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NUMBER 2771

PEL 5 AND PEL 6; PEDIRKA BASIN FARMOUT AREA

EROMANGA, SIMPSON, AND PEDIRKA BASINS

1976 PILLAN HILL SEISMIC SURVEY

PROGRESS AND FINAL REPORTS FOR THE PERIOD 10/7/76
TO APRIL 1977

Submitted by

Delhi International Oil Corporation

1977

MINES AND ENERGY
SOUTH AUSTRALIA

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ENVELOPE 2771

TENEMENT: PEL 5 and PEL 6; Eromanga, Simpson and Pedirka Basins

TENEMENT HOLDER: Delhi International Oil Corporation (operator), Santos Ltd, Vamgas NL, Total Exploration Australia Pty Ltd, Petroleum and Minerals Investment Group (Australian Commonwealth Government) and Western Mining Corporation (Exploration) Pty Ltd

CONTENTS OF VOLUME ONE

REPORT:	**Potts, K.A., 1976.** Progress report no. 7 covering operations for the period 1-15/10/76 (Seismograph Service Ltd, Party 859, October 1976).		**710 R 7** Pgs 26-29	
PLANS		**Scale**		
Encl. 1	Survey statistics sheet for fortnightly period 1-15 October.		2771-13	*A1*
Encl. 2	Survey progress map for fortnightly period 1-15 October.	1:250 000	2771-14	*A1*

REPORT:	**Potts, K.A., 1976.** Progress report no. 8 covering operations for the period 16-31/10/76 (Seismograph Service Ltd, Party 859, November 1976).		**710 R 8** Pgs 30-32	
PLANS		**Scale**		
Encl. 1	Survey statistics sheet for fortnightly period 16-31 October.		2771-15	*A1*
Encl. 2	Survey progress map for fortnightly period 16-31 October.	1:250 000	2771-16	*A1*

REPORT:	**Worthington, M., 1976.** Progress report no. 9 covering operations for the period 1-15/11/76 (Seismograph Service Ltd, Party 859, November 1976).		**710 R 9** Pgs 33-35	
PLANS		**Scale**		
Encl. 1	Survey statistics sheet for fortnightly period 1-15 November.		2771-17	*A1*
Encl. 2	Survey progress map for fortnightly period 1-15 November.	1:250 000	2771-18	*A1*

REPORT:	**Potts, K.A., 1976.** Progress report no. 10 covering operations from 16/11/76 to end of contract (Seismograph Service Ltd, Party 859, December 1976).		**710 R 10** Pgs 36-38	
PLANS		**Scale**		
Encl. 1	Survey statistics sheet for fortnightly period 16-28 November.		2771-19	*A1*
Encl. 2	Survey progress map for fortnightly period 16-28 November.	1:250 000	2771-20	*A1*

CONTENTS OF VOLUME TWO

REPORT:	**Hollingsworth, R.J.S. and Potts, K.A., 1977.** Final report on 1976 Pillan Hill Seismic Survey, PELs 5 and 6 (Delhi International Oil Corporation and Seismograph Service Ltd, March 1977).		**710 R 11** Pgs 39-59	
PLANS		**Scale**		
Plate 2	Pillan Hill Seismic Survey programme map.	1:500 000	2771-33	*A1*
Plate 3	Interpreted seismic section, Line 74-WAA, VP 110-550.		2771-34	*A0*
Plate 4	Interpreted seismic section, Line 76-WBB, VP 100-270.		2771-35	*A1*
APPENDIX 1:	Field operations.		Pgs 60-69	
APPENDIX 2:	Data processing.		Pgs 70-72	
APPENDIX 3:	Contract vehicles.		Pg. 73	
APPENDIX 4:	Technical and camp equipment.		Pg. 74	
APPENDIX 5:	Personnel.		Pg. 75	
APPENDIX 6:	Statistics.		Pg. 76	
APPENDIX 7:	Permanent markers.		Pgs 77-83	

CONTENTS OF VOLUME THREE

END OF CONTENTS

000039

FINAL REPORT

PILLAN HILL SEISMIC SURVEY

P.E.L. 5 and 6 S.A.

1976

FOR

DELHI INTERNATIONAL OIL CORPORATION

BY

SEISMOGRAPH SERVICE LIMITED

TEXT

APPENDICES

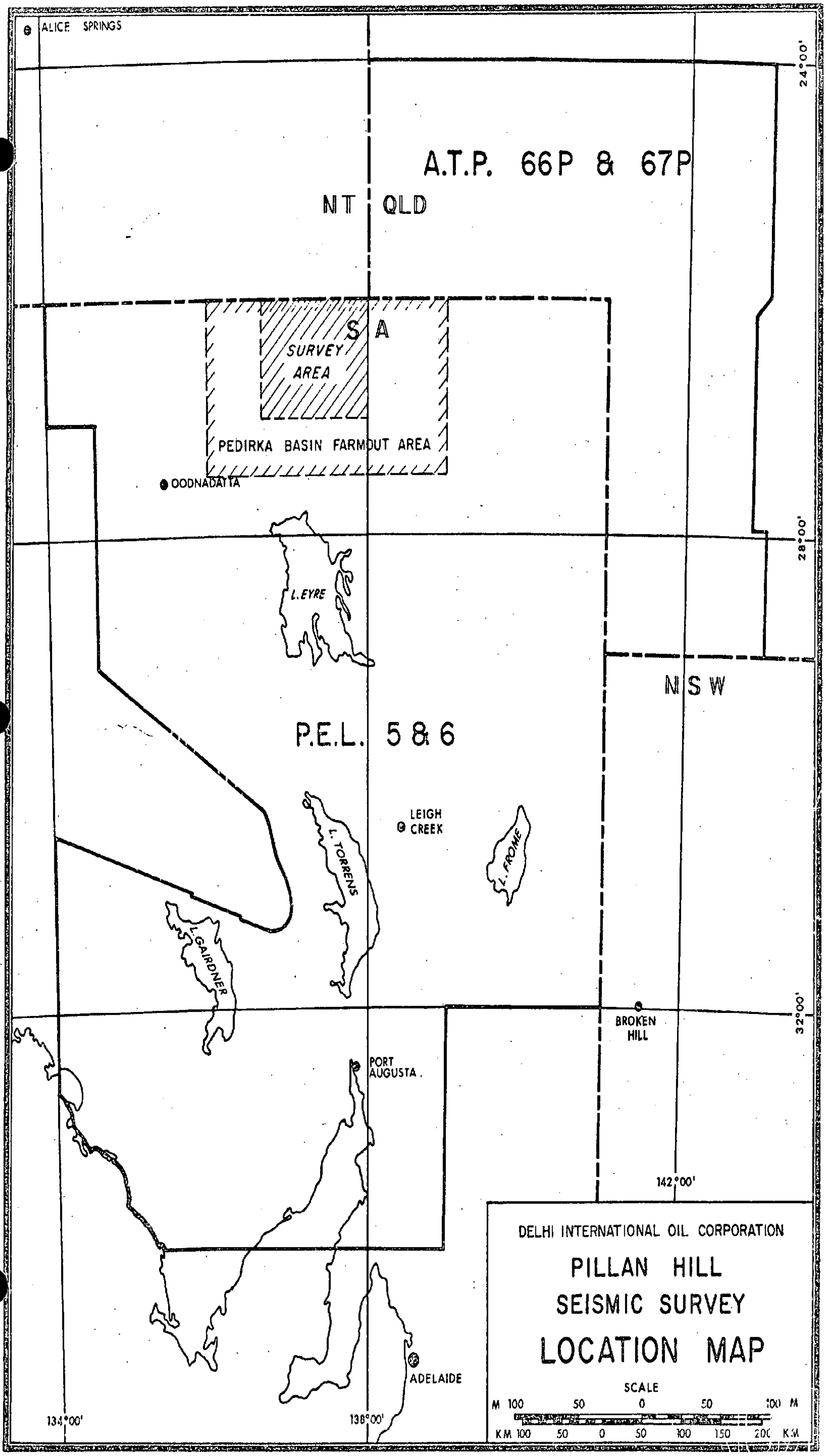
PLATES AND ENCLOSURES

ABSTRACT

The Pillan Hill Seismic Survey has extended high quality seismic coverage into areas of the Pedirka Basin where previous data was sparse or non-existent.

In addition, detail work was carried out in the Macumba and Poolowanna areas which has matured two drilling sites to test the hydrocarbon bearing potential of the section.

A total of 893.4km (555.2 miles) of 1200% coverage vibroseis data were recorded.


ALICE SPRINGS
24°00'
A.T.P. 66P & 67P
NT QLD
S A
SURVEY AREA
PEDIRKA BASIN FARMOUT AREA
OODNADATTA
28°00'
L. EYRE
N S W
P.E.L. 5 & 6
LEIGH CREEK
L. TORRENS
L. FROME
L. GAIRDNER
BROKEN HILL
32°00'
PORT AUGUSTA
142°00'
ADELAIDE
134°00'
138°00'
DELHI INTERNATIONAL OIL CORPORATION
PILLAN HILL
SEISMIC SURVEY
LOCATION MAP
SCALE
M 100 50 0 50 100 M
KM 100 50 0 50 100 150 200 KM

INTRODUCTION

The Pillan Hill Seismic Survey was carried out in the Pedirka Basin in P.E.L.'s 5 and 6 in South Australia in the physiographic province of the Simpson Desert (see plate 1). The survey was conducted within the area held by Santos, Delhi, Vamgas, Total and the Petroleum and Minerals Investment Group and constitutes part of the interest earning requirements of Western Mining Corporation which is farming into portion of this area.

Delhi acted as operator for the survey, with Seismograph Service Limited contracted to undertake the field gathering and digital processing of the data. The lines recorded are shown in Plate 2. The energy source used was Vibroseis* with a split-spread recording technique yielding 1200% multiple coverage. Static corrections were derived by shooting a short 12 trace weathering spread (LVL shot) at intervals along the profiles. Line clearing was carried out by F.T. and B.I. Thomson and Son Pty. Ltd., using three dozers.

In the western part of the operations area the terrain consists of a series of semi-parallel north-northwest trending sand dunes. Average spacing of the dunes in this area is about 700 metres with an average crestal height of 15 metres above base level. Further east the interdunal corridors commonly widen out into big claypans or "Ephemeral Lakes", while the dunes are generally wider and higher, sometimes reaching 30 metres above base level. Because of the abnormally high rainfall of recent years the dunes are thickly covered with vegetation consisting mainly of cane grass and spinifex. Surface water is generally non-existent.

The weather was generally fine, and hot in the latter part of the survey. Only three days were lost due to local rain.

Access to the area was from Oodnadatta via Macumba homestead, Purni bore and Mokari. A supply road from Oodnadatta to Mokari was constructed at the beginning of the survey.

After initial experimentation production recording commenced on July 13 and was completed on November 28. During this period a total of 893.1 km of 1200% CDP seismic coverage were recorded with an average daily production of 4.14 km.

*Registered Trade Mark and Service Mark of Continental Oil Company.

PURPOSE OF SURVEY

000046

The Pillan Hill Seismic Survey was planned with two objectives in mind.

Firstly, the work was to provide good quality regional coverage in the area between the Mokari No. 1 well and the Lake Thomas survey and extend this coverage south of the Ephemeral Lakes over an indicated gravity anomaly.

A second objective was to detail the Macumba trend, and other anomalous areas preferably closer to the basin centre to provide two locations for drill tests of the section.

REGIONAL GEOLOGY AND EXISTING GEOPHYSICS

Extensive petroleum exploration over the last twenty years has proved the existence of a number of remnant infra-basins of the post-Triassic Great Artesian Basin, containing, variably, sediments ranging in age from Devonian to Triassic. These include the Galilee, Adavale, Cooper and Pedirka Basins. Hydrocarbons are produced from the Cooper Basin, and have been found, so far in non-commercial occurrences, in the Galilee and Adavale Basins.

