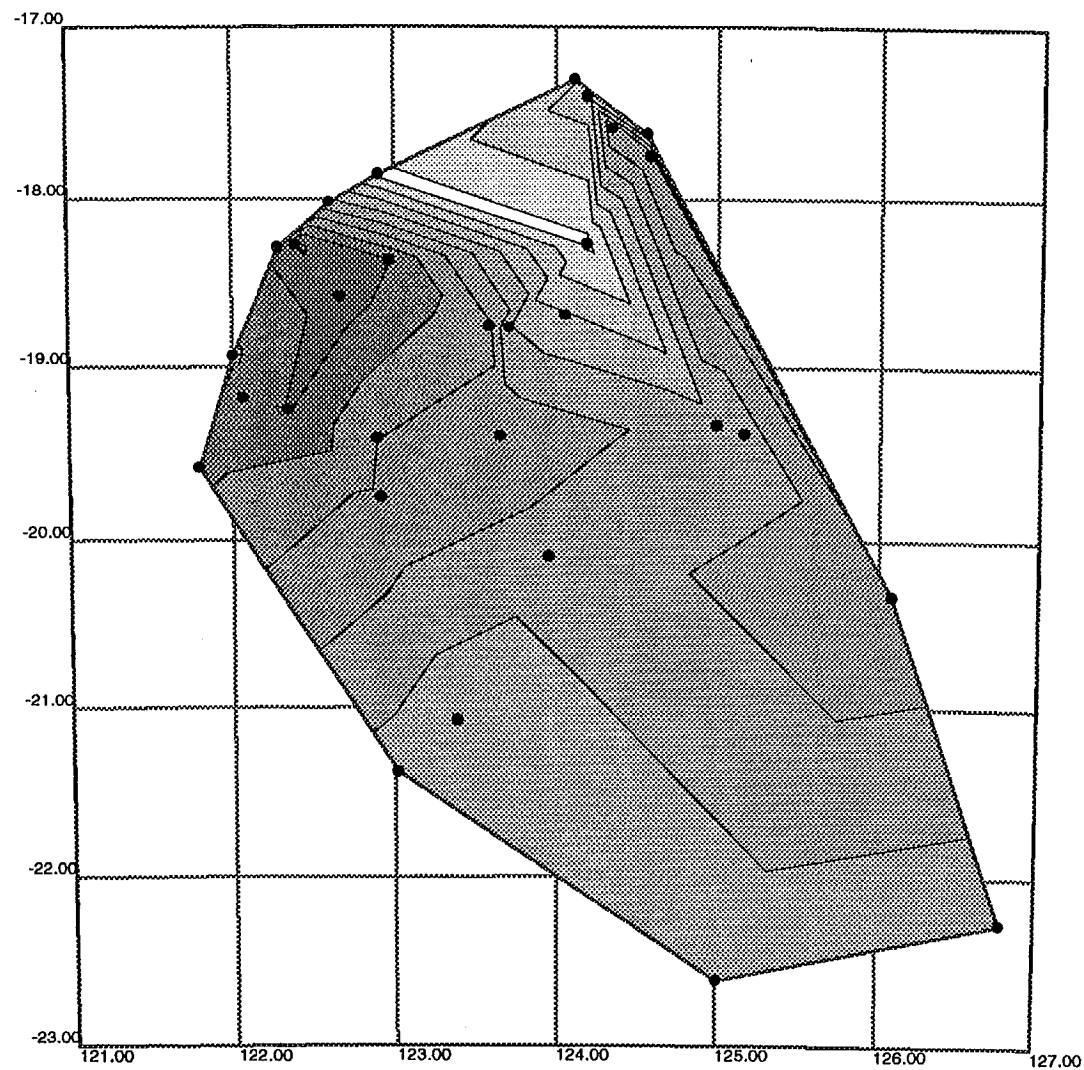
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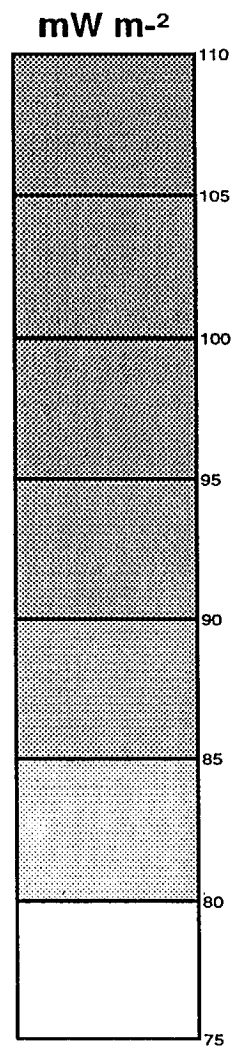
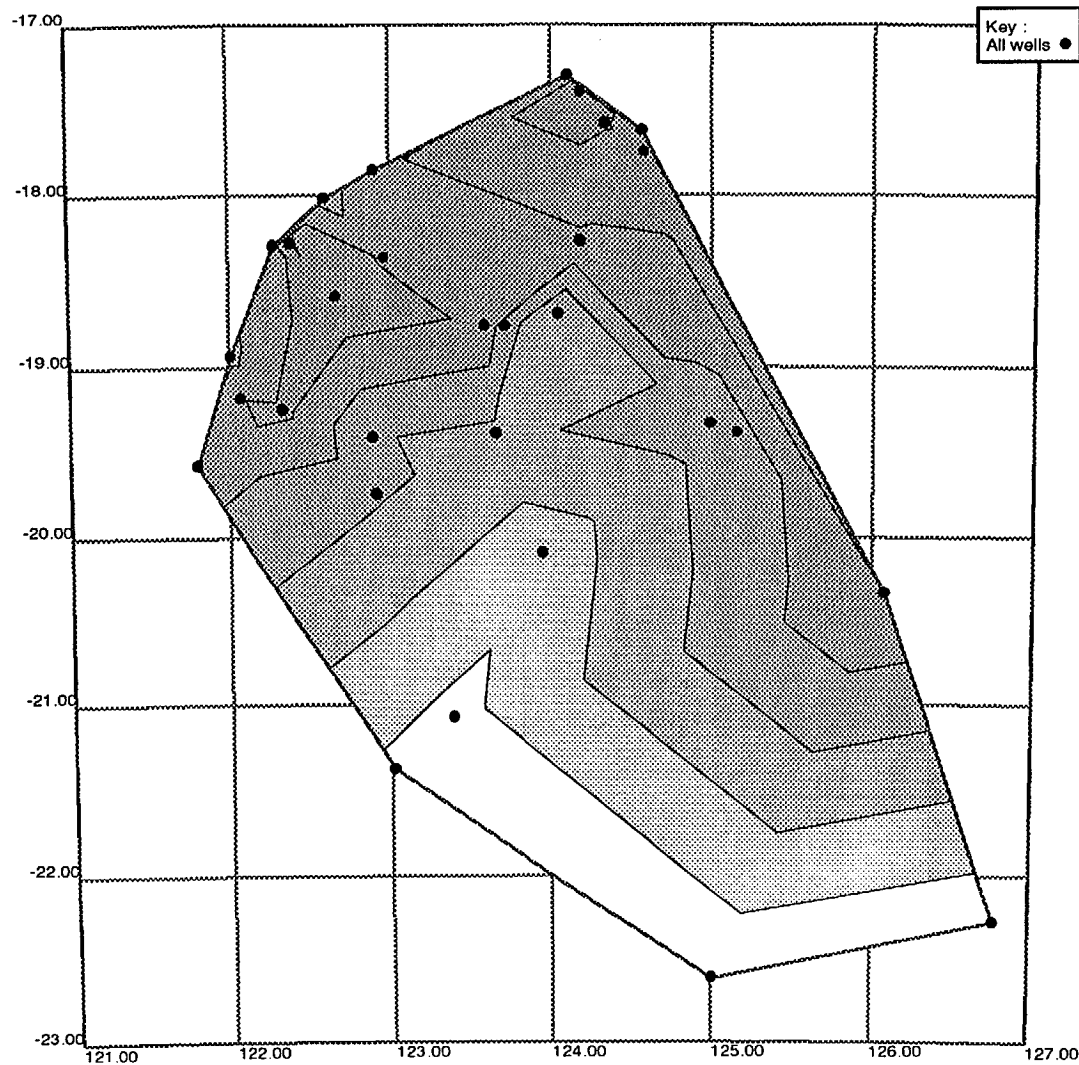
WinBury v1.4c r4 1/8/95 10:25:33 PM



Heatflow Map (mW m⁻²) @ 469.00 Ma

Appendix D, Figure 7

WinBury v1.4c r4 12/9/94 11:32:30 AM



Appendix D, Figure 8

APPENDIX E: Hydrocarbon Generation Plots and Maturation (Temperature) Maps

This Appendix comprises Hydrocarbon Generation Plots and Maturation (Temperature) Maps for each identified source interval.

- APPENDIX E-1. Lower Supersequence A1 Source Interval
(upper Nambeet and lower Willara Formations)**
- APPENDIX E-2. Lower Supersequence A2 Source Interval
(lower Goldwyer Formation)**
- APPENDIX E-3. Upper Supersequence A2 Source Interval
(upper Goldwyer Formation)**
- APPENDIX E-4. Lower Supersequence B1 Source Interval
(Bongabinni Formation)**
- APPENDIX E-5. Lower Supersequence D Source Interval
(lower Pillara Cylce, incorporating the Gogo Formation,
Mellinjerie Formation, Mirbelia Dolomite, and
Boab Sandstone)**
- APPENDIX E-6. Lower Supersequence F Source Interval
(lower Laurel Shale)**

APPENDIX E-1. Lower Supersequence A1 Source Interval (upper Nambeet and lower Willara Formations)

This Appendix comprises Hydrocarbon Generation Plots and Maturation (Temperature) Maps for the Lower Supersequence A1 (upper Nambeet and lower Willara Formations) source interval.

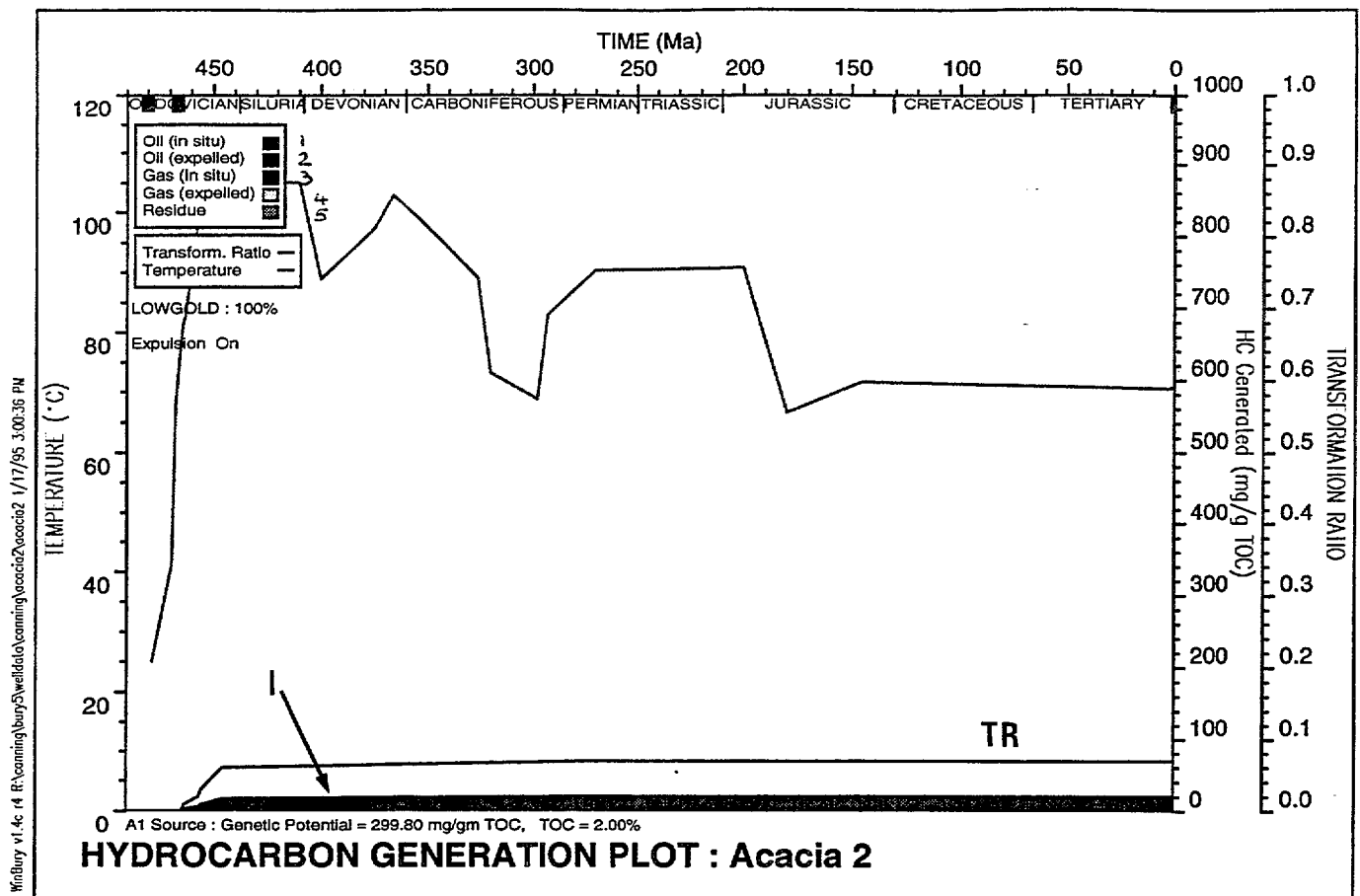
Hydrocarbon Generation Plots are presented for the following wells.

- Legend 1 - Oil (in situ)
2 - Oil (expelled)
3 - Gas (in situ)
4 - Gas (expelled)
5 - Residue

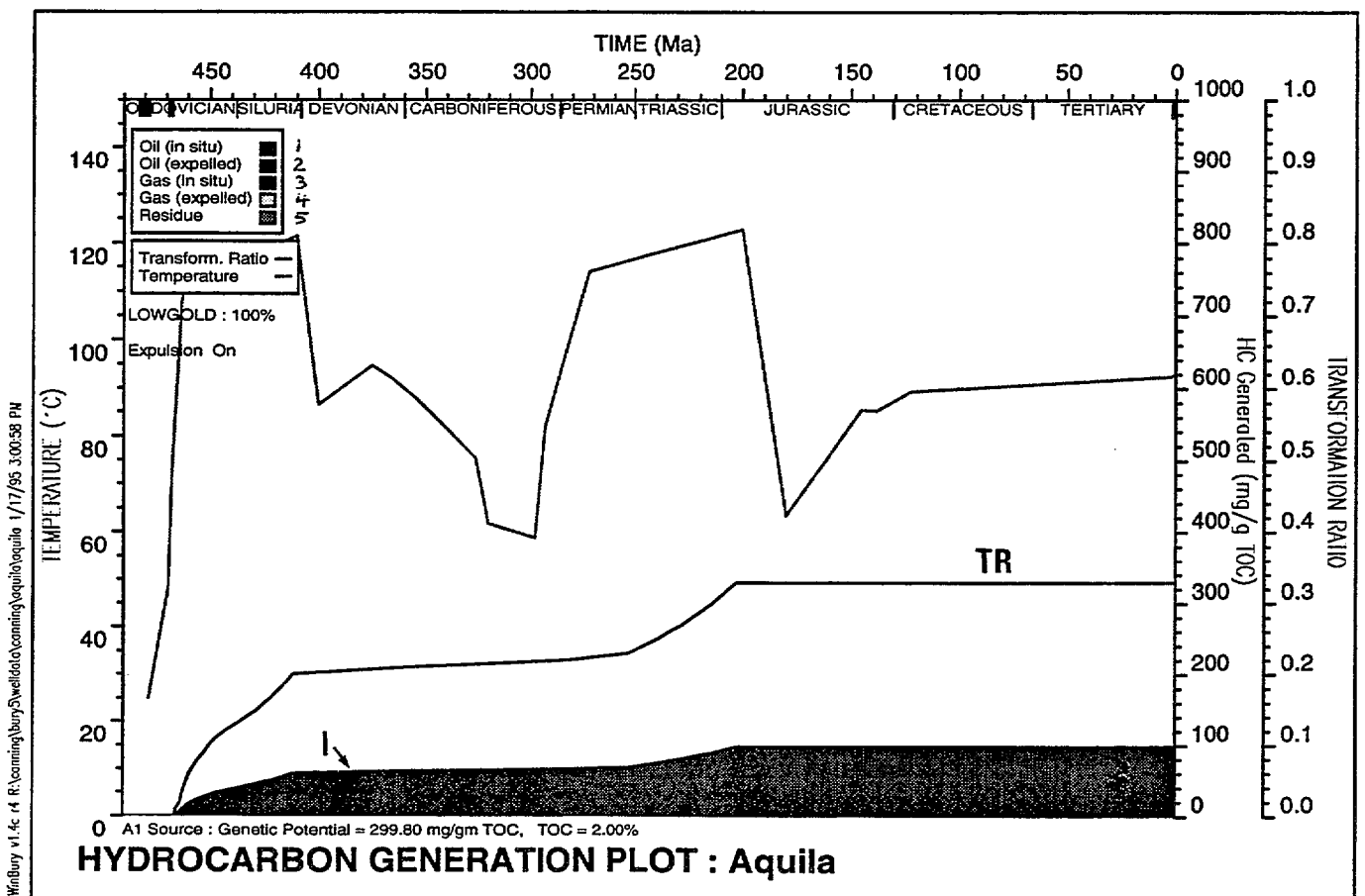
Acacia-2	Figure 1
Aquila-1	Figure 2
Blackstone-1 (sub TD)	Figure 3
Dodonea-1	Figure 4
East Crab Creek-1 (sub TD)	Figure 5
Edgar Range-1	Figure 6
Hedonia-1	Figure 7
Hilltop-1	Figure 8
Matches Springs-1	Figure 9
Mimosa-1 (sub TD)	Figure 10
Pegasus-1	Figure 11
Pictor-1	Figure 12
Thangoo-1A	Figure 13

Maturation (Temperature) Maps are presented for times immediately prior to major basin structuring. Arrows indicate peak maturation temperature

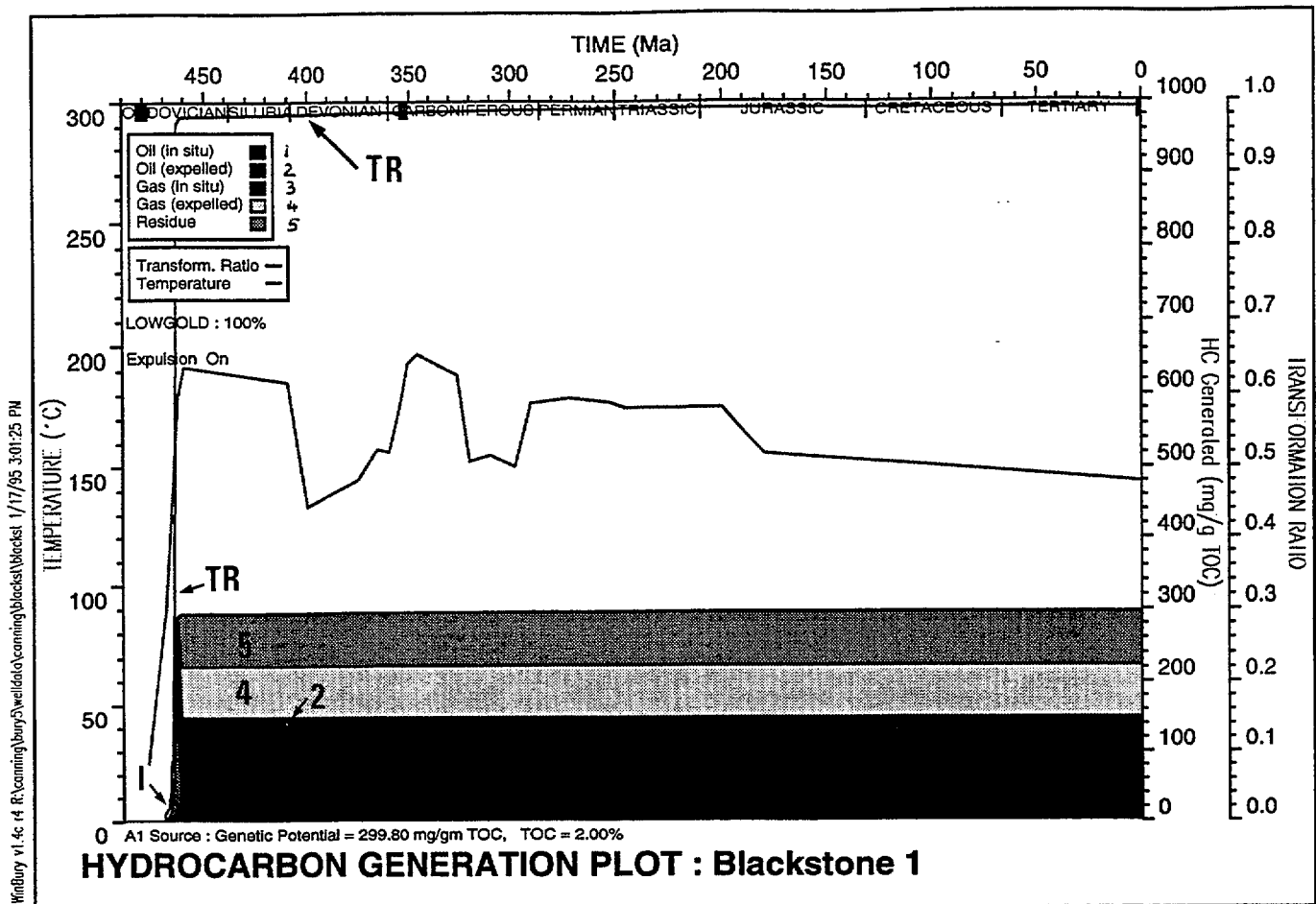
410 Ma (Prices Creek Movement)	Figure 14
326 Ma (Meda Transpression)	Figure 15
200 Ma (Fitzroy Transpression)	Figure 16
0 Ma (Present day)	Figure 17



