Open File Envelope

No. 8534

Eringa Trough

PEL 48,Pedirka Basin

Mariebar International (Qld) Pty Ltd

Enquiries: Customer Services Branch
Minerals and Energy Resources
7th Floor
101 Grenfell Street, Adelaide 5000

Telephone: (08) 8463 3000
Facsimile: (08) 8204 1880

ENVELOPE 8534

TENEMENT: PEL 48; Eringa Trough of Pedirka Basin

TENEMENT HOLDER: J.F. Allender (operator) and Mariebar International (Qld) Pty Ltd

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END OF CONTENTS

21 Salisbury Street,
UNLEY S.A. 5061

The Director General,
Department of Mines and Energy,
191 Greenhill Road,
PARKSIDE S.A. 5063

Dear Sir,

Petroleum Exploration Licence Application - Dalhousie Area

We the undersigned hereby apply for an Petroleum Exploration Licence under the Petroleum Act, 1940 and Regulations under the Petroleum Act as amended in 1968, 1969, 1971, 1978, 1981 and 1984. This application is an amendment of an earlier application made in the name of J. F. Allender and others on 2 April 1989 and replaces this earlier version.

Area Description

The area under application lies within the 1:250 000 Dalhousie Sheet SG 53-11. The application area is contained by longitude 135 degrees 30 minutes to longitude 135 degrees 45 minutes and latitude 26 degrees 00 minutes to latitude 26 degrees 20 minutes. The area is shown on the attached plan (2 copies) and totals approximately 940 square kilometres.

Applicants

The applicants are:

MARIEBAR INTERNATIONAL (QLD) PTY. LTD. 50 %
6th Floor,
231 Adelaide Terrace,
PERTH WA 6000

J.F. Allender 50 %
21 Salisbury Street,
UNLEY SA 5061.

Proposed Work Programme

The work programme planned is described below and is shown year by year. This plan will be subject to change depending upon the results obtained in the early phases. Details of each step in this programme will be discussed with officers of your department at each stage. The costs are expressed in 1989 dollars and are estimates only. Detailed costing will of course be undertaken at each stage of the work programme and submitted to your Department.

Year 1: $ 50 000

The area is covered by a dense seismic grid which was undertaken by the previous licence holder. It is proposed that

seismic reprocessing be undertaken in order to define the geometry of the seismically delineated structure. Site investigation as a prelude to a clearance under the requirements of the Aboriginal Heritage Act will be undertaken during the year.

Year 2: $ 150 000

Having decided on an unambiguous crestal location, it is planned to drill at least one well to test the Mesozoic section. The proposed well location will test the Mayhew structure. This well will be drilled using current drilling technology.

Year 3: $ 200 000

A second well probably designed to test the Dalton structure is proposed.

Year 4: $ 200 000

Additional seismic is proposed. This will be of the order of 50 kilometres.

Year 5: $ 200 000

One additional well is planned for the final year of the permit life.

Technical Advice Available to Applicants:

The applicants are personally well equipped to undertake all aspects of petroleum exploration and development and all are experienced professionals. MARIEBAR INTERNATIONAL (QLD) PTY. LTD. is a company of which Mr H. Crocker is the principal. This company has active interests in Papua New Guinea, (PL 89), New Zealand (PL 38317) and Western Australia (EP 110). Details of the applicants are appended.

Financial Resources Available to the Applicants:

MARIEBAR INTERNATIONAL (QLD) Pty Ltd has available the necessary financial resources to fund the proposed programme. Copies of the company's annual returns as evidence of this financial ability will be forwarded shortly. Please note that the work programme expenditure is well in excess of the minimum commitment as described in your letter of 18 April (SR 27/2/89 GRH:LT)

The applicants regard this prospect as being very attractive although high risk. We look forward to a successful exploration programme in this area. A cheque for $A 400 accompanies this amended application.

Thank you for your assistance.

Yours Faithfully,

J.F. Allender

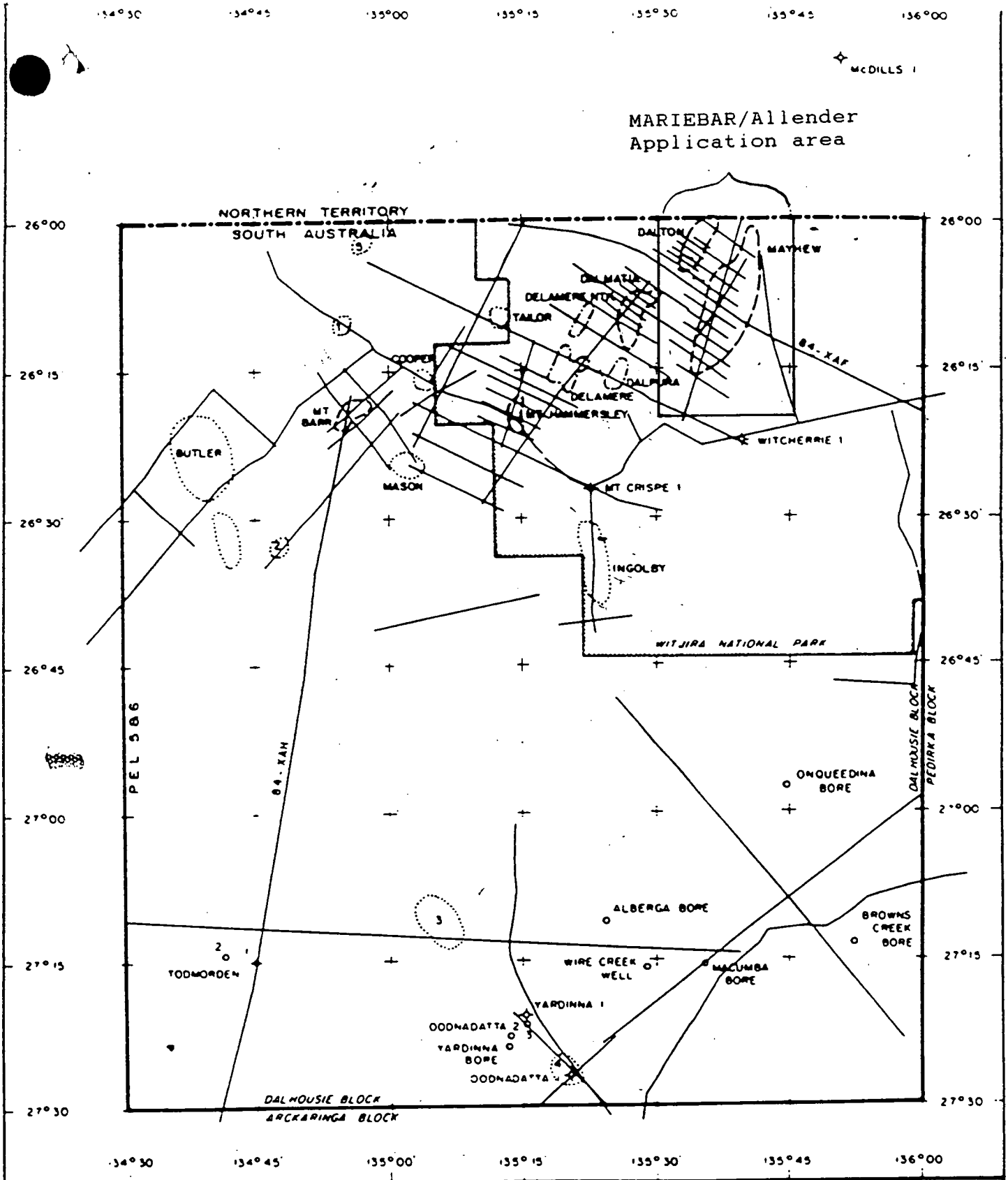
J.F. Allender

MARIEBAR INTERNATIONAL (QLD) PTY. LTD.

Hugh Crocker
DIRECTOR

MARIEBAR INTERNATIONAL (QLD) PTY. LIMITED
Common Seal

Barbara Crocker
Secretary.



LEGEND

SEISMIC COVERAGE 1966-1986

WATER BORE

DRY WELL

OIL SHOW

PROSPECT.