The Pedirka Basin is the least know of these infra-basins and its limits, particularly in the east and south, are not reliably defined. Its existence is known from a few wells and limited geophysical data. It is interpreted to be an Upper Palaeozic downwarp which may have been active into Triassic time. It represents the depositional site of locally derived continental and deltaic sediments which were preserved during the period of severe and widespread erosion in the Lower and Middle Mesozoic. It lies between the Cooper and Amadeus Basins, being separated from the former by the Birdsville Track Ridge, and from the latter by an area of shallow basement which is probably the extension of the Musgrave Block. To the north and south-west, it is limited by the Arunta and Denison cratonic blocks. It is overlain by sediments of the Eromanga lobe of the Great Artesian Basin, consisting of several thousand metres of Jurassic-Cretaceous deposits ranging in type from continental sandstones to marine shales. These sediments themselves are masked in the survey area by Quaternary sands of the Simpson Desert.

Magnetic and gravimetric data, acquired between 1962 and 1964, indicate the presence of thick sediments in the general area of the Pedirka Basin. Seismic surveys have provided more precise sediment thickness and structural detail, and led to the drilling of a number of exploratory wells. (F.P.C. - Witcherrie No. 1, Purni No. 1, Poonarunna No. 1, Mt Crispe No. 1, and Mokari No. 1; Amerada - McDill's No. 1, Hale River No.1.)

With the exception of Poonarunna No. 1, all these wells are located in the north-west quadrant of the Basin. Those in this area all encountered Permian section ranging in thickness from approximately 20 metres in Mt. Crispe No. 1, to 425 metres in Mokari No. 1, which is believed to lie closest to, but still a considerable distance from, the centre of the Basin. Poonarunna No. 1 did not encounter Permo-Triassic section, but this is believed to be a local phenomenon due to erosion or non-deposition over the small area of the high on which the well was located.

Drilling in the north-western quadrant of the Basin has shown that potential source and reservoir rocks exist. Physical measurements and electric log analyses at Purni No. 1 and Hale River No. 1 show the Permian sandstones to have good reservoir characteristics. The presence of an effective seal for the Permian is indicated in Mokari No. 1, where water salinity in the Permian is 11,000 ppm, compared with 7000 ppm in the Jurassic. Triassic may be present and provide additional seal in deeper parts of the Basin.

At Purni, in the upper part of the Permian, some fluorescence was noted, and in the same interval, gas kicks were recorded. At Mokari

No. 1, gas kicks were noted in the basal part of the Permian section.

The Beal Hill Seismic Survey in 1974 extended 12-fold coverage east of the Mokari No. 1. well to the eastern side of the Ephemeral Lakes. Interpretation of this and other seismic data in the north-western part of the farm-out area has established a number of positive fault controlled structural features with generally north south axes. These features have been named, from west to east, the Border Trend, the Colson Trend, the Macumba Trend, the East Border Trend and the Poolowanna Trend and are shown on the programme map (Plate 2).

In 1974 the Lake Thomas Seismic Survey detailed the area on the eastern side of the lakes and results indicated a number of small highs of very gentle relief. However, this area appears to offer less structural potential than the western portion of the block.


NORTHERN TERRITORY
SOUTH AUSTRALIA
QUEENSLAND
BORDER TREND
OLSON TREND
MACUMBA TREND
EAST BORDER TREND
POOLOWANNA TREND
26°00'
26°15'
26°30'
26°45'
27°00'
27°15'
27°30'
136°00'
136°15'
136°30'
136°45'
137°00'
137°15'
137°30'
137°45'
138°00'
138°15'
138°30'
76 WCE
76 WBE
76 WBC
76 WBF
76 WCD
76 WCB
76 WCA
76 WBD
76 WCC
76 WBG
76 WBA
76 WBB
76 WBH
76 WBN
76 WBP
76 WBM
76 WBZ
76 WBL
76 WBX
76 WBY
76 WBQ
76 WBW
76 WBQ
76 WBT
76 WBJ
76 WBU
76 WBR
76 WBS
76 WBK
LEGEND
TELLUROMETER STATION
ASTROFIX
CROSSES INDICATE 30,000 METRE GRID INTERCEPT FROM FALSE ORIGIN ZONE 5.
LOCATION
N.T
QLD
W.A
S.A
N.S.W
VIC
DELHI INTERNATIONAL OIL CORPORATION
PILLAN HILL
SEISMIC SURVEY
PROGRAMME MAP
SCALE 1:500,000

PREVIOUS GEOPHYSICAL SURVEYS IN OR ADJACENT TO

PEDIRKA BASIN FARMOUT AREA

Anado and Anacoora Seismic Survey, N.T. for Beach Petroleum by Geoseismic (Australia) Limited, 1964.

Annandale Seismic Survey, Qld., for French Petroleum Company for Compagnie Generale de Geophysique, 1963.

Beal Hill Seismic Survey, S.A., for Delhi International Oil Corporation by Seismograph Service Ltd., 1974.

Clifton Hills Seismic Survey, Great Artesian Basin, S.A., & Qld., for Delhi Australian Petroleum Ltd., by United Geophysical Corporation, 1962.

Dakota Bore Area Seismic Survey, N.T., for Beach Petroleum by Geoseismic (Australia) Limited, 1965.

Emery Seismic & Gravity Survey, S.A., for French Petroleum Company by Compagnie Generale de Geophysique, 1966.

Kallakoopah Reflection Seismic Survey, S.A., for French Petroleum Company by United Geophysical Corporation, 1964.

Kilpattha Seismic Survey, N.T., for Australian Aquitaine Petroleum by Compagnie Generale de Geophysique, 1964.

Lake Thomas Seismic Survey, S.A., for Delhi International Oil Corporation by Seismograph Service Ltd., 1974.

Pedirka Seismic Survey, S.A., for French Petroleum Company by Compagnie Generale de Geophysique, 1963.

Perlanna Seismic & Gravity Survey, N.T., for Australian Aquitaine Petroleum by Compagnie Generale de Geophysique, 1966

Poeppel Corner Seismic Survey, N.T., for Reef Oil by Geophysical Service International, 1972.

Poolowanna Seismic and Gravity Survey, S.A., for French Petroleum Company by Compagnie Generale de Geophysique, 1965.

Simpson Desert "A" Seismic Survey, N.T., for Amerada Petroleum by Austral Geoprospectors, 1966.

Simpson Desert "C" Seismic Survey, N.T., for Amerada Petroleum by Austral Geoprospectors, 1966.

Three Corners Seismic and Gravity Survey, N.T., for Beach Petroleum by Geosurveys of Australia, 1971.

HORIZONS AND MAPS

In addition to the data obtained during the Pillan Hill Survey, previously acquired data from the Poolowanna survey were reviewed and incorporated into the interpretation. Where necessary corrections were made to the old sections to tie them to the new lines.

Three prominent events are present on the Pillan Hill sections.

1) Horizon 'C': This is a strong, continuous reflection and originates at the top of the Cretaceous Transition Beds. It is mappable over the whole survey area and is correlatable with a similarly designated reflection in other parts of the Great Artesian Basin. In the Beal Hill and Lake Thomas Surveys, and lines 76-WBC and 76-WBF of this survey, the event generally appears as two cycles of energy with the lower trough being the more prominent. However a change in recording and processing parameters emphasised the upper trough, where the event is picked, for the remainder of the survey.

2) Horizon 'P': This is the first event in a band of strongly reflected energy which is related to the Permian coal horizons. By analogy with the Cooper Basin this event has been labelled 'P', the undifferentiated top of the Permian. However it should be noted that the uppermost coal measures so far identified in the Pedirka Basin are of Lower Permian age, whereas those in the Cooper Basin are Upper Permian. In progressing eastward from the Mokari No. 1. well, additional cycles of energy are seen to be added to the top of the energy band, and lost towards the south in the Umaroona area. Thus the 'P' horizon is not a continuous stratigraphic horizon, but becomes younger towards the centre of the basin, and although there is no marked unconformity, the horizon should probably be thought of more as the base of Mesozoic.

As well as gaining and losing cycles of energy the horizon exhibits marked changes of character in various parts of the area, sometimes fading abruptly to the extent that it has to be phantomed, and at other times becoming very irregular. In some places the whole Permian section takes on a confused irregular appearance (see Plate 4). In many areas there appears to be some correlation between the appearance of the Permian reflection band and structure; for example, strong continuous Permian events are generally associated with structural lows and vice versa, however there are also many cases where this association is not apparent or even reversed. Since the 'C' horizon maintains such a constant character over the region, it would seem that these variations are due to lithological changes in the Permian rather than near surface or survey effects.

3) Horizon 'V': Within the Permian band at the Mokari No. 1. well there is one strong event near the base of the Upper Purni Member of the Purni Formation. This is believed to come from thick coal seam and by analogy with Patchawarra Coal Formation of the Cooper Basin has been labelled 'V'. (It corresponds to event P_z of the Poolowanna Survey). Between Mokari and Macumba this event appears progressively deeper in the section until east of Macumba it is the deepest strong continuous event. The horizon is not obvious in the Poolowanna area but appears to correlate with a weak semi-coherent event at the base of the section. Like the rest of the Permian energy band the horizon exhibits marked changes in character with some correlation being apparent between high amplitudes and structural lows. However the horizon is considered too intermittent and its correlation over the area too vague to allow mapping. Its character change and apparent progression

through the section is shown on Plate 3.
Two structure maps and an isopach map are presented with this report. These are titled" Horizon 'C' (Enclosures 2A, 2B, and 2C), Horizon 'P' (Enclosures 3A, 3B, and 3C) and 'C-P' Isopach (Enclosures 4A, 4B, and 4C). They are prepared in time only as the lack of well control in the area precludes any serious conversion to depth. Station Location and Elevation maps (Enclosures 1A, 1B, and 1C) are also included.

DISCUSSION OF RESULTS AND CONCLUSIONS

The survey has proved successful in extending 12 fold seismic coverage over a hitherto unknown or partially known area of the basin and also in the lineating at least two sites for drilling tests.

For ease in discussion the survey area has been divided into four regions, based loosely on the main structural divisions. These are the Macumba Area, the East Border Area, the Poolowanna Area and the Umaroona Area.

1) The Macumba Area

Detail work in this area has confirmed the existence of a large anticlinal complex, approximately 35 miles long and 10 miles wide, lying to the east of the Macumba fault with its main axis plunging in a south-southeasterly direction. Several culminations are present within the feature, yielding a total areal closure in excess of 80 square miles. The complex is apparent on both 'C' and 'P' horizon maps with 'C-P' isopach thinning over the various high portions. Closure is generally provided by four-way dip except in one main area south of line 76-WCA where faulting at 'P' level provides the closure to the west. The highest of the features is centred near GS 180 on line 76-WCC and has an areal closure of approximately 22 square miles. A well to test the section, Macumba No. 1, has been proposed on this feature at GS 160 on line 76-WCC.

LINE 74-WAA

LINE 74-WAA

Plate 3

2771-34

LINE 76-WBB

Plate 4

2771-35

Apart from the Macumba complex itself, several other leads are apparent. The principal one is the potentially large anticline on the upthrown side of the Macumba Fault west of line 76-WBF. Further seismic work would be necessary to define this anomaly. Of more academic interest are the small tight grabens that appear on several of the lines, notably at GS 205 on line 76-WBH, GS 535 on 74-WAA and GS 325 on 76-WBG. Although some trend is sometimes apparent in these, their geological interpretation is still doubtful.