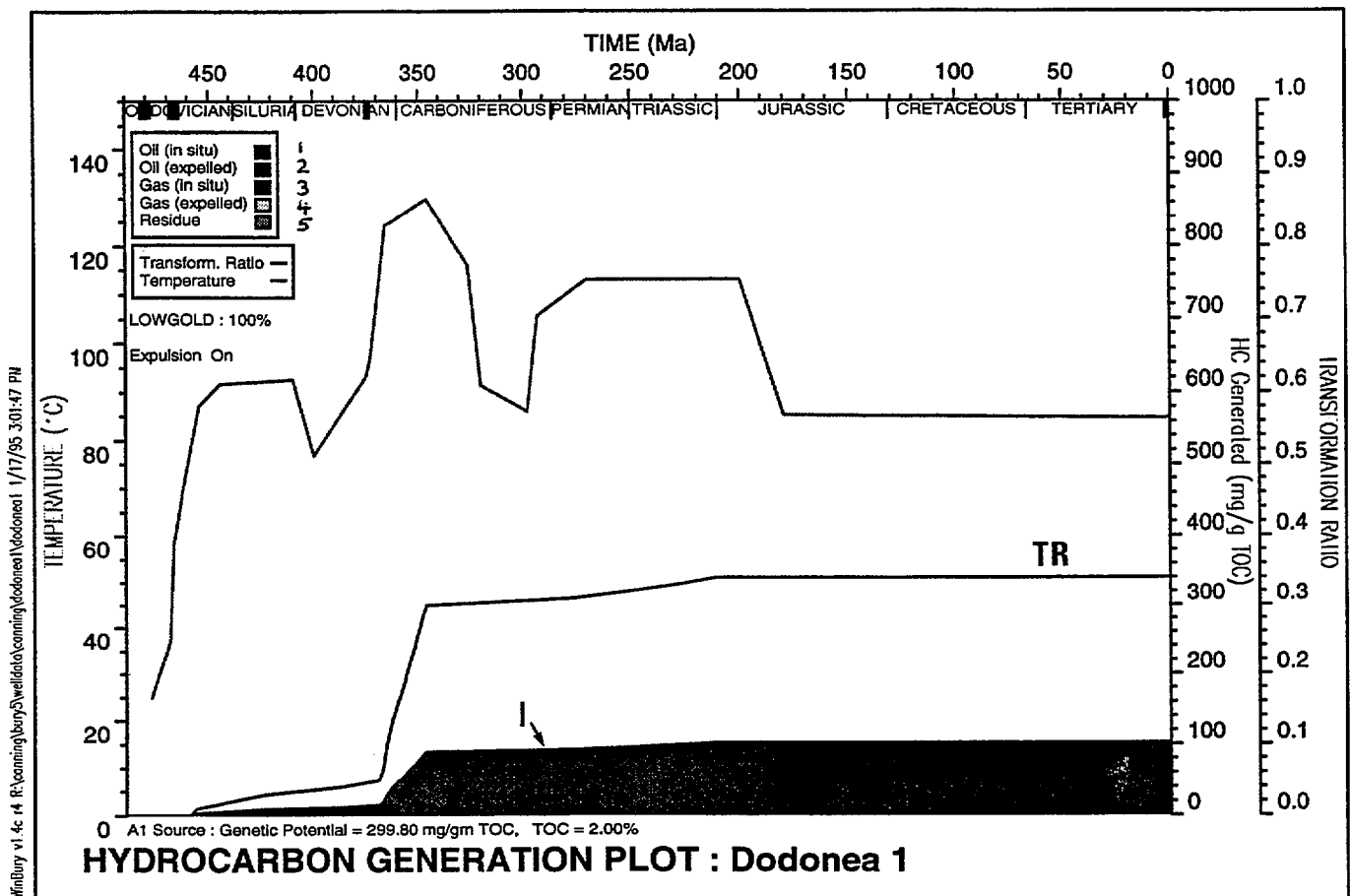
Appendix E-1, Figure 1



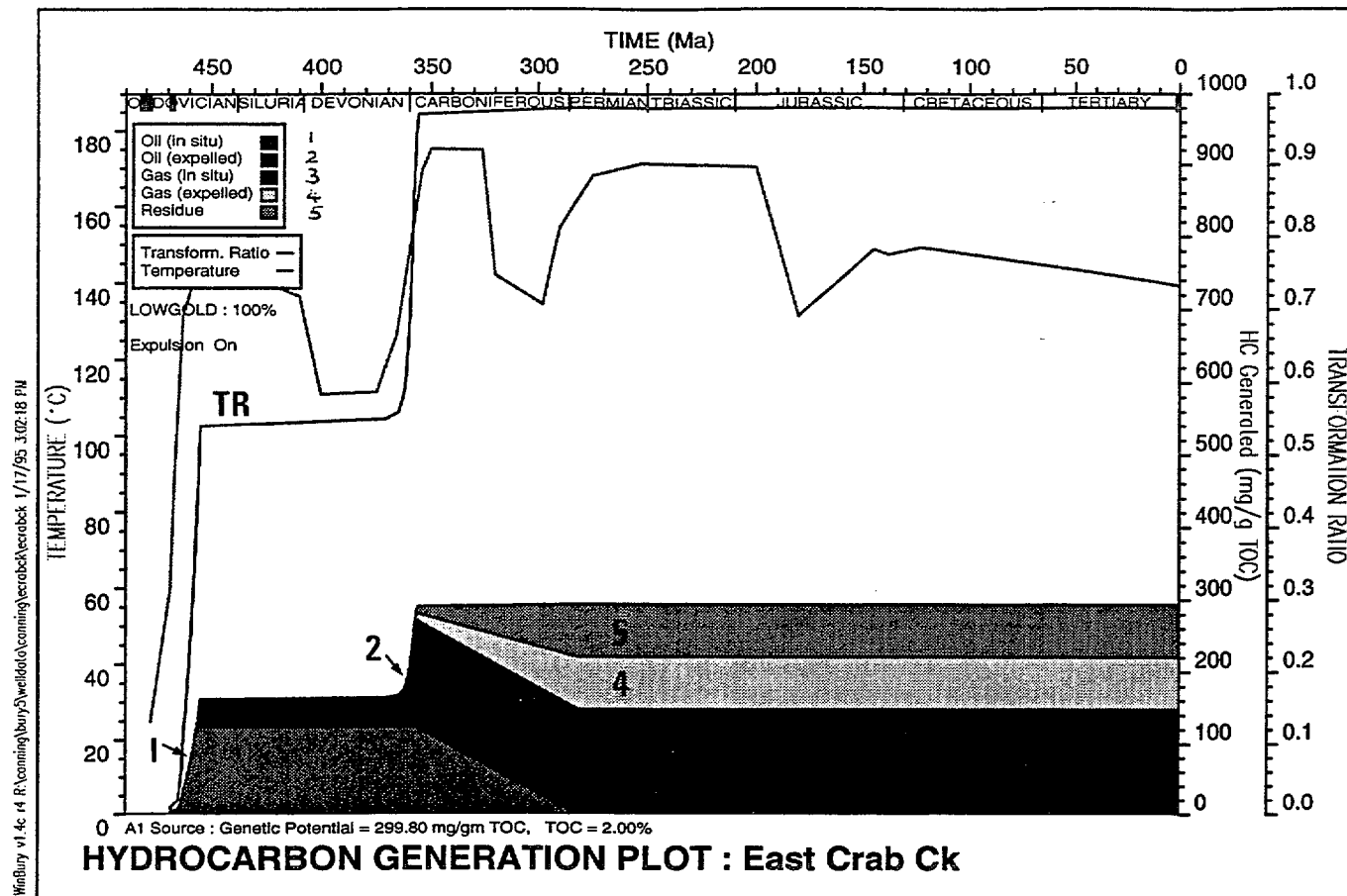
Appendix E-1, Figure 2



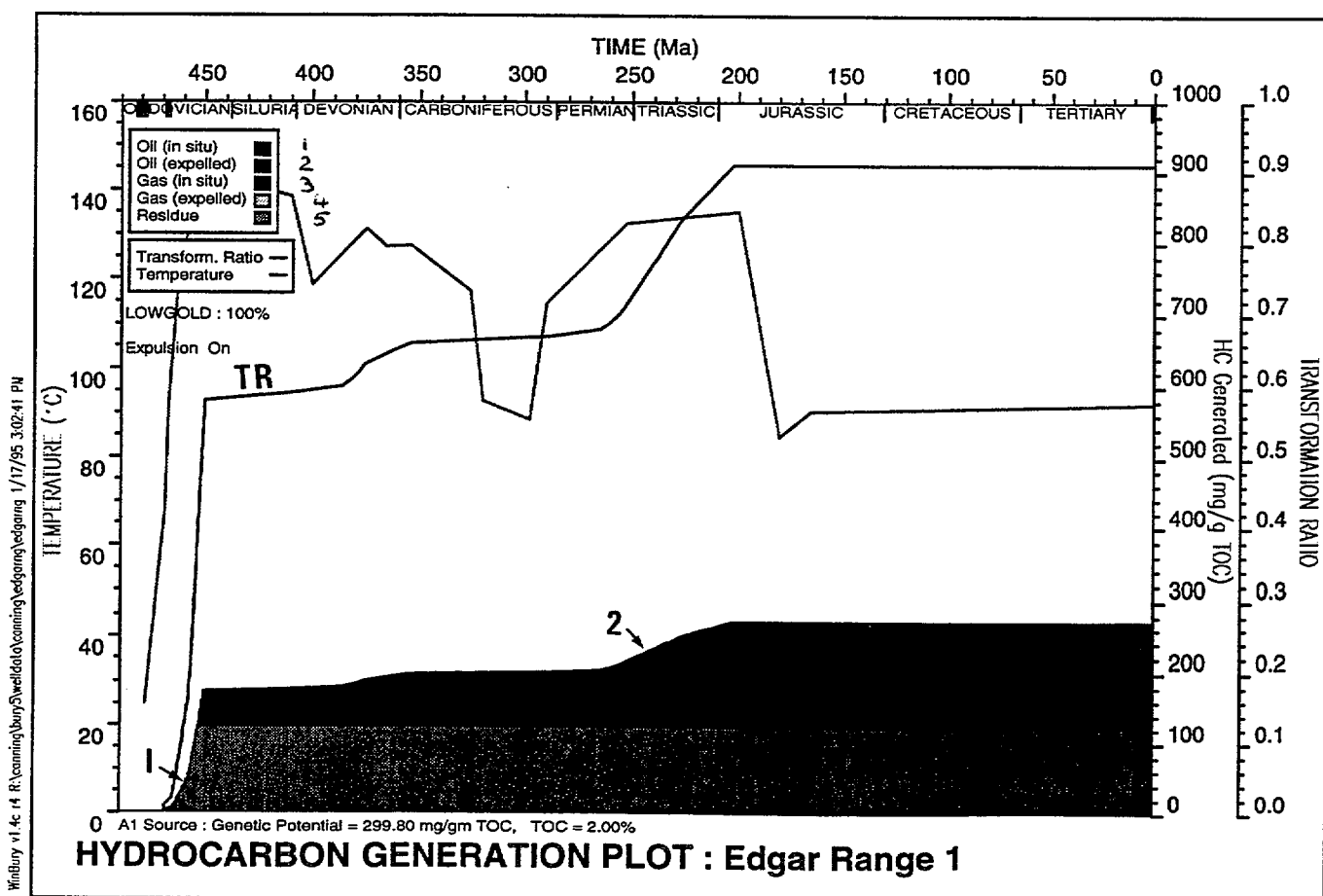
Appendix E-1, Figure 3



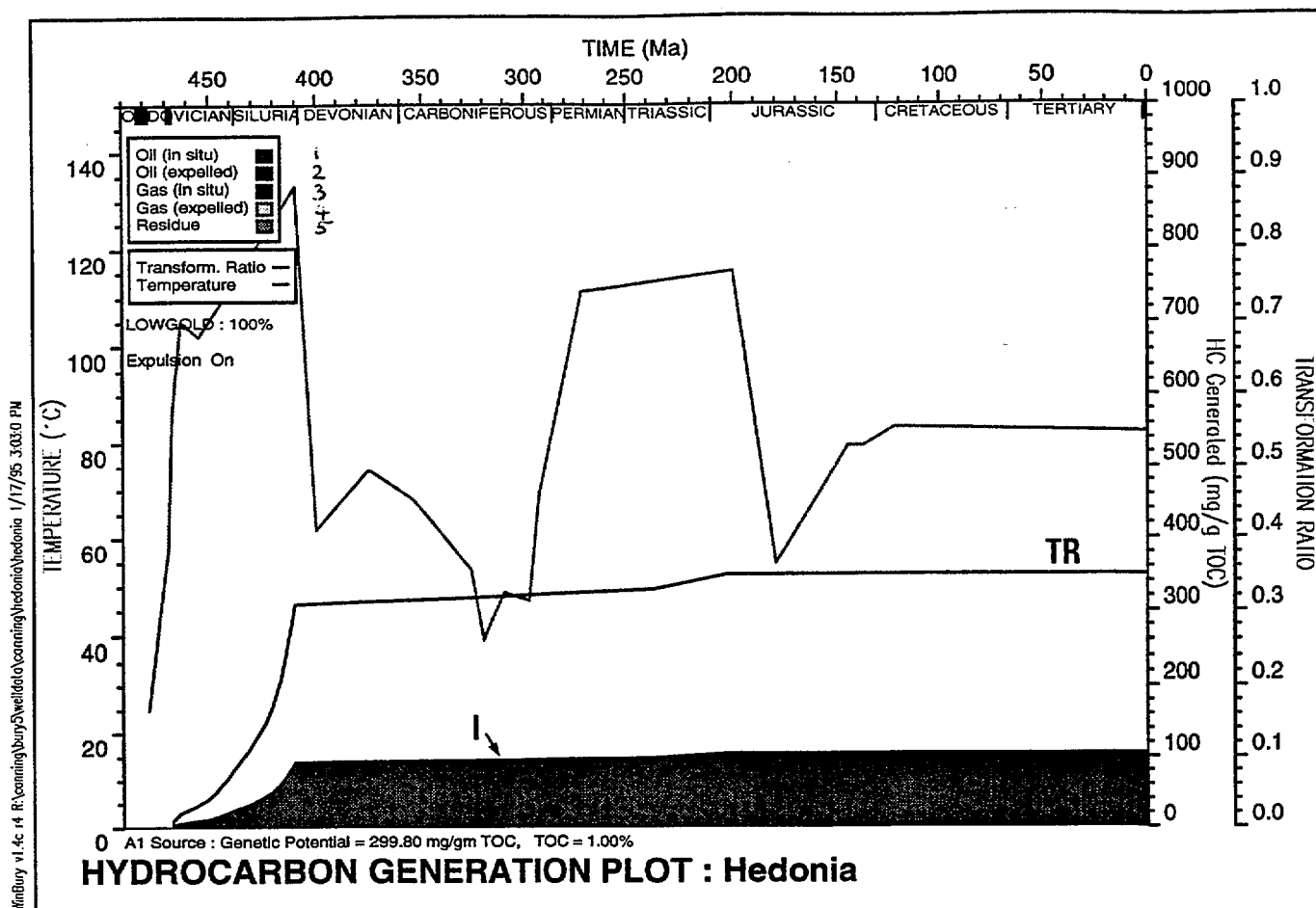
Appendix E-1, Figure 4



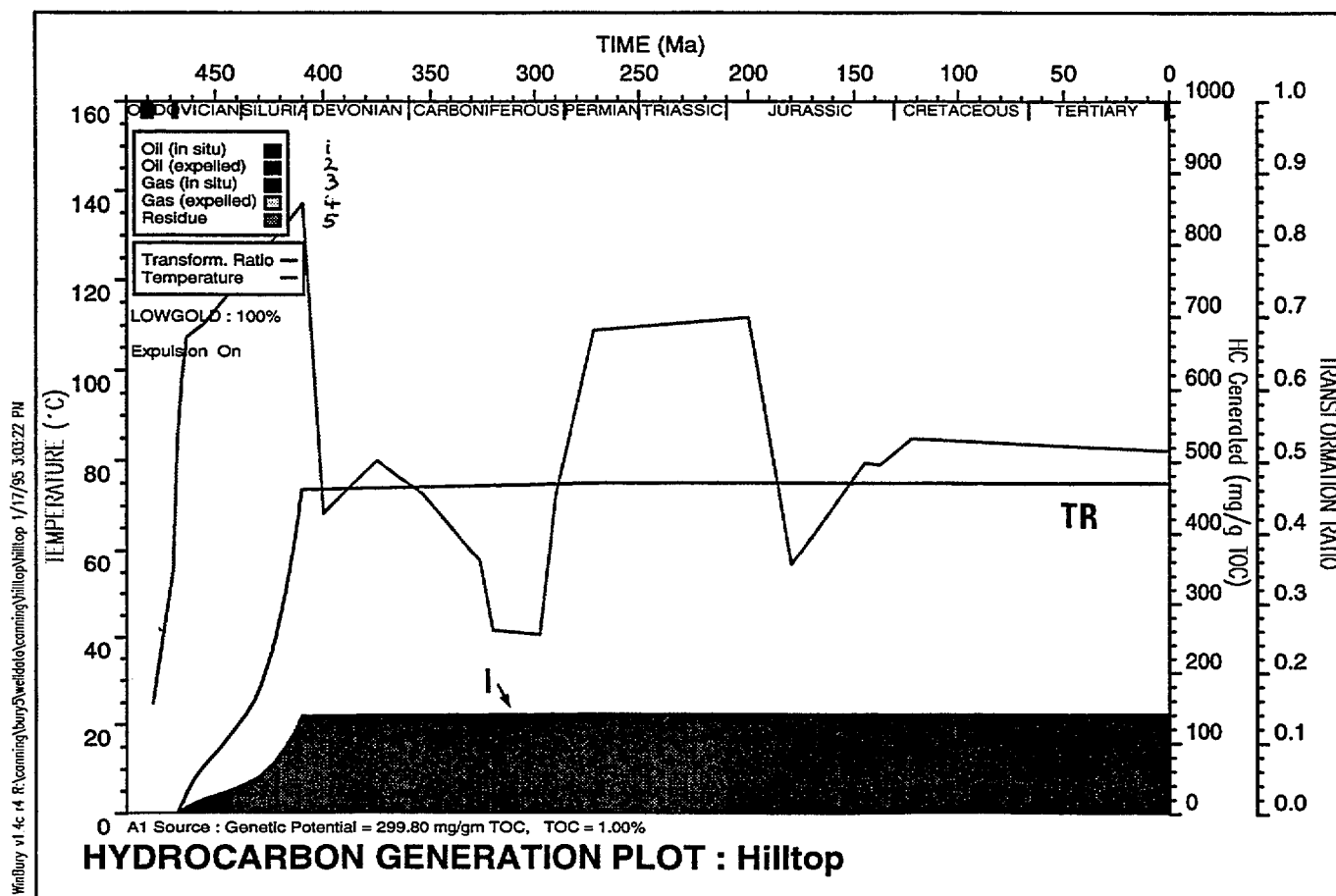
Appendix E-1, Figure 5



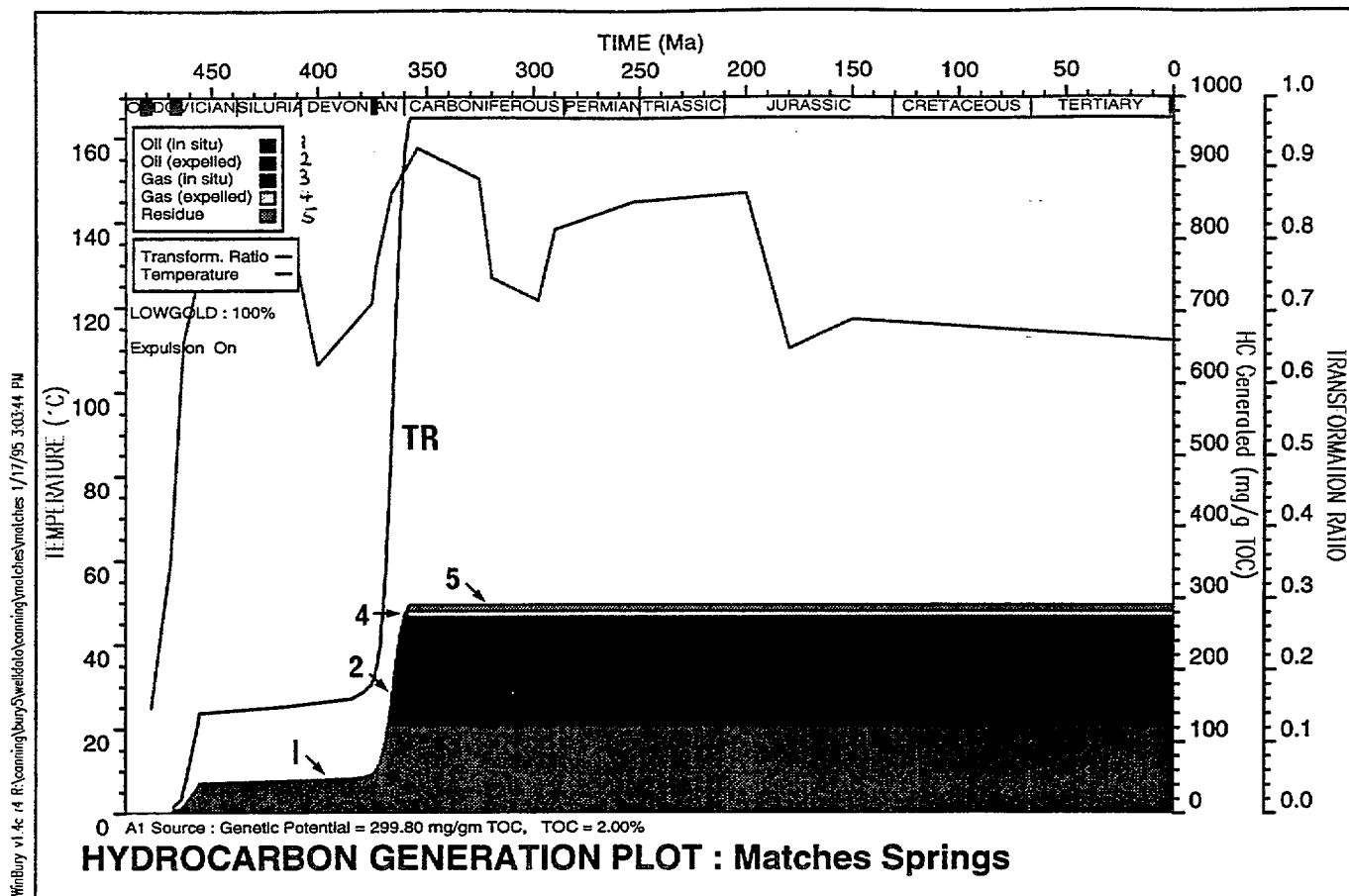
Appendix E-1, Figure 6



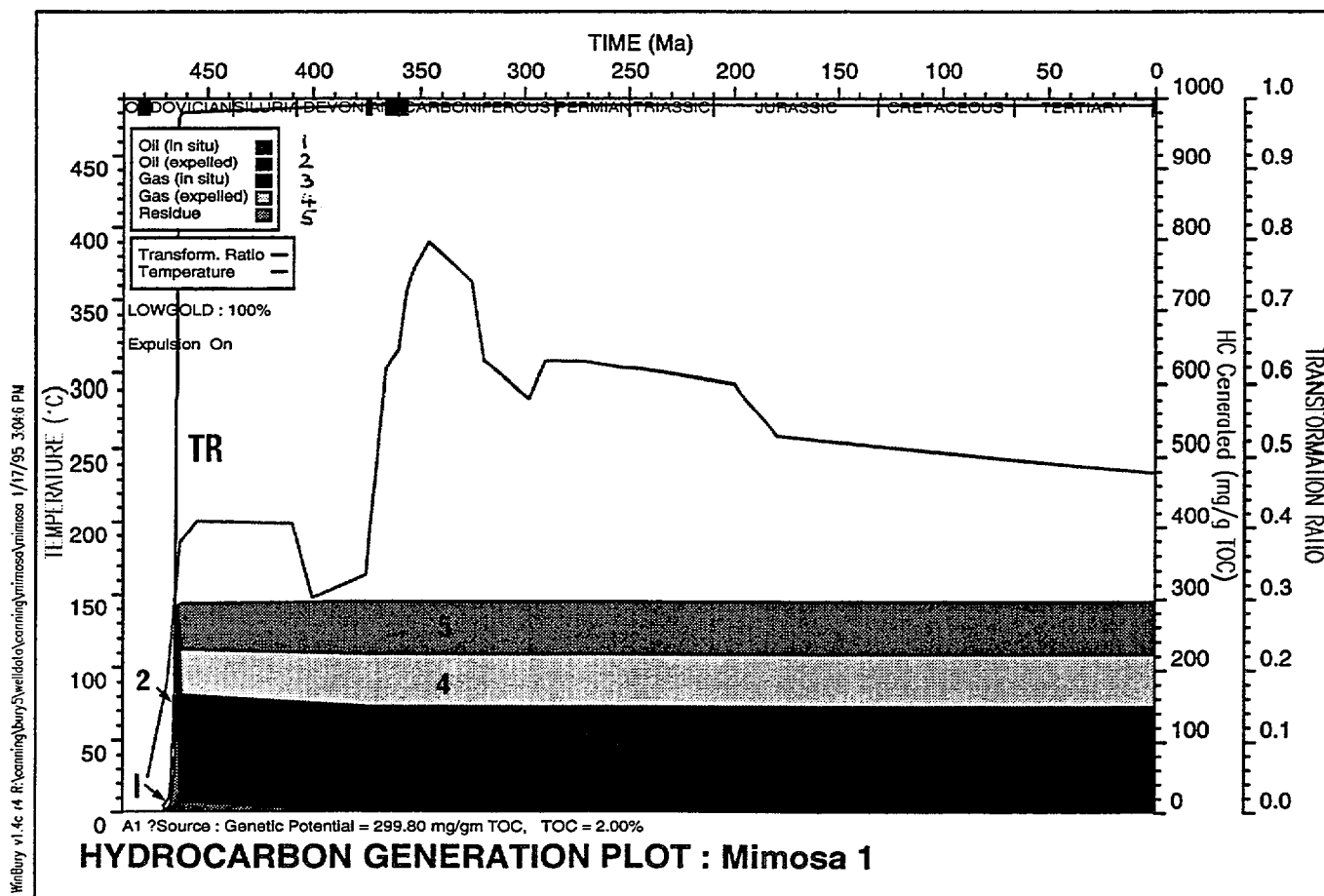
Appendix E-1, Figure 7



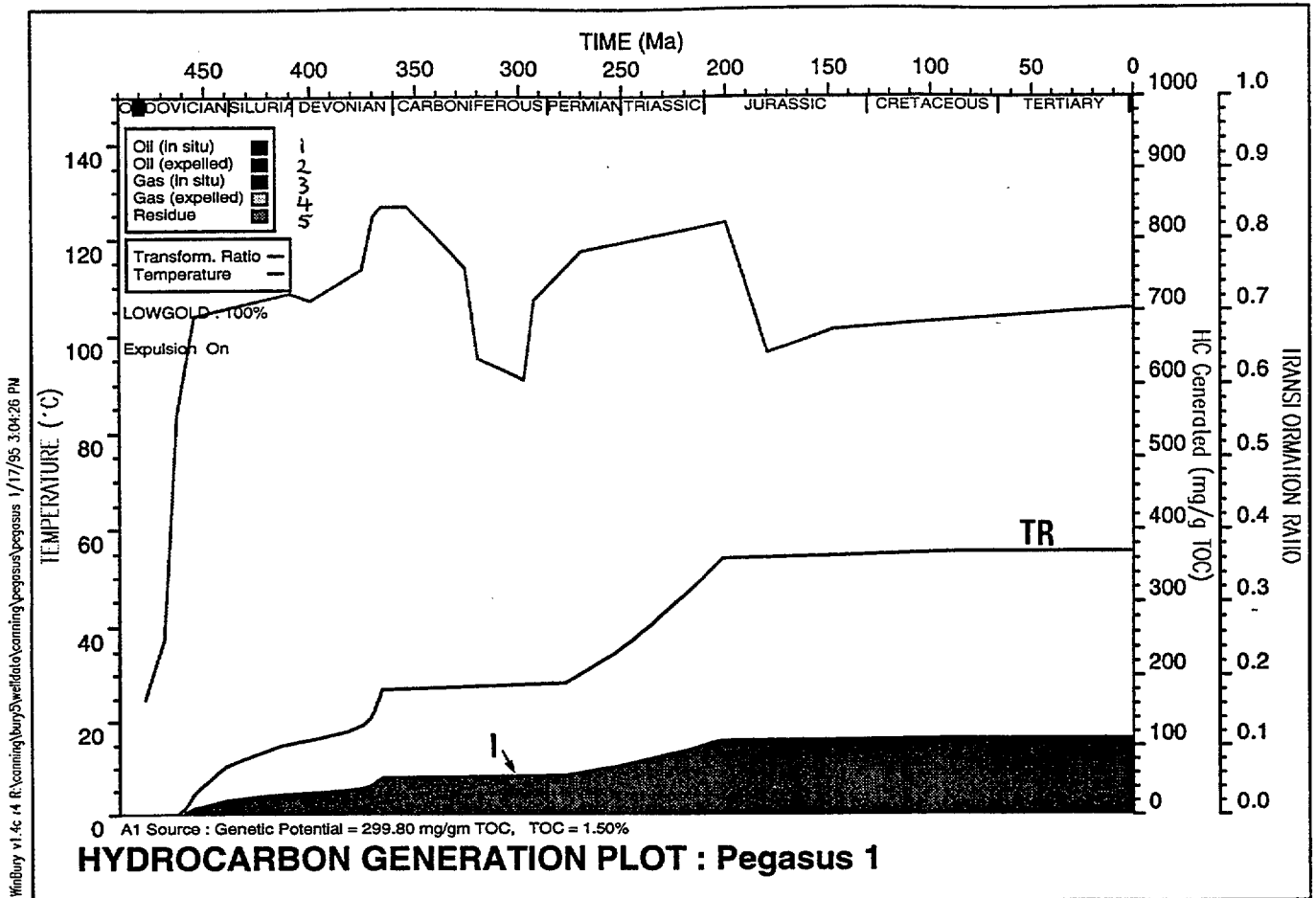
Appendix E-1, Figure 8



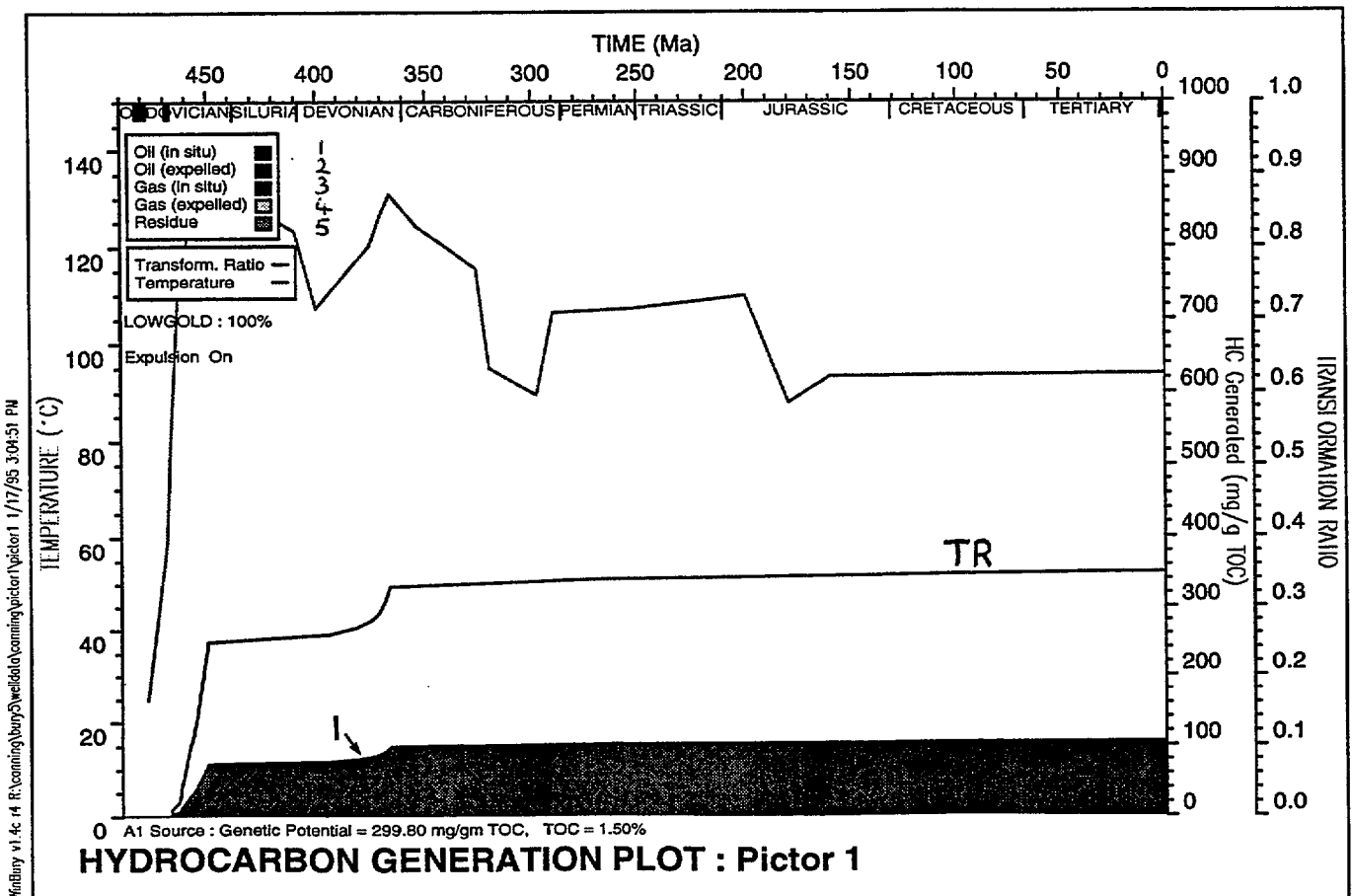
Appendix E-1, Figure 9



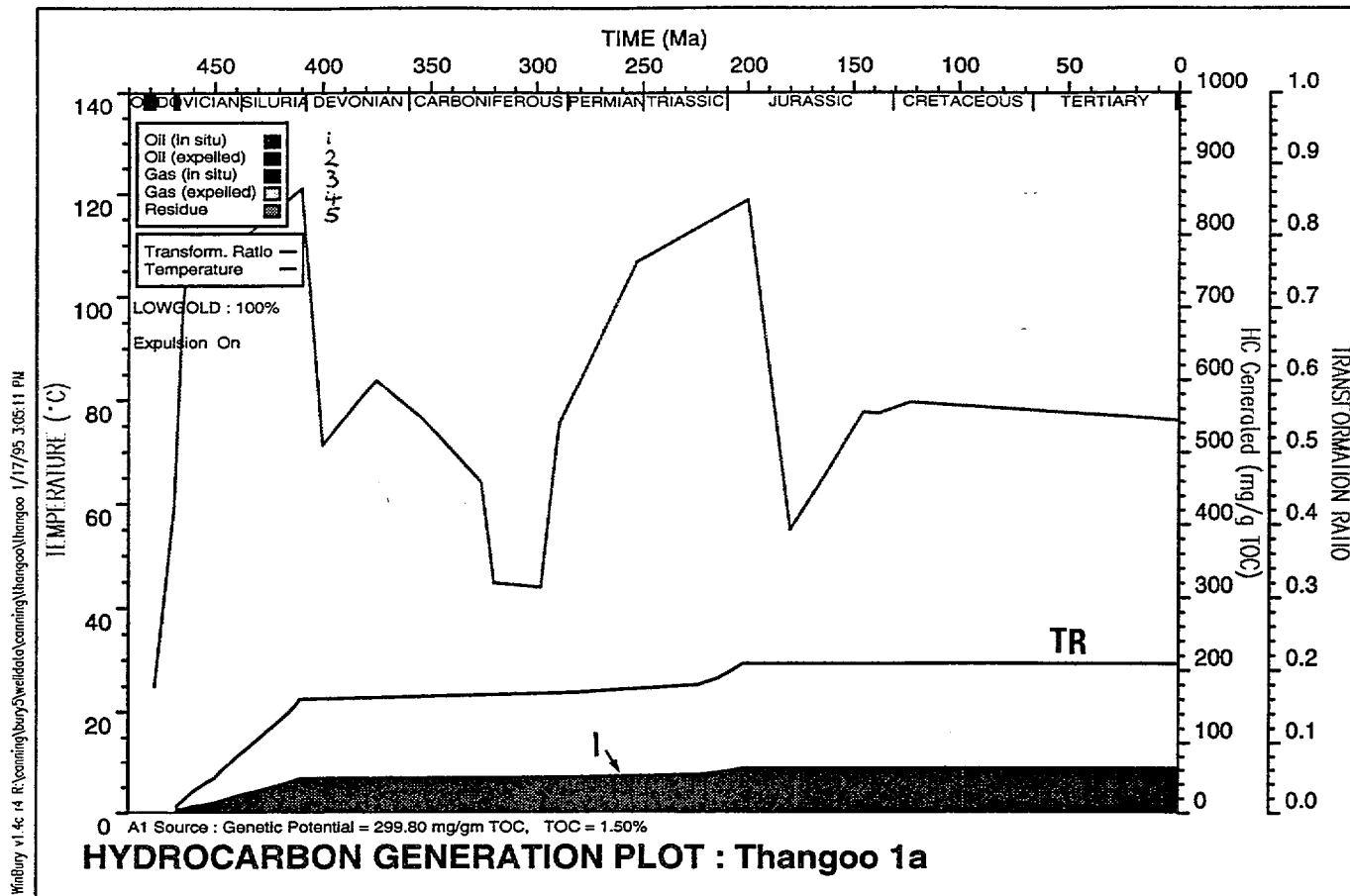
Appendix E-1, Figure 10



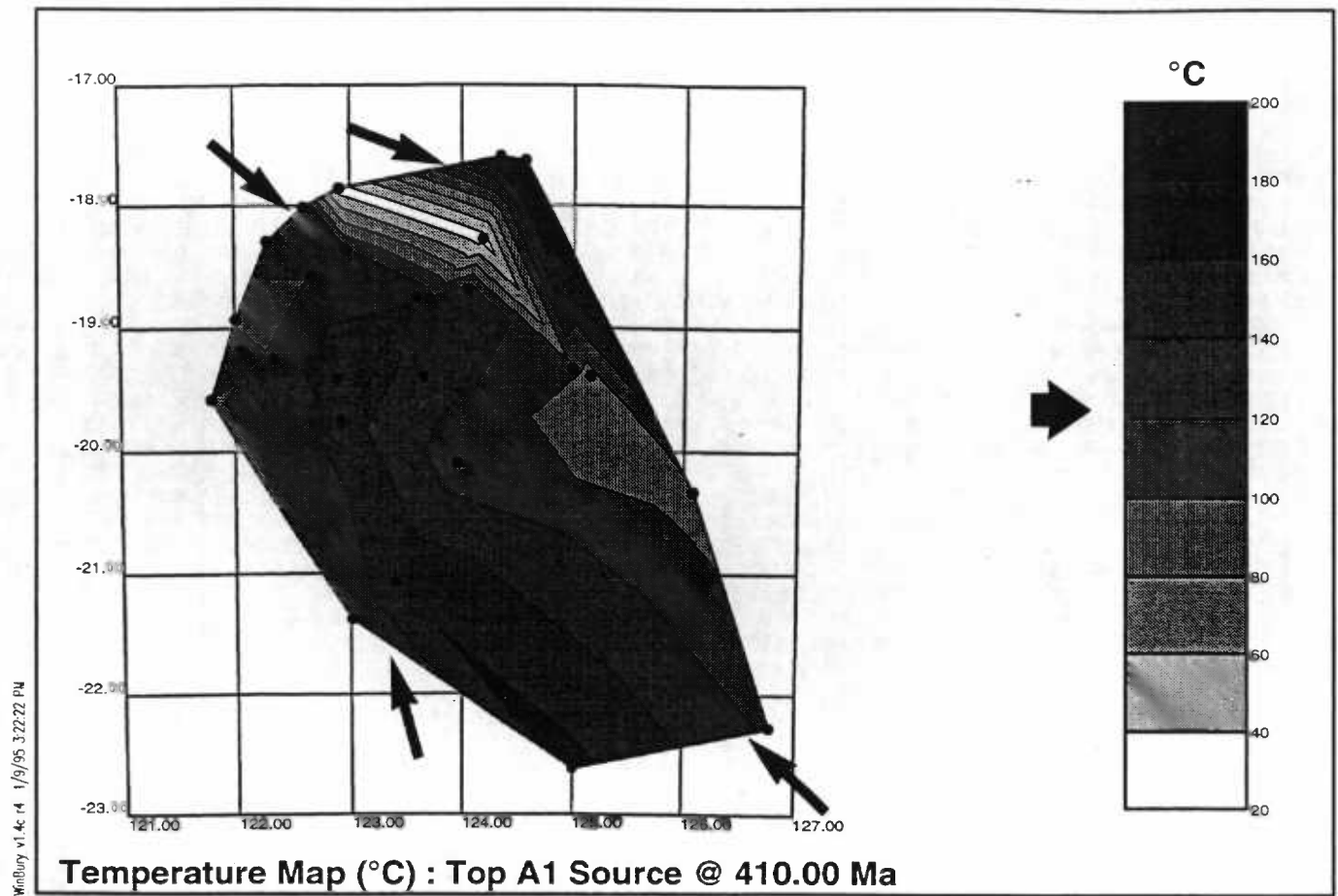
Appendix E-1, Figure 11



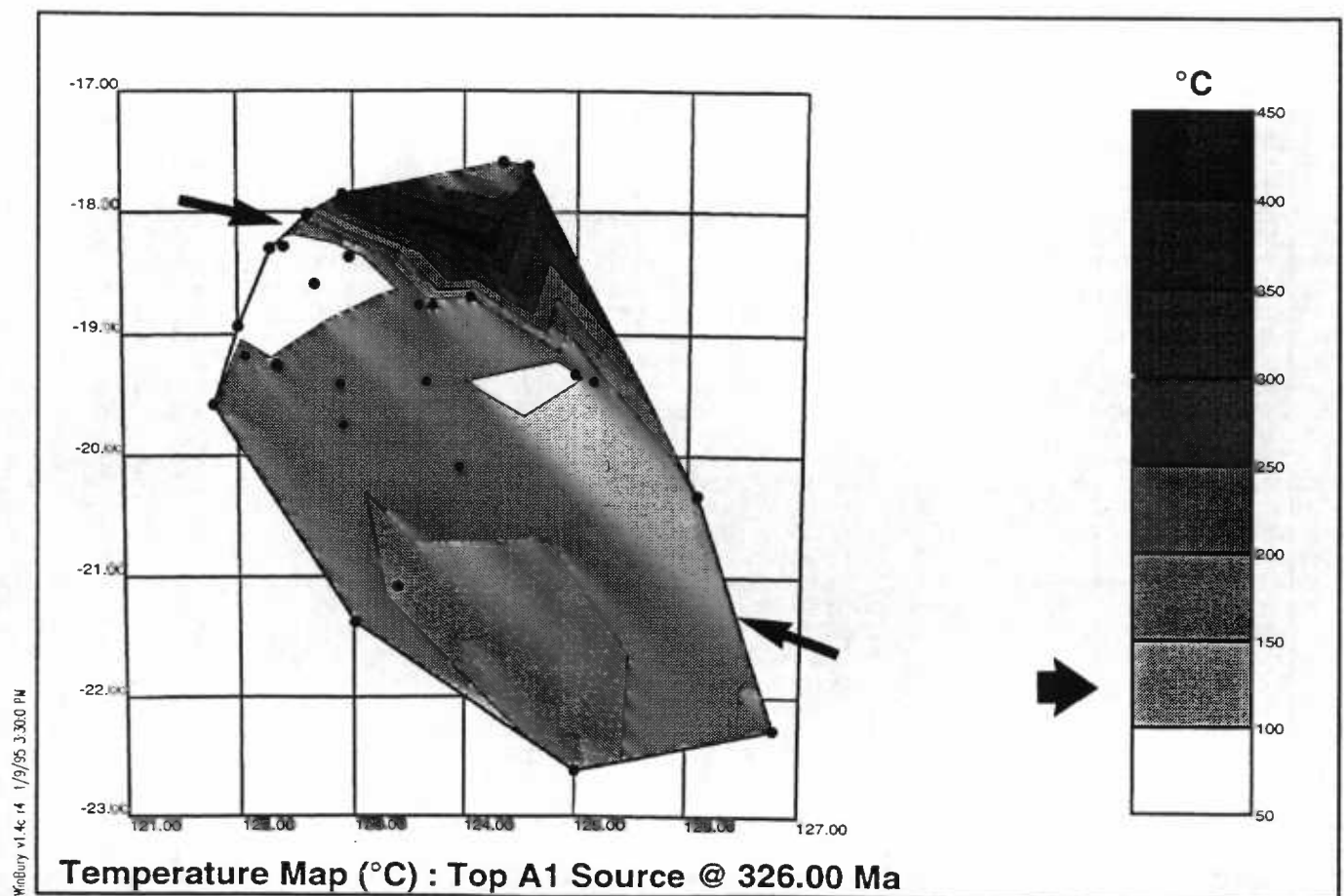
Appendix E-1, Figure 12



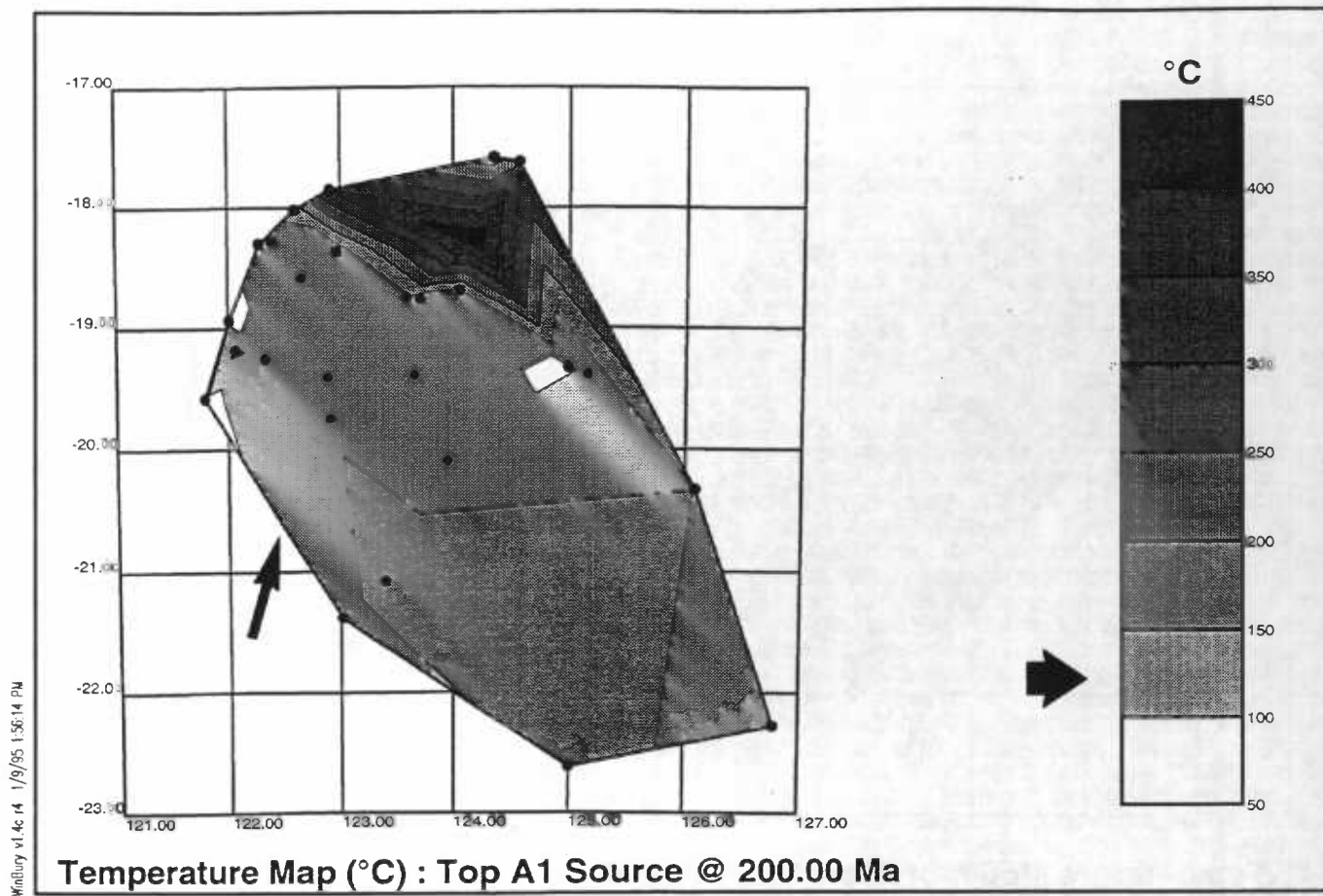
Appendix E-1, Figure 13



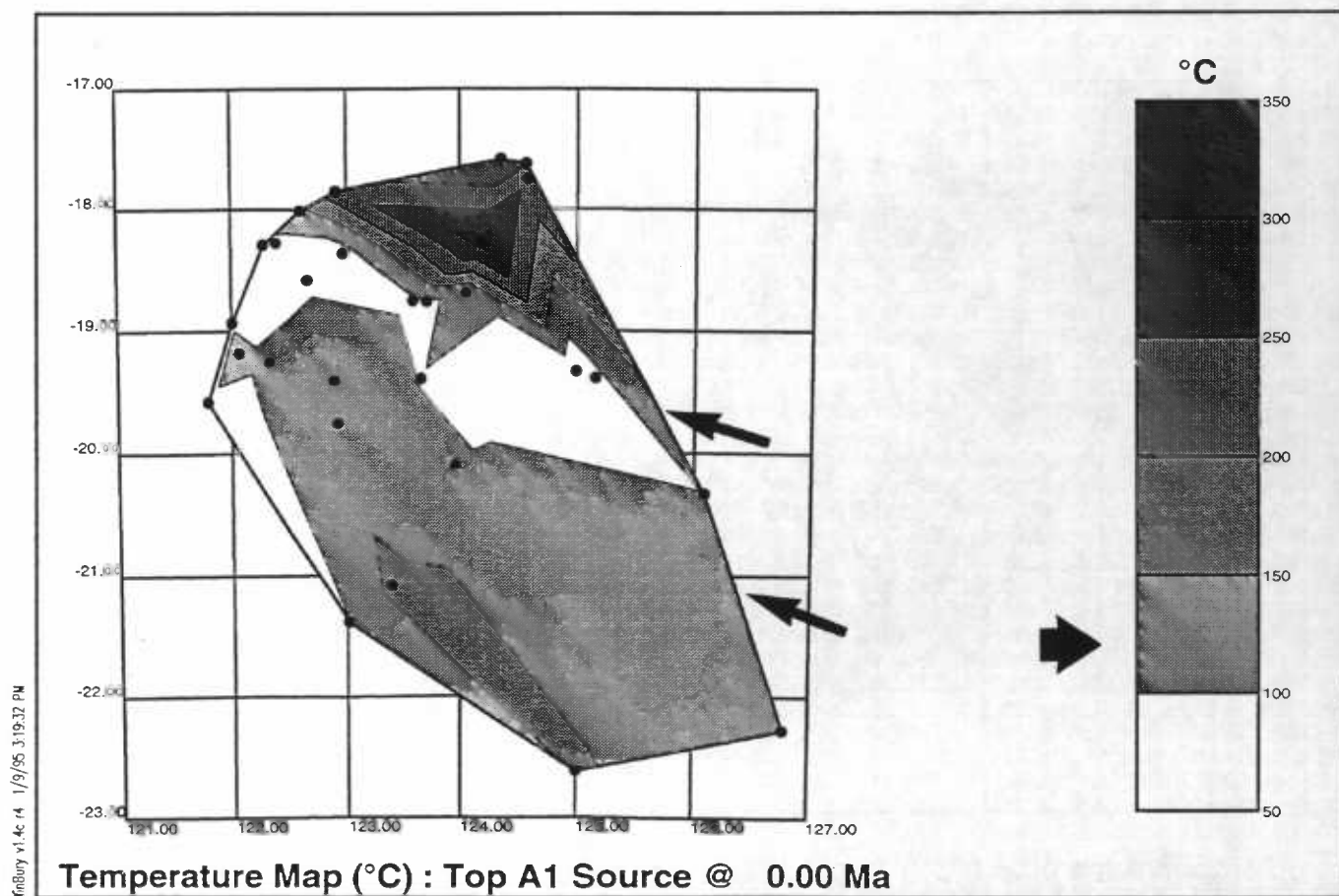
Appendix E-1, Figure 14



Appendix E-1, Figure 15



Appendix E-1, Figure 16



Appendix E-1, Figure 17

APPENDIX E-2. Lower Supersequence A2 Source Interval (lower Goldwyer Formation)

This Appendix comprises Hydrocarbon Generation Plots and Maturation (Temperature) Maps for the Lower Supersequence A2 (Lower Goldwyer Formation) source interval.

Hydrocarbon Generation Plots are presented for the following wells:

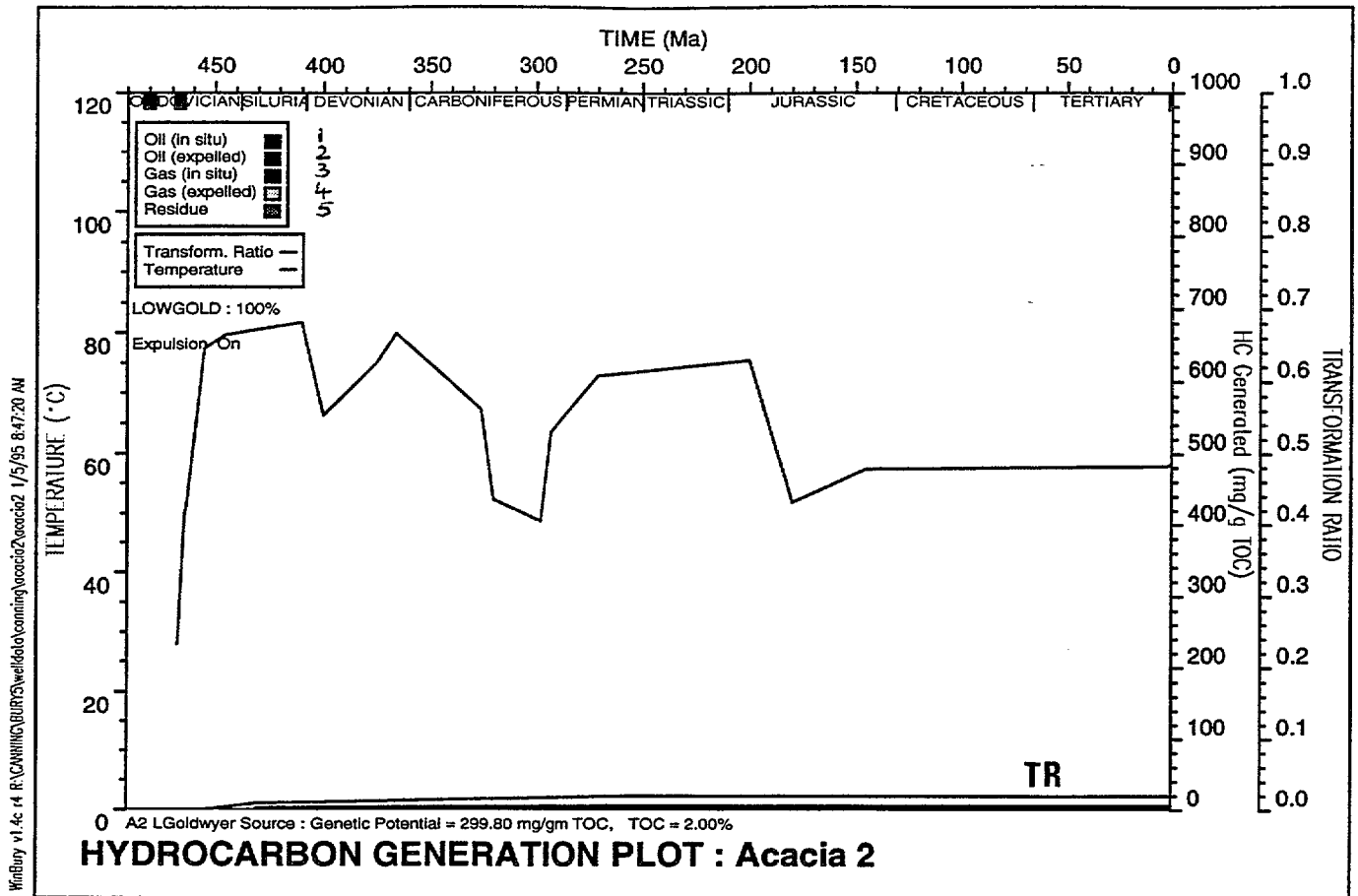
- Legend 1 - Oil (in situ)
2 - Oil (expelled)
3 - Gas (in situ)
4 - Gas (expelled)
5 - Residue

Acacia-2	Figure 1
Aquila-1	Figure 2
Dodonea-1	Figure 3
East Crab Creek-1 (sub TD)	Figure 4
Edgar Range-1	Figure 5
Hedonia-1	Figure 6
Hilltop-1	Figure 7
Matches Springs-1	Figure 8
Pictor-1	Figure 9
Thangoo-1A	Figure 10

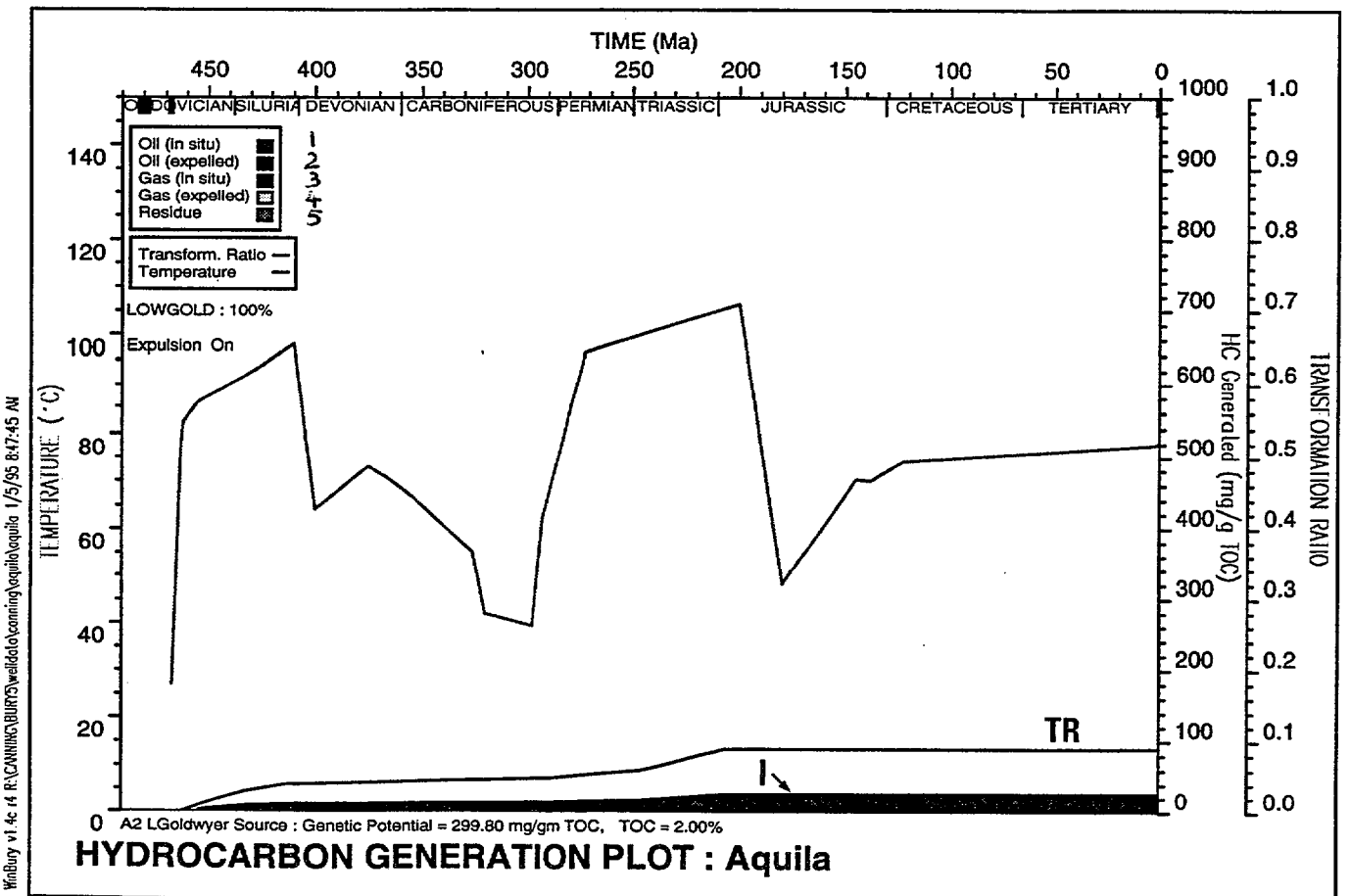
Maturation (Temperature) Maps are presented for times immediately prior to major basin structuring. Arrows indicate peak maturation temperature.

410 Ma (Prices Creek Movement)	Figure 11
326 Ma (Meda Transpression)	Figure 12
200 Ma (Fitzroy Transpression)	Figure 13
0 Ma (Present day)	Figure 14

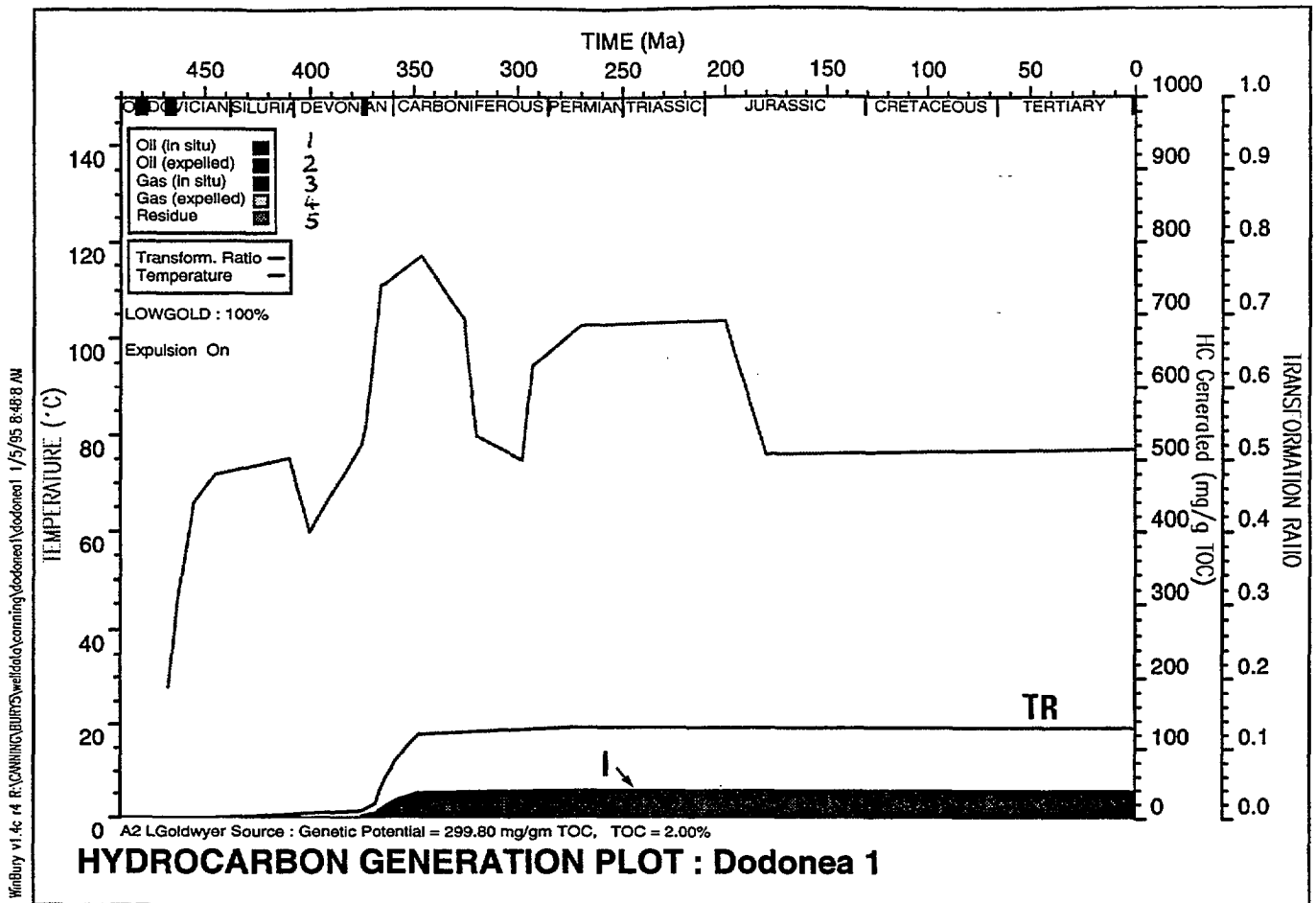




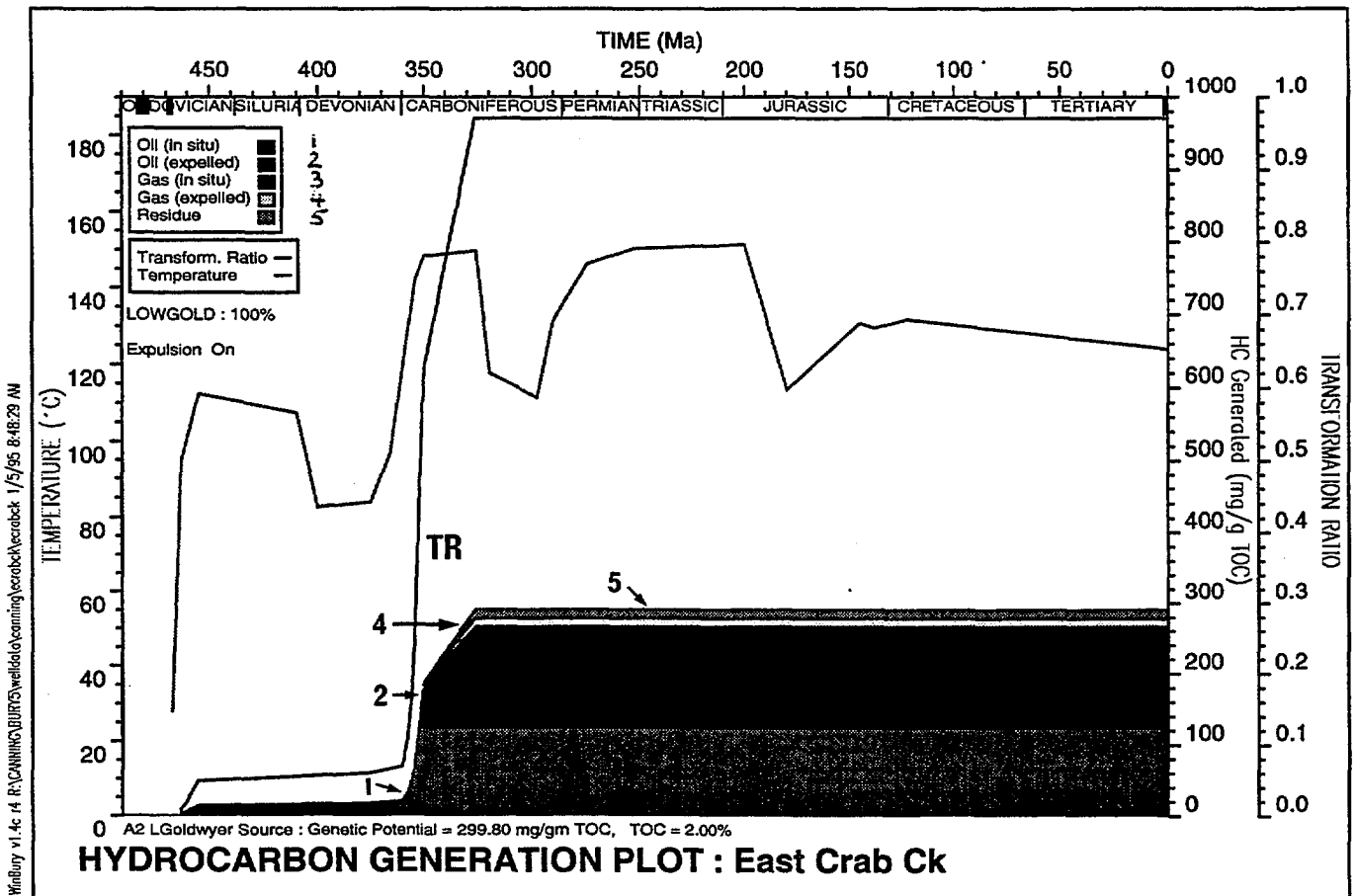
Appendix E-2, Figure 1



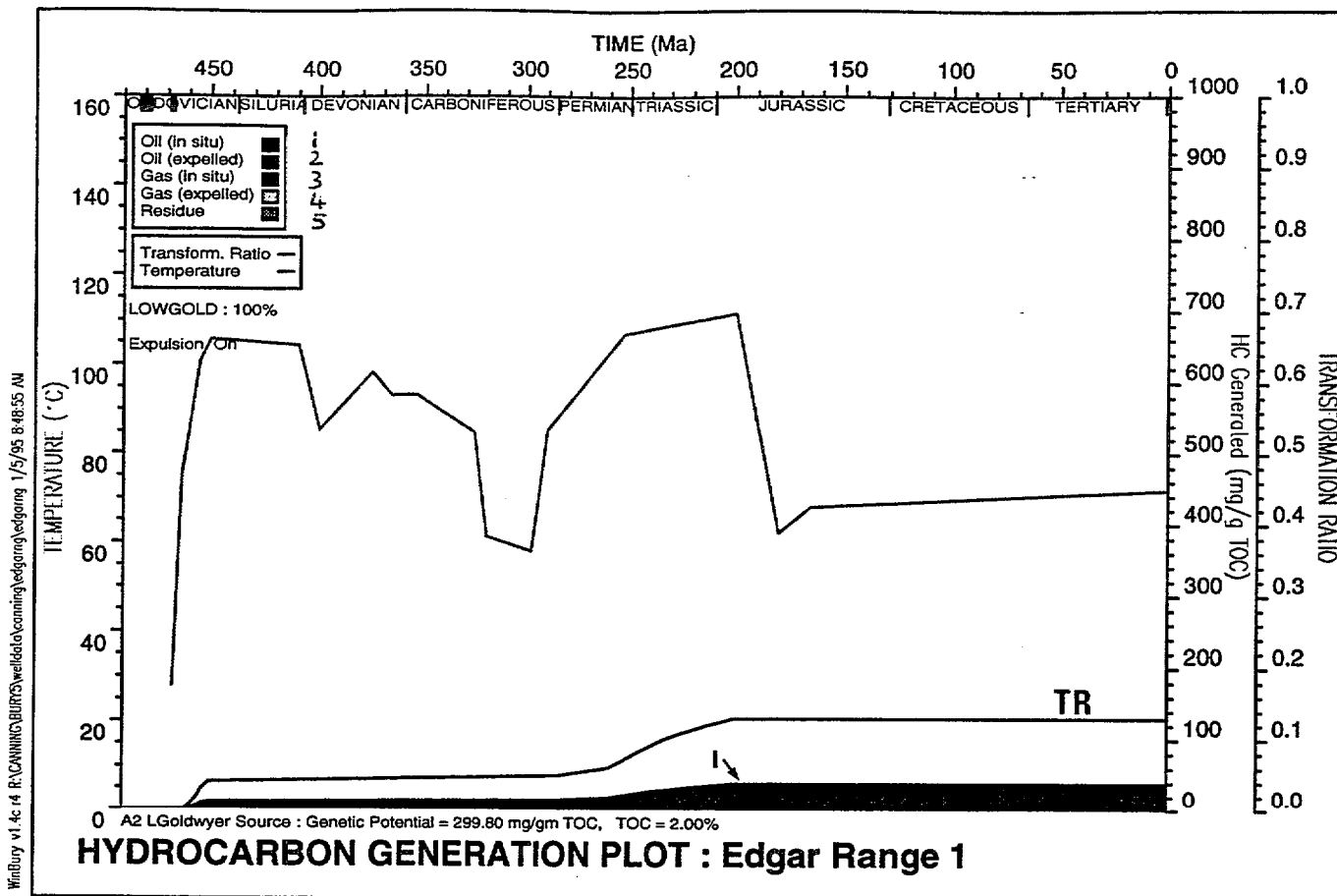
Appendix E-2, Figure 2



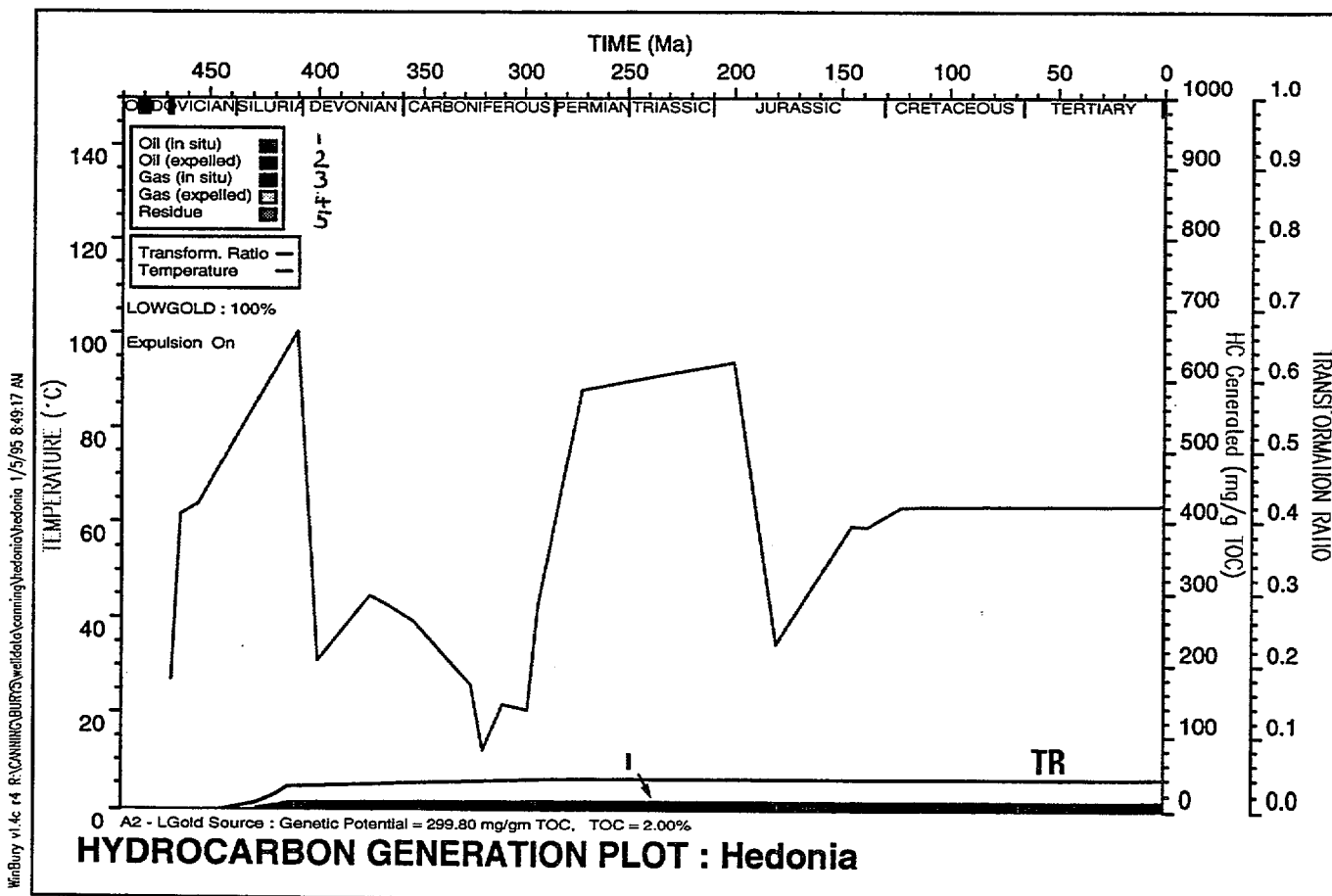
Appendix E-2, Figure 3



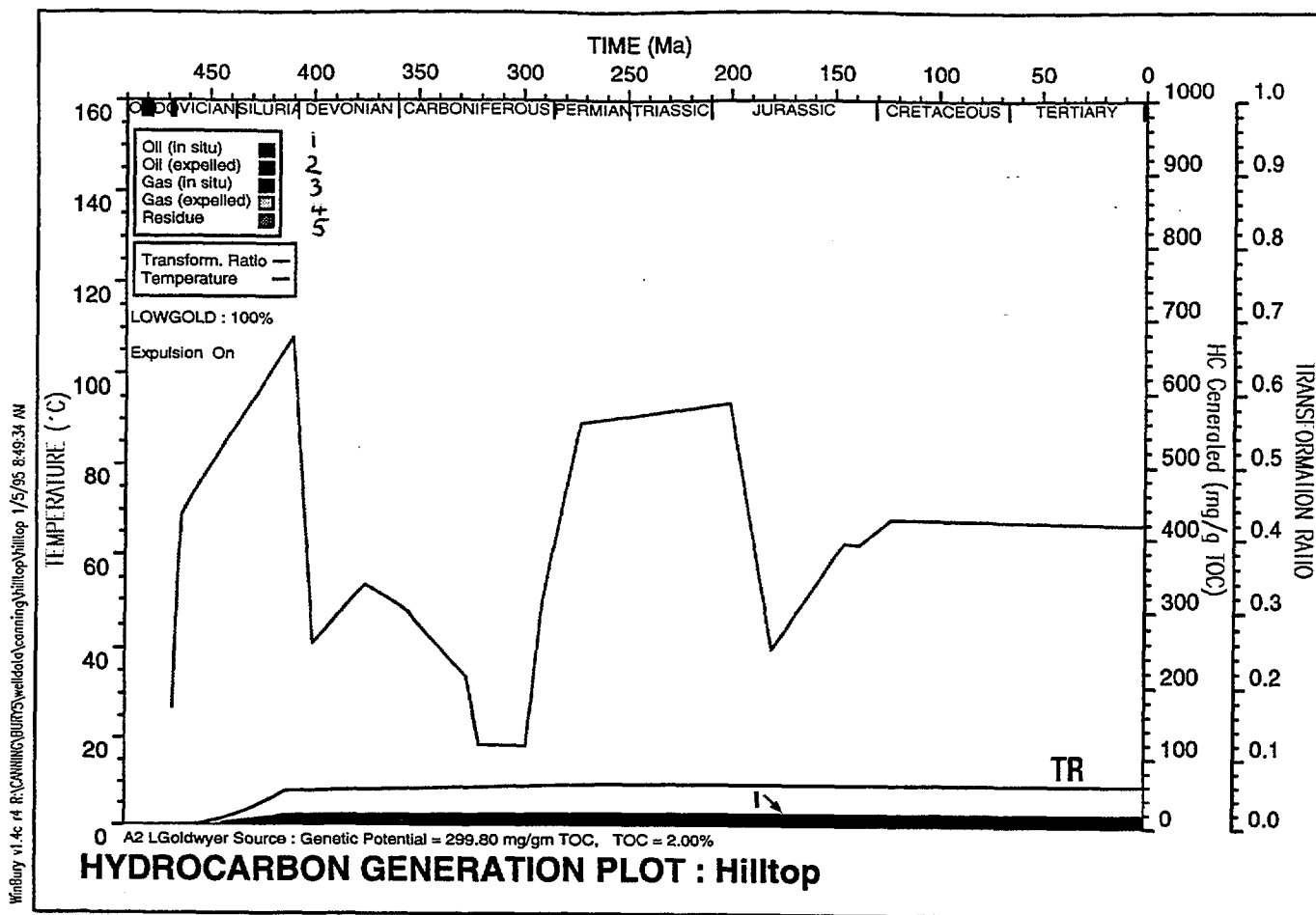
Appendix E-2, Figure 4



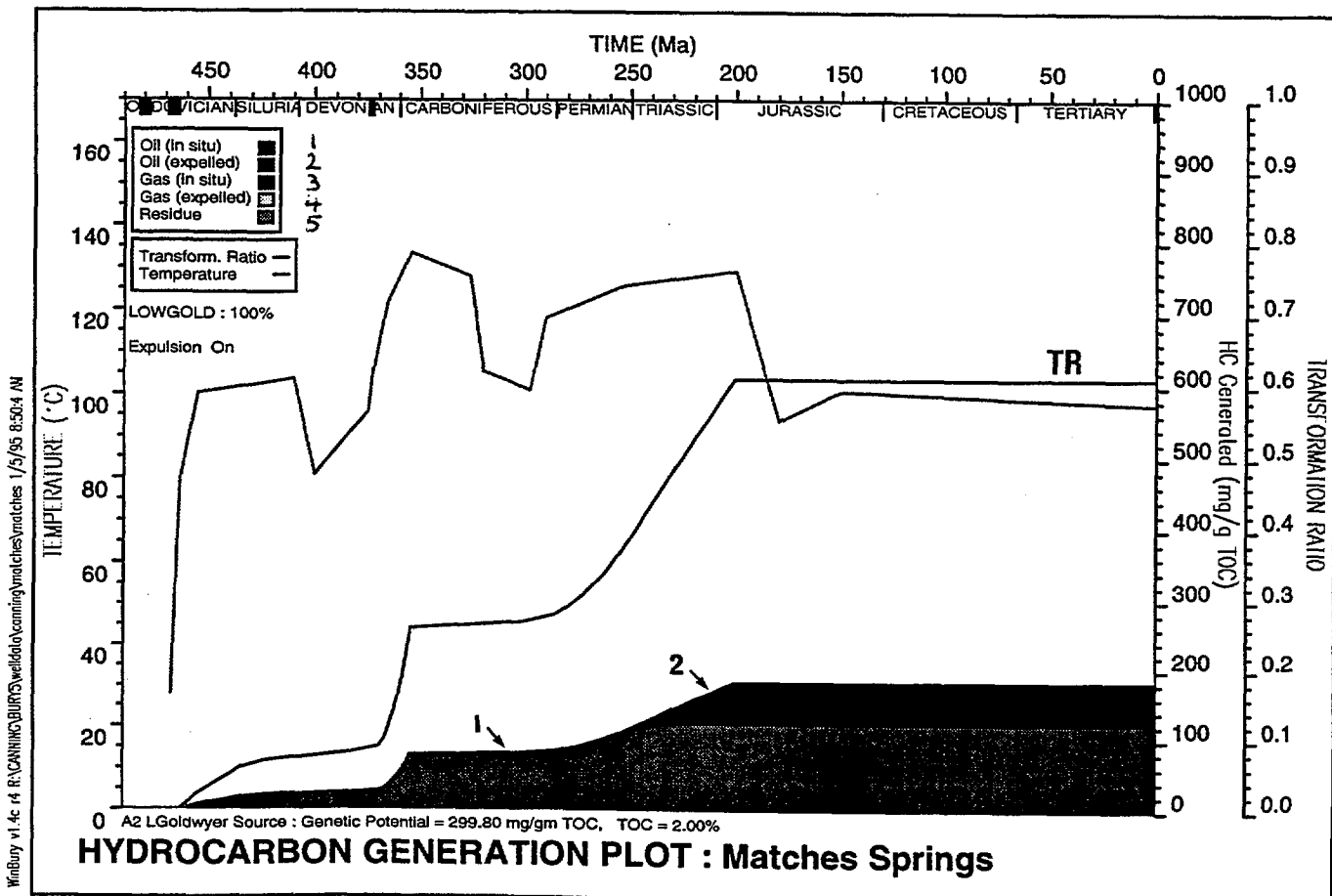
Appendix E-2, Figure 5



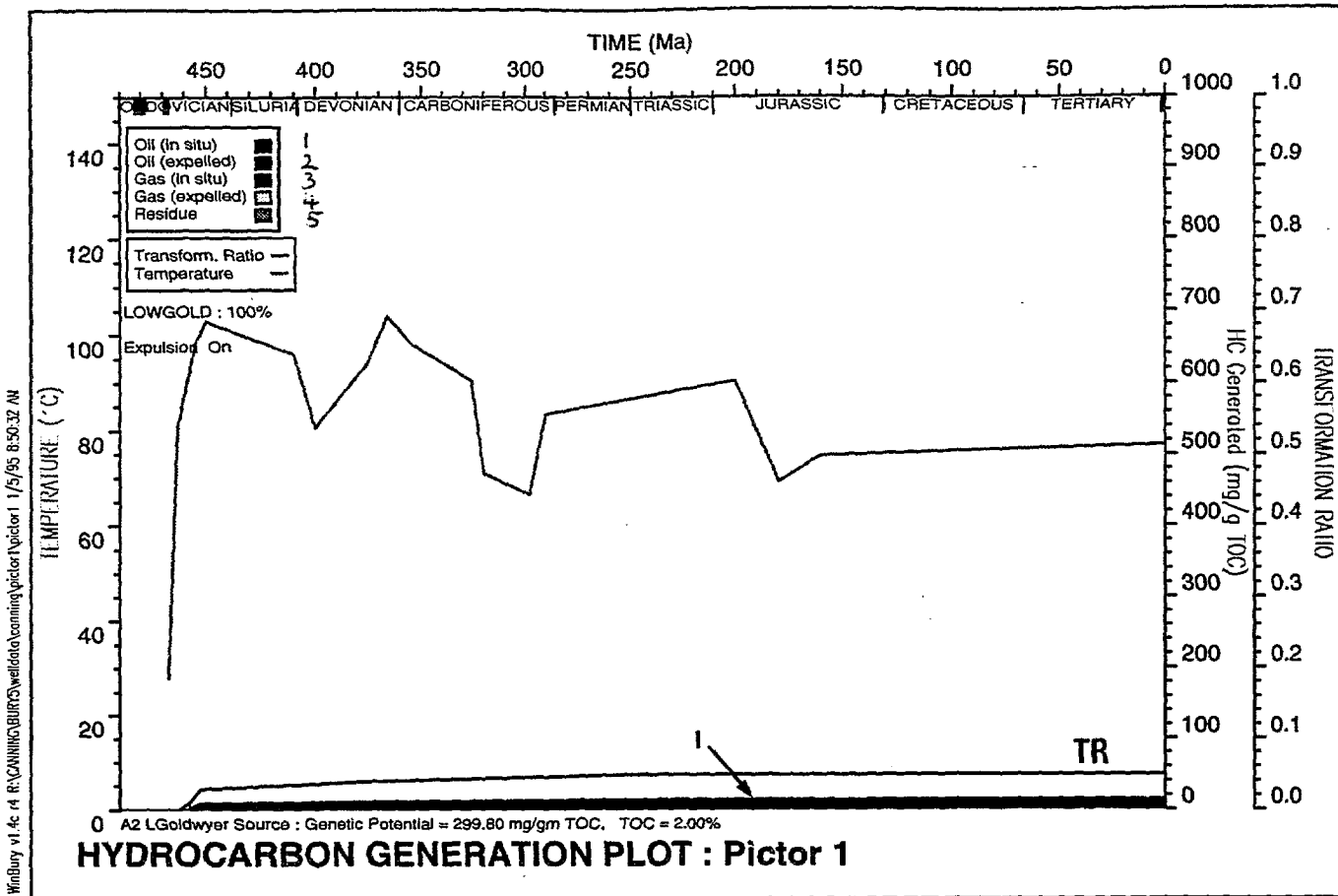
Appendix E-2, Figure 6



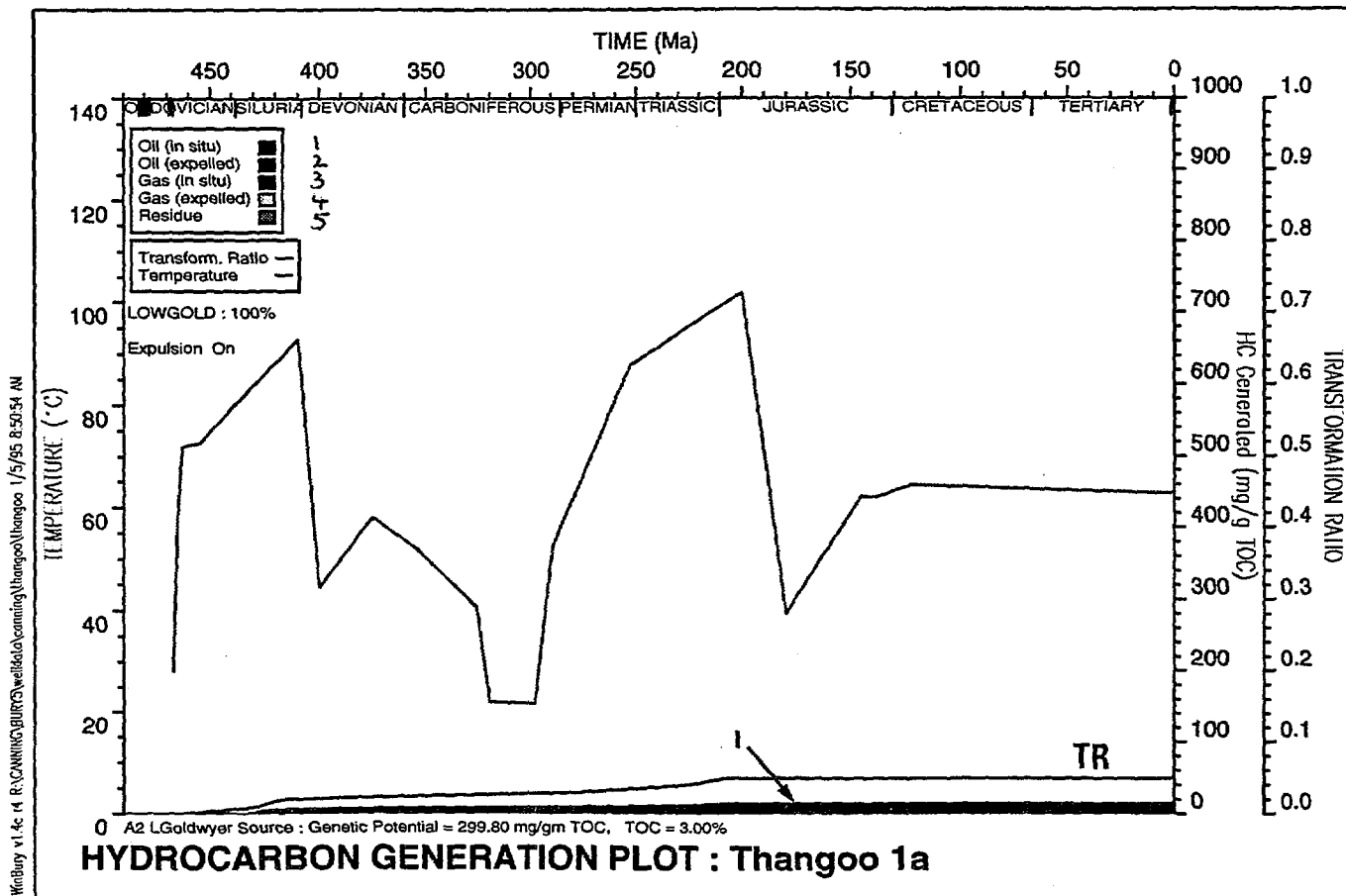
Appendix E-2, Figure 7



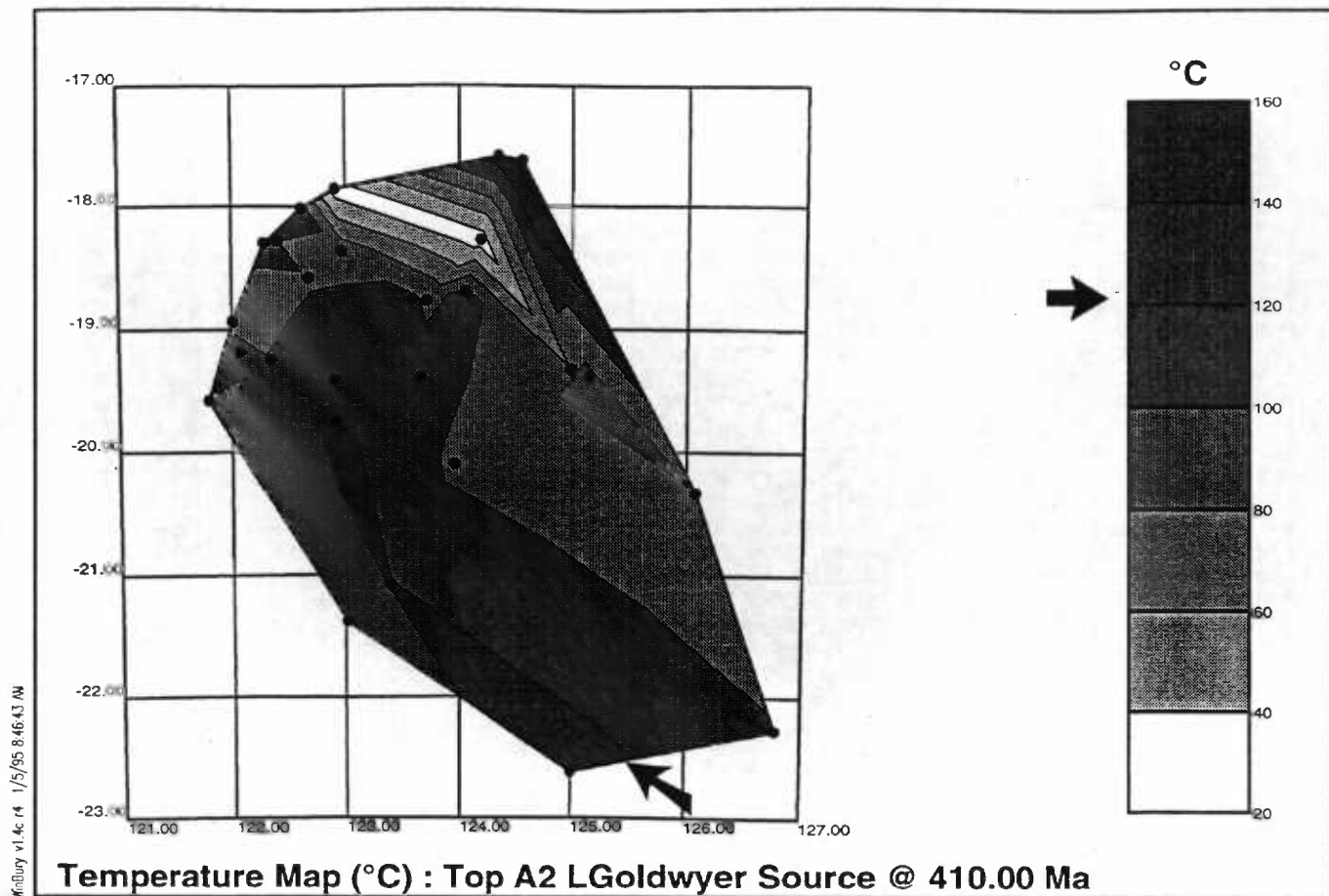
Appendix E-2, Figure 8



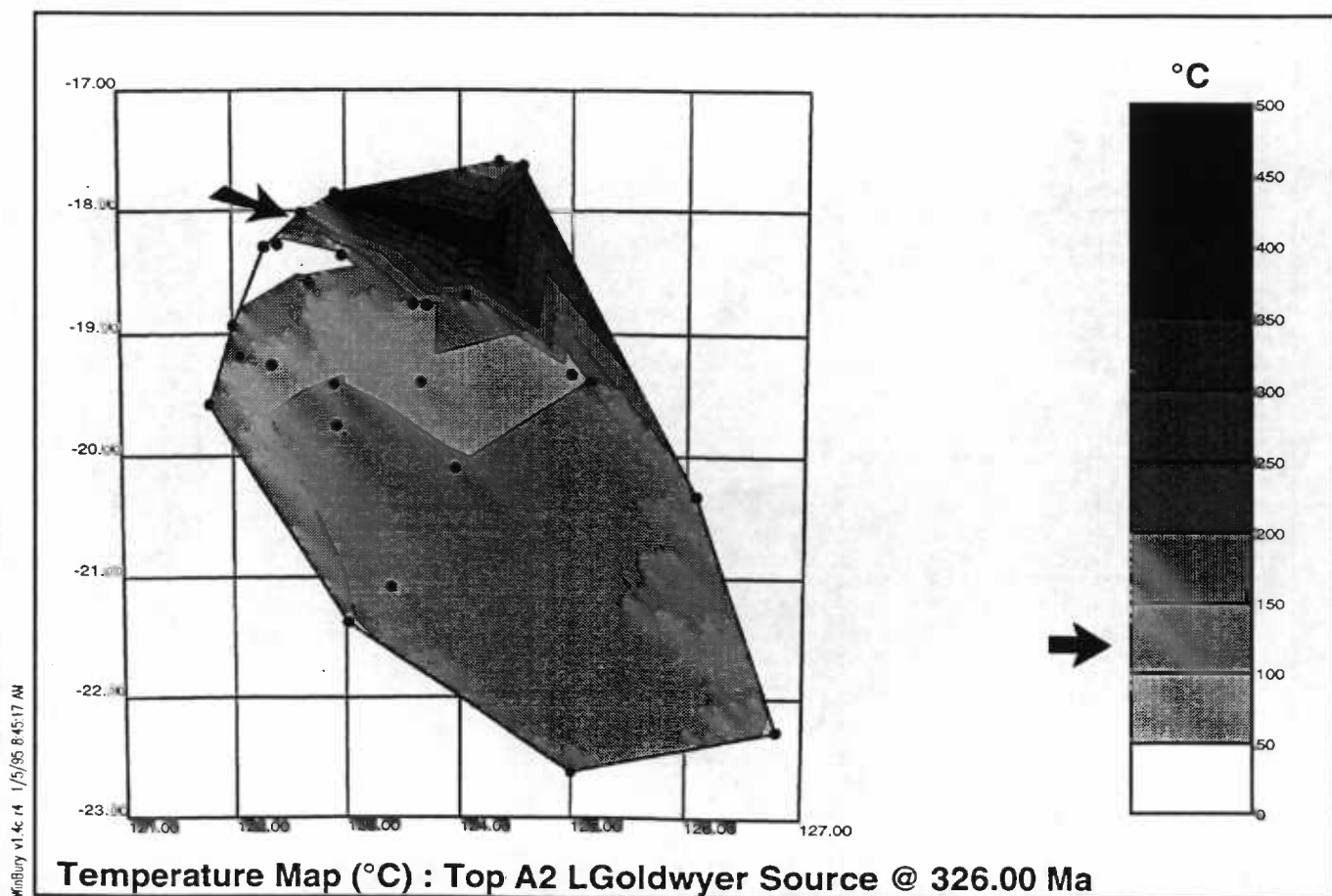
Appendix E-2, Figure 9



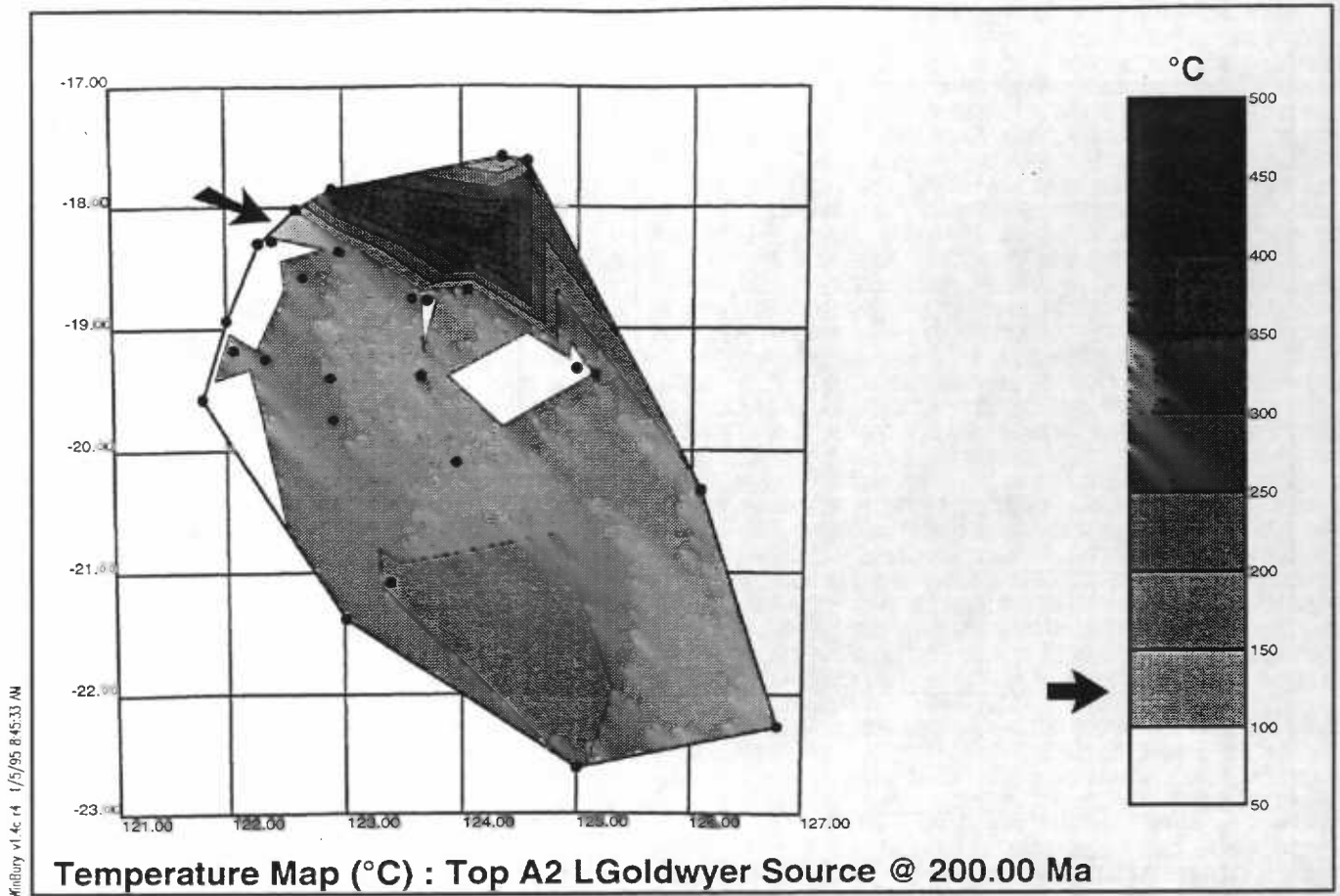
Appendix E-2, Figure 10



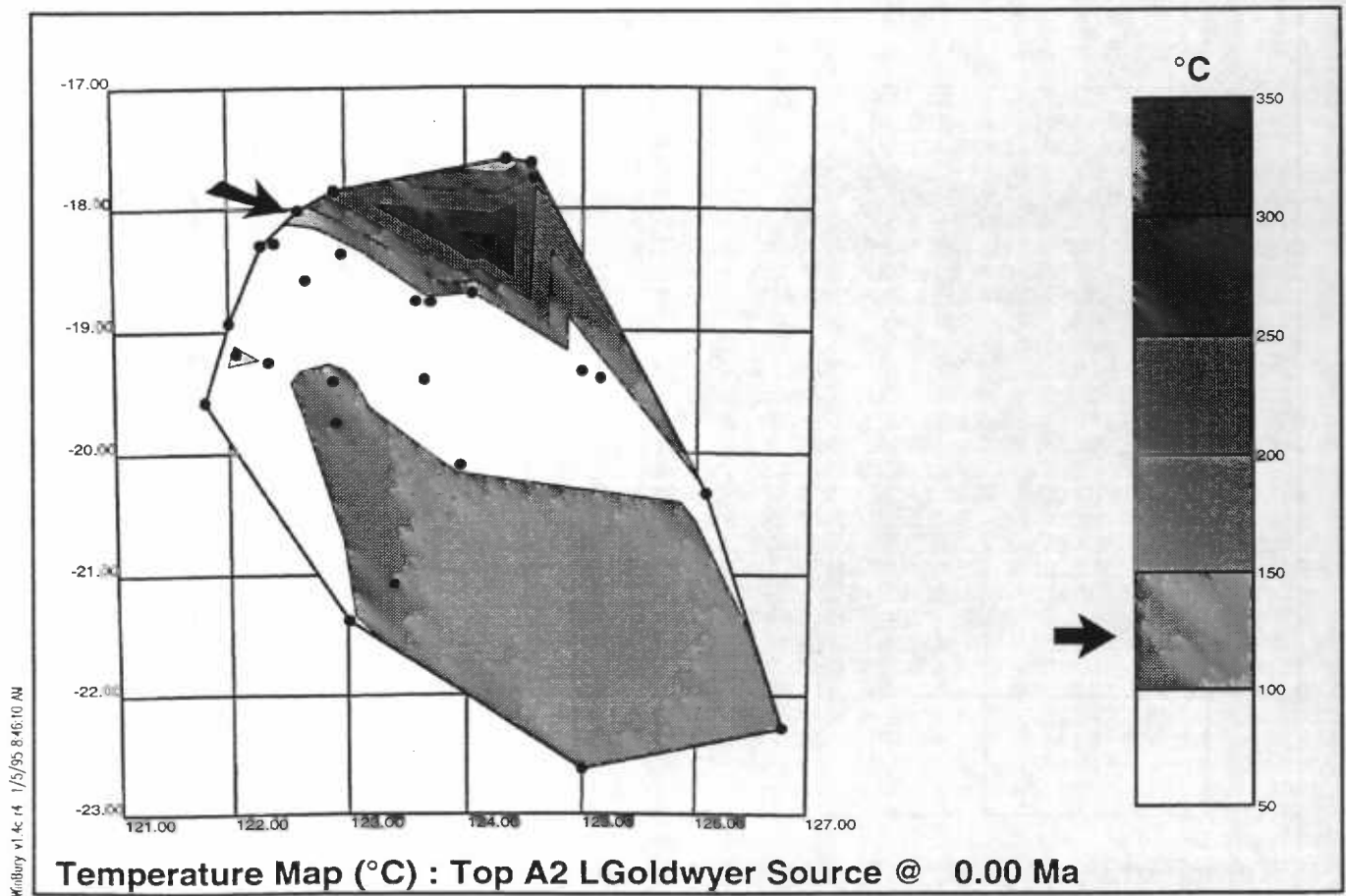
Appendix E-2, Figure 11



Appendix E-2, Figure 12



Appendix E-2, Figure 13



Appendix E-2, Figure 14

APPENDIX E-3. Upper Supersequence A2 Source Interval (upper Goldwyer Formation)

This Appendix comprises Hydrocarbon Generation Plots and Maturation (Temperature) Maps for the Upper Supersequence A2 (Upper Goldwyer Formation) source interval.

