COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

Petroleum Search Subsidy Acts

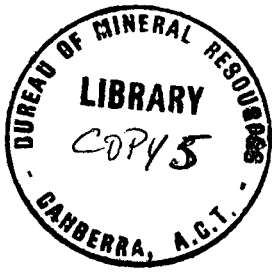
PUBLICATION No. 88

SUMMARY OF DATA AND RESULTS

OTWAY BASIN, VICTORIA

Pecten No. 1-1A

Nerita No. 1



OF

SHELL DEVELOPMENT (AUSTRALIA) PROPRIETARY LIMITED

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COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

MINISTER: THE HON. DAVID FAIRBAIRN, D.F.C., M.P.

SECRETARY: R. W. BOSWELL, O.B.E.

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

DIRECTOR: J. M. RAYNER, O.B.E.

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FOREWORD

Under the Petroleum Search Subsidy Act 1959-1967, agreements relating to subsidized operations provide that the information obtained may be published by the Commonwealth Government six months after the completion of field work.

The growth of the exploration effort has greatly increased the number of subsidized projects and this increase has led to delays in publishing the results of operations.

The detailed results of subsidized operations may be examined at the office of the Bureau of Mineral Resources in Canberra (after an agreed period), and copies of the reports may be purchased.

In order to make the main results of operations available early, short summaries are being prepared for publication. These will be grouped by area and date of completion as far as practicable. Drilling projects and geophysical projects will be grouped separately. In due course, full reports will be published concerning those operations which have produced the more important new data.

This Publication contains summaries of data and results of two offshore drilling operations undertaken in the Otway Basin, Victoria : Pecten No. 1-1A and Nerita No. 1. The information has been abstracted by the Petroleum Exploration Branch of the Bureau of Mineral Resources from well completion reports furnished by Shell Development (Australia) Proprietary Limited.

J.M. RAYNER
Director

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of

SHELL DEVELOPMENT (AUSTRALIA) PROPRIETARY LIMITED

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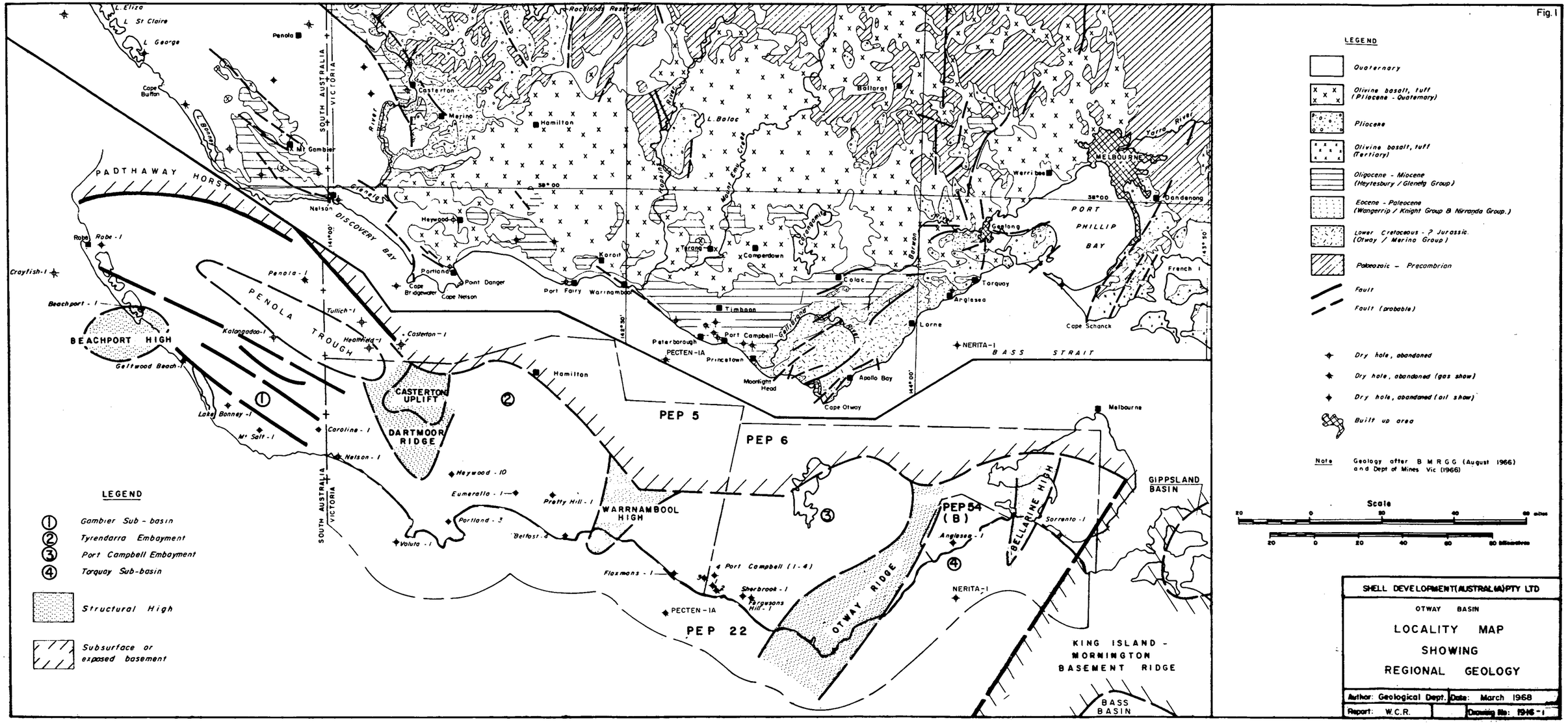

LEGEND

- Quaternary
- Olivine basalt, tuff (Pliocene - Quaternary)
- Pliocene
- Olivine basalt, tuff (Tertiary)
- Oligocene - Miocene (Heytesbury / Gleneig Group)
- Eocene - Paleocene (Wangerrip / Knight Group & Nirranda Group.)
- Lower Cretaceous - ? Jurassic. (Otway / Merino Group)
- Palaeozoic - Precambrian
- Fault
- Fault (probable)
- Dry hole, abandoned
- Dry hole, abandoned (gas show)
- Dry hole, abandoned (oil show)
- Built up area

Note: Geology after B M R G G (August 1966) and Dept of Mines Vic (1966)

Scale

20 0 20 40 60 80 miles

20 0 20 40 60 80 kilometres

SHELL DEVELOPMENT (AUSTRALIA) PTY LTD

OTWAY BASIN

LOCALITY MAP SHOWING REGIONAL GEOLOGY

Author: Geological Dept.		Date: March 1968	
Report: W.C.R.		Drawing file: FSHS - 1	

PECTEN NO. 1-1A

SUMMARY OF DATA AND RESULTS*

SUMMARY

Pecten No. 1-1A was the first well drilled offshore in the Otway Basin in south-western Victoria. It was located on the culmination of a seismically defined anticlinal structure with a closed area of approximately 28 square miles and vertical closure of 150 to 350 feet, nine miles offshore in the Port Campbell Embayment. Pecten-1A was drilled as a test of the hydrocarbon-bearing potential of the Tertiary and Upper Cretaceous sequence in which reservoir rocks were known from onshore wells. The main target was the Waarre Formation, the basal unit of the Upper Cretaceous Sherbrook Group.

The well was drilled by Southeastern Drilling, Inc., using the Sedco 135E semi-submersible rig, for Shell Development (Australia) Proprietary Limited. Positioning of the Sedco unit over the location proved to be troublesome; efforts to anchor conventionally were given up after twenty individual setting trials. Jet tests with a bit failed to penetrate the crust of the seafloor and a 15-foot core cut from the seabed revealed a top surface of smooth hard rock overlying soft sediments. An alternative location on the same structure was tried with similar results. Finally six specially designed anchor piles were drilled into the seabed and these proved to be sufficient to hold the unit in position.

Drilling commenced on 26th March, 1967 but the hole had to be abandoned on 11th April at 887 feet because of mechanical troubles just before setting the 20-inch casing. The Sedco unit was moved 50 feet to the south and a new hole - Pecten 1A - was spudded on 12th April. Drilling then proceeded uneventfully to total depth of 9352 feet reached on 4th June.

The sequence penetrated in Pecten-1A consisted of carbonates of the Oligocene - Miocene Heytesbury Group to 1880 feet; interbedded sands, marls and ferruginous sands of the upper Eocene Nirranda Group to 2630 feet; sands, silts and clays of the Palaeocene Wangerrip Group to 3894 feet; sands, siltstones and clays of the Upper Cretaceous Sherbrook Group to 5892 feet; and sandstones, siltstones and shales of the Lower Cretaceous Otway Group to total depth at 9352 feet. While the sequence penetrated is broadly similar to that onshore, significant changes in thickness and facies have taken place and the several stratigraphic breaks have been confirmed and more precisely defined. Good quality reservoir rocks were present in the Tertiary and Upper Cretaceous section but no significant quantities of hydrocarbons were encountered.