STRONG LEAD

WEAK LEAD

SANTOS LIMITED

S.A. EXPLORATION

P.E.L. 5&6

DALHOUSIE BLOCK

SEISMIC LINE & WELL LOCATION

km 10 0 10 20 30 40 50 km

Original Scale 1:000,000 Author DELM

Datum NA Drafted UL

Date FEB 1987 Checked

6

PETROLEUM ACT, 1940

PETROLEUM EXPLORATION LICENCE No. 48

I, JOHN HEINZ CORNELIS KLUNDER, Minister of Mines and Energy in the State of South Australia pursuant to the provisions of the Petroleum Act, 1940 HEREBY GRANT to:-

Mariebar International (Qld) Pty. Ltd., the Registered office of which is situated at 6th Floor, 231 Adelaide Terrace, Perth, WA. 6000 and James Fraser Allender of 21 Salisbury Street, Unley, SA. 5061, (hereinafter referred to as the "Licensees") a Petroleum Exploration Licence in respect of the area set out below, to have effect for a period of five years and to expire on 30th July 1990 but carrying the rights of renewal conferred by the Petroleum Act, 1940.

COMMISSIONER OF STAMPS
S.A.
ORIGINAL DULY STAMPED
10/07/90 15:16

Description of Area

The land comprised in this licence is that part of the State of South Australia described in the Schedule hereto.

Conditions

1. The Licensee shall at all times comply with:-

   (a) the provisions of the Petroleum Act, 1940 and of any regulations for the time being and from time to time in force under the Act; and

   (b) all directions given to it under the Act or the regulations for the time being and from time to time in force under that Act.

2. During the term of the licence, the Licensees shall carry out or cause to be carried out exploratory operations on the area comprised in the licence in accordance with such work programmes as are approved by the Minister from time to time. These exploratory operations shall include but not necessarily be limited to:-

   (a) in the first year of the term of the licence, seismic reprocessing at a total estimated cost of $50,000 (fifty thousand dollars).

(b) in the second year of the term of the licence the drilling of one exploration well to test the Mesozoic and Permian sections at an estimated total cost of $150 000 (one hundred and fifty thousand dollars).

(c) in the third year of the term of the licence the drilling of one exploration well to test the Mesozoic and Permian sections at an estimated total cost of $200 000 (two hundred thousand dollars).

(d) the fourth year of the term of the licence the acquisition processing and interpretation of 50 line kilometres of seismic surveying at an estimated total cost of $200 000 (two hundred thousand dollars).

(e) in the fifth year of the term of the licence the drilling of one exploration well to test the Mesozoic and Permian sections at an estimated total cost of $200 000 (two hundred thousand dollars).

3. Within sixty days after the end of each year (being the period of twelve calendar months ending on the anniversary of the date upon which this licence comes into force), the Licensees shall submit to the Minister a full and complete written statement of expenditures actually made or caused to be made by the Licensees during that year upon approved exploratory operations. This statement of expenditures shall be accompanied by a written opinion on the veracity of the statement from an auditor whose qualifications and independence from the Licensees are acceptable to the Minister.

4. In the event that the Licensees during any year of the term of this licence (a year being the period of twelve calendar months ending on the anniversary of the date upon which this licence comes into force) fail to comply with the exploratory operations requirements of this licence, it is an express term of this licence that the Minister then may at his discretion either cancel this licence or authorise such variation to these requirements as the Minister thinks fit.

5. In addition to the quarterly reports specified in the Petroleum Regulations 1989, the Licensees shall promptly prepare and submit to the Director-General in a form acceptable to him, detailed reports on all exploratory operations done or caused to be done by or on behalf of the Licensees within and in relation to the licence area.

6. An application to drill a well within the area comprised in the licence shall include written proposals of the Licensees in relation to the bringing under control of the well, in the event that effective control of the well is lost, and to the clean-up of oil spills, including financial proposals such as well control insurance or other means to cover the costs involved in such operations.

SIGNED SEALED AND DELIVERED
by the said MINISTER OF MINES
AND ENERGY at ADELAIDE this

....31st....day of ..July.....1990.....

MINISTER OF MINES AND ENERGY

SIGNED SEALED AND DELIVERED
by the said LICENSEES at

Adelaide..... this
twentieth..... day of June..... 1990

THE COMMON SEAL of MARIEBAR INTERNATIONAL (QLD) PTY LTD
was hereto affixed in the presence of:-

MARIEBAR INTERNATIONAL (QLD) PTY LIMITED Common Seal

.....
(Director)

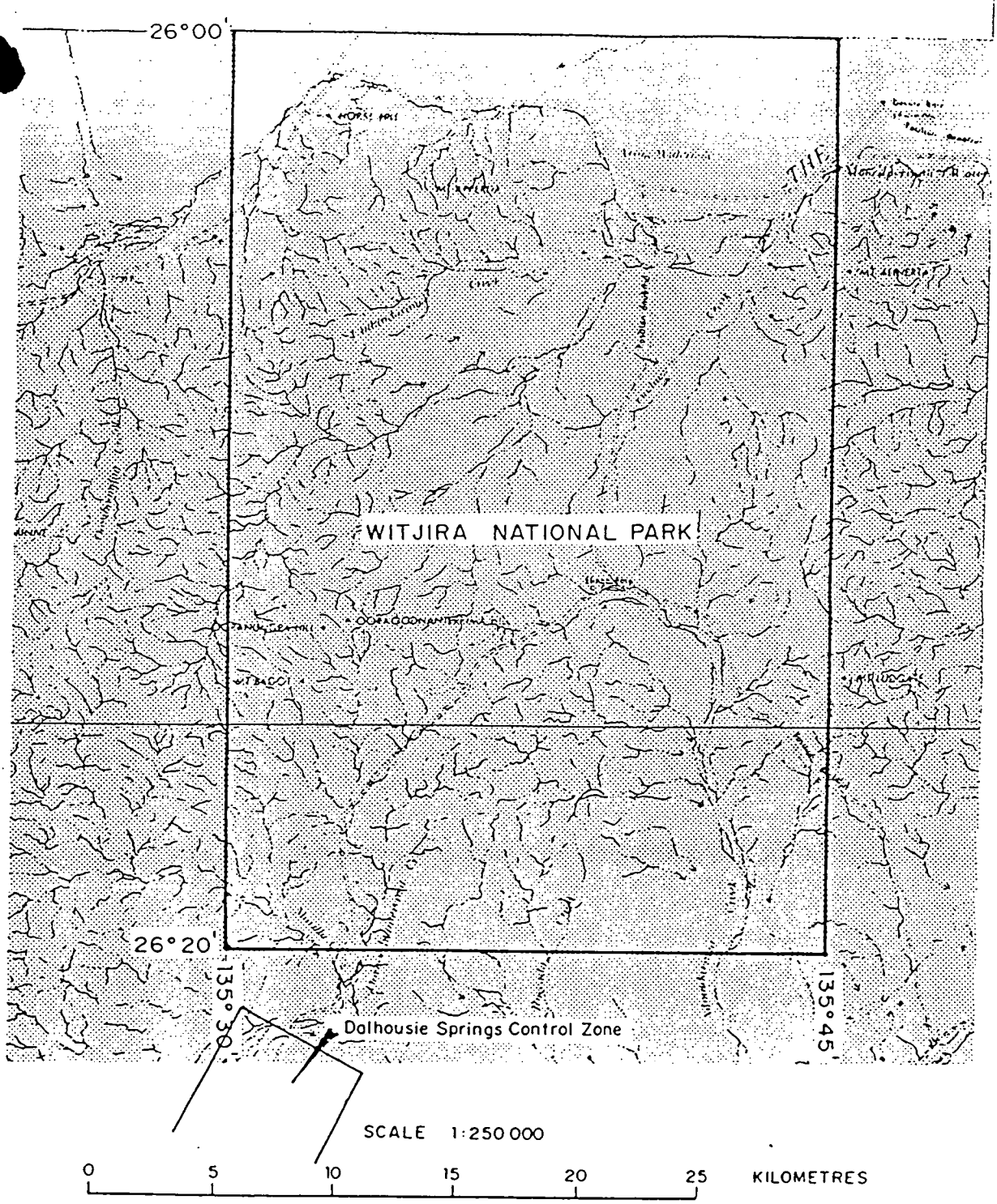
.....
(Secretary)

SIGNED BY THE SAID JAMES FRASER ALLENDER
in the presence of:-

.....