2) The East Border Area

The East Border Area lies between the Macumba and Poolowanna Trends and is dominated by the East Border Fault. This fault, which dies out southwards towards line 76-WBG, cuts both the 'C' and 'P' horizons and thus exhibits movement as late as Cretaceous times. However isopach thinning on the western upthrown side indicates the fault has been growing since Permian time. Two major anomalies are associated with this fault. One, the East Border Anticline itself, lies on the upthrown side at the northern end and is mainly shown on line 76-WBN. However northern closure is not proven and it is thought from previous data that this feature extends north across the border into the Northern Territory. Of more interest to the current survey is the Peera feature which lies on the eastern, down thrown, side of the fault on the western end of line 76-WBL. Total areal closure is of the order of 15 square miles over three small culminations, but although vertical relief is not large, some 'C-P' isopach closure is present. Two other structural leads are indicated in this area; one near GS 235 on line 76-WBN needs further detailing for control to the north, while the other is a low relief feature running in a series of smaller anticlines from GS 570 on 76-WBG to line 76-WBT south of 76-WBQ. 'C-P' isopach closure on this structure is somewhat nebulous.

3) The Poolowanna Area

This area is dominated by the Poolowanna Fault, a marked north northwest - south southeast trending feature which cuts all levels up to and above the Cretaceous Transition Beds. It can be traced south into the Umaroona area on the 'P' horizon, but dies out on the 'C' horizon south of line 74-WAC. To the north it appears to die out north of line 76-WBN. A subsidiary fault, also downthrown to the west, cuts the Permian and Cretaceous sections on lines 76-WBX and 76-WBG just west of the main fault. Detailing in the area has confirmed the existence of the Poolowanna Anticline, a long sinuous feature on the upthrown side of the Poolowanna Fault. Closure is present on both the 'P' and'C' horizons with an areal extent at 'P' level of just over 16 square miles. Isopach closure the structure and the main fault is fairly nebulous indicating relatively late growth for both these features. However, given the lower temperature gradient in the Pedirka Basin and hence the probably later maturing sediments, this is not necessarily the disadvantage it could be in the Cooper Basin. A well to test the section in this area, Poolowanna No. 1, has been programmed on line 76-WBL at GS 340. As well as the Poolowanna Anticline, two other features are seen on the downthrown side of the Poolowanna Fault; one of these is near GS 1975 on line 74-WAB while the second is between lines 76-WBX and 76-WBG just west of the fault. Both structures are present on the 'C' and 'P' horizon maps but the second shows virtually no isopach closure.

4) The Umaroona Area

This area lies to the south of the Poolowanna and East Border areas. Structural grain in this region shows a tendency to swing from the generally north-south trend to a more east-west attitude and it is interesting to note that this tendency is apparent on the Bouguer Gravity Anomaly map as well. No well defined features are shown at present, however two interesting noses exist on the southern ends of lines 76-WBJ and 76-WBS. These require further detailing.

AUTHORS

The seismic data was interpreted by R.J.S. Hollingsworth of Delhi International Oil Corporation, who also prepared the seismic time maps and compiled this report.

K. Potts and C. Rowson of Seismograph Service Limited have supplied the material for the Field Operations and the Data Processing.

For Delhi International Oil Corporation

R.J.S. Hollingsworth . . . .

For Seismograph Service Limited

K.A. Potts . . . .

APPENDIX I

000060

Field Operations

Field operations for the Pillan Hill seismic survey commenced on July 10 1976 and were completed on November 28 1976. A total of 893.1 km were recorded using the Vibroseis system of data acquisition. Three days were spent recording an experimental programme at the beginning of the survey.

The prospect area lay in the Pedirka basin in PEL 5 and 6 of South Australia. This is an area of northwest to southeast trending sand dunes situated in the southern Simpson Desert. The dunes were thickly covered with vegetation due to the abnormally high rainfall of the recent years. Surface water was usually non existent in the area although some clay pans did fill with water during thunder storms.

Part of the prospect area lay in the Simpson Desert Conservation Park. To gain access to this area the South Australian Department for the Environment required that:-

1. Surface damage was kept to a minimum.
2. No old lines were opened up.
3. The grid system of lines was to be broken up by raking over the "windrows" to minimise circular traffic within the park.
4. Heavy vehicle entry to the park was to be kept to a minimum.
5. All camp sites were to be cleaned up - all pits filled in and no equipment abandoned.
6. There would be no claying of roads within the Conservation Park.

All these conditions were complied with by the field crew.

The weather was good during the survey with no rain falling in the first half of the survey. Only three days were lost due to inclement weather.

Five camp sites were used during the survey although one camp site was occupied twice. The survey and line-cutting crews lived on fly camps as the work required to keep travelling time to a minimum.

The crew worked continuously with personnel taking rotational leave in Adelaide.

Supply and Communication

At the beginning of the survey a supply road from Oodnadatta to Mokari was constructed by the Shell agent from Oodnadatta. This road was cut by rain in October when the crossing over the Macumba River was washed out. The crossing was remade after the floods subsided.

Fuel was supplied by the Shell Company of Australia and delivered to Mokari via the supply route from their local agent in Oodnadatta. Crew vehicles then collected the fuel at Mokari for transport to the camp sites as it was required.

Food was supplied and transported to the crew by Oodnadatta Stores using light weight 4x4 vehicles.

Drinking water was drawn from Purni Bore on the western side of the desert for the duration of the survey. This water was also used for laundry and washing at camps 1 & 6. At camps 2, 3, 4 and 5, washing water was drawn from the Kalakoopah river due to the much shorter supply route.

Lightweight supplies and spares together with mail and personnel were flown to the crew by Piper Navajo aircraft chartered from Williams General Aviation. Four airstrips were used for this purpose - Mokari, Beal Hill, Salt Lake and Poolawanna. At the end of the survey all these airstrips required attention and Beal Hill was declared unfit for use by Piper Navajo aircraft.

Heavy supplies and spares were shipped from Adelaide to Oodnadatta by road or rail and then carried into the crew by 4x4 vehicles.

An administrative and supply office was maintained in Adelaide which had twice daily radio communication with the crew. Radio communication was also possible with the Royal Flying Doctor Service at Port Augusta.

The client's representative on the crew maintained daily radio communication with the client's office in Adelaide.

Earth Moving

Three bulldozers - a TD25C, a D7F and a D6C were contracted from F.T. & B.I. Thomson & Son Pty. Ltd. of Adelaide. The TD25C and D7F were fitted with trailing V blades to assist line clearance. Two Toyota support vehicles were also supplied by the contractor and a mechanic was on site for the duration of the survey.

The TD25 was mobilised in May to help construct the supply road from Oodnadatta. This machine then started line cutting on June 11. On June 13 the TD25 was joined by the D6 and the D7 started work line cutting on June 17. When recording started on July 10 a lead of 109 kilometres had been established by the bulldozers. With all bulldozers operational this lead was easily maintained. However due to breakdowns and the use of the bulldozers to clear access roads, airstrips etc., the lead fell throughout the survey until when line cutting was completed the lead was only 21 km over the recording crew.

When line cutting was completed the D7 and D6 were used to clean up the last camp site and help the camp move out of the desert whilst the TD25 filled in all the pits which had been dug to find clay for the access road and line WAA this year and in 1974.

The bulldozers were picked up by low loaders on December 1 for the journey back to Adelaide.

Surveying

The survey was carried along lines cleaned by the bulldozers on a magnetic compass heading. The lines were chained and pegged using a 150 metre chain made of 3mm steel dinghy rigging wire. Steel fence pickets with aluminium tags stamped with station and line identification were used as permanent markers. These were placed in accordance with section 117 (vi) of the Regulations Under the Petroleum Act 1940-1069

A list of permanent marks is included in this report.

Distances were checked against gross error by tacheometry whilst elevations were produced by tacheometric heighting, the centre hair reading being taken on both faces of the TIA theodolite. As a check against gross error in the levelling vertical angles were taken on both faces to the top of the staff on turn points and reduced each day to check for errors.

Azimuths for line computation were established by observing included angles at flag stations along the line connecting sun azimuth values.

Ties were made as often as possible with old seismic lines in the area.

Control was established from old seismic lines and from Government survey stations.

Weathering Unit

To determine weathering corrections for the survey LVL's were recorded at intervals along the lines. The interval between LVL shots, being determined by the lead of the unit over the recording crew, was usually 0.9 to 1.2 km. Weathering corrections for the intermediate stations were interpolated from values calculated from the LVL's. LVL shots were recorded at all line intersections to ensure there were no misties at the intersections due to interpolation.

The LVL's were recorded with an RS4 recording system using HS1 geophones and a special cable with geophone take out intervals of:

5 5 15 15 30 30 30 15 15 5 5 metres

After several weeks use the HS1 geophones began to fail rapidly and they were replaced with SM4 units from the recording crew. These units gave better quality breaks than the HS1 geophones and seemed to be more immune to noise pick up.

Initially 4 lb of explosive was used for each shot - one shot being taken from each end of the cable 5 metres offset from the end geophone. However, after a post hole digger was acquired to dig the shot holes the better coupling this method afforded allowed the charge to be reduced to 2 lb per shot.

The two LVL shots from one location were plotted on a single sheet of graph paper and average values of V_o, V_1 and V_2 calculated.

Average intercept times for V_1 and V_2 were also determined. From these values a final Tg was computed by standard computation.

The final results were tabulated on a single sheet of graph paper for each line showing station number and elevation for each station: Z_0, t_0, Z_1, t_1, t_{sw}, Tg for each LVL shot and interpolated values of Tg between LVL shots.

These final result plots were forwarded to the Phoenix processing centre in Adelaide.

Z_0	=	depth weathering (velocity V_0)
t_0	=	time in weathering (velocity V_0)
Z_1	=	depth in weathering (velocity V_1)
t_1	=	time in weathering (velocity V_1)
t_{sw}	=	time from base weathering to datum at velocity V_2
Tg	=	Final correction

At the end of the survey the remaining dynamite and detonators were destroyed.

Recording

Recording started on July 10, 1976 with a 3 day experimental programme. This experimental programme was designed to determine if any improvements could be made to the technique used in the Beal Hill and Lake Thomas seismic surveys on 1974. Two noise studies and six sweep and pattern comparisons were recorded

Until the experimental programme was processed production recording began on July 13 with the following parameters similar to those used in 1974.

1.	Station interval	150m
2.	Geophone pattern	weighted 112233 332211 centred on the peg 10m detector spacing
3.	Vibrator pattern	3 vibrators spacing 16m moveup 13m, 8 sweeps per V.P.
4.	Configuration	Split straddle 1½ peg offset from vibrator to 1st geophone
5.	Sweep	50-10Hz, 14 sec, 0.25 taper
6.	Sample rate	4ms
7.	Filters	Lo cut 8Hz 36dB/octave Hi cut 62 Hz 72dB/octave

Lines WBF and WBC were recorded with these parameters. All subsequent lines were however recorded with the following changes from the above parameters.

1.	Geophone pattern	same weighting detector spacing 7m
2.	Vibrator pattern	same spacing moveup 3m, 8 sweeps per V.P.
3.	Sweep	60-18Hz, 14 sec, 0.25 taper
4.	Filters	Lo cut 18Hz 36dB/octave Hi cut 62Hz 72dB/octave

These changes were made on the basis of the experimental programme to eliminate low frequency interference, give an improved signal to noise ratio over the whole section and to give better resolution and better shallow data continuity.

The familiar problem of animal damage to cables and geophones continued throughout the Pillan Hill survey. To alleviate the problem as much as possible the cables (which take a long time to repair) were picked up every night whilst the geophones were dipped in rodent repellent. This reduced geophone damage by 80%.

Damage to the geophones and cables was also caused by dingoes during the day, and the hawks which abound in the desert were attracted to the bright yellow geophones pulling them out of the ground often causing stations to become noisy. In several areas the latter problem was so bad that the geophones had to be buried.