One sand only, in the Upper Cretaceous Waarre Formation, was drillstem tested through perforations in the 9 5/8-inch casing and yielded gas at a maximum flow rate of 145,000 cubic feet per day together with 615 barrels per day of salt water. The well was plugged and abandoned as a dry hole on 11th June, 1967, and after rigging down and de-anchoring the unit left for the Nerita location on 14th June.

The test drilling operation at Pecten No. 1-1A Well was subsidized under the Petroleum Search Subsidy Act 1959-1964 from seabed to total depth.

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* Abstracted from: Pecten Nos 1 and 1A, Offshore Victoria, Well Completion Report, by Shell Development (Australia) Pty Limited, October, 1967.

WELL HISTORY

General Data

Well name and number:	Pecten No. 1-1A	
Location:	Latitude	38°40'41" S.
	Longitude	142°39'56" E.
Total Depth:	Pecten-1	Pecten-1A
	887 feet	9352 feet (bdf)
Date drilling commenced:	26. 3.67	12. 4.67
Date drilling completed:	3. 4.67	4. 6.67
Date well abandoned:	11. 4.67	11. 6.67
Date rig released:	-	14. 6.67
Elevation:		
Permanent datum:	Mean Sea Level	
Derrick floor:	112 feet above M.S.L. (datum for depths)	
Depth of water:	205 feet	
Status:	Dry hole; plugged and abandoned	
Total Cost (estimated):	Pecten-1	$ 294,000
	Pecten-1A	$2,259,650 (below 887 feet)

GEOLOGY

Stratigraphy

The stratigraphic sequence encountered in Pecten No. 1-1A Well is shown in the following Table.

Age	Rock Unit	Depth Intervals (feet)	Thickness (feet)
? Pleistocene	Limestone unit	Seabed - 318	1
Oligocene-Miocene	Heytesbury Group	318 - 1880	1562
	Limestone unit	318 - 1250	932
	Marl unit	1250 - 1880	630
Upper Eocene	Nirranda Group	1880 - 2630	750
	Narrawaturk Marl	1880 - 2150	270
	Mepunga Formation	2150 - 2630	480
Palaeocene	Wangerrip Group	2630 - 3894	1264
	Dilwyn Formation	2630 - 3468	838
	Pebble Point Formation	3468 - 3894	426

Age	Rock Unit	Depth Intervals (feet)	Thickness (feet)
Upper Cretaceous	Sherbrook Group	3894 - 5892	1998
	Curdies Formation	3894 - 4713	819
	Paaratte Formation	4713 - 5274	561
	Belfast Mudstone	5274 - 5706	432
	Flaxmans Formation	5706 - 5810	104
	Waarre Formation	5810 - 5892	82
Lower Cretaceous	Otway Group	5892 - 9352	3460+
	Unit 1	5892 - 7455	1563
	Unit 2	7455 - 9352 (T.D.)	1897+

Relevance to Occurrence of Petroleum

No indications of hydrocarbons were noted from cuttings, cores or sidewall samples. Below 4000 feet traces of gas were recorded from the mud returns by gas detector with peaks over the intervals 4680 to 4860 feet, 5810 to 5870 feet, 6590 to 6620 feet, 7040 to 7450 feet and 7890 to 8560 feet. Two porous sands in the Waarre Formation (5810 to 5822 feet and 5834 to 5852 feet) were tested but yielded only minor quantities of gas (max. 145 Mcf/D) and formation water (615 bbl/D).

Petrophysical evaluation of the section drilled in Pecten-1A shows all sands to be water bearing with water saturation never less than 70 percent. Logs show also that the section is freshwater flushed down into the Curdies Formation with freshwater influence as deep as approximately 4400 feet.

Contribution to Geological Concepts resulting from Drilling

The more important factors resulting from the drilling of Pecten No. 1-1A are summarized below:

(i) The 3460 feet of Otway Group penetrated confirmed the uniformity of these sediments and demonstrated once more the complete absence of porosity and permeability in sandstones of the unit.

(ii) Correlation with Flaxmans No. 1 Well shows a considerable thickness (± 2300 feet) of the upper part of the Otway Group to be missing in Pecten-1A thus confirming the magnitude of the basal Sherbrook Group angular unconformity indicated by seismic data. The presence of this unconformity strongly supports the inclusion of the Waarre Formation as the basal unit of the Sherbrook Group.

(iii) Time-stratigraphic studies have shown the several formations of the Sherbrook Group to be facies units of one major transgressive-regressive depositional cycle.

(iv) Erosion of Permian rocks is indicated by the presence of reworked spores of Permian age throughout the Cretaceous sequence, and reworked Lower Cretaceous spores in the Curdies and Paaratte Formations suggest that Otway Group sediments, probably from the Otway horst, were being eroded at this time.

(v) Marked disconformities occur in the Tertiary sequence of Pecten No. 1-1A between the Upper Palaeocene and lower-middle Eocene and between the upper Eocene and middle Oligocene. The interval between these disconformities is formally defined as the Nirranda Group comprising the Mepunga Formation and the overlying Narrawaturk Marl.

ADDITIONAL DATA FILED IN THE BUREAU OF MINERAL RESOURCES

The following additional data relating to Pecten-1A Well have been filed in the Bureau of Mineral Resources, Canberra, and are available for reference:

(i) Well Completion Report, by Shell Development (Australia) Pty Limited — 21 pp.

Appendix 1 : List of Schlumberger Logs run in Pecten-1A — 1 p.

Appendix 1A: Summary of Schlumberger Logs — 1 p.

Appendix 2 : Petrophysical Evaluation Pecten-1A — 3 pp.

Appendix 3 : Deviation Survey Record Pecten-1A — 1 p.

Appendix 4 : Drillstem Test Results Pecten-1A — 1 p.

Appendix 5 : Water Analysis Pecten-1A, by J. Puchel, Bureau of Mineral Resources — 1 p.

Appendix 6 : Gas Analysis Pecten-1A, by J. Puchel, Bureau of Mineral Resources — 1 p.

Appendix 7 : Core and Sidewall Core Descriptions Pecten-1A, by Shell Development (Australia) Pty Ltd — 5 pp.

Appendix 8 : The Foraminiferal Sequence Pecten-1A, by S.D.A. Geological Laboratory — 7 pp.

Appendix 9 : Palynological Examination of Tertiary Samples from Pecten-1A, by J. Muller, B.I.P.M., The Hague — 3 pp.

Appendix 10 : Palynological Report on Pecten-1A, by M.E. Dettmann, University of Queensland — 28 pp.

(ii) Daily Drilling Reports for the period 26th March, 1967 to 17th June, 1967.

(iii) Schlumberger Well Logs including the following:

(a) Induction-Electrical Log

Run 1: 849 - 2184 feet (scale 1", 5" : 100 ft)
Run 2: 2164 - 6261 feet (scale 1", 5" : 100 ft)
Run 3: 6246 - 8387 feet (scale 1", 5" : 100 ft)
Run 4: 8200 - 9352 feet (scale 1", 5" : 100 ft)

(b) Sonic Log

Run 1: 849 - 2166 feet (scale 1", 5" : 100 ft)
Run 2: 2164 - 6250 feet (scale 1", 5" : 100 ft)

(c) B.S.G.R.C. Log

Run 3: 6246 - 8378 feet (scale 1", 5" : 100 ft)
Run 4: 8200 - 9338 feet (scale 1", 5" : 100 ft)

(d) Gamma Ray - Neutron Log

Run 1: 849 - 2192 feet (scale 1", 5" : 100 ft)

(e) Neutron Log

Run 2: 5700 - 9353 feet (scale 1", 5" : 100 ft)

(f) Gamma Ray Log

Run 2: 2164 - 6261 feet (scale 1", 5" : 100 ft)

(g) Formation Density Log

Run 1: 2164 - 6258 feet (scale 1", 5" : 100 ft)
Run 2: 6246 - 8386 feet (scale 1", 5" : 100 ft)
Run 3: 8290 - 9352 feet (scale 1", 5" : 100 ft)

(h) Microlog

Run 1: 2164 - 6261 feet (scale 1", 5" : 100 ft)

(i) Microlaterolog

Run 1: 6246 - 9352 feet (scale 1", 5" : 100 ft)

(j) Cement Bond Log

Run 1: 310 - 2164 feet (scale 1", 5" : 100 ft)
Run 2: 2100 - 6246 feet (scale 1", 5" : 100 ft)

(k) Continuous Dipmeter

Run 1: 2164 - 6256 feet (scale 2" : 100 ft)

