Open File Envelope

NUMBER 7406/2

PEL 39

OTWAY BASIN

REEDY CREEK 1

TEST REPORTS

Submitted by

SADME

1992

MINES AND ENERGY
SOUTH AUSTRALIA

Enquiries: Information Services Branch
Mines and Energy South Australia
191 Greenhill Road, Parkside 5063
Telephone: (08) 274 7687
Facsimile: (08) 272 7597

ENVELOPE 7406/2

TENEMENT: PEL 39; Otway Basin

TENEMENT HOLDER: Gas and Fuel Exploration NL (operator), Magellan Petroleum Australia Ltd, Cultus Petroleum (Australia) NL and AGL Petroleum Operations Pty Ltd

CONTENTS

END OF CONTENTS

AMDEL
CORE
SERVICES

12 October 1992

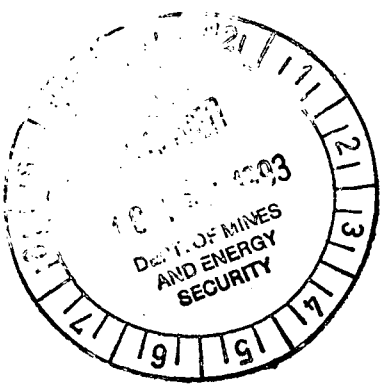
Department of Mines and Energy
PO Box 151
EASTWOOD SA 5063

Attention: Rod Austin

REPORT: HH/1959

CLIENT REFERENCE:	EX 1243 11/06/0700
MATERIAL:	Rock Samples
LOCALITY:	Reedy Creek-1
WORK REQUIRED:	Source Rock Analysis

Please direct technical enquiries regarding this work to the signatory below under whose supervision the work was carried out.



BRIAN L WATSON
Laboratory Supervisor
on behalf of Amdel Core Services Pty Ltd

1. INTRODUCTION

Six (6) samples were received for TOC analysis, Rock-Eval pyrolysis and vitrinite reflectance analysis. This report is a formal presentation of results which were forwarded by facsimile as they became available.

2. ANALYTICAL PROCEDURES

2.1 Sample Preparation

Samples (as received) were ground in a Siebtechnik mill for 20-30 seconds.

2.2 Total Organic Carbon (TOC)

Total organic carbon was determined by digestion of a known weight (approximately 0.2 g) of powdered rock in HCl to remove carbonates, followed by combustion in oxygen in the induction furnace of a Leco WR-12 Carbon Determinator and measurement of the resultant CO_2 by infra-red detection.

2.3 Rock-Eval Pyrolysis

A 100 mg portion of powdered rock was analysed by the Rock-Eval pyrolysis technique (Girdel IFP-Fina Mark 2 instrument; operating mode, Cycle 1).

2.4 Organic Petrology

Representative portions of each sample (crushed to -14+35 BSS mesh) were obtained with a sample splitter and then mounted in cold setting Glasscraft resin using a 2.5 cm diameter mould. Each block was ground flat using diamond impregnated laps and carborundum paper. The surface was then polished with aluminium oxide and finally magnesium oxide.

Reflectance measurements were made with a Leitz MPV1.1 microphotometer fitted to a Leitz Ortholux microscope and calibrated against synthetic standards. All measurements were taken using oil immersion (n = 1.518) and incident monochromatic light (wavelength 546 nm) at a temperature of 23±1°C.

3. RESULTS

TOC and Rock-Eval data are listed in Table 1. Figure 1 is a plot of T_{max} versus Hydrogen Index illustrating kerogen Type and maturity. Table 2 is a summary of the vitrinite reflectance measurements which are presented along with histograms in Appendix 1, while Figure 2 is a plot of measured vitrinite reflectance versus depth.

4. INTERPRETATION

4.1 Maturity

Reliable measured vitrinite reflectance values (Table 2, Figure 2) range from 0.41-0.57% over the section studied and indicate that the samples are marginally mature to mature for the generation of liquid hydrocarbons. Oil generation from thermally labile exinites (resinite, bituminite and

suberinite) commences at VR = 0.45%. The maturity versus depth profile indicates that this maturity was reached at approximately 1800 metres depth in this location. Oil generation from the less thermally labile exinites (cutinite, sporinite, etc) commences at higher maturities (VR >0.7%). Extrapolation of the available data indicates that these maturities should be reached in the sedimentary interval below approximately 2700 metres depth. Rock-Eval T_{max} values are generally in agreement with the measured vitrinite reflectance values, suggesting a maturity range of $VR_{EQUIV} \approx 0.40$-0.60% (Table 1, Figure 1).

A high production index (P.I. >0.2; Table 1) suggests the presence of migrated hydrocarbons in the sample at depth 2170-2180 metres.

4.2 Source Richness

Both organic richness and source richness are consistently poor in the samples studied (TOC <1%, $S_1 + S_2$ <2 kg of hydrocarbons/tonne; Table 1), with the exception of the uppermost samples at depths 1650-1660 and 1690-1700 metres. These samples both have fair organic and source richness (TOC = 1.22-1.54%, $S_1 + S_2$ = 2.95-3.49 kg of hydrocarbons/tonne; Table 1).

4.3 Kerogen Type and Source Quality

Hydrogen Index and T_{max} values (Table 1, Figure 1) indicate that these samples contain organic matter which has a bulk composition of Type III kerogen, again with the exception of the two uppermost samples which contain organic matter which has a bulk composition of Type II-III kerogen.

Pyrolysis-GC analyses may more accurately assess the oil generative potential of the better quality source intervals.

TABLE 1

AMDEL CORE SERVICES

Rock-Eval Pyrolysis 08/30/92

Client: South Australian Department of Mines and Energy

Well: Reedy Creek-1

Depth (m)	T Max	S1	S2	S3	S1+S2	PI	S2/S3	PC	TOC	HI	OI
1650-1660	433	0.16	2.79	2.58	2.95	0.05	1.08	0.24	1.22	228	211
1690-1700	436	0.21	3.28	1.59	3.49	0.06	2.06	0.29	1.54	212	103
1930-1940	430	0.17	0.79	1.19	0.96	0.18	0.66	0.08	0.63	125	188
1965-1975	442	0.07	0.76	0.72	0.83	0.09	1.05	0.06	0.60	126	120
2030-2040	436	0.15	0.81	1.07	0.96	0.16	0.75	0.08	0.69	117	155
2170-2180	432	0.10	0.27	1.46	0.37	0.28	0.18	0.03	0.38	71	384

TABLE 2

SUMMARY OF VITRINITE REFLECTANCE MEASUREMENTS

REEDY CREEK-1

Depth (m)	Mean Maximum Reflectance (%)	Standard Deviation	Range	Number of Determinations
1650 - 1660	0.41	0.03	0.35 - 0.46	22
1690 - 1700	0.44	0.04	0.35 - 0.51	29
1930 - 1940	0.47	0.03	0.40 - 0.53	20
1965 - 1975	0.54	0.04	0.46 - 0.60	16
2030 - 2040	0.52	0.03	0.46 - 0.58	14
2170 - 2180	0.57	0.04	0.48 - 0.63	25