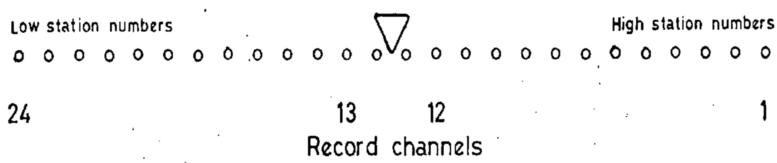
After a short settling in period the vibrators and instruments performed well and only 2 full days were lost due to instrument and vibrator failures. The crew recorded a total of 893.10 km at an average of 7.14 km/recording day.

The instruments used are listed in an Appendix to this report.

Data Despatch

Data was despatched twice weekly via light aircraft to the processing centre in Adelaide.

SPREAD GEOMETRY



▽ 3 Vibrators in line

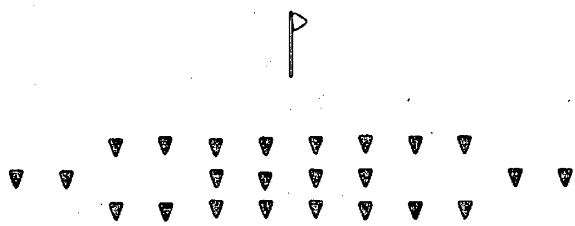
o 24 Geophones

o o Station interval 150 metres

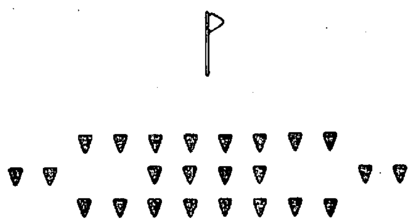
SSL 1976

GEOPHONE PATTERNS

24 Geophones 10metres between weighted groups 110metres long



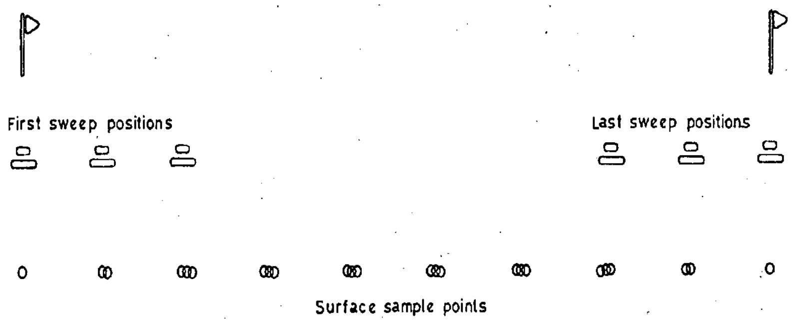
24 Geophones 7 metres between weighted groups 77metres long



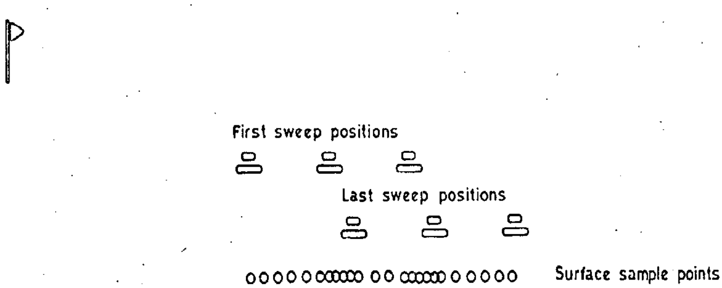
SSL 1976

VIBRATOR PATTERNS

3 Vibrators 16 metres apart 8 sweeps over 150 metres



3 Vibrators 16 metres apart 8 sweeps over 53 metres



 Station interval 150 metres

SSL 1976

APPENDIX II

Processing

Field tapes were processed at SSL's Phoenix data processing centre in Adelaide.

The Hardware consisted of one Raytheon 706 processing system including:

(a) CPU with 24 K memory
(b) One teletype
(c) Three 9-track tape drives and controller
(d) Two disc storage drives and controller
(e) Array transform processor
(f) One electrostatic plotter/printer
(g) One card reader
(h) One card punch
(i) One tape cleaner
(j) One tape eraser

The supporting Software consisted of five Phases and a set of utility programmes. The following processing sequence and parameters were applied :

Phase 1 Demultiplex at 4 ms sample rate including Binary Gain Recovery. Frequency domain cross-correlation. Edit.

Phase 2 (i) Edit - removal of dead and noisy traces
(ii) Static corrections were derived from field computations and applied during sorting of data into common depth points. (Datum = M.S.L.)

Phase 3 Analysis programmes to determine NMO velocities and optimum trace muting times.

Phase 4 (i) Normal move-out, trace muting and trace equalisation applied.

(ii) Stacking the data after correction for Automatic residual statics.

Phase 5 (i) Time-domain deconvolution

(ii) Time variant filtering

(iii) Final Display and Film - Variable area/wiggle trace with horizontal scale of 11 traces/inch and vertical scale of 5 inches/second.

Determination of Processing Parameters

(i) Velocity Analysis

On each line several multi-velocity stack analyses were carried out, the number of analysis locations being determined by the geology of the line. The programme took groups of common depth point traces and stacked them repeatedly using an incremental range of velocities. From the resultant display the velocity that gave the best stack for each event on the section was picked. Velocity charts were reproduced on the Final Display.

(ii) Trace Muting (Blanking)

Blanking parameters were checked on each line. A group of 144 traces were taken from the analysis point on the CDP tape and sorted into ascending trace number order to form a trace gather. NMO and Static corrections were applied and from the display each trace was examined to determine the amount of blanking to avoid NMO stretch. The blanking charts were reproduced on the Final Display. This analysis was also used as an NMO velocity check.

(iii) Deconvolution

Time domain deconvolution trials were carried out before and after stack to assess the optimum parameters for the equalisation of the spectrum of the signal and removal of reverberant energy following primary signals. From visual inspection of the results in association with sectional autocorrelograms before and after deconvolution, the following parameters were chosen:

Time domain after stack

Operator length 200 ms

Predictive gap 30 ms

Derivation window-time variant according to structure

(iv) Filter

A final filter suite was carried out on a 24 trace segment of the deconvoluted data.

The chosen parameters for each line were displayed on the final label.

APPENDIX III

CONTRACT VEHICLES

Seismograph Service Limited

4	Hydraulic Vibrator, Wabco Y900 LF mounted on International Paystar 5000 6x6 chassis.
1	International 6x6 Water tanker
3	International 4x4 Load carrier
1	International 4x4 Mobile workshop
1	Bedford R 4x4 Recording truck
1	Toyota 4x4 Short Wheel base - Party Chief
1	Toyota 4x4 LVL unit
1	Toyota Personnel carrier 4x4 Short Wheel base
6	Toyota 4x4 Pick up

F.T. & B.I. Thomson

1	Bulldozer TD25C
1	Bulldozer D7F
1	Bulldozer D6C
2	Toyota 4x4 Pick Up

APPENDIX IV

TECHNICAL AND CAMP EQUIPMENT

1	24 Channel DFS III Recording system
1	24 Channel summing system ADDIT 1
1	24 Channel monitor oscillograph SDW 300
1	Digital sweep generator Pelton
4	Hydraulic vibrator units Wabco Y900LF
4	Vibrator control electronics VIBK 1000
248	Strings of 6 SM4 geophones 10Hz connected in series
20	Spread cables each 3 intervals of 150 metres
1	12 trace RS4 weathering recording system
1	LVL spread cable
15	Refraction geophones HS1 4.5 Hz
6	Phillips FM828 vibrator control radios 172.5 MHz
5	Phillips FM828 line control radios 154.4 MHz
4	SSB radios
2	Theodolite TIA
1	Calculator HP45
1	Calculator HP35
1	Office caravan
1	Kitchen caravan
1	Shower caravan
1	Mobile water tank 1000 gallons
1	Mobile water tank 250 gallons
2	Mobile toilets
2	Mobile generators 50KVA
4	Billy Hut messes
50	Single man tents

APPENDIX V

Personnel

Party Chief	K.A. Potts
Computer	M. Worthington
Senior Observer	I. Sim N. Wills
Junior Observer	A. Sharp D. Norman
Surveyor	E. Cowperthwaite C. Burn
Mechanic	A. Roughton D. Jaggers R. Johnston
Senior Seismologist	M. Hobson
Engineer	B. Evans / J. Groenendijk
Administration	R.J. Howell
Area Manager	M. Covil

APPENDIX VI

STATISTICS

Total surface coverage	893.10 km
Total days production recording	125
Average daily production	4.14 km
Days Experimental recording	3
Days camp move	5
Days maintenance	1
Days lost to rain	3
Days lost instrument failure	2
Days lost mechanical failure	2
Days lost repairing cables	1
Dynamite used pounds	8000
Detonators used	2000
Total TD25C hours	1247
Total D7F hours	1189.75
Total D6C hours	1186.00

N.B. Dynamite and detonator figures include amounts destroyed at end of contract

APPENDIX VII

PERMANENT MARKERS PILLAN HILL 1976

LINE	STN. NO.	EASTING	NORTHING	ADJ. ELEV. (M)
76 WBA	100	439 469 +	1 564 532	63.93 +
	150	442 376 +	1 557 622	55.32 +
	177	443 915	1 553 879	49.40
	200	445 231	1 550 694	45.43
	250	448 245	1 543 828	43.72
	296	451 022	1 537 512	49.94
	304	451 507 +	1 536 414	41.49 +
76 WBB	99	447 957 +	1 583 143	55.94 +
	107	448 454	1 582 052	67.53
	150	450 756	1 576 029	50.80
	182	452 461	1 571 545	49.81
	200	453 424	1 569 025	55.94
	250	456 170	1 562 048	48.82
	300	458 920	1 555 074	43.35
	350	461 665	1 548 095	38.09
	400	464 315	1 541 118	41.06
	426	465 840	1 537 487	31.39
	434	466 278 +	1 536 371	36.23 +
76 WBC	101	449 733 +	1 603 557	60.74 +
	109	450 173 +	1 602 440	60.50
	145	452 158	1 597 416	76.81
	150	452 430	1 596 716	70.02
	200	455 176	1 589 733	53.87
	250	457 946	1 582 760	48.55
	256	458 279	1 581 923	48.43
	300	460 718	1 575 789	66.26
	312	461 386	1 574 117	57.56
	320	461 832 +	1 573 003	46.50 +

+ = Unadjusted Values

LINE	STN. NO.	EASTING	NORTHING	ADJ. ELEV. (M)
76 WBD	100	464 850 +	1 576 422	55.36 +
	150	467 668	1 569 472	46.89
	200	470 452	1 562 508	37.32
	250	473 220	1 555 536	48.46
	262	473 876	1 553 859	32.97
	270	474 347 +	1 552 756	31.46 +
76 WBE	100	445 064 +	1 595 521	58.59 +
	149	452 150	1 597 420	76.35
	197	459 089 +	1 599 293	63.19 +
76 WBF	100	442 586 +	1 568 481	54.23 +
	150	449 744 +	1 570 708	51.18 +
	169	452 461	1 571 545	49.81
	200	456 923	1 572 828	52.84
	231	461 386	1 574 117	57.56
	250	464 113	1 574 941	44.03
	267	466 553 +	1 575 679	70.34
76 WBG	100	442 715 +	1 553 881	47.91 +
	108	443 915	1 553 881	49.83
	150	450 208	1 553 881	46.27
	200	457 686	1 553 878	50.22
	211	459 334	1 553 878	49.08
	250	465 178	1 553 880	50.32
	300	472 675	1 553 862	38.47
	308	473 876	1 553 859	32.97
	350	480 170	1 553 871	40.40 +
	400	487 661	1 553 905	43.83 +
	450	495 148	1 553 928	17.76 +
	500	502 638	1 553 939	45.52 +
	534	507 730	1 553 947	21.42 +
	550	510 127	1 553 947	25.22 +
	600	517 617	1 553 949	30.23 +
	609	518 967	1 553 950	10.61 +