Hydrocarbon Generation Plots are presented for the following wells:

- Legend 1 - Oil (in situ)
2 - Oil (expelled)
3 - Gas (in situ)
4 - Gas (expelled)
5 - Residue

Acacia-2

Figure 1

Dodonea-1

Figure 2

Matches Springs-1

Figure 3

Maturation (Temperature) Maps are presented for times immediately prior to major basin structuring. Arrows indicate peak maturation temperature.

410 Ma (Prices Creek Movement)

Figure 4 (immature throughout basin)

326 Ma (Meda Transpression)

Figure 5

200 Ma (Fitzroy Transpression)

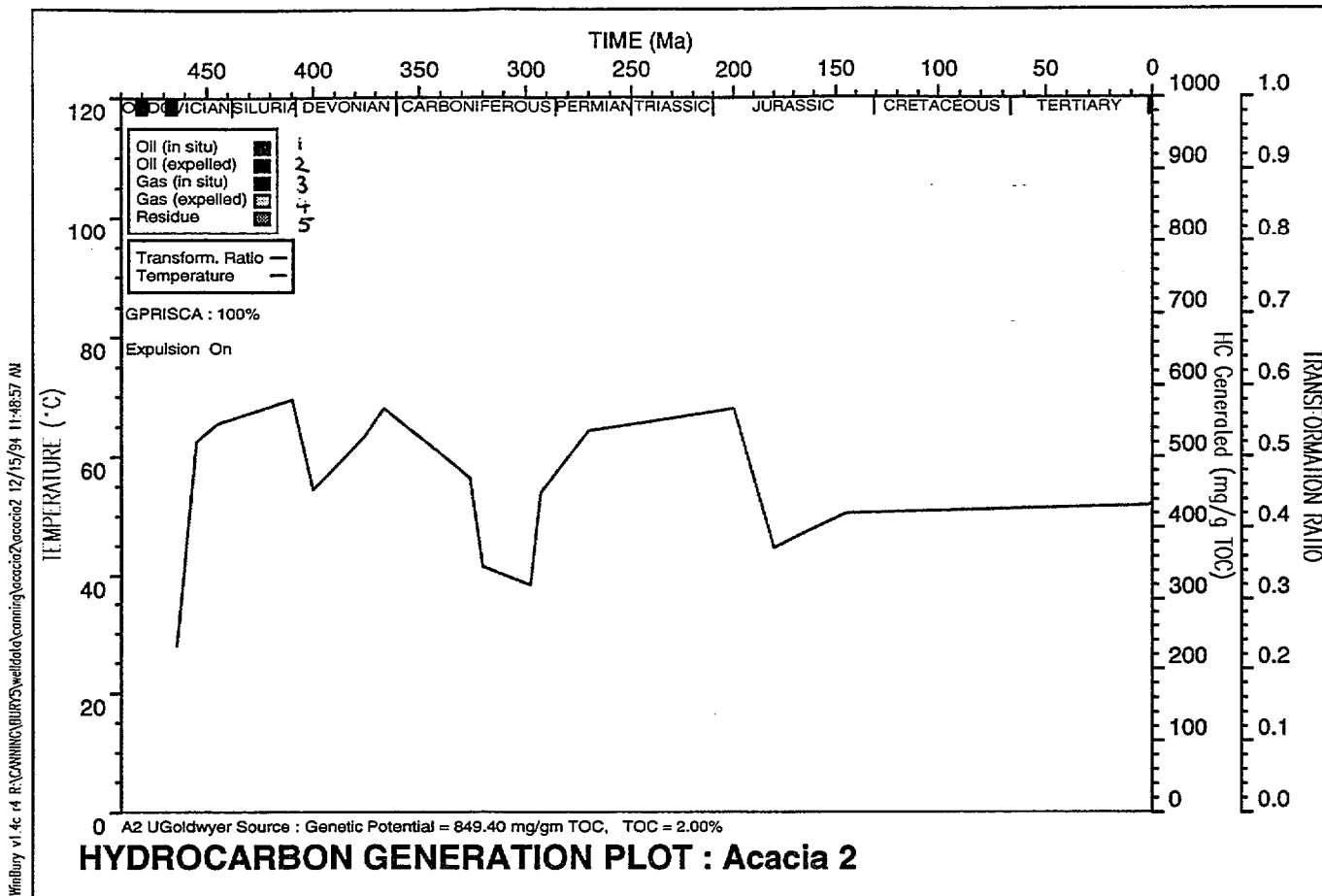
Figure 6

0 Ma (Present day)

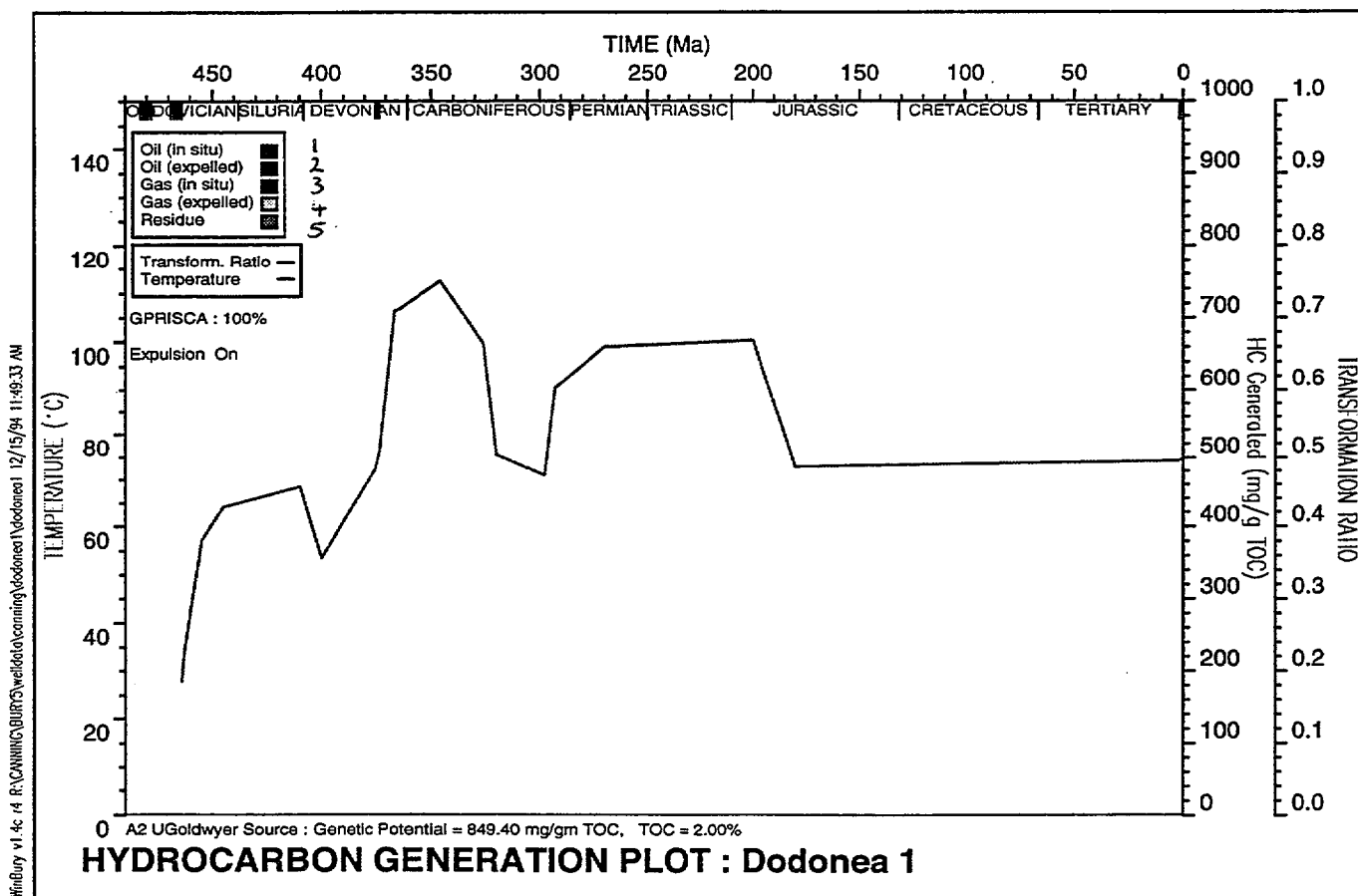
Figure 7



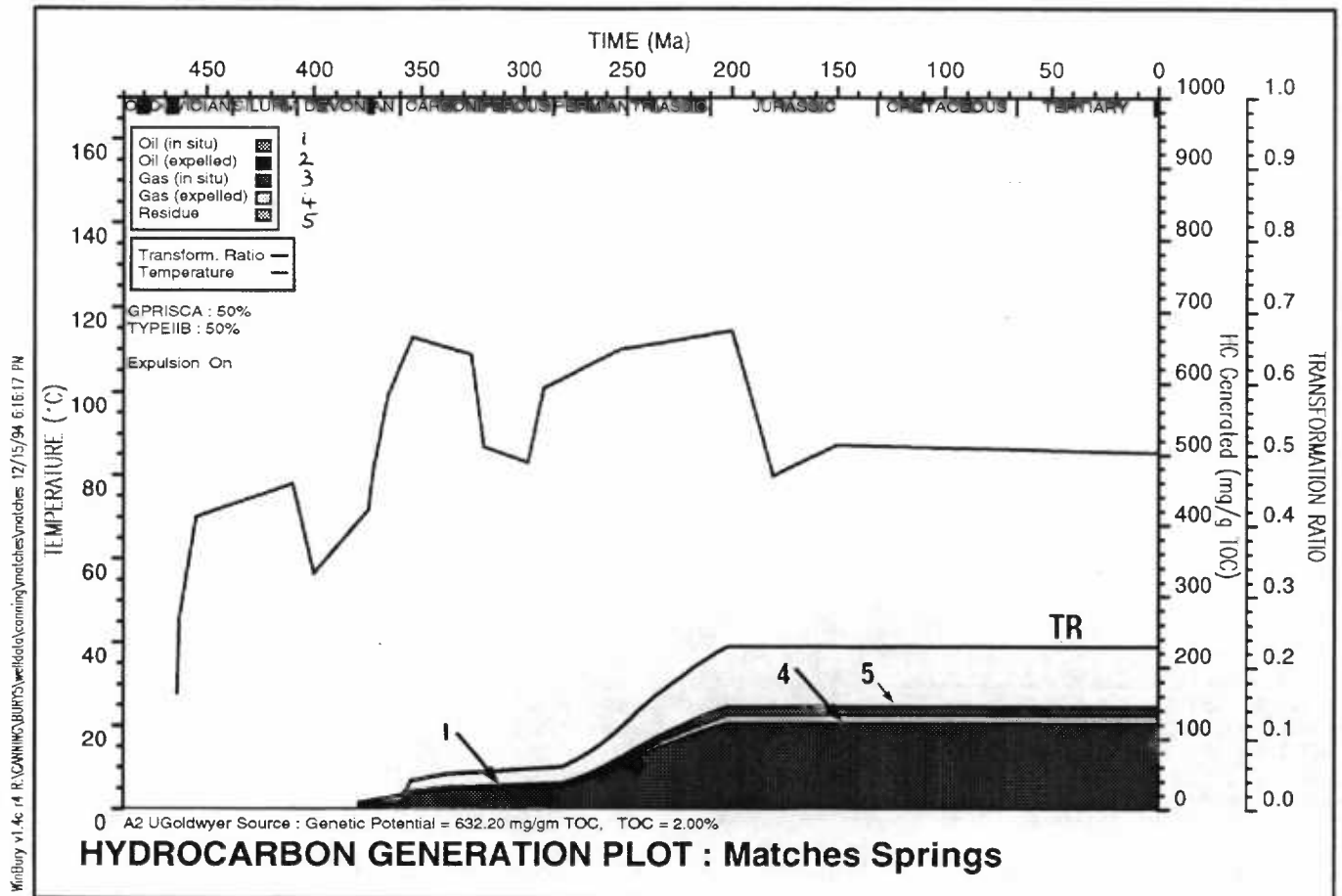
* R 9 4 0 6 7 0 8 *



Appendix E-3, Figure 1



Appendix E-3, Figure 2

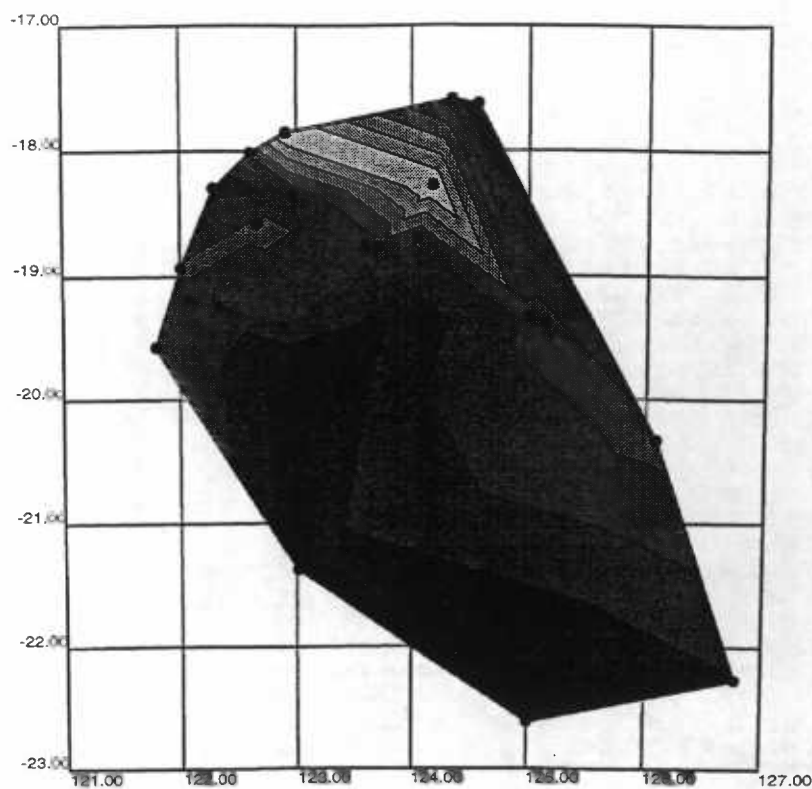


Appendix E-3, Figure 3



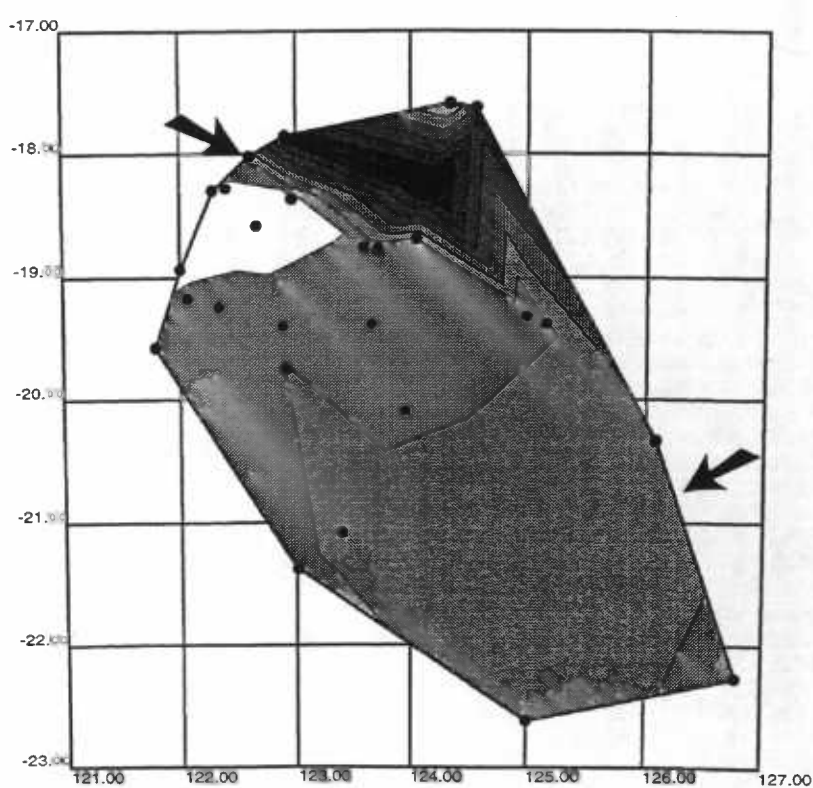
* R 9 4 0 6 7 0 9 *

Windbury v1.4c.14 1/9/95 2:44:36 PM

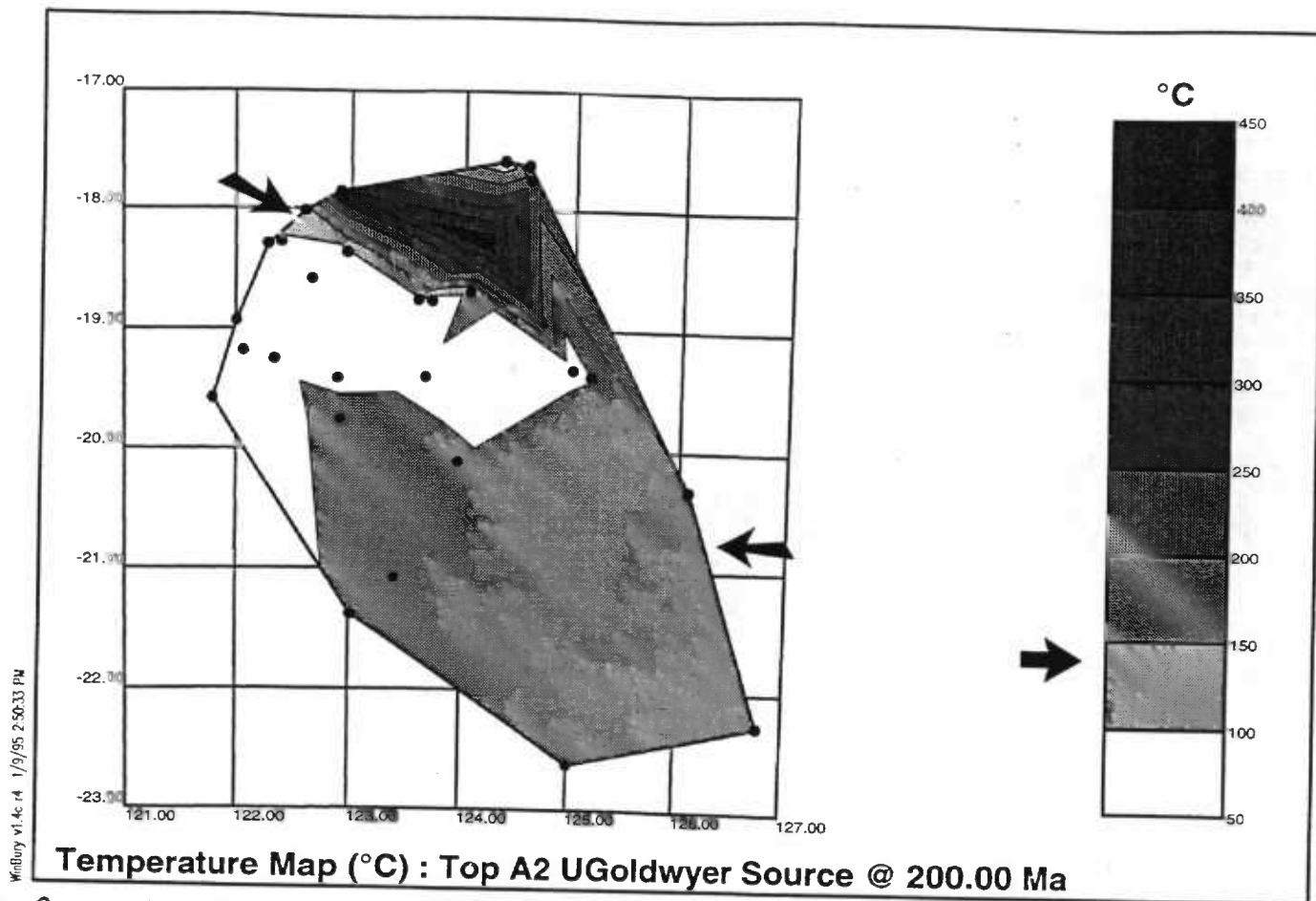


Appendix E-3, Figure 4

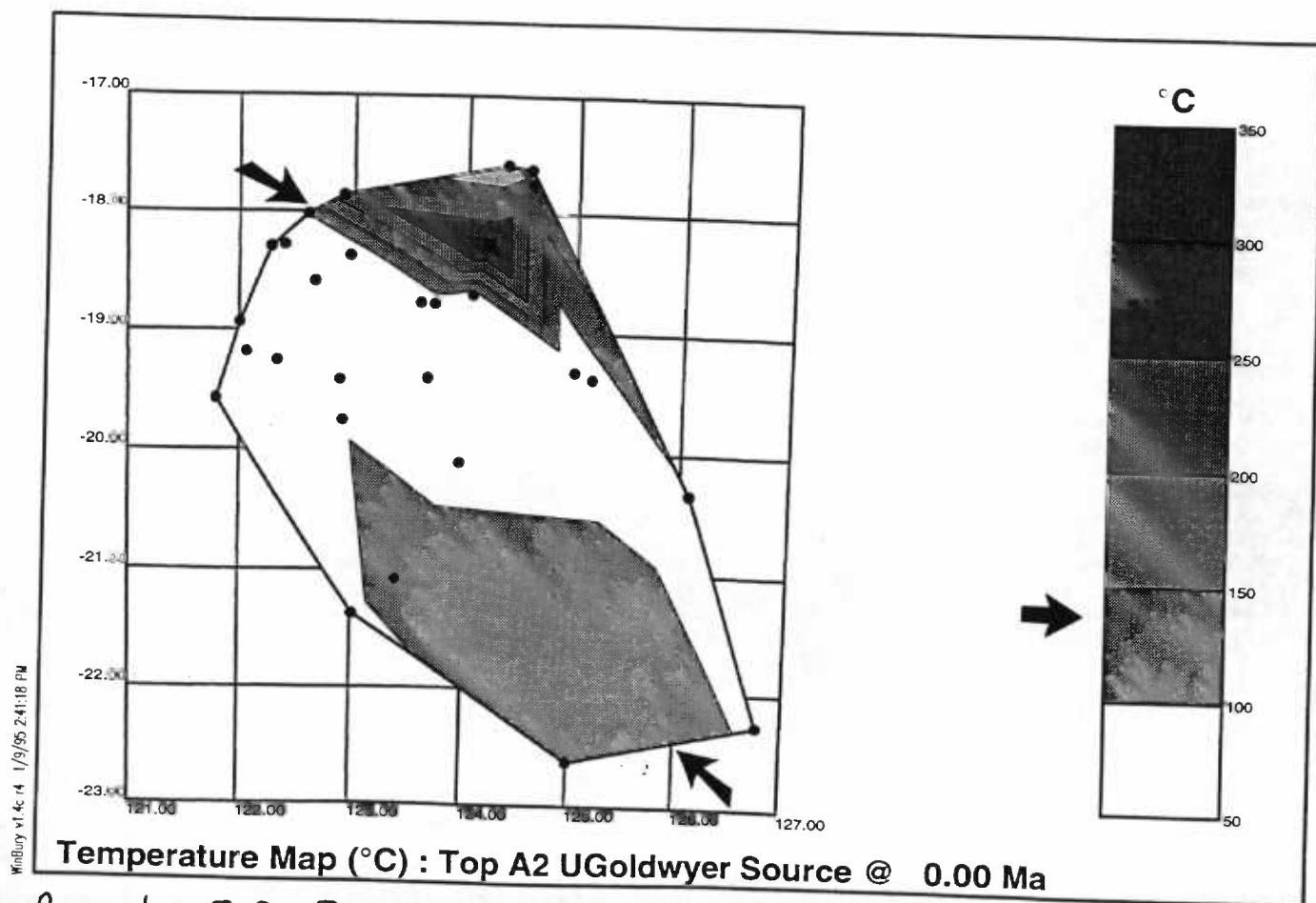
Windbury v1.4c.14 1/9/95 2:43:28 PM



Appendix E-3, Figure 5



Appendix E-3, Figure 6



Appendix E-3, Figure 7

APPENDIX E-4. Lower Supersequence B1 Source Interval (Bongabinni Formation)

This Appendix comprises a Hydrocarbon Generation Plot for the Lower Supersequence B1 (Bongabinni Formation) source interval.

Hydrocarbon Generation Plots are presented for the following wells:

- Legend
- 1 - Oil (in situ)
 - 2 - Oil (expelled)
 - 3 - Gas (in situ)
 - 4 - Gas (expelled)
 - 5 - Residue

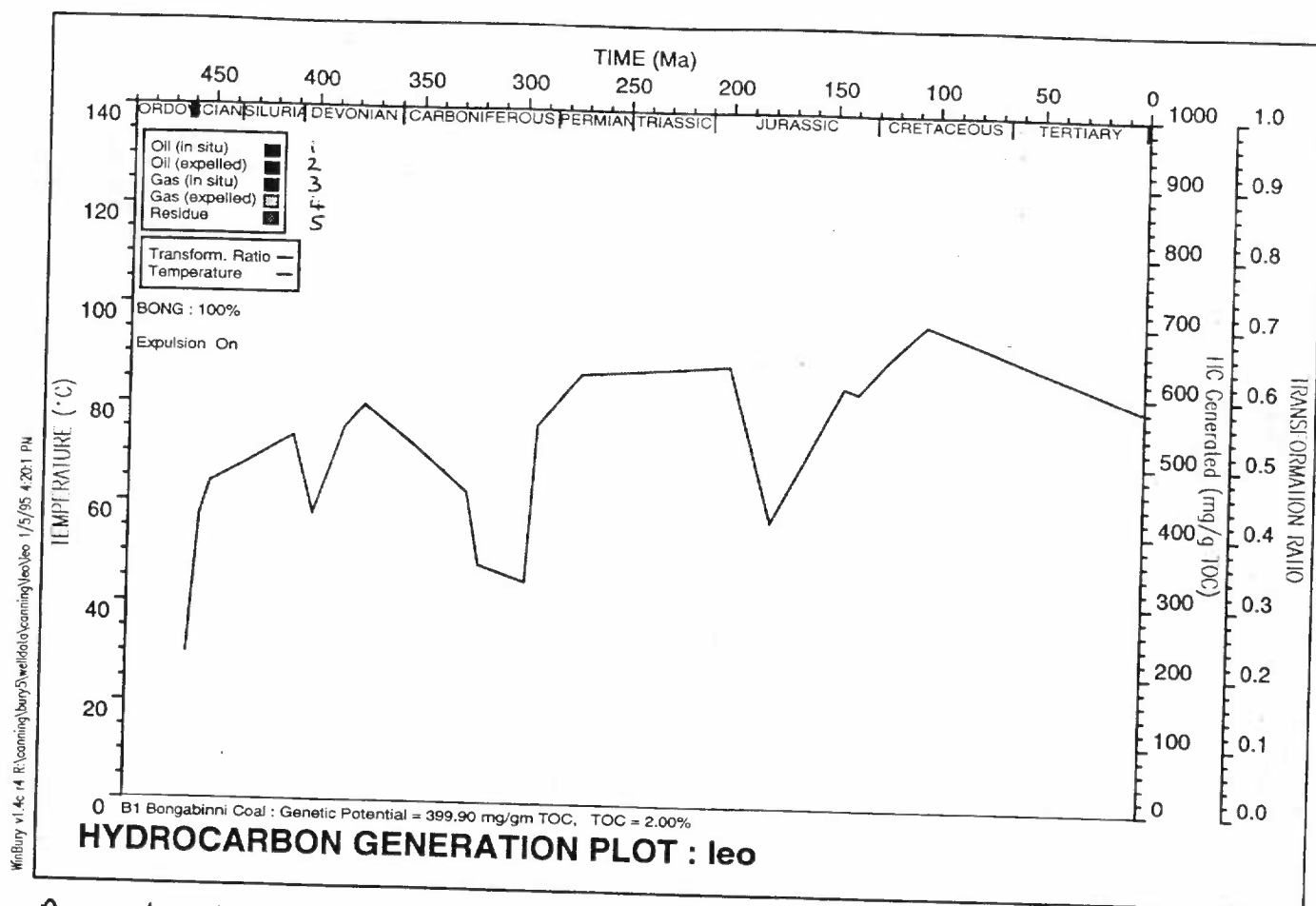
Leo-1

Figure 1

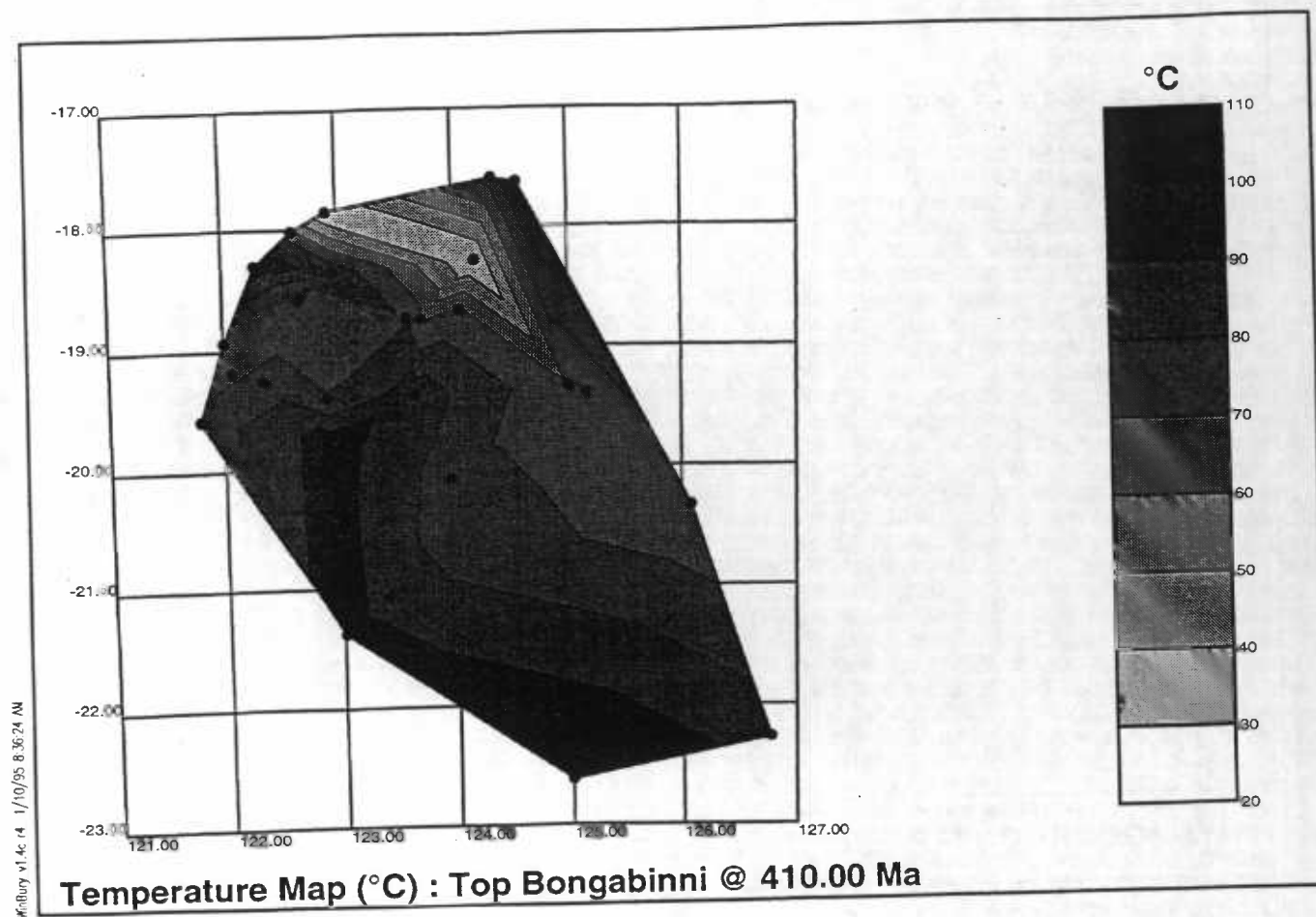
Maturation (Temperature) Maps are presented for times immediately prior to major basin structuring. Arrows indicate peak maturation temperature.

410 Ma (Prices Creek Movement)
326 Ma (Meda Transpression)
200 Ma (Fitzroy Transpression)
0 Ma (Present day)

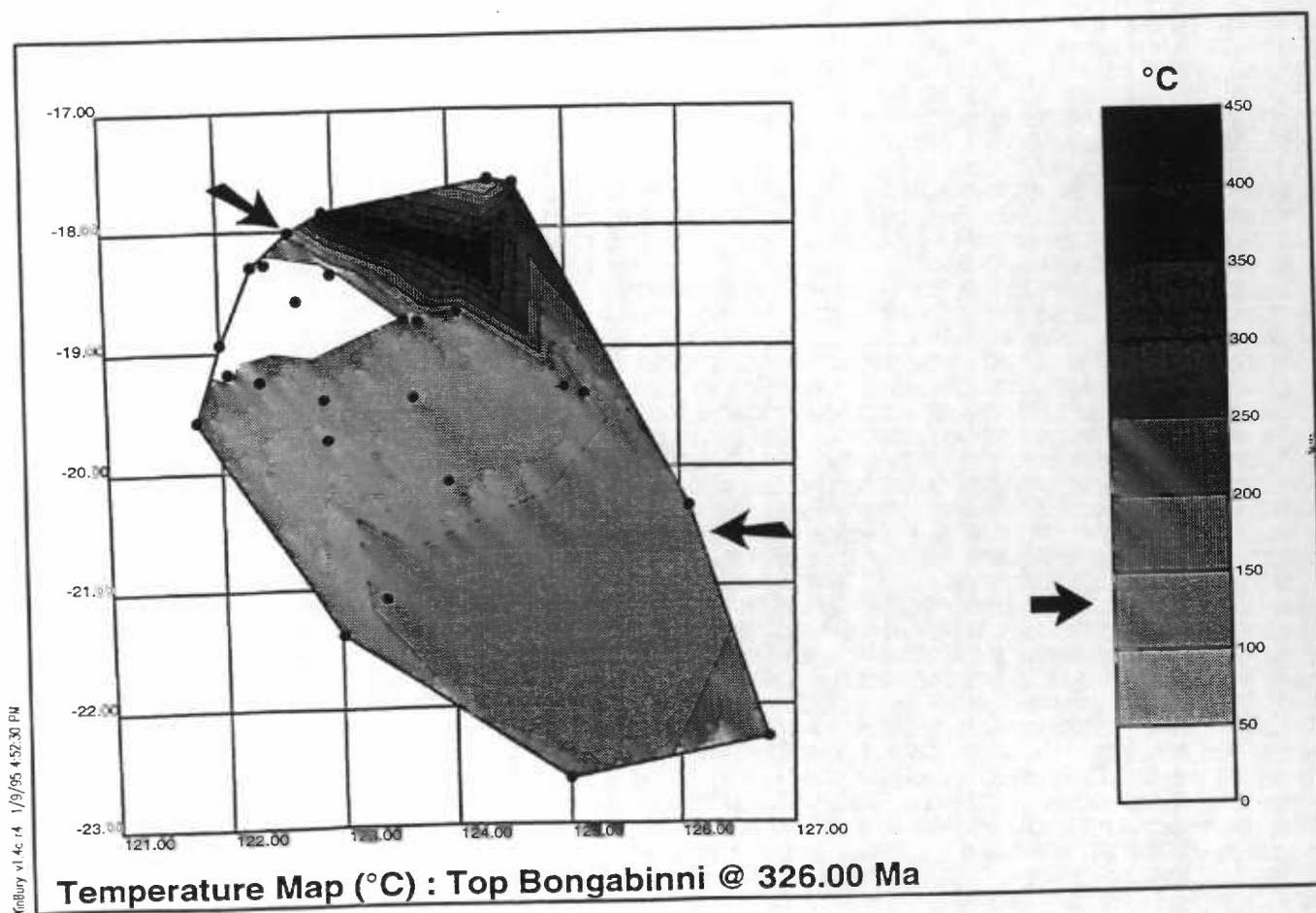
Figure 2 (immature throughout basin)
Figure 3
Figure 4
Figure 5



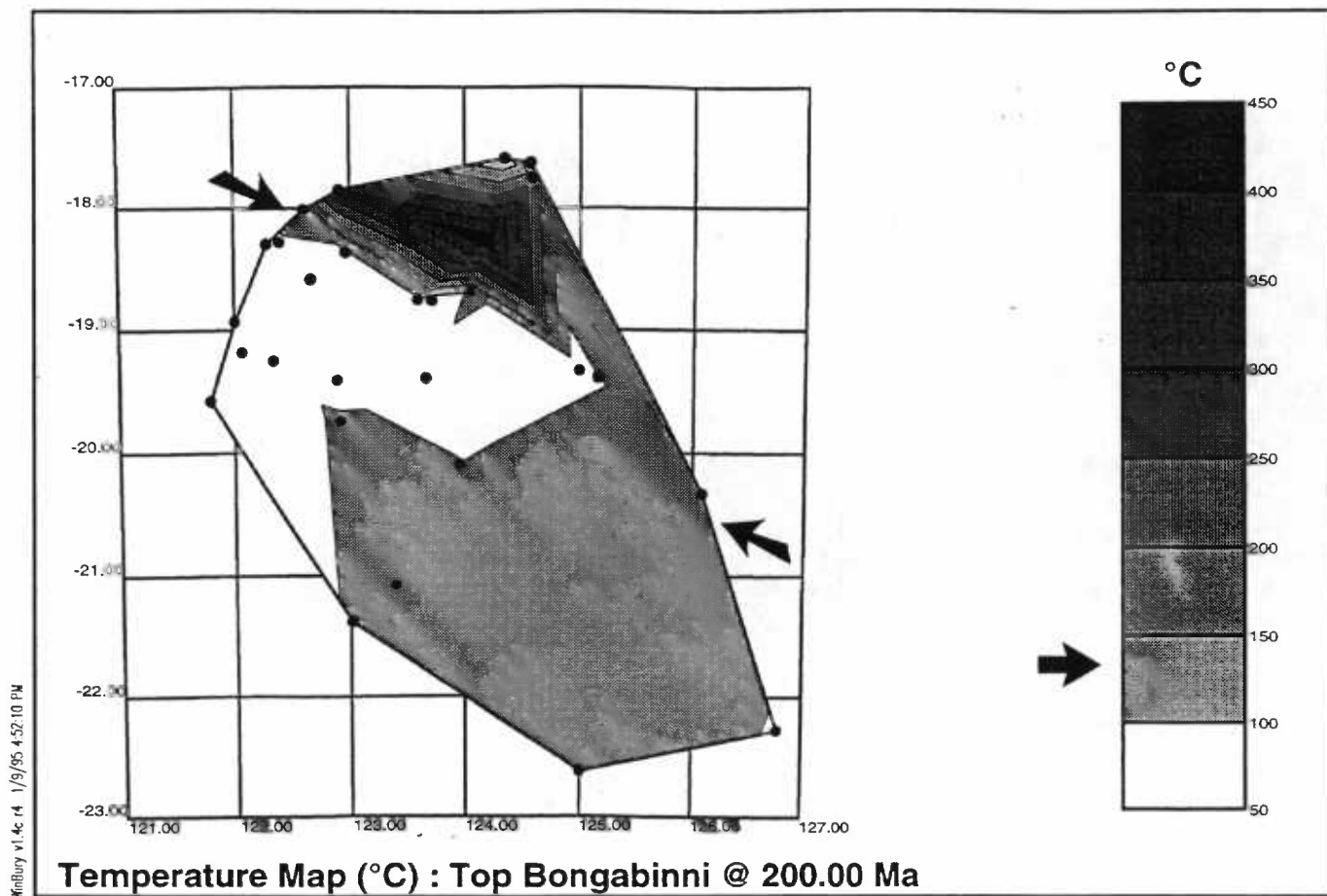
Appendix E-4. Figure 1



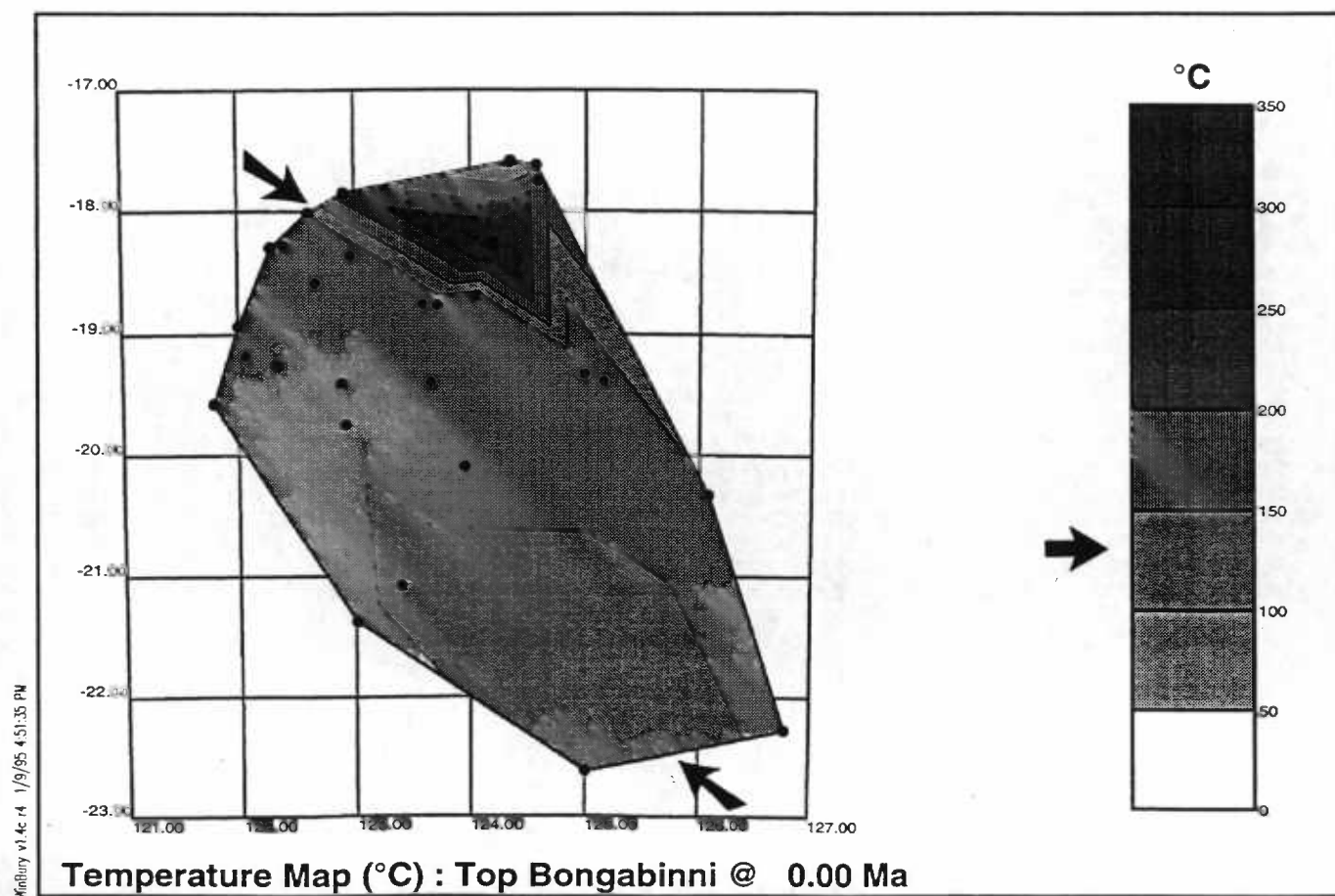
Appendix E-4, Figure 2



Appendix E-4, Figure 3



Appendix E-4, Figure 4



Appendix E-4, Figure 5

APPENDIX E-5. Lower Supersequence D Source Interval
(lower Pillara Cylce, incorporating the Gogo Formation,
Mellinjerie Formation, Mirbelia Dolomite, and Boab
Sandstone)

This Appendix comprises Hydrocarbon Generation Plots and Maturation (Temperature) Maps for the Lower Supersequence D (Gogo Formation, Mellinjerie Formation, Mirbelia Dolomite, and Boab Sandstone) source interval.

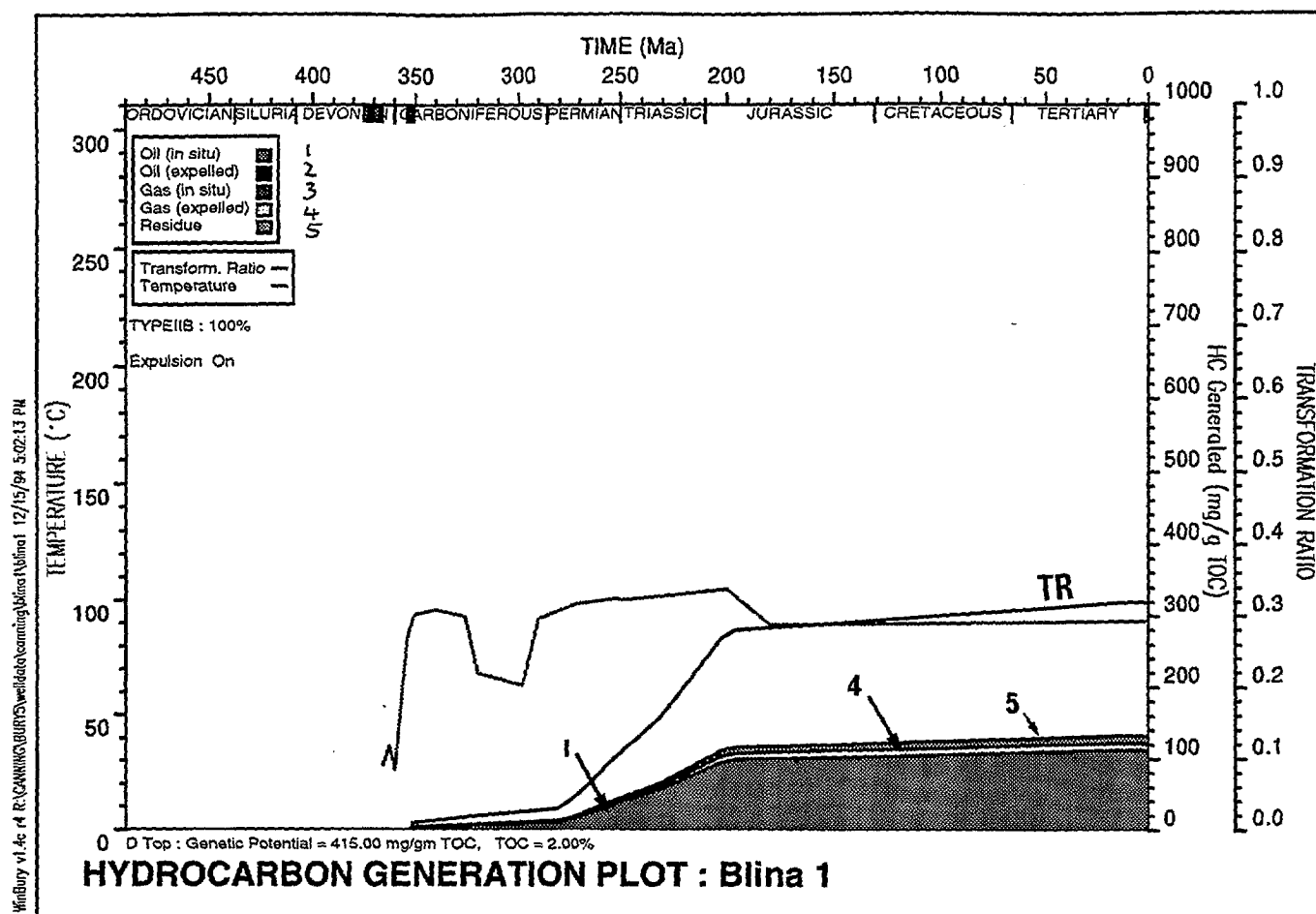
Hydrocarbon Generation Plots are presented for the following wells:

- Legend 1 - Oil (in situ)
 2 - Oil (expelled)
 3 - Gas (in situ)
 4 - Gas (expelled)
 5 - Residue

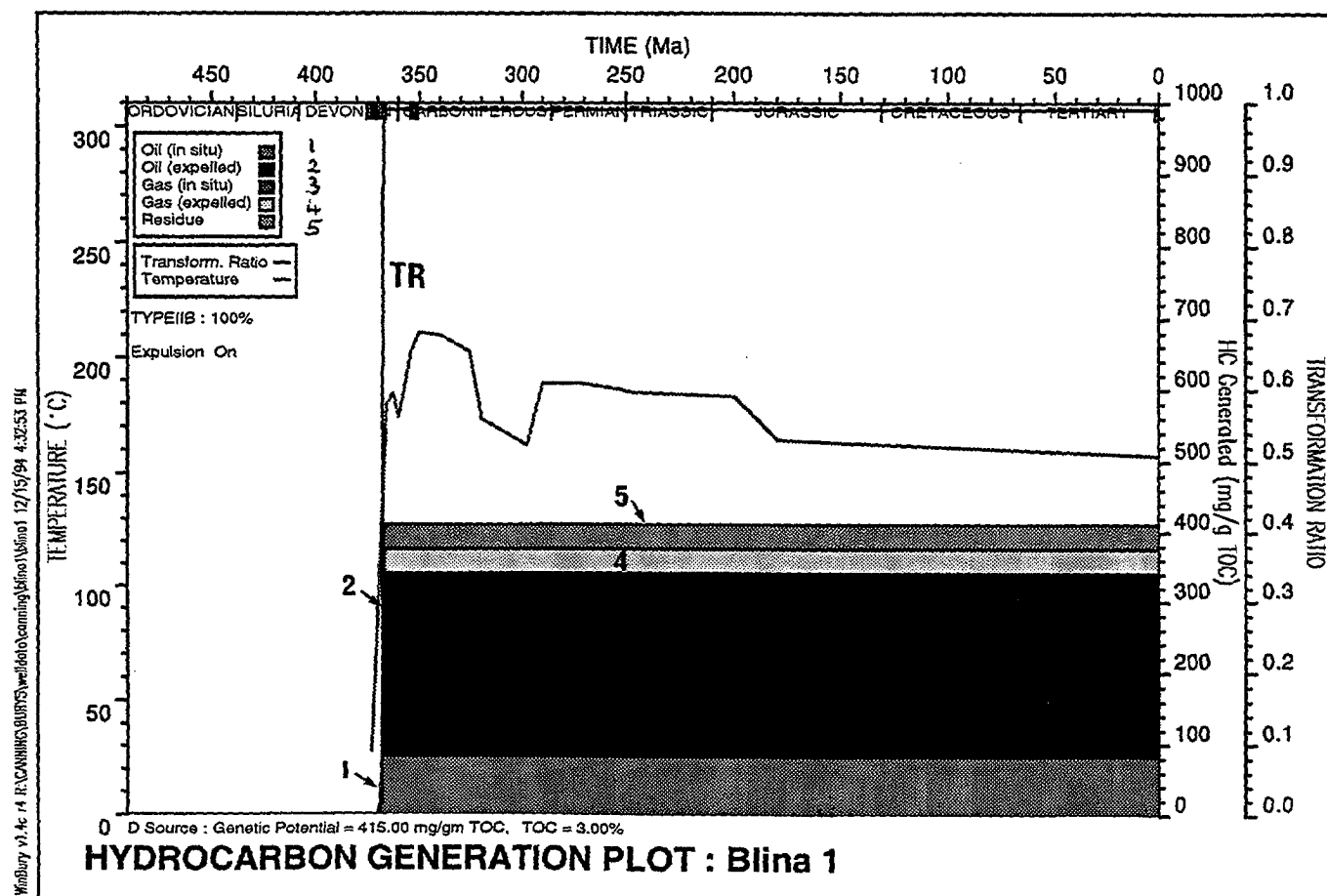
Blina-1 (top Supersequence D)	Figure 1
Blina-1	Figure 2
Dodonea-1	Figure 3
Matches Springs-1	Figure 4
Mimosa-1	Figure 5
Myroodah-1	Figure 6
Percival-1	Figure 7
Sahara-1	Figure 8
Yulleroo-1	Figure 9

Maturation (Temperature) Maps are presented for times immediately prior to major basin structuring. Arrows indicate peak maturation temperature.