FIGURE 1

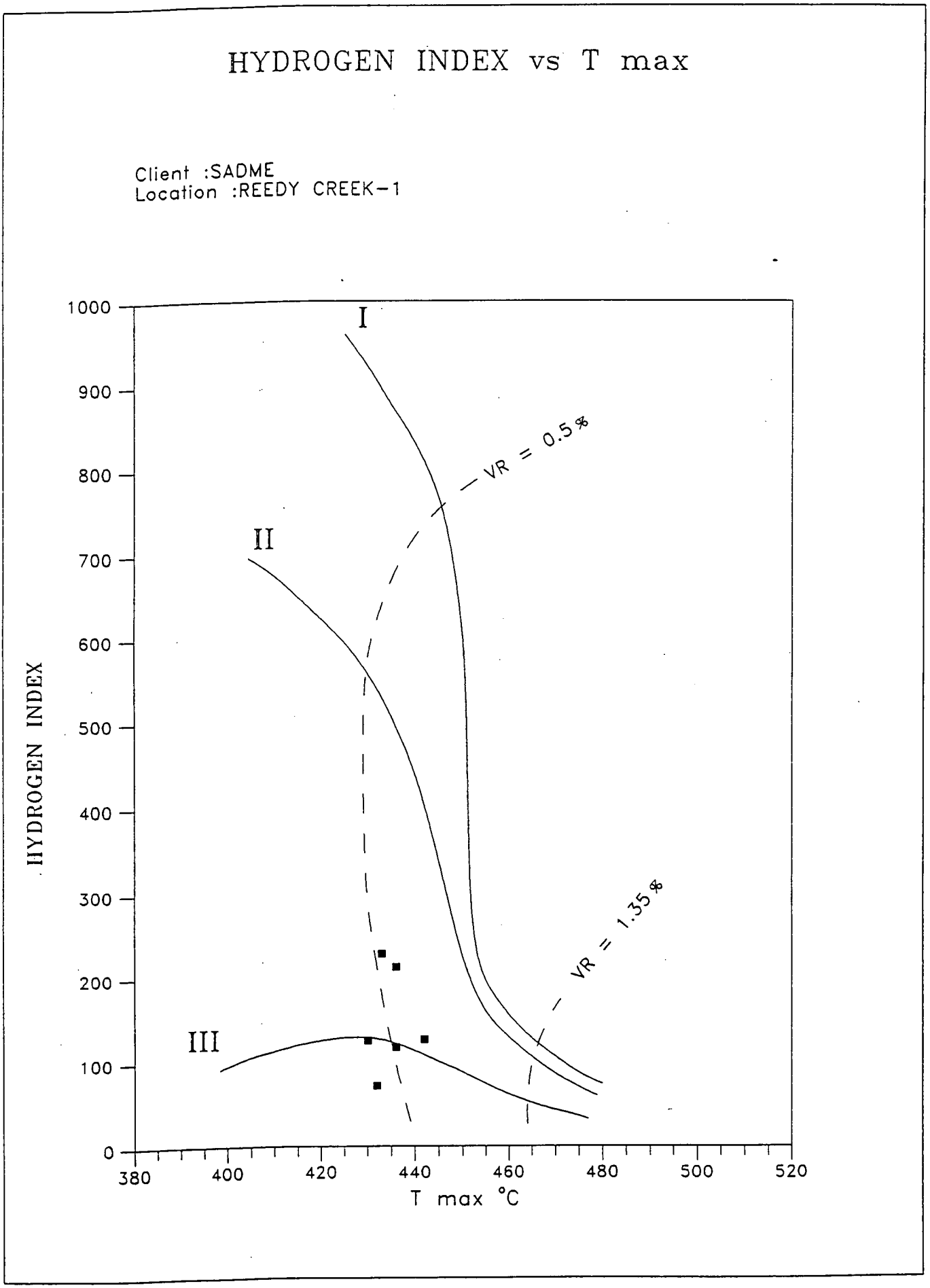
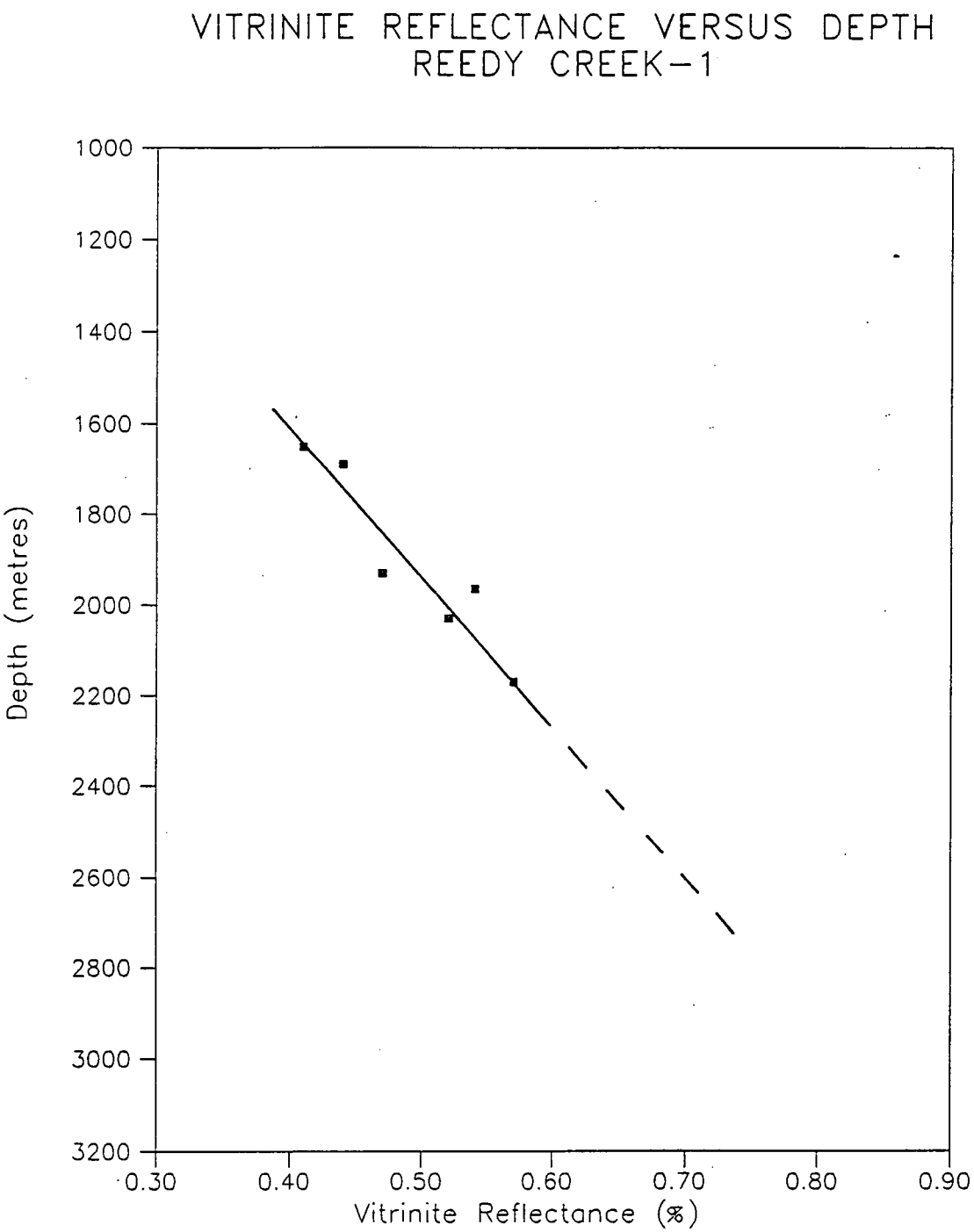

HYDROGEN INDEX vs T max
Client :SADME
Location :REEDY CREEK-1
HYDROGEN INDEX
T max °C
I
II
III
VR = 0.5%
VR = 1.35%
0
100
200
300
400
500
600
700
800
900
1000
380
400
420
440
460
480
500
520

FIGURE 2


VITRINITE REFLECTANCE VERSUS DEPTH
REEDY CREEK-1
Depth (metres)
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
0.30
0.40
0.50
0.60
0.70
0.80
0.90
Vitrinite Reflectance (%)

APPENDIX 1

HISTOGRAM PLOTS OF VITRINITE REFLECTANCE DATA

REEDY CREEK-1

VITRINITE REFLECTANCE VALUES

Well Name: REEDY CREEK-1
Depth: 1650-1660 m

Sorted List

0.35	0.40	0.45
0.36	0.41	0.46
0.36	0.41	
0.37	0.41	
0.38	0.42	
0.39	0.42	
0.39	0.43	
0.40	0.43	
0.40	0.44	
0.40	0.44	