Fig.2

LOCALITY MAP AND OFFSHORE STRUCTURAL CONTOURS OF CONTACT BETWEEN WANGERRIP AND SHERBROOK GROUPS

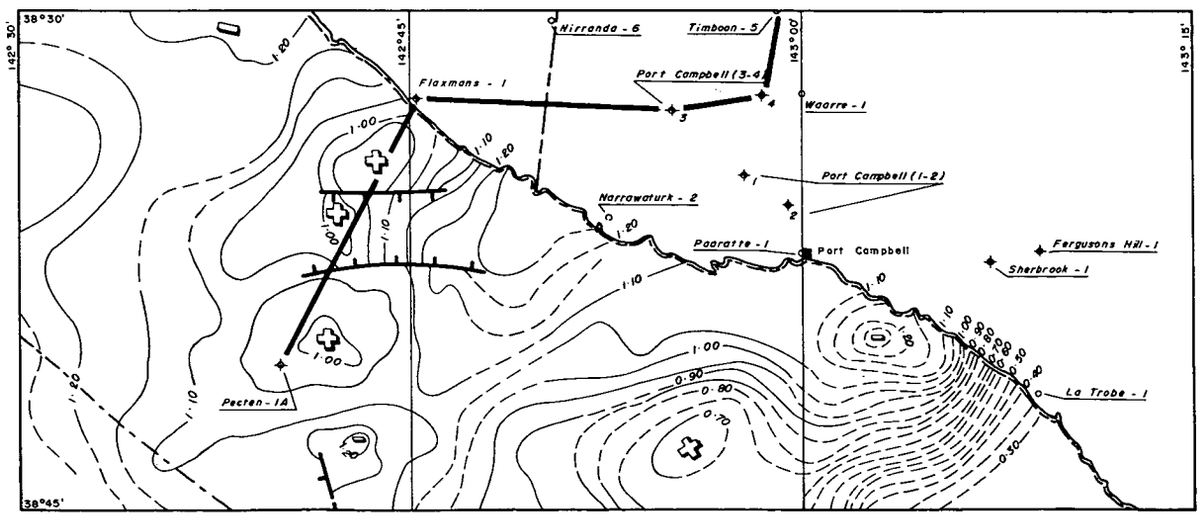
Scale

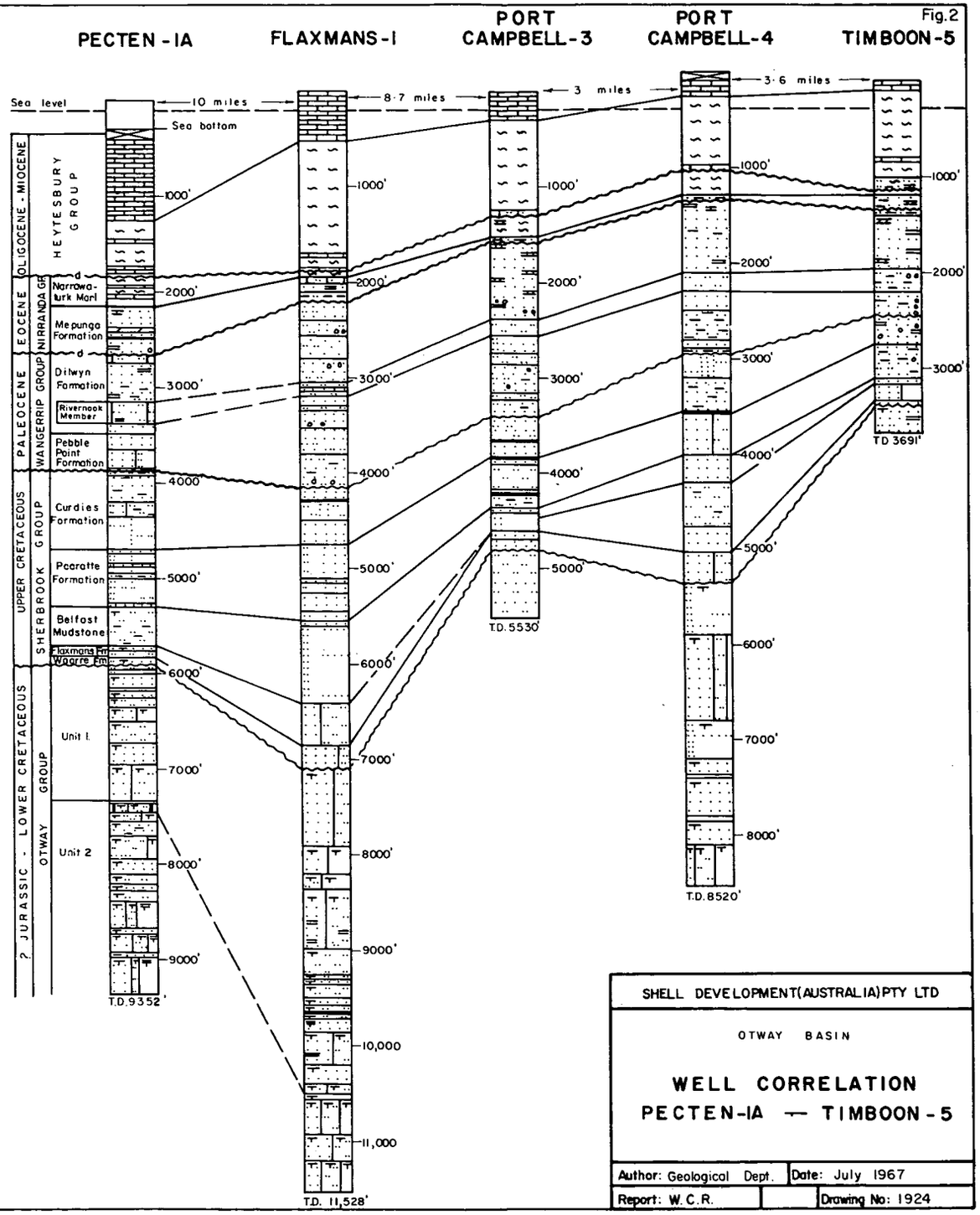
5 0 5 10 Miles

LEGEND

- Concession limit
- Structure contour (accurate)
- Structure contour (probable)
- Oil well
- Water well

TIME - DEPTH RELATIONSHIP	
seconds	feet
0·30	990'
0·40	1340'
0·50	1690'
0·60	2050'
0·70	2470'
0·80	2910'
0·90	3390'
1·00	3860'
1·10	4350'
1·20	4900'





SHELL DEVELOPMENT (AUSTRALIA) PTY LTD

OTWAY BASIN

WELL CORRELATION PECTEN-IA — TIMBOON-5

Author: Geological Dept.	Date: July 1967
Report: W.C.R.	Drawing No: 1924

NERITA NO. 1

of

SHELL DEVELOPMENT (AUSTRALIA) PROPRIETARY LIMITED

SUMMARY OF DATA AND RESULTS

NERITA NO. 1

SUMMARY OF DATA AND RESULTS*

SUMMARY

Nerita No. 1 was the second offshore exploration well in the Otway Basin. It was drilled to test the hydrocarbon-bearing potential of a seismically defined structure with an area of closure of approximately fifteen square miles and a vertical closure of up to 350 feet, situated twelve miles offshore in the Torquay Sub-basin which forms the eastern part of the Otway Basin.

The well was drilled by Southeastern Drilling, Inc., with the Sedco 135E semi- submersible rig, for Shell Development (Australia) Proprietary Limited. Anchoring the Sedco unit over the location did not require any pile drilling as at the Pecten No. 1-1A location. However, numerous re-settings of the anchors had to be made and additional back-up anchors (and in one case heavy chain) had to be added to obtain sufficient holding capacity.

The well was spudded on 1st July, 1967 and drilling proceeded uneventfully to total depth of 6700 feet reached on 30th July.

Nerita No. 1 drilled through a sequence of marine carbonates and marls of the Miocene - upper Eocene Torquay Group to 1180 feet, and then penetrated the mainly marine silty clays of the upper Eocene Demon's Bluff Formation to 2091 feet and a section of continental sands, silty claystones and coal seams of the upper Eocene Boonah Formation to an unconformity at 2555 feet, the level of the seismic 'B' horizon. Below this unconformity the well drilled through a mainly continental sequence of sands, sandstones, siltstones, claystones and coal of the Palaeocene - Upper Cretaceous Eastern View Coal Measures to 4798 feet and continental sandstones, siltstones and shales of the Lower Cretaceous Otway Group to total depth of 6700 feet.

Although sandstones with reasonable reservoir properties were present no significant quantities of hydrocarbons were encountered in the well. Only minor methane shows were recorded from the Eastern View Coal Measures and the Otway Group. Three Formation Interval Tests in sandstones of the Eastern View Coal Measures produced only fresh to brackish water. The Lower Cretaceous Otway Group, which, as elsewhere in the Otway Basin, proved to be a fairly monotonous sequence of interbedded lithic sandstones, siltstones and claystones of fluviatile origin, was plugged back without testing and the well was abandoned as a dry hole on 2nd August, 1967. After rigging down and de-anchoring, the Sedco unit left for the Voluta location on 17th August.