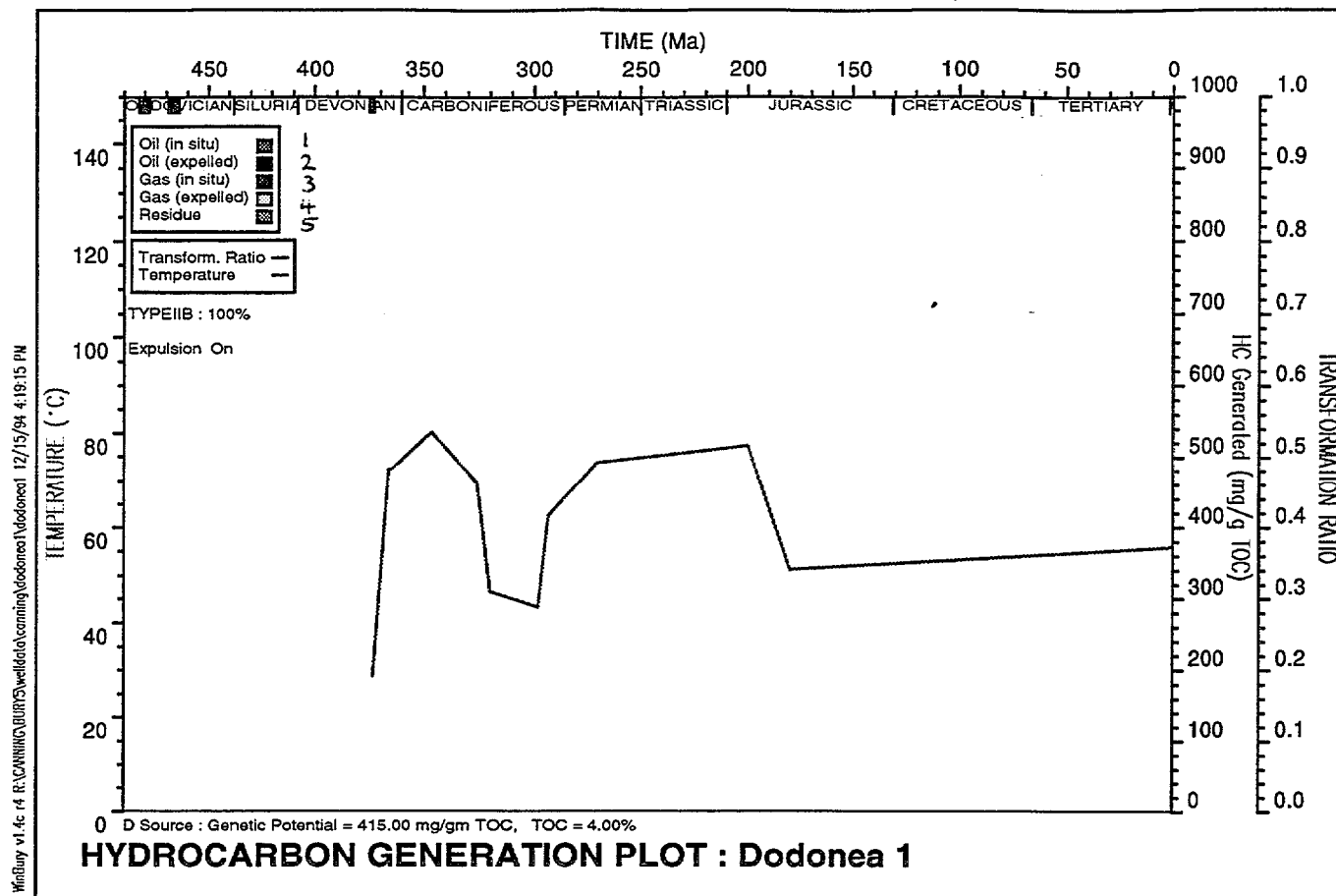
326 Ma (Meda Transpression)	Figure 10
200 Ma (Fitzroy Transpression)	Figure 11
0 Ma (Present day)	Figure 12



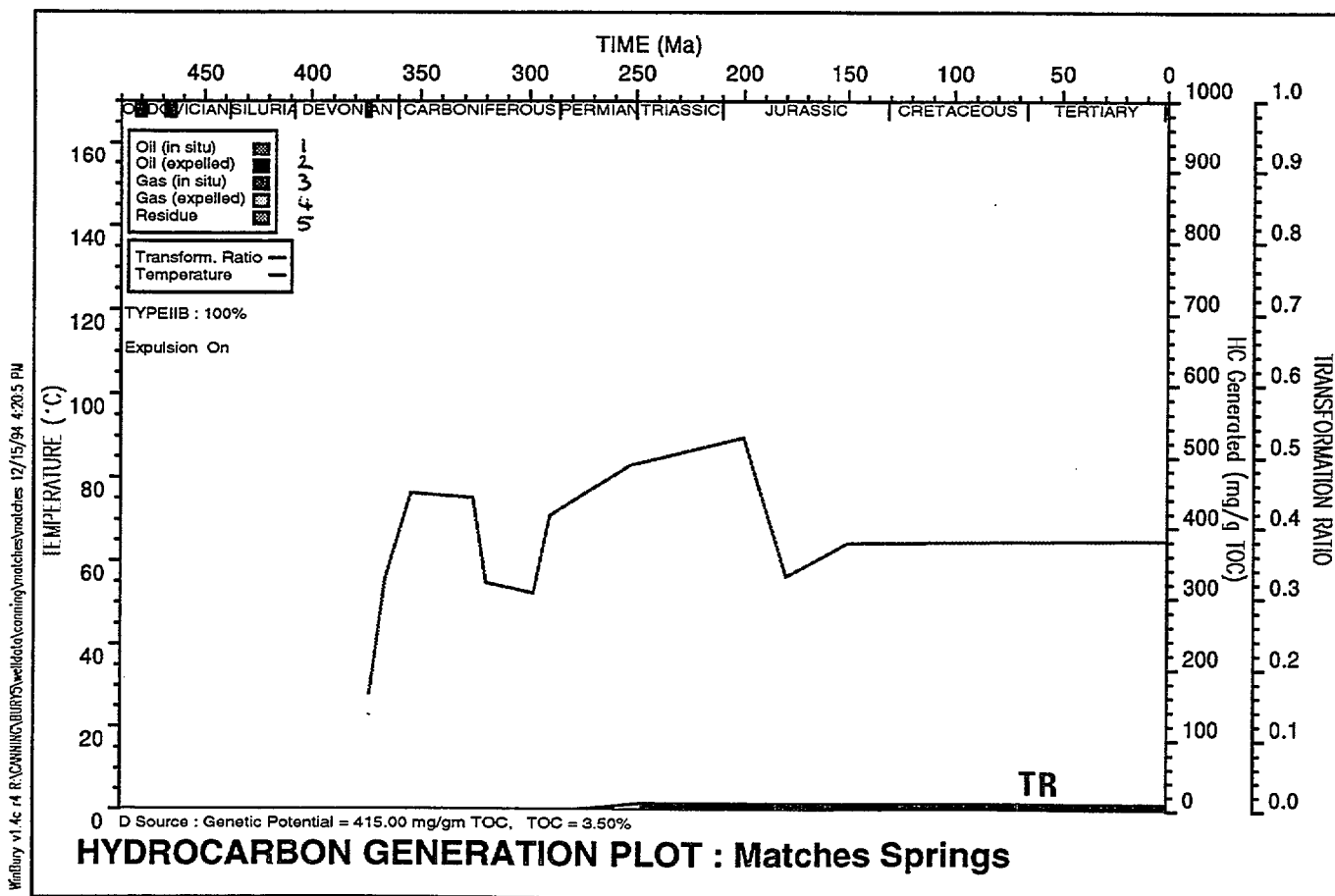
Appendix E-5, Figure 1



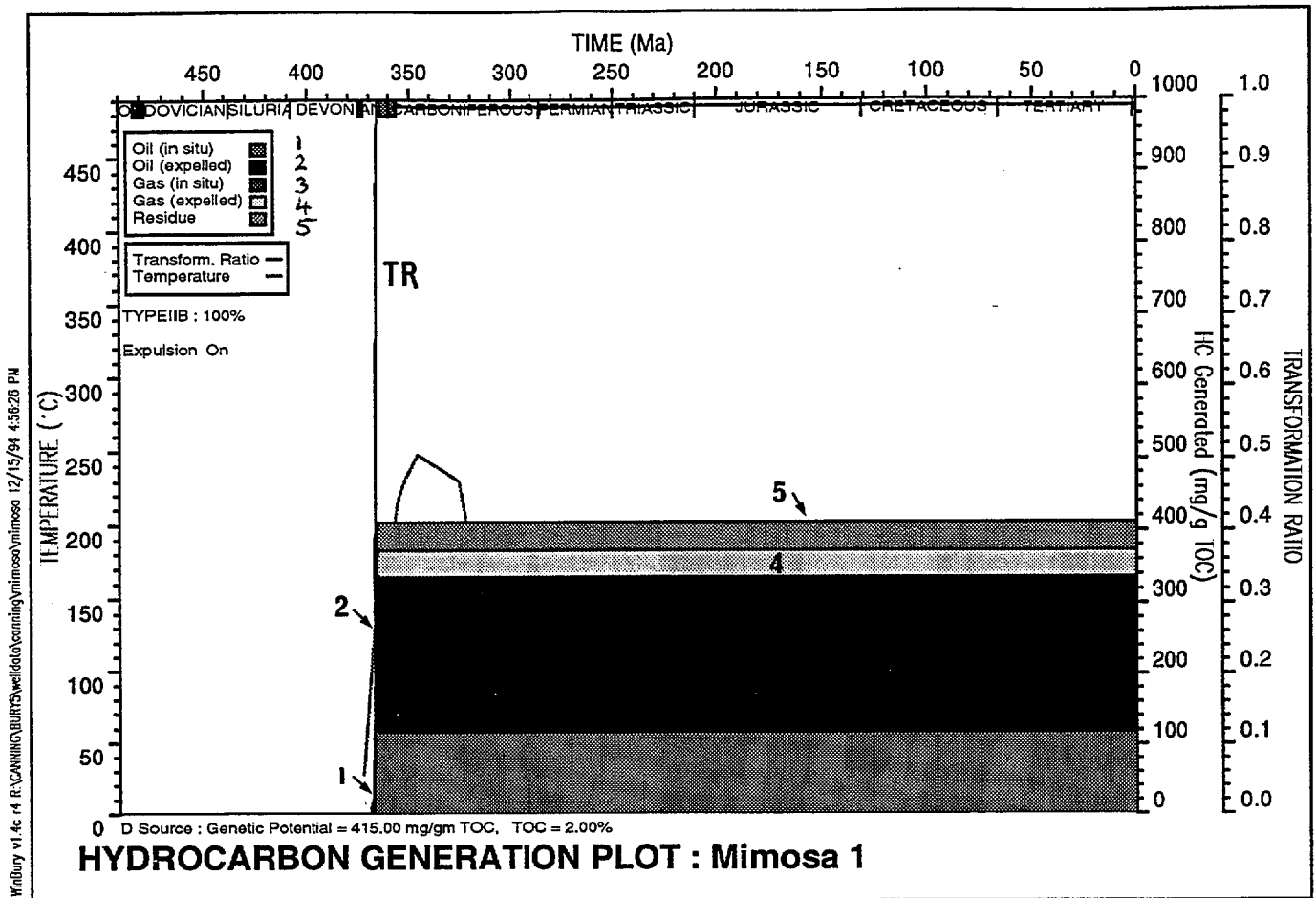
Appendix E-5, Figure 2



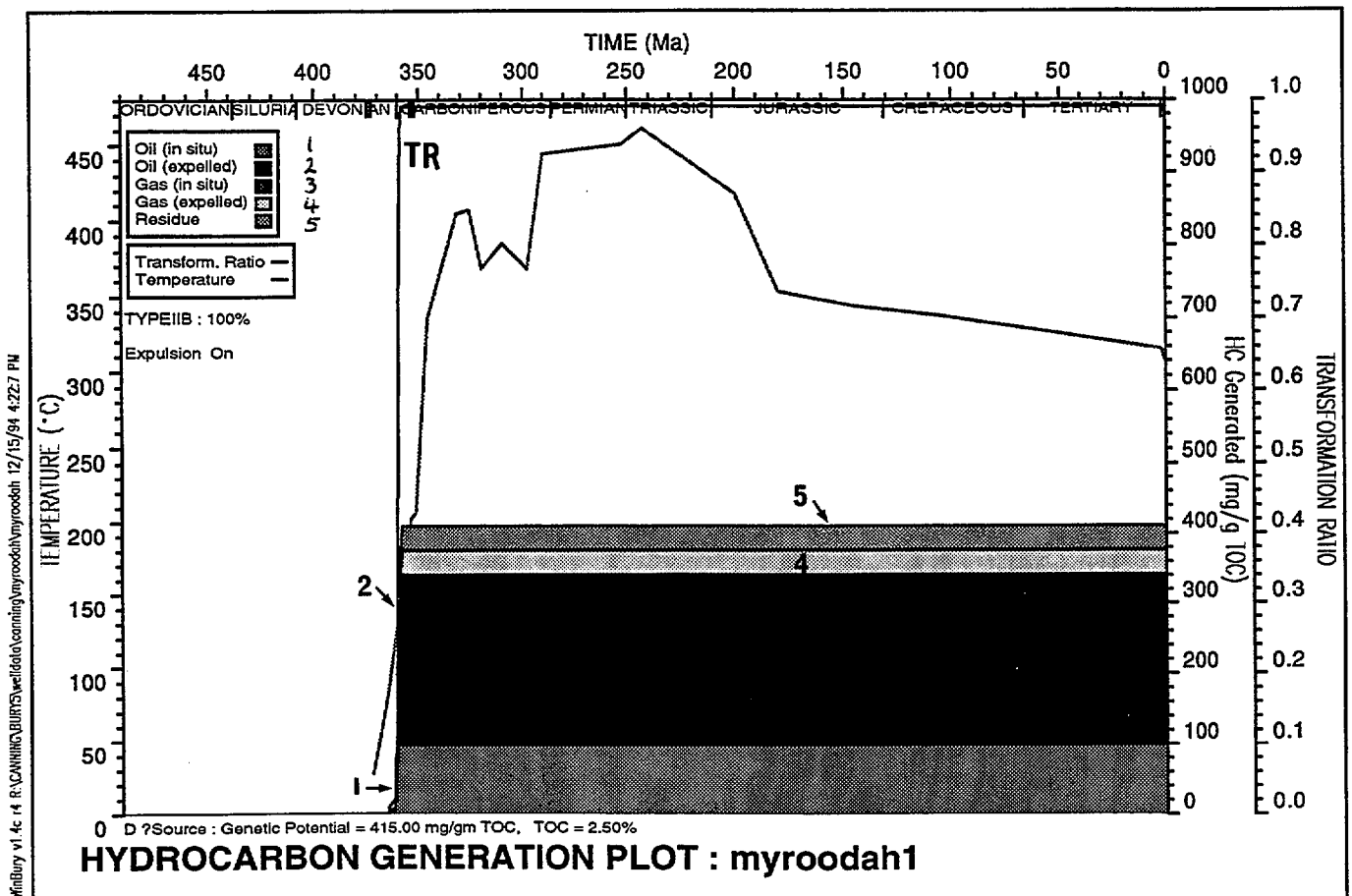
Appendix E-5, Figure 3



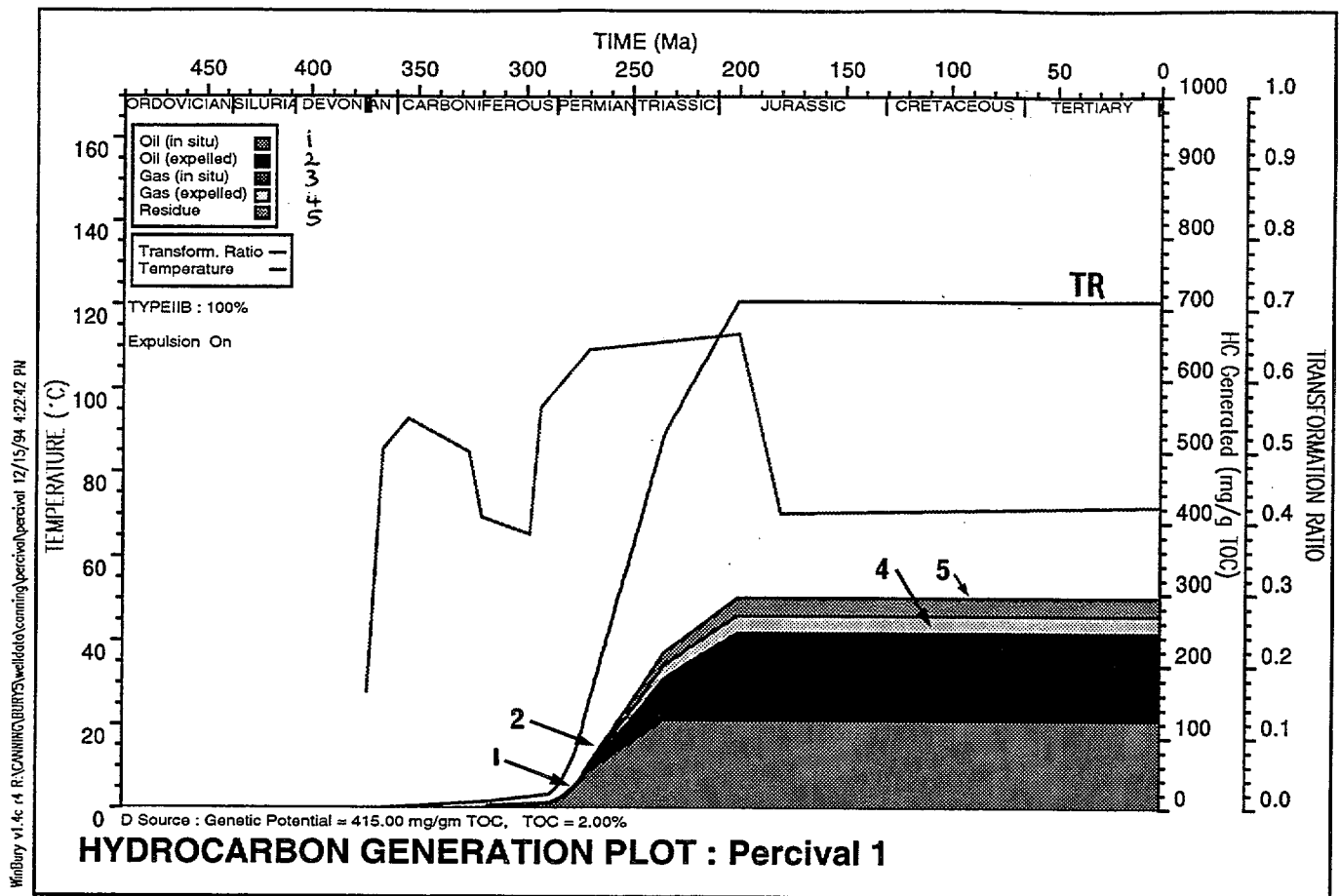
Appendix E-5, Figure 4



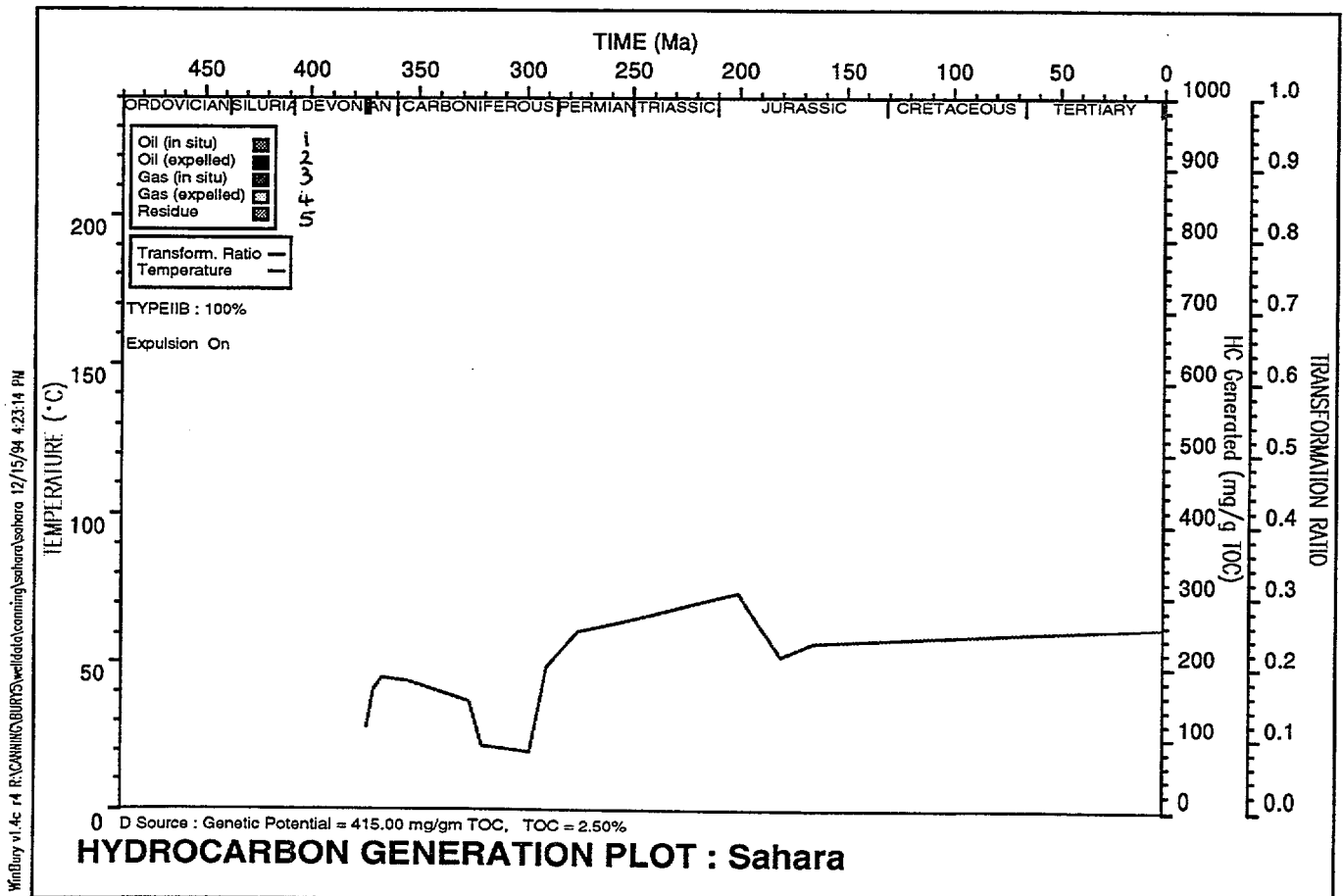
Appendix E-5, Figure 5



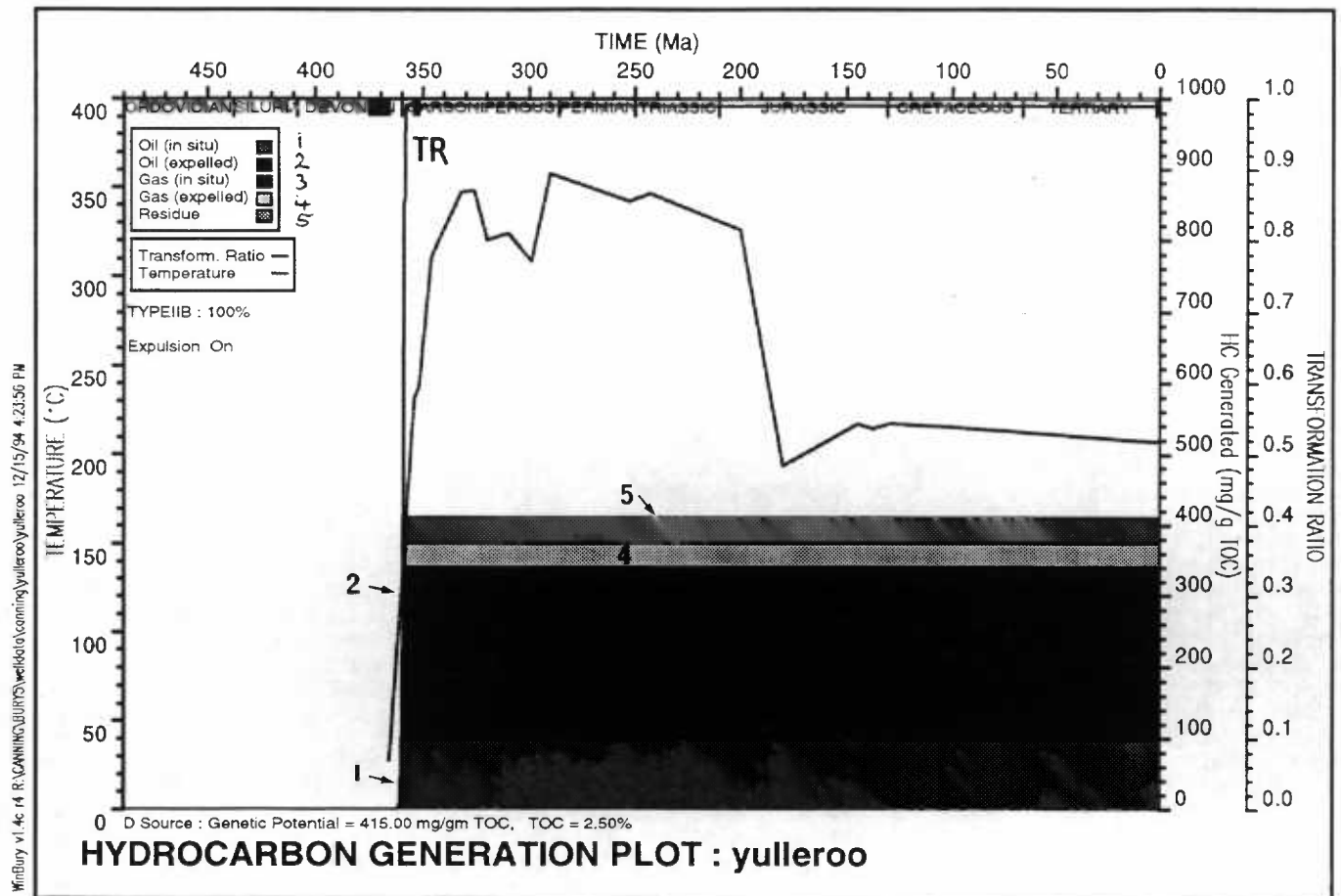
Appendix E-5, Figure 6



Appendix E-5, Figure 7



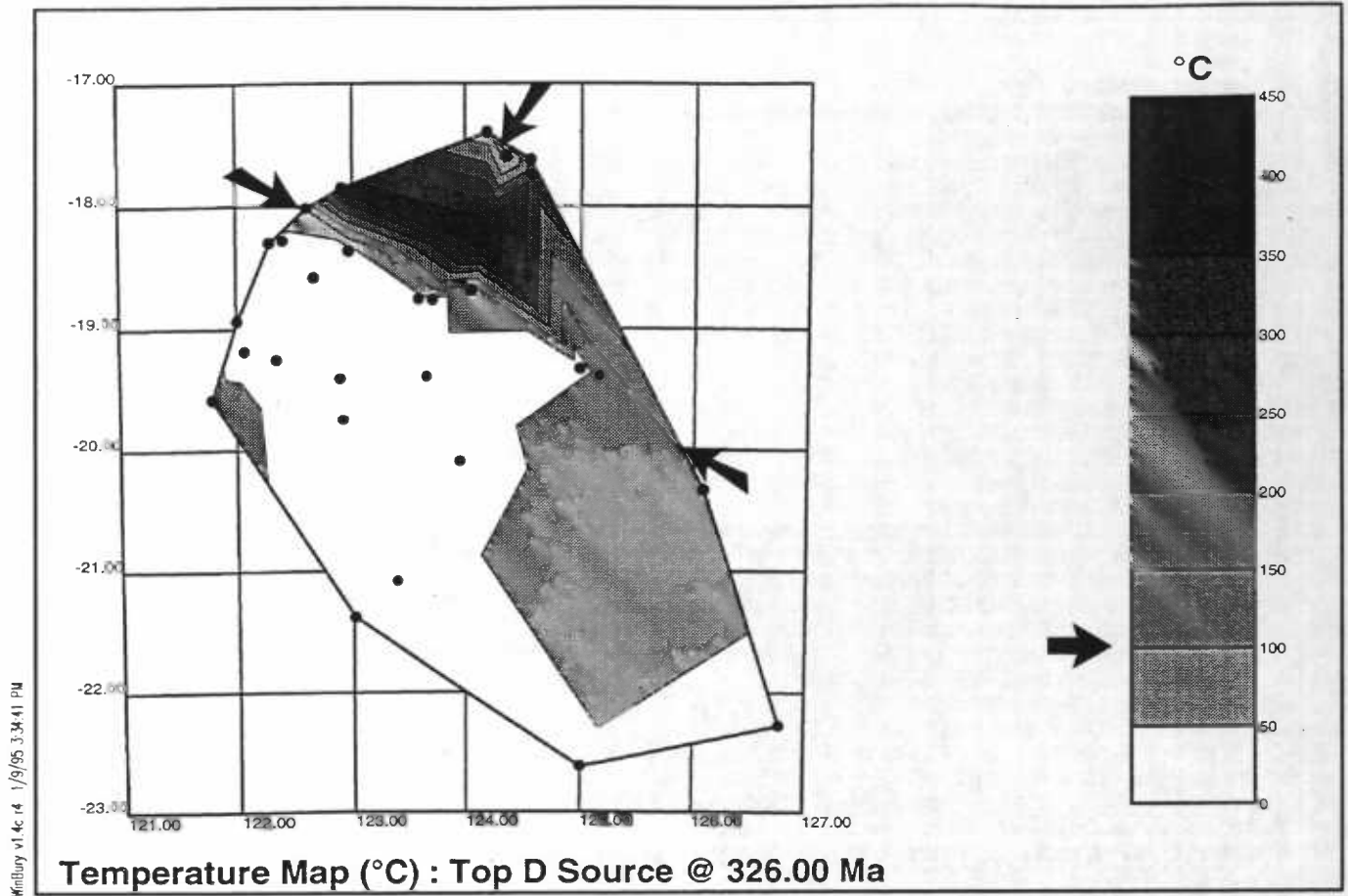
Appendix E-5, Figure 8



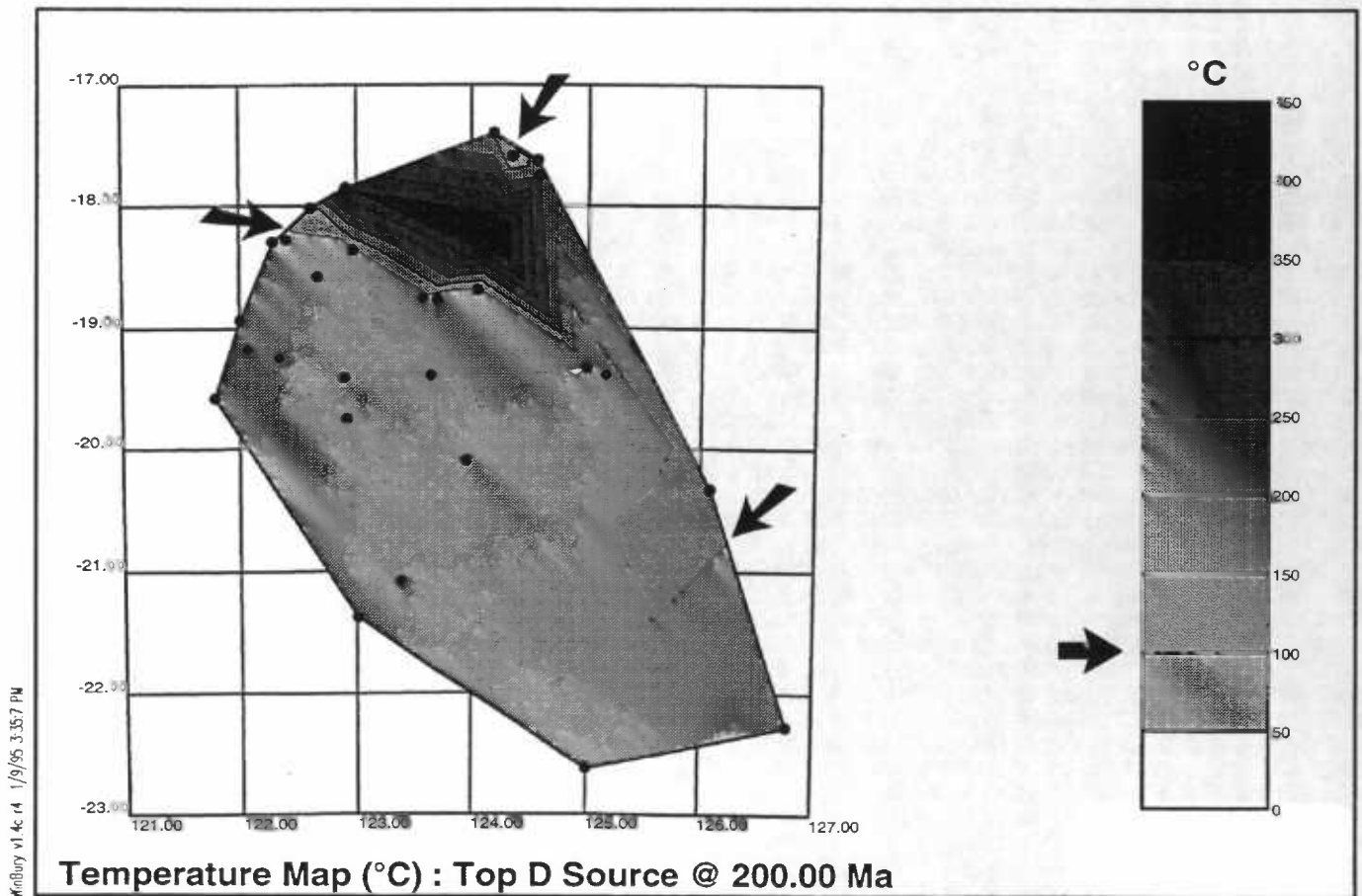
Appendix E-5, Figure 9



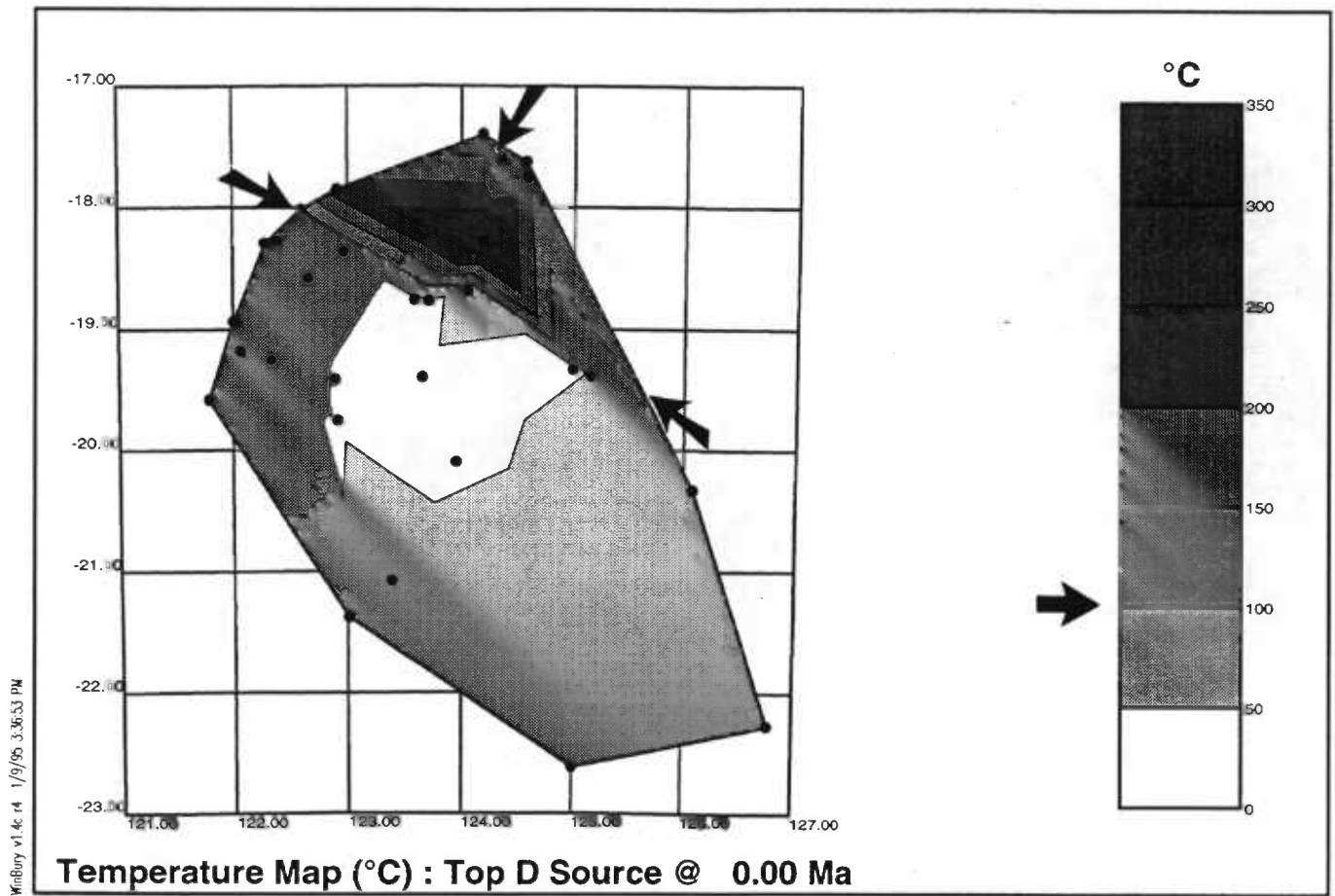
* R 9 4 0 6 7 1 1 *



Appendix E-5, Figure 10



Appendix E-5, Fig 11



Appendix E-5, Figure 12

APPENDIX E-6. Lower Supersequence F Source Interval (lower Laurel Shale)

This Appendix comprises Hydrocarbon Generation Plots and Maturation (Temperature) Maps for the Lower Supersequence F (lower Laurel Shale) source interval.

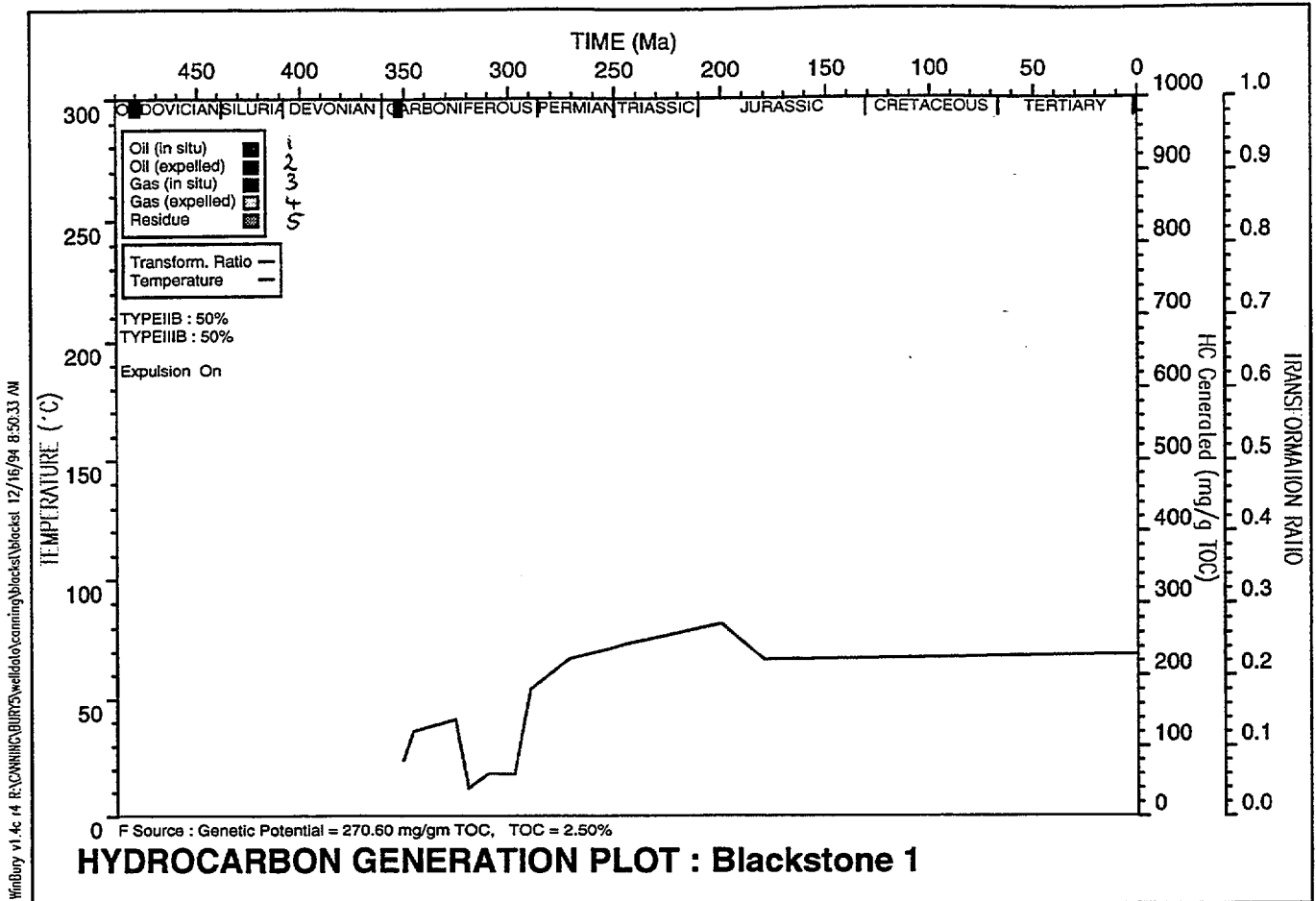
Hydrocarbon Generation Plots are presented for the following wells:

- Legend
- 1 - Oil (in situ)
 - 2 - Oil (expelled)
 - 3 - Gas (in situ)
 - 4 - Gas (expelled)
 - 5 - Residue

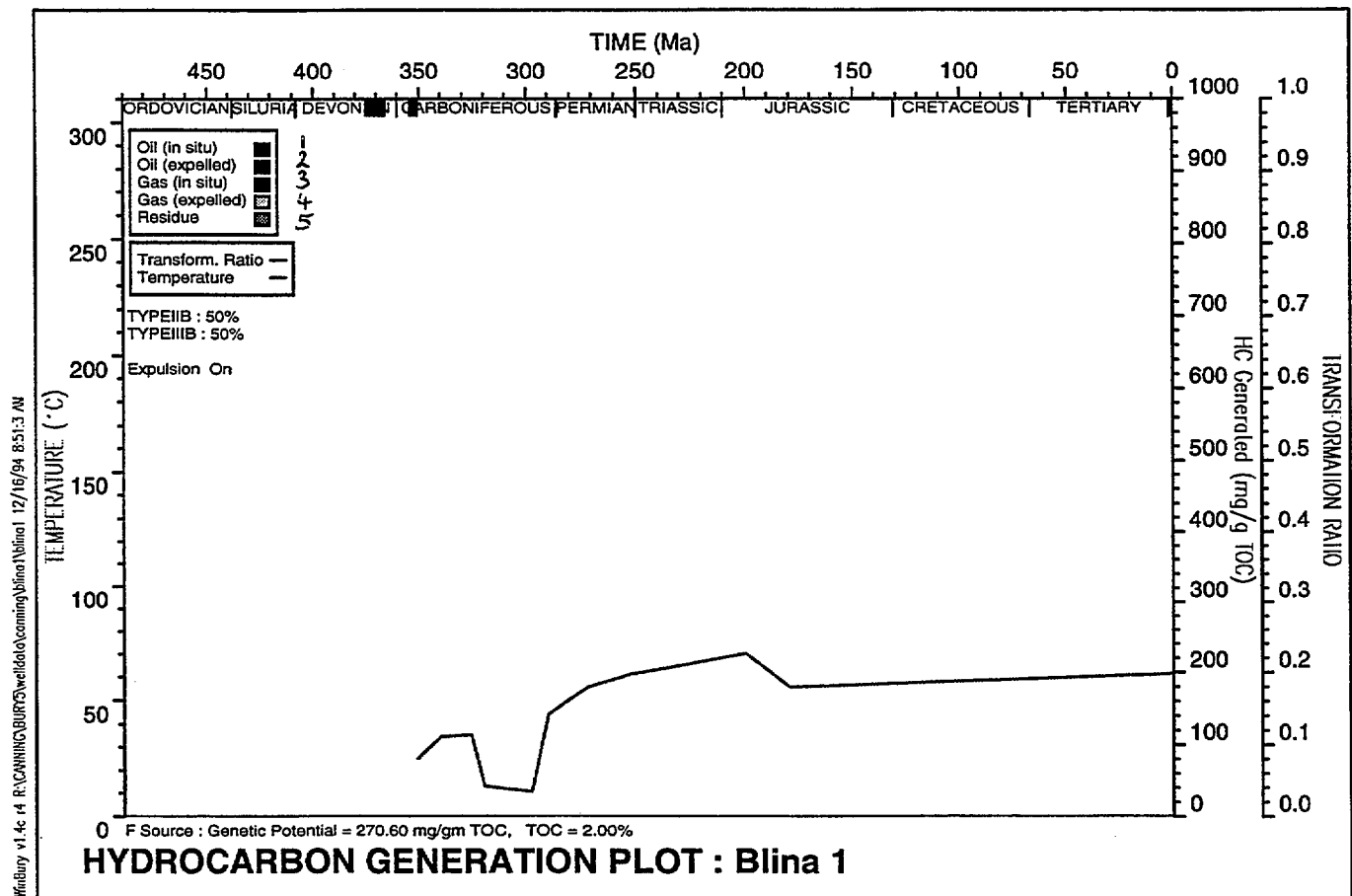
Blackstone-1	Figure 1
Blina-1	Figure 2
Meda-1	Figure 3
Myroodah-1	Figure 4
Yulleroo-1	Figure 5

Maturation (Temperature) Maps are presented for times immediately prior to major basin structuring. Arrows indicate peak maturation temperature.

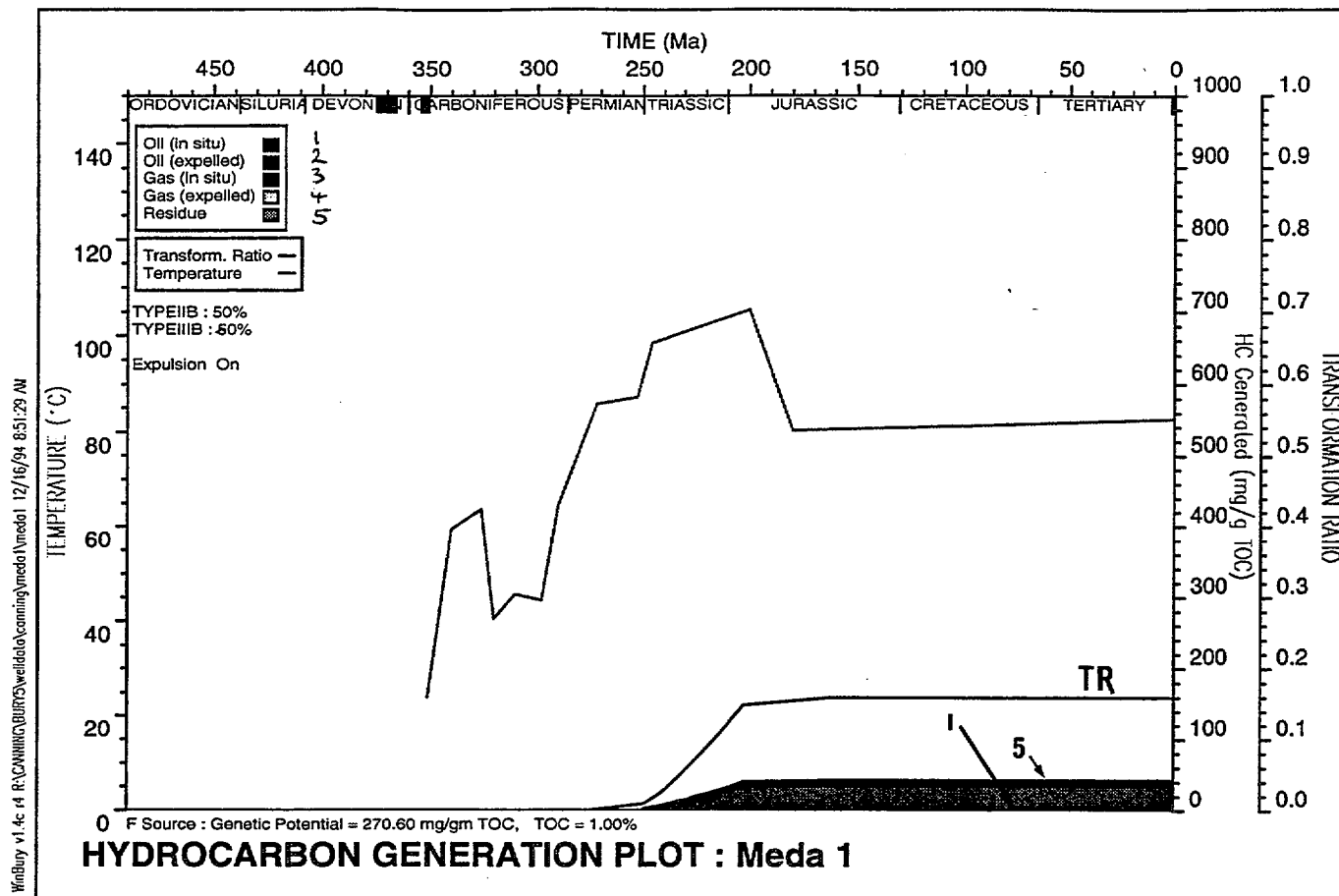
326 Ma (Meda Transpression)	Figure 6
200 Ma (Fitzroy Transpression)	Figure 7
0 Ma (Present day)	Figure 8



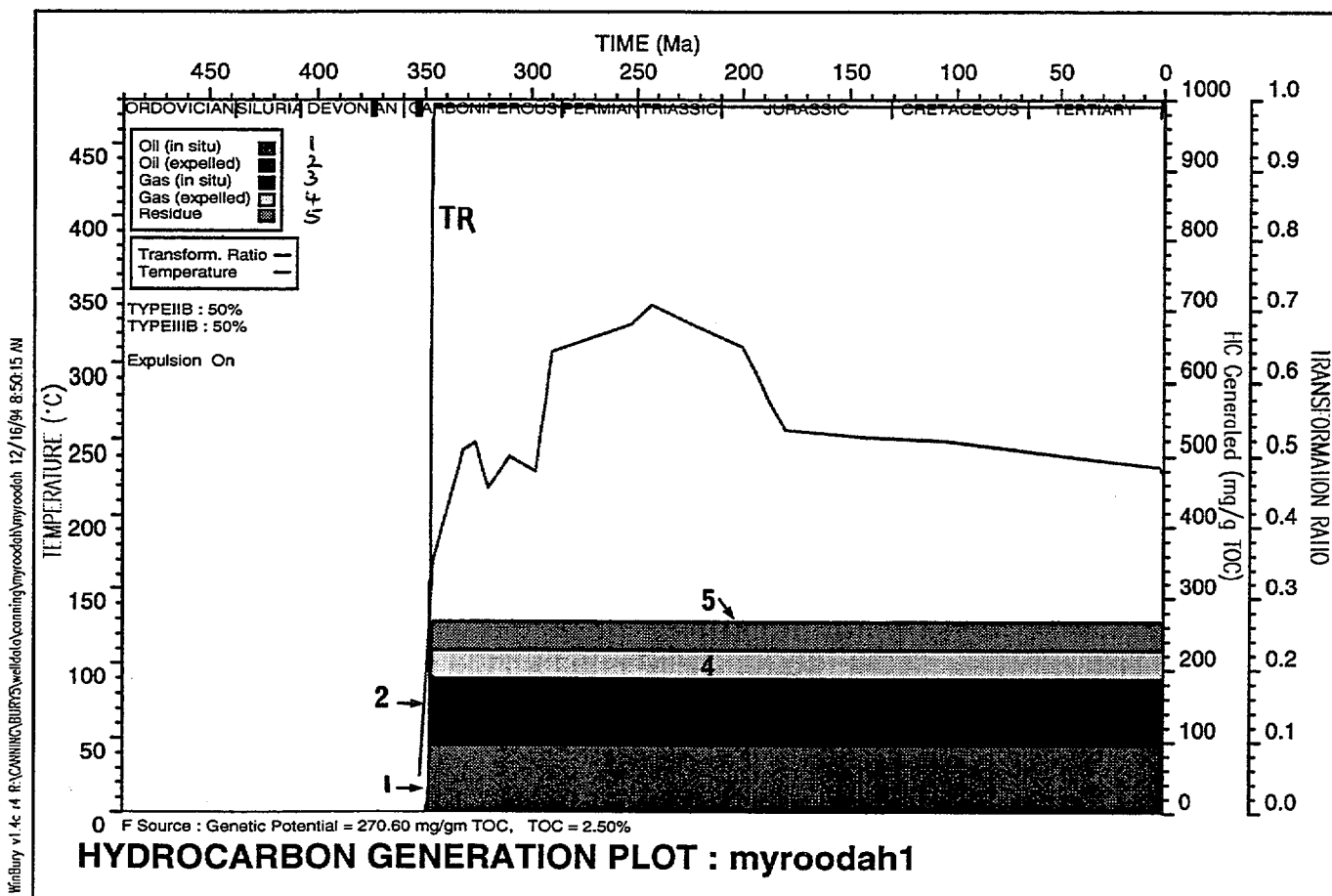
Appendix E-6, Figure 1



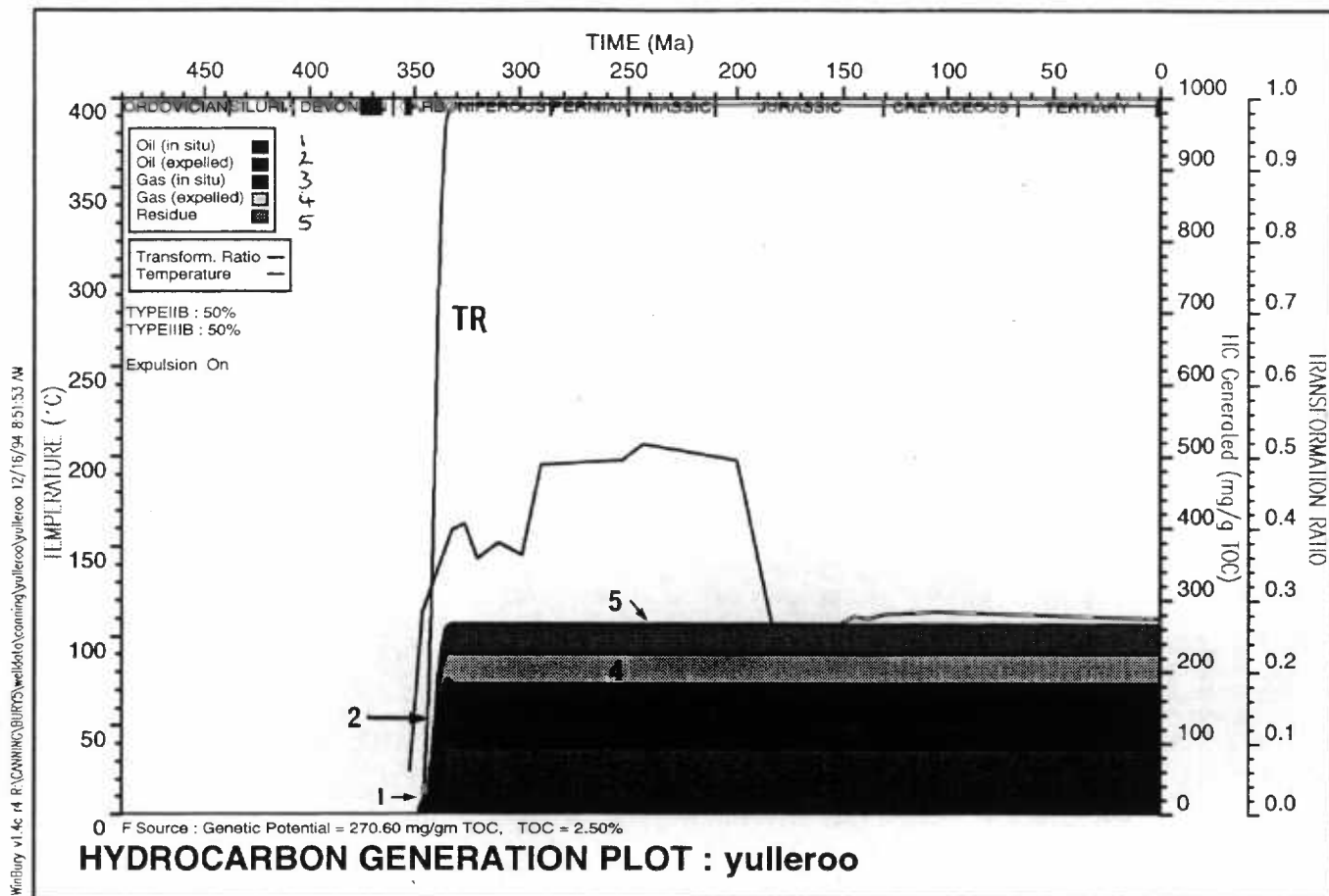
Appendix E-6, Figure 2



Appendix E-6, Figure 3



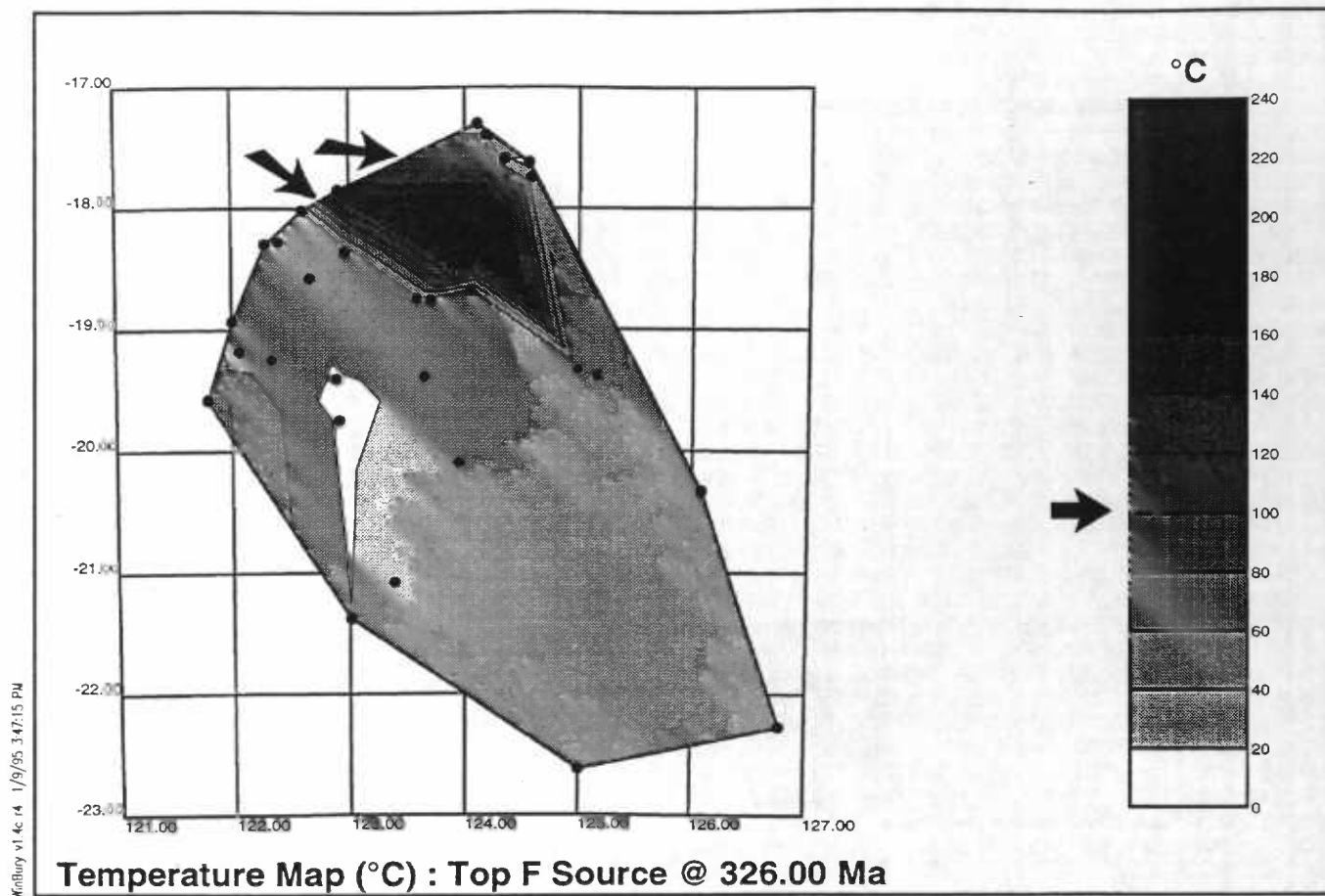
Appendix E-6, Figure 4



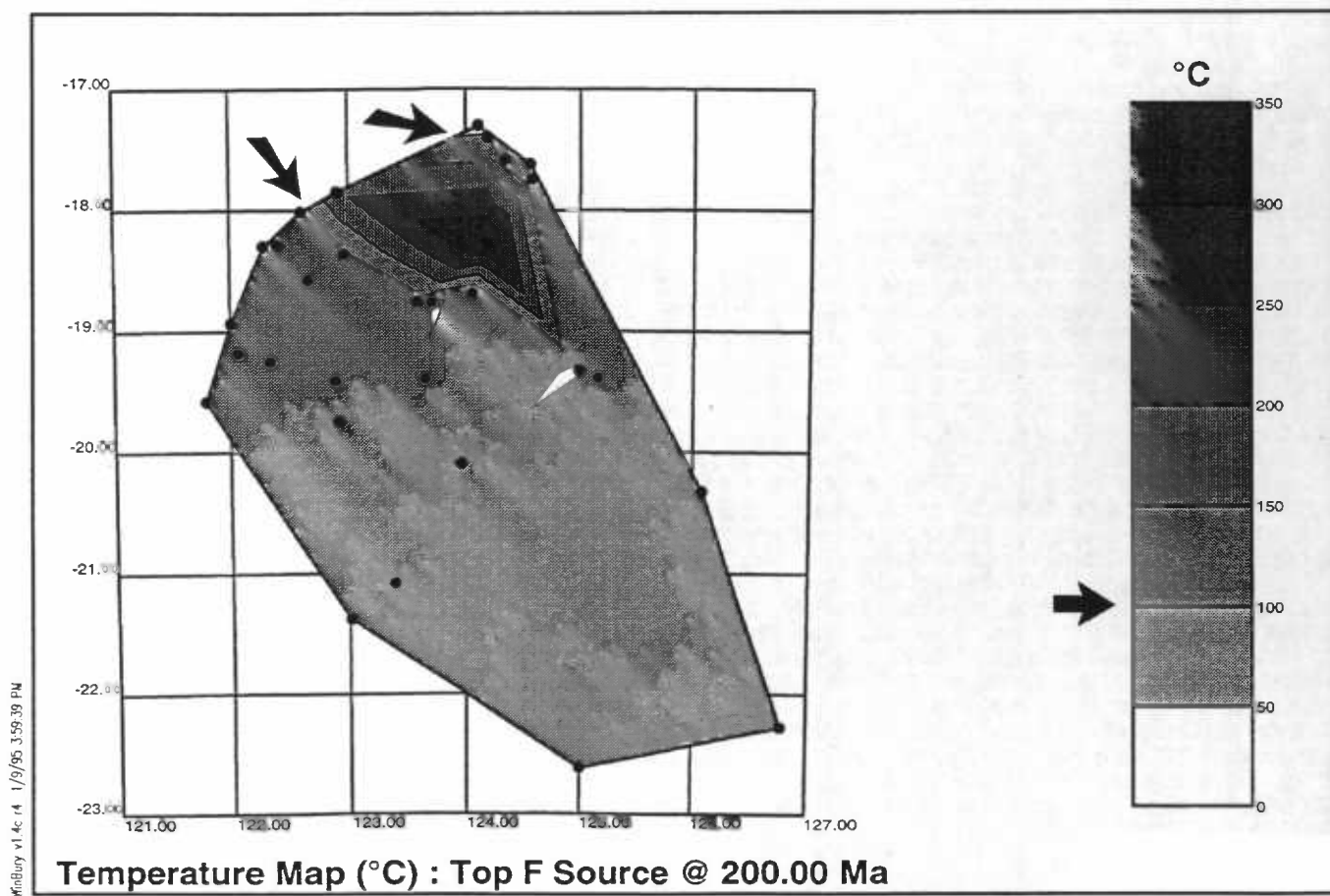
Appendix E-6, Figure 5



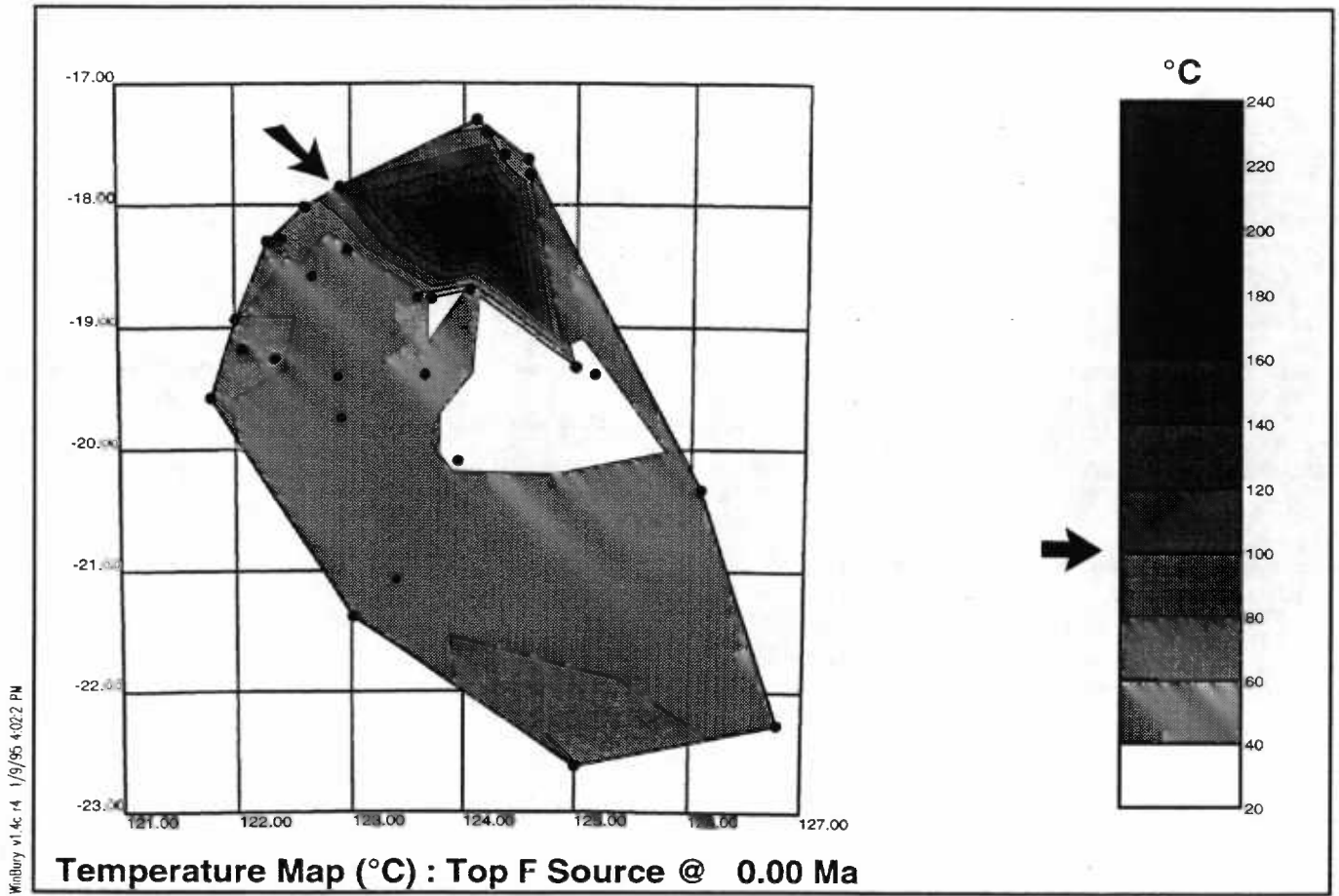
* R 9 4 0 6 7 1 3 *



Appendix E-6, Figure 6



Appendix E-6, Figure 7



Appendix E-6, Figure 8

APPENDIX F: Supplementary Geochemical Studies of Ordovician Source Units in the Canning Basin

by J.M. Kennard, C.J. Boreham, D. Edwards & A. Murray

In order to address several matters that arose from the studies of the Ordovician source units presented by Taylor (1992) and Kennard et al. (1994), the following investigations were carried out.

