

**APPLICATION FOR COMMONWEALTH  
SUBSIDY**

**EXPLORATION DRILLING**

**NARIMBA #1**

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APPLICATION FOR COMMONWEALTH SUBSIDY EXPLORATION DRILLING

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## ESSO AUSTRALIA LTD.

APPLICATION FOR COMMONWEALTH SUBSIDY  
EXPLORATION DRILLING - NARIMBA-1 WELL

Under the terms of the Petroleum Search Subsidy Act 1959-1969 and the press release by Hon. R.W. Swartz, Minister of National Development, in March 1972, Esso Exploration and Production Australia, Inc. as operator of the Bass Basin portion of Exploration Permit, T/5P, held by Hematite Petroleum Pty. Ltd, hereby respectfully applies for approval for a grant of subsidy on the drilling of Narimba-1, offshore Bass Basin, Tasmania.

The specific information required as set out in the Department of National Development's "Guide to Applicants and Operators" dated January, 1970, is given below.

- i) Name of Project  
Esso Narimba-1
- ii) Name of Applicant  
Esso Exploration and Production Australia, Inc.
- iii) Registered Address  
Esso Exploration and Production Australia Inc.  
C/- Price Waterhouse Nominees (Victoria) Pty. Ltd.  
The National Mutual Centre,  
447 Collins Street,  
MELBOURNE. VIC. 3000.
- iv) Nominee and Address of all Communications  
Mr. K.A. Richards,  
Exploration Manager,  
Esso Australia Ltd.,  
Box 4249, G.P.O.,  
SYDNEY. N.S.W. 2001.
- v) Location of Project Area  
Narimba-1 will be located 45 miles offshore in the Bass Basin, Tasmania in Permit T/5P, held by Hematite Petroleum Pty. Ltd. The well will be 5.3 miles NW of Pelican-2 and 7.1 miles W of Pelican-3 in 250 feet of water.

The geographic co-ordinates are:

Longitude: 145<sup>0</sup> 43' 53.33" E  
Latitude: 40<sup>0</sup> 16' 16.15" S

X 392,147m E  
Y 5,541,359m N  
A.M.G. Zone 55

The well is located at S.P. 1174 on seismic line B70A-17.

vi) Regional Geology

The Bass Basin is restricted to the offshore area of Tasmania and southern Victoria. Sedimentation has been continuous in some part of the basin from early Cretaceous to Recent time.

The Lower Cretaceous lacustrine and fluviatile greywackes of the Otway Group were deposited within an east-west rift system, the north and south boundaries of which were created by the limits of extensional faulting.

The rocks of Upper Cretaceous through Eocene (the Eastern View Group) represent a continuation of the lacustrine-fluviatile environment except that the quartz sandstones are more mature and develop better reservoir characteristics. From early Paleocene through early Eocene, the nonmarine depositional environment continued, and there is no known lateral equivalent marine edge. A substantial portion of the late Eocene deposits are marginal marine or marine, becoming more marine at the top of the sequence. There is no evidence of channel cut and fill in any of the Eastern View sediments.

Rocks of Oligocene age are mainly marl and mudstone which had slow depositional rates. The site of coarse clastic deposition is confined to the basin margins.

Sedimentation during Early Miocene was similar to the Oligocene whereas Late Miocene through Pliocene is represented by more rapid deposition of marls, bryozoal-skeletal limestones and calcarenites. The loading effect of this rapid deposition resulted in isostatic adjustment of the central portion of the Bass Basin, but this has caused only minor changes from the original basin form.

Wet gas and a minor amount of oil has been discovered in the Bass Basin, but these are non-commercial. All of the hydrocarbons found are in anticlinal culminations within the Eastern View Group.

Narimba-1 is located on a separate anticlinal closure northwest of Pelican-2. Pelican-2 recovered gas/condensate on wire line tests from the early Eocene Lower M.diversus, but reservoir quality (low permeability) makes it a non-commercial discovery.