Number of values= 22

Mean of values 0.41
Standard Deviation 0.03

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

35-37	****
38-40	*******
41-43	*******
44-46	****

VITRINITE REFLECTANCE VALUES

Well Name: REEDY CREEK-1
Depth: 1690-1700 m

Sorted List

0.35	0.43	0.47
0.36	0.43	0.48
0.38	0.44	0.48
0.40	0.44	0.48
0.40	0.44	0.49
0.41	0.45	0.49
0.42	0.46	0.50
0.42	0.46	0.51
0.42	0.47	0.51
0.43	0.47	

Number of values= 29

Mean of values 0.44
Standard Deviation 0.04

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

35-37	**
38-40	***
41-43	*******
44-46	******
47-49	********
50-52	***

VITRINITE REFLECTANCE VALUES

Well Name: REEDY CREEK-1
Depth: 1930-40 m

Sorted List

0.40	0.48
0.43	0.48
0.43	0.48
0.44	0.49
0.45	0.49
0.46	0.50
0.47	0.50
0.47	0.50
0.48	0.50
0.48	0.53

Number of values= 20

Mean of values 0.47
Standard Deviation 0.03

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

40-42	*
43-45	****
46-48	********
49-51	******
52-54	*

VITRINITE REFLECTANCE VALUES

Well Name: REEDY CREEK-1
Depth: 1965-75 m

Sorted List

0.46	0.55
0.47	0.56
0.51	0.57
0.52	0.58
0.53	0.59
0.53	0.60
0.54	
0.54	
0.55	
0.55	

Number of values= 16

Mean of values 0.54
Standard Deviation 0.04

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

46-48	**
49-51	*
52-54	***
55-57	*******
58-60	***

VITRINITE REFLECTANCE VALUES

Well Name: REEDY CREEK-1
Depth: 2030-40 m

Sorted List

0.46	0.54
0.46	0.55
0.48	0.55
0.49	0.58
0.52	
0.52	
0.53	
0.53	
0.54	
0.54	

Number of values= 14

Mean of values 0.52
Standard Deviation 0.03

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

46-48	***
49-51	*
52-54	****
55-57	*****
58-60	*

VITRINITE REFLECTANCE VALUES

Well Name: REEDY CREEK-1
Depth: 2170-80 m

Sorted List

0.48	0.56	0.61
0.52	0.56	0.61
0.52	0.57	0.62
0.52	0.57	0.63
0.52	0.58	0.63
0.53	0.59	
0.54	0.59	
0.54	0.60	
0.54	0.60	
0.55	0.61	

Number of values= 25

Mean of values 0.57
Standard Deviation 0.04

HISTOGRAM OF VALUES
Reflectance values multiplied by 100

48-50	*
51-53	*****
54-56	****
57-59	*******
60-62	******
63-65	**

GFE Resources Ltd

PEL 39

OTWAY BASIN

SOUTH AUSTRALIA

REEDY CREEK - 1 WELL SITE

ENVIRONMENTAL AUDIT

S.ROGERS
MARCH, 1995

REEDY CREEK POST DRILLING SITE INSPECTION AND EVALUATION

VISUAL APPEARANCE AND STATE OF LAND:

The rig was released in March 1992. To date little rehabilitation/restoration work has been carried out on the well site. A fence completely surrounds the area and a gate leading into the drill area has been erected. Sown pastures with a cover of native grasses dominate the surrounding landscape. Land use in the area is dominated by livestock grazing. The site was photographed in all directions as a means of recording environmental disturbance (figures 1-4). Little land disturbance is evident when looking southerly from the Robe-Penola road onto the well site (figure 5). The only visible disturbance from the road is the topsoil stockpile situated to the north of the site.

INFILLING OF CELLAR, SUMP, WATER PIT AND FLARE PIT:

The current landowner Mr Lea, is completely satisfied with the state of the site and is using the site as an integral part of his ongoing farming operations. The hard standing is used for hay storage and distribution. The sump situated to the southern end of the drill area and to the forefront of the spoil stockpile is full of water and has some form of water weed growing within, which appears to attract various bird life (figure 6). Other biological life, namely various micro-organisms, is evident within the confines of the water. Mr Lea has mentioned using the pit for yabby propagation in the future. The water-pit is also full of relatively clear water and is used for stock watering and yabby propagation (figure 7).

Water samples from both pits have been taken for analysis (Appendix 1). Standard water analysis shows the salt content for the sump to be much greater than that for the water pit (Graph 1). The concentrations of Calcium,Magnesium,Sulphate and Nitrate ions appear to differ by only relatively small amounts (Graph 1). Potassium ions are of a much higher concentration in the sump sample than the water pit sample. Conversely Bi-Carbonate ions are greater in the water pit sample than the sump sample. Both samples have a neutral pH and the total dissolved solids are greater in the sump sample than the water pit sample (Graph 2). Total hardness is greater in the water pit sample than the sump sample and the Sodium/Total Cation Ratio is greater in the water pit sample than the sump sample (Graph 3). The Biochemical Oxygen Demand (BOD) measures the amount of oxygen consumed by a sample of water under standard conditions. It is an indicator of the level of wastes present and measures the organic pollution in a body of water. The greater the amount of wastes present, the higher the consumption of oxygen by organisms living in the water and the higher the BOD. The Biochemical Oxygen Demand was <1mg/L in the water pit and 15mg/L in the sump sample (Appendix 1). The BOD in the sump sample is higher than expected and the level is comparable to high quality sewage effluent. The water in the sump would be useful for irrigation and not for stock watering.

The flare pit situated at the western end of the sump is completely dry and has not been filled with subsoil and respread with associated vegetation. The cellar remains open and Mr Lea has agreed to fill this in before the end of February 1995. The well name and number are clearly displayed on the well head (figure 8).

According to Mr Lea, the two bores drilled by MESA found no pollution of the water table.

TOPSOIL AND ASSOCIATED VEGETATION:

The topsoil stockpile and the pit spoil stockpile located at the southern end of the site have not been used to fill in the pits. Associated vegetation has not been respread over the affected areas. Vegetative growth upon these stockpiles consists predominantly of thistle and various native grasses.

RESTORATION OF ABANDONED DRILL AREA:

The drill site consists of compacted soil and shows very little regeneration of grass on site. It is mainly covered in thistle and interspersed with various native grasses and would most probably have to be deep ripped to break up the compacted layers. This would then allow an even distribution of native grasses to grow. No fragmentation of the land mass is evident. Erosion is not evident , although is possible due to strong winds present. The drill site has been cleared of all debris, including any fuel drums or chemicals used in the drilling process. No fuel appears to have been spilt. A rubbish pit Mr Lea has been using will be infilled.

FINAL STATEMENT:

GFE Resources has operated under the guidelines as set out in "The Environmental Management of Petroleum Drilling and Workover Operations in the South-East of South Australia" in the "Code of Environmental Practice" (November 1990). Mr Lea has sold the land and exchange will take place on 31 March 1995.

ENVIRONMENTAL QUALITATIVE ASSESSMENT
POST DRILLING SITE INSPECTION AND EVALUATION

SITE NAME: Reedy Creek-1

DATE: 15.2.95

VISUAL APPEARANCE:Topsoil and spoil stockpiles evident. Little regeneration of grass on site. No infilling of sump, water pit or flare pit.

CONDITION OF SURROUNDING LAND: Good. Used for livestock grazing.

COMPACTION: Yes. **EROSION**: Nil - probable.

SOIL SURFACE CONDITION: Average. Deep Ripping required for continuous cover of vegetative growth.

STABILITY OF LAND: Good.

WEED INTRODUCTION: Thistle.

FRAGMENTATION OF LAND MASS: No

WIDTH AND LENGTH OF DRILL AREA (hardstanding): 100m x 95m.

MANAGEMENT: LITTER/WASTE DISPOSED OF ACCORDINGLY: Yes
ANY FUEL SPILLED: No.
LINING OF SUMP: Yes.
INFILLING OF SUMP: No.
INFILLING OF WATER-PIT: No.
INFILLING OF FLARE-PIT: No.
DISPOSAL OF RUBBISH FROM RUBBISH PIT: Yes.
REFILLING RUBBISH PIT Within a week following inspection.
DISTRIBUTION OF TOPSOIL AND SPOIL: No.
STATUS OF CELLAR: Remains open. Will be infilled within a week following inspection.