- Assess the degree of contamination from deisel added to the drilling mud on available pyrolysis data for Ordovician samples in several wells.
- Evaluate "mineral matrix effects" on pyrolysis data available for Ordovician samples.
- Evaluate the original source richness and kerogen type within the Ordovician source intervals (including the lower Goldwyer, Willara, Nambeet and Bongabinni Formations).

Diesel Contamination

A review of well completion reports indicated that significant quantities of deisel oil were added to the drilling mud when the Ordovician-Silurian section was drilled in the following wells: Kidson-1, Matches Springs-1, McLarty-1 and Wilson Cliffs-1. A comprehensive compilation of all available Rock-Eval data for these (and all other) wells in the Canning Basin is presented in Jackson et al. (1994). Data for the above four wells shows highly variable S_1 values (commonly 5-21 kg hydrocarbon per tonne), and PI values commonly in the range 0.5-0.9. Plots of PI versus Depth and Tmax versus Depth (Figs 1-4) suggest widespread contamination of the Ordovician samples, except possibly in Matches Springs-1 where PI is generally less than 0.5 (Fig. 2a) and Tmax shows a fairly consistent increase with depth (Fig. 2b).

In order to further evaluate the degree of contamination in these samples, cuttings and cores from the Goldwyer Formation in Kidson-1 were examined; see stratigraphic re-interpretation of Kidson-1 presented in Romine et al. (1994, fig. 11), Jackson et al. (1994) and Southgate et al. (in prep). Previous analyses of these samples (see Jackson et al., 1994) indicate high S_1 , S_2 and PI values for cutting samples, but low S_1 , S_2 and PI values for core samples (Cores 21, 22). In contrast to the core samples, all examined cutting samples have a strong petroliferous odour. Cores and cuttings in the upper Goldwyer Formation consist of red-brown mudstone, and were visually assessed to have poor source potential. Cores and cuttings in the lower Goldwyer Formation, however, consist of medium to dark grey mudstone and were visually assessed to have some source potential. A representative cuttings sample (AGSO no. 7919; 14290-14300 ft; 4356-4359 m) was selected for analysis and comparison with previous analyses carried out on cuttings and cores 21 and 22.

A portion of this cuttings sample was crushed to a fine powder, and TOC and Rock-Eval pyrolysis analyses were carried out (Sample 7919). The remaining cuttings were washed thoroughly in dichloromethane and the solvent retained in a round bottomed flask. The solvent-washed cuttings were then air dried and TOC and Rock-Eval pyrolysis analyses were repeated on the sample (7919ex). The solvent was removed from the extracted organic material by evaporation and the residue analysed as a 'whole oil' by gas chromatography.

The Rock-Eval pyrolysis results (Table 1) show that the cuttings sample is contaminated by free hydrocarbons as indicated by the high S_1 and PI values (a PI value above 0.4 is typical of oil stained sediments). Comparison of unwashed cuttings with the washed cuttings show that after washing: TOC decreases, Tmax increases, S_1 decreases and PC (Pyrolysable Carbon) decreases, all of which are in agreement with removal of free hydrocarbons. Not all the free hydrocarbons have been removed by this washing process as a small S_1 peak is still recorded ($S_1 = 0.9$ kg/t).

The 'whole oil' gas chromatogram (Fig. 5) shows that the n-alkanes are predominant (C_{14} - C_{30} ; maximum peak at C_{17}) with no odd-over-even carbon number preference. This distribution is typical of a fractionated crude oil, and hence the cuttings in Kidson-1 are believed to be contaminated with diesel (possibly fractionated from an Australian crude oil). The naphthene hump which is centred about n- C_{17} , is usually seen in diesel fuel and arises from the cracking of higher molecular weight

hydrocarbons. A sample of diesel (and other common contaminants) is shown in Figure 6 for comparison.

Figure 7 shows a saturates chromatogram of an extract from the lower Goldwyer Formation (mineral exploration well SS 7-6). The saturates chromatogram of the lower Goldwyer Formation differs from the Kidson-1 diesel in that there is an absence of a naphthene hump and the pristane/phytane ratio is higher. However, the overall n-alkane distribution in the lower Goldwyer extract and in the diesel chromatogram is similar. This similarity would make it difficult to differentiate between indigenous hydrocarbons in an organic-rich sample and any contamination by diesel during drilling.

The low S_1 values for cores 21, 22 in Kidson-1 ($S_1 < 0.9$, $S_2 < 0.4$; see Jackson et al., 1994) suggest that these samples are significantly less contaminated than the cuttings samples.

Although samples from McLarty-1 and Wilson Cliffs-1 have not been similarly analysed, Ordovician sediments in these wells are also concluded to be contaminated by diesel in the drilling mud since and PI values are generally greater than 0.4, and they show a similar contrast of pyrolysis data between core and cuttings samples. Contamination is concluded to be minor in Matches Springs-1, however, since S_1 and PI values are uniformly low for both cuttings and core samples, irrespective of locally high S_2 values (2-10 kg/t).

Mineral Matrix Effects

In order to evaluate possible 'mineral matrix effects' on pyrolysis data available for Ordovician source units (that is, reduced pyrolysis yields due to the absorption of heavier hydrocarbons on active mineral sites), plots of S_2 versus TOC are presented for each source interval in the following wells: Acacia-1, Aquila-1, Canopus-1, Crystal Creek-1, Dodonea-1, Edgar Range-1, Hedonia-1, Hilltop-1, Matches Springs-1, Pictor-1, Santalum-1 and Solanum-1. These plots are presented as Figures 8-19, and are based on data compiled in Jackson et al. (1994). Since HI (Hydrogen Index) = $S_2/\text{TOC} \times 100$, the value of HI corrected for any mineral matrix effects can be determined from the gradient of the trendline through the data points. Assuming constant organic matter type, if these trendlines do not pass through the TOC zero intercept (ie, $\text{TOC} > 0$), then the corrected HI value is greater than the originally calculated HI value; that is the HI values have been suppressed by mineral matrix effects.

A comparison of HI values corrected for mineral matrix effects and uncorrected average HI values for each source interval is shown in Table 3. In virtually all cases, HI values have been significantly suppressed by mineral matrix effects.

Table 2 shows a comparison of Rock-Eval pyrolysis data for 'whole rock' cuttings and 'kerogen' samples recovered from these cuttings for the upper Goldwyer Formation in Acacia-1 and Solanum-1. Note that the 'kerogen' samples are not pure kerogen (TOC 13-33%); these samples were processed for palynological analysis (digested in HCL and HF), and their high mineral content is probably due to the presence of pyrite (sodium borohydride has not been used to remove pyrite). The Acacia-1 'whole rock' samples show an obvious suppression of HI values due to mineral matrix effects (HI values of 430 and 436) when compared to the corresponding 'kerogen' samples (HI values of 538 and 611, respectively). The TOC-rich cuttings sample in Solanum-1, however, shows no mineral matrix effect.

Estimates of the degree of transformation of kerogen to hydrocarbon should be based on HI values corrected for mineral matrix effects; if the uncorrected HI values are used (eg. Taylor, 1992), then transformation ratios will be erroneously high.

Original Source Richness and Kerogen Kinetics/Types

Taylor (1992) concluded that if the source beds within both the Nambeet Formation and the lower Goldwyer Formation were of comparable kerogen type and richness to the immature *G. prisca*-dominated source rocks in the upper Goldwyer Formation, then they would have generated large



amounts of oil during the Ordovician-Silurian depositional cycle. However it is by no means certain that these older source intervals originally contained kerogens similar to that within the upper Goldwyer Formation on the Barbwire Terrace. Furthermore, WinBury maturation models of the lower Goldwyer source interval in several modelled wells (Acacia-2, Aquila-1, Dodonea-1, Edgar Range-1, Hedonia-1, Hilltop-1, Pictor-1, Thangoo-1A) suggest that it has not been sufficiently buried to mature *G. prisca*-dominated kerogen which, over the range of modelled heating rates, requires temperatures of about 140°C for maturation (50% transformation of kerogen); burial temperatures sufficient for maturation of this source interval only occur in deeper wells such as Matches Springs-1 and East Crab Creek-1. Similarly, maturation models of the Willara and Nambeet A1 source intervals suggest that they are only partially mature ($TR < 0.5$) in several wells (Acacia-2, Aquila-1, Dodonea-1, Hedonia-1, Hilltop-1, Pegasus-1, Pictor -1, Thangoo-1A).

In order to more objectively evaluate the original source richness for the Goldwyer source intervals, whole rock kerogen kinetic analyses were obtained for samples of both the upper and lower Goldwyer Formation in Solanum-1. This well was chosen since:

1. Samples were readily available (provided by Clinton Foster, AGSO),
2. A kerogen sample from the upper Goldwyer Formation in this well had been previously analysed by another laboratory (Boreham, unpublished data), and
3. WinBury maturation models of the nearby Acacia-2 well suggest that the upper and lower Goldwyer source intervals had not experienced temperatures in excess of 80°C, and hence irrespective of the type of kerogen, these intervals are immature.

Kinetic data was also obtained for a kerogen isolate from 'algal coals' (oil shales) of the Bongabinni Formation (CRA Mineral Exploration Hole DD 88559, 1391.26-1391.33 m). Kinetic analyses were undertaken by Geotechnical Services Pty Ltd, Western Australia, and results are presented in Appendix F-1.

Kerogen kinetic parameters are determined by pyrolysing the kerogen in a RockEval instrument at a series of different heating rates and observing the shift in the generation envelope. The generation of oil from the kerogen is modelled as a series of parallel first-order Arrhenius processes, and a fit to the RockEval curves gives a distribution of activation energies (E_a) and a universal frequency factor (A). Generally speaking, the higher the activation energies the greater the temperature required for oil generation. The 'standard' kerogen kinetics used by many modelling programs, including WinBury, may not give a true indication of the temperature and depth needed for significant oil generation. For example, Type I kerogens such as those derived from *G. prisca* have a much narrower and higher energy spread than the standard Type II kerogens. Furthermore, the energy for *G. prisca* is higher than for the standard Type I kerogens included in models which are usually based on the Green River Shale. Thus, use of measured *G. prisca* kinetics will yield an abrupt oil window occurring at higher temperature than a standard Type II kerogen. The 'rules of thumb' used to define the temperature of significant oil generation and its equivalent in terms of RockEval Tmax and vitrinite reflectance must be modified for *G. prisca* type kerogens. For example, a Tmax of 435 °C does not indicate the onset of oil generation for such kerogens and 445 °C would be more reasonable. Furthermore, because of the narrower E_a distribution, there is no progressive increase in Tmax which can be used to observe the approach to the oil window - Tmax may hover near 435 °C and then suddenly increase to 460 °C.

The whole rock kinetic data for the upper Goldwyer sample (Solanum-1, 315.53m) is characterised by a unimodal activation energy peak of 98% at 60 kcal/mol (Appendix F-1). This unimodal pattern is typical of *G. prisca*-dominated kerogen analyses, but in this case the peak occurs 3 kcal/mol higher than previous analyses commissioned by AGSO. These previous analyses have been used for the upper Goldwyer source interval in the present winBury modelling study (see appendix G).

Tegelaar & Noble (1995) have provided kerogen kinetic data for a wide range of kerogens and shown the great variability that can occur. They also point out that the standard fitting techniques do not provide a very good result for Type I kerogens. They propose using a Gaussian model rather than a discrete distribution of activation energies to determine the parameters for such kerogens. For the above sample, we found that the Gaussian method reduced the peak activation by 1 kcal/mole only (59 kcal/mole).

The whole rock kinetic data for the lower Goldwyer sample (Solanum-1, 519.58-519.61m) is characterised by a major activation energy peak of 66% at 55 kcal/mol, and a 'front' of lower activation energies in the range 48-54 kcal/mol (Appendix F-1). This pattern indicates a mixed Type I and II kerogen. The lower activation energy peak and low activation energy 'front' is clearly distinct from the *G. prisca* signature in the upper Goldwyer source interval. This kerogen type requires temperatures of about 120-125°C for maturation (50% transformation) over the modelled heating rates, which is considerably less than the 140°C required for maturation of *G. prisca* kerogen.

The kerogen isolate from the Bongabinni Formation (#7817) is characterised by a major activation energy peak of 50% at 56 kcal/mol, and a high activation energy 'tail' in the range 57-64 kcal/mol (Appendix F-1). This pattern probably also indicates a Type I kerogen, but the high activation energy 'tail' readily distinguishes it from both the upper Goldwyer *G. prisca* kerogen and the lower Goldwyer sample. Over the modelled heating rates, this kerogen type requires temperatures of about 130°C for maturation (50% transformation).

References

Tegelaar, E.W., & Noble, R.A., 1995 - Kinetics of hydrocarbon generation as a function of the molecular structure of kerogen as revealed by pyrolysis-gas chromatography. *Organic Geochemistry*, 22, 543-574.

Table 1 Rock-Eval pyrolysis data for Kidson-1.

Sample No	Well	Formation	Sample Type	TOC %	Tmax °C	S1 kg/t	S2 kg/t	S3 kg/t	S1+S2 kg/t	PI	S2/S3	PC %	HI mgS2/gTOC	OI mgS3/gTOC
7919	Kidson-1	L. Goldwyer	Cuttings	3.44	435	31.28	9.10	3.49	40.38	0.77	2.61	3.36	265	101
7919ex	Kidson-1	L. Goldwyer	Solvent washed	1.60	441	0.91	4.03	3.18	4.94	0.18	1.27	0.41	252	199

Table 2 Rock-Eval pyrolysis data for Canning Basin samples.

Sample No	Well	Formation	Sample Type	TOC %	Tmax °C	S1 kg/t	S2 kg/t	S3 kg/t	S1+S2 kg/t	PI	S2/S3	PC %	HI mgS2/gTOC	OI mgS3/gTOC
3597	Acacia-1	U. Goldwyer	Cuttings	1.52	437	0.24	6.53	0	6.77	0.04	0	0.56	430	0
3597k	Acacia-1	U. Goldwyer	Kerogen	13.60	436	0.92	73.12	0	74.04	0.01	0	6.17	538	0
3598	Acacia-1	U. Goldwyer	Cuttings	2.66	434	0.24	11.59	0	11.83	0.02	0	0.98	436	0
3598k	Acacia-1	U. Goldwyer	Kerogen	13.50	436	0.34	82.50	0	82.84	0	0	6.90	611	0
3599	Solanum-1	U. Goldwyer	Cuttings	5.26	439	1.35	41.59	0	42.94	0.03	0	3.57	791	0
3599k	Solanum-1	U. Goldwyer	Kerogen	33.00	441	1.87	232.11	0	233.98	0.01	0	19.49	703	0

WELL	SOURCE UNIT	AVERAGE HI	CORRECTED HI
Acacia-1	Upper Goldwyer	503	1129
	Lower Goldwyer	172	500
Aquila-1	Lower Goldwyer	165	252
Canopus-1	Upper Goldwyer	48	96
	Lower Goldwyer	36	111
	Willara	80	84
Crystal Creek-1	Upper Goldwyer	202	*
	Lower Goldwyer	83	76
Dodonea-1	Upper Goldwyer	524	833
	Lower Goldwyer	45	*
Edgar Range-1	Upper Goldwyer	108	202
	Lower Goldwyer	87	135
	Nambeet	24	15
Hedonia-1	Lower Goldwyer	155	276
	Nambeet	33	109
Hilltop-1	Lower Goldwyer	149	266
	Nambeet	13	27
Matches Springs-1	Upper Goldwyer	243	517
	Lower Goldwyer	105	171
Pictor-1	Lower Goldwyer	68	116
	Nambeet	8	*
Santalum-1	Upper Goldwyer	536	861
Solanum-1	Upper Goldwyer	614	794
	Lower Goldwyer	141	*

Table 3. Comparison of average uncorrected HI values and HI values corrected for mineral matrix affects. * Insufficient data to define TOC vs S₂ trend-line.

AGSO No	WELL	SOURCE UNIT	DEPTH (m)	Tmax	S1	S2	S3	PI	PC	TOC	HI	OI
3599 Whole Rock	Solanum	Upper Gold	315.53 to 315.58	439	1.35	41.59	0	0.03	0	5.26	791	0
8051 Whole Rock	Solanum	Upper Gold	315.53	437	1.47	31.65	0.56	0.04	2.76	4.38	723	13
8052 Whole Rock	Solanum	Lower Gold	919.58 to 519.61	437	0.46	1.74	0.53	0.21	0.18	1.65	105	32
7817 Whole Rock	CRA DD 88559	Bonga-binni	1391.26 to 1391.33	443	18.3	167.4	0	0.10	15.5	40.9	409	0

Table 4. Rock-Eval data of samples with kerogen kinetic data

KIDSON-1 (Ordovician)

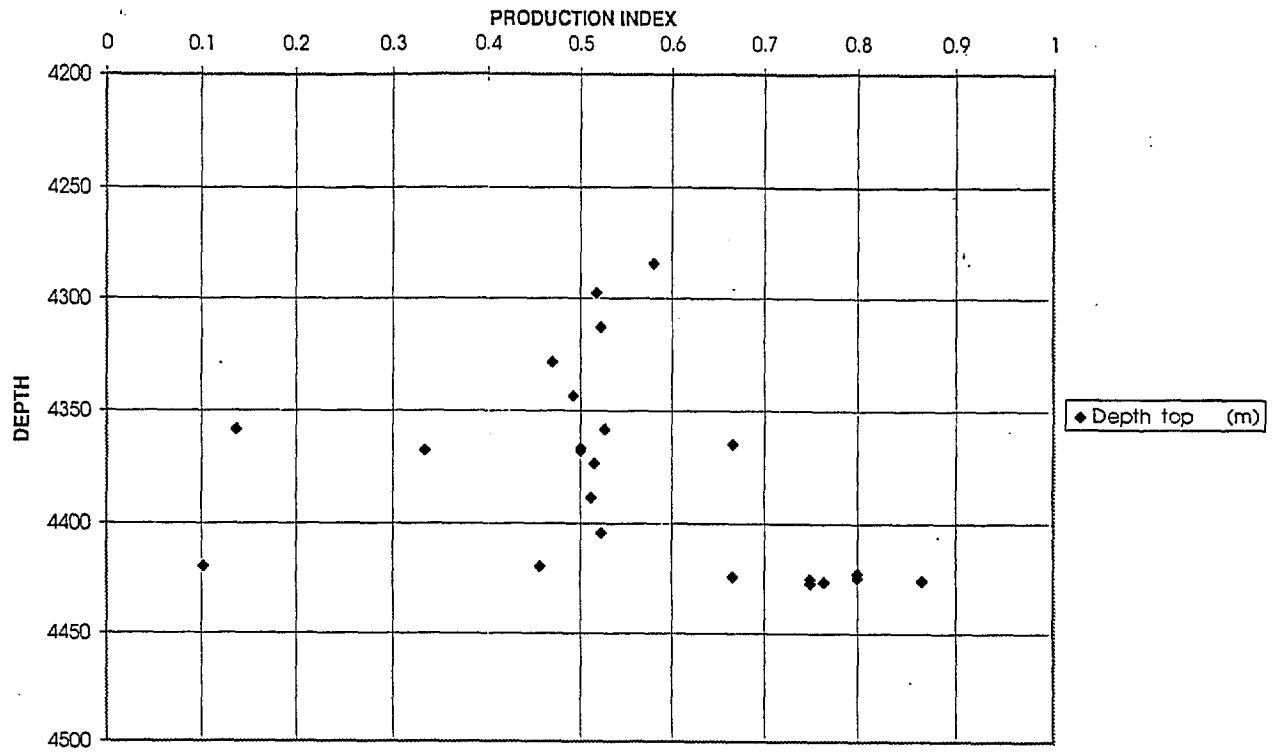


Figure 1a

KIDSON-1 (Ordovician)

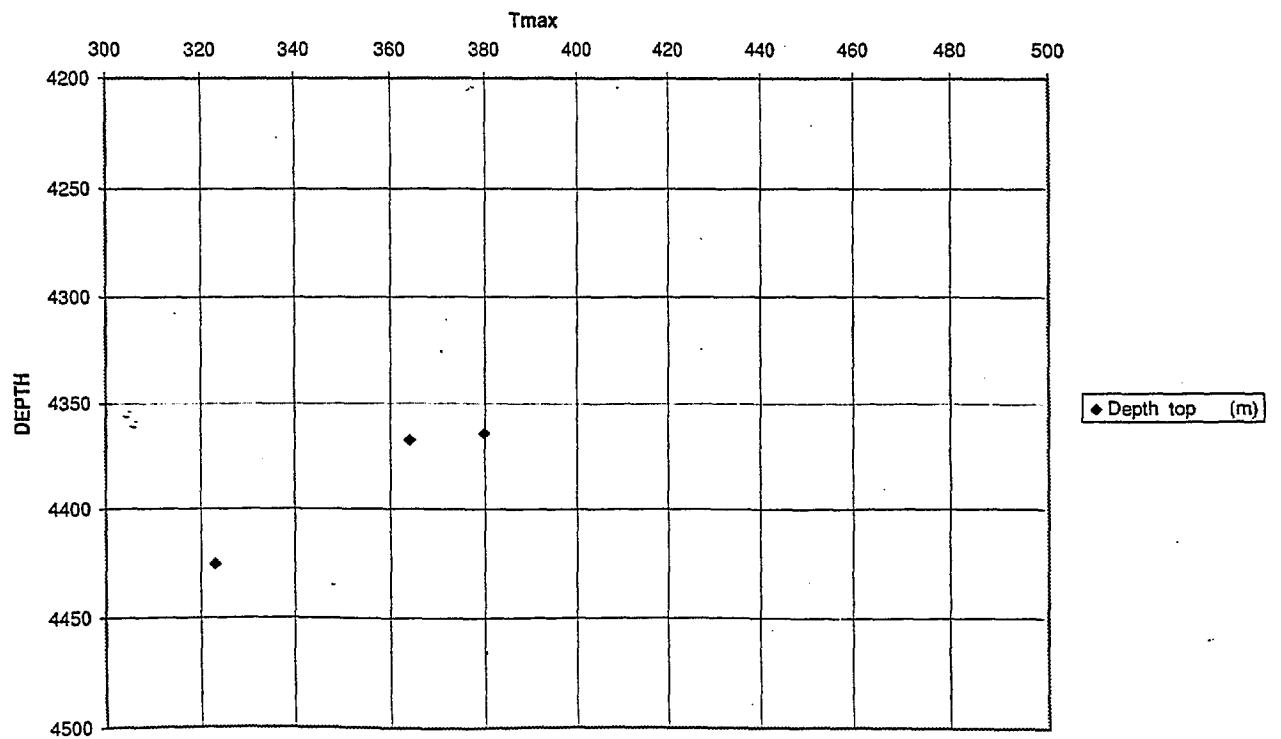


Figure 1b

MATCHES SPRINGS-1 (Ordovician)

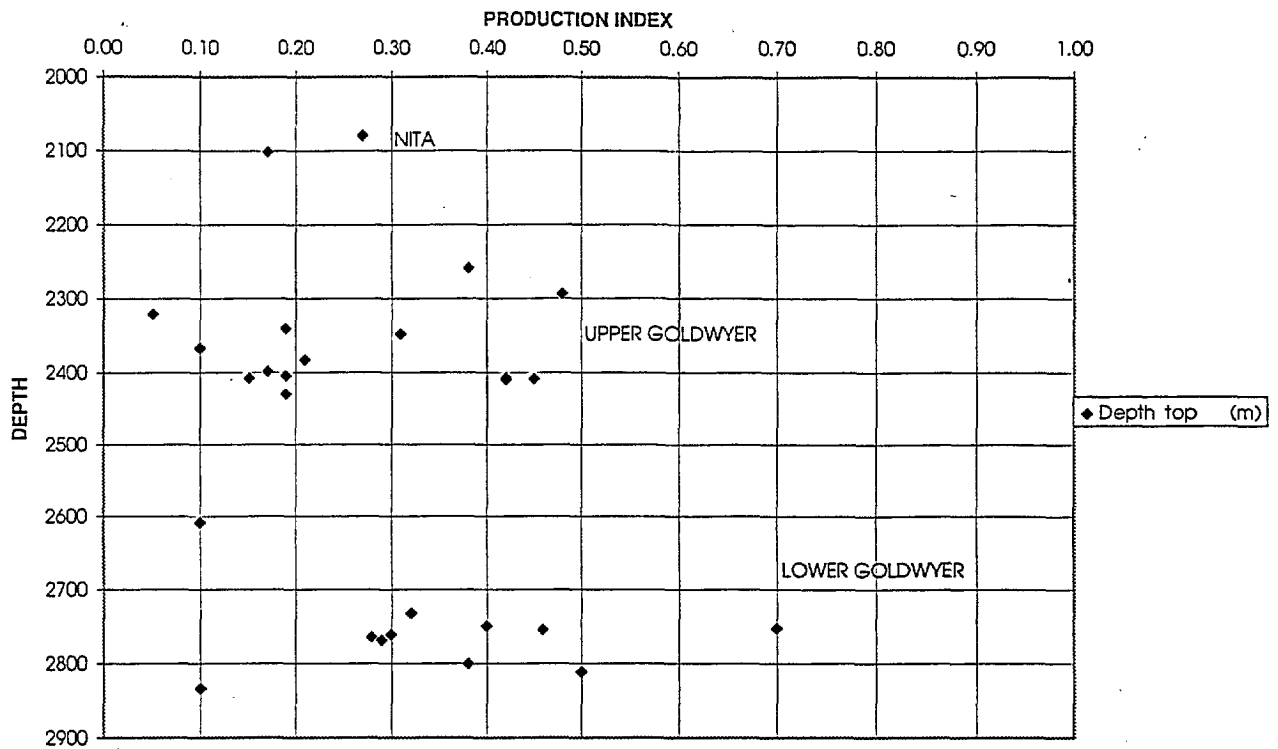


Figure 2a

MATCHES SPRINGS-1 (Ordovician)

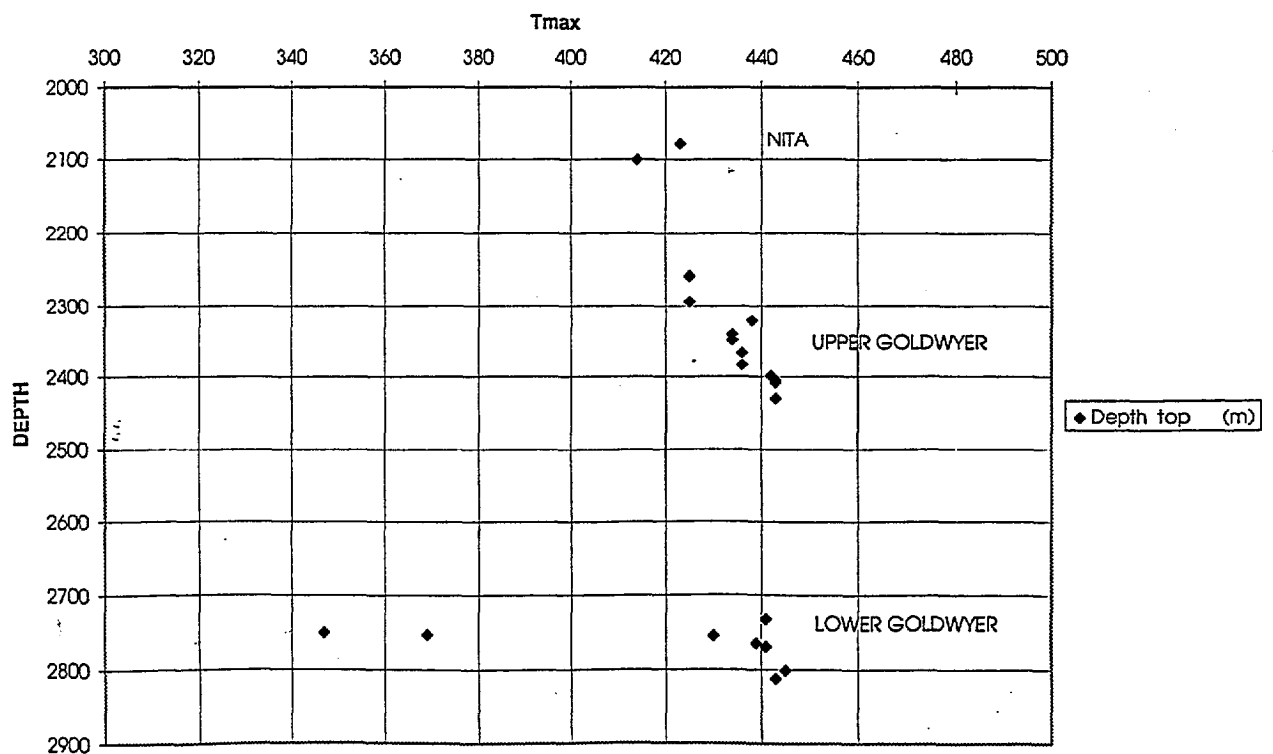


Figure 2b

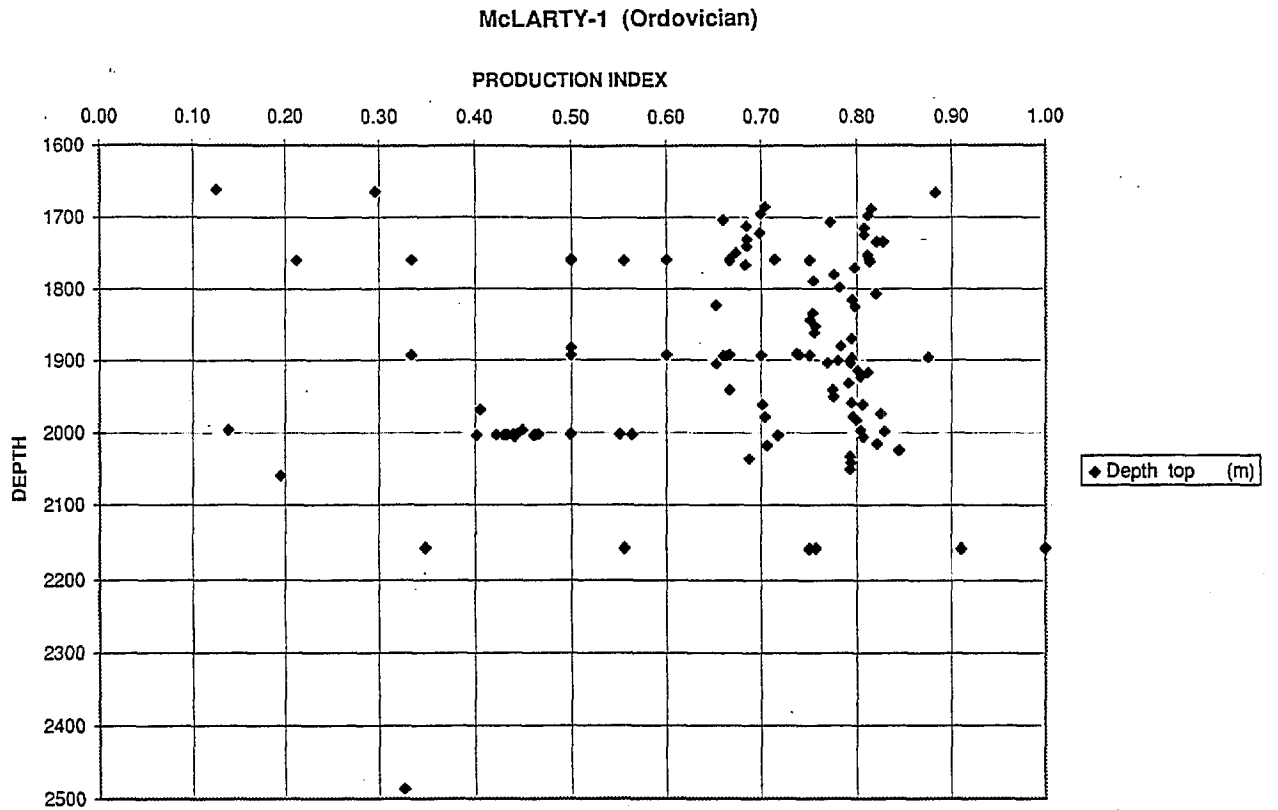


Figure 3a

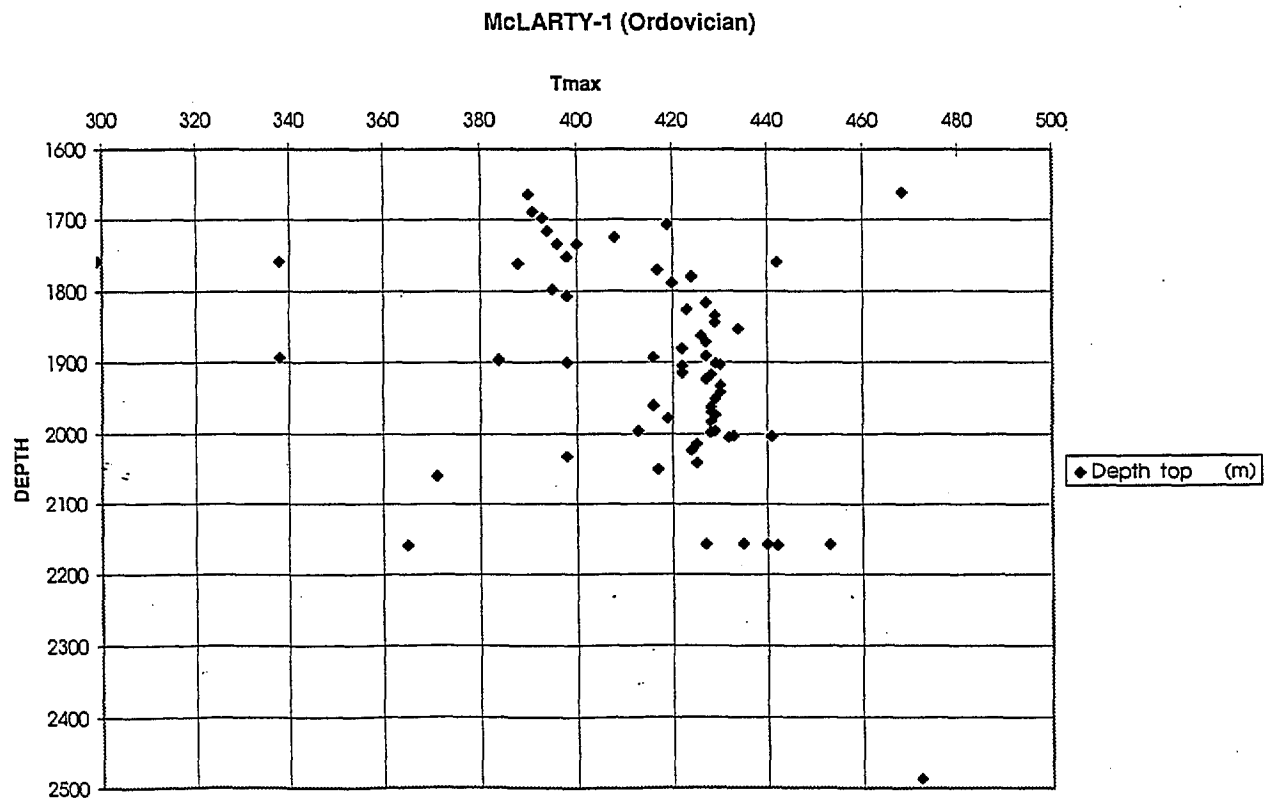


Figure 3b

WILSON CLIFF-1 (Ordovician - All Samples)

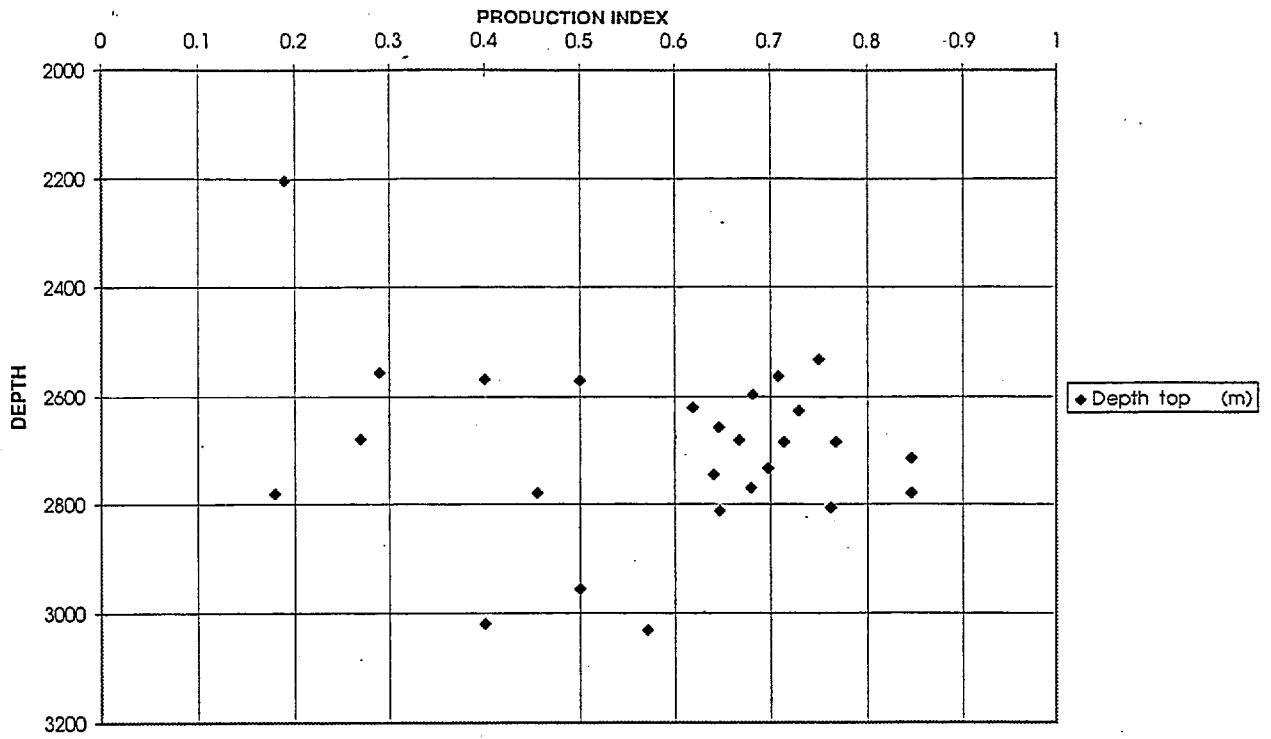


Figure 4a

WILSON CLIFF-1 (Ordovician - All Samples)

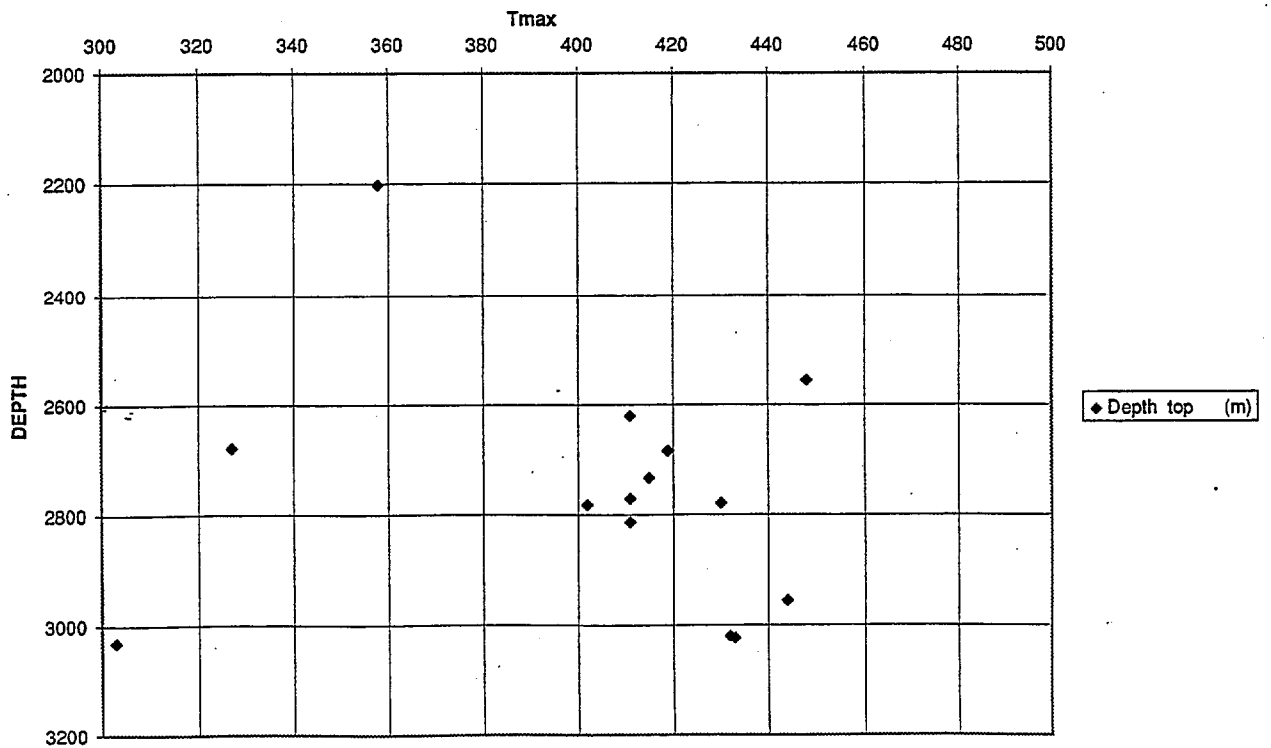
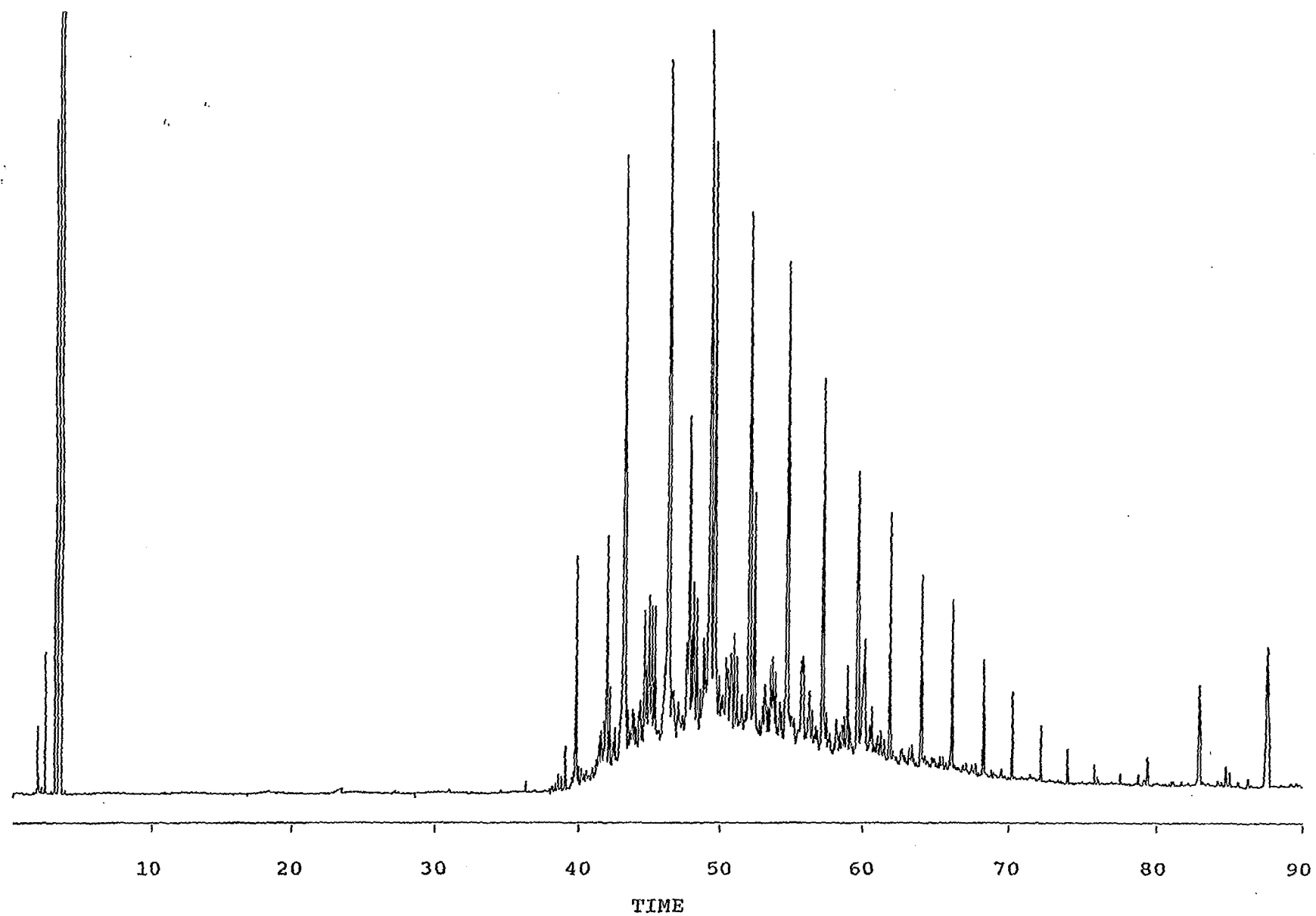


Figure 4b

Figure 5 7919 WHOLE OIL CONTAMINANT KIDSON-1 14290-14300 FT



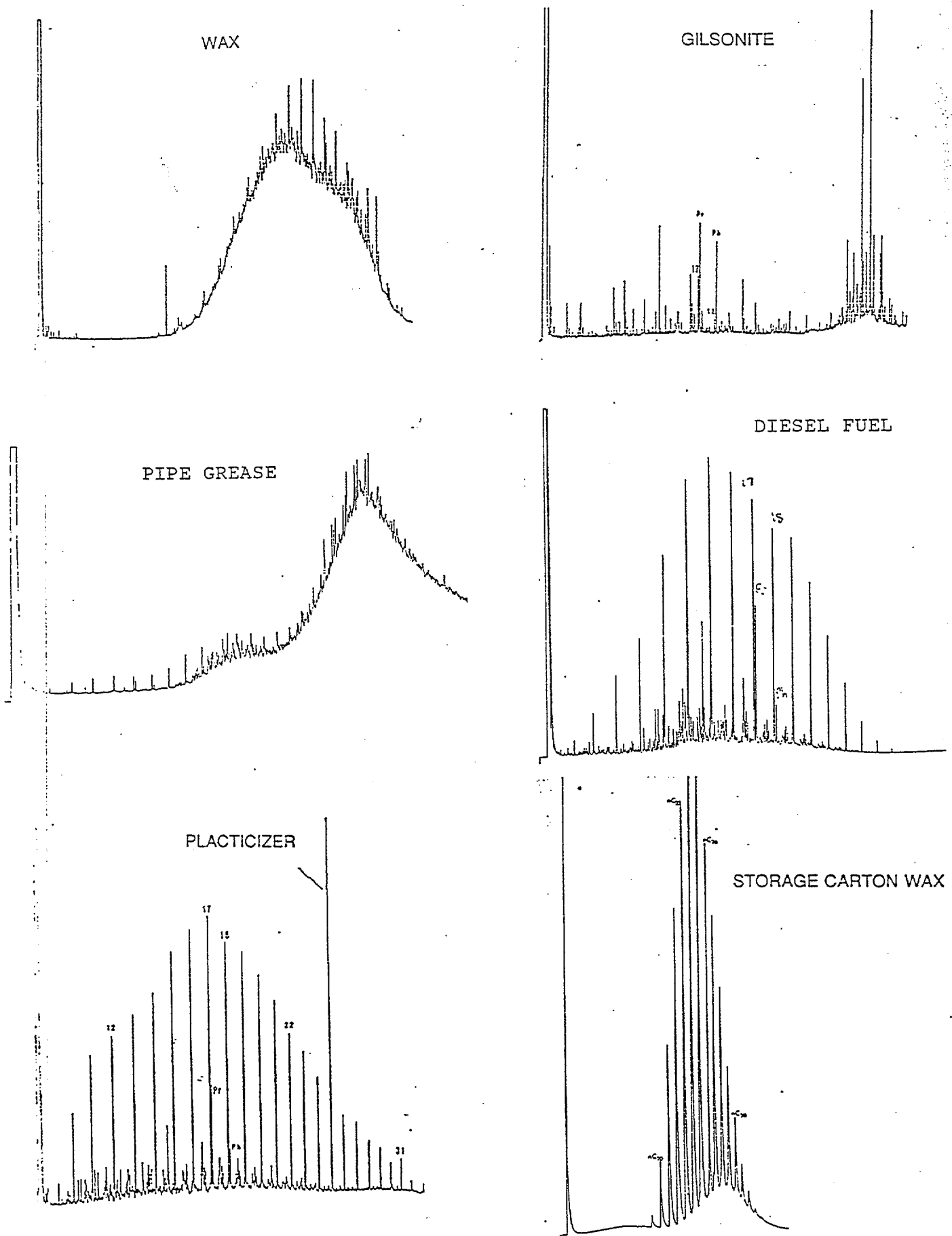
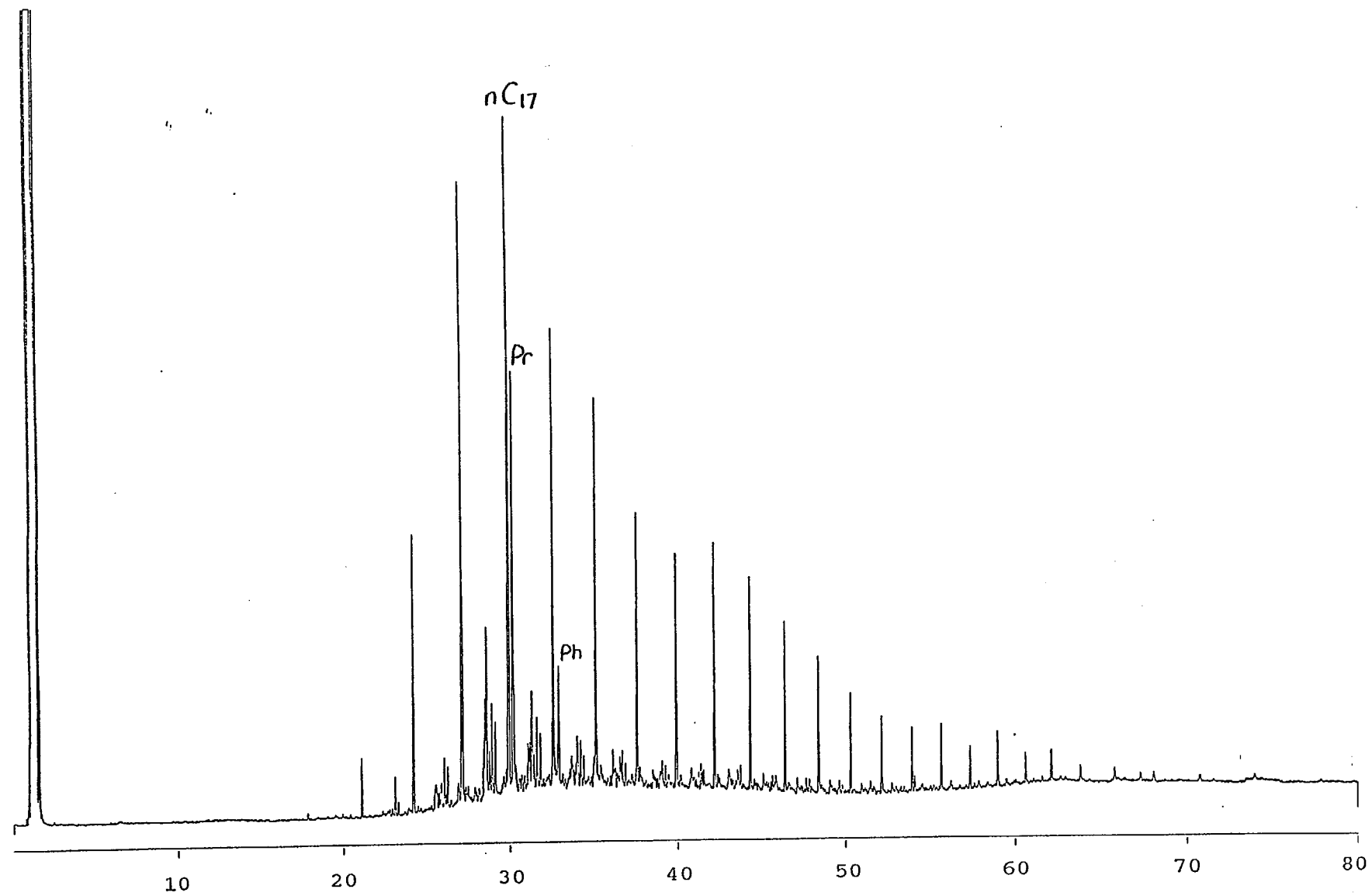