.....Johnston.....
(Witness)

F00517



NOTE : There is no warranty that the boundary of this Licence is correct in relation to other features on the map. The boundary is to be ascertained by reference to the Australian Geodetic Datum and the schedule.

THE PLAN HEREINBEFORE REFERRED TO

PETROLEUM EXPLORATION LICENCE NO. 48

DEPARTMENT OF MINES AND ENERGY - S A SR 27/2/89 AREA 928 km² (approx.)

PEL 48

The Schedule

DESCRIPTION OF AREA

All that part of the State of South Australia, bounded as follows:

Commencing at a point being the intersection of the northern border of the State of South Australia and longitude 135°30′ east, thence easterly along the said border to longitude 135°45′ east, south to latitude 26°20′ south, west to longitude 135°30′ east, and north to the point of commencement.

All latitudes and longitudes are geodetic and expressed in terms of the Australian Geodetic Datum as defined on p.4984 of Commonwealth Gazette number 84 dated October 6, 1966.

AREA: 928 square kilometres approximately

MEMORANDUM SR 27/2/89

Petroleum Exploration Licence No. 48, Mariebar International (Qld) Pty Ltd and James Fraser Allender.

1. This licence granted on ....31.st....July.. 1990 is hereby entered on the Petroleum Register.

2. A security in the sum of $4,000 cash has been lodged with respect to this licence.

3. Interests in the licence are:

   . Mariebar International (Qld) Pty Ltd - 50%
   . James Fraser Allender - 50%

31 / 7 /90

J H C KLUNDER
MINISTER OF MINES & ENERGY

F01729

PEL 48

"MAYHEW"

DALHOUSIE - SOUTH AUSTRALIA

J.F. Allender
21 Salisbury Street
Unley SA 5061

CONTENTS

FIGURES

ENCLOSURES

SUMMARY

PEL 48 was granted to J.F. Allender and Mariebar International (Qld) Pty Ltd., tenable for a period of five years from 31 July 1990. The data from the PEL area was reinterpreted which has provided a firm drilling location for the current year. Well wireline log data from Mt Hammersley 1 and Dalmatia 1 wells have been computer analysed; the results of which are reported separately. — Not submitted (? no new work).

INTRODUCTION

PEL 48 hosts two undrilled anticlinal structures, namely the Palaeozoic Dalton and the Mesozoic Mayhew anticlines. The Mayhew anticline is by far the largest structure in the area with a closure area of approximately 250 sq. km. (63000 acres) and a vertical closure of more than 400 metres. Despite the disappointing results from two recent wells drilled to the south west it was decided to examine the seismic and well data adjacent to the Mayhew anomaly and reprocess and reinterpret the data as appropriate.

DATA BASE

SEISMIC

The seismic coverage is as follows:

Line	first SP	last SP	length km	
65-AA1	1.0	93.0	53.4	Poolowanna-DAL
65-AF3	93.0	148.0	32.6	"
65-AL	570.0	595.0	17.8	
84-XAF	128.0	3600.0	86.7	Hogarth-DAL
85-YGF	280.0	680.0	10.0	Morphett-DAL
85-YGG	280.0	720.0	11.0	"
85-YGH	400.0	760.0	9.0	"
85-YGJ	400.0	800.0	10.0	"
85-YGK	200.0	1120.0	23.0	"
85-YGL	360.0	880.0	13.0	"
85-YGM	400.0	840.0	11.0	"
85-YGN	200.0	1760.0	39.0	"
85-YJP	200.0	680.0	12.0	"
85-YJQ	200.0	760.0	14.0	"
85-YJR	200.0	800.0	15.0	"
86-ADS	200.0	1412.0	30.2	Fletcher-DAL
86-ADT	200.0	1192.0	24.7	"
86-ADW	320.0	992.0	16.7	"
86-ADY	200.0	800.0	15.0	"
86-ADZ	200.0	648.0	11.2	"
86-AEA	204.0	456.0	6.3	"
86-AEC	238.0	894.0	16.4	"
86-AJF	200.0	540.0	8.5	"
86-AJG	200.0	540.0	8.5	"
86-AJJ	200.0	680.0	12.0	"
86-AJK	200.0	554.0	8.8	"
86-AJL	200.0	480.0	7.0	"
86-AJP	200.0	480.0	7.0	"
86-AJQ	200.0	440.0	6.0	"

Total seismic line length = 535.7 km

WELLS

Well Name	Year
Elinga water bore	1917
Oodnadatta 1	1957
Witcherrie 1	1963
Mt Crispe 1	1966
Mt Hammersley 1	1987
Dalmatia 1	1988

HYDROCARBON OCCURRENCES

Well Name	SADME Number	Total Depth	Gas Shows: Concentrations (ppm)						Oil Shows
			C1	C2	C3	C4	C5	C6	
Alberga Bore	5943/1	347 m	25	1	1	5	3	10	
Wire Creek Well	5943/2	472 m	105	2	1	1	3	15	
Yardinna Bore	5943/3	374 m	6						
Santos Oodnadatta 1	5943/4	403 m							100-101 m 148 m 220-223 m 273 m 284-284.4 m
Yardinna 1	5943/11	156 m							
Macumba Bore	6043/2	457 m	50	1	1	5	3	10	
Brown's Creek Bore	6043/3	579 m	100						
Onqueedina 1	6044/4	594 m							

REGIONAL SETTING

PEL 48 is located adjacent to the SA-NT border and occurs in a geologically complex area incorporating parts of the Warburton, Pedirka and Eromanga Basins. The Amadeus Basin lies to the west and northwest, the Officer Basin to the southwest and the Arckaringa Basin to the south. It lies along the north south Mayhew - Mt Crispe anticlinal trend which separates the Amadeus Eringa Trough to the west and Pedirka Basin to the east.

Sediments ranging in age from Cambro-Ordovician to Recent, attain a maximum thickness of approximately 1750 metres to the west of PEL 48 in the Eringa Trough.

Exploration of the area is still in the frontier stage, with five wells (Oodnadatta (1957), Witcherrrie (1963), Mt Crispe (1966)), Mt Hammersley 1 (1987) and Dalmatia 1 (1988) located in the general area peripheral to PEL 48. There are no wells drilled in the block. A total of 535 km of seismic has been data acquired in the PEL area of 928 km2.

Potential source rocks in the Oodnadatta area to the south of the block, comprise Cambro-Ordovician carbonates, together with Palaeozoic (particularly Permian) and older rocks to the west and east of the Block (See Figure 2). The name 'Cootanoorina Formation' has been given to describe the typical Cambro-Ordovician rocks, however, the identification of other formations especially those lying at depth within PEL 48 is not possible.

Potential reservoir rocks in the Block include the Cambro-Ordovician carbonates which are considered to have vugular and fracture porosity. The overlying Eromanga Basin Algebuckina Sandstone is an excellent reservoir rock which provides a conduit for hydrocarbons generated immediately to the west in the Eringa Trough and to the east in the Pedirka Basin.

EXISTING DATA AND INTERPRETATIONS

GRAVITY AND MAGNETICS

Various gravity and aeromagnetic surveys have been conducted over the Dalhousie Block. An interpretation of the available data was undertaken by R. Gerdes of the SA Department of Mines and Energy during 1984, the results of which were used to position the regional grid in the area which in turn led to the initial discovery of the Mayhew structure.

SEISMIC

Hand drawn maps of both the Dalton and Mayhew prospects appear in Western Team, SANTOS Ltd, (April 1988) Dalhousie Block Acreage Assessment. A drafted suite of regional maps of several seismic horizons in Dalhousie Block is contained in Southwell. P., (1988) Dalhousie Block regional seismic interpretation report. Both reports have been lodged with the SA Department of Mines and Energy as part of Santos' relinquishment data package. Both sets of maps incorporate all recent seismic data.

TECTONIC AND STRUCTURAL FRAMEWORK

The regional tectonic setting of the PEL 48 with respect to sedimentary basins and major basement features is shown in Figure 3.

The dominant structural feature within the block is the Mayhew - McDills Trend. The trend comprises a regional anticlinal feature aligned north south and plunging north into the Northern Territory. Several discrete anticlines occur along this trend, Mayhew, Dalhousie Springs a breached anticline to the south and McDills to the north being three of them. Both McDills 1 and another well drilled between Mayhew and McDills in the Northern Territory were both off structure.