LINE	STN. NO.	EASTING	NORTHING	ADJ. ELEV. (M)
76 WBG (cont'd)	650	525 050	1 554 812	14.91 +
	695	531 726	1 555 763	31.93 +
	687A	530 531 +	1 555 888	41.58 +
	703A	532 914 +	1 555 927	25.89 +
	700	532 472 +	1 555 689	26.86 +
	750	539 939 +	1 554 944	26.95 +
	792	546 197 +	1 554 280	5.59 +
76 WBH	100	449 824 +	1 537 511	43.16 +
	108	451 022	1 537 512	49.94
	150	457 318	1 537 507	38.27
	200	464 790	1 537 491	39.94
	207	465 840	1 537 487	31.39
	215	467 039 +	1 537 493	35.21 +
76 WBJ	100	502 071 +	1 571 188	29.82 +
	108	502 455	1 570 051	28.10 +
	150	504 482	1 564 085	32.99 +
	200	506 713	1 555 928	28.49 +
	221	507 730	1 553 947	21.42 +
	250	509 137	1 549 836	32.53 +
	300	511 585	1 542 753	32.71 +
	350	513 928	1 535 635	37.65 +
	400	516 235	1 528 507	18.31 +
	450	518 442	1 521 354	20.00 +
	490	519 932	1 515 561	12.88 +
	500	520 245 +	1 514 094	15.61 +
	550	521 813 +	1 506 760	22.58 +
	592	523 123 +	1 500 599	4.85 +
76 WBK	100	507 952 +	1 515 527	21.28 +
	108	509 149	1 515 527	25.72 +
	150	515 440	1 515 542	19.76 +
	180	519 932	1 515 561	13.44 +
	200	522 931 +	1 515 577	34.25 +
	250	530 420 +	1 515 605	16.51 +
	293	536 870 +	1 515 375	11.18 +

LINE	STN. NO.	EASTING	NORTHING	ADJ. ELEV. (M)
76 WBL	100	496 908 +	1 570 065	33.23 +
	137	502 455	1 570 051	28.10 +
	150	504 404	1 570 043	33.82 +
	200	511 900	1 570 019	31.99 +
	240	517 899	1 570 008	31.54 +
	250	519 399	1 570 006	29.80 +
	300	526 903	1 570 016	30.07 +
	310	528 402	1 570 017	19.90 +
	350	534 399	1 570 023	18.84 +
	376	538 296 +	1 570 028	11.61 +
76 WBM	100	509 838 +	1 597 824	25.94 +
	150	511 925	1 590 620	29.97 +
	200	514 012	1 583 418	31.65 +
	214	514 597	1 581 401	26.15 +
	250	516 104	1 576 210	26.70 +
	293	517 899	1 570 008	31.54 +
	301	518 233 +	1 568 855	25.92 +
76 WBN	100	487 957 +	1 590 884	47.99 +
	150	495 447 +	1 590 820	45.37 +
	200	502 929 +	1 590 740	34.04 +
	250	510 426 +	1 590 644	45.49 +
	260	511 925	1 590 620	29.97 +
	300	517 923	1 590 602	28.79 +
	350	525 413	1 590 585	22.45 +
	400	532 911	1 590 548	12.60 +
	422	536 207	1 590 531	21.83 +
	430	537 404 +	1 590 525	13.70 +
76 WBP	100	534 306 +	1 597 319	29.41 +
	147	536 207	1 590 531	21.83 +
	150	536 329	1 590 097	18.46 +
	200	538 352	1 582 876	28.62 +
	250	540 377	1 575 655	22.08 +
	292	542 020 +	1 569 575	11.81 +

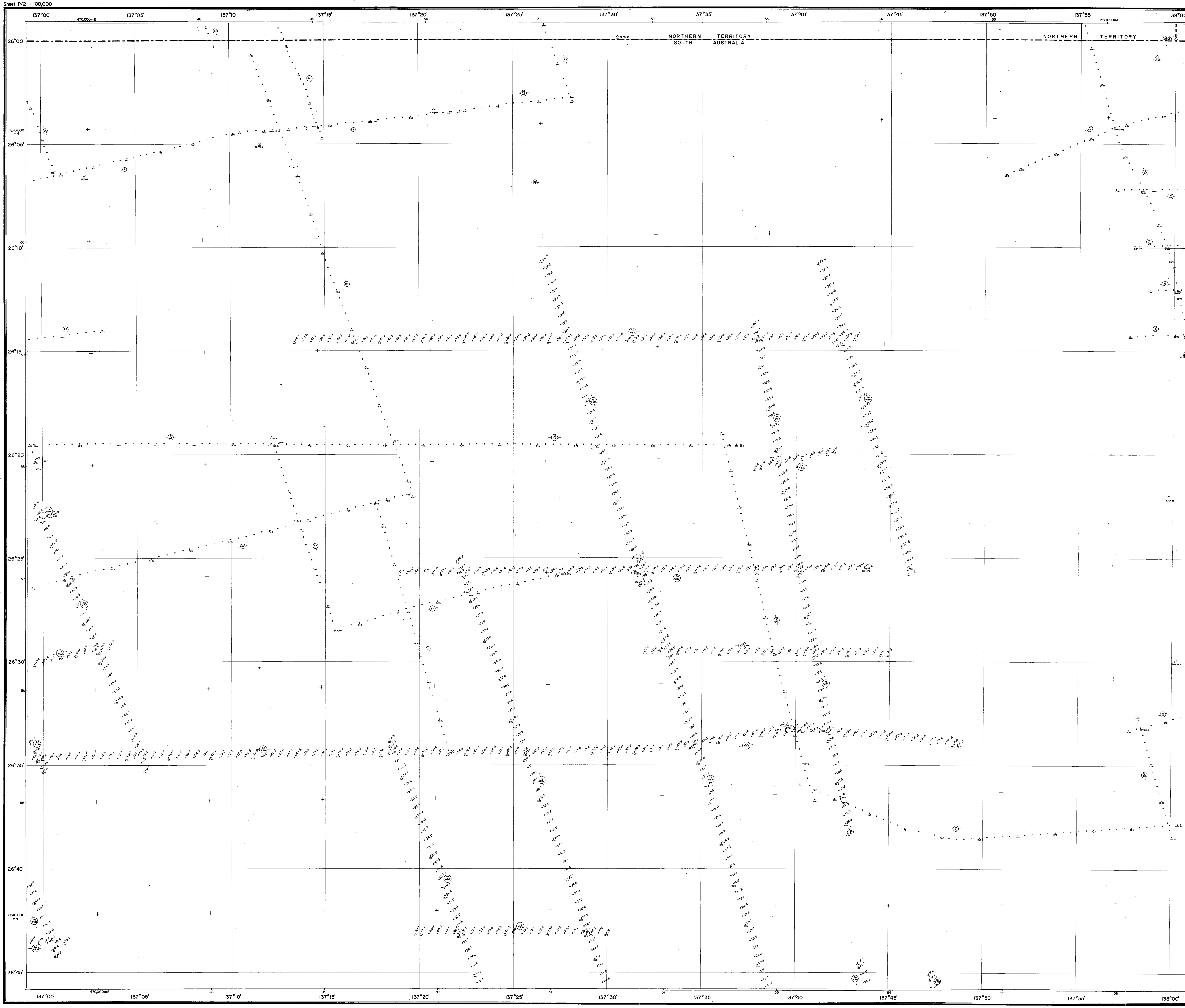
LINE	STN. NO.	EASTING	NORTHING	ADJ. ELEV. (M)
76 WBQ	97	498 063 +	1 538 013	10.89 +
	123	501 964	1 537 965	32.31 +
	150	506 016	1 537 925	44.27 +
	198	513 217 +	1 537 869	30.12 +
	210	515 014 +	1 537 854	9.98 +
76 WBR	103	514 493 +	1 524 838	14.95 +
	122	517 338	1 524 776	13.05 +
	150	521 539	1 524 628	25.16 +
	200	529 039	1 524 444	31.42 +
	215	531 289	1 524 382	34.69 +
	250	536 542 +	1 524 307	17.75 +
	300	544 039 +	1 524 207	42.46 +
	308	545 241 +	1 524 195	25.56 +
	345	550 781 +	1 524 139	7.95 +
76 WBS	102	543 490 +	1 533 930	6.54 +
	150	544 712 +	1 526 842	20.03 +
	168	545 241 +	1 524 195	25.56 +
	200	546 191 +	1 519 491	16.11 +
	250	547 661 +	1 512 136	25.42 +
	269	548 209 +	1 509 339	3.97 +
76 WBT	103	495 861 +	1 555 071	22.31 +
	111	496 266 +	1 553 941	21.25 +
	150	498 242	1 548 432	29.88 +
	200	500 760	1 541 361	26.75 +
	224	501 964	1 537 965	33.47 +
	250	503 253	1 534 280	16.34 +
	300	505 736	1 527 197	26.87 +
	350	507 834	1 519 990	30.18 +
	381	509 149	1 515 527	25.72 +
	389	509 490 +	1 514 377	29.17 +

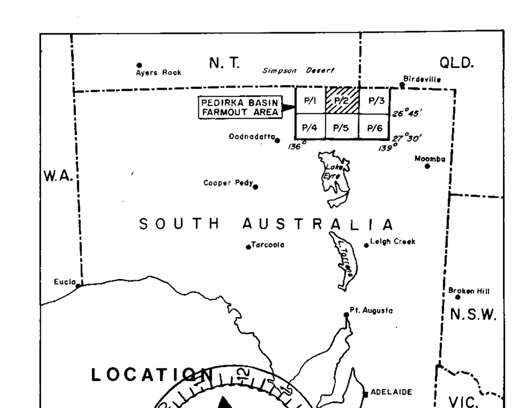
LINE	STN. NO.	EASTING	NORTHING	ADJ. ELEV. (M)
76 WBU	108	537 231 +	1 534 964	15.13 +
	150	538 639 +	1 528 828	35.50 +
	181	539 542 +	1 524 267	24.40 +
	207	540 386 +	1 520 460	9.15 +
76 WBW	99	518 022 +	1 571 185	46.78 +
	107	518 352 +	1 570 031	37.95 +
	150	520 137	1 563 825	37.39 +
	157	520 426	1 562 814	36.19 +
	200	522 195	1 556 603	22.08 +
	215	522 811	1 554 436	38.59 +
	250	524 232	1 549 378	11.05 +
	300	526 280	1 542 155	19.16 +
	350	528 333	1 534 934	27.37 +
	400	530 359	1 527 706	23.61 +
	423	531 289	1 524 382	34.69 +
	435	531 773 +	1 522 649	6.12 +
76 WBX	106	518 628 +	1 562 867	11.92 +
	118	520 426	1 562 814	36.19 +
	150	525 227	1 562 643	18.24 +
	200	532 731	1 562 521	30.93 +
	249	540 072 +	1 562 387	12.51 +
76 WBY	150	528 430 +	1 591 799	40.36 +
	158	523 629 +	1 590 615	42.07 +
	200	529 677	1 584 389	34.40 +
	233	530 503	1 579 499	33.39 +
	250	530 943	1 576 981	23.03 +
	297	532 147	1 570 020	26.73 +
	300	532 223	1 569 575	32.38 +
	348	533 407	1 562 461	26.87 +
	350	533 456	1 562 165	33.94 +
	395	534 575	1 555 503	14.80 +
	400	534 722	1 554 761	13.39 +
	436	535 795	1 549 417	31.09 +
	450	536 220 +	1 547 356	29.62 +
	456	536 404 +	1 546 476	8.31 +