Figure 6

GC traces of common contamination

Figure 7. 4533 SS7-6 EXTRACT 1772.40-50



ACACIA-1 Upper Goldwyer

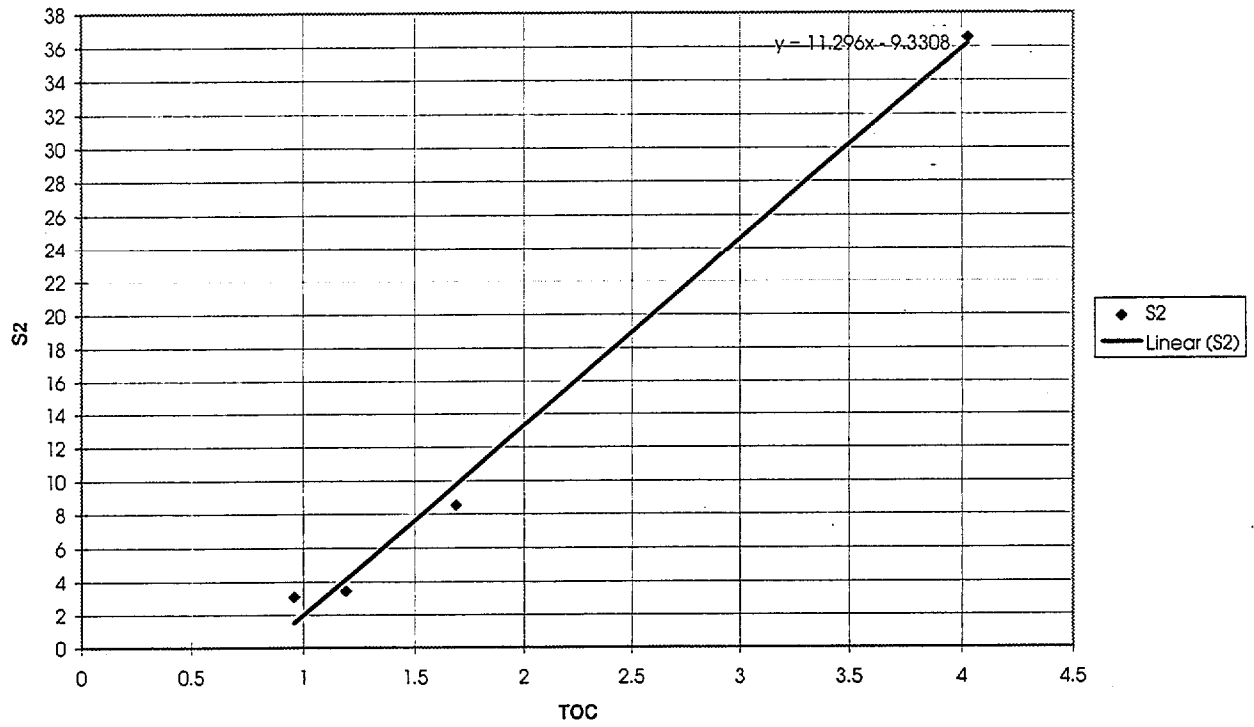


Figure 8a

ACACIA-1 Lower Goldwyer Unit 1

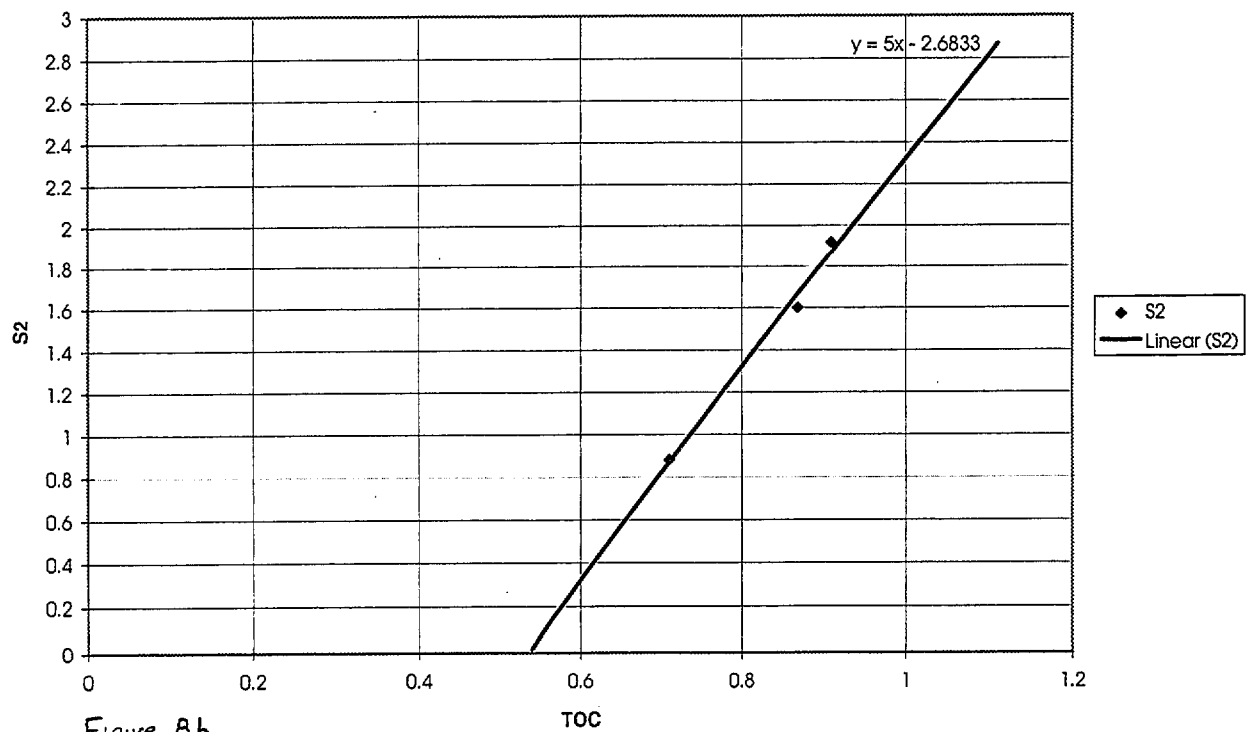
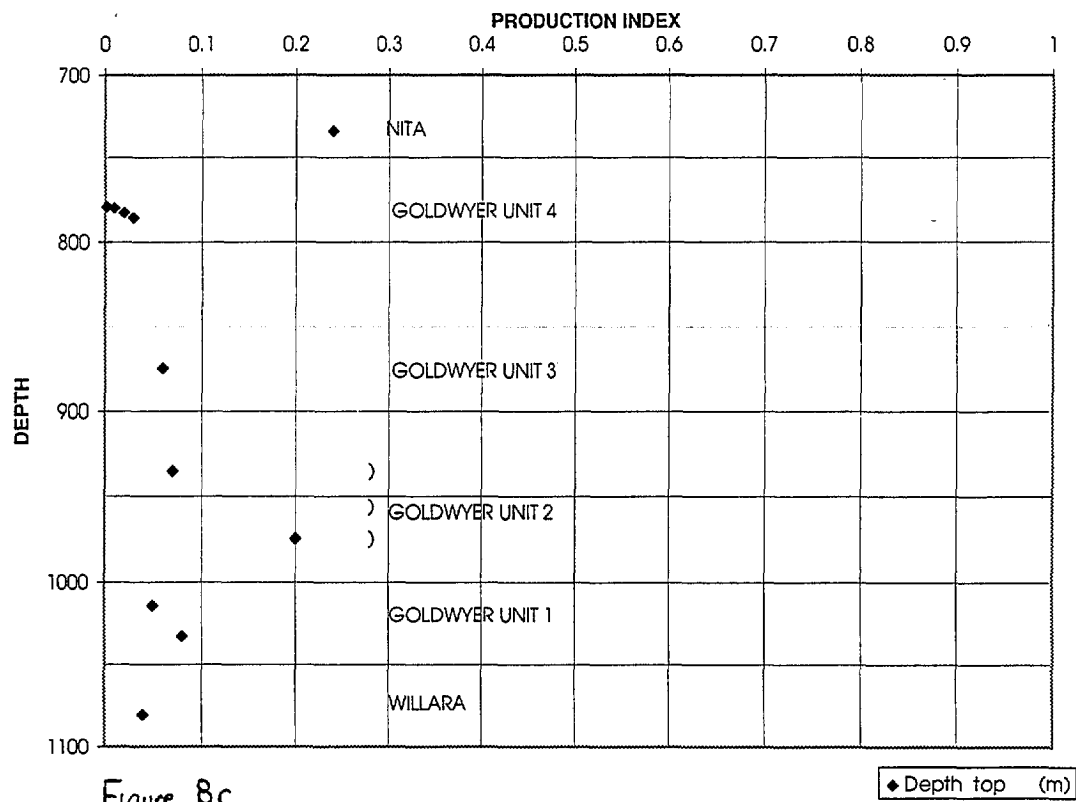
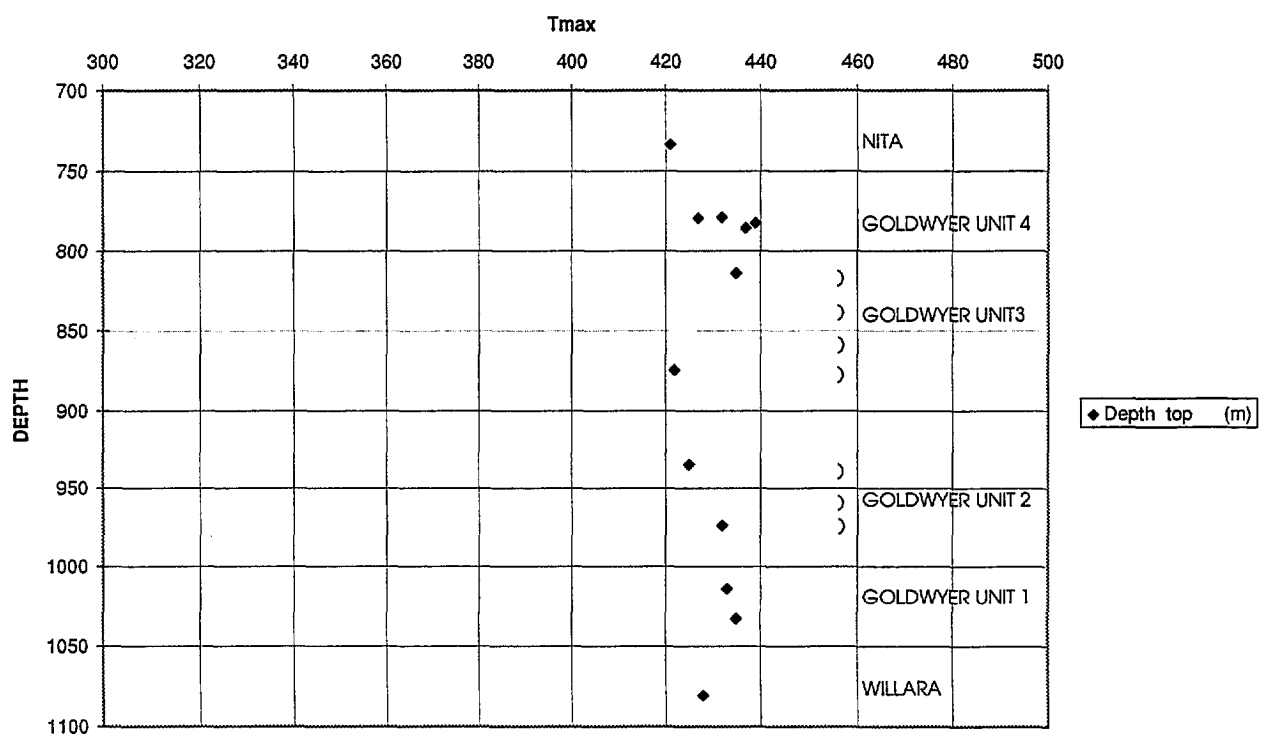


Figure 8b

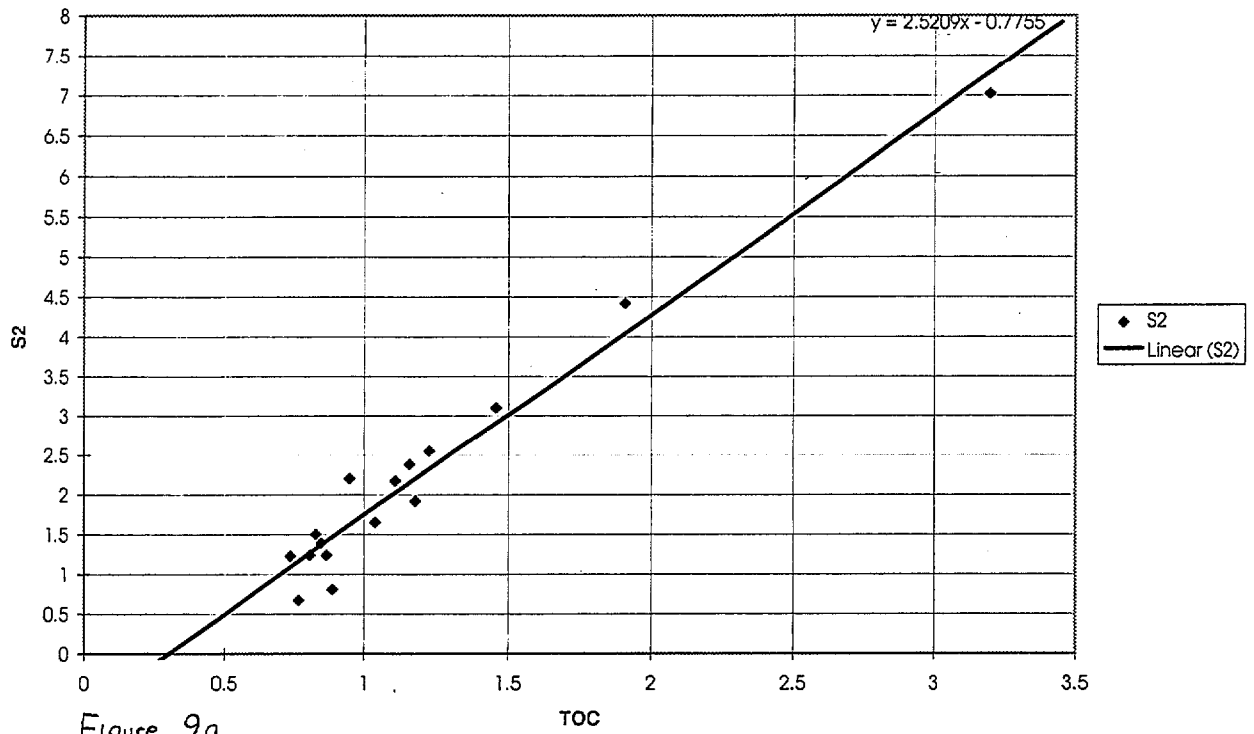
ACACIA-1



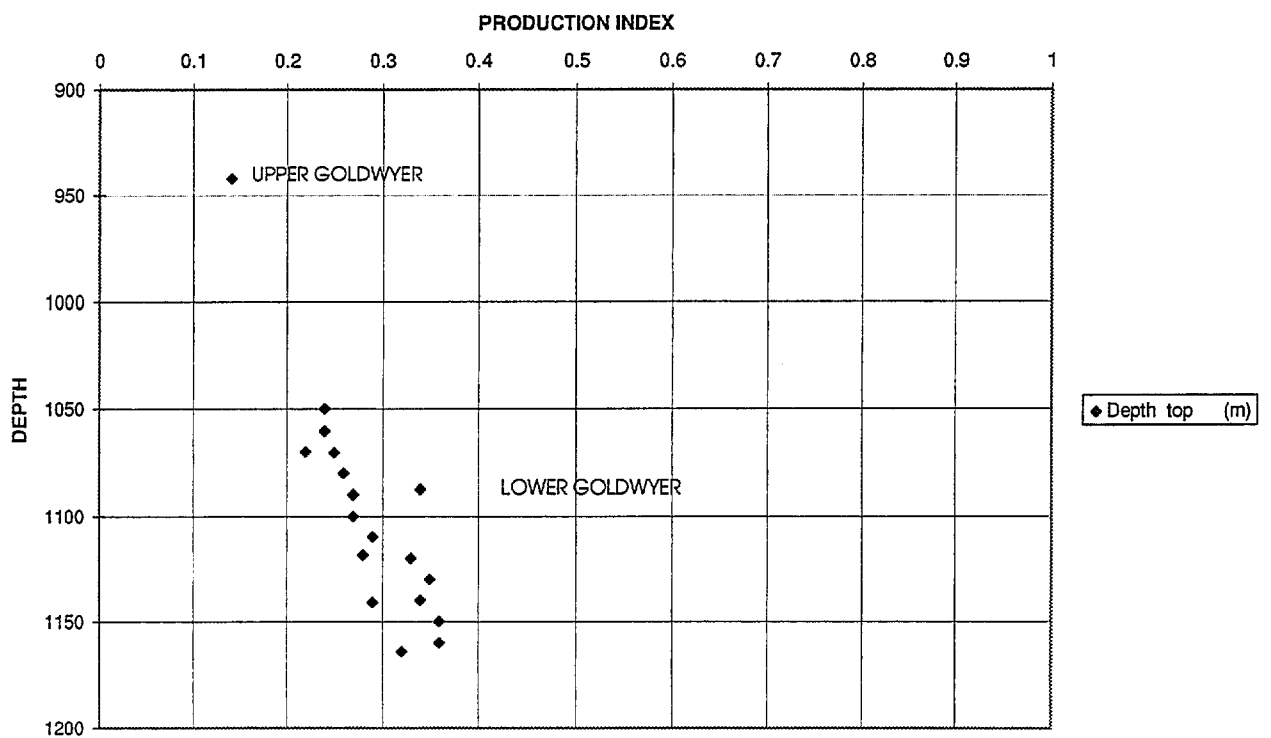
ACACIA-1



AQUILA-1 Lower Goldwyer (mod)



AQUILA-1



AQUILA-1

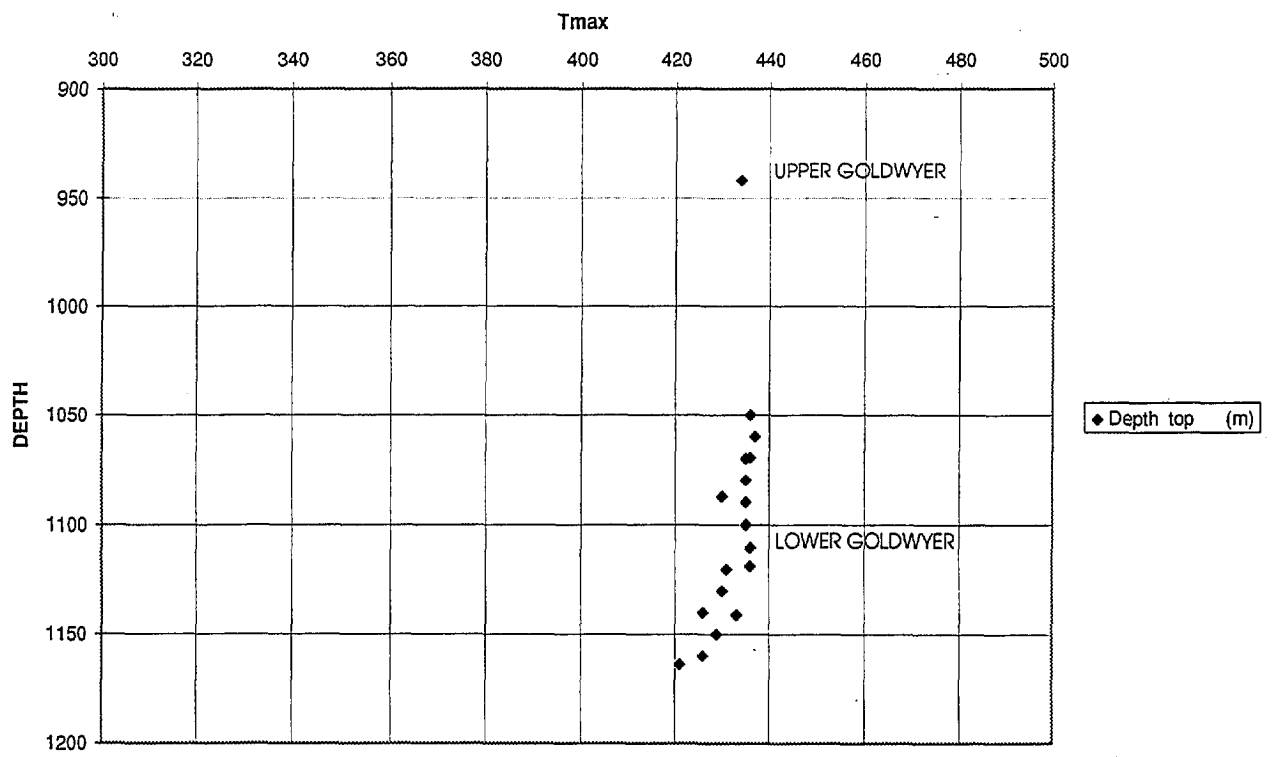


Figure 9c

CANOPUS-1 Upper Goldwyer

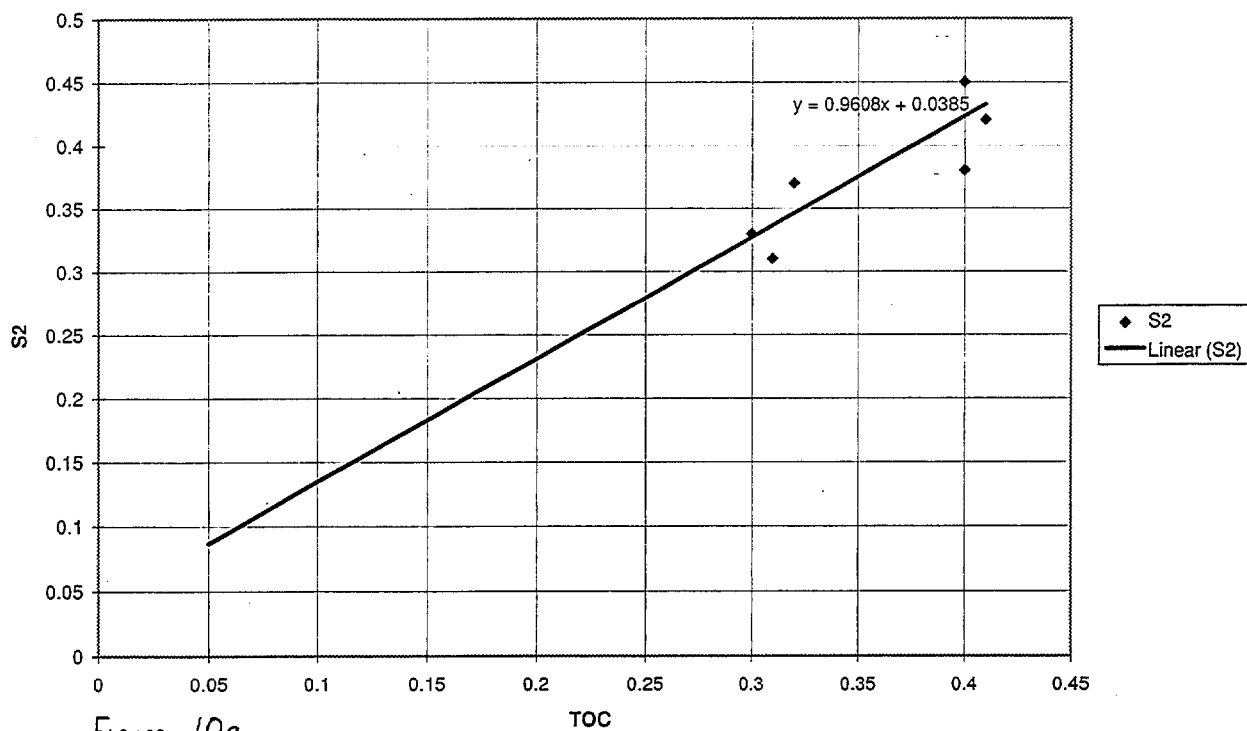


Figure 10a

CANOPUS-1 Lower Goldwyer

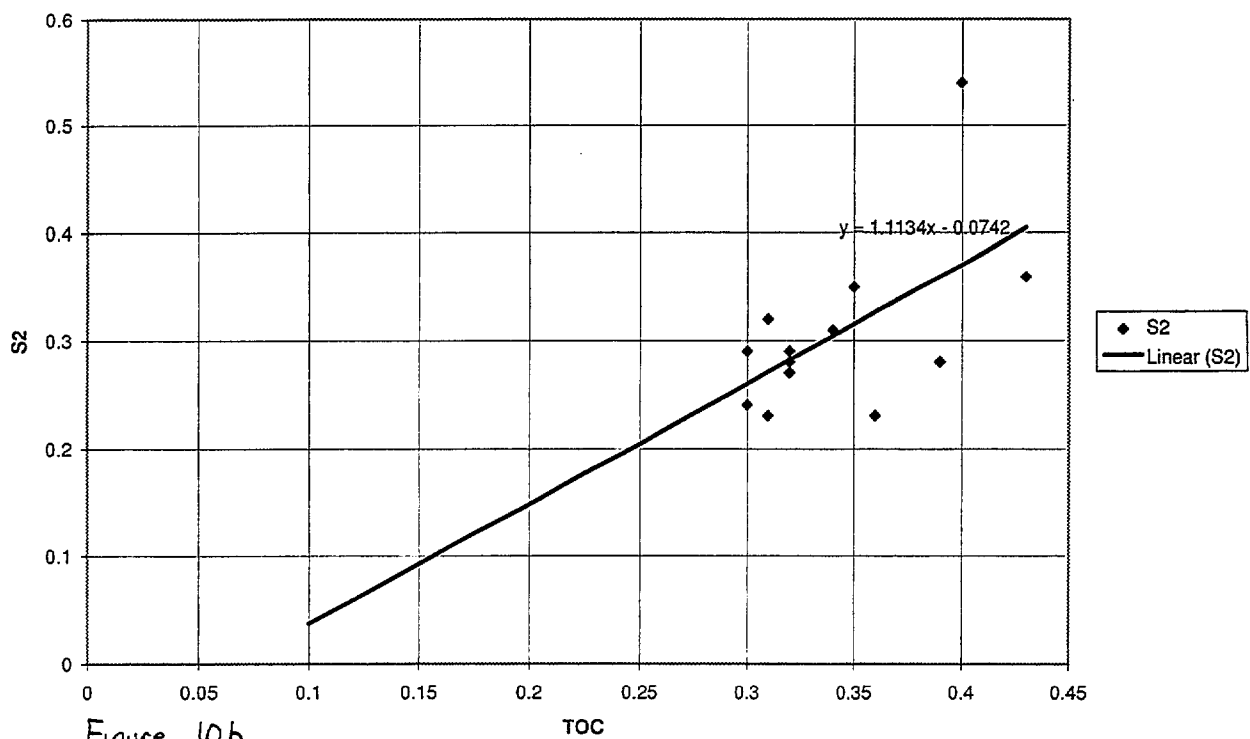
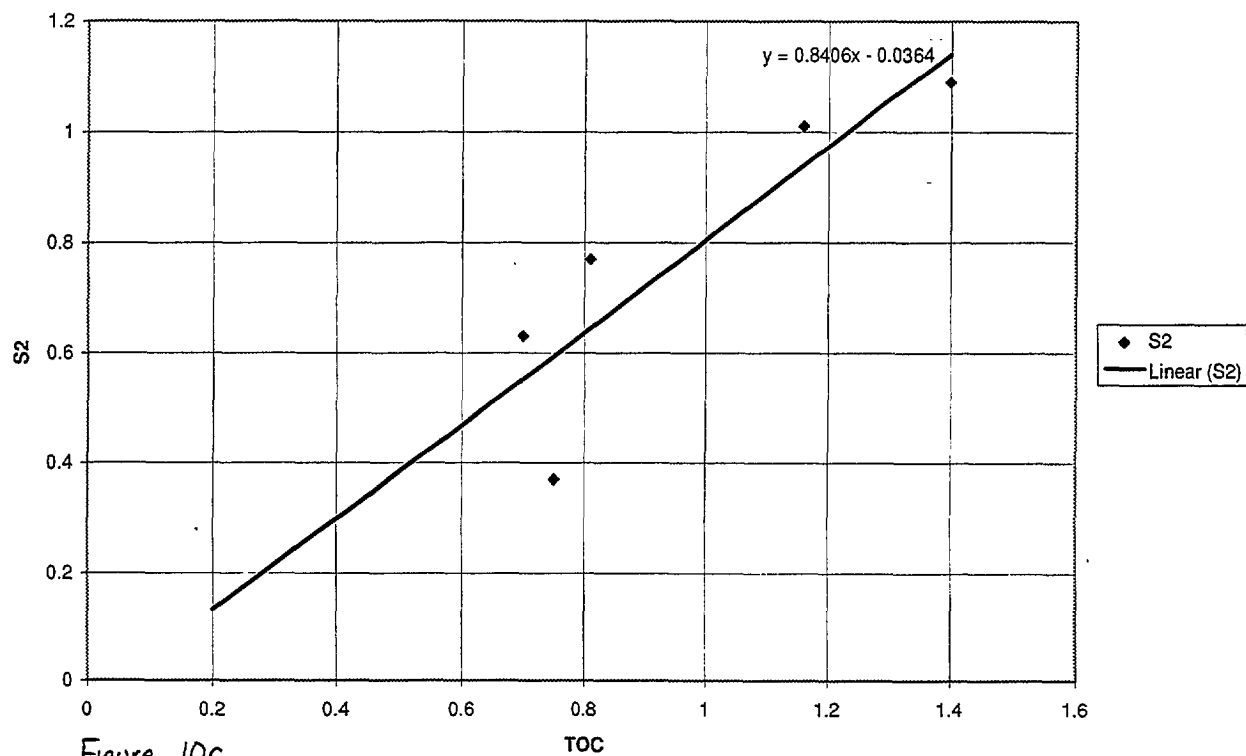
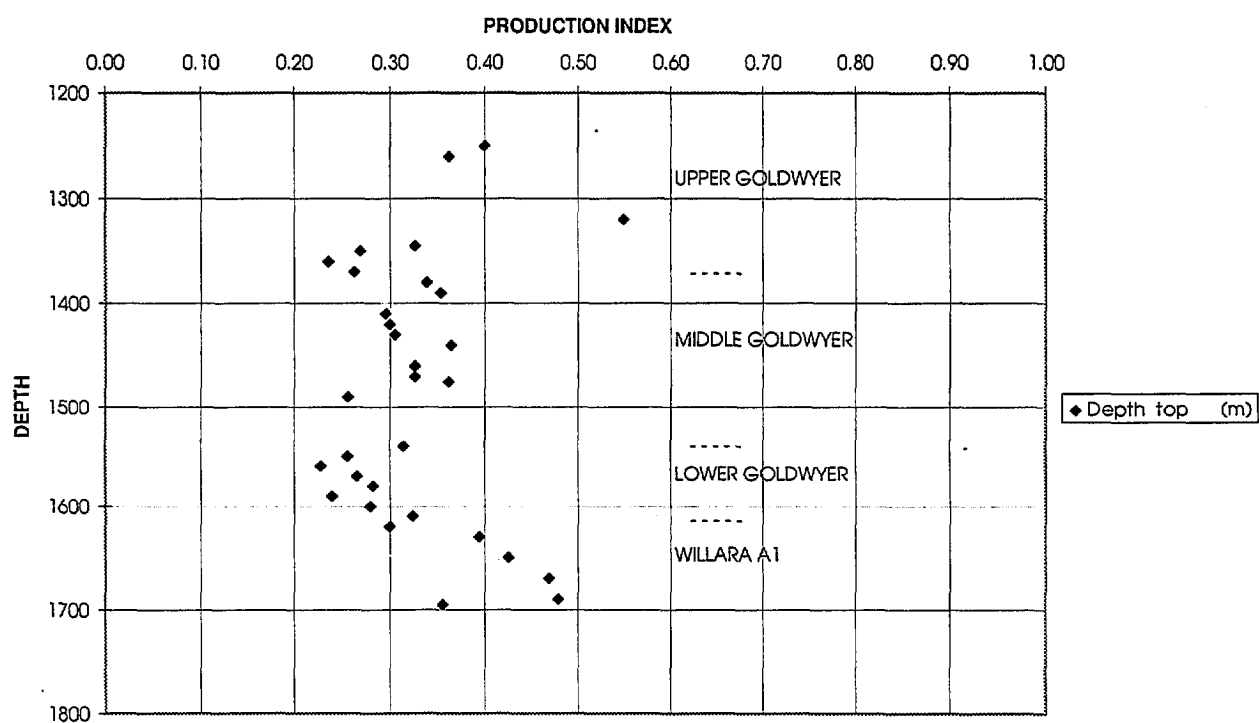


Figure 10b

CANOPUS-1 Willara A1



CANOPUS-1 Ordovician



CANOPUS-1 Ordov. n

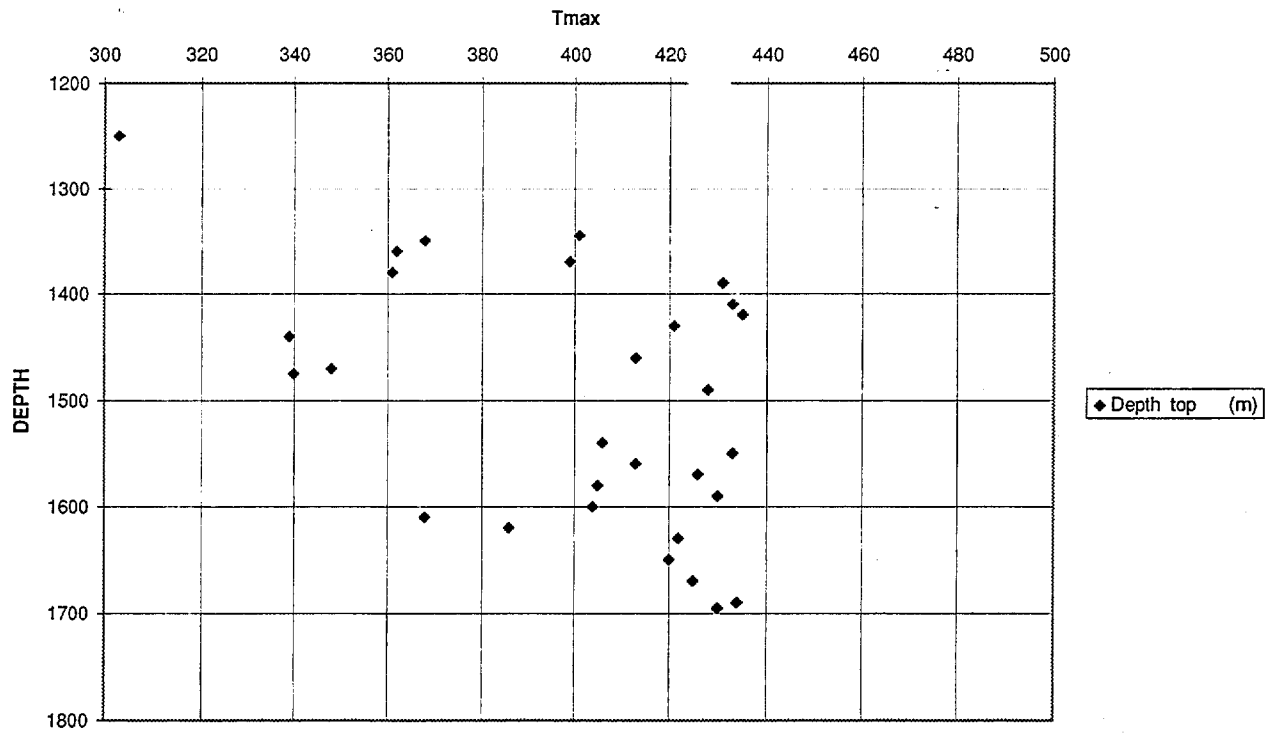
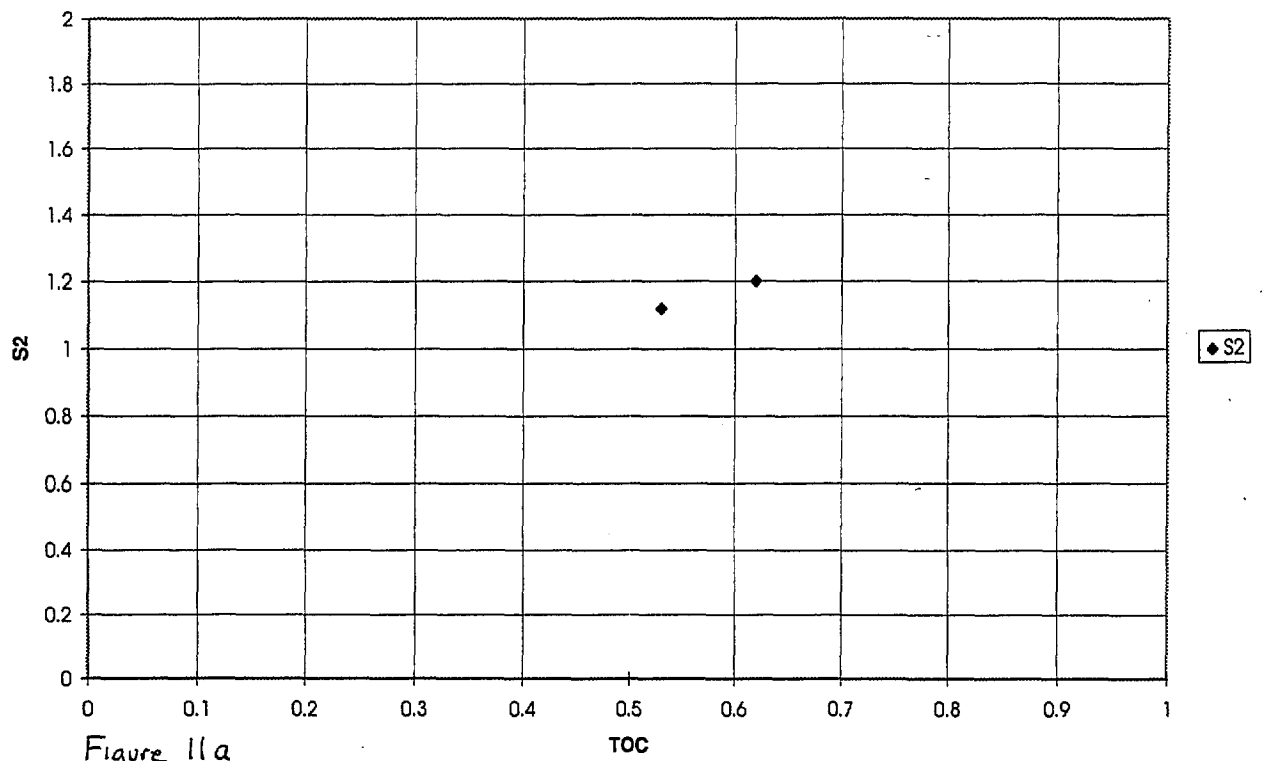
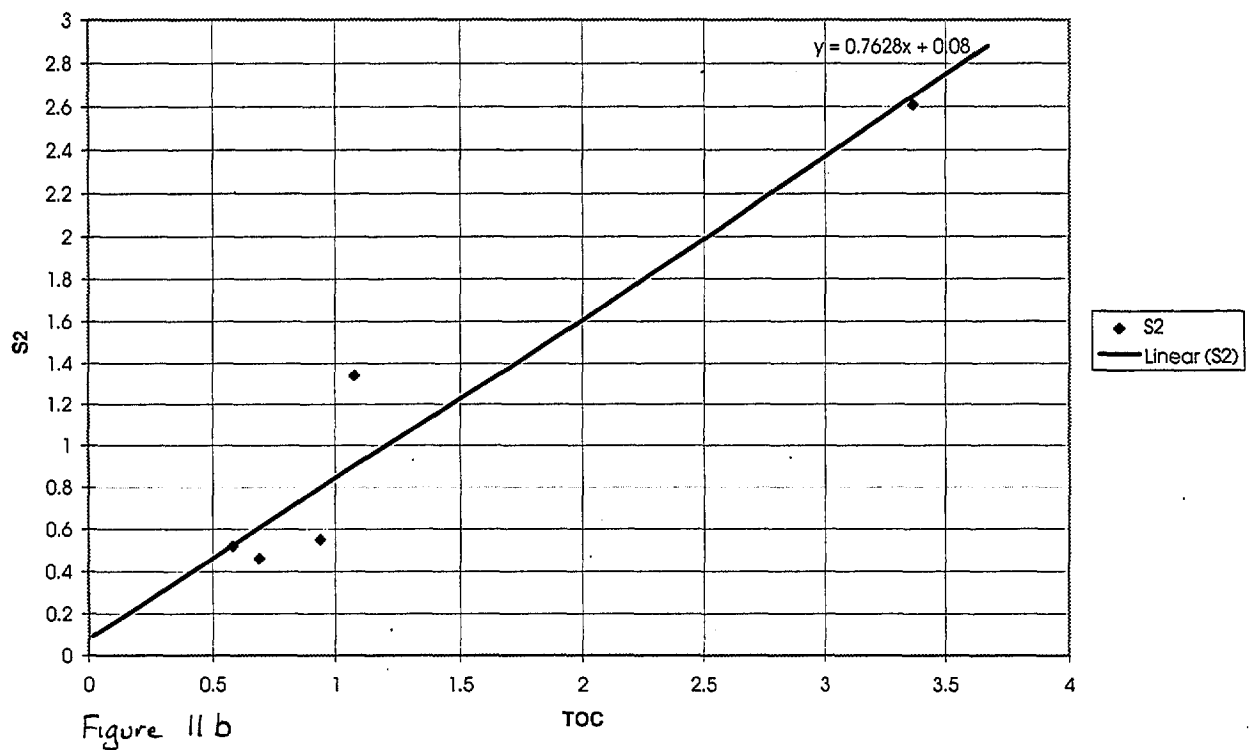


Figure 10e

CRYSTAL CREEK-1 Upper Goldwyer



CRYSTAL CREEK-1 Lower Goldwyer



CRYSTAL CREEK-1 (Ordovician)

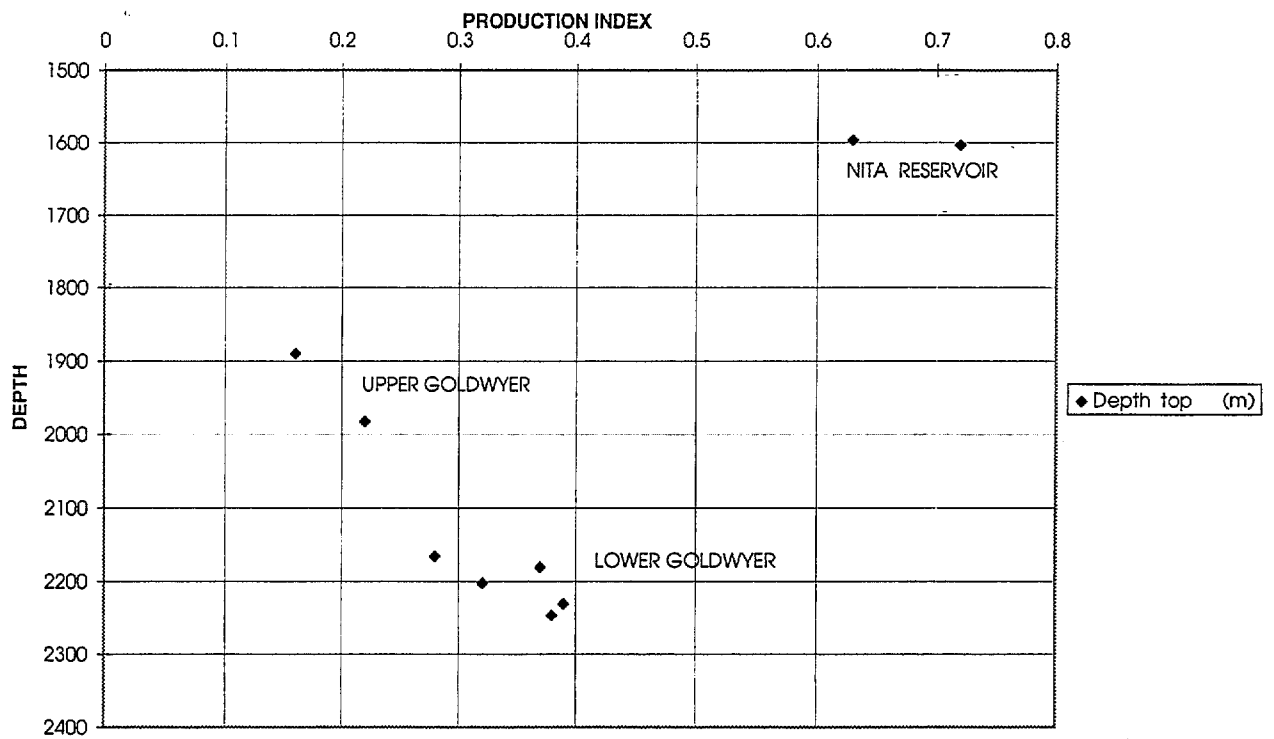


Figure 11c

CRYATAL CREEK-1

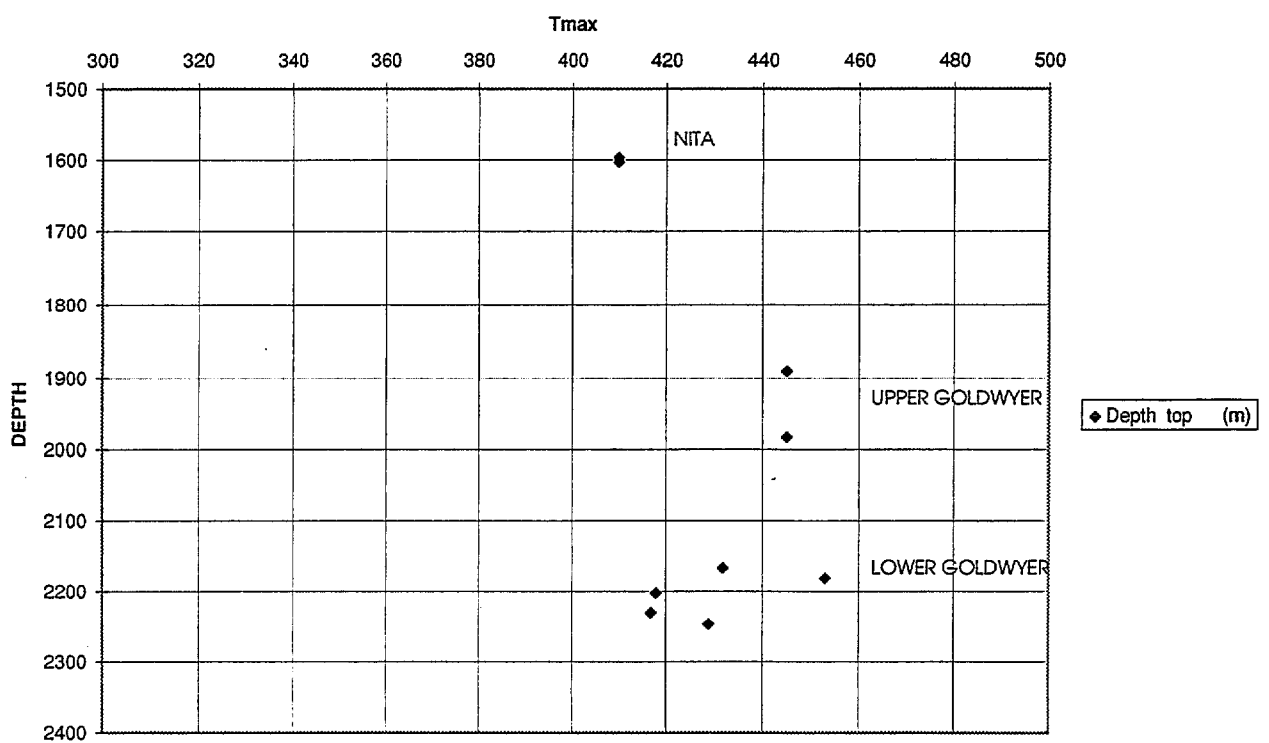


Figure 11d

DODONEA-1 Upper Goldwyer

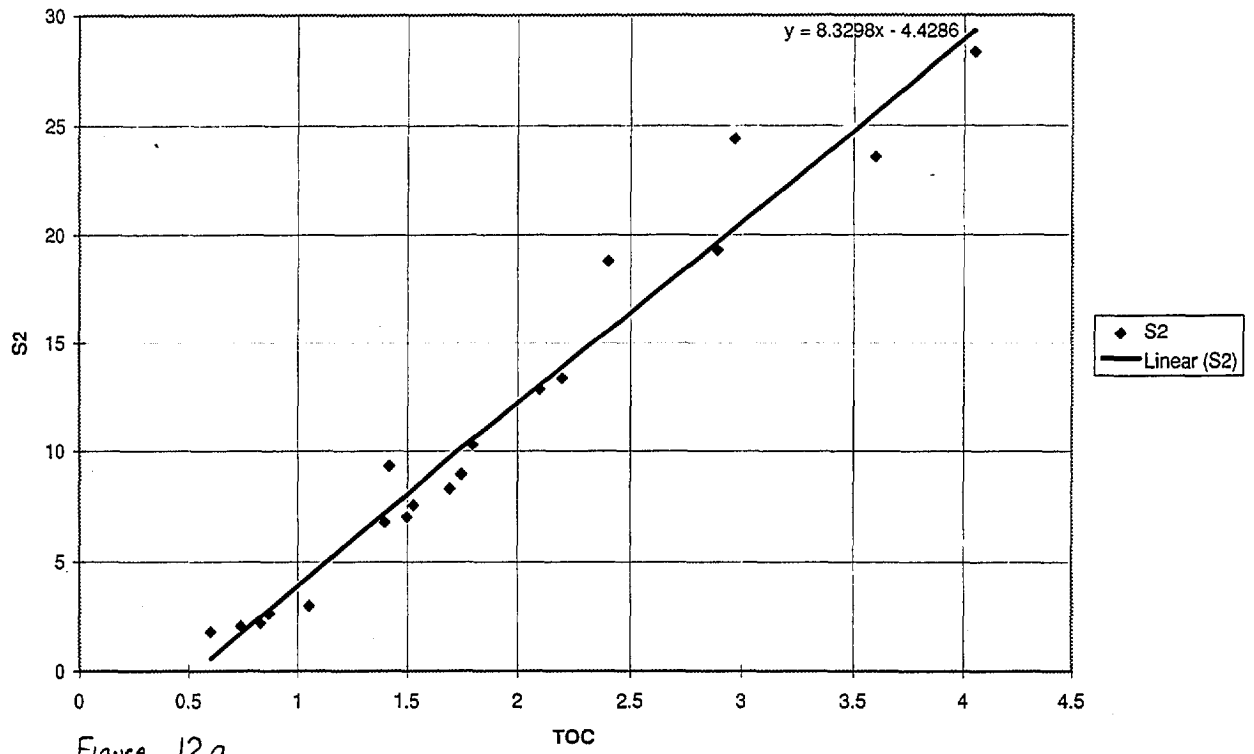


Figure 12a

DODONEA-1 Nambeet A1

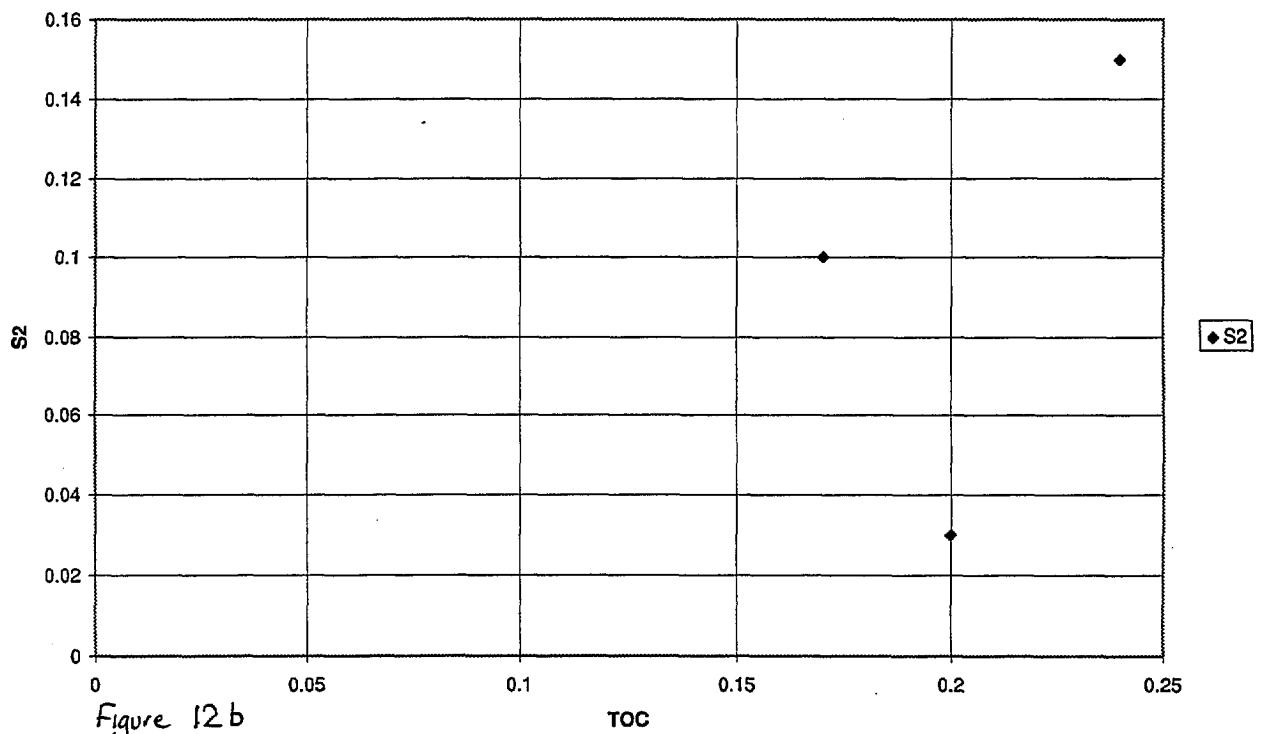


Figure 12b

DODONEA-1 (Ordovician)