Etingimbra 1

The most recent seismic indicates that a sedimentary sequence onlaps onto the metamorphosed core of the Mayhew-McDills Trend from the east and west. Seismic data provides clear evidence of at least two major periods of uplift and deformation. A Late Triassic/Early Permian erosional unconformity can be observed on most of the seismic lines that traverse the trend. Late Tertiary (Miocene?) compression and uplift is also evident. Some seismic evidence exists for a Delamerian unconformity.

The boundary between the Warburton and Amadeus Basins is ill defined. In McDills 1, Warburton Basin sediments overlie the Amadeus Basin sequence.

The dominant structural grain has an approximate north - south orientation evidenced by the major faults and other structural highs. The McDills and Dalhousie Anticlines and the Mayhew - McDills trend being local examples.

The area to the south has suffered at least six periods of tectonism ranging in age from Middle Proterozoic to Quaternary which have been recognised from outcrop studies in the Peake and Denison Ranges to the southeast of the Block (Figure 3).

Major deformation occurred during the Ordovician (Delamerian Orogeny) and the Tertiary.

THE DELAMERIAN OROGENY

In eventual response to rapid sedimentation and subsidence, the region was folded, uplifted and mildly metamorphosed by the Ordovician Delamerian Orogeny. Steeply dipping dark shales are widespread throughout the area (eg Purni 1, Erabena 1, Poolowanna 1, located to the east of PEL 48) which give a radiometric date of Ordovician, corresponding to the time of deformation of the region. Deformed Precambrian rocks crop out in the Peake and Denison Ranges. The effects of this deformation within PEL 48 are largely unknown at present. Little is known of the nature of the Cambro-Ordovician sediments within the Block, since few wells have penetrated the section. Their extent can be interpreted from seismic data and inferred from wells outside the Block.

The mask of Eromanga Basin (Recent to Jurassic) sediments and sparse seismic coverage do not enable a more detailed picture of the effects of the Delamerian Orogeny to be drawn.

STRATIGRAPHY

CAMBRO - ORDOVICIAN SEDIMENTATION

CARBONATE SHELF SEDIMENTATION

Cambrian carbonates comprising fossiliferous and oolitic limestone together with dolomites extend from the Adelaide Geosyncline through the Boorthanna Trough and into the Officer Basin. A regional stratigraphic table is shown in Figure 4. Much of the sequence is considered to have been deposited in a shallow shelf marine environment. Oil from Cambrian carbonates comprising limestones and argillaceous dolomites has been recovered from Byilkaoora 1, located approximately 100 km beyond the western boundary of the Block. The extent of this sequence therefore has an important bearing on the hydrocarbon potential of the region. Regional gravity derived density data suggest that stratigraphically equivalent carbonate rocks extend to the south of PEL 48.

Cambrian shallow shelf dolomites occur in the Amadeus Basin, and are known to extend as far as McDills 1 where 454 m of flat lying dolomites with minor clastics were intersected. Drilling terminated within the dolomites.

Cambrian vuggy limestones are also known in Kalladeina 1
on the Birdsville Track Ridge and are believed to extend at depth beneath the Pedirka region. Their absence in the Peake and Denison Ranges is probably due to uplift and erosion.

CLASTIC SHELF SEDIMENTATION

During the Late Cambrian and Ordovician, shelf sandstones were deposited in the Officer and Warburton Basins. A shallow shelf linking the Amadeus and Warburton Basins appears to have been present, with unnamed sandstones of Ordovician age and Ordovician Stairway Sandstone noted in Mt Crispe 1 and Witcherrrie 1. Brachiopods confirm the Ordovician age for the unit in Mt Crispe 1.

Recent regional seismic indicates a thick sequence of Cambro-Adelaidean? sediments of the Arckaringa Basin to the south of the Block. Similarly a thick sequence of Cambro-Ordovician(?) sediments has been inferred from seismic evidence and the results of Dalmatia 1 and Mt Hammersley 1 in the Eringa Trough along the western boundary of the Block.

BASINAL SEDIMENTATION

The existence of a basinal facies within the block is based on the results of Dalmatia 1 and Mt Hammersley 1. Green, grey and black shales and siltstones of Late Cambrian to Early Ordovician age are recorded in wells in the Pedirka region to the east, e.g. Poolowanna 1, Erabena 1. Further to the east, Ordovician graptolites were reported in the Putamurdie 1 well.

SILURO - DEVONIAN SEDIMENTATION

A sequence of Siluro-Devonian terrigenous clastics (mainly redbeds) thins from the Amadeus Basin into the Pedirka and Dalhousie regions to the south. In Witcherrie 1 515 m of Devonian redbeds (dipping at about 5°) unconformably overlie more steeply dipping (20°) Ordovician quartzites. Dalmatia 1 stopped drilling after intersecting 761 m of clastics. Similarly Mt Hammersley 1 bottomed in similar unnamed clastics after penetrating 354 m.

PERMIAN SEDIMENTATION

The extent of Permian Pedirka and Arckaringa Basin sediments is shown in Figure 3.

The Pedirka Basin sequence consists of the lower, glacigene Crown Point Formation and the Upper Purni Formation.

Witcherrie 1 intersected 101 m of Crown Point Formation (from 554 m to 655 m) consisting of fine to coarse sandstones and conglomerate with occasional shales. Mt Crispe was drilled on a major high trend south of the block and intersected only 19 m of Crown Point Formation (from 447 m to 466 m). Dalmatia 1 intersected 287 m and Mt Hammersley 1, 701 m of glacigene to fluviatile and lacustrine sediments. A 200 m section of Permian Crown Point sediments comprising fine to medium grained sandstones and clays with glacial affinities, was penetrated in McDills 1, to the north of the block.

The Purni Formation in the Pedirka Block to the east, consists of fluviatile sandstones, siltstones, shale and coal (as in Mokari 1) deposited in a meandering fluvial environment. This unit was not encountered in either Mt Crispe 1 or Witcherrie 1, but seismic suggests the presence of Permian sediments in the deeper part of the Pedirka Basin to the east of PEL 48. The unit was intersected at both Dalmatia 1 (76 m) and Mt Hammersley 1 (286 m).

Seismic data indicates that Permian sediments are thin beneath the Mesozoic crestal location of Mayhew. Permian sediments on the flanks of Mayhew thicken eastwards into the Pedirka Basin and westwards and northwards into the Eringa Trough.

MESOZOIC EROMANGA BASIN SEDIMENTATION

A blanket of Mesozoic Eromanga Basin sediments overlies older sediments throughout PEL 48. The base of the Mesozoic section occurs at 554 m in Witcherrie 1, 447 m in Mt Crispe 1, 422 m in Dalmatia 1 and 426 m at Mt Hammersley 1. In Oodnadatta 1 the sequence is 396 m thick and in Lambina 1 to the west , 259 m thick. Seismic data indicates a general thickening to the north west along the axis of the Eringa Trough and to the east over the Pedirka Basin.

ALGEBUCKINA SANDSTONE

The Algebuckina Sandstone is a poorly cemented, white to pale brown, fine to coarse-grained quartz sandstone kaolinitic in parts, with pebble horizons. Minor shale and siltstone interbeds are present. The environment of deposition is interpreted as high energy braided fluvial. Porosity and permeability are typically good to excellent in the sandstones, which form the major artesian aquifer of the region. The Algebuckina Sandstone is mid to late Jurassic in age. This massive sand unit is the major reservoir objective at the Mayhew location.

CADNAOWIE FORMATION

The Cadnaowie Formation comprises laminated very fine grained calcareous sandstone, with minor siltstone and shale. Coarse grained, gritty, and pebbly sandstones occur mainly in the upper part of the formation. The environment of deposition was mainly shallow water, marginal marine and this unit represents the onset of the Early Cretaceous marine transgression. The top of this unit has been mapped seismically over PEL 48.

BULLDOG SHALE

The Bulldog Shale consists of dark grey, silty, marine carbonaceous shale and siltstone. Occasional boulders, fossil wood and spherical concretions of hard, marly fossiliferous limestone occur in the lower portion. This unit forms the regional seal over the Algebuckina and Cadnaowie reservoirs. This seal is regional and contains the waters of the Great Artesian Basin.