ACCESS TO SITE: Area is fenced with two gates for access.

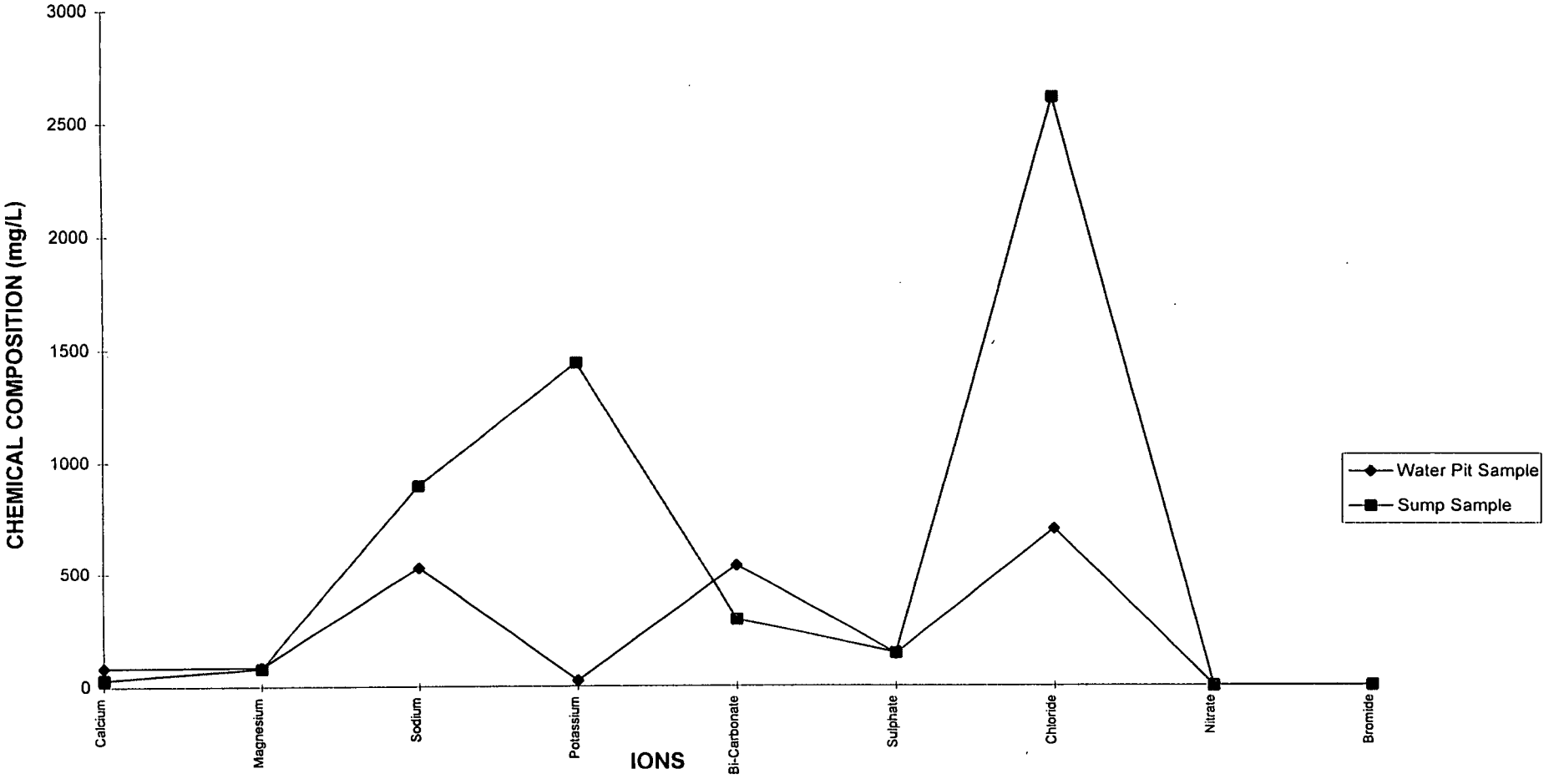
CURRENT LAND USE: Livestock watering and yabby propagation.

COMMENTS (STATEMENT OUTLINING CLEAN-UP OPERATION):
Mr Lea continues to be happy with the state of the site. He will continue to use the site as part of his farming operations.