The test drilling operation at Nerita No. 1 Well was subsidized under the Petroleum Search Subsidy Act 1959-1967 from seabed to total depth.

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* Abstracted from: Nerita No. 1, Offshore Victoria, Well Completion Report, by Shell Development (Australia) Pty Limited, December, 1967.

WELL HISTORY

General Data

Well name and number :	Nerita No. 1
Location :	Latitude 38° 37' 43.19" S. Longitude 144° 13' 44.83" E.
Total Depth :	6700 feet (bdf)
Date drilling commenced :	1st July, 1967
Date drilling completed :	30th July, 1967
Date well abandoned:	2nd August, 1967
Date rig released :	17th August, 1967
Elevation :	
Permanent datum :	Mean Sea Level
Derrick floor :	112 feet above M.S.L. (datum for depths)
Depth of water :	245 feet
Status :	Dry hole; plugged and abandoned
Total Cost :	$1,300,000

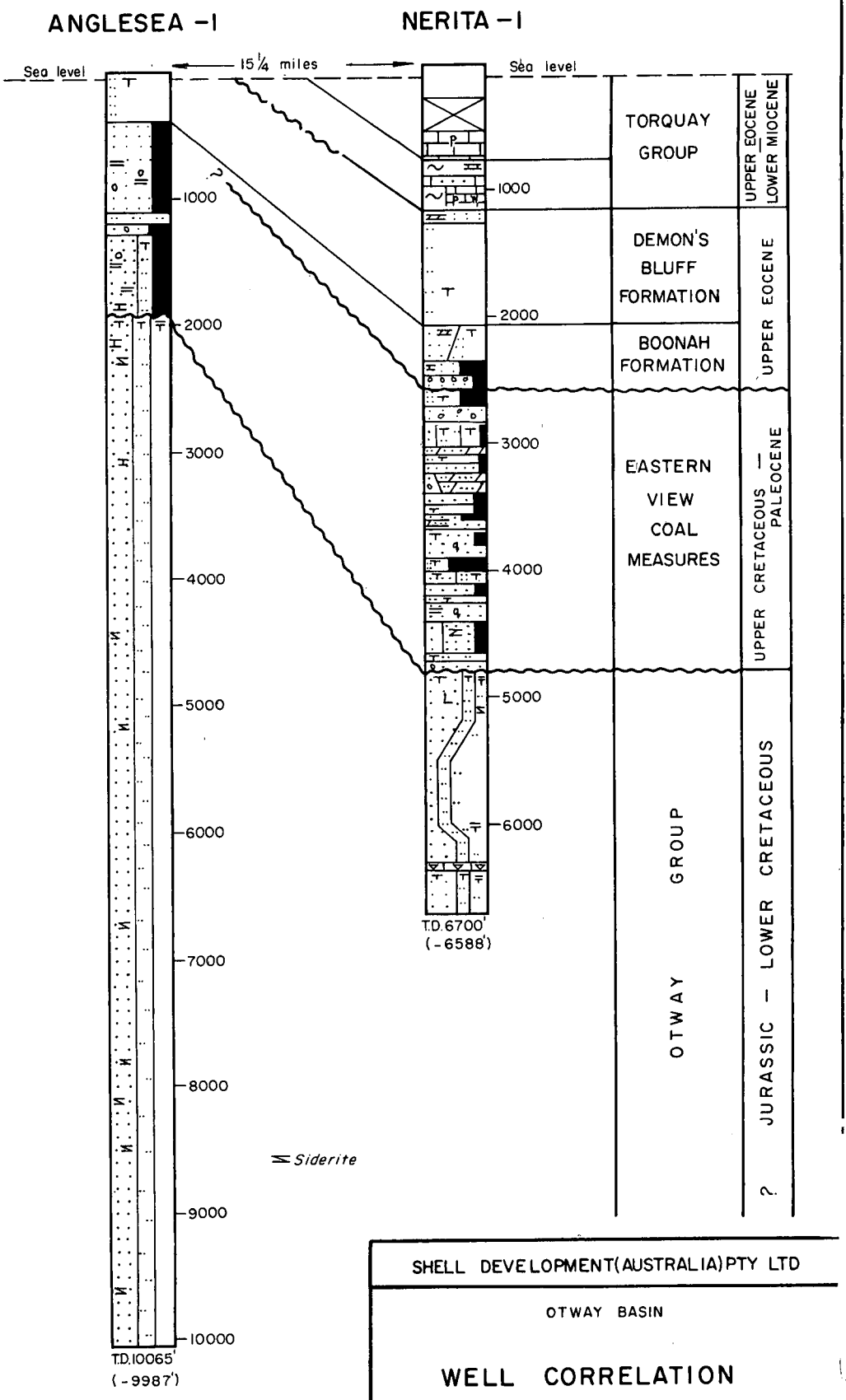
GEOLOGY

Stratigraphy

The stratigraphic sequence encountered in Nerita No. 1 Well is shown in the following Table.

Age	Rock Unit	Depth Intervals (feet)	Thickness (feet)
Upper Eocene - Lower Miocene	Torquay Group	Seabed - 1180	823+
Upper Eocene	Demon's Bluff Formation	1180 - 2091	911
Upper Eocene	Boonah Formation	2091 - 2555	464
----------	Unconformity ----------		
Upper Cretaceous-Palaeocene	Eastern View Coal Measures	2555 - 4798	2243
----------	Unconformity ----------		
Lower Cretaceous	Otway Group	4798 - 6700(T.D.)	1902+

Fig. 3



SHELL DEVELOPMENT(AUSTRALIA)PTY LTD

OTWAY BASIN

WELL CORRELATION

ANGLESEA-1 — NERITA-1

Author: Geological Dept.	Date: November 1967
Report: W C R	Drawing No: 2092

The Upper Cretaceous and lower Tertiary section in the offshore part of the Torquay Sub-basin, as drilled in Nerita No. 1, is basically different from that in the remainder of the Otway Basin, and in fact shows greater similarity to the Gippsland sequence. In particular, the Upper Cretaceous and lower Tertiary transgressive - regressive cycles in the Port Campbell Embayment are absent in the Torquay Sub-basin, and the Eastern View Coal Measures have no lithological equivalent in the Port Campbell Embayment. The stratigraphy of the section in Nerita No. 1 is based on the local nomenclature defined by Raggatt and Crespin in coastal exposures of the Lower Cretaceous and Tertiary along the western margin of the Sub-basin. The only probable Upper Cretaceous previously known in the Sub-basin was penetrated in Anglesea No. 1 Well, drilled in 1962.

Relevance to Occurrence of Petroleum

No hydrocarbon indications were noted from cuttings or sidewall cores, but minor shows of methane and traces of ethane and propane were recorded on the mud-return gas detector in the Eastern View Coal Measures, from 2850 feet downward and in the Otway Group.

Petrophysical evaluation of the section drilled in Nerita No. 1 shows all sands to be 100 percent water saturated. The formation water is characterized by a gradual and continuous downward increase in salinity from approximately 2000 ppm to a maximum of 25,000 ppm NaCl at total depth.

Sandstones of the Boonah Formation and the Eastern View Coal Measures show locally fair porosities. Three Schlumberger F.I.T.'s taken in this section at 2404, 3670 and 4777 feet recovered only fresh to brackish water. Sandstones in the Otway Group are too tight throughout to be regarded as potential reservoirs and did not warrant testing.

Porosity and Permeability of Sediments Penetrated

No cores were cut in Nerita No. 1 and, consequently, no direct measurements are available on porosity and permeability of the sediments.

Calculated values of porosities were obtained from the Formation Density log. For sands and sandstones of the Boonah Formation and Eastern View Coal Measures porosity values range from 21-31% and for the sandstones of the Otway Group values from ?25% to less than 10% were determined.

Porosities as described from sidewall cores give generally lower values, partly due to impact compaction of the sample, but also due to the presence of much clayey matrix in the unconsolidated sands, which undoubtedly accounts for part of the porosity value indicated in the FDC log.

Contribution to Geological Concepts resulting from Drilling

Before drilling Nerita No. 1 Well it was known from surface and subsurface geological studies by various authors that in its post-Lower Cretaceous development the Torquay Sub-basin differed in many respects from the remainder of the Otway Basin.

The marine seismic surveys undertaken by Shell Development and the drilling of Nerita No. 1 have confirmed the validity of this concept and at the same time have provided much new information leading to a better understanding of the geological history of the Torquay Sub-basin:

(i) The 1902 feet of Otway Group sediments penetrated showed similar characteristics to the sediments of this Group elsewhere, thus confirming once more the uniformity of sedimentary development in the Otway Basin during the Lower Cretaceous. In Nerita No. 1, as elsewhere, sandstones of the Otway Group were found to be too tight to have any reservoir possibilities.