COORIKIANA SANDSTONE

The Coorikiana Sandstone (designated as a member of the Oodnadatta Formation on the 1:250000 geological sheets), is referred to as a separate formation on the latest 1:2000000 State geological map. It consists of fine to coarse-grained, kaolinitic, feldspathic, micaceous, glauconitic quartz sandstone. The unit is gritty in parts, and in other areas is very fine grained, with shaly and silty interbeds. Sandstones are often cross bedded or strongly bioturbated. A nearshore, moderate-energy, marine environment is envisaged.

Although penetrated in the Witcherrie 1, Mt. Crispe 1 and Oodnadatta 1 wells, the full extent of the Coorikiana Sandstone is unclear. It passes eastwards and north eastwards into marine siltstones. Reservoir quality is generally poor, however, moderate porosity has been noted in some outcrop samples where the unit is better developed and less silty.

OODNADATTA FORMATION

The Oodnadatta Formation consists of grey argillaceous siltstone and shale, with minor calcareous sandstone interbeds and concretionary limestone intervals. Sandstones are typically rich in lithic fragments and glauconite and may contain plant fragments. A sandy interval towards the middle of the Oodnadatta Formation is very fine grained, silty and glauconitic, with poor reservoir characteristics.

RESULTS AND RECOMMENDATIONS

METHODOLOGY

All seismic data from the last decade were reinterpreted and internally tied. The principal well control used was Mt Hammersley 1 and Dalmatia 1. A water bore, Elinga 1 gave some geological control. This well was drilled on the south eastern flank of the Mayhew structure. No wireline logs are available for this well.

HORIZONS MAPPED

A near top Cadnaowie time structure map and a near base Mesozoic time structure map have been prepared. The top Cadnaowie map represents the interface between the overlying Bulldog Shale seal and the underlying reservoir section at the Mayhew location.

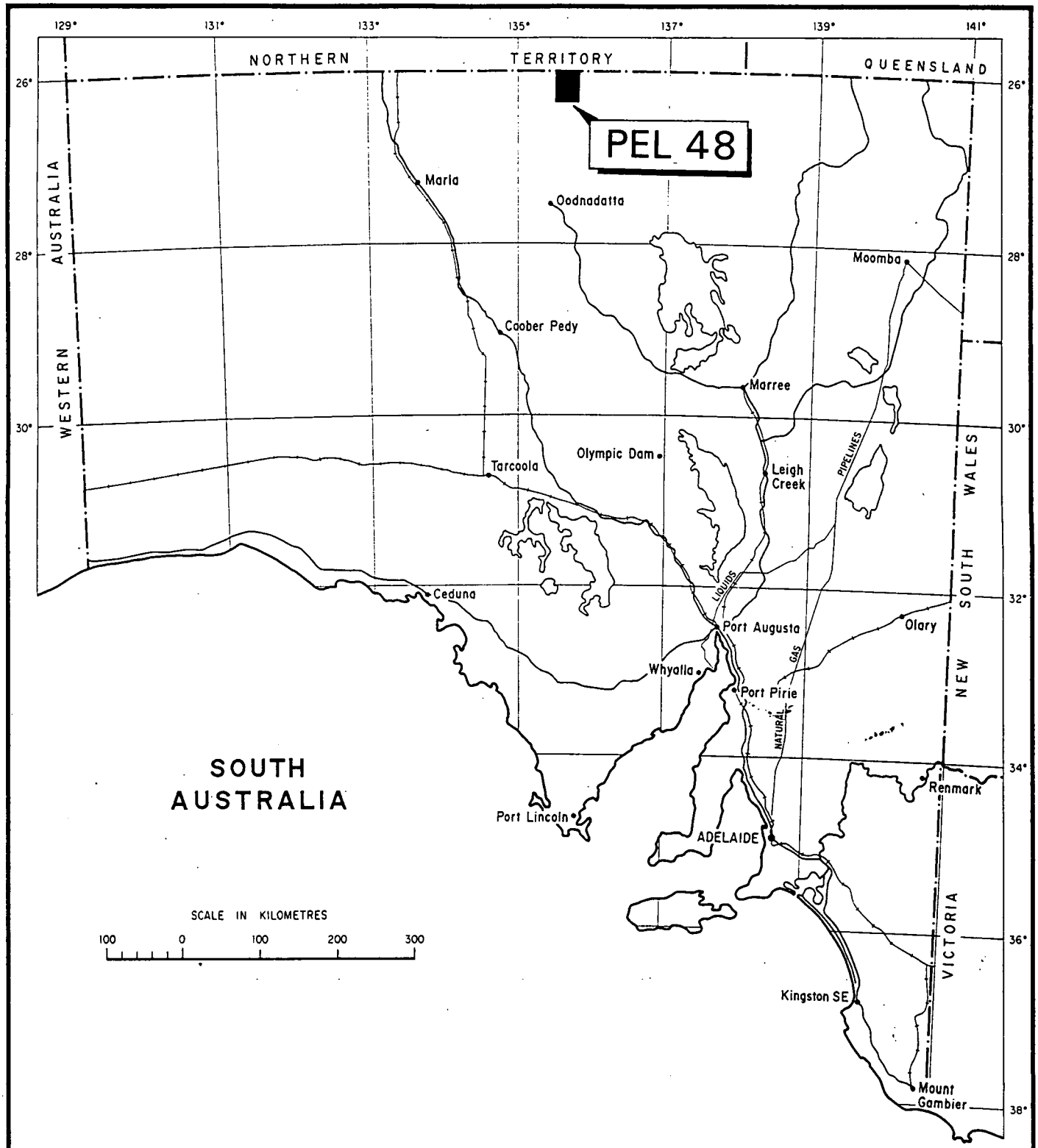
PLAY CONCEPTS

The two targets in PEL 48 are the Mesozoic Mayhew structure and the Palaeozoic Dalton anticline. Mayhew is a very large classic four way dip anticline.

The Mesozoic section is immature for oil and gas generation in traditional terms. Oil shows have been recorded in a number of wells and shallow water wells to the south of PEL 48 and are unexplained in maturation terms. Mayhew lies in juxtaposition between the Pedirka Basin to the ~~west~~ east and to the adjacent generative Eringa Trough to the west. This regionally high and large structure is at the focus of migration pathways from these source areas.

RECOMMENDATIONS

A crestal test of the Mayhew structure is proposed at a location on line 84-XAF at VP 1810. Preliminary reserves assuming 10 metres of net pay at the crest of the structure and a recovery of 300 bbls/acre ft are 3.5 MMbbl.



AREA OF INVESTIGATION MAP

figure 1.