GRAPH -1

REEDY CREEK-1

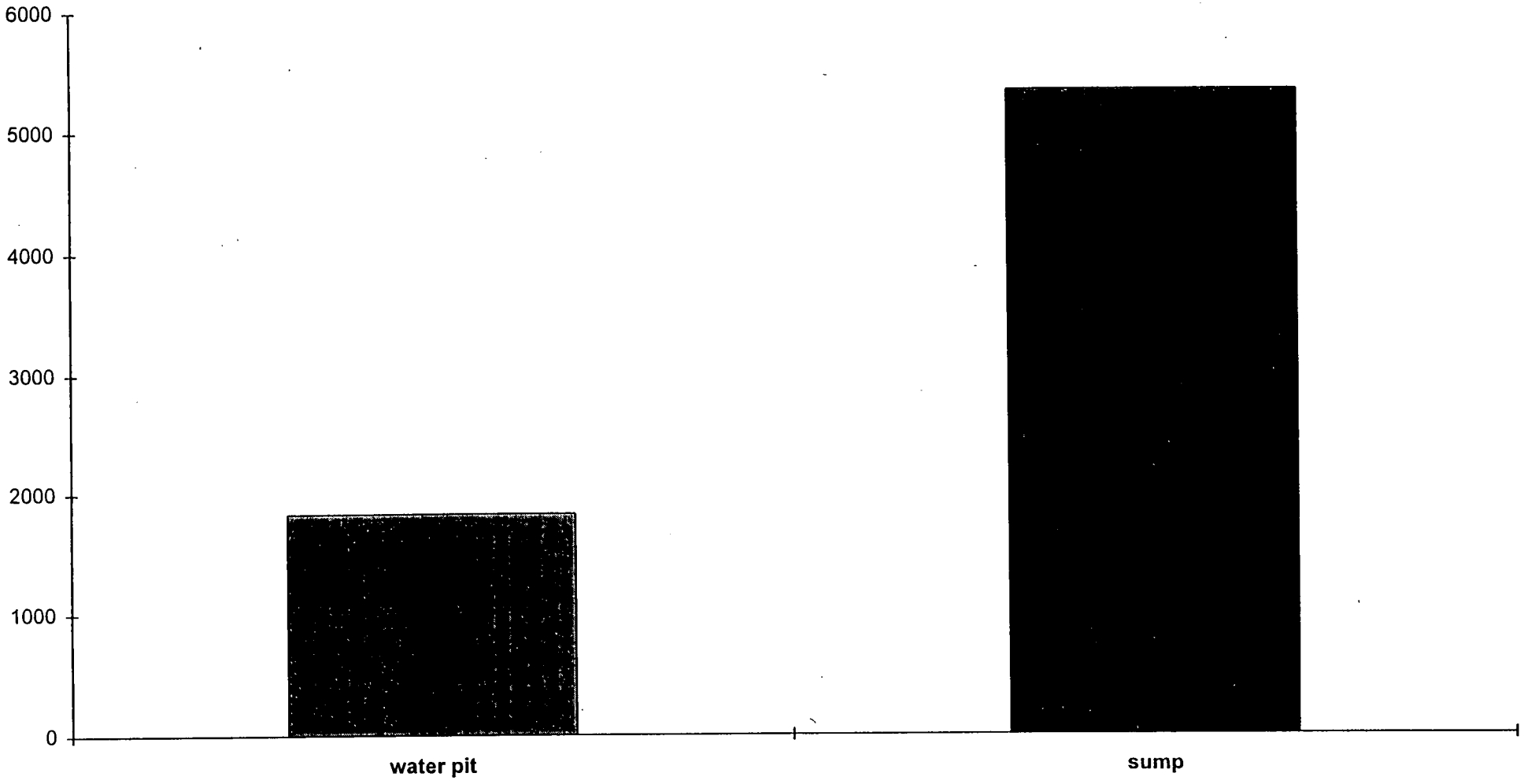
CHEMICAL COMPOSITION OF WATER PIT AND SUMP SAMPLE



GRAPH - 2

Reedy Creek-1

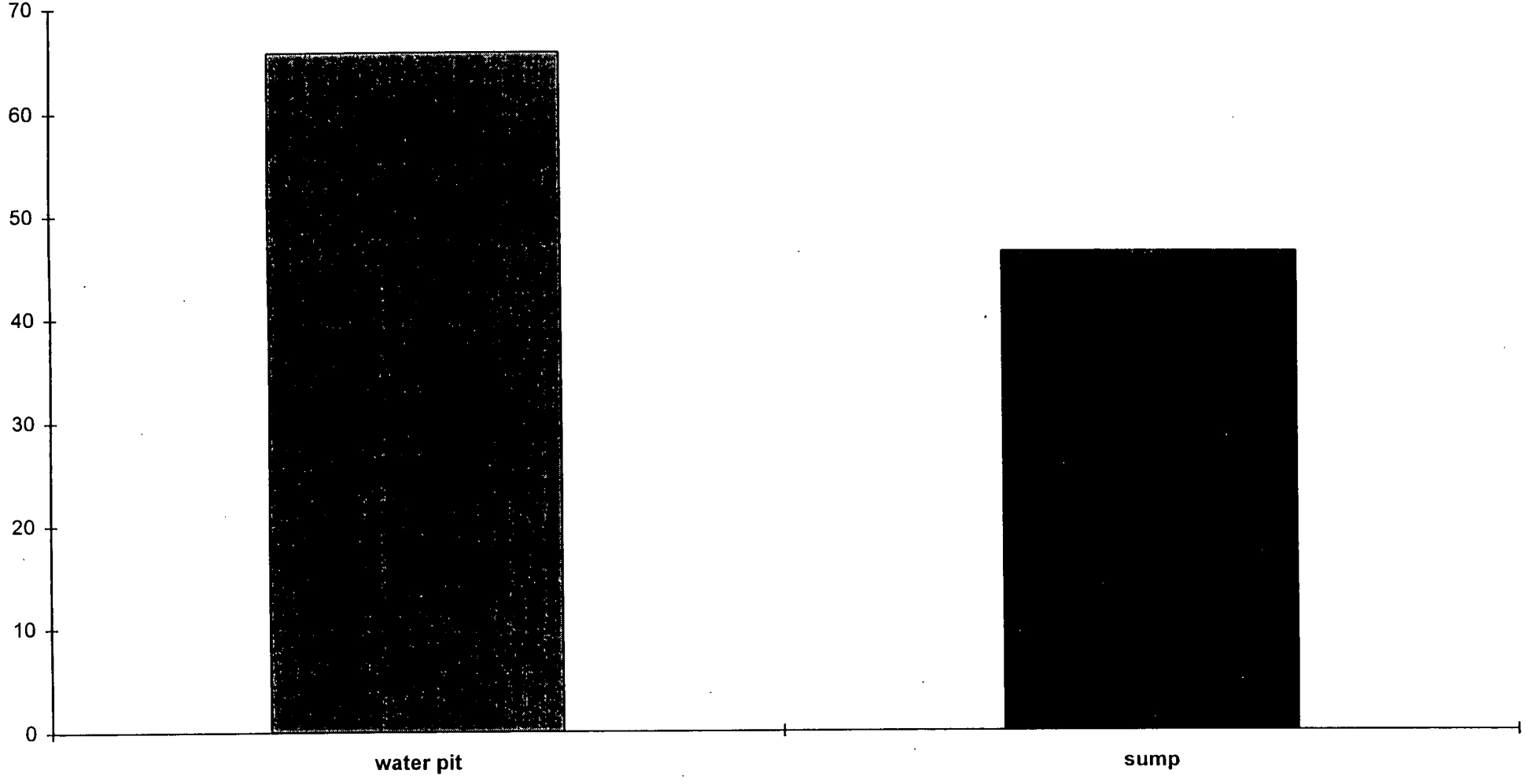
Total dissolved solids (Calculated) (mg/L)



GRAPH -3

Reedy Creek-1

Sodium/Total Cation Ratio (%)



APPENDIX 1

1. INTRODUCTION

Two (2) water samples were received for standard water analysis. In addition, biochemical oxygen demand (BOD) was requested on one of the samples. This report is a formal presentation of results forwarded as they became available.

2. RESULTS

Water analysis results are presented on the following pages. The BOD of the sump sample was determined to be 15 mg/L.

amdel

Water Analysis Report Job No. 95L7553 Method WAT 2
Page 2

Sample ID. REEDY CREEK-1

Chemical Composition

		mg/L	me/L
Cations			
Calcium	(Ca)	30.0	1.50
Magnesium	(Mg)	80.0	6.58
Sodium	(Na)	895.0	38.93
Potassium	(K)	1440.0	36.83
Anions			
Hydroxide	(OH)		
Carbonate	(CO3)		
Bi-Carbonate	(HCO3	293.1	4.81
Sulphate	(SO4)	145.0	3.02
Chloride	(Cl)	2604	73.35
Nitrate	(NO3)	<0.1	
Bromide	(Br)	1.0	

Other Analyses :

Reaction - pH	7.8
Conductivity (E.C) (micro -S/cm at 25°C)	9140
Resistivity Ohm.M at 25°C	1.09

Derived Data

	mg/L
Total Dissolved Solids	
A. Based on E.C.	5850
B. Calculated (HCO3=CO3)	5341
Total Hardness	404
Carbonate Hardness	259
Non-Carbonate Hardness	145
Total Alkalinity (Each as CaCO3)	259

Totals and Balance

Cations (me/L)	83.8	Diff=	2.66
Anions (me/L)	81.2	Sum =	165.0

ION BALANCE (Diff*100/Sum) = 1.61%

Sodium / Total Cation Ratio 46.4%

mg/L = Milligrams per litre
me/L = MilliEqivs.per litre

Name: S.ROGERS
Address: GFE RESOURCES
PO.BOX 629
MELB. 3000

Date Collected 15/02/95
Date Received 01/03/95
Collected by CLIENT

Formation
Type SUMP
Point
Time
Interval
Geologist
Depth

amdel

Water Analysis Report Job No. 95L7553 Method WAT 2
Page 1

Sample ID. REEDY CREEK-1

Chemical Composition		mg/L	me/L
Cations			
Calcium	(Ca)	84.0	4.19
Magnesium	(Mg)	86.0	7.08
Sodium	(Na)	526.0	22.88
Potassium	(K)	24.0	0.61
Anions			
Hydroxide	(OH)		
Carbonate	(CO3)		
Bi-Carbonate	(HCO3	534.0	8.75
Sulphate	(SO4)	142.0	2.96
Chloride	(Cl)	696	19.61
Nitrate	(NO3)	<0.1	
Bromide	(Br)	0.6	

Other Analyses :

Reaction - pH	7.5
Conductivity (E.C) (micro -S/cm at 25°C)	3050
Resistivity Ohm.M at 25°C	3.28

Derived Data	mg/L
Total Dissolved Solids	
A. Based on E.C.	1952
B. Calculated (HCO3=CO3)	1825
Total Hardness	563
Carbonate Hardness	472
Non-Carbonate Hardness	91
Total Alkalinity (Each as CaCO3)	472

Totals and Balance			
Cations (me/L)	34.8	Diff=	3.45
Anions (me/L)	31.3	Sum =	66.1
ION BALANCE	(Diff*100/Sum) =		5.22%
Sodium / Total Cation Ratio			65.8%

mg/L = Milligrams per litre
me/L = MilliEqivs.per litre

Name: S.ROGERS
Address: GFE RESOURCES
PO.BOX 629
MELB. 3000

Date Collected 15/02/95
Date Received 01/03/95
Collected by CLIENT

Formation
Type WATER PIT
Point
Time
Interval
Geologist
Depth

Figure -1 Looking North onto site from spoil stockpile.