(ii) The Upper Aptian-Upper Albian Coptospora paradoxa Zone found in the upper 2000 feet of the Otway Group in Pecten No. 1-1A in the Port Campbell Embayment is missing in Nerita No. 1, indicating comparatively deeper erosion of the Otway Group at the Nerita location.

(iii) The presence of Upper Cretaceous sediments in the offshore part of the Torquay Sub-basin, a possibility which was suggested previously in several studies, was definitely established. The lower 650 feet (approx.) of the Eastern View Coal Measures are of Upper Cretaceous age and are overlain by a section approximately 350 feet thick which has to be considered as an Upper Cretaceous - Palaeocene transition zone.

(iv) An angular unconformity was found at the top of the Eastern View Coal Measures, separating this formation from an overlying sequence of similar lithology, the Boonah Formation. Previously known only from limited surface outcrops, the Boonah Formation shows much more variety in lithology than originally described.

(v) The post-Otway Group rock units in Nerita No. 1 are readily correlated with the stratigraphic units established previously in the onshore part of the Sub-basin and are equally different from the remainder of the Otway Basin. A main difference is the absence of transgressive-regressive cycles in the Upper Cretaceous and lower Tertiary as are found in the Port Campbell Embayment. In fact, the continental Eastern View Coal Measures and Boonah Formation seem to have more resemblance to the sequence in the Gippsland Basin.

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SHELL DEVELOPMENT (AUSTRALIA) PTY LIMITED, 1967: Nerita No. 1, offshore Victoria, Well Completion Report. Unpublished P.S.S.A. Report.

SMIT, A., and DUERST, T., 1967: Report on the marine seismic survey PEP 22/D1, Otway Basin, Victoria. Unpublished report for Shell Development (Australia) Pty Limited.

ADDITIONAL DATA FILED IN THE BUREAU OF MINERAL RESOURCES

The following additional data relating to Nerita No. 1 Well have been filed in the Bureau of Mineral Resources, Canberra, and are available for reference:

(i)	Well Completion Report, by Shell Development (Australia) Pty Limited	21 pp.
	Appendix 1 : List of Schlumberger Logs run in Nerita-1	1 p.
	Appendix 1A : Summary of Schlumberger Logs	1 p.
	Appendix 2 : Petrophysical Evaluation Nerita-1	2 pp.
	Appendix 3 : Deviation Surveys Record Nerita-1	1 p.
	Appendix 4 : Sidewall Core Descriptions Nerita-1	14 pp.
	Appendix 5 : Palaeontological Report Nerita-1, by S.D.A. Geological Laboratory	5 pp.
	Appendix 6 : Palynological Report on Shell Nerita No. 1 Well, 2106-6456 feet, by M.E. Dettmann, University of Queensland	18 pp.
	Appendix 7 : Palynological Examination of Tertiary Samples from Nerita-1, by B.I.P.M., The Hague	2 pp.
	Appendix 8 : Velocity Survey Nerita-1, by Shell Development (Australia) Pty Limited	6 pp.

(ii) Daily Drilling Reports for the period 17th June, 1967 to 16th August, 1967.

(iii) Schlumberger Well Logs including the following:

(a) Induction - Electrical Log

Run 1 : 617 - 1300 feet (scale 1", 5" : 100 ft)
Run 2 : 1296 - 3224 feet (scale 1", 5" : 100 ft)
Run 3 : 3216 - 6678 feet (scale 1", 5" : 100 ft)

(b) B.S.G.R.C. Log

Run 1 : 617 - 1280 feet (scale 1", 5" : 100 ft)
Run 2 : 1296 - 3208 feet (scale 1", 5" : 100 ft)
Run 3 : 3216 - 6664 feet (scale 1", 5" : 100 ft)

(c) Formation Density Log

Run 1 : 1296 - 3224 feet (scale 1", 5" : 100 ft)
Run 2 : 3216 - 6678 feet (scale 1", 5" : 100 ft)

(d) Microlog

Run 1 : 1296 - 3224 feet (scale 1", 5" : 100 ft)
Run 2 : 3216 - 6679 feet (scale 1", 5" : 100 ft)

(e) Neutron Log

Run 1 : 3216 - 6678 feet (scale 1", 5" : 100 ft)

(f) Cement Bond Log

Run 1 : 342 - 1296 feet (scale 1", 5" : 100 ft)
Run 2 : 690 - 3216 feet (scale 1", 5" : 100 ft)

(g) Continuous Dipmeter

Run 1 : 617 - 1287 feet (scale 2", 5" : 100 ft)
Run 2 : 1296 - 3220 feet (scale 2", 5" : 100 ft)
Run 3 : 3216 - 6675 feet (scale 2", 5" : 100 ft)

(h) Formation Tester

Run 1 : 2404, 3670, 4777 feet (scale 5" : 100 ft)

COMPOSITE WELL LOG — PECTEN No. 1A
SHELL DEVELOPMENT (AUSTRALIA) PTY. LTD.

PETROLEUM TENEMENT: PEP 22 — HELD BY FROME-BROKEN HILL

STATE: VICTORIA

PORTLAND 4 MILE SHEET

OTWAY BASIN

WELL STATUS: DRY AND ABANDONED

LOCATION: E 558,514 y
N 230,870 y ATM ZONE 6
ELEVATION: D.F. 112' ABOVE M.S.L.
SEA BOTTOM DEPTH 205' BELOW M.S.L.
DATE SPUDDED: 12th APRIL 1967
DATE T.D. REACHED: 4th JUNE 1967
DATE RIG RELEASED: 14th JUNE 1967
TOTAL DEPTH, DRILLER: 9,352'
All depths below D.F.

HOLE SIZE:

INCHES	FROM	TO
36	SEA-BED	386'
26	386'	864'
17 1/2	864'	2,186'
12 1/4	2,186'	6,263'
8 1/2	6,263'	9,352'

CASING:

SIZE	WEIGHT	GRADE	DEPTH	CEMENT	CEM. TO
30"	310 lbs./ft.	—	378'	650 bgs	SEA-BED
20"	94 lbs./ft.	J55	849'	1410 bgs	SEA-BED
13 3/8"	61/72 lbs./ft.	J55/N80	2,164'	1350 bgs	SEA-BED
9 5/8"	435/47 lbs./ft.	J55	6,245'	1900 bgs	2,320'

CEMENT PLUGS:

FROM	TO	CEMENT
6,100'	5,100'	200 bgs
595'	327'	100 bgs

BRIDGE PLUGS: BAKER MODEL N AT 6,135' AND AT 615'

PERFORATIONS:

TYPE	FROM	TO	NO. FT
2 1/8" UNIJET	5,852'	5,834'	4
2 1/8" UNIJET	5,822'	5,810'	4

DRILLED BY: SEDCO 135E
DRILLING METHOD: ROTARY
MUDLOGGING BY: GEOSERVICES
LOGGED BY: SCHLUMBERGER
CEMENTED BY: HALLIBURTON
WELL HEAD FITTINGS: VETCO TYPE PERMANENT GUIDE BASE

INDUCTION LOG DATA				
RUN NUMBER	1	2	3	4
DATE	21-4-1967	10-5-1967	26-5-1967	4-6-1967
FOOTAGE LOGGED	1,335'	4,097'	2,141'	1,152'
LOGGED FROM	2,184'	6,261'	8,387'	9,352'
LOGGED TO	849'	2,164'	6,246'	8,200'
TOTAL DEPTH ELECTRIC LOG	2,185'	6,262'	8,388'	9,353'
TOTAL DEPTH DRILLER	2,200'	6,260'	8,381'	9,350'
CASING SHOE ELECTRIC LOG	849'	2,164'	6,246'	6,246'
CASING SHOE DRILLER	849'	2,164'	6,245'	6,245'
BIT SIZE	12 1/4"	12 1/4"	8 1/2"	8 1/2"
MUD TYPE	SPERSENE / XP 20	SPERSENE / XP 20	SPERSENE / XP 20	SPERSENE / XP 20
WATER LOSS Ccs/30 mins.	4·8	5·2	4·9	5·5
WEIGHT lbs/cu.ft.	69·5	72	77·5	79·5
VISCOSITY (MARSH) sec	58	38	49	46
Ph	9·3	9·8	10	9·9
Rm Ωm²/m	1·27 at 80°F	1·34 at 78°F	1·24 at 76°F	0·92 at 94°F
Rm at B.H.T.	1·0 at 104°F	0·66 at 146°F	0·54 at 182°F	0·42 at 205°F
Rmf	1·97 at 61°F	1·39 at 74°F	1·11 at 70°F	0·99 at 66°F
Rmc	—	1·10 at 74°	1·94 at 70°	1·94 at 66°
MAX. RECORDED TEMP°F	104	146	182	205
RECORDED BY	GREAU	GREAU	GREAU	GREAU
WITNESS	LE CALVEZ	LE CALVEZ	LE CALVEZ	LE CALVEZ