LINE	STN. NO.	EASTING	NORTHING	ADJ. ELEV. (M)
76 WBZ	122	528 529 +	1 579 082	16.32 +
	135	530 442 +	1 579 457	30.49 +
	150	532 650 +	1 579 883	31.16 +
	168	535 300 +	1 580 393	10.05 +
76 WCA	100	453 701 +	1 559 827	47.87 +
	108	454 871 +	1 560 090	46.53
	121	456 775	1 560 513	55.17
	150	461 029	1 561 479	51.27
	200	468 365	1 563 114	43.37
	212	469 119 +	1 563 507	42.22
	220	471 290 +	1 564 772	34.80 +
76 WCB	100	456 524	1 571 554	44.75
	150	459 734	1 564 759	53.29
	174	461 277	1 561 504	45.38
	200	462 957	1 557 969	61.66
	230	464 877	1 553 882	55.42
	238	465 387 +	1 552 796	54.69 +
76 WCC	100	448 241 +	1 577 345	51.45 +
	145	450 464	1 570 928	56.21
	150	450 747	1 570 230	50.03
	161	451 368	1 568 699	49.95
	200	453 584	1 563 266	62.63
	231	455 341 +	1 558 946	51.76 +
76 WCD	100	446 544 +	1 567 355	50.06 +
	147	453 317	1 569 305	55.49
	173	457 081	1 570 356	53.99
	182	458 378 +	1 570 720	50.10 +
76 WCE	100	443 928 +	1 598 333	60.92 +
	150	451 333	1 599 510	75.57 +
	158	452 515 +	1 599 697	71.45 +


Sheet P/1 1:100,000
DELHI INTERNATIONAL OIL CORPORATION
PILLAN HILL
SEISMIC SURVEY
P.E.L. 5&6; SOUTH AUSTRALIA
PEDIRKA BASIN FARMOUT AREA
GEOPHONE STATION
LOCATION AND ELEVATION MAP
DATUM: Australian Height Datum = 0 metres
DATE: March 1977
TRANSVERSE MERCATOR PROJECTION based on CLARKE'S 1858 SPHEROID. CROSSES indicate 10,000 metre GRID intercepts from the FALSE ORIGIN, ZONE 5, AUSTRALIAN MAP SERIES.
SCALE 1:100,000
KILOMETRES
MILES
LOCATION
SOUTH AUSTRALIA
N.S.W.
VIC.
ADELAIDE
RECEIVED
13 APR 1977
ENC. 1A
2771-21
Sheet P/1 1:100,000

Sheet P/2 1:100,000





DELHI INTERNATIONAL OIL CORPORATION

PILLAN HILL SEISMIC SURVEY

P.E.L. 5&6; SOUTH AUSTRALIA
PEDIRKA BASIN FARMOUT AREA

GEOPHONE STATION LOCATION AND ELEVATION MAP

DATUM: Australian Height Datum = 0 metres   DATE: March 1977

TRANSVERSE MERCATOR PROJECTION based on CLARKE'S 1858 SPHEROID. CROSSES indicate 10,000 metre GRID intercepts from the FALSE ORIGIN, ZONE 5, AUSTRALIAN MAP SERIES.

SCALE 1:100,000

KILOMETRES 2 1 0 2 4 6 8 10

MILES 1 0 1 2 3 4 5 6 7

ENC. 1B

Sheet P/2 1:100,000

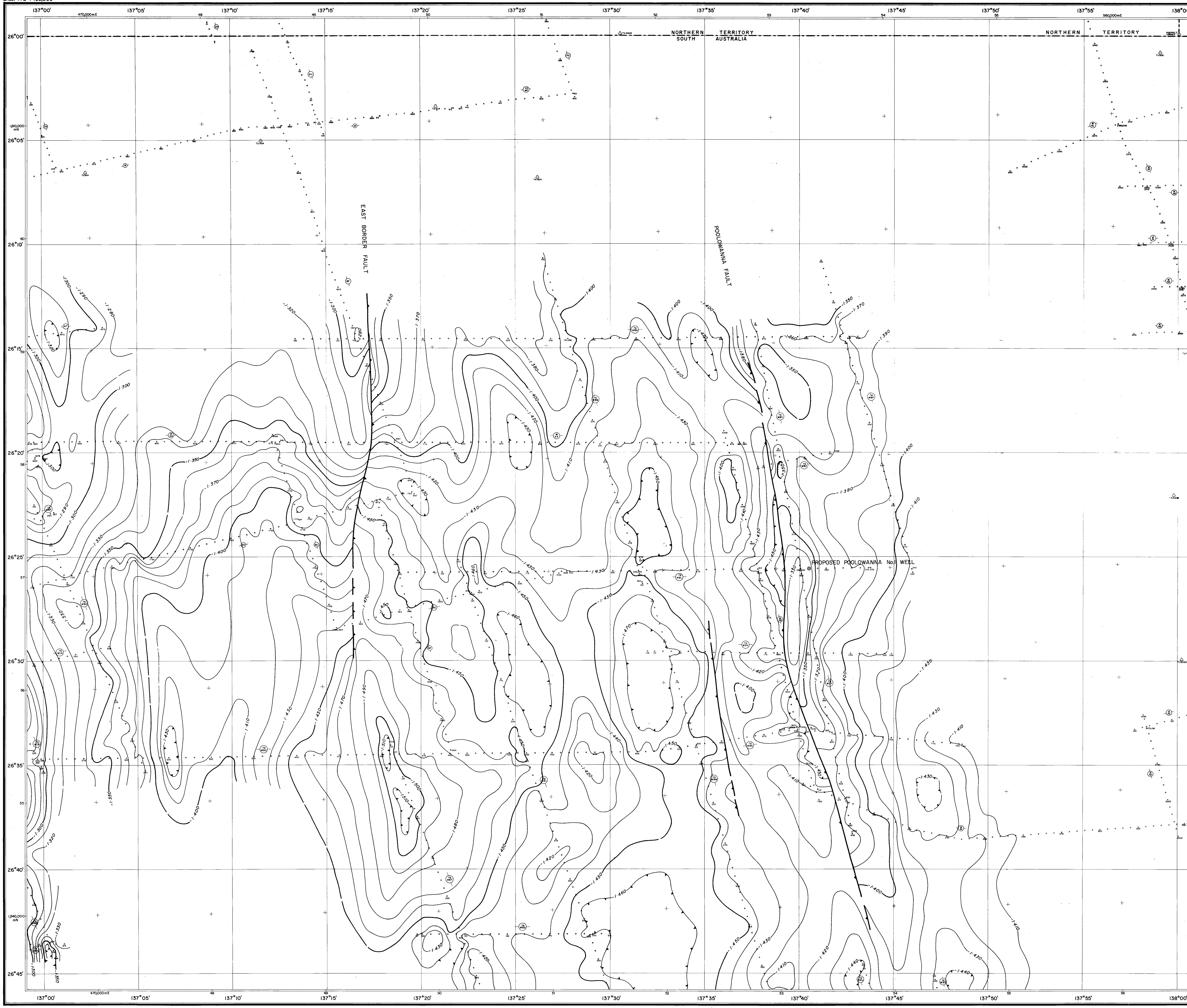
2771-22

Sheet P/5 1:100,000

2771-23 Sheet P/5 1:100,000


Sheet P/1 1:100,000
PROPOSED MACUMBA No.1 WELL
PURNI No.1
MOKARI No.1
LOCATION
N.T.
QLD.
W.A.
SOUTH AUSTRALIA
N.S.W.
VIC.
ADELAIDE
Pt. Augusta
Broken Hill
Eucla
RECEIVED 13 APR 1977 DEPT. OF MINES SECURITY
DELHI INTERNATIONAL OIL CORPORATION
PILLAN HILL
SEISMIC SURVEY
P.E.L. 5&6; SOUTH AUSTRALIA
PEDIRKA BASIN FARMOUT AREA
'C' HORIZON
CONTOUR INTERVAL : 0·010 seconds
DATUM: Mean Sea Level
INTERPRETATION BY : R.J.S. Hollingsworth
DATE: March 1977
DRAFTED : P.F. / J.R.H.
TRANSVERSE MERCATOR PROJECTION based on CLARKE'S 1858 SPHEROID. CROSSES indicate 10,000 metre GRID intercepts from the FALSE ORIGIN, ZONE 5, AUSTRALIAN MAP SERIES.
SCALE 1:100,000
KILOMETRES
MILES
ENC. 2A
2771-24
Sheet P/1 1:100,000

Sheet P/2 1:100,000



DELHI INTERNATIONAL OIL CORPORATION

PILLAN HILL SEISMIC SURVEY

P.E.L. 5&6 ; SOUTH AUSTRALIA
PEDIRKA BASIN FARMOUT AREA

'C' HORIZON

CONTOUR INTERVAL : 0·010 seconds   DATUM: Mean Sea Level
INTERPRETATION BY : R.J.S. Hollingsworth   DATE: March 1977
DRAFTED : P.F. / J.R.H.

TRANSVERSE MERCATOR PROJECTION based on CLARKE'S 1858 SPHEROID. CROSSES indicate 10,000 metre GRID intercepts from the FALSE ORIGIN, ZONE 5, AUSTRALIAN MAP SERIES.