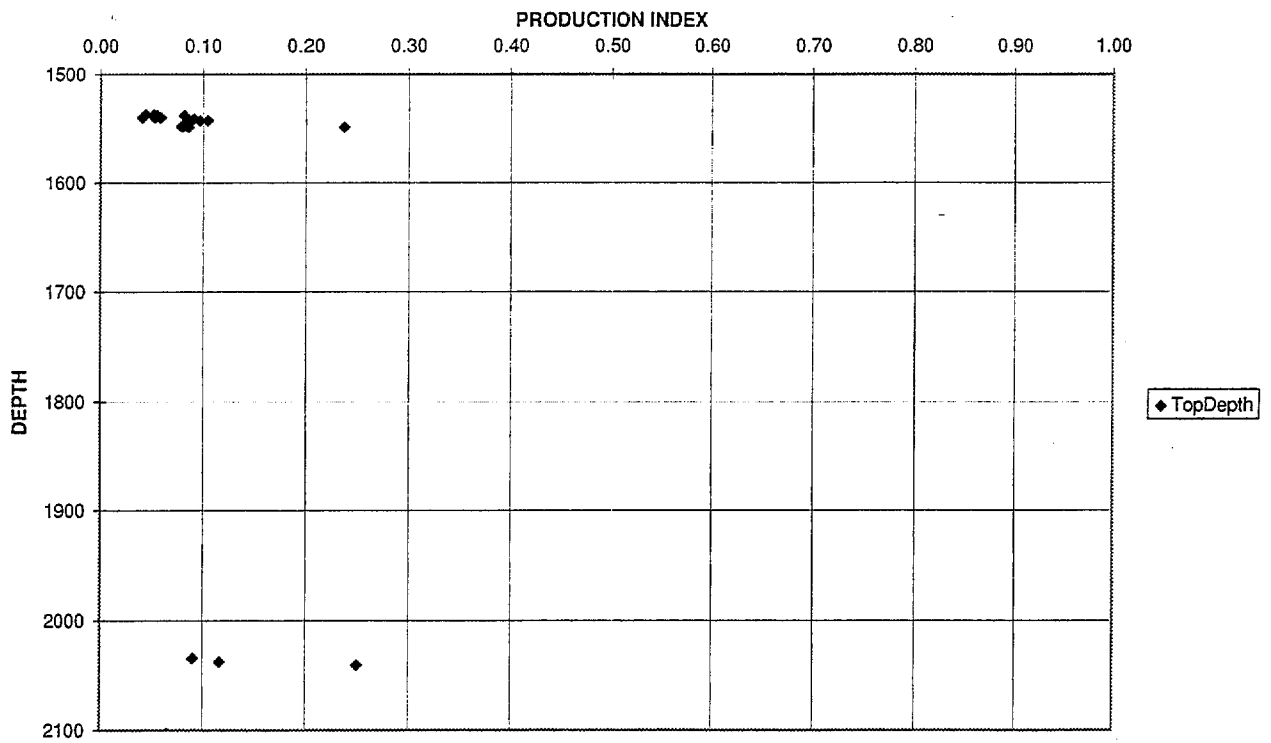


Figure 12 c

DODONEA-1

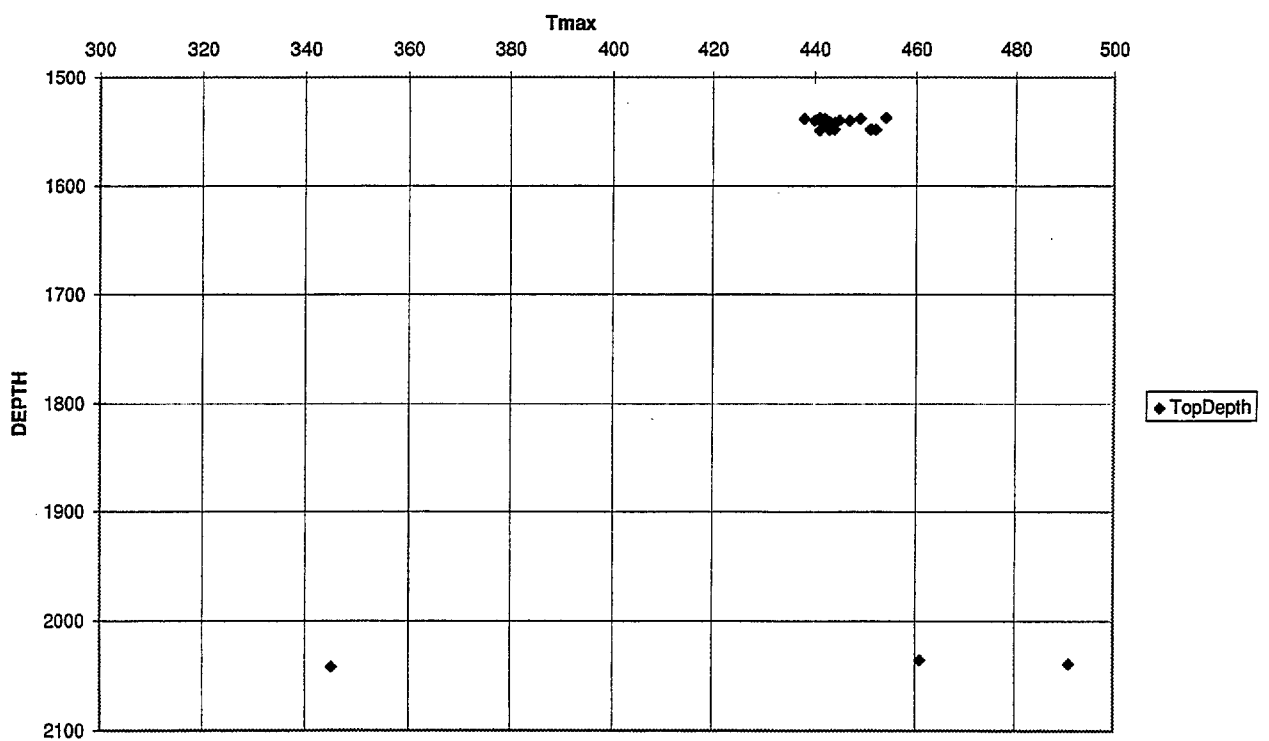


Figure 12 d

EDGAR RANGE-1 Upper Goldwyer

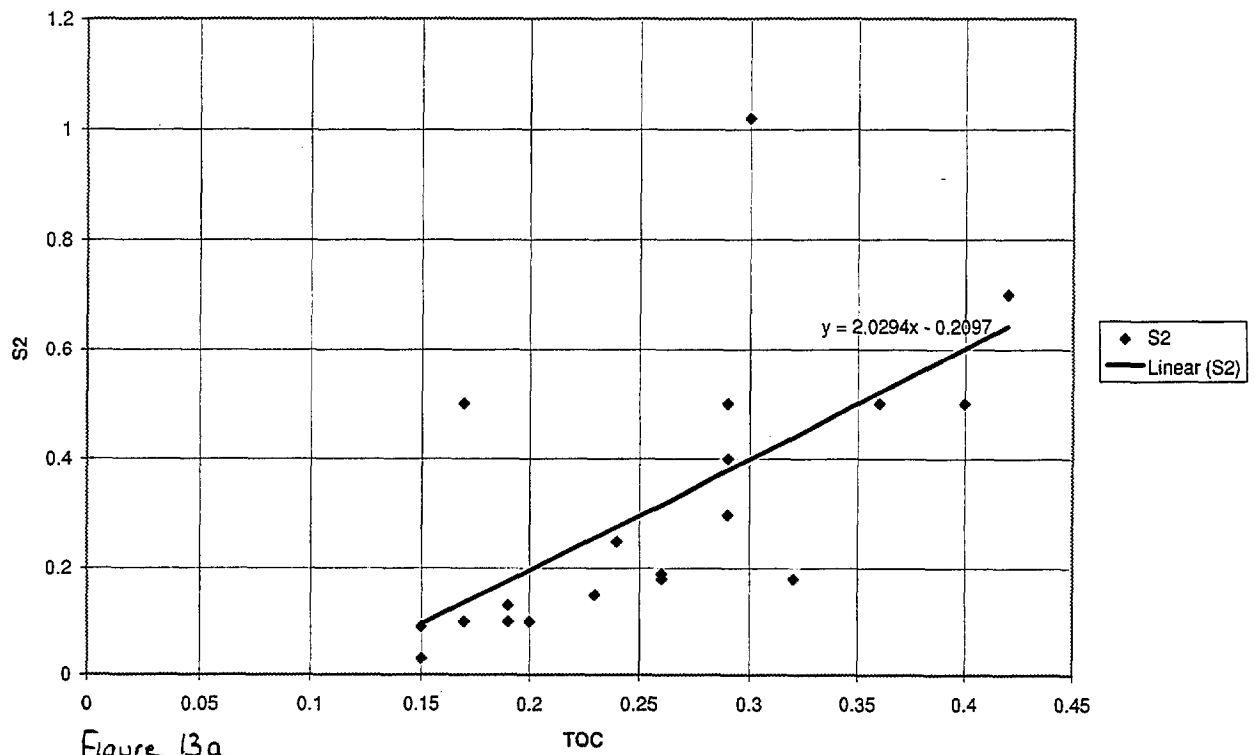


Figure 13a

EDGAR RANGE-1 Lower Goldwyer

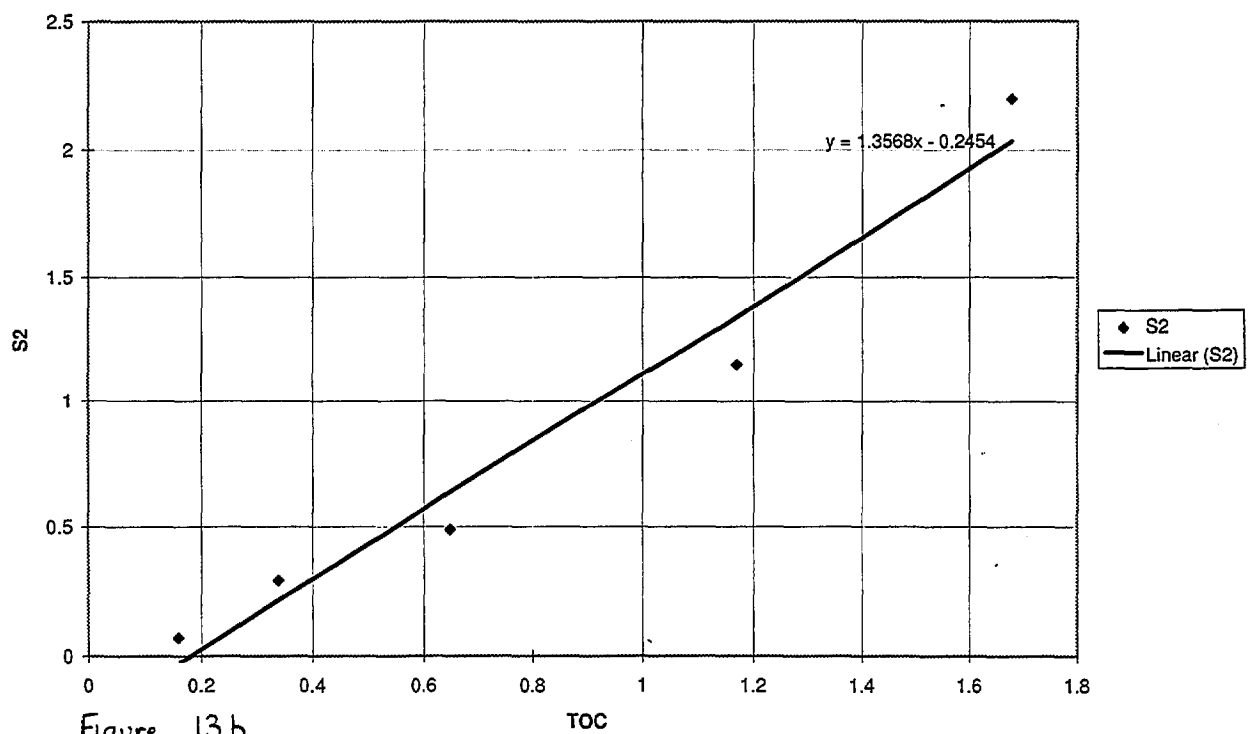


Figure 13b

EDGAR RANGE-1 Nambeet A1

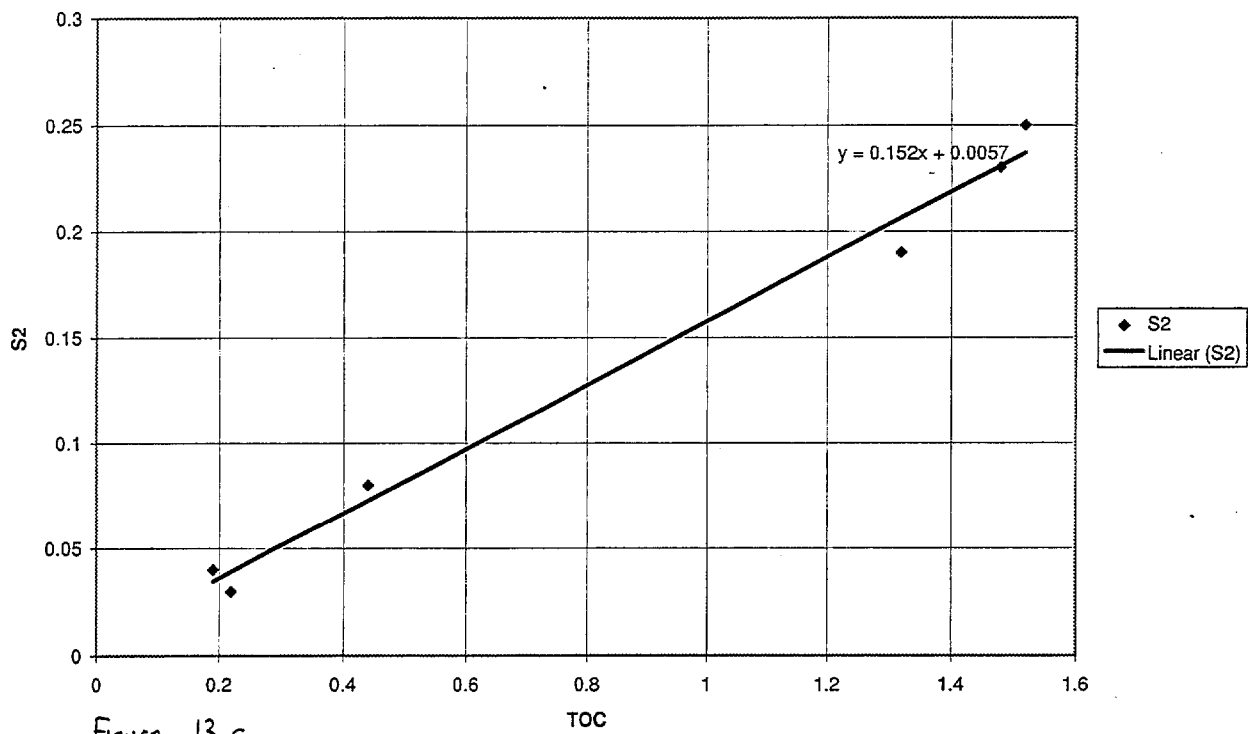


Figure 13c

EDGAR RANGE-1

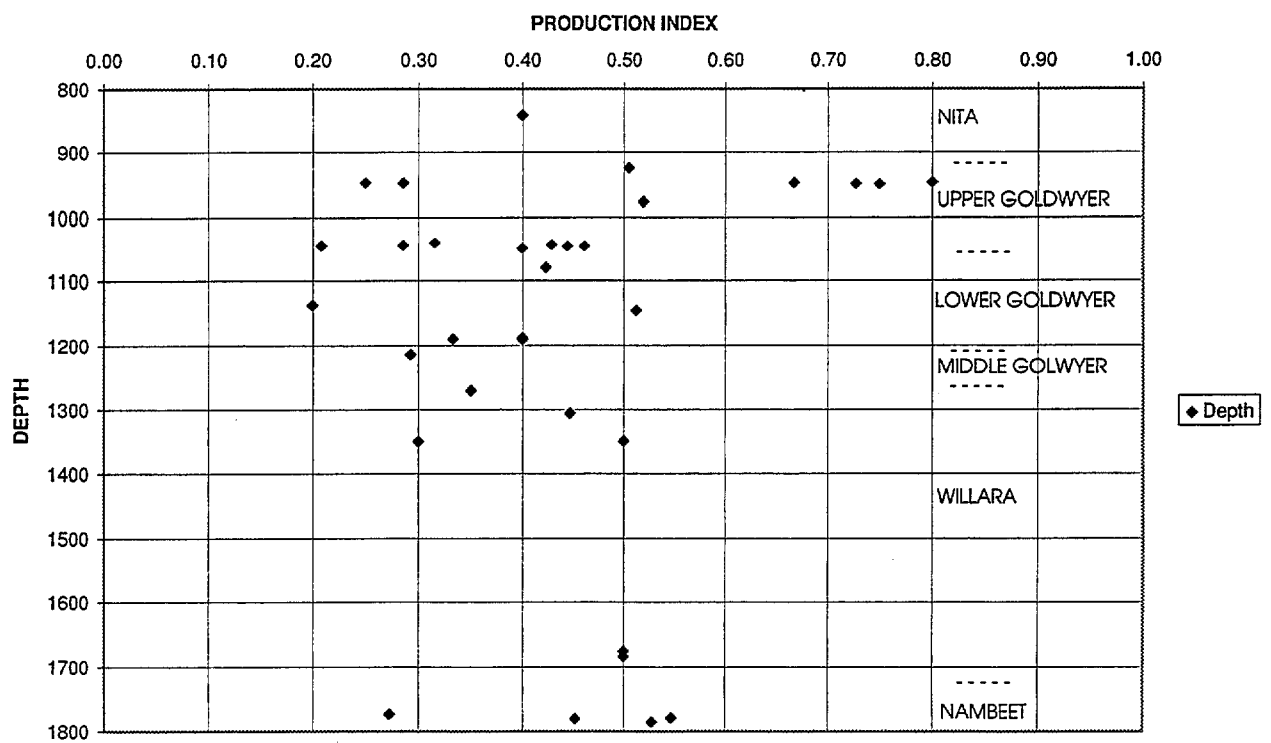


Figure 13d

EDGAR RANGE-1

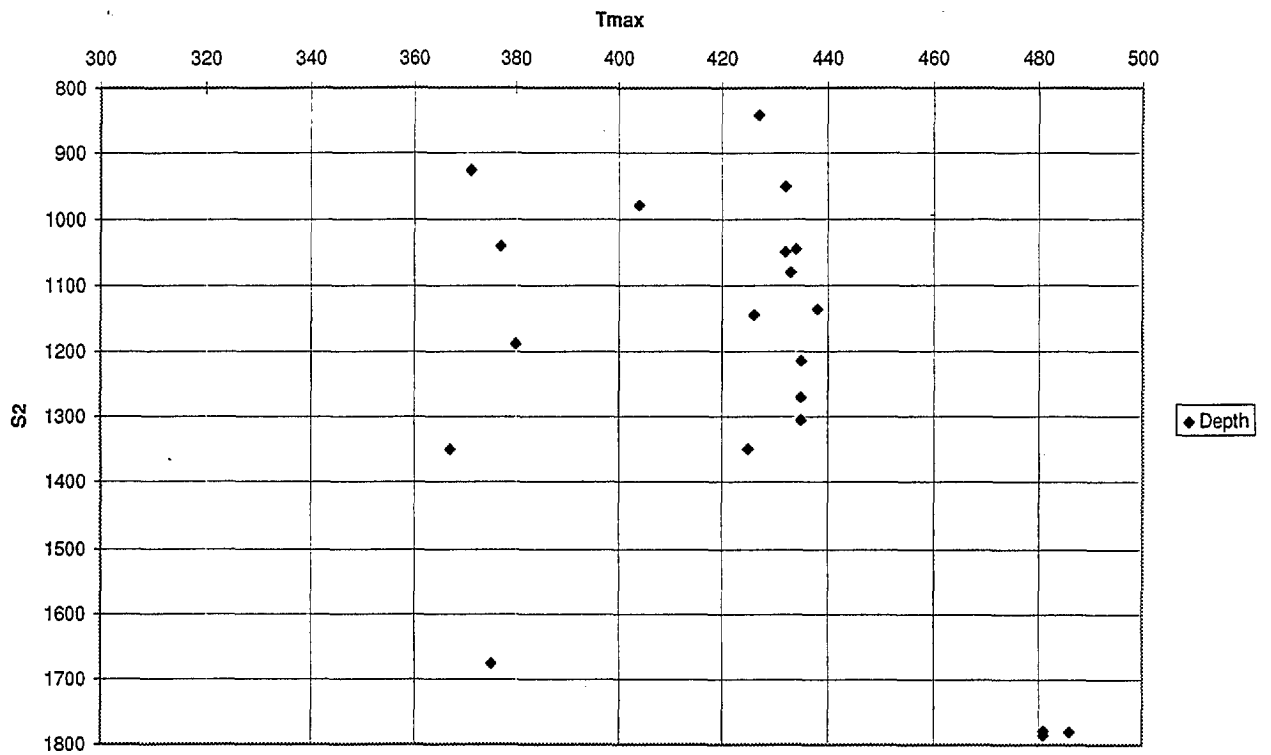


Figure 13e

HEDONIA-1 Lower Gc ryer

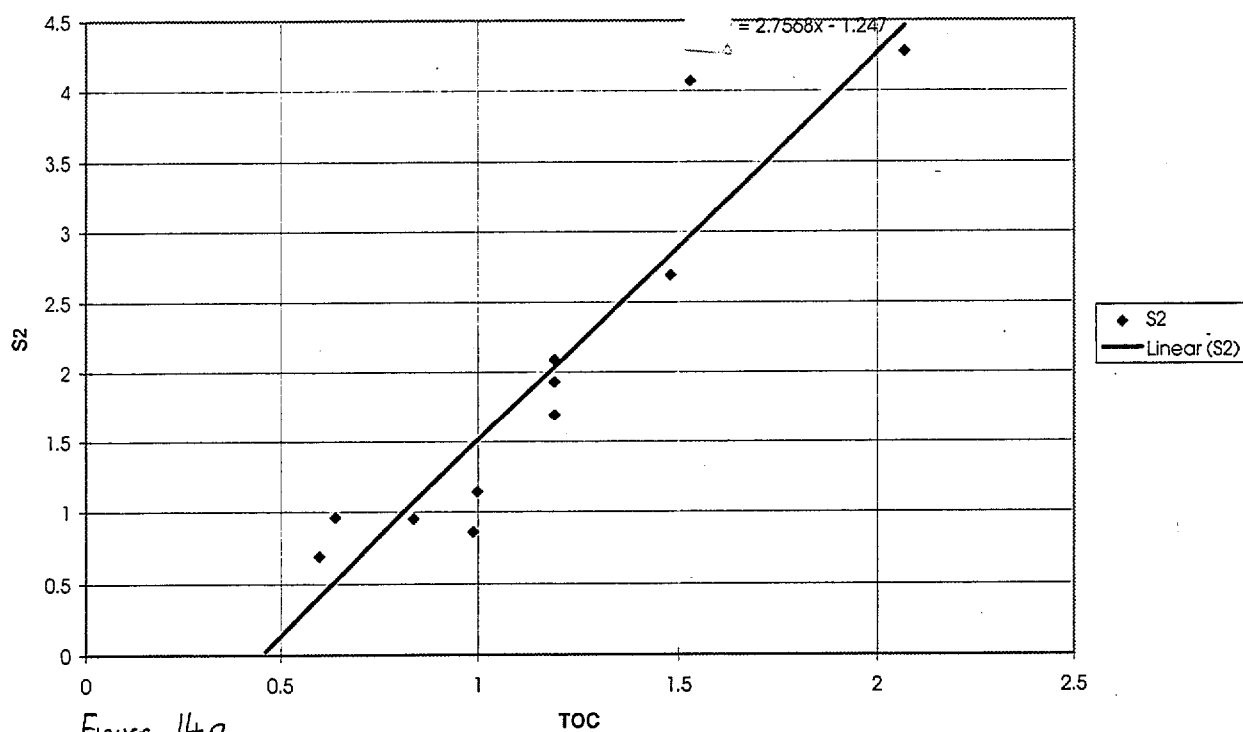


Figure 14a

HEDONIA-1 A1 "Nambeet" (mod)

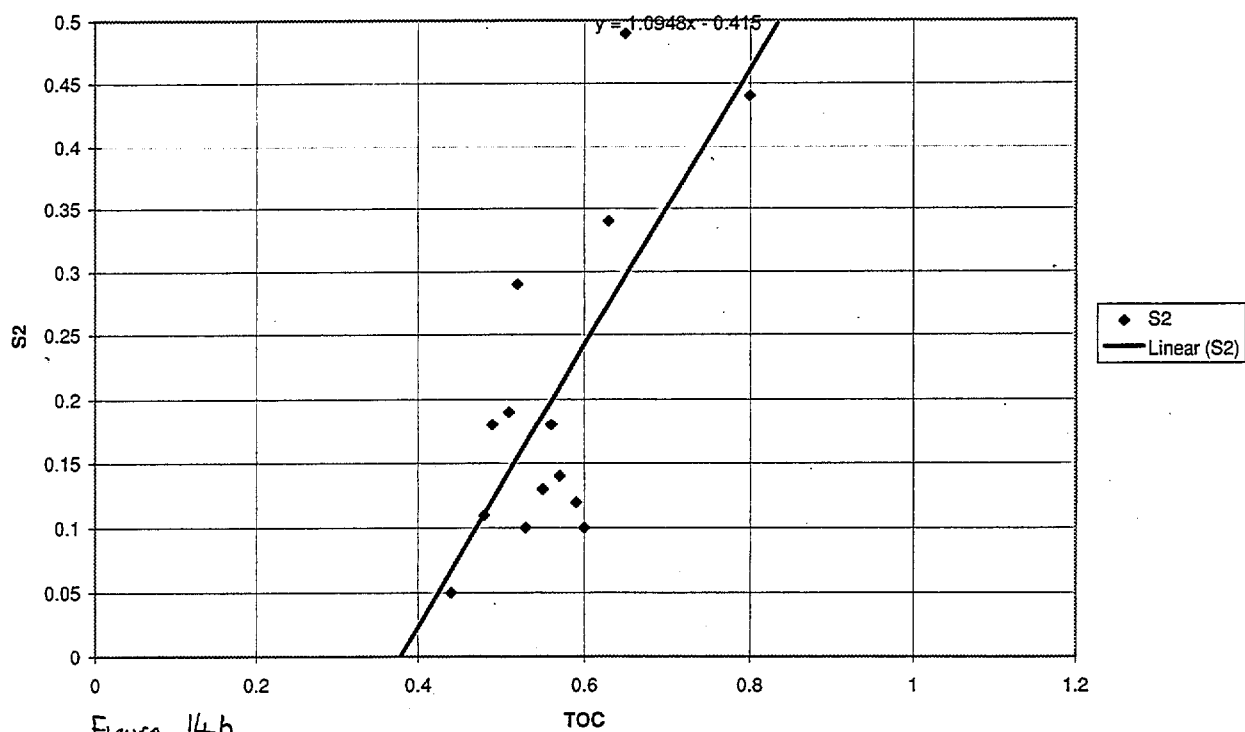


Figure 14b

HEDONIA-1 (Ordovician)

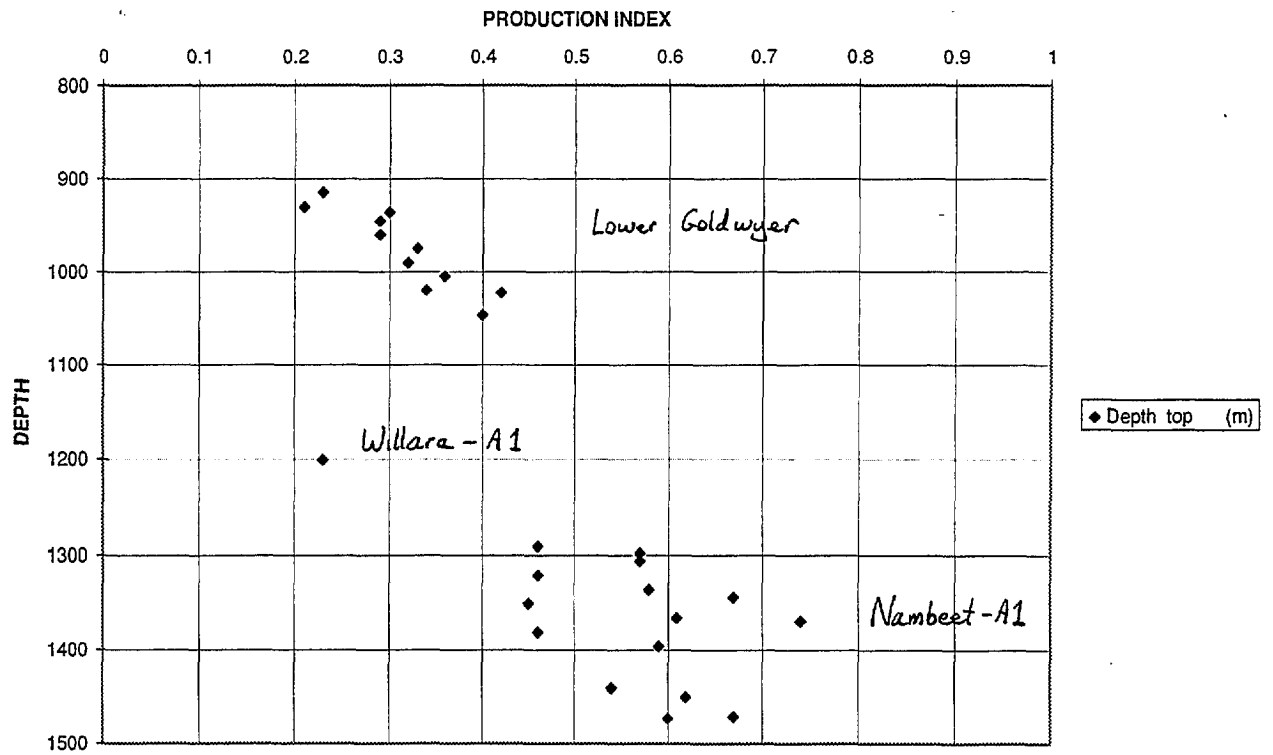


Figure 14c

HEDONIA-1 (Ordovician)

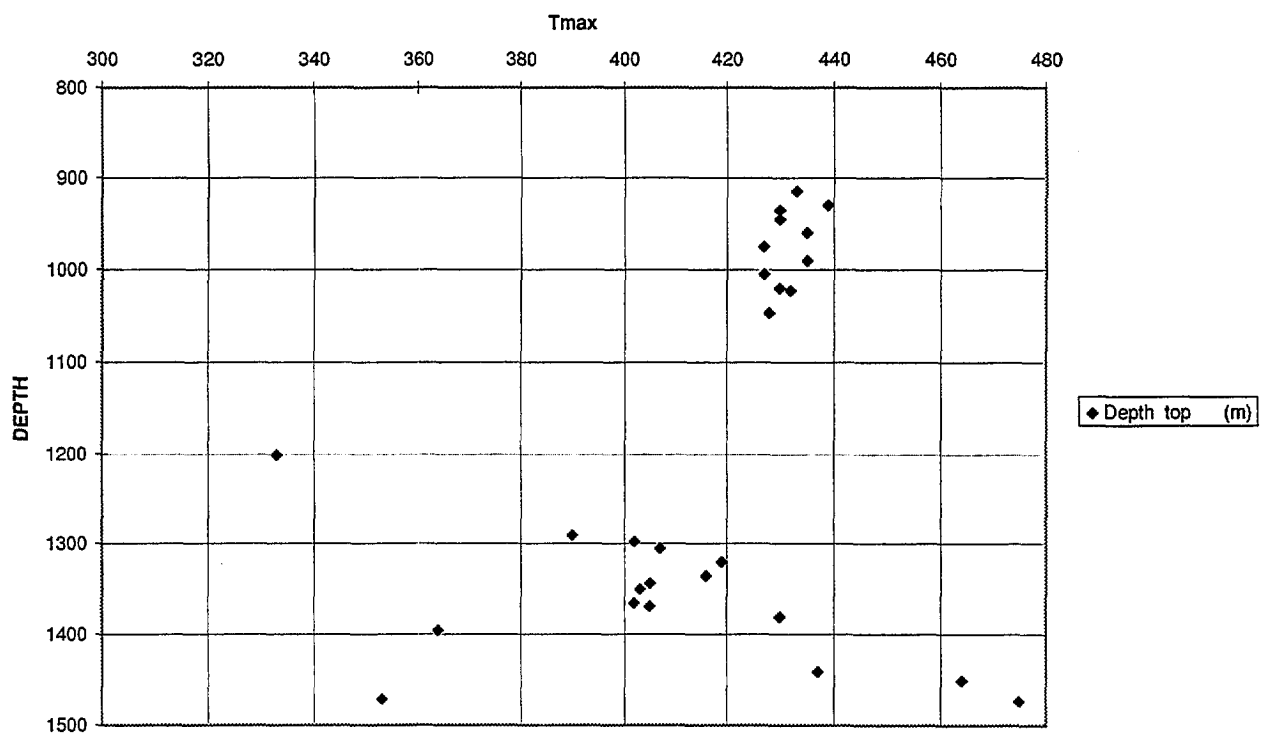


Figure 14d

HILLTOP-1 Lower Goldwyer

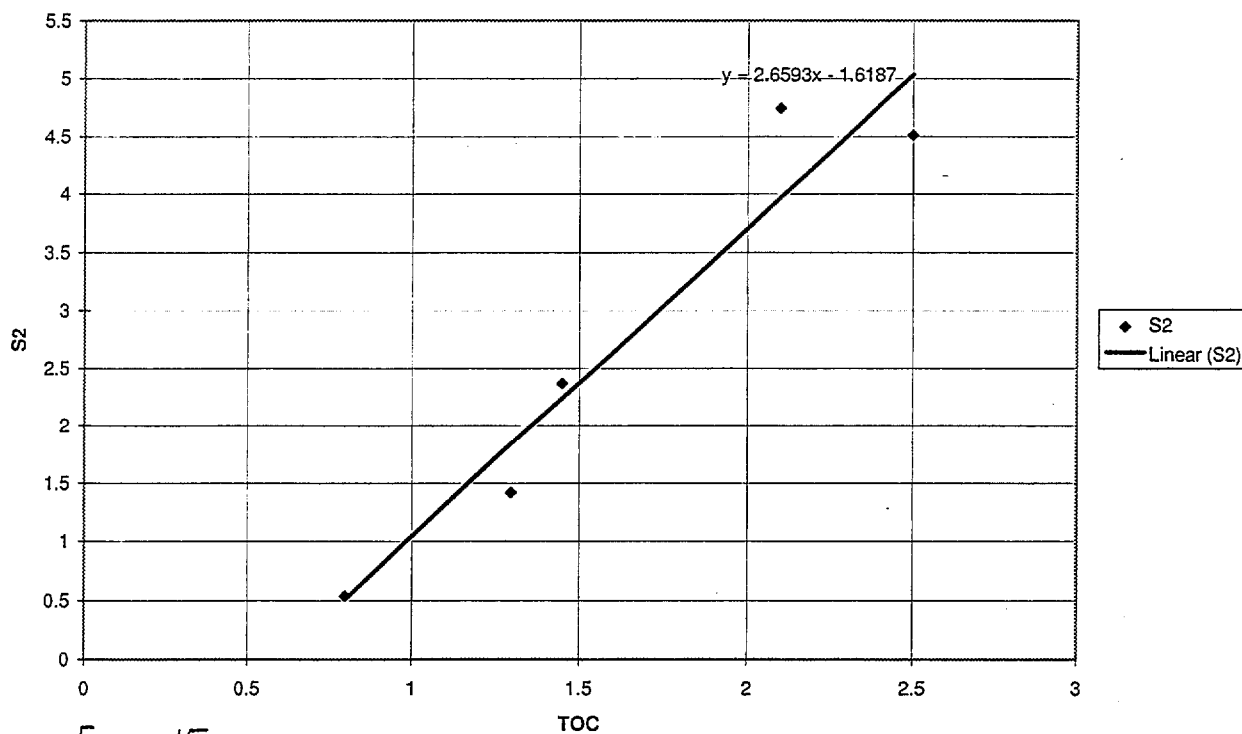


Figure 15a

HILLTOP-1 A1 "Nambeet"

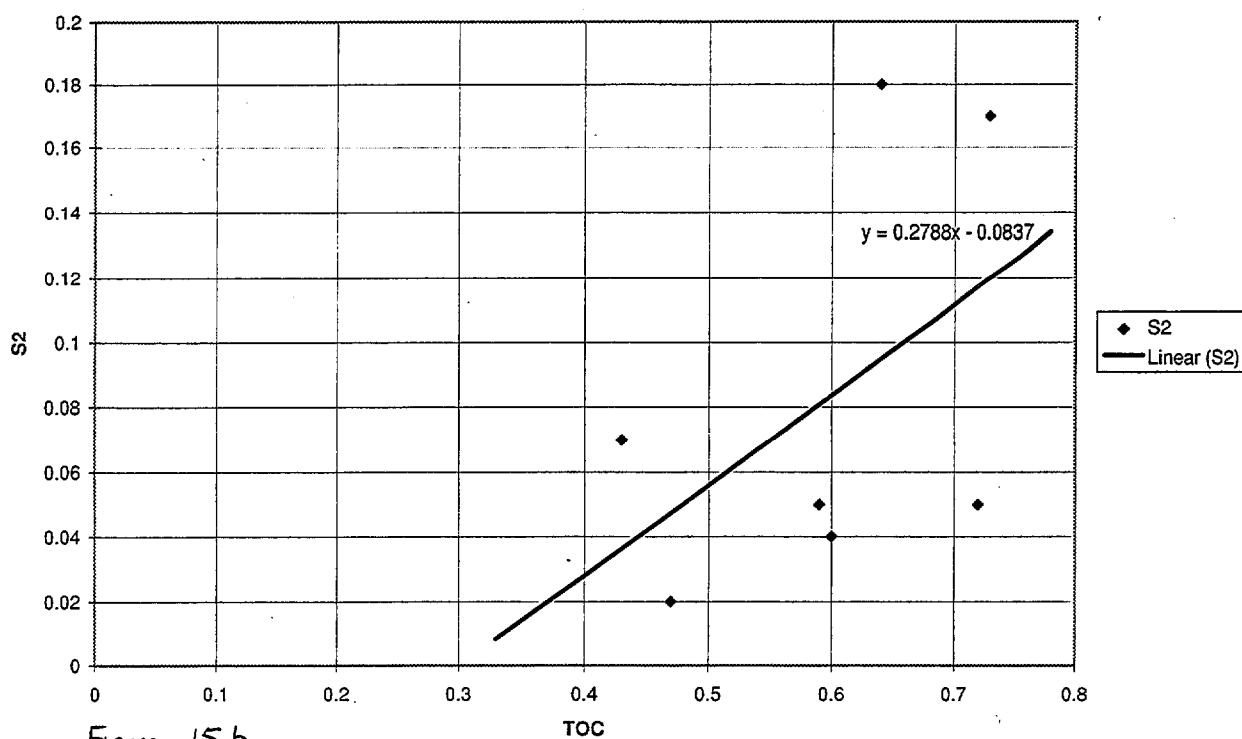


Figure 15b

HILLTOP-1

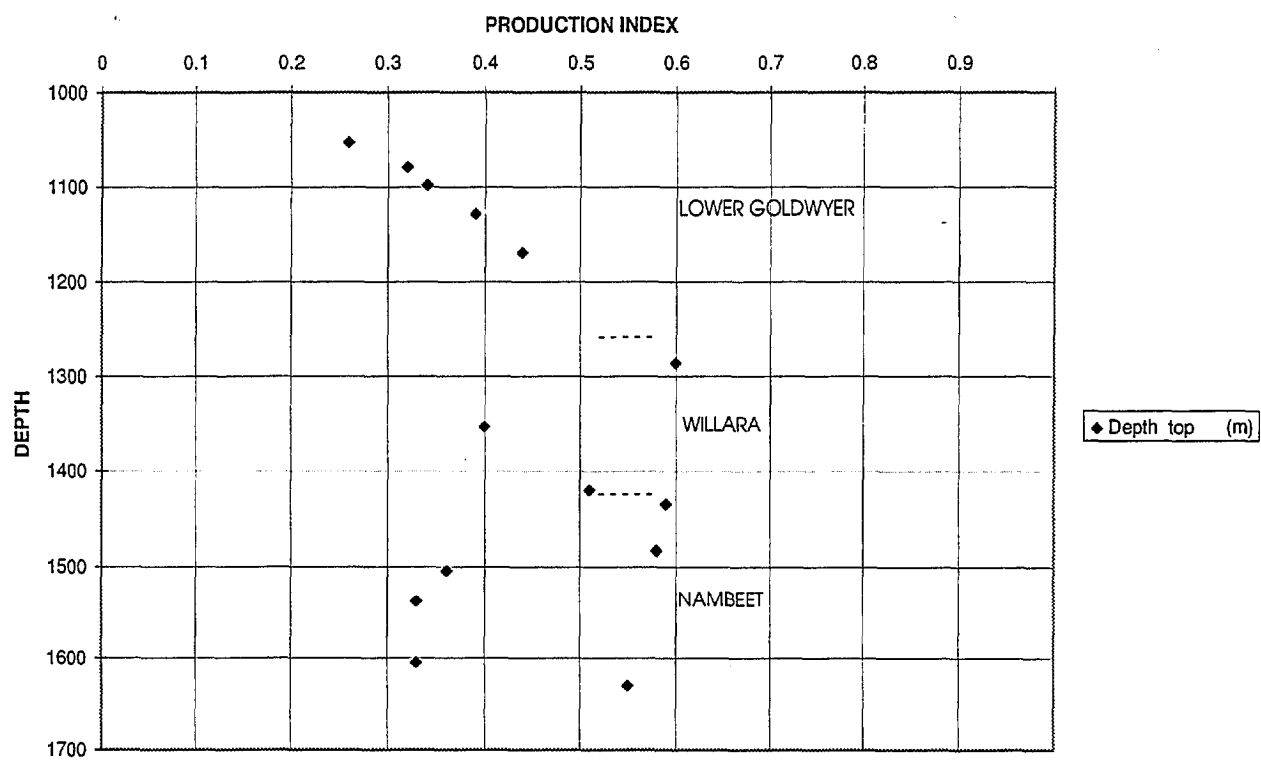


Figure 15c

HILLTOP-1

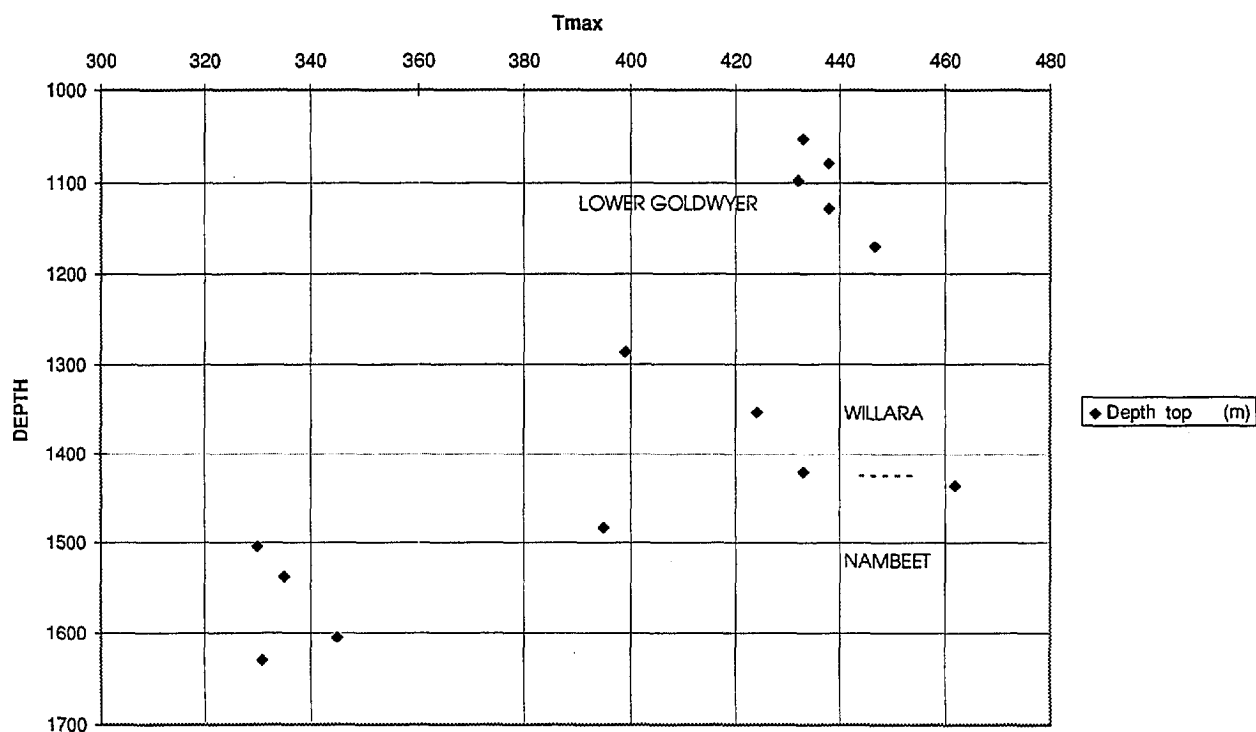
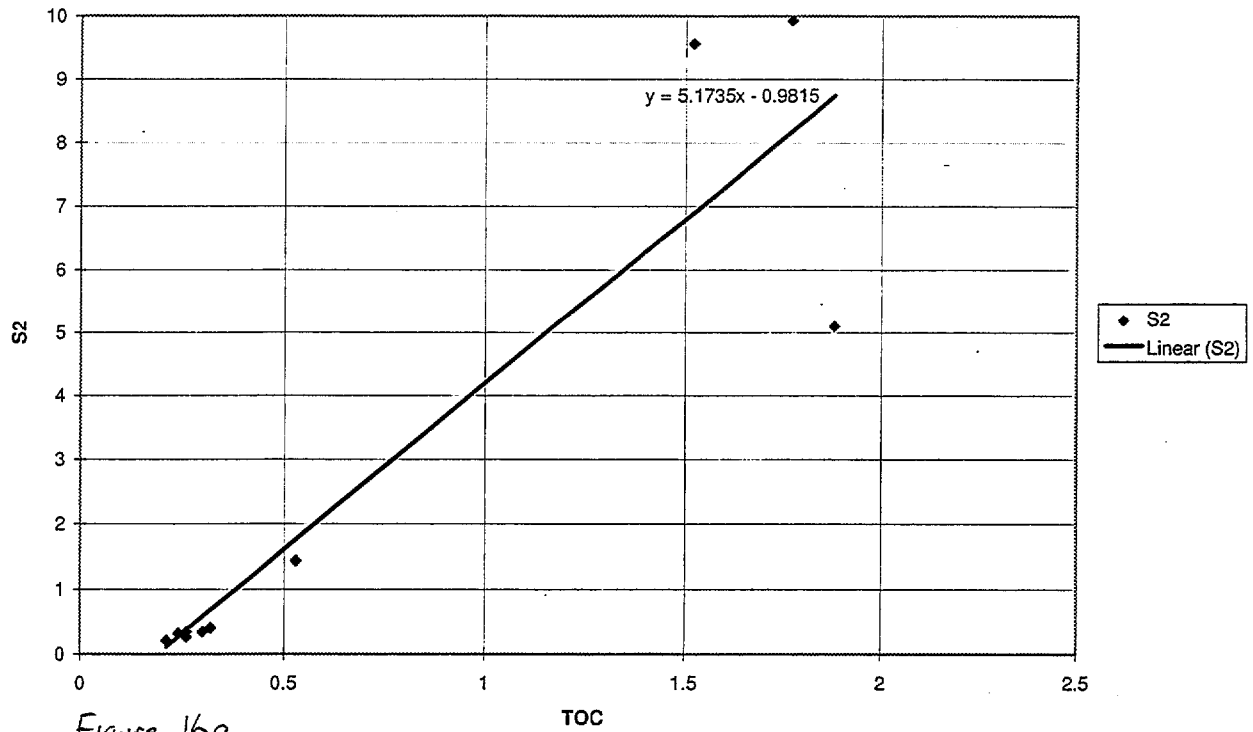
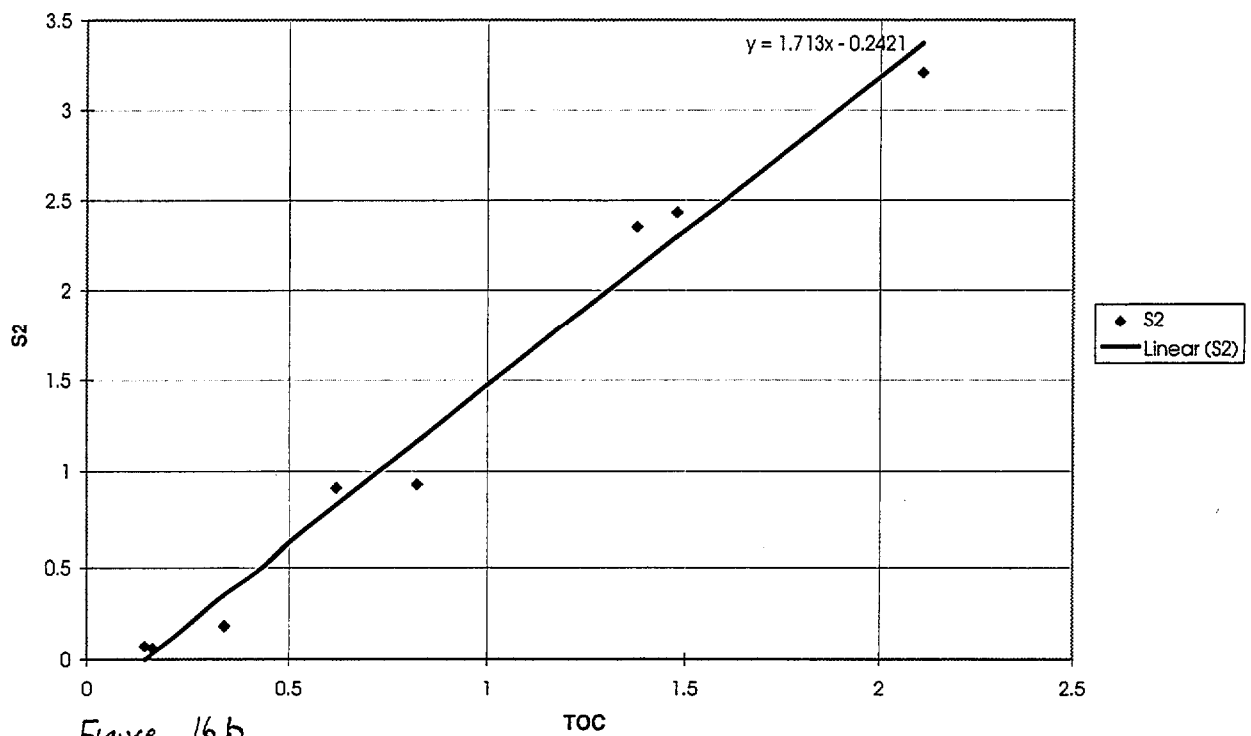


Figure 15d

MATCHES SPRING-1 (Upper Goldwyer)



MATCHES SPRING-1 (Lower Goldwyer)



MATCHES SPRINGS-1 (Ordovician)

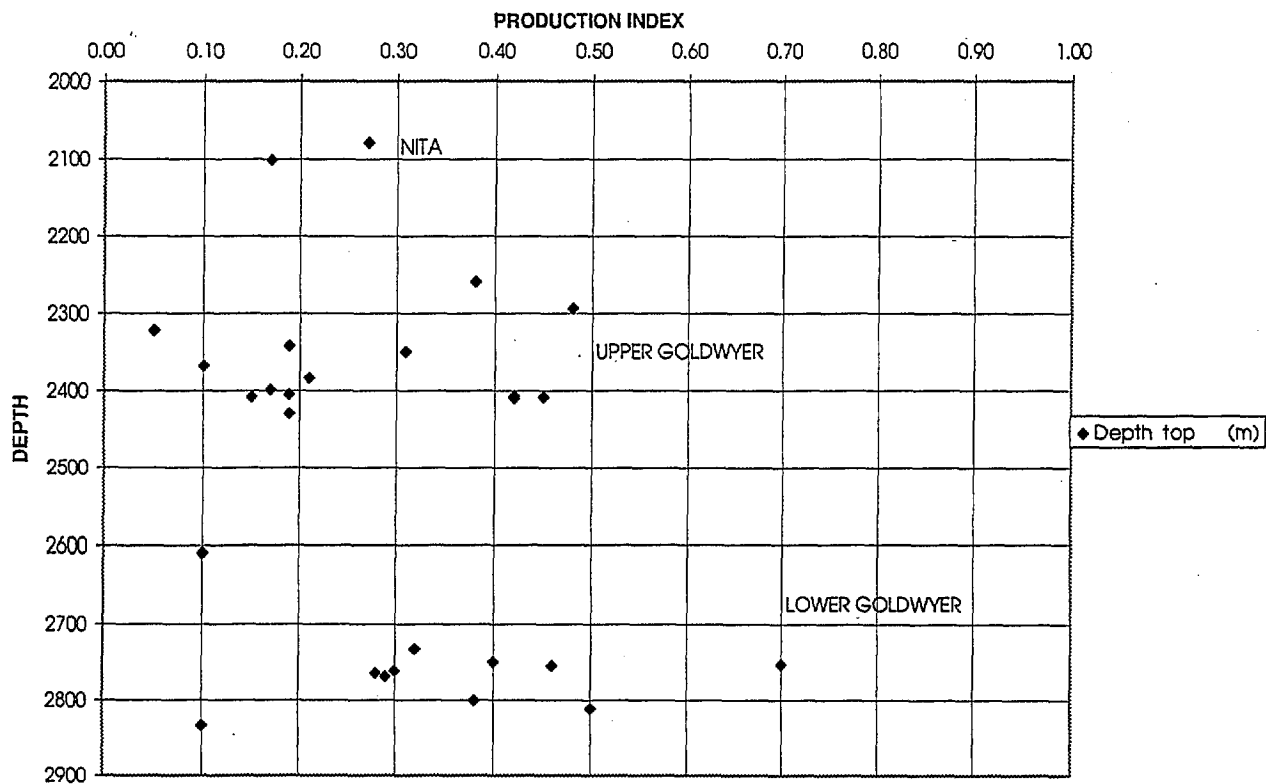


Figure 16 c

Page 1

MATCHES SPRINGS-1 (Ordovician)