The Narimba prospect appears to be on the same trend as the Pelican structure and therefore its structural history is similar to Pelican. Anticlinal growth is seen from early Eocene through approximately middle Eocene time.

The crest of the prospect was sealed by interbedded siltstone and shale throughout Eocene time. The syncline or saddle mapped on the intra Lower M.diversus to the southeast apparently formed during the anticlinal folding phase (early Eocene through middle Eocene time) although later northwest tilting of the area has made it less pronounced.

vii) Geophysics

Geophysical control across the structure is good. A closely spaced grid of B72A, B70A and older lines of good to fair quality provide good time and fair to good velocity control. Depths to the intra Lower M.diversus were calculated using an average velocity map to the Top of the Eastern View Group and an acceleration factor method for the interval below the Top of the Eastern View.

The intra Lower M.diversus marker cannot be directly tied to a specific well top or electric log pick at the Pelican-1 or Pelican-2 wells. However, a seismic character correlation can be made which relates the seismic section to the well logs for mapping purposes to establish the structural configuration of the trend.

viii) Suitability of Project for Subsidy

The Narimba-1 well will test a separate anticlinal structure in the Bass Basin. For success the prospect depends on improved reservoir quality and a significant volume of generated hydrocarbons from a paleo drainage area adjacent to, but separate from the Pelican structure.

Although the prospect is situated on trend with Pelican-1 and Pelican-2, these wells have non-commercial qualities of recoverable hydrocarbons.

ix) Geological prognosis and T.D.

<u>AGE</u>	<u>FORMATION</u>	<u>FORMATION TOPS</u>
Miocene	Water Depth	- 250'
Oligocene	Oligocene Seismic Marker	- 4480'
Eocene	"Upper Eocene Shale"	- 5380'
Eocene	TOP OF EASTERN VIEW GROUP	- 5950'
Eocene	Upper <u>M.diversus</u>	- 7350'
Eocene	Lower <u>M.diversus</u>	- 8300'
Eocene	Intra <u>Lower M.diversus</u>	- 9280'
	P.T.D.	10200'
		(drilled depth)

Depths are from mean sea level; for drill depths add 32'.

The well is programmed to 10,200' to evaluate the Eastern View section to a depth where reservoirs are expected to deteriorate. However, the well may be continued to a depth of 11,000' if reservoir characteristics are good and/or the well is encountering shows.

x) Proposed Operations

Exploratory Drilling

Well Name:

Narimba-1

Location:

Long. 145° 43' 53.33" E  
 Lat. 40° 16' 16.15" S

Elevation KB + 32'

Programmed Depth:

10,200' (alternate T.D. of 11,000')

Geological Objectives:

Lower Eocene Eastern View sandstones.

x) Proposed Operations (Cont'd)

Estimated Spud Date: 14th August, 1973.  
Drill Time: 40 days.  
Estimated Rigging-up Time: 1 day.  
Estimated Rigging-down Time: 1 day.  
Drilling Contractor: Global Marine  
Rig: "Glomar Conception"  
List of Service Companies:

Rig	Global Marine
Coring	Christensen Diamond Products Aust. Pty. Ltd.
Cementing	Halliburton Manufacturing Services Ltd.
Mud Logging	Baroid Australia Pty. Ltd.
Electric Logging	Schlumberger Seaco Inc.
Surveying	Offshore Navigation Inc.
Diving	Broman Divers International Pty. Ltd.
Pressure Recording	R.D. Agnew (Vic.) Pty. Ltd.

Anticipated Date of Submission of Final Report: 21st January, 1974.

xi) Details of Petroleum Title

Narimba-1 will be drilled on Exploration Permit T/5P held by Hematite Petroleum Pty. Ltd. for a period of 6 years to July 16, 1974.

xii) Contracts

Refer Cobia-1 Subsidy Application.

xiii) Estimate of Allowable Costs

Based on the following program, the cost of Narimba-1 is estimated to be A.\$ 1,087,000, to a depth of 11,000'.