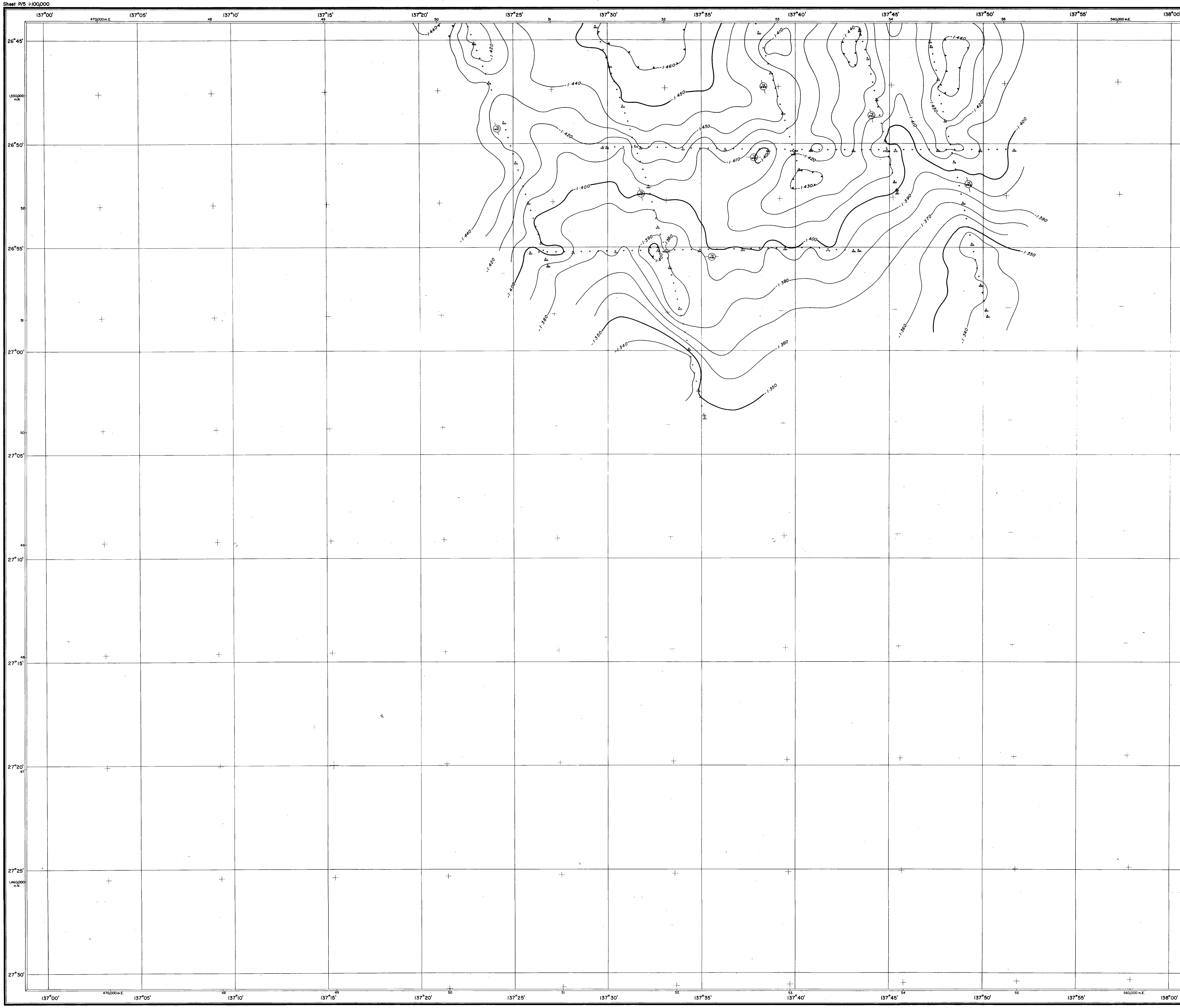
SCALE 1:100,000

ENC. 2B

2771-25

Sheet P/2 1:100,000

Sheet P/5 1:100,000



DELHI INTERNATIONAL OIL CORPORATION

PILLAN HILL SEISMIC SURVEY

P.E.L. 5&6, SOUTH AUSTRALIA
PEDIRKA BASIN FARMOUT AREA

'C' HORIZON

CONTOUR INTERVAL : 0·010 seconds DATUM : Mean Sea Level
INTERPRETATION BY : R.J.S. Hollingsworth DATE : March 1977
DRAFTED : P.F. / J.R.H.

TRANSVERSE MERCATOR PROJECTION based on CLARKE'S 1858 SPHEROID. CROSSES indicate 10,000 metre GRID intercepts from the FALSE ORIGIN, ZONE 5, AUSTRALIAN MAP SERIES.

ENC. 2C

2771-26

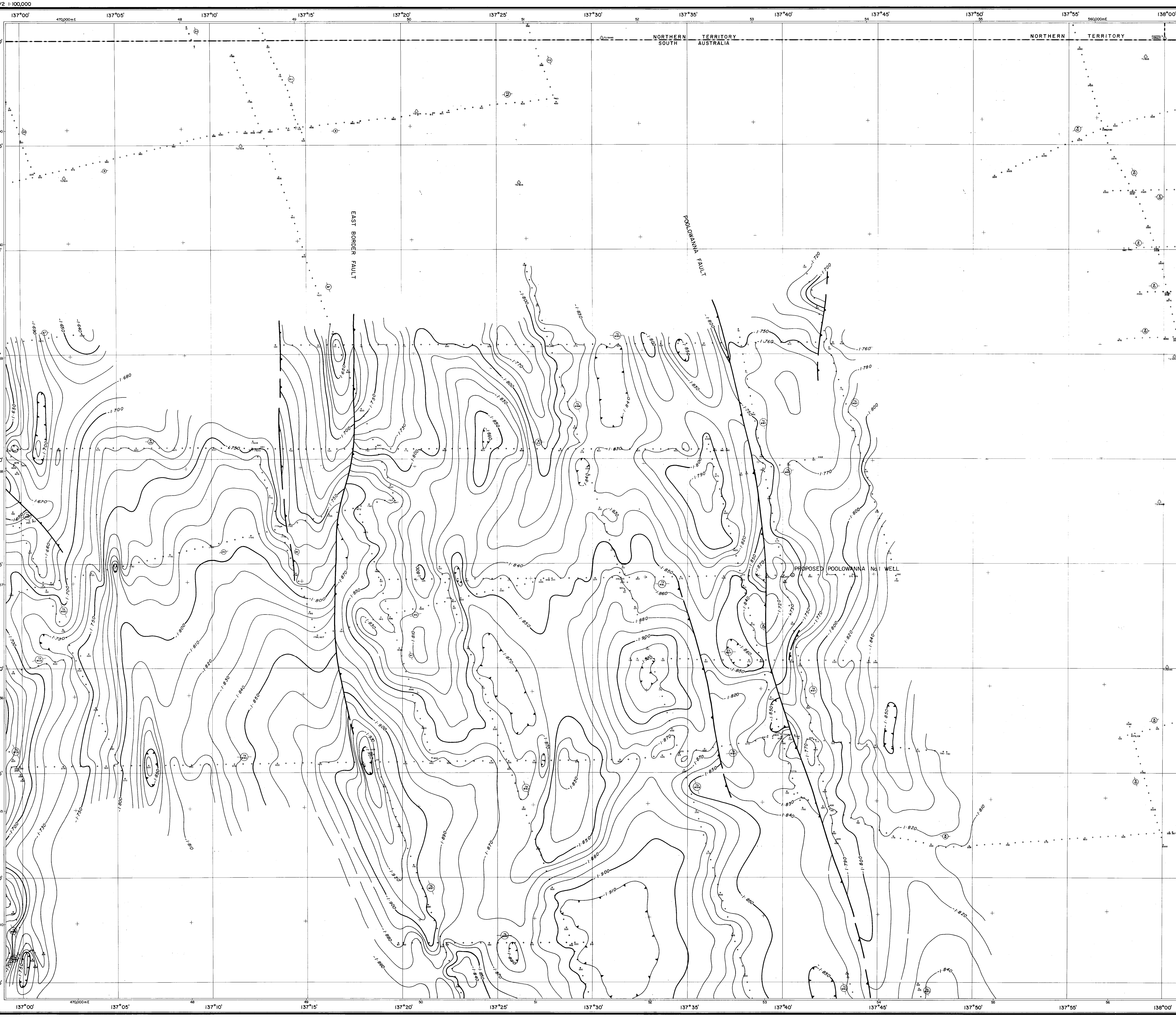
Sheet P/5 1:100,000

Sheet P/1 1:100,000

Sheet P/1 1:100,000

2771-27

Sheet P/2 1:100,000



LOCATION

RECEIVED 13 APR 1977 DEPT. OF MINES SECURITY 2771-

DELHI INTERNATIONAL OIL CORPORATION

PILLAN HILL SEISMIC SURVEY

P.E.L. 5&6 ; SOUTH AUSTRALIA PEDIRKA BASIN FARMOUT AREA

'P' HORIZON

CONTOUR INTERVAL : 0·010 seconds DATUM : Mean Sea Level
INTERPRETATION BY : R.J.S. Hollingsworth DATE : March 1977
DRAFTED : P.F. / J.R.H.

TRANSVERSE MERCATOR PROJECTION based on CLARKE'S 1858 SPHEROID. CROSSES indicate 10,000 metre GRID intercepts from the FALSE ORIGIN, ZONE 5, AUSTRALIAN MAP SERIES.

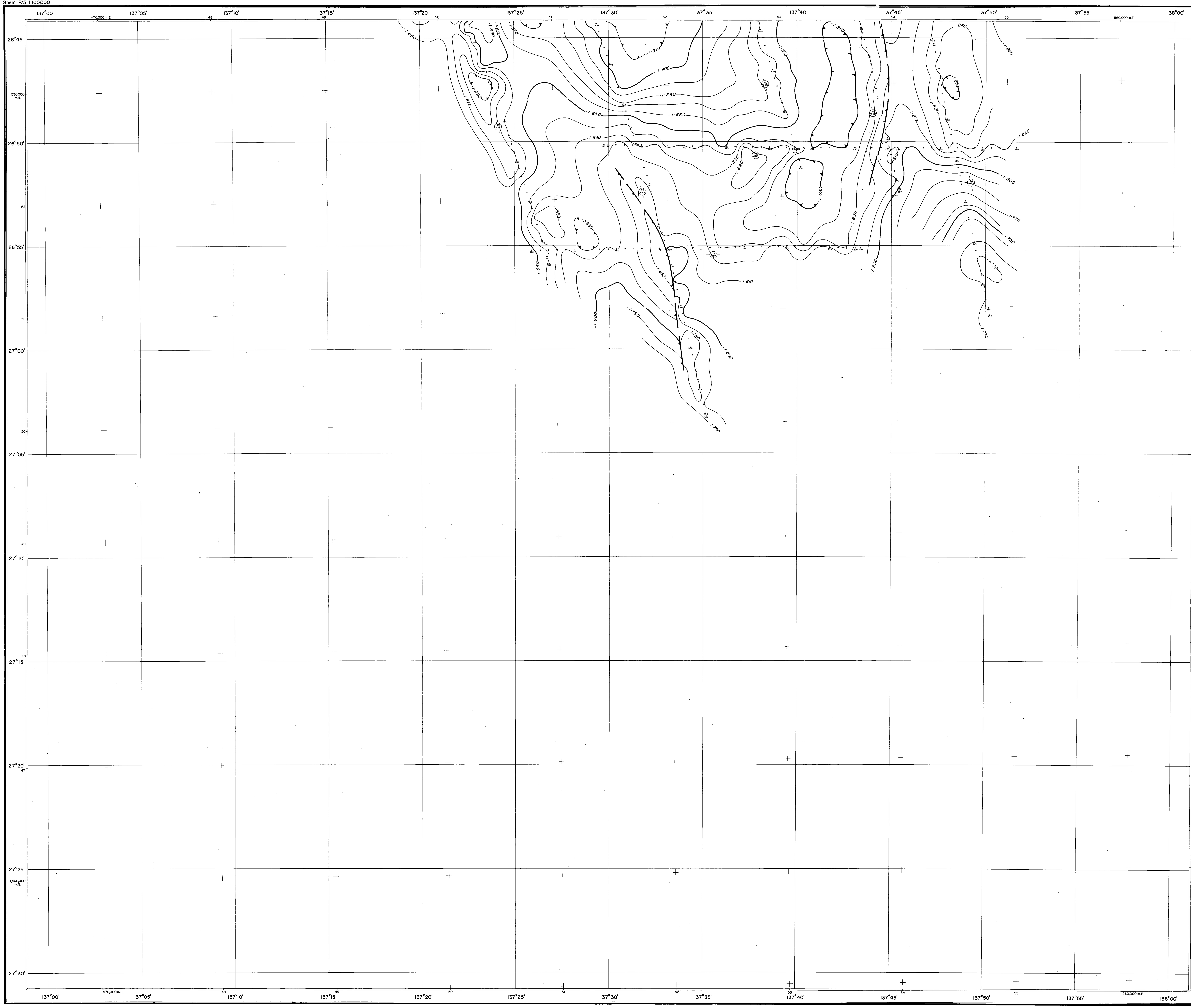
SCALE 1:100,000

ENC. 3B

2771-28

Sheet P/2 1:100,000

Sheet P/5 1:100,000



DELHI INTERNATIONAL OIL CORPORATION

PILLAN HILL SEISMIC SURVEY

P.E.L. 5 & 6, SOUTH AUSTRALIA
PEDIRKA BASIN FARMOUT AREA

'P' HORIZON

CONTOUR INTERVAL : 0·010 seconds   DATUM : Mean Sea Level
INTERPRETATION BY : R.J.S. Hollingsworth   DATE : March 1977
DRAFTED : P.F. / J.R.H.