Figure -2 Looking East onto site from Western end of drill area.

Figure -3 Looking West onto site from Eastern end of drill area.

Figure -4 Looking South onto site from top of topsoil stockpile.

Figure -5 Looking South onto site from Robe-Penola Road.

Figure -6 Looking South Westerly onto sump.

Figure -7 Looking Westerly onto water-pit.

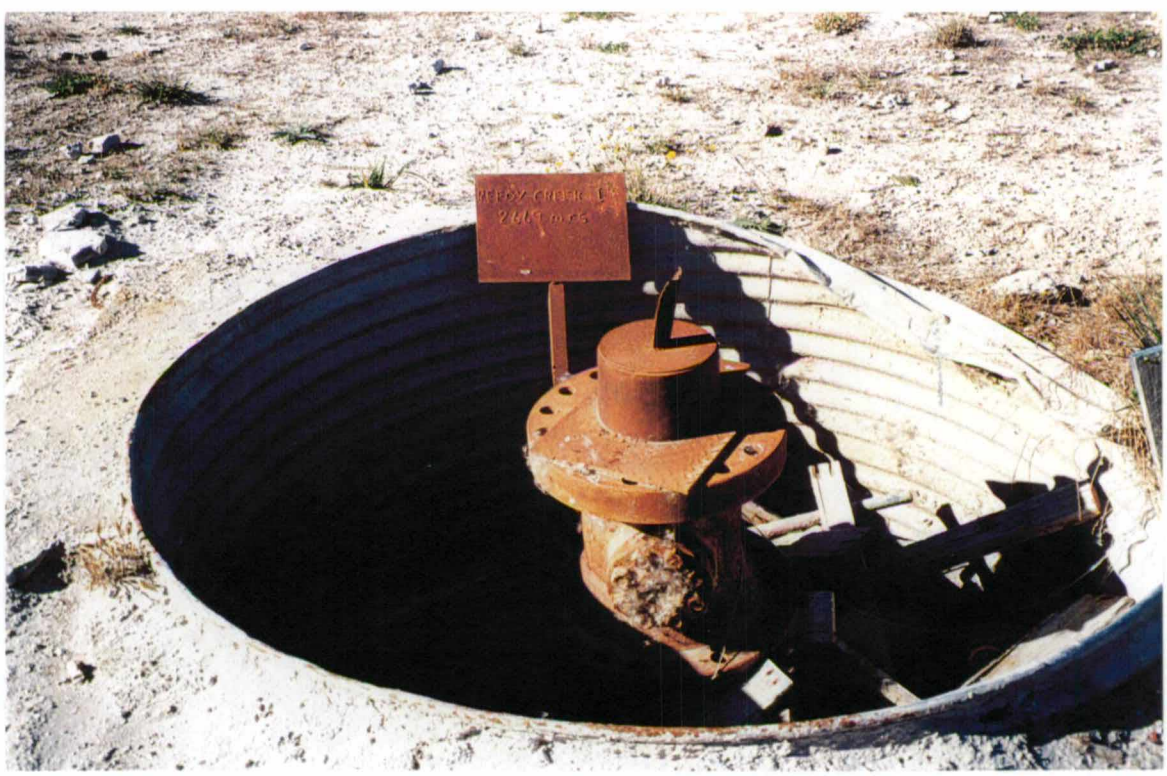
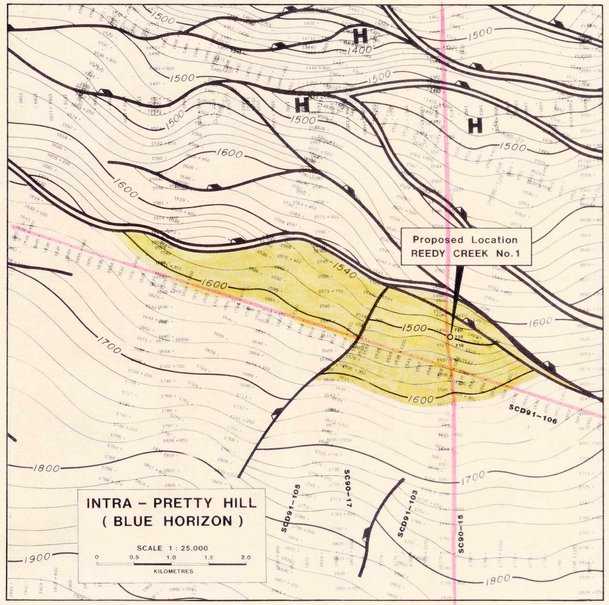
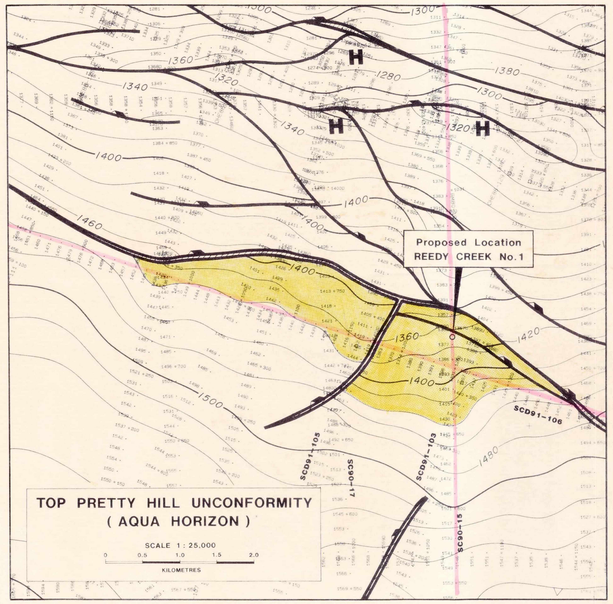
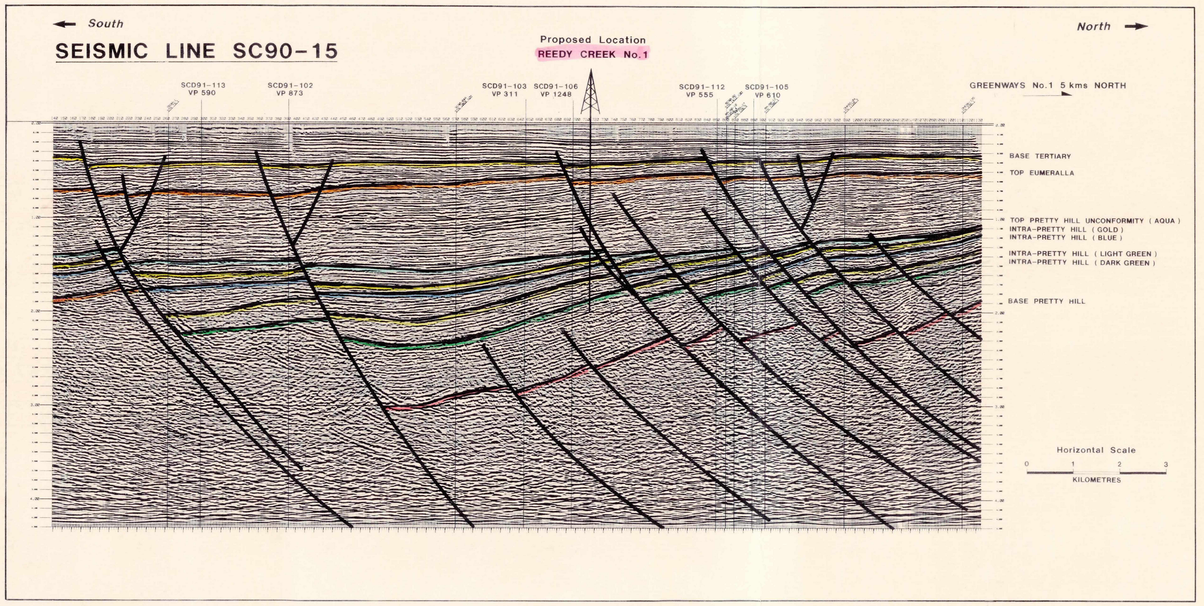
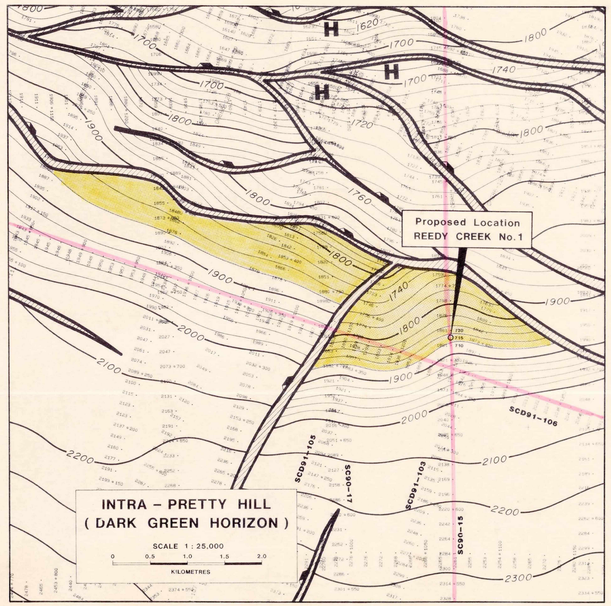