Casing: 20" @ 500' ± penetration.  
13-3/8" @ 3000' ± penetration.  
9-5/8" as required.

Mud Logging: Continuous from 20" casing shoe.

Coring: Anticipate continuous coring of any hydrocarbon zone through the hydrocarbon-water contact.  
Cores may be taken for facies control.

Electric Logging: Run 1 at T.D. or prior to running 9-5/8" casing.  
ISF-SCT, GR-FDC-CNL, HDT, FIT's, CST's and Velocity Survey.  
Run 2 if required.

Estimated Cost Breakdown

		<u>NARIMBA-1 WELL COSTS</u>	
		<u>A.\$</u>	<u>A.\$</u>
Section A	- Tangible Equipment		
	13-3/8" Surface Casing	15,000	
	9-5/8" Intermediate Casing	45,000	
	Wellhead assembly - drilling	36,000	96,000
Section B	- Surface Costs		
	Surveying	6,000	6,000
Section C	- Contract Rig		
	Drilling	444,000	444,000
Section D	- Formation Evaluation		
	Logging Service	146,000	146,000
Section E	- Cementing		
	Cementing Materials/Service	16,000	
	Float Equipment, Centralizers, etc.	5,000	21,000
Section F	- Transportation and Communication		
	Marine	104,000	
	Aviation	46,000	150,000
Section G	- Miscellaneous Materials		
	Fuel and Water	13,000	
	Drilling Fluid	30,000	
	Bits	18,000	
	Miscellaneous Supplies/Drilling	20,000	81,000
Section H	- Miscellaneous Rentals and Services		
	Catering	4,000	
	Miscellaneous Labour & Services/Drilling	20,000	
	Miscellaneous Rentals/Drilling	20,000	
	Divers	19,000	63,000
Section I	- Allocated Warehouse & Overhead		
	Technical and Administrative Overhead	40,000	
	Drilling Tool Expense	22,000	
	Warehouse Expense	18,000	80,000
		<u>Total Cost:</u>	<u>A.\$ 1,087,000</u>

xiv) Sample of Daily Drilling Form

See Cobia-1 Subsidy Application.

xv) Evidence of Financial Position of Applicant

Esso Exploration and Production Australia, Inc. (EEPA) is incorporated in Delaware, U.S.A., and is a wholly owned subsidiary of Esso Eastern Inc., which in turn is a wholly owned subsidiary of the Exxon Corporation, which is a holding company for the Esso Group of companies.

As at December 31, 1972, Esso Exploration and Production Australia, Inc. had total assets amounting to A.\$ 334,950,008 financed by Shareholders' funds (equity and loans) of A.\$ 248,963,516 loans from Esso Australia Ltd. of A.\$ 20,166,237 and other liabilities of A.\$ 65,820,255.

Funds are available for the full performance of the operation to drill the Narimba-1 well.

xvi) a) Certification of Percentage Financial Contributions

This is to certify that the cost of this operation is to be shared 50-50 by Hematite Petroleum Pty. Ltd. and Esso Exploration and Production Australia, Inc.

b) Nominee for Receipt of Subsidy

Esso Exploration and Production Australia, Inc.

c) Statement By Australian Company

Refer Cobia-1 Subsidy Application.

*K. Richards*

K.A. Richards,  
Exploration Manager.

Enclosures: Structure Map - Intra Lower M. diversus (1:50,000) - not with report.  
Geological Cross Section A-A'  
Geological Cross Section B-B'  
(For additional information refer to the Narimba-1  
Authorization to Drill)

A

NORTHWEST

ELEVATION (FEET)

SEA LEVEL

-1000

-2000

-3000

-4000

-5000

-6000

-7000

-8000

-9000

-10,000

-11,000

-12,000

-13,000

-14,000

NARIMBA - 1

PROPOSED

PELICAN - 2

(PROJECTED)

PELICAN - 1

K.B. 100'

WLT - G

A'

SOUTHEAST

ELEVATION (FEET)