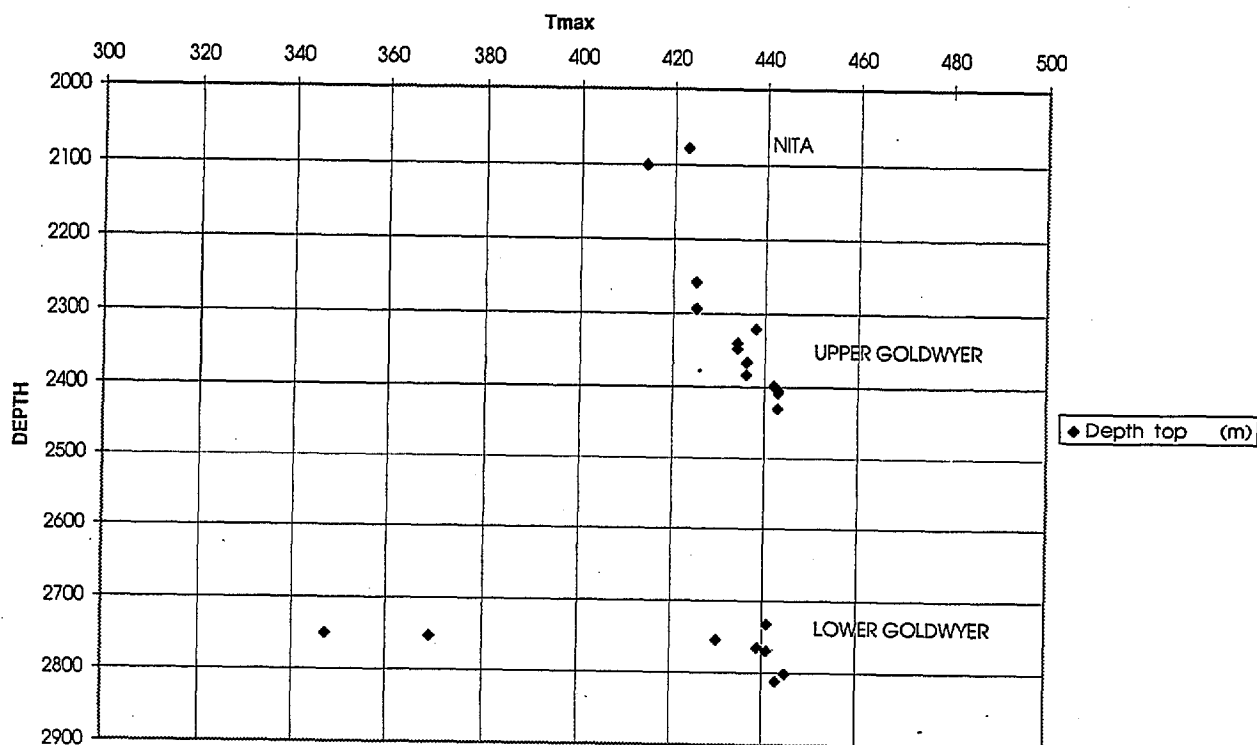


Figure 16 d

PICTOR-1 Lower Goldwyer

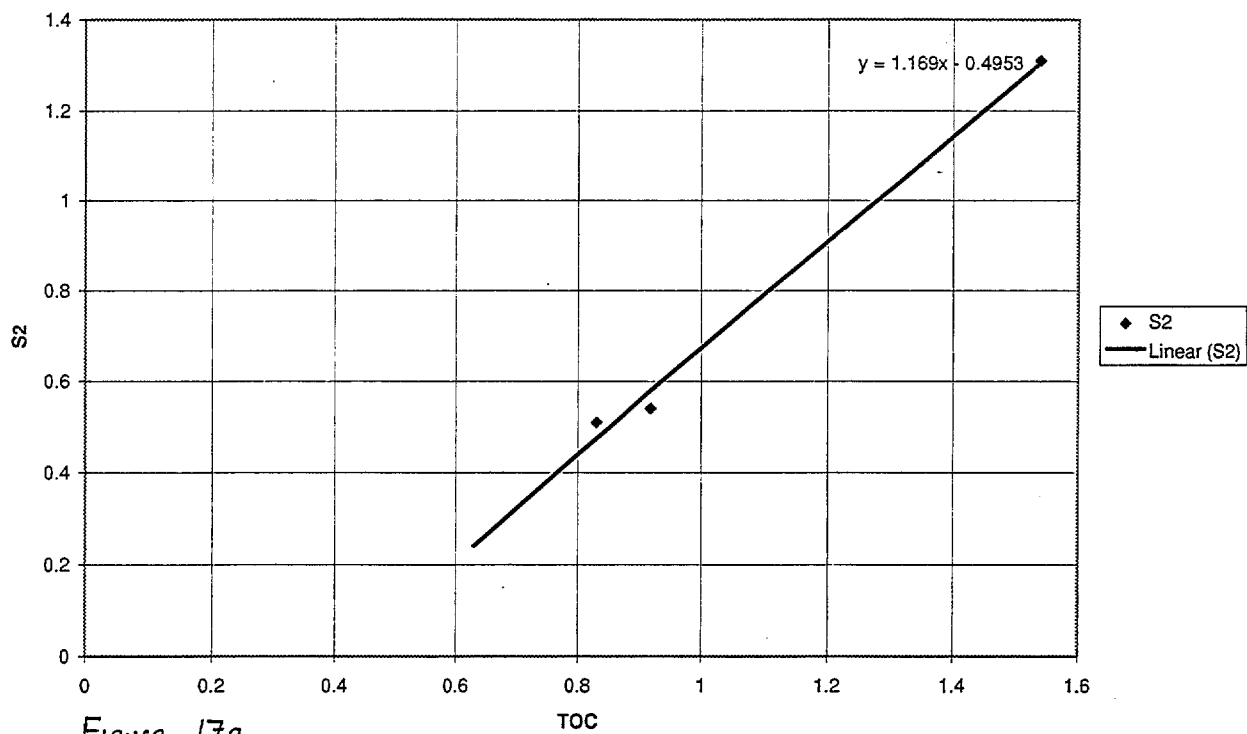


Figure 17a

PICTOR-1 Nambet A1

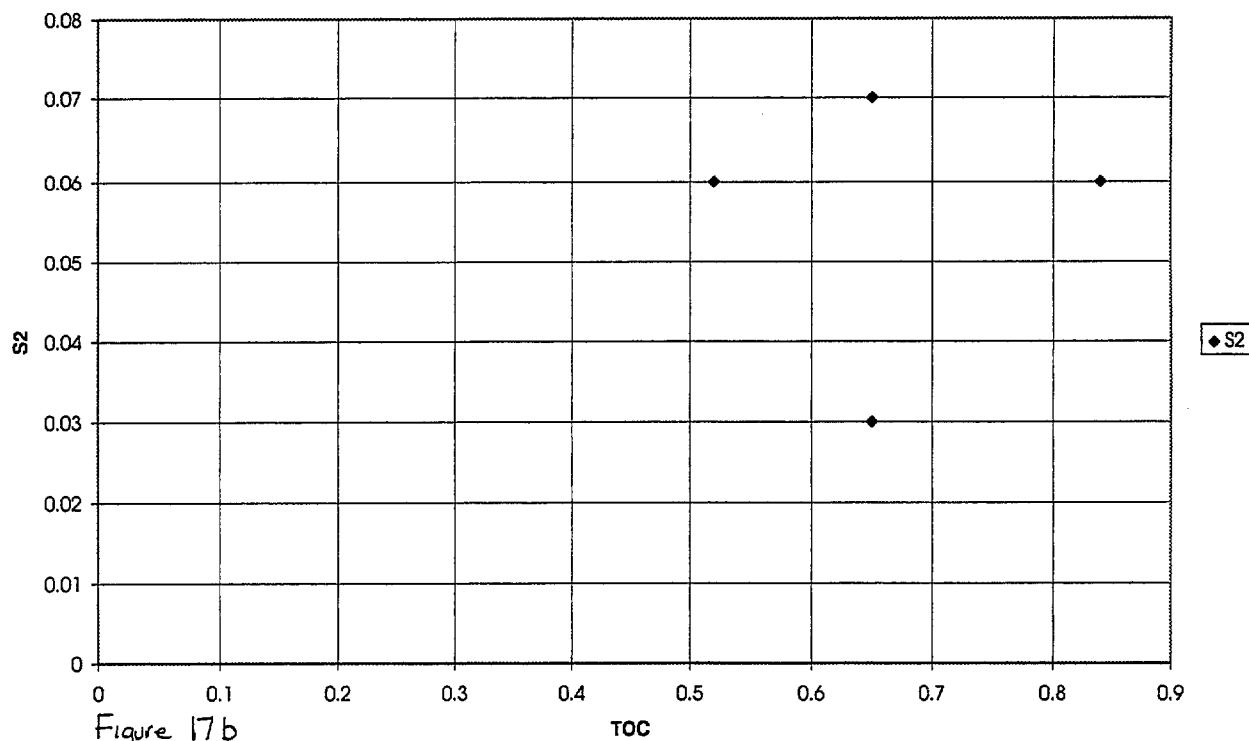


Figure 17b

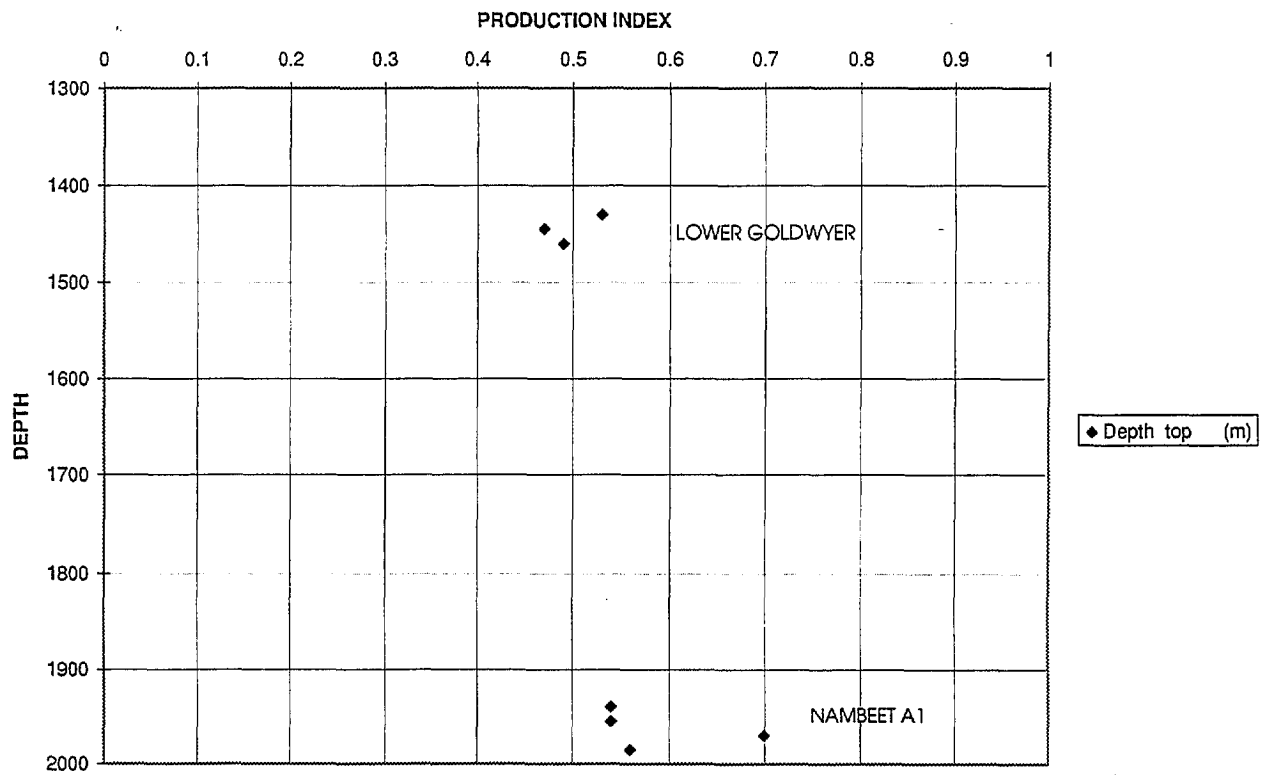


Figure 17c

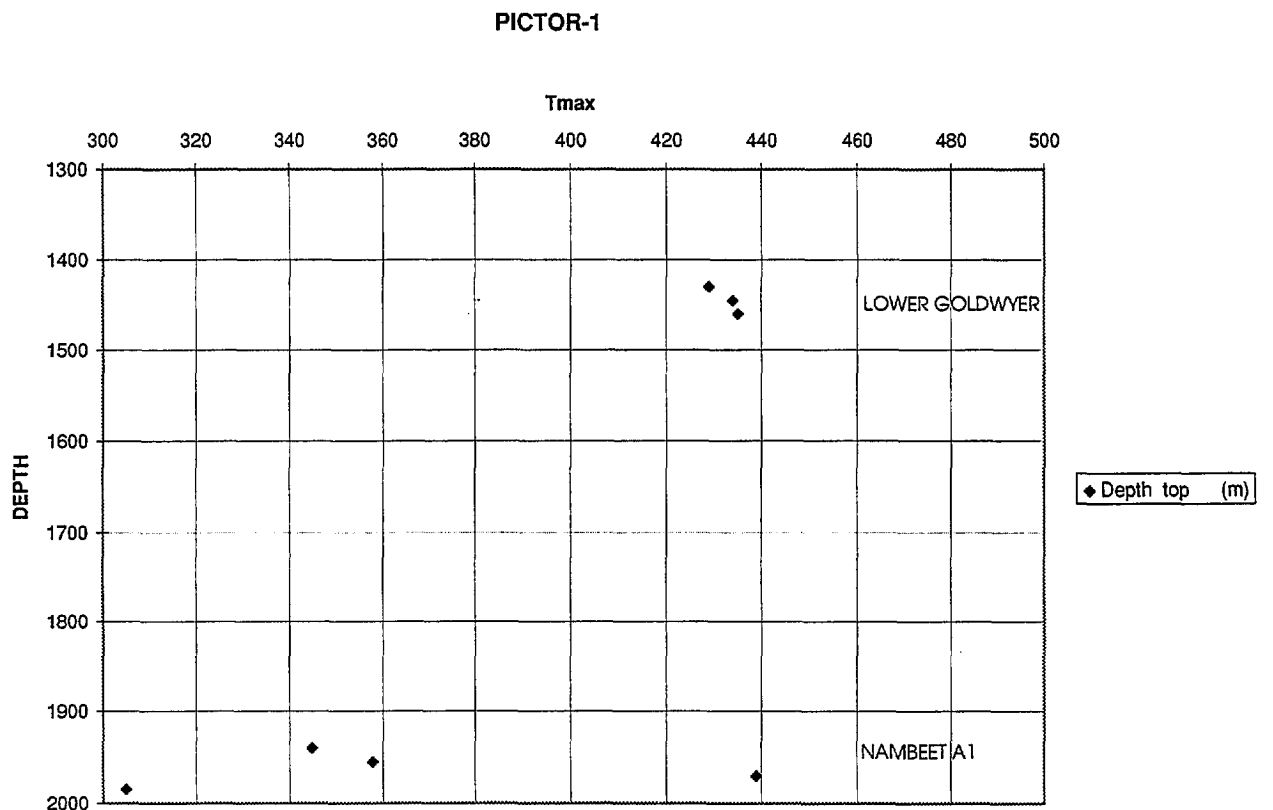
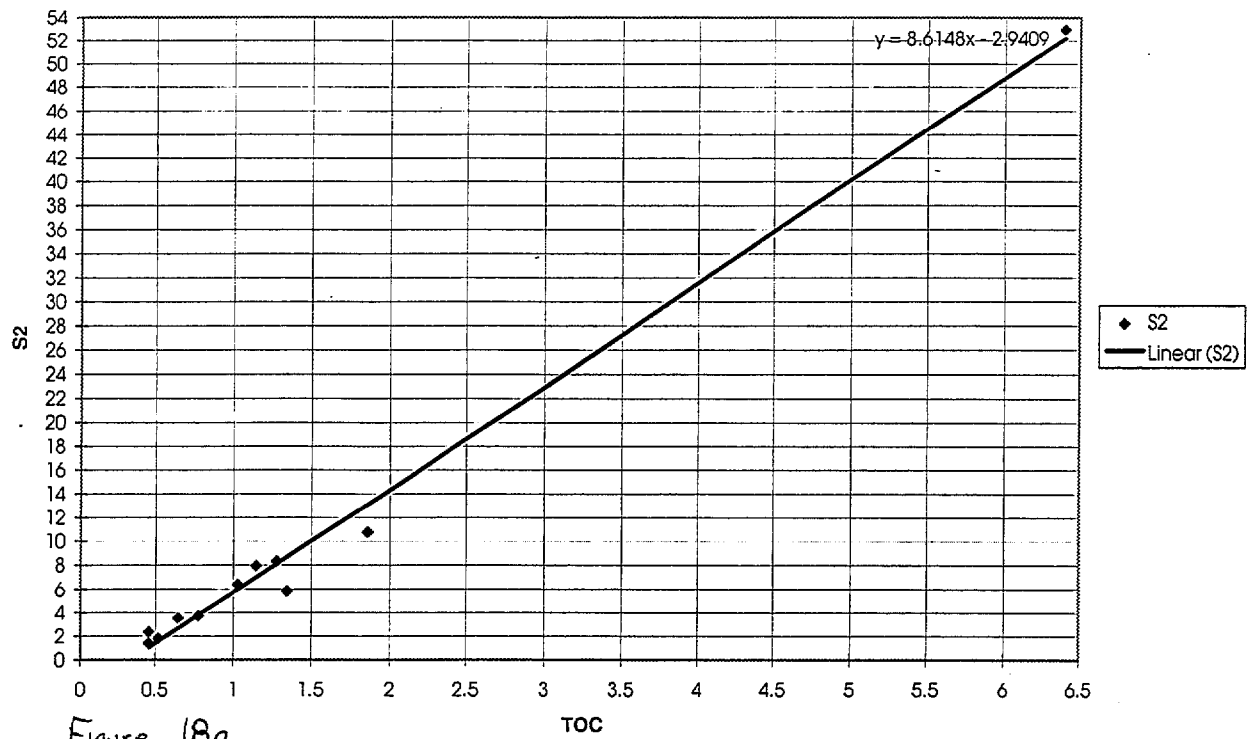
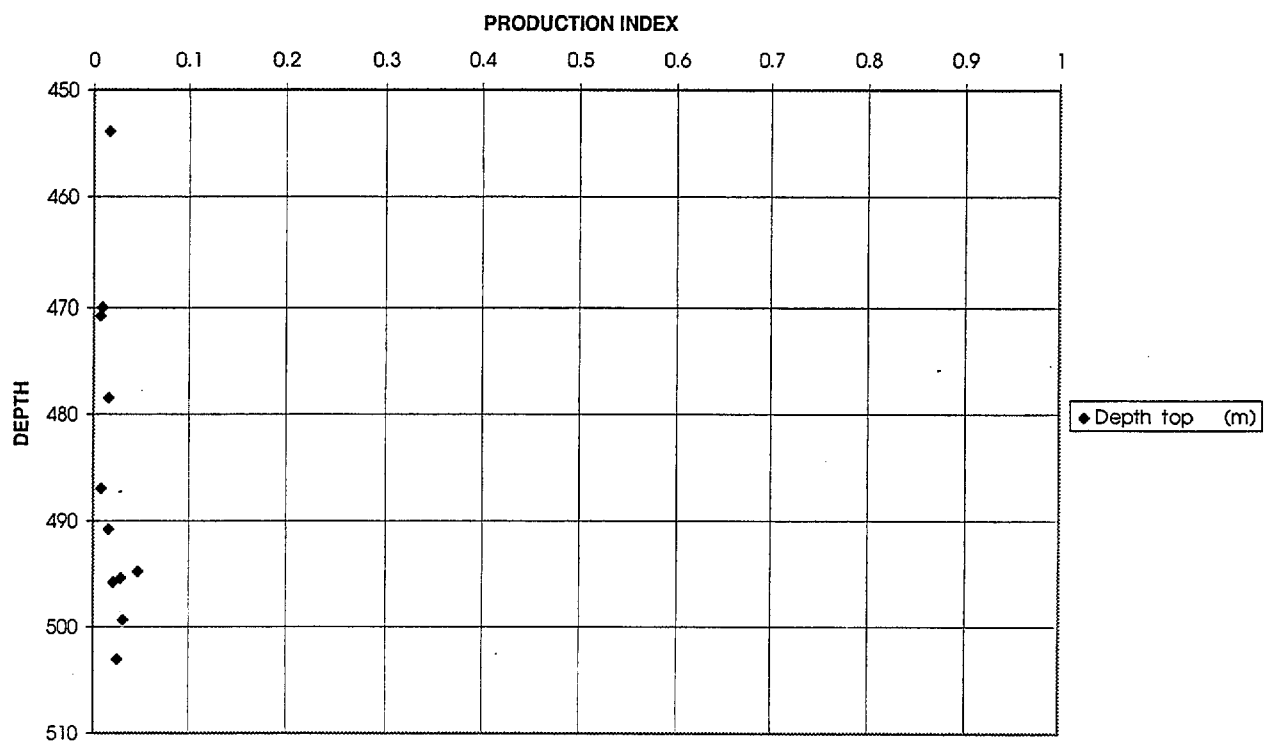


Figure 17d

SANTALUM-1 Upper Goldwyer



SANTALUM-1 (Upper Goldwyer)



SANTALUM-1 (Upper Goldwyer)

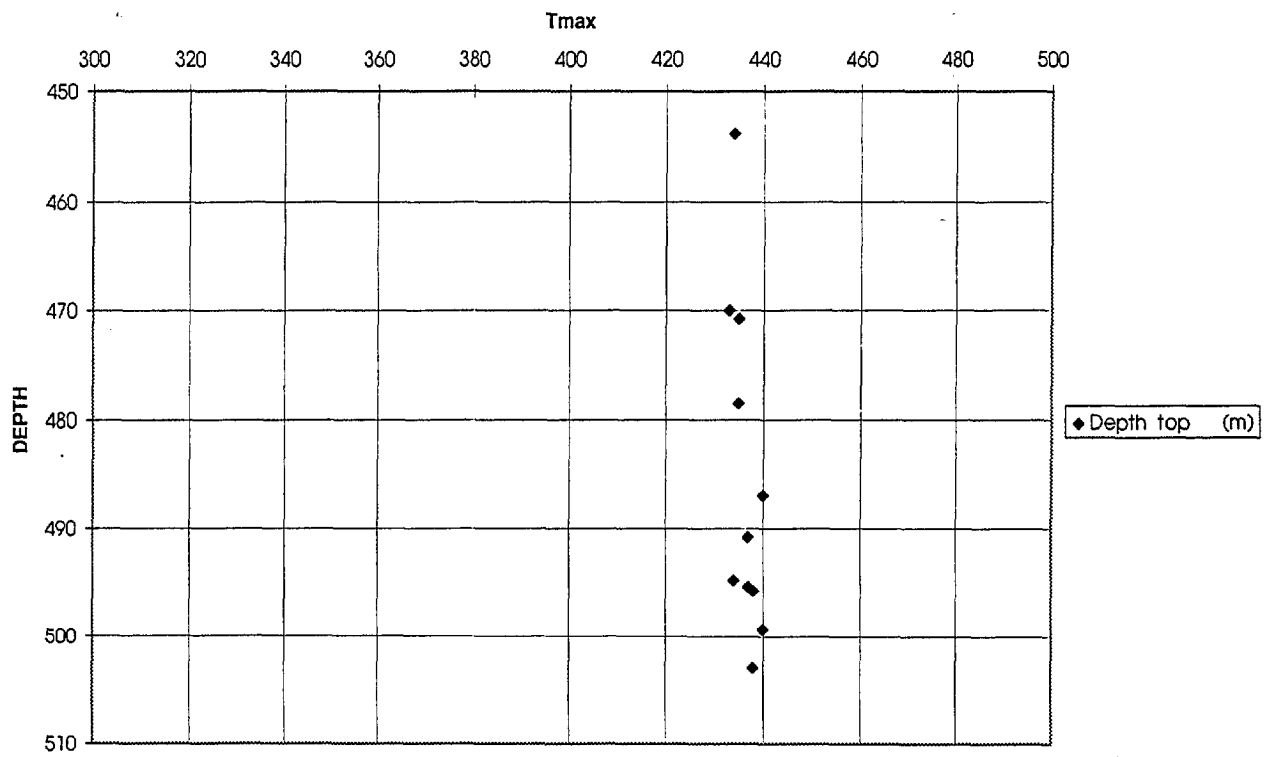
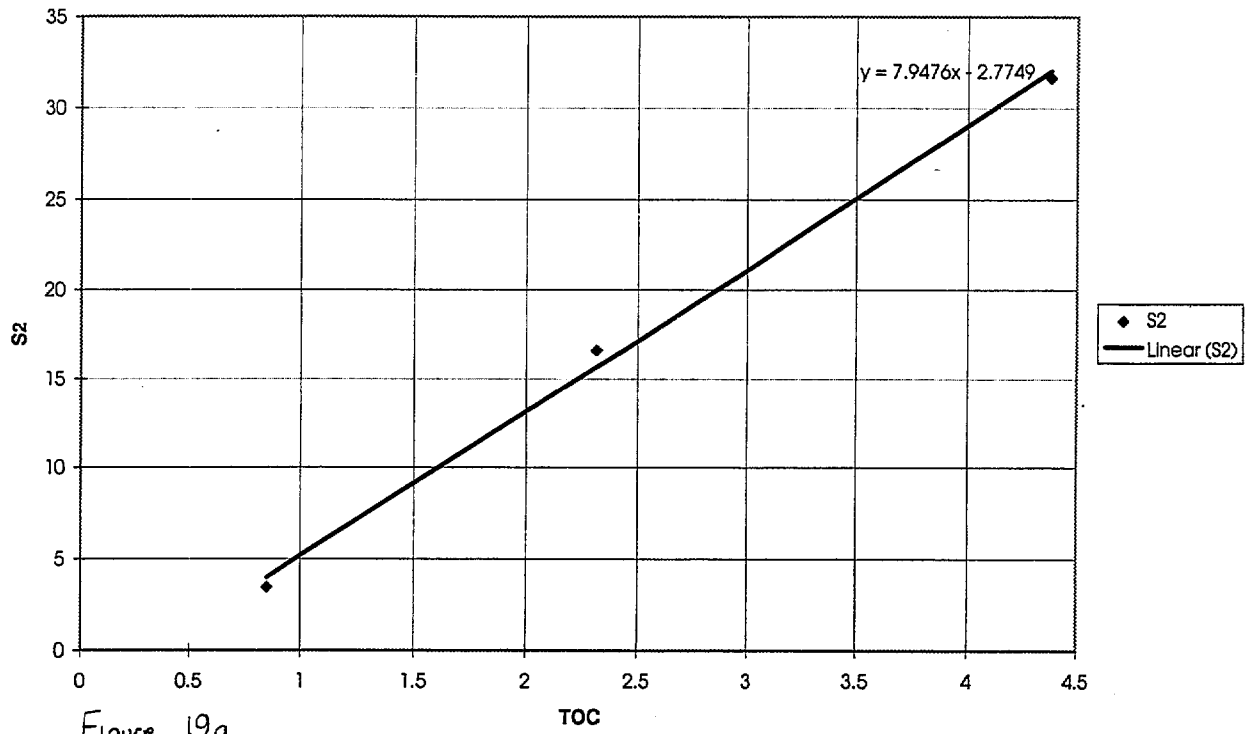
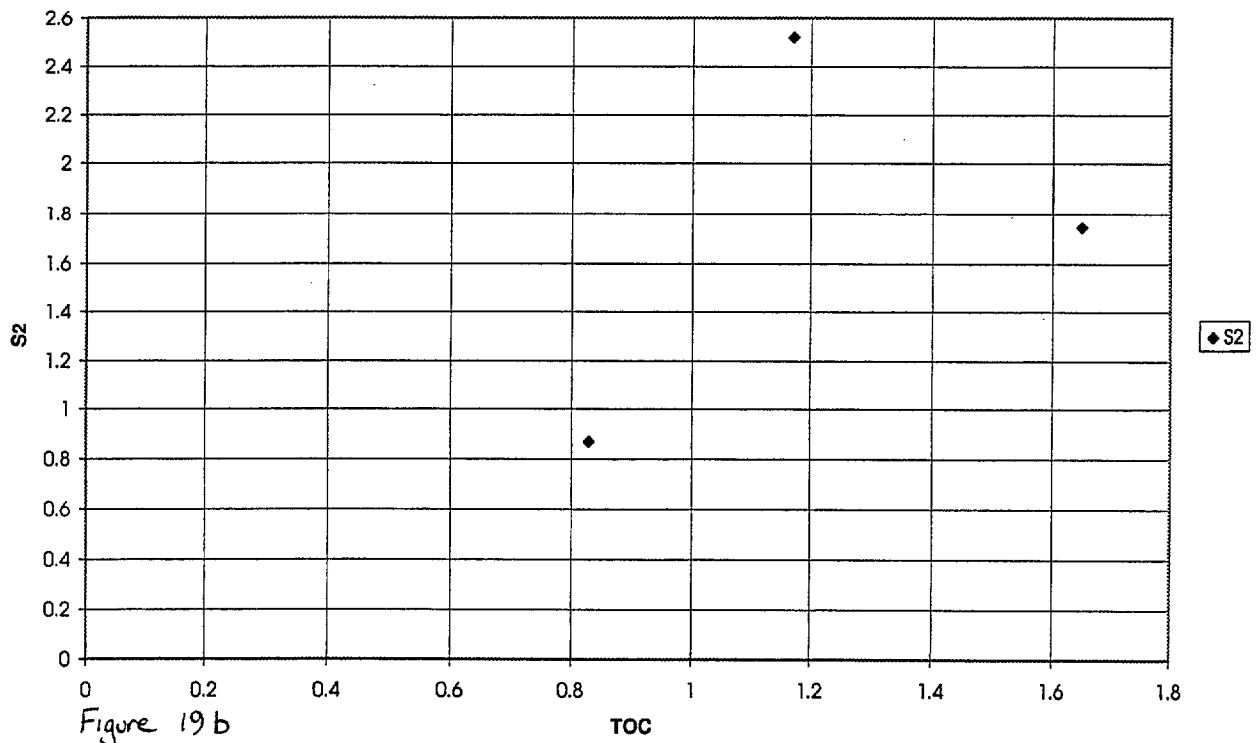


Figure 18c

SOLANUM-1 Upper Goldwyer Units 3,4



SOLANUM-1 Lower Goldwyer Unit 1



SOLANUM-1

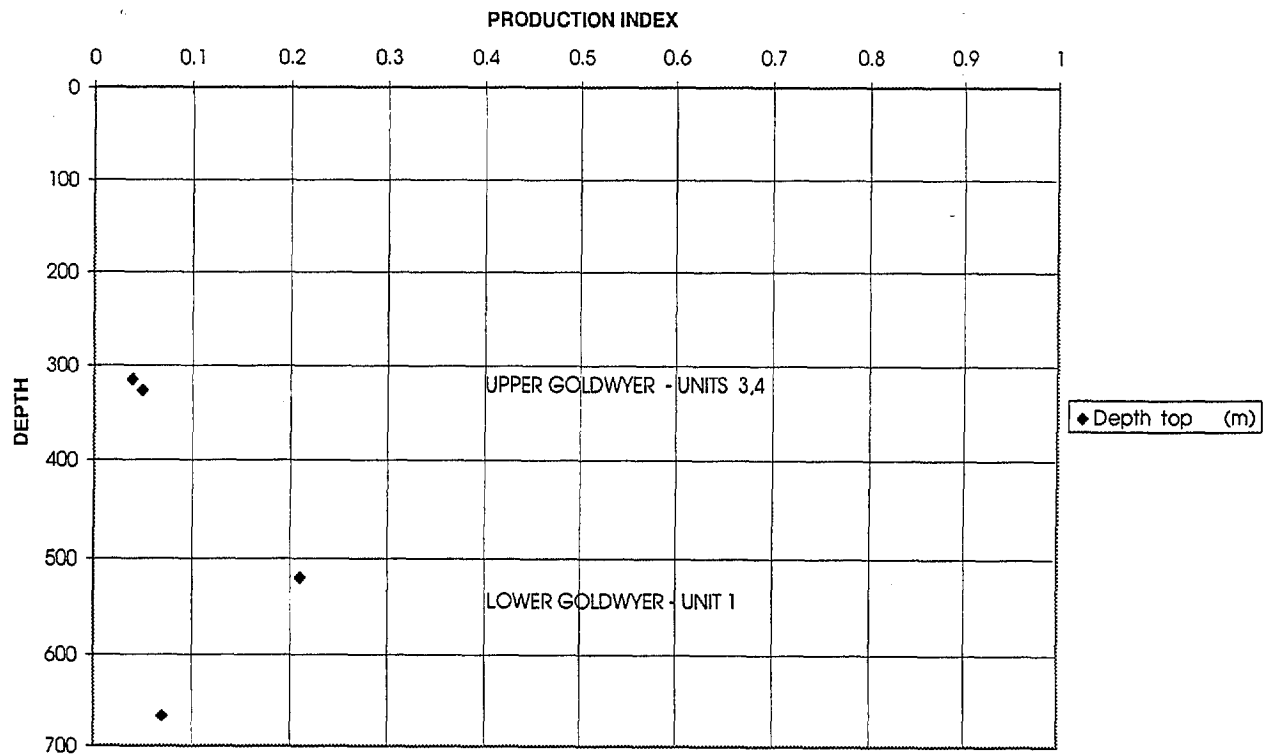


Figure 19c

SOLANUM-1

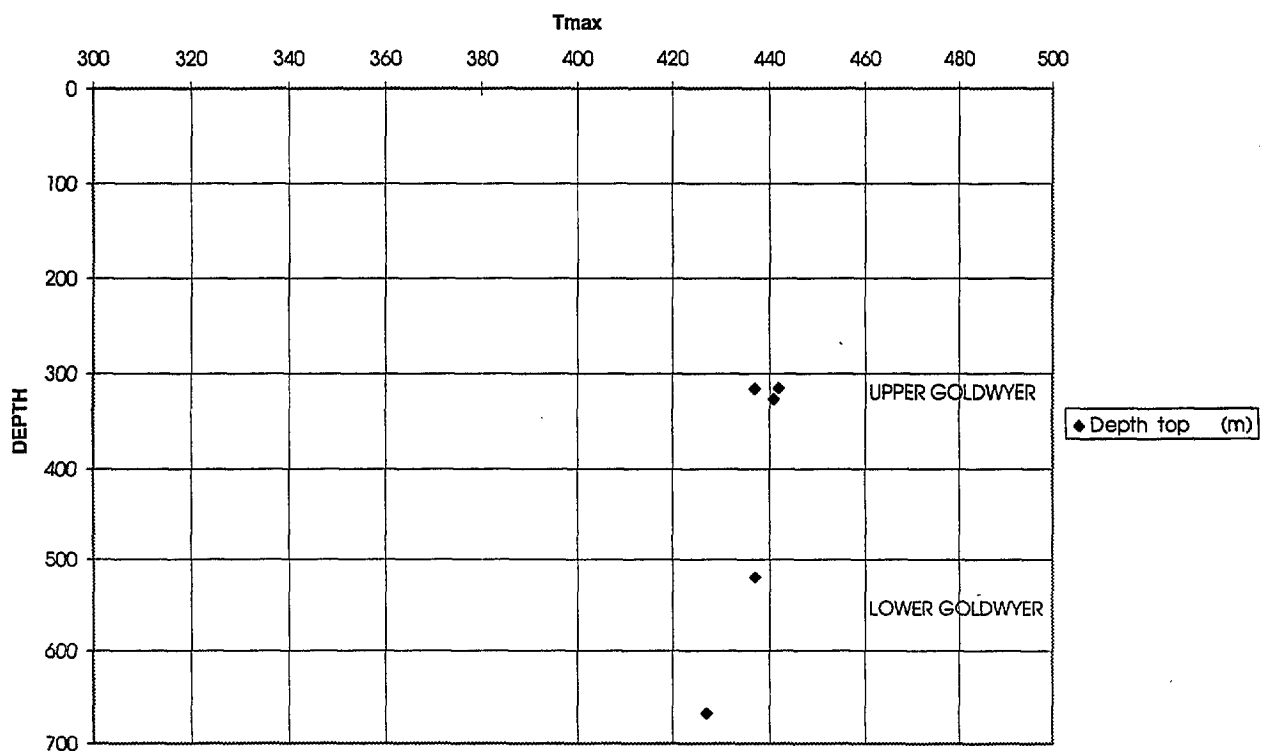


Figure 19d

APPENDIX F-1: GEOTECH Kerogen KineticAnalyses

The following kerogen kinetic data were analysed by Geotechnical ServicesPty. Ltd.

Sample # 8051 Solanum-1 315.53m, Upper Goldwyer Formation

Distribution of Activation Energy method		Gaussian Model	
Frequency Factor: A = 4.3924E+15 /s		Frequency Factor: A = 2.2302E+15 /s	
%	Activation Energy (kcal/mol)	%	Activation Energy (kcal/mol)
0.00	58	0.00	58
0.00	59	98.26	59
97.59	60	0.00	60
0.00	61	0.00	61
0.00	62	1.47	62
2.17	63	0.00	63
0.00	64	0.00	64
0.00	65	0.00	65
0.00	66	0.27	66
0.24	67	0.00	67

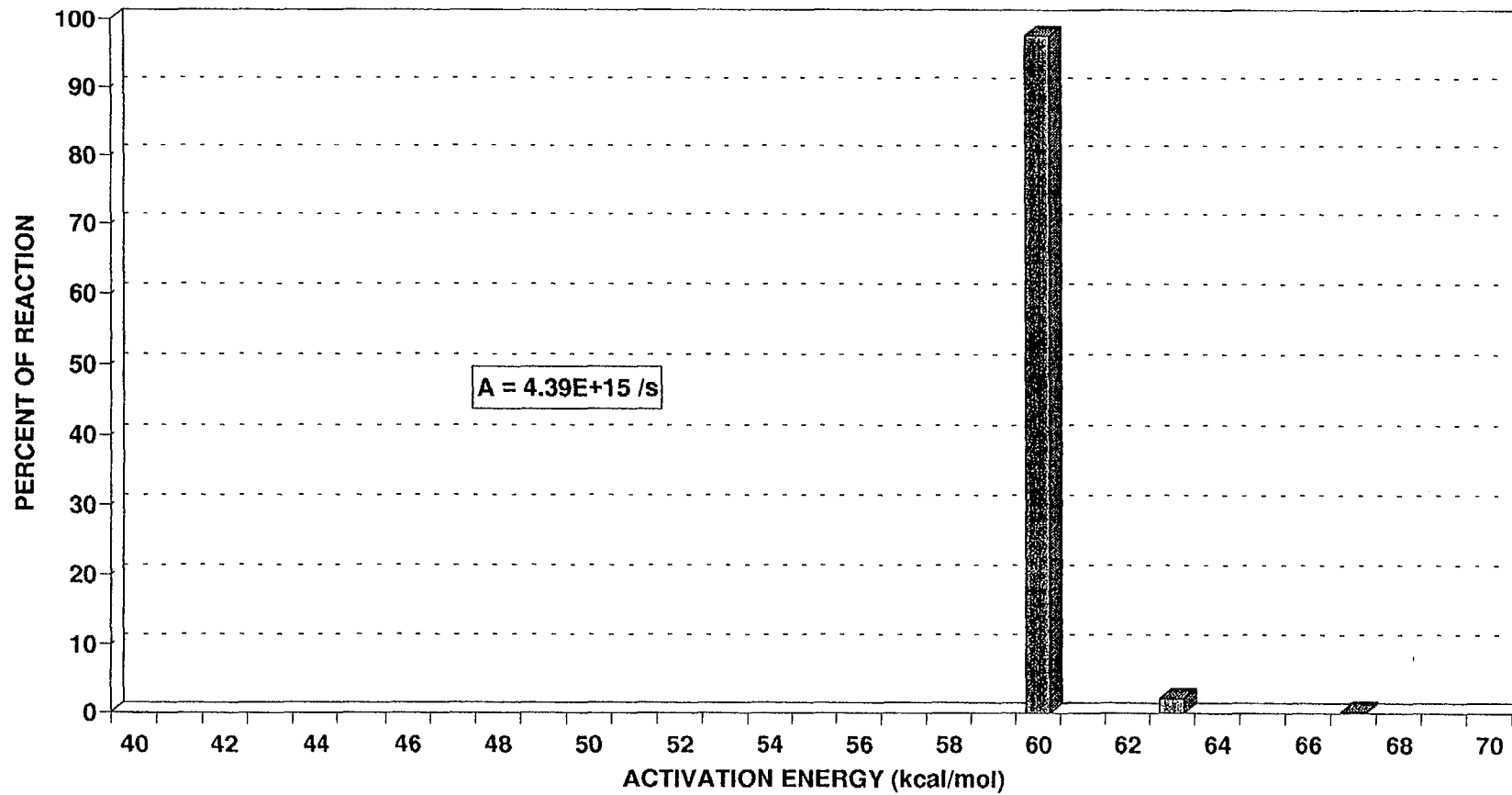
Sample #8052 Solanum-1 519.58-519.61m, Lower Goldwyer Formation

Frequency Factor: A = 1.36E+14 /s	
%	Activation Energy (kcal/mol)
2.74	48
0.02	49
2.21	50
4.69	51
0.00	52
8.14	53
13.31	54
66.39	55
0.00	56
0.00	57
0.55	58
0.00	59
0.00	60
0.00	61
1.95	62

Sample #7817 CRA DD 88559 1391.26-1391.33m, Bongabinni Formation

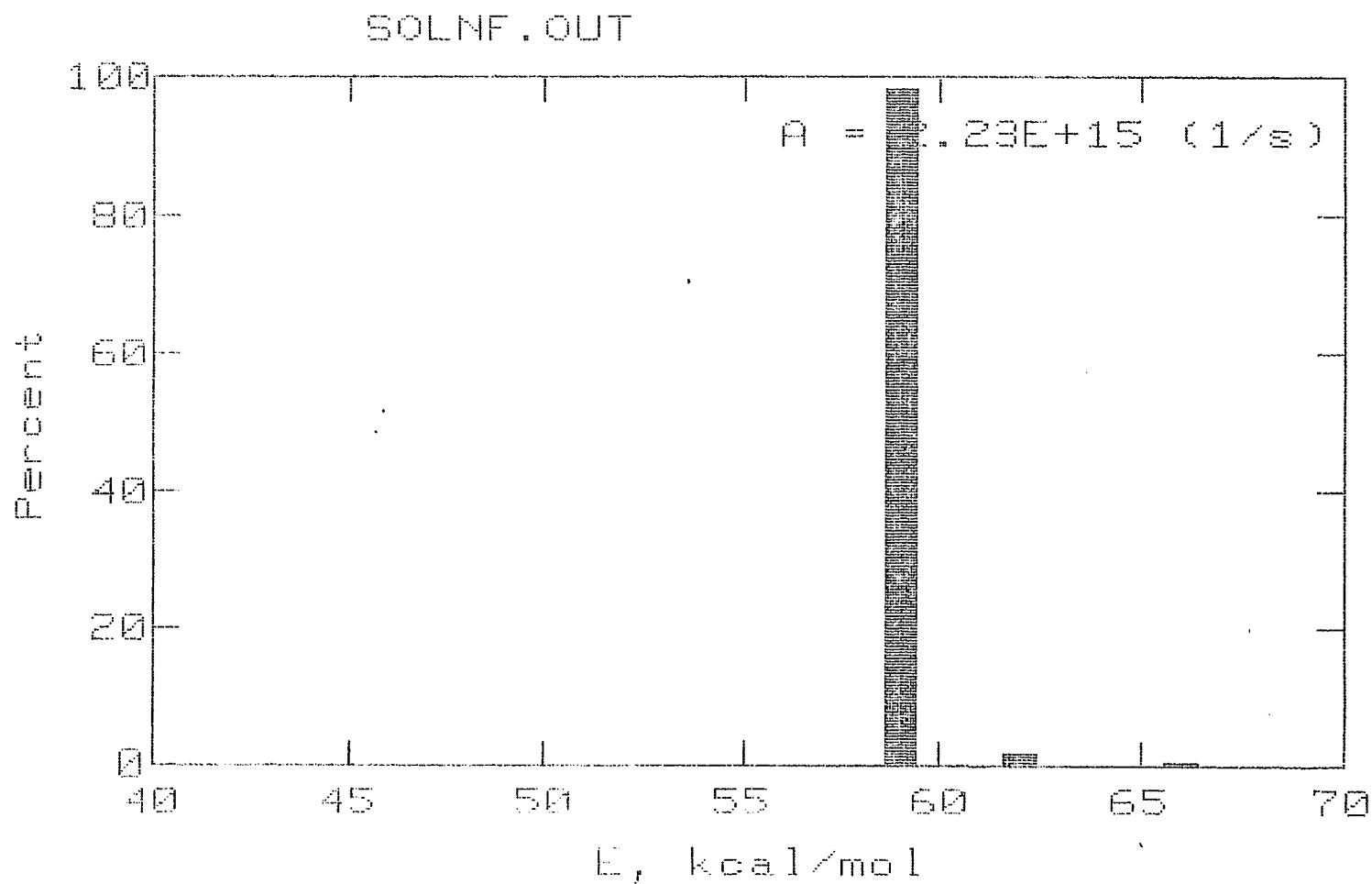
Frequency Factor: A = 1.36E+14 /s	
%	Activation Energy (kcal/mol)
0.00	46
0.00	47
0.00	48
0.50	49
0.05	50
0.00	51
0.00	52
0.00	53
0.00	54
0.00	55
50.25	56
17.97	57
15.85	58
2.97	59
7.78	60
0.00	61
1.22	62
0.00	63
3.42	64

SOLANUM-1 315.53 m (Upper Goldwyer Fm)
ROCK-EVAL DERIVED KINETICS

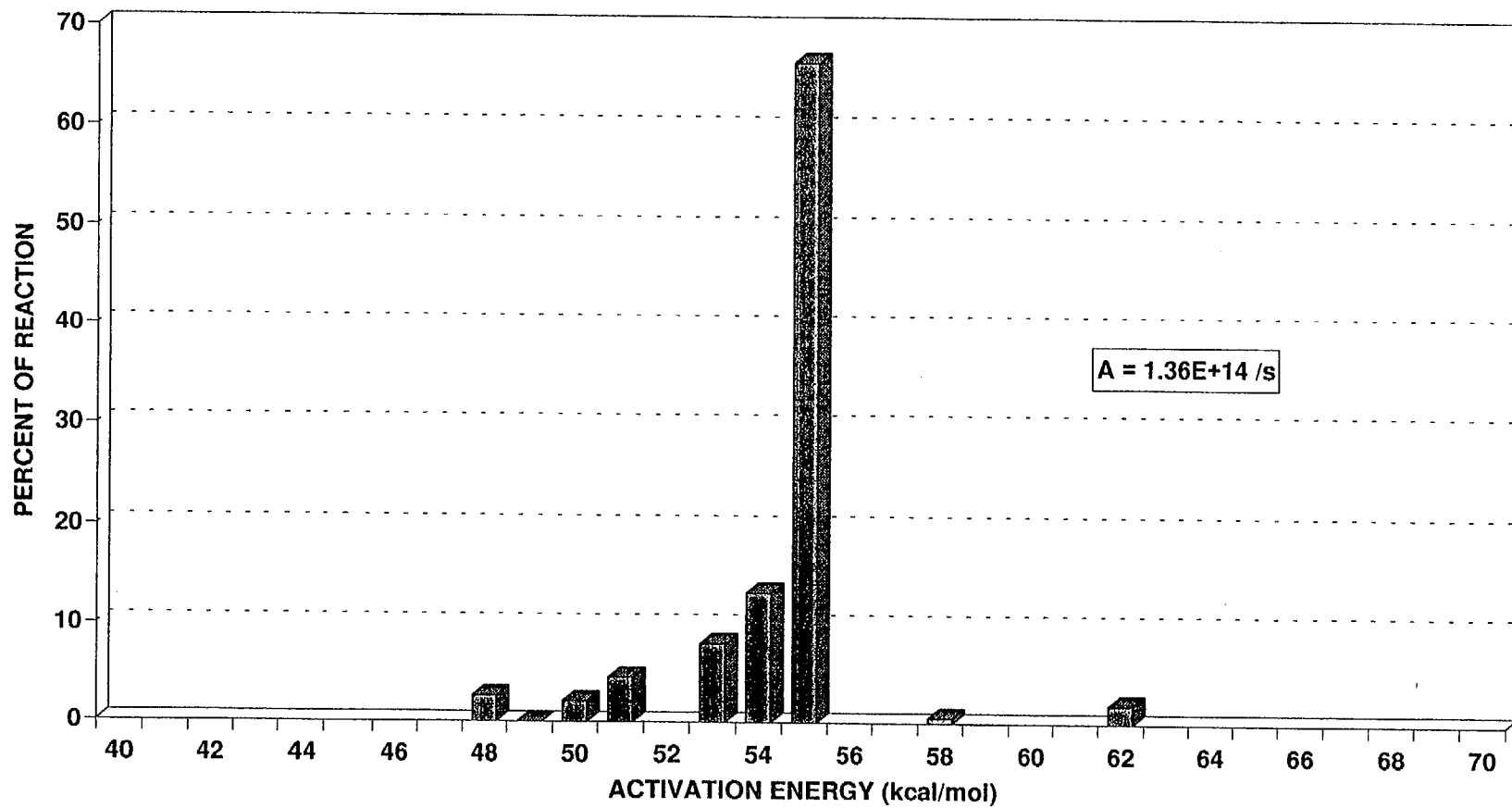


SOLANUM-1 315.53 m (Upper Goldwyer Fm)
Gaussian Model

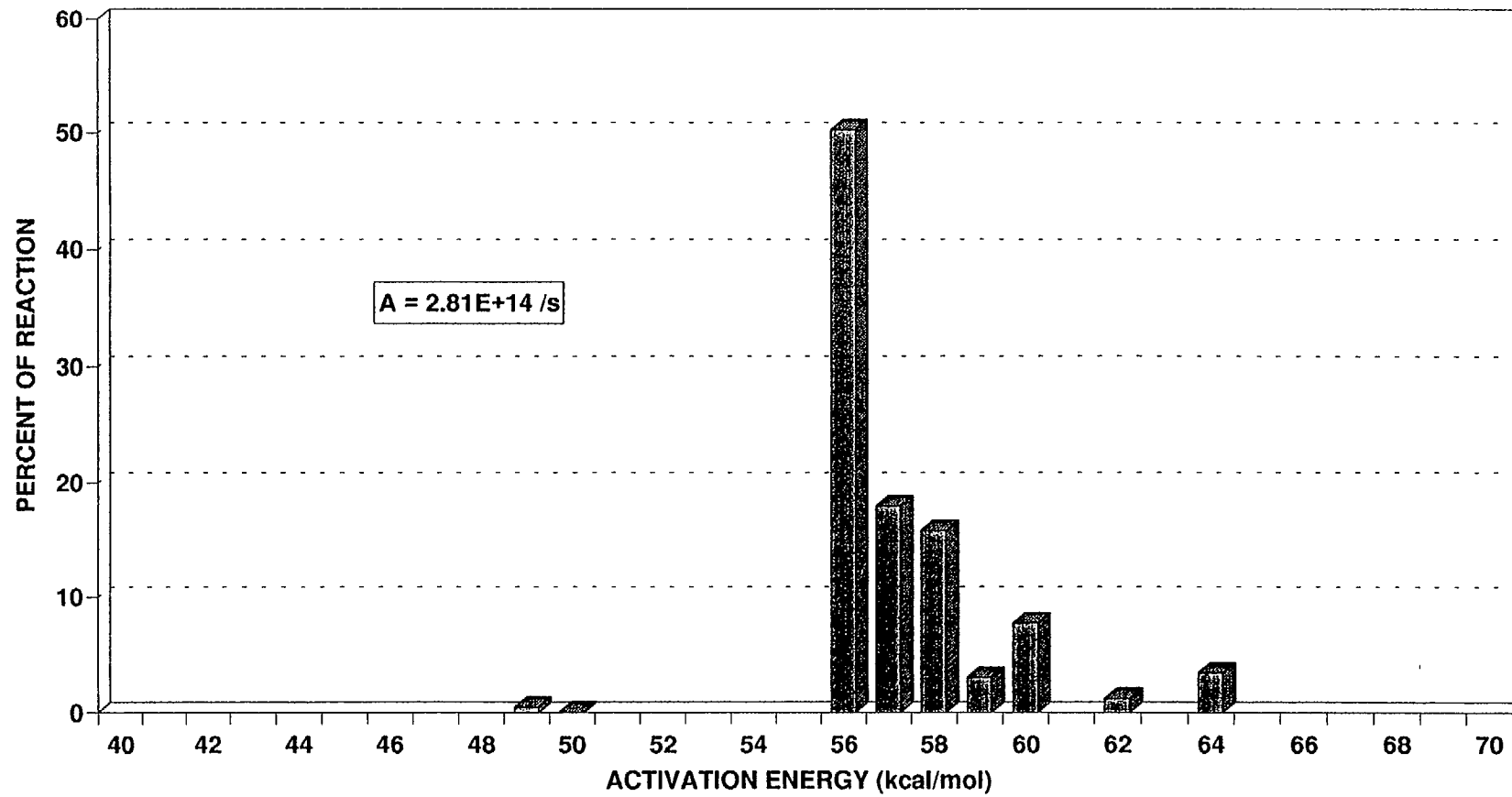
D



SOLANUM-1⁵ 19.58-19.61 m (lower Goldwyer Fm)
ROCK-EVAL DERIVED KINETICS



#7817 KEROGEN (*Bongabinni Fm*)
ROCK-EVAL DERIVED KINETICS



APPENDIX G: Kerogen Kinetic Data Used in WinBury Models

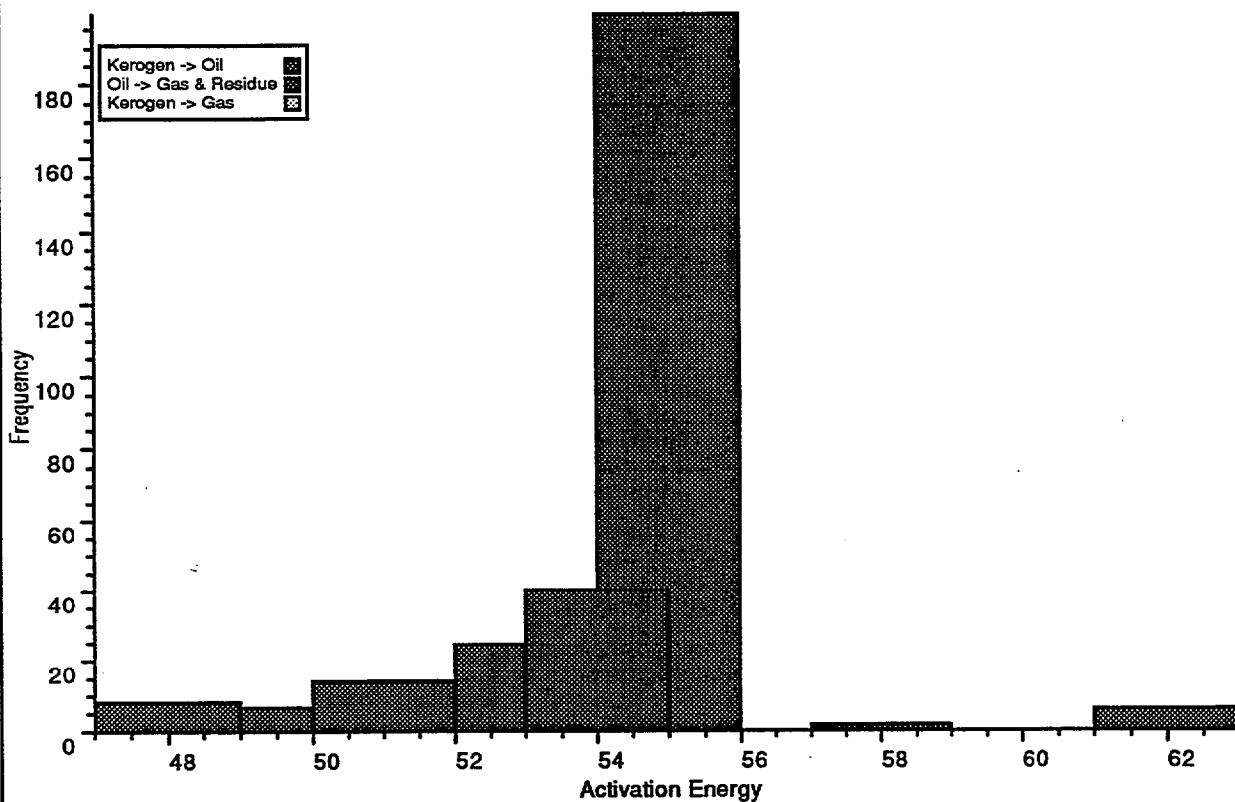
This appendix tabulates kinetic data modelled in the WinBury program for the following kerogen types:

LOWGOLD	: Lower Goldwyer and Willara-Nambeet, source	Figure 1
GPRISCA:	Upper Goldwyer source	Figure 2
BONG:	Bongabinni source	Figure 3
TYPE IIB:	Supersequence D (Gogo, Mellinjerie, Mirbelia, Boab) source	Figure 4
TYPE IIIB:	Supersequence F (Laruel) source interval modelled as 50/50 mixture of Type IIB and Type IIIB kerogen	Figure 5

	N O	Activation energy	Rate Constant	Bond Frequency	Reactant Code	Product Code
1	1	48	4.3E+0027	8.22	1	2
2	1	50	4.3E+0027	6.63	1	2
3	1	51	4.3E+0027	14.07	1	2
4	1	53	4.3E+0027	24.42	1	2
5	1	54	4.3E+0027	39.93	1	2
6	1	55	4.3E+0027	199.17	1	2
7	1	58	4.3E+0027	1.65	1	2
8	1	62	4.3E+0027	5.85	1	2
9	5	54	3.2E+0025	40.00	2	5

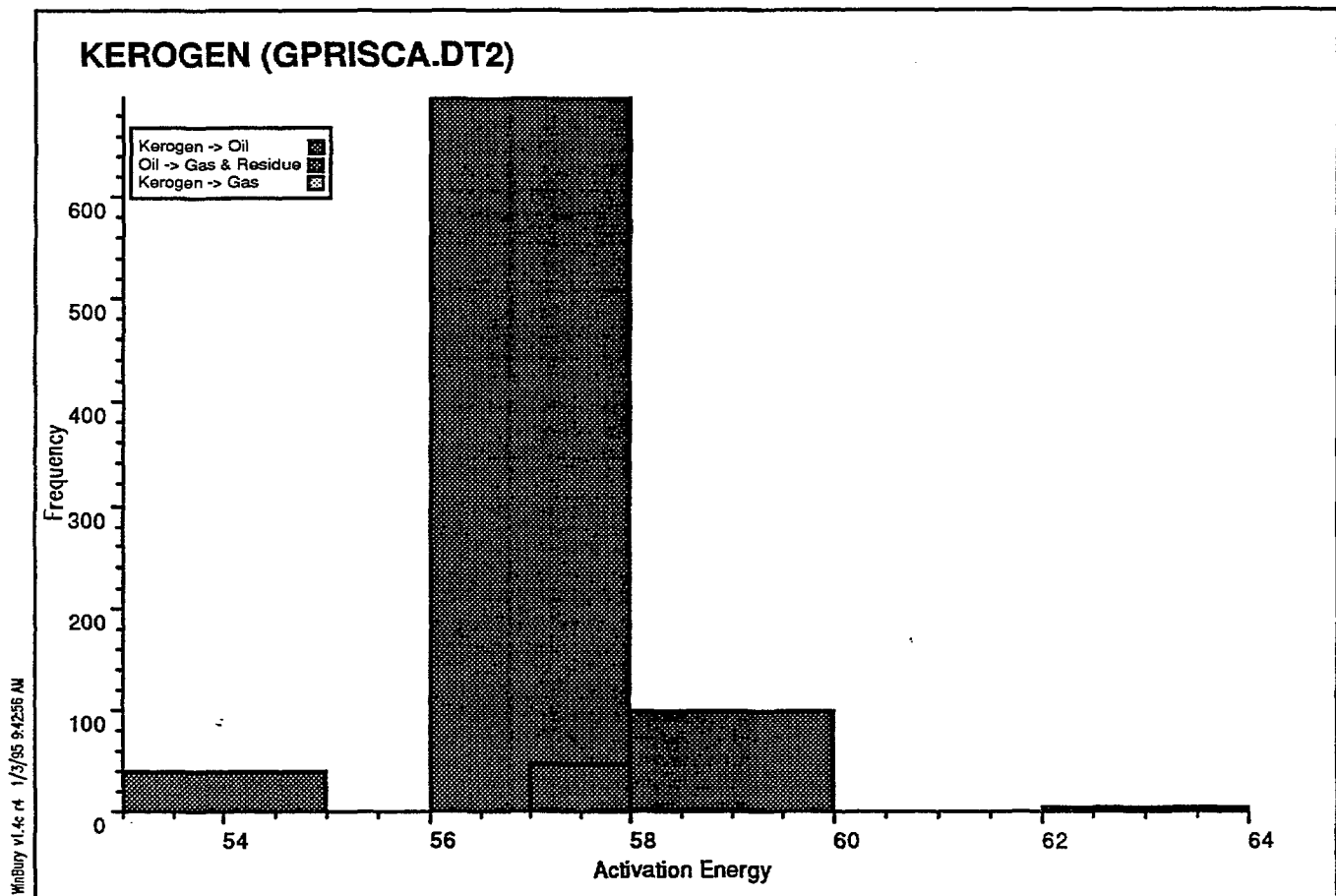
KINETICS : LOWGOLD.DT2

KEROGEN (LOWGOLD.DT2)



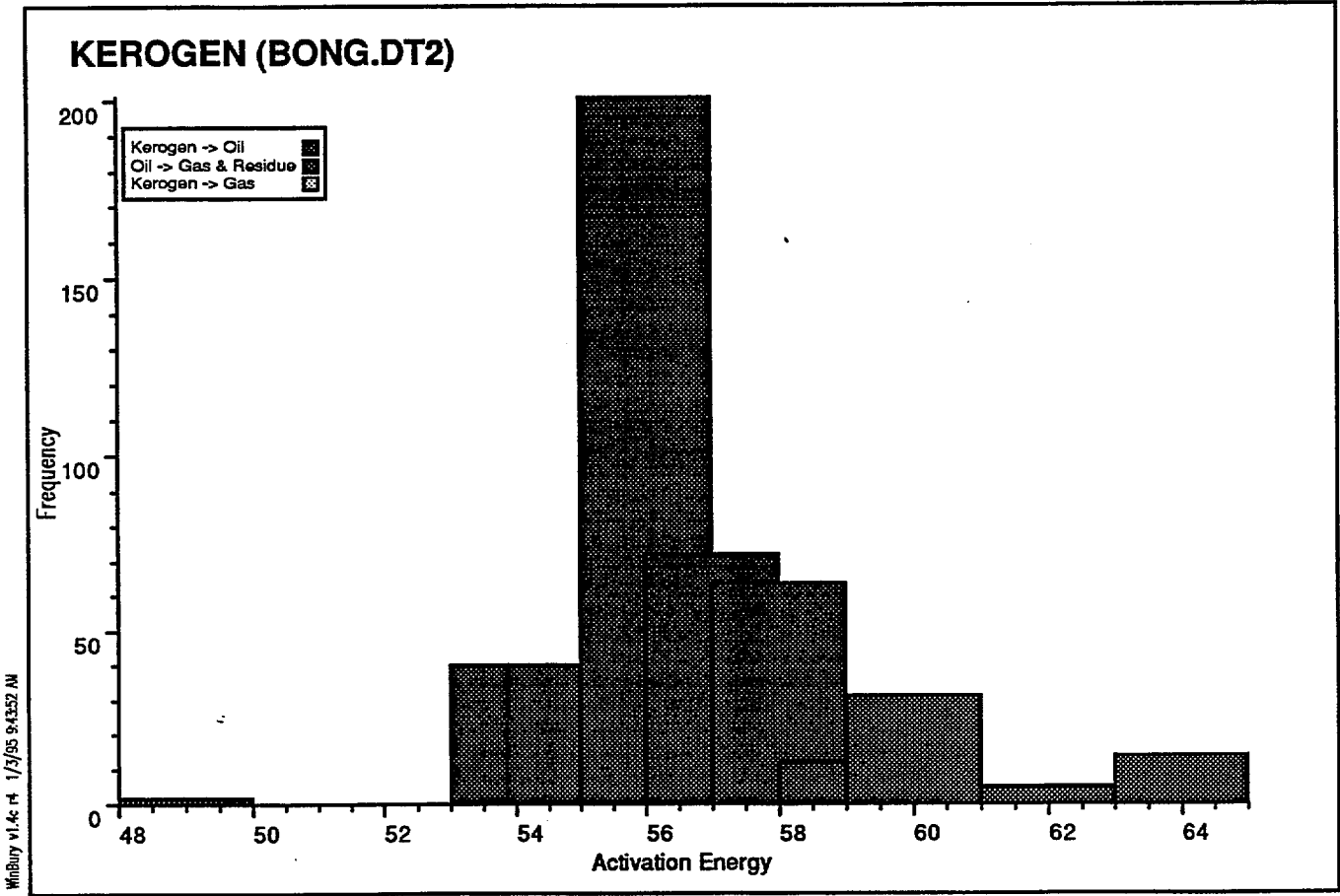
	N O	Activation energy	Rate Constant	Bond Frequency	Reactant Code	Product Code
1	1	57	7.4E+0027	698.00	1	2
2	2	58	7.4E+0027	47.00	1	2
3	2	59	7.4E+0027	99.70	1	2
4	2	63	7.4E+0027	4.70	1	2
5	5	54	3.2E+0025	40.00	2	5

KINETICS : GPRISCA.DT2



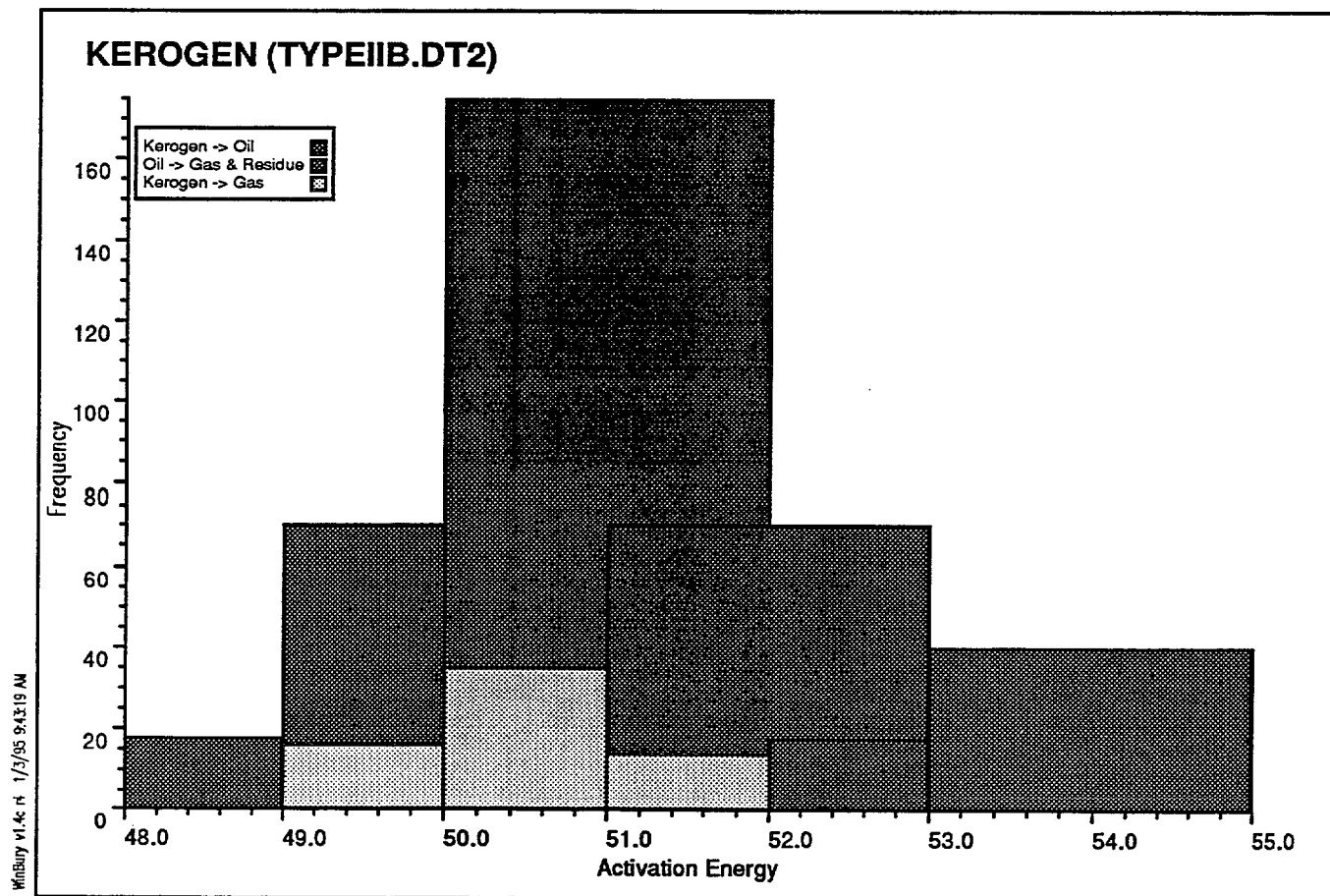
	N	O	Activation energy	Rate Constant	Bond Frequency	Reactant Code	Product Code
1	1	49		8.9E+0027	2.00	1	2
2	1	56		8.9E+0027	201.00	1	2
3	1	57		8.9E+0027	71.88	1	2
4	1	58		8.9E+0027	63.40	1	2
5	1	59		8.9E+0027	11.88	1	2
6	1	60		8.9E+0027	31.12	1	2
7	1	62		8.9E+0027	4.88	1	2
8	1	64		8.9E+0027	13.68	1	2
9	5	54		3.2E+0025	40.00	2	5

KINETICS : BONG.DT2



	N O	Activation Energy	Rate Constant	Bond Frequency	Reactant Code	Product Code
1	1	49	9.5E+0026	17.50	1	2
2	2	50	9.5E+0026	70.00	1	2
3	3	50	9.5E+0026	16.00	1	5
4	4	51	9.5E+0026	175.00	1	2
5	5	51	9.5E+0026	35.00	1	5
6	6	52	9.5E+0026	70.00	1	2
7	7	52	9.5E+0026	14.00	1	5
8	8	53	9.5E+0026	17.50	1	2
9	9	54	3.2E+0025	40.00	2	5

KINETICS : TYPEIIB.DT2



	N O	Activation energy	Rate Constant	Bond Frequency	Reactant Code	Product Code
1	1	48	5.1E+0026	3.00	1	2
2	2	50	5.1E+0026	10.00	1	2
3	3	52	5.1E+0026	24.00	1	2
4	4	52	5.1E+0026	20.00	1	5
5	5	54	5.1E+0026	13.00	1	2
6	6	56	5.1E+0026	54.00	1	5
7	7	60	5.1E+0026	18.00	1	5
8	8	64	5.1E+0026	13.00	1	5
9	9	68	5.1E+0026	5.00	1	5
10	10	54	3.2E+0025	40.00	2	5

KINETICS : TYPEIIIB.DT2