DALHOUSIE

GEOLOGICAL SURVEY OF SOUTH AUSTRALIA
DEPARTMENT OF MINES AND ENERGY ADELAIDE

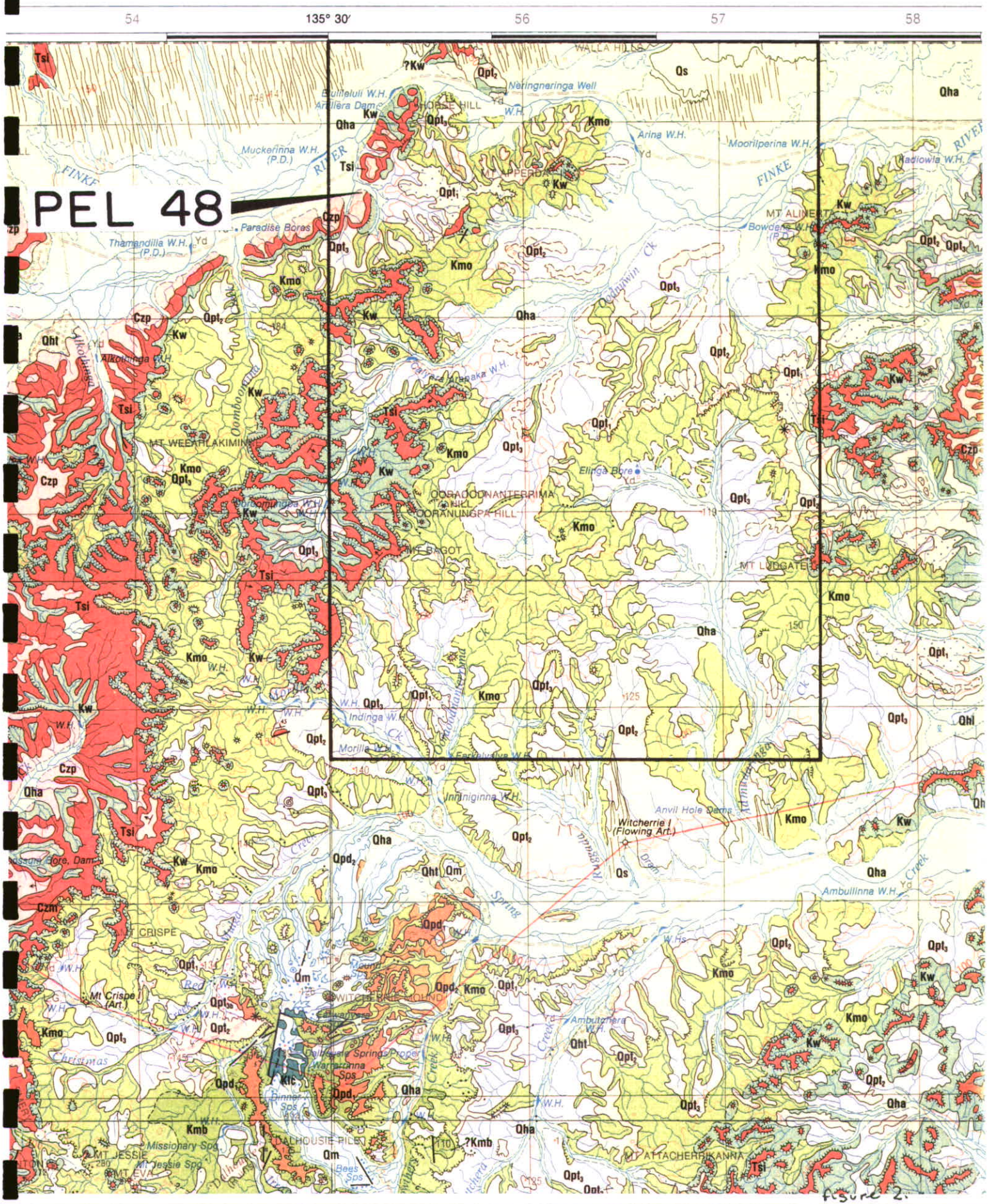


figure 2.

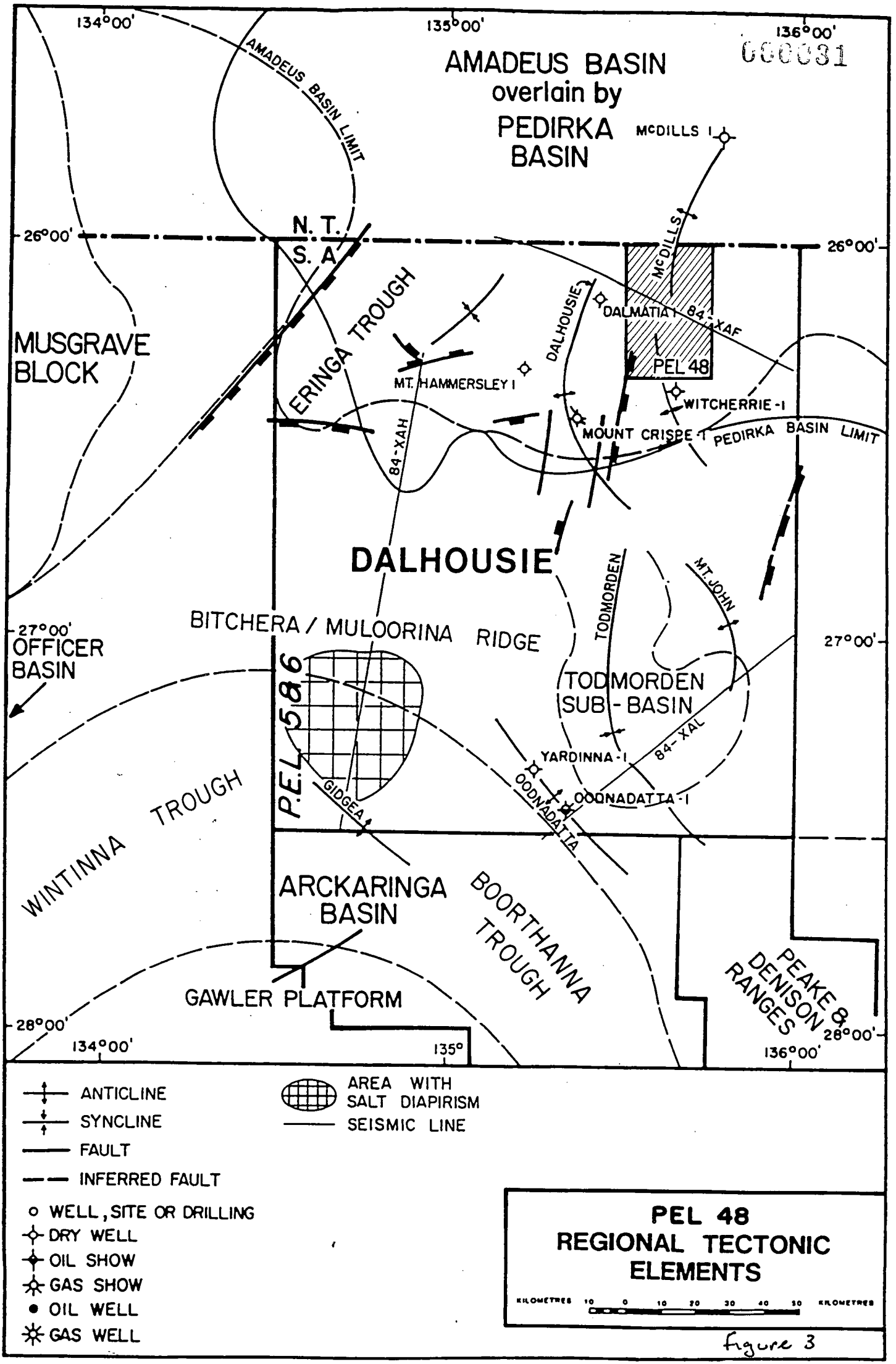

AMADEUS BASIN
overlain by
PEDIRKA BASIN
000031
134°00'
135°00'
136°00'
26°00'
27°00'
28°00'
AMADEUS BASIN LIMIT
N. T.
S. A.
McDILLS 1
McDILLS
DALMATIA 1
84-XAF
PEL 48
DALHOUSIE
ERINGA TROUGH
MT. HAMMERSLEY 1
WITCHERRIE-1
MOUNT CRISPE-1
PEDIRKA BASIN LIMIT
84-XAH
MUSGRAVE BLOCK
DALHOUSIE
BITCHERA / MULOORINA RIDGE
TODMORDEN
MT. JOHN
OFFICER BASIN
TODMORDEN SUB-BASIN
P.E.L. 586
GIDGEA
YARDINNA-1
84-XAL
OODNADATTA
OODNADATTA-1
WINTINNA TROUGH
ARCKARINGA BASIN
BOORTHANNA TROUGH
PEAKE & DENISON RANGES
GAWLER PLATFORM
135°
ANTICLINE
SYNCLINE
FAULT
INFERRED FAULT
WELL, SITE OR DRILLING
DRY WELL
OIL SHOW
GAS SHOW
OIL WELL
GAS WELL
AREA WITH SALT DIAPIRISM
SEISMIC LINE
PEL 48
REGIONAL TECTONIC ELEMENTS
KILOMETRES 10 0 10 20 30 40 50 KILOMETRES

figure 3

STRATIGRAPHIC TABLE
AMADEUS, PEDIRKA, COOPER & ARCKARINGA BASINS.