Figure -8 Reedy-Creek well head.

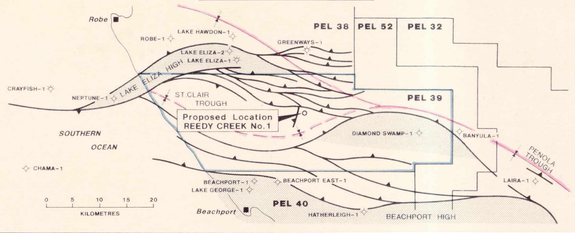




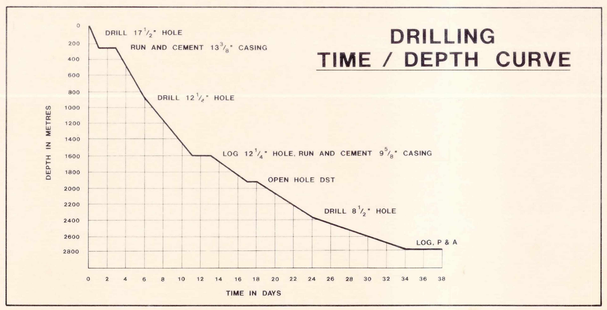




LOCATION MAP

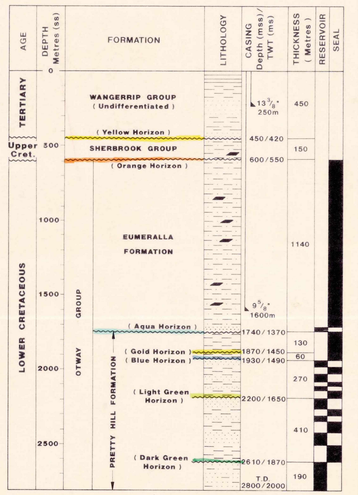


DRILLING TIME / DEPTH CURVE



STRATIGRAPHIC PROGNOSIS

OBJECTIVE : INTRA-PRETTY HILL FORMATION



Based on GFE Interpretation

JUSTIFICATION

Reedy Creek No.1 is the first deep well to be drilled in the St.Clair Trough. The well is designed to test, as the main objective, sand reservoirs within the Lower Cretaceous Pretty Hill Formation of the Otway Group.

The Prospect is situated on the most basinward of a series of NW-SE trending fault blocks on the northern flank of the St.Clair Trough.

A NNE-SSW trending normal fault (clearly evident on strike line SCD91-106) bisects the fault block at Pretty Hill levels thus forming a classical trap-door structure. The main objective is sandstones within the sand-shale unit of the Pretty Hill Formation. We anticipate these to be well developed, clean and have porosities averaging 15%. Seal is believed to be provided by claystones of the overlying shaly unit of the Pretty Hill which also juxtapose the objective sandstones across the bounding faults of the structure.

Subsurface data obtained from the wells drilled within and in the vicinity of the PEL 39 indicate that the St.Clair Trough is the western extension of the Penola Trough and hence is likely to have similar litho-stratigraphy. Geological modeling carried out in the St.Clair Trough indicates that the onset of potential oil generation (VRE = 0.64%) generally commences at a depth range of 2300-2700m and the onset of significant gas generation (VRE = 1.0%) commences between 3200-3100m. Regional dip would encourage northward migration of any produced hydrocarbons and the Reedy Creek structure, being the first structural trap to the north of the trough axis, is well situated to entrap these. Hydrocarbon shows encountered in Lake Eliza No.1 and Greenways No.1 north of Reedy Creek are further encouragment for the prospectivity and potential of the structure.

GAS AND FUEL EXPLORATION N.L.

REEDY CREEK No.1

TOTAL DEPTH : 2800m GROUND LEVEL ELEVATION : 12.00 a.m.s.l.

CLASSIFICATION : WILDCAT

LOCATION : LATITUDE 37°19'21.14"S LONGITUDE 140°09'17.9"E

SEISMIC LINE : SC90-15 SHOTPOINT : 715

PRIMARY RESERVOIR TARGET : PRETTY HILL (BLUE HORIZON)

DEPTH : 1930m (ss)

AERIAL CLOSURE : 5.36 sq.km.

VERTICAL CLOSURE : 280m

POROSITY : 15% NET THICKNESS : 140m

HYDROCARBON SATURATION : 70%

IN PLACE VOLUME : 130 x 10^6 bbls OIL, or
145 bCF GAS
(Based on INTRA-PRETTY HILL BLUE HORIZON)

RECOVERY FACTOR : 25% (OIL) 70% (GAS)

SIGNIFICANT NEARBY WELLS : GREENWAYS No.1 11 kms NORTH
LAKE ELIZA No.1 18.0 kms NORTHWEST

FACILITIES / MARKET : MILLICENT 35 kms SOUTH
ROBE 41 kms NORTHWEST
MT.GAMBIER 76 kms SOUTHEAST
ADELAIDE 300 kms NORTH

ESTIMATED COST : DRY HOLE : $ 1,500,000
DISCOVERY : $

A

PEL 39

PEL 52

PEL 32

A'

ST.CLAIR TROUGH

DIAMOND SWAMP HIGH

PENOLA TROUGH

CROSS SECTION B – B'

SEISMIC LINE SC90-04A (27.5 Kms)

SEISMIC LINE SC90-04 (12.0 Kms)

DATUM : SEA LEVEL

DIAMOND SWAMP No.1

KBE = 14.9m
GLE = 10.7m

BANYULA No.1

GLE = 40.0m
KBE = 46.9m

LAIRA No.1

KB = 67.6m

KATNOOK No.2

KBE = 68.8m

TERTIARY – UPPER CRETACEOUS GROUP

EUMERALLA FORMATION

PRETTY HILL UNDIFFERENTIATED

SHALE UNIT

VR = 0.64 %

SHALE – SAND UNIT

CASTERTON FORMATION

BASAL SAND

VR = 1.0 %

PRETTY HILL FORMATION

Pretty Hill Undifferentiated

VR = 1.27 %

BASEMENT

CASTERTON FORMATION

DEPTH IN METRES

621.8m (–606.9m)

1359.4m (–1344.5m)

1464.5m (–1449.6m)

T.D. = 1595m

DST : NONE

BASEMENT : Highly fractured quartzite and green phyllite

BHT = 50.2°C AT 1594m (not corrected)

Pretty Hill Undifferentiated

BASEMENT

830m (–783.1m)

Base Eumeralla Sand

1989m (–1942.1m)

DST 1

1995m (–1948.1m)

2352m (–2305.1m)