OTHER LOGS			
TYPE OF LOG	FROM	TO	RUN NO
SONIC CALIPER	6,250'	849'	1, 2
GAMMA RAY - NEUTRON	849'	2,192'	1
GAMMA RAY	6,261'	2,164'	2
FORMATION DENSITY COMPENSATED	9,352'	2,164'	1, 2, 3
MICROLOG — CALIPER	6,261'	2,164'	1
CEMENT BOND LOG	6,246'	310'	1, 2
SONIC - GAMMA RAY - CALIPER	9,338'	6,246'	3, 4
NEUTRON	9,353'	5,700'	2
GAMMA RAY CASING COLLAR LOCATOR	6,130'	5,710'	5

LITHOLOGY

- SANDSTONE
- SAND
- SILTSTONE
- SILT
- SHALE
- CLAYSTONE - MUDSTONE
- CLAY
- MARL
- LIMESTONE
- CRYSTALLINE LIMESTONE
- DOLOMITE
- COAL
- SANDSTONE (STREAKS OR LENSES)
- SAND
- SILTSTONE - SILT
- SHALE - CLAYSTONE
- LIMESTONE
- DOLOMITE
- CONGLOMERATIC (MIXTURES OR MATRICES)
- SANDY
- SILTY
- ARGILLACEOUS
- MARLY
- CALCAREOUS
- DOLOMITIC
- COALY, CARBONACEOUS
- INTERBEDS (70% SHALE / 30% SAND)
- ROCK TYPE UNKNOWN

WELL SYMBOLS

- 2 — CORE, INTERVAL, RECOVERY, NUMBER
- SIDEWALL CORE RECOVERED
- 20" 849' C 1410 — CASING SHOE, CEMENTED, DIAMETER, DEPTH, SACKS OF CEMENT
- 5810'-5822' — PERFORATED INTERVAL
- 1 — FORMATION TEST INSIDE CASING, INTERVAL, NUMBER
- PB 327' 10-VI-1967 — HOLE PLUGGED BACK TO 327' 10th. JUNE 1967
- PB 615' 10-VI-1967 — HOLE BRIDGED AT 615' 10th. JUNE 1967 B.P: BRIDGE PLUG WLBP: WIRE LINE BRIDGE PLUG
- GAS SHOW INTERVAL
- V 25 bbls. — DRILLING FLUID LOSS, 25 BBLS.

FOSSILS

- SHELL DEBRIS OR BIOCLASTS
- ECHINOID
- BRYOZOA
- FORAMINIFERA IN GENERAL

CARBONATE TEXTURES

- w FINE GRAINED WACKESTONE
- p " " PACKSTONE
- g " " GRAINSTONE

CLASTICS COMPOSITION

- q QUARTZ CLASTS, FINE GRAINED
- Q " " , MEDIUM, TO COARSE GRAINED
- l LITHIC " , FINE GRAINED
- L " " MEDIUM TO COARSE GRAINED
- (l) SUBLITHIC " FINE GRAINED
- (L) SUBLITHIC CLASTS MEDIUM TO COARSE GRAINED
- f FELDSPATHIC " FINE GRAINED
- F " " MEDIUM TO COARSE GRAINED
- (f) SUBFELDSPATHIC " FINE GRAINED
- (F) " " MEDIUM TO COARSE GRAINED

(▽), (w) BRACKETS APPLIED TO A SYMBOL MEANS "LOW PERCENT", "OCCASIONAL", "RARE" OR "APPROXIMATE"

OTWAY PECTEN 1A DRG. No 2041

PLATE 1
Sheet 2

COMPOSITE WELL LOG
SHELL DEVELOPMENT (AUSTRALIA) PTY. LTD.
PECTEN No. 1A

DATE

DRILLING RATE min/foot and BIT DATA 0 — 50

1-5-1967: 12¼" YT1A 140rpm 550g 25,000lbs
2-5-1967: 12¼" YT1A 140rpm 550g 25,000lbs
3-5-1967: 12¼" YT1A 130rpm 550g 25,000lbs
4-5-1967: 12¼" YT3A 140-100rpm 760g 40,000lbs
5-5-1967: 12¼" X1G 100rpm 760g 30-29,000lbs
6-5-1967: 12¼" YT3A 100rpm 750-550g 29-35,000lbs
7-5
8-5-1967: 12¼" YT1A 100rpm 1100g 35,000lbs
9-5

PERCENTAGE LOG

FOSSILS

MUD GAS DETECTION % Methane

0 01 02 03 4 5 6 7 8 9 10
Change of Scale

Return to Standard Scale

0 01 02 03 4 5 6 7 8 9 10
Change of Scale

DEPTH

DEVIATION °(deg)

DIPS from continuous dip meter survey

CASING CORES PLUGS PERFORATED

Core No 2

PB 5500
9-VI 1967

Core No. 3

5810-5822
5834-5852

Core No. 4

INTERPRETED LITHOLOGY

TESTS HYDROCARBON SHOWS

② DST 5810
7-VI-67 5852
Packer not set
test not attempted
due to not enough
daylight left

③ DST 5810
8-VI-67 5852
484m + 615/556/
212m 1200 ppm
12,500 ppm
3 BW + 236/317/2308
IFBHP 1537 to 1971
FFBHP 1597 to 2241
SIBHP 2394/2386 m
HP 3153

S.P. LOG 100 millivolts

INDUCTION ELECTRICAL LOG Resistivity ohms — m²/m

16" Normal 0 — 4 — 20 — 200
Induction 0 — 20 — 200

GAMMA RAY API units 0 — 100

SONIC LOG Interval transit time microseconds per foot

140 — 90 — 40
190 — 140

CALIPER LOG Hole diameter in inches

7 8 9 10 11 12 13 14 15

MICROLOG — MICROLATEROLOG Resistivity ohms — m²/m

0 — 5 — 10
0 — 5 — 10

DEPTH

STRATIGRAPHY

2700 2800 2900 3000 3100 3200 3300 3400 3500 3600 3700 3800 3900 4000 4100 4200 4300 4400 4500 4600 4700 4800 4900 5000 5100 5200 5300 5400 5500 5600 5700 5800 5900 6000

TRIDACNATHUS MEMBER
DILWYN FORMATION
RIVERNOOK MEMBER
WANGERRIP GROUP
PEBBLE POINT FORMATION
CURDIES FORMATION
PAARATTE FORMATION
BELFAST MUDSTONE
SHERBROOK GROUP
FLAXMANS Fm
WAARRE Fm

T ← S

UPPER PALEOCENE

MIDDLE

UPPER CRETACEOUS

Nothofagidites assemblage

SANTONIAN — UPPERMOST CRETACEOUS

XA

CONIACIAN — SANTONIAN

XB – XA Transition

XB

CENOMANIAN — TURONIAN

Tricolpites pachyexinus assemblage

Appendicisporites distocarinatus → *Clavifera triplex*

Appendicisporites jansonii assemblage

KL

OTWAY PECTEN 1A DRG. No 2041

PLATE 1
Sheet 3

COMPOSITE WELL LOG
SHELL DEVELOPMENT (AUSTRALIA) PTY. LTD.
PECTEN No. IA

DATE | DRILLING RATE min/foot and BIT DATA (0–50) | PERCENTAGE LOG | FOSSILS | MUD GAS DETECTION % Methane | DEPTH | DEVIATION (deg) | DIPS from continuous dip meter survey | CASING CORES PLUGS PERFORATED | INTERPRETED LITHOLOGY | TESTS HYDROCARBON SHOWS | S.P. LOG 100 millivolts | INDUCTION ELECTRICAL LOG Resistivity ohms — m²/m (16" Normal 0–4 / 0–20 / 0–60; Induction 0–20 / 0–200) | GAMMA RAY API units 0–100 | SONIC LOG Interval transit time microseconds per foot (140–90–40 / 190–140) | CALIPER LOG Hole diameter in inches (7 8 9 10 11 12 13 14 15) | MICROLOG — MICROLATEROLOG Resistivity ohms — m²/m (0–5–10 / 0–5–10) | DEPTH | STRATIGRAPHY