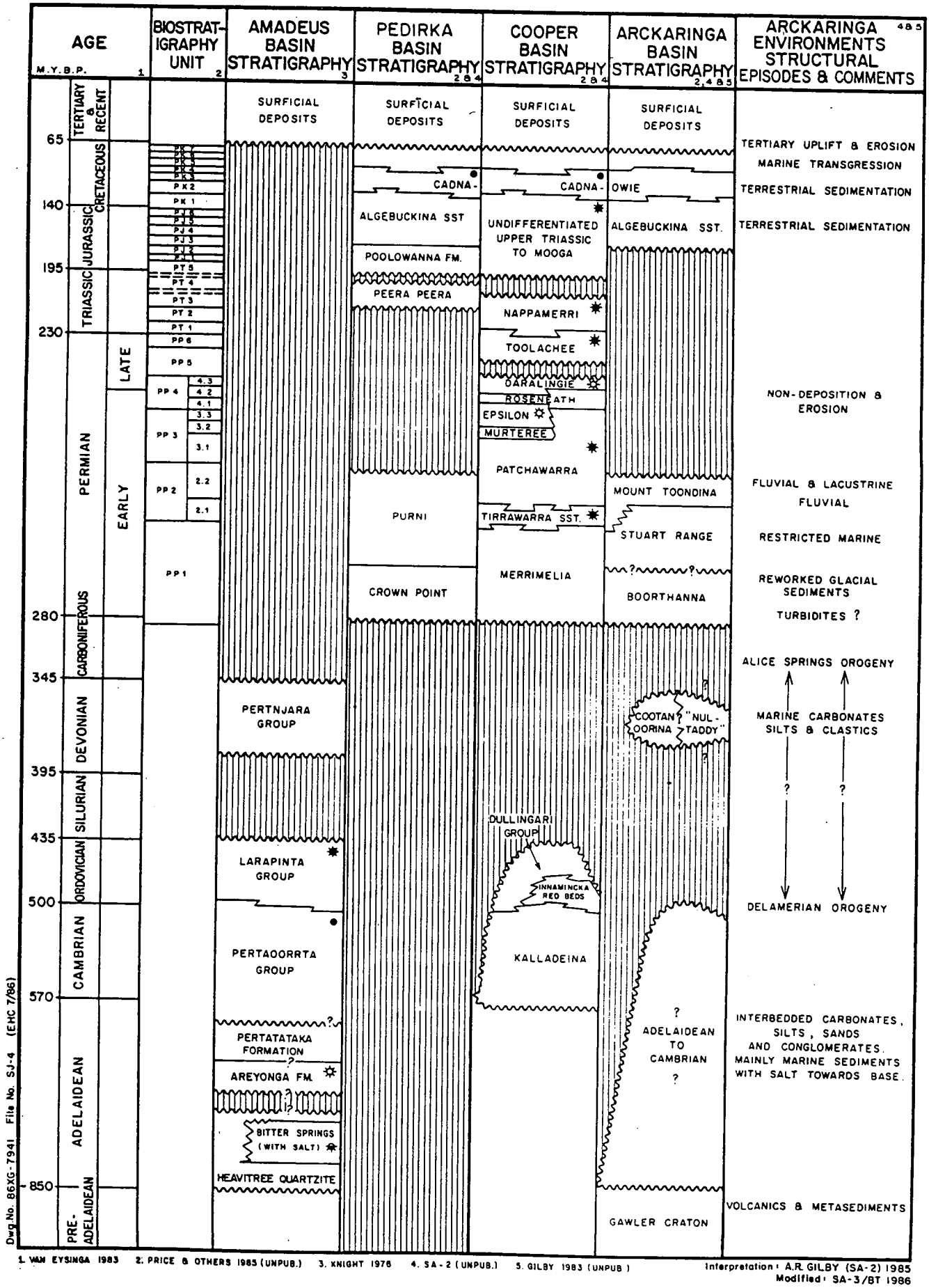


FIGURE 4

PROPOSED LOCATION
MAYHEW NO. 1

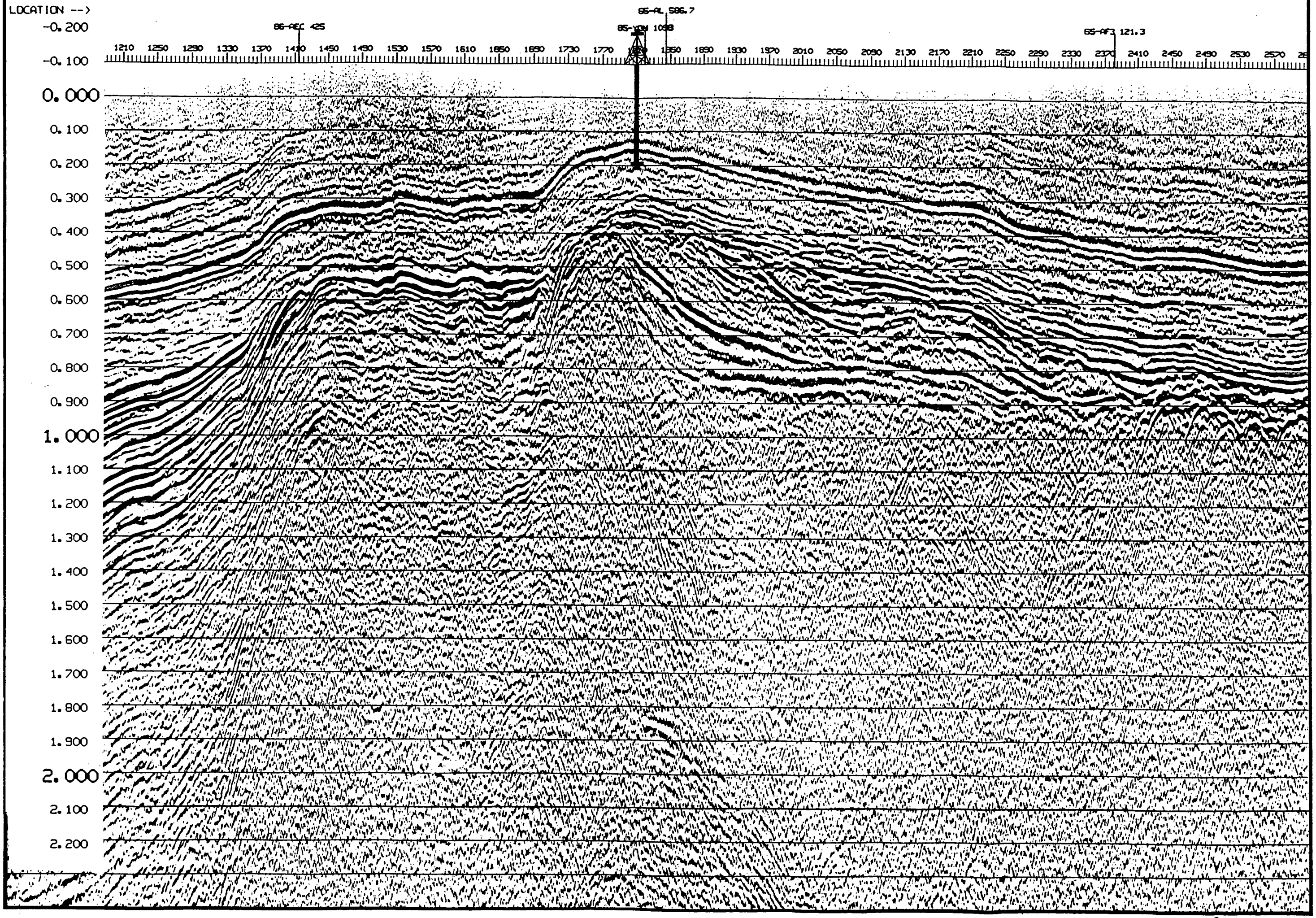
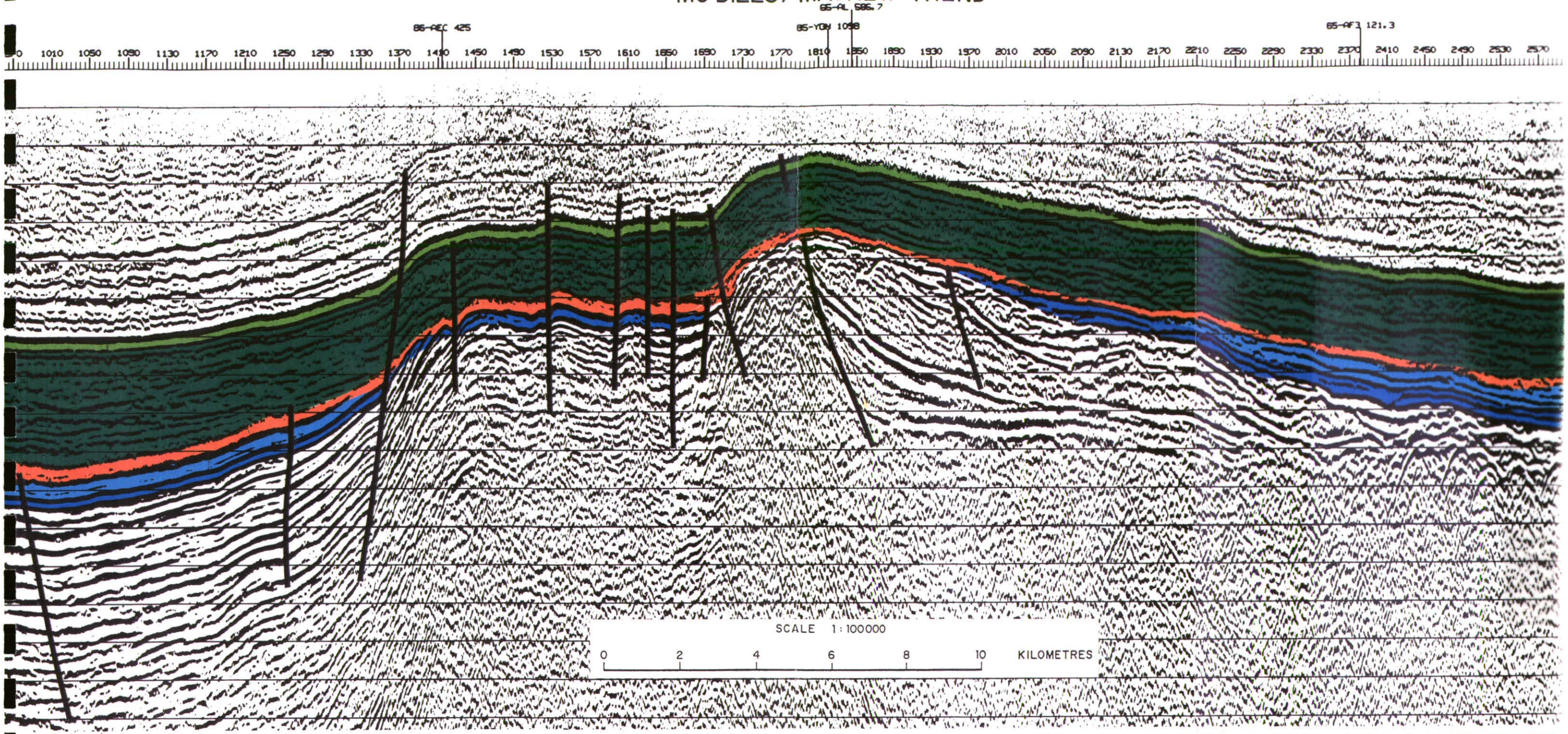