SEA LEVEL

-1000

-2000

-3000

-4000

-5000

-6000

-7000

-8000

-9000

-10,000

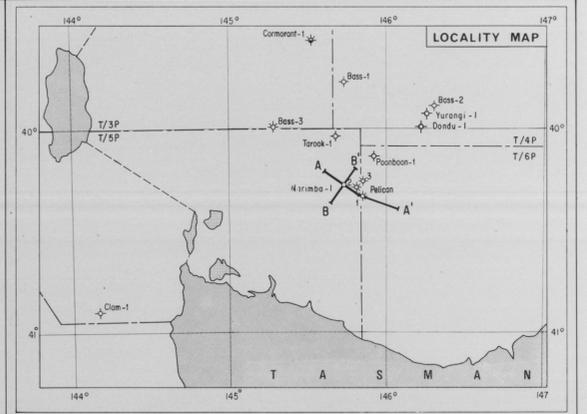
-11,000

-12,000

-13,000

-14,000

SECTION B-B'



LEGEND

- LIMESTONE
- SANDSTONE
- MARL
- COAL
- SHALE
- SILTSTONE

ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.

BASS BASIN  
TASMANIA

NARIMBA PROSPECT  
GEOLOGICAL CROSS SECTION A-A'



HORIZONTAL SCALE 1" = 50,000'



VERTICAL SCALE 1" = 1000'

AUTHOR: R.J. COPPIN      DRAFTED BY: R. WILSON  
 TO ACCOMPANY: SUBSIDY APPLICATION FOR NARIMBA - 1      DATE: JULY, 1973