T.D. = 2789m

PALYNOLOGY : HARRIS & FOSTER, 1983
MORGAN, 1987

DST No. | INTERVAL (Metres) | RECOVERY
1 | 1989.5 – 2031 | 1750m of brakish water

CORE No. | INTERVAL (Metres) | RECOVERY %
1 | 1995 – 2001 | 98.6
2 | 2390 – 2404 | 100
3 | 2786.7 – 2789.4 | 100

BHT : 107°C (225°F) AT 2789m (corrected)

SHALE – SAND UNIT

PRETTY HILL FORMATION

BASAL SAND

VR = 1.0 %

VR = 1.27 %

CASTERTON FORMATION

BASEMENT

794m (–725m)

1915m (–1846m)

1935m (–1866m)

2645m (–2576.4m)

T.D. = 3005.8m

PALYNOLOGY : MORGAN, 1990

DST No. | INTERVAL (Metres) | RECOVERY
1 | 2677.7 – 2681.6 | Muddy water (left test tool in the hole)
2 | 2679 – 2694 | Misrun (packer failure)
3 | 2671.8 – 2693.4 | GTS, RTSTM

BHT : 121°C AT 2995.0m

GRADIENT : 2.1°C Surface – 1000m
4.0°C 1000m – Total Depth

620m (–551.2m)

DST 1

1882.5m (–1813.7m) BASAL EUMERALLA SAND
1900.7m (–1831.9m) KATNOOK SAND MEMBER
1980m (–1911.2m) TOP PRETTY HILL SHALE UNIT

DST 2,3,12,13
2847m (–2778.2m) PRETTY HILL SAND–SHALE UNIT
DST 11,11A,11B

DST 9,10

DST 7,8
DST 4,5,6

T.D. = 3478.2m

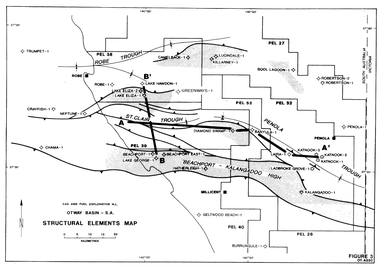
PALYNOLOGY : MORGAN, 1989

DST No. | INTERVAL (Metres) | RECOVERY
1 | 1558 – 1564.5 | Flowed 341 MCFGD
2 | 2799 – 2867.4 | Misrun
3 | 2841.5 – 2867.9 | Flowed 14.0 MMCFGPD 109 BCPD API : 47.3°
4 | 3456.4 – 347 | FGTS, Rate : TSTM
5 | 3456.4 – 3474 | Misrun
6 | 3456.4 – 3478.2 | Misrun
7 | 3420.8 – 3429 | Flowed GTS, RTSTM
8 | 3420.8 – 3434.5 | Flowed GTS, RTSTM
9 | 3223.3 – 3240.3 | Flowed GTS, RTSTM
10 | 3022.5 – 3029.5 | Flowed GTS, RTSTM
11 | 2908 – 2917 | Misrun
11A | 2908 – 2917 | Misrun
11B | 2908 – 2917 | Flowed GAS 4.7 MMCFD
12 | 2877 – 2899.5 | Flowed 16.38 MMCFGD 140 BCPD
13 | 2864 – 2868.5 | 15.5 MMCFGPD 362 BCPD API : 50.0°

BHT : 142.2°C AT 3478.2m

GRADIENT : 3.52°C / 100m (Slightly higher than Katnook–1 3.45°C / 100m)

LOCATION MAP



HORIZONTAL SCALE 1 : 50,000

0 1 2 4 6 8 10
KILOMETRES

LEGEND

- UNCONFORMITY
- GARNET
- DRY HOLE (P & A)
- DRY HOLE WITH GAS SHOW
- GAS WELL
- FAULT
- BASEMENT
- ISO MATURITY LINE
- CORED INTERVAL
- DST (No.)

GAS AND FUEL EXPLORATION N.L.

OTWAY BASIN

SCHEMATIC STRUCTURAL CROSS SECTION AND LOG CORRELATION THROUGH PENOLA – ST.CLAIR TROUGH

AUTHOR : V.AKBARI	DRAWN BY : S.CLARK
DATE : AUGUST, 1991	ENCLOSURE No. 1
SCALE : As Shown	
CHECKED BY : J.FOSTER	DRG No. : OT 4406

OT 4406

B — PEL 40 — BEACHPORT – KALANGADOO HIGH — WOAKWINE TERRACE — PEL 39 — ST.CLAIR TROUGH — LAKE ELIZA HIGH — PEL 38 — B'

LAKE GEORGE No.1

KBE = 7.4m

LAKE ELIZA No.1

KBE = 12.2m

LAKE HAWDON No.1

KBE = 16.5m

CROSS SECTION A – A'

DATUM : SEA LEVEL

DATUM : SEA LEVEL

TERTIARY – UPPER CRETACEOUS GROUP

EUMERALLA FORMATION

PRETTY HILL UNDIFFERENTIATED

SHALE UNIT

VR = 0.64 %

SHALE – SAND UNIT

PRETTY HILL FORMATION

BASAL SAND

Pretty Hill Undifferentiated

VR = 1.0 %

VR = 1.27 %

CASTERTON FORMATION

BASEMENT

T.D. = 1368.9m

PALYNOLOGY : EVANS et al 1970

CORE No.	INTERVAL (m)	RECOVERY %
1	1262.5 – 1265.5	100
2	1365.8 – 1368.9	100

INTERVAL (m)	T C°
598	21 (not corrected)
1369	48 (not corrected)

T.D. = 1472.8m

PALYNOLOGY : EVANS AND MULHOLLAND, 1970

INTERVAL (m)	POROSITY (%)	PERMIABILITY (m.d.)
1085 – 1094	23.3 (CORE)	2.7

DST No.	INTERVAL (m)	RECOVERY
1	1072 – 1086	GAS CUT SALT WATER
2	1067 – 1071	GAS CUT SALT WATER

INTERVAL (m)	T C°
643	20.8°
1156	41.3°
1475	51.9°

BASEMENT : METASILTSTONE

391.7m (–379.5m)

1068m (–1055.8m)

1315.2m (–1303m)

1390.2m (–1378m)

GROUP

348.1m (–331.6m)

FORMATION

EUMERALLA

SHALE – SAND UNIT

BASAL SAND

1213m (–1196.5m)

PRETTY HILL FORMATION

1612m (–1595.5m)

1973.3m (–1956.8m)

T.D. = 2082.4m

BHT : 74.1°C (91°F) at 2081.5m (CORRECTED)

DST : NONE

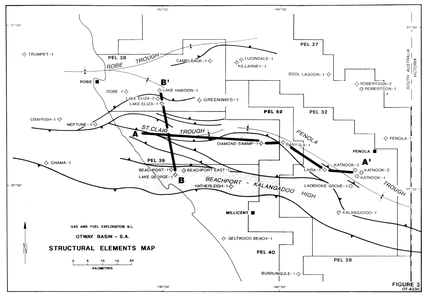
BASEMENT : METASILTSTONE AND PHYLLITE

CASTERTON FORMATION

DEPTH IN METRES

0 — 500 — 1000 — 1500 — 2000 — 2500 — 3000 — 3500 — 4000 — 4500 — 5000

LOCATION MAP



HORIZONTAL SCALE 1 : 25,000

0 0.5 1 2 3 4 5

KILOMETRES

LEGEND

- UNCONFORMITY
- GARNET
- DRY HOLE (P & A)
- DRY HOLE WITH GAS SHOW
- GAS WELL
- FAULT
- BASEMENT
- ISO MATURITY LINE
- CORED INTERVAL
- DST (No.)

GAS AND FUEL EXPLORATION N.L.

OTWAY BASIN

SCHEMATIC STRUCTURAL CROSS SECTION AND LOG CORRELATION THROUGH ST.CLAIR TROUGH

AUTHOR : V.AKBARI	DRAWN BY : S.CLARK
DATE : AUGUST, 1991	ENCLOSURE No. 2
SCALE : As shown	
CHECKED BY : J.FOSTER	DRG No. OT.4407

OT 4407