EAST NOWA NO. 1

FINAL WELL REPORT

ARCO LIMITED / WOODSIDE (LAKES ENTRANCE)
OIL CO. N. L.

EAST NOWA NO. 1
GIPPSLAND BASIN

by

Frank T. Ingram

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SUMMARY

The