DRILLING RATE / BIT DATA:
- 9-5-1967: 12¼" XIG 100rpm 800g 35,000lbs
- 16-5-1967: 8 7/8" OWV 100rpm 350g 25,000lbs
- 17-5-1967: 8½ OSC 80rpm 350g 45,000lbs
- 18-5-1967: 8½" OSC 60rpm 350g 25,000lbs
- 19-5-1967: 8½" OSCIG 60-80rpm 350-375g 25-28,000lbs
- 20-5-1967: 8½" OSC3 80rpm 480g 28-37,000lbs
- 21-5-1967: 8½" OSC6 80rpm 380g 37,000lbs
- 22-5: 8½" OSC3 80rpm 380g 26,000lbs
- 23-5-1967: 8½" OSCIG 80rpm 380g 36,000lbs
- 24-5-1967: 8½" OSC3 80rpm 380g 36,000lbs
- 25-5-1967: 8½" OSC3 80rpm 380g 36,000lbs
- 26-5: 8½" OSCIG 80rpm 380g 36,000lbs
- 27-5-1967: 8½" OSC3 80rpm 380g 36,000lbs
- 28-5-1967: 8½" OSCIG 90rpm 380g 33,000lbs
- 29-5-1967: 8½" OSCIG 90rpm 380g 33,000lbs
- 30-5: 8½" OSC 90rpm 380g 33,000lbs
- 31-5: 8½" OSC3 80rpm 380g 25,000lbs
- 1-6-1967: 8½" OSCIG 80rpm 380g 35,000lbs
- 2-6-1967: 8½" OSC 100rpm 380g 35,000lbs
- 3-6-1967: 8½" OWV 100rpm 380g 35,000lbs

CASING CORES PLUGS PERFORATED: WLBP6135 5-VI-1967; 9⅞" 6245 C 1900

TESTS HYDROCARBON SHOWS: 5/8 × 3/8 × 1/4 × 1/8; DST 1 VI-67 To test Bridge Plug at 6135; 67m; 3/32"; V 25 bbls

Return to Standard Scale 1 2 3 4 5 6 7 8WC; 10 20 40 60 80

RUN 3 (S.P. LOG, INDUCTION ELECTRICAL LOG, GAMMA RAY, SONIC LOG, CALIPER LOG)

RUN 1 MICROLATEROLOG

RUN 4 (S.P. LOG, INDUCTION ELECTRICAL LOG, GAMMA RAY, SONIC LOG, CALIPER LOG, MICROLOG — MICROLATEROLOG)

DEPTH: 6000, 6100, 6200, 6300, 6400, 6500, 6600, 6700, 6800, 6900, 7000, 7100, 7200, 7300, 7400, 7500, 7600, 7700, 7800, 7900, 8000, 8100, 8200, 8300, 8400, 8500, 8600, 8700, 8800, 8900, 9000, 9100, 9200, 9300, 9400

T.D. 9352 3-VI-1967

STRATIGRAPHY

KL

CRETACEOUS

LOWER

UNIT 2

UPPER APTIAN OR YOUNGER

Coptospora paradoxa or Crybelosporites striatus

OTWAY GROUP

UNIT 1

Coptospora paradoxa

ALBIAN

OTWAY GROUP

UNIT 1

ALBIAN

OTWAY PECTEN IA DRG. No 2041

COMPOSITE WELL LOG — NERITA No. 1
SHELL DEVELOPMENT (AUSTRALIA) PTY. LTD.

PETROLEUM TENEMENT: PEP 22 —— HELD BY FROME-BROKEN HILL PTY. LTD.

STATE: VICTORIA

QUEENSCLIFF 4 MILE SHEET

OTWAY BASIN

WELL STATUS: DRY AND ABANDONED

LOCATION E 231,346y
N 236,677y ATM ZONE 7
ELEVATION D.F. 112' ABOVE M.S.L.
SEA BOTTOM DEPTH 245' BELOW M.S.L.
DATE SPUDDED 1st JULY 1967
DATE T.D. REACHED 30th JULY 1967
DATE RIG RELEASED 17th AUGUST 1967
TOTAL DEPTH, DRILLER 6,700'
ALL DEPTHS BELOW D.F.

HOLE SIZE:

INCHES	FROM	TO
36	SEA-BED	470'
26	470'	629'
17 1/2	629'	1,305'
12 1/4	1,305'	3,226'
8 1/2	3,226'	6,700'

CASING:

SIZE	WEIGHT	GRADE	DEPTH	CEMENT	CEM. TO
30"	310 lbs/ft		462'	1280 bgs	SEA-BED
20"	94 lbs/ft	H40	618'	680 bgs	SEA-BED
13 3/8"	72 lbs/ft	N80	1,295'	630 bgs	500'
9 5/8"	47/43.5 lbs/ft	P110/N80	3,216'	730 bgs	1000'

CEMENT PLUGS:

FROM	TO	CEMENT
5,010'	2,900'	800 bgs
2,800'	2,092'	250 bgs
600'	370'	80 bgs

BRIDGE PLUGS: BAKER MODEL N AT 2806'
BAKER MODEL K AT 610'
(converted to BP)

PERFORATIONS: TYPE FROM TO NO. FT
NOT APPLICABLE

DRILLED BY: SEDCO 135E
DRILLING METHOD: ROTARY
MUDLOGGING BY: GEOSERVICES
LOGGED BY: SCHLUMBERGER
CEMENTED BY: HALLIBURTON
WELL HEAD FITTINGS: VETCO TYPE PERMANENT GUIDE BASE

INDUCTION LOG DATA			
RUN NUMBER	1	2	3
DATE	10-7-1967	17-7-1967	30-7-1967
FOOTAGE LOGGED	683'	1,928'	3,461'
LOGGED FROM	1,300	3,224'	6,679'
LOGGED TO	617'	1,296'	3,218'
TOTAL DEPTH-ELECTRIC LOG	1,301'	3,225'	6,680'
TOTAL DEPTH-DRILLER	1,305'	3,227'	6,700'
CASING SHOE-ELECTRIC LOG	617'	1,296'	3,218'
CASING SHOE-DRILLER	618'	1,295'	3,216'
BIT SIZE	12 1/4"	12 1/4"	8 1/2"
MUD TYPE	SPERSENE / XP 20	SPERSENE/XP 20	SPERSENE/XP 20
WATER LOSS Ccs/30 mins	6·4	4·0	6·1
WEIGHT lbs/cu.ft.	68·5	73	76
VISCOSITY (MARSH) sec	43	39	42
Ph	9·5	9·5	10·4
Rm Ωm²/m	1·35 at 64°F	1·15 at 80°F	1·14 at 86°F
Rm at B.H.T.	0·9 at 100°F	0·8 at 111°F	0·64 at 150°F
Rmf	1·15 at 70°F	1·16 at 68°F	1·28 at 73°F
Rmc	——	1·90 at 68°F	2·31 at 73°F
MAX RECORDED TEMP°F	100°	111°	150°
RECORDED BY	GREAU	GREAU	GREAU
WITNESS	LILLIE	DE NYS	LE CALVEZ

OTHER LOGS			
TYPE OF LOG	FROM	TO	RUN NO
BHC SONIC/CALIPER/GAMMA RAY LOGGING	6,664'	617'	1, 2, 3
DIPMETER - CONTINUOUS	6,675'	617'	1, 2, 3
FORMATION DENSITY COMPENSATED	6,678'	1,296'	1, 2
MICROLOG - CALIPER	6,679'	1,296'	1, 2
NEUTRON LOGGING	6,678'	1,296'	1, 2
CEMENT BOND LOGGING	3,216'	342'	2, 3

LITHOLOGY

- SANDSTONE / SAND
- SILTSTONE / SILT
- SHALE / CLAYSTONE - MUDSTONE / CLAY
- MARL
- LIME WACKESTONE *1
- LIME PACKSTONE *1
- LIME GRAINSTONE *1
- DOLOMITE
- COAL
- CHERT

(CLASTIC ROCKS; CARBONATE ROCKS)

*1 The textural classification of the carbonates is based on R.J. Dunham (1962): Classification of carbonate rocks according to depositional texture. A.A.P.G. Mem. 1

- SANDSTONE / SAND
- SILTSTONE - SILT
- SHALE - CLAYSTONE
- LIMESTONE
- DOLOMITE

(STREAKS OR LENSES)

- CONGLOMERATIC
- SANDY - VERY SANDY
- SILTY
- ARGILLACEOUS
- MARLY
- CALCAREOUS
- DOLOMITIC
- COALY, CARBONACEOUS

(MIXTURES OR MATRICES)

- INTERBEDS (70% SHALE/30% SAND)
- ROCK TYPE UNKNOWN

WELL SYMBOLS

- SIDEWALL CORE RECOVERED
- SIDEWALL CORE NOT RECOVERED
- 13 3/8" / 1295' — 630 — CASING SHOE, DIAMETER / DEPTH, SACKS OF CEMENT
- PB 2900' / 2-VIII-67 — HOLE PLUGGED BACK TO 2900' 2nd AUGUST 1967
- BP 2806' / 3-VIII-67 — HOLE BRIDGED AT 2806' 3rd AUGUST 1967 B.P. : BRIDGE PLUG
- GAS SHOW

COMPOSITION OF FRAMEWORK FRACTION (>20μ) OF SILICICLASTIC ROCKS

Q	MEDIUM - COARSE	QUARTZ
q	FINE	QUARTZ
F	MEDIUM - COARSE	FELDSPATHIC *2
f	FINE	FELDSPATHIC *2
L	MEDIUM - COARSE	LITHIC *2
l	FINE	LITHIC *2