34409

ENCLOSURE 1

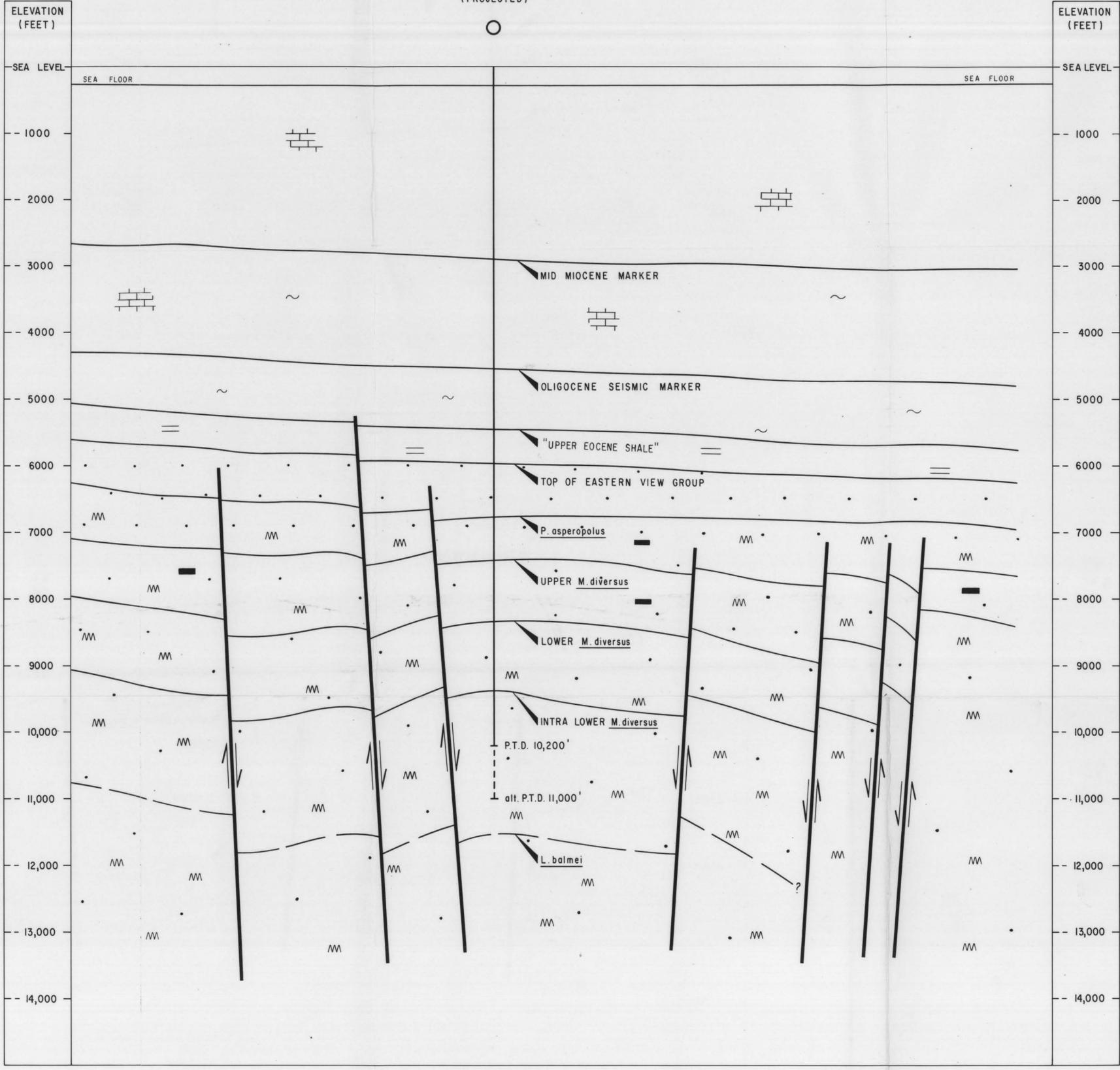
VERTICAL EXAGGERATION 4.2 : 1

INTERPRETATIVE

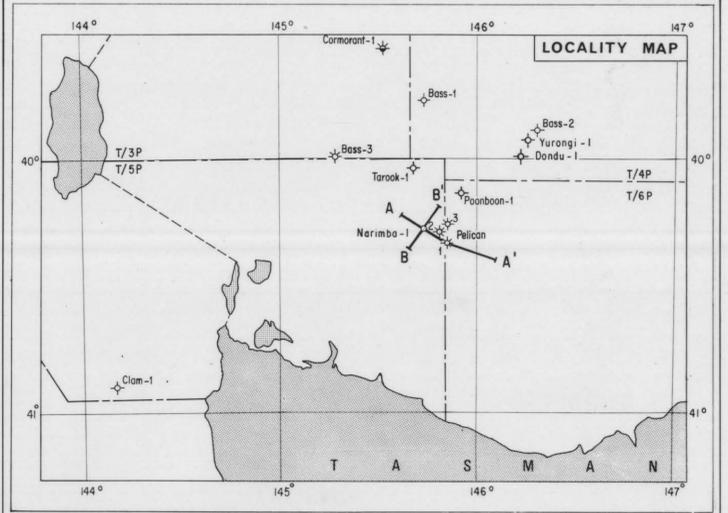
**B**  
SOUTHWEST

SECTION  
A - A'  
**NARIMBA - 1**  
PROPOSED  
(PROJECTED)

**B'**  
NORTHEAST



VERTICAL EXAGGERATION 4-2 : 1



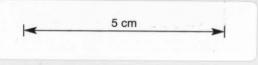
**LEGEND**

- |  |           |  |           |
|--|-----------|--|-----------|
|  | LIMESTONE |  | SANDSTONE |
|  | MARL      |  | COAL      |
|  | SHALE     |  | SILTSTONE |

ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.

**BASS BASIN**  
TASMANIA

**NARIMBA PROSPECT**  
GEOLOGICAL CROSS SECTION B-B'



HORIZONTAL SCALE 1 : 50,000



VERTICAL SCALE 1" = 1000'

AUTHOR: R. J. COPPIN      DRAFTED BY: R. WILSON  
TO ACCOMPANY: SUBSIDY APPLICATION FOR NARIMBA - 1      DATE: JULY, 1973

344010

ENCLOSURE 2

INTERPRETATIVE

OR-0340A