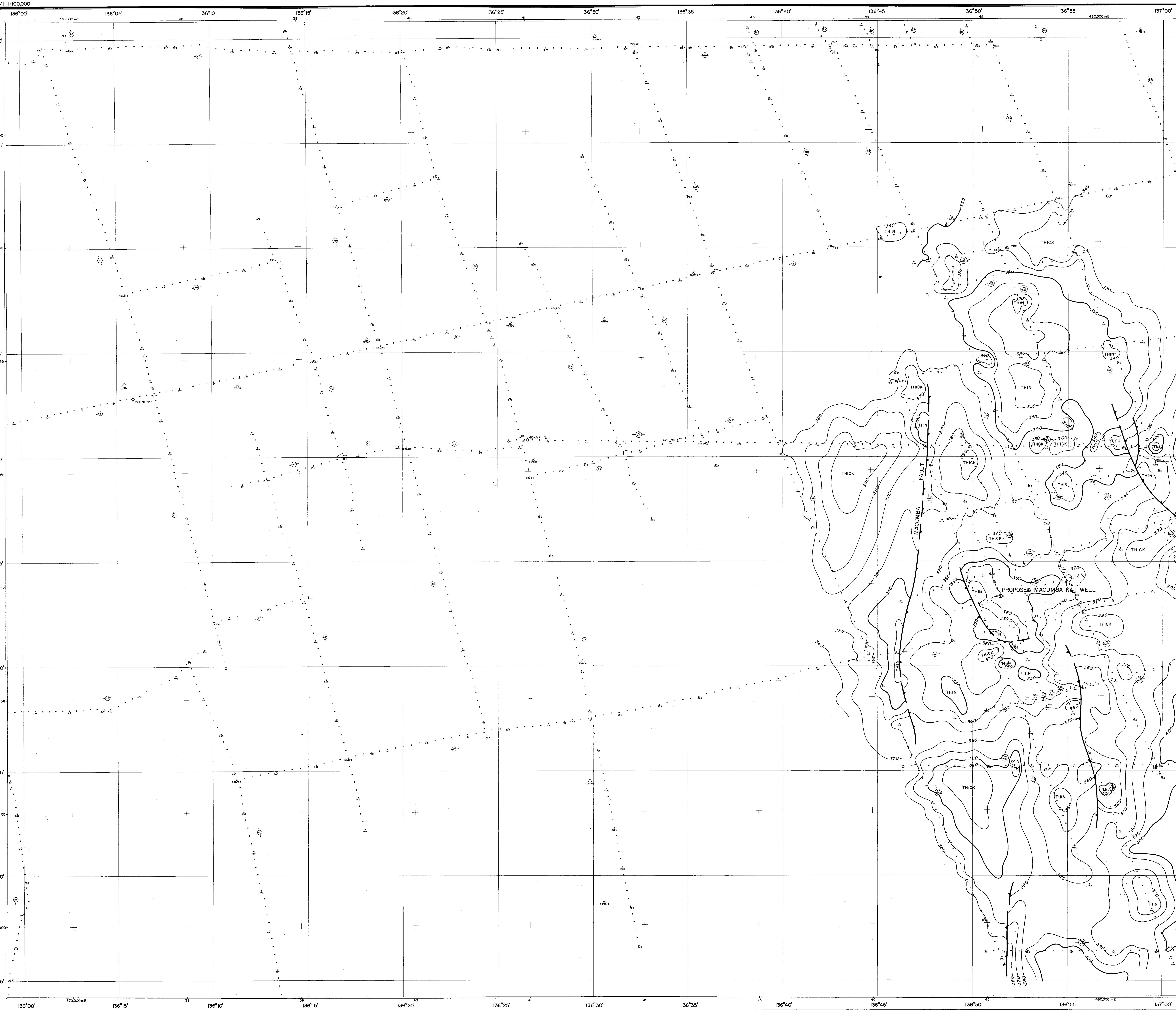
TRANSVERSE MERCATOR PROJECTION based on CLARKE'S 1858 SPHEROID. CROSSES indicate 10,000 metre GRID intercepts from the FALSE ORIGIN, ZONE 5, AUSTRALIAN MAP SERIES.

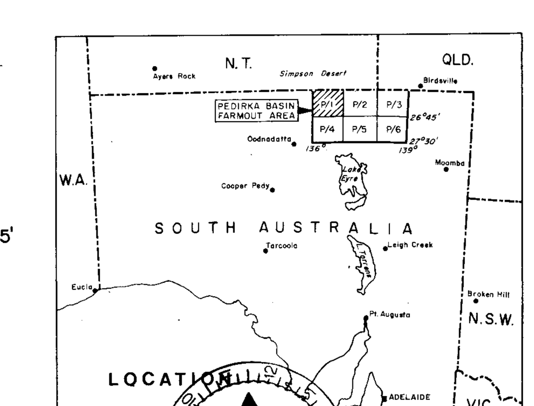
SCALE 1:100,000

ENC. 3C

Sheet P/5 1:100,000

2771-39





DELHI INTERNATIONAL OIL CORPORATION

PILLAN HILL SEISMIC SURVEY

P.E.L. 5&6 ; SOUTH AUSTRALIA PEDIRKA BASIN FARMOUT AREA

'C-P' ISOPACH

CONTOUR INTERVAL : 0·010 seconds DATUM : N/A
INTERPRETATION BY : R.J.S. Hollingsworth DATE: March 1977
DRAFTED : P.F. / J.R.H.

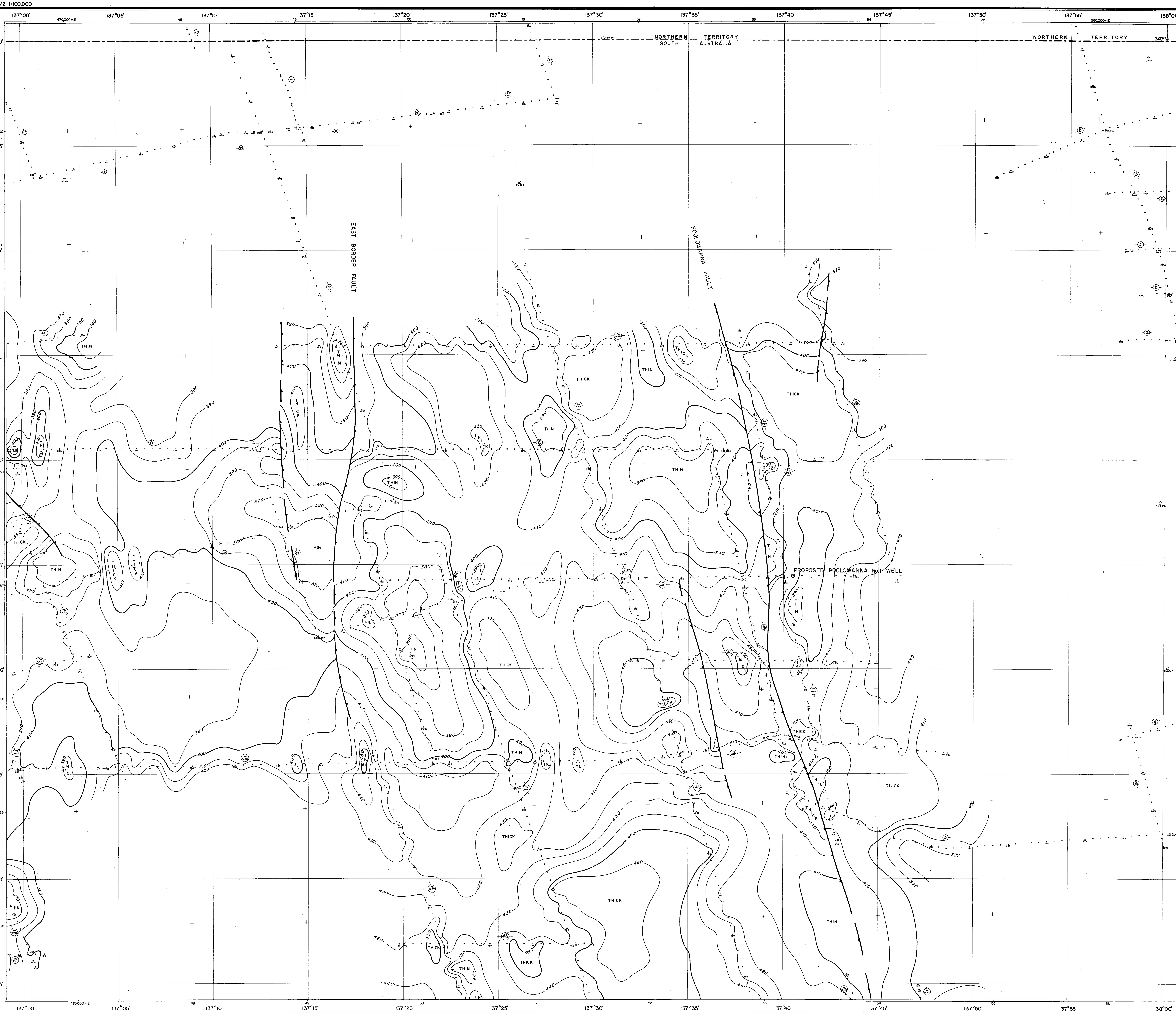
TRANSVERSE MERCATOR PROJECTION based on CLARKE'S 1858 SPHEROID. CROSSES indicate 10,000 metre GRID intercepts from the FALSE ORIGIN, ZONE 5, AUSTRALIAN MAP SERIES.

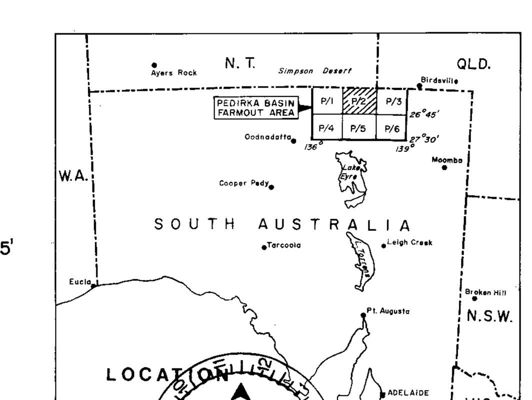
SCALE 1:100,000

ENC. 4A

2771-30

Sheet P/2 1:100,000





RECEIVED 13 APR 1977 DEPT. OF MINES SECURITY 2771-III

DELHI INTERNATIONAL OIL CORPORATION

PILLAN HILL SEISMIC SURVEY

P.E.L. 5&6; SOUTH AUSTRALIA PEDIRKA BASIN FARMOUT AREA

'C-P' ISOPACH

CONTOUR INTERVAL : 0·010 seconds DATUM: N/A
INTERPRETATION BY : R.J.S. Hollingsworth DATE: March 1977
DRAFTED : P.F. / J.R.H.

TRANSVERSE MERCATOR PROJECTION based on CLARKE'S 1858 SPHEROID. CROSSES indicate 10,000 metre GRID intercepts from the FALSE ORIGIN, ZONE 5, AUSTRALIAN MAP SERIES.

SCALE 1:100,000

ENC. 4B

Sheet P/2 1:100,000

2771-31


Sheet P/5 1:100,000
THIN
THICK
400
410
420
430
440
450
460
390
LOCATION
N.T.
QLD.
W.A.
SOUTH AUSTRALIA
N.S.W.
VIC.
ADELAIDE
RECEIVED
1 3 APR 1977
DEPT. OF MINES
SECURITY
2771-III
DELHI INTERNATIONAL OIL CORPORATION
PILLAN HILL
SEISMIC SURVEY
P.E.L. 5&6, SOUTH AUSTRALIA
PEDIRKA BASIN FARMOUT AREA
'C-P' ISOPACH
CONTOUR INTERVAL : 0·010 seconds DATUM: N/A
INTERPRETATION BY : R.J.S. Hollingsworth DATE: March 1977
DRAFTED : P.F./J.R.H.
TRANSVERSE MERCATOR PROJECTION based on CLARKE'S 1858 SPHEROID. CROSSES indicate 10,000 metre GRID intercepts from the FALSE ORIGIN, ZONE 5, AUSTRALIAN MAP SERIES.
SCALE 1:100,000
10 KILOMETRES
MILES
ENC. 4C
2771-32
Sheet P/5 1:100,000