*2 Brackets applied to letter symbol indicate sub -, e.g. (F) = sub-feldspathic, medium-coarse

FOSSILS *3

- SHELL DEBRIS OR BIOCLASTS
- LAMELLIBRANCHS, FRAGMENTS OF -
- ECHINOIDS, FRAGMENTS OF -
- GASTROPODS
- FORAMINIFERA IN GENERAL
- BRYOZOA
- PLANT REMAINS

*3 Brackets applied to symbol indicate rare occurrence

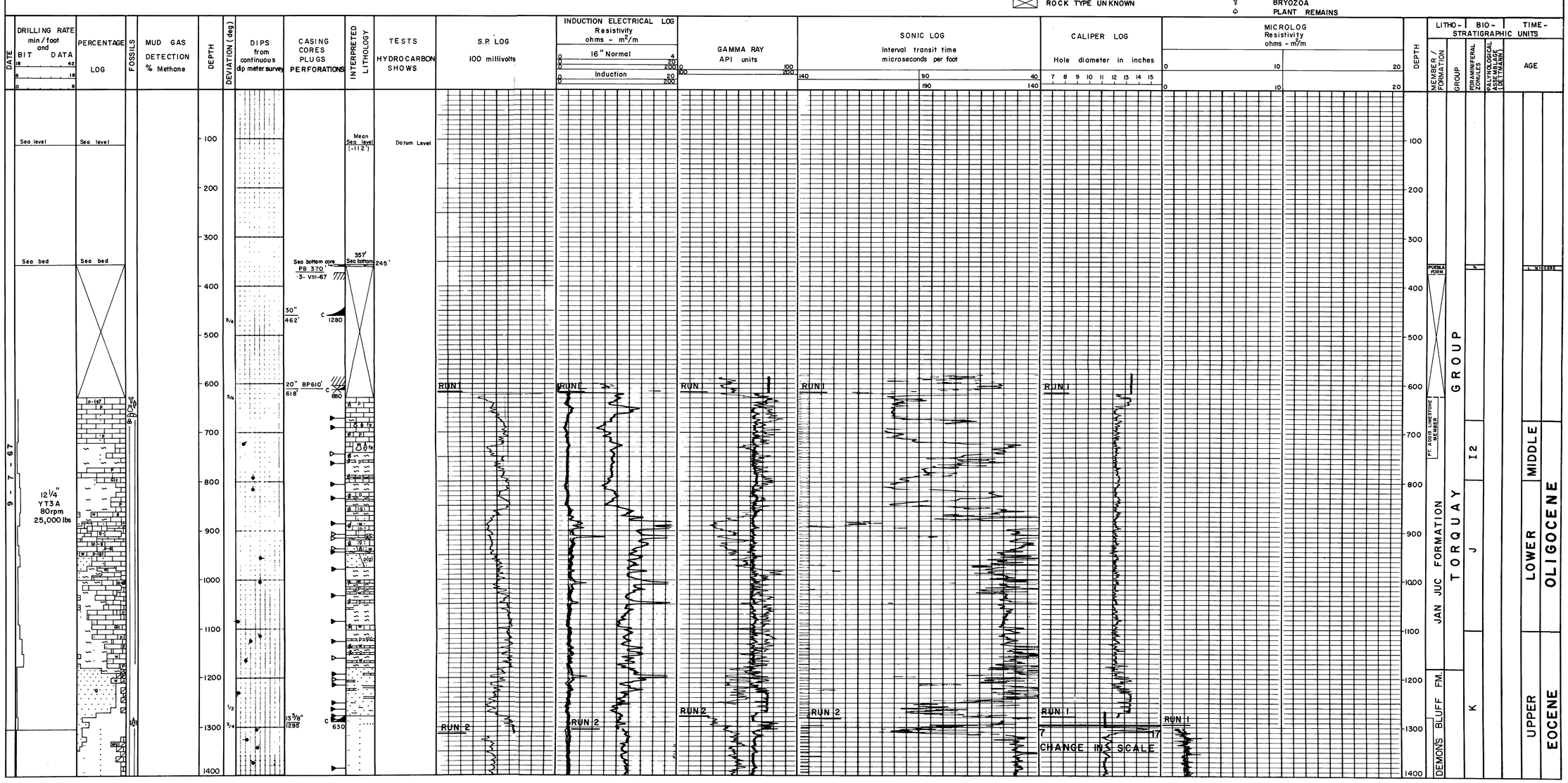

PLATE 2
Sheet 2

COMPOSITE WELL LOG
SHELL DEVELOPMENT (AUSTRALIA) PTY. LTD.
NERITA No. 1

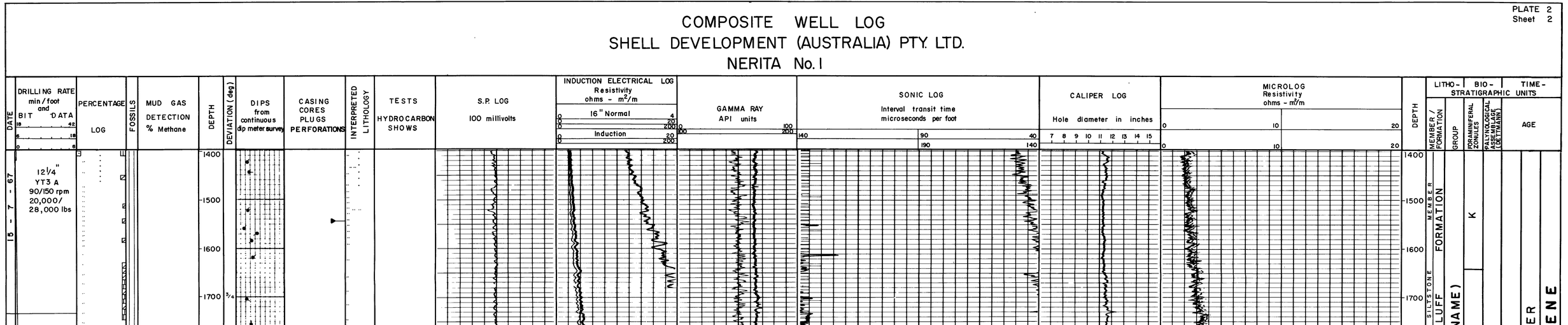

PLATE 2
Sheet 3

COMPOSITE WELL LOG
SHELL DEVELOPMENT (AUSTRALIA) PTY. LTD.
NERITA No. 1

DATE

DRILLING RATE min/foot and BIT DATA
- 22-7-67: 8½" OSC1GJ 75 rpm 35,000 lbs; D 2°
- 23-7-67: 8½" OSC1GJ 65 rpm 34,0 00 lbs; 8½" OWVJ 40/60 rpm 35,000 lbs
- 24-7-67: 8½" OSC1GJ 65 rpm 35,000 lbs; 8½" OSC 3J 45/60 rpm 35,000 lbs
- 25-7-67: 8½" OSC3J 55 rpm 30,000 lbs; 8½" OSC3J 60 rpm 30,000 lbs
- 26-7-67: 8½" OSC3J 90 rpm 30,000 lbs
- 27-7-67: 8½" OSCJG 90 rpm 30,000 lbs
- 28-7-67: 8½" OSC1G 90 rpm 30,000 lbs; 8½" OSC3J 90 rpm 30,000 lbs
- 29-7-67: 8½" OSC1G 60 rpm 30,000 lbs

PERCENTAGE LOG

FOSSILS

MUD GAS DETECTION % Methane

DEPTH

DEVIATION (deg)

DIPS from continuous dip meter survey

CASING CORES PLUGS PERFORATIONS
- PB 5010' 2-VIII-67
- 30-VII-1967 TD 6700' (-6588')

INTERPRETED LITHOLOGY

TESTS HYDROCARBON SHOWS
- Schlumberger Fm Inv Test

S.P. LOG 100 millivolts

INDUCTION ELECTRICAL LOG Resistivity ohms - m²/m
- 16" Normal
- Induction

GAMMA RAY API units

SONIC LOG Interval transit time microseconds per foot

CALIPER LOG Hole diameter in inches

MICROLOG Resistivity ohms - m²/m

DEPTH

LITHO-STRATIGRAPHIC UNITS

MEMBER / FORMATION: EASTERN VIEW COAL MEASURES

GROUP: OTWAY GROUP

BIO-STRATIGRAPHIC UNITS

FORAMINIFERAL ZONULES

PALYNOLOGICAL ASSEMBLAGE ZONES (THIS WELL)
- *Nothofagidites* — P. *C. striatus*
- *Dictyotosporites speciosus* zone
- *Crybelosporites striatus* subzone of *Dictyotosporites speciosus* zone

TIME-STRATIGRAPHIC UNITS

AGE
- SENONIAN — UPPER CRETACEOUS
- UPPER APTIAN — LOWER CRETACEOUS
- INDETERMINABLE

W.C.R. Nerita Encl 3 Drawing No2132 B