figure 5

MC DILLS / MATHEW TREND



SADME

000084

(Plan 3)

figure 6

← MC DILLS / MAYHEW TREND →

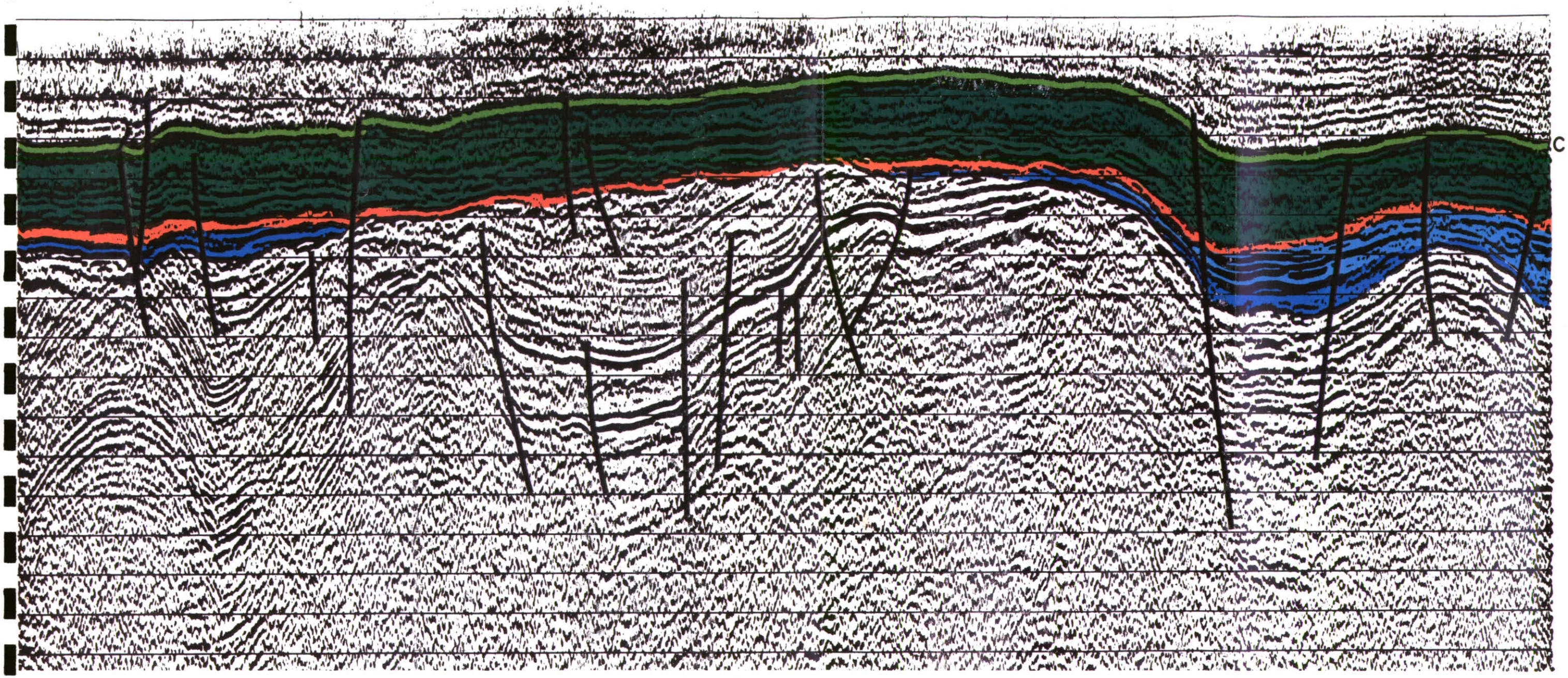
85-YGN

NE ⇨

210 250 290 330 370 410 450 490 530 570 610 650 690 730 770 810 850 890 930 970 1010 1050 1090 1130 1170 1210 1250 1290 1330 1370 1410 1450 1490 1530 1570 1610 1650 1690 1730

-0.20
-0.10
0.0
0.10
0.20
0.30
0.40
0.50
0.60
0.70
0.80
0.90
1.0
1.1
1.2
1.3
1.4
1.5

C



SADNÉ

PEDIRKA BASIN

600035

(Plan 4

figure 7

135° 30'
26° 00'
135° 45'
26° 00'
26° 20'
135° 30'
26° 20'
135° 45'

O ELINGA BORE
318m

SCALE
0 1 2 3 4 5 KILOMETRES

PEL 48

TIME STRUCTURE CONTOURS
Nr TOP CADNAOWIE FORMATION
C.I. = 0·025 msecs TWT

J. F. ALLENDER AUGUST 1991

8534-1

(Plan 5)

135° 30'
26° 00'
135° 45'
26° 00'
26° 20'
135° 30'
26° 20'
135° 45'
N
ELINGA BORE
318m
SCALE
0 1 2 3 4 5 KILOMETRES
PEL 48
TIME STRUCTURE CONTOURS
Nr BASE MESOZOIC UNCONFORMITY
C.I. = 0·025 msecs TWT
J. F. ALLENDER
AUGUST 1991
8534-2
(Plan 6)

MEMORANDUM

CANCELLATION OF PEL 48

This Memorandum will confirm that on .....10.....August..... 1994, I approved the cancellation of PEL 48 for failure to fulfil the licence work commitments.

The cancellation is effective immediately.

This Memorandum is hereby entered on the Petroleum Register.

/01 8 /1994
SR 27/2/89

DALE BAKER MP
MINISTER FOR MINES AND ENERGY

F06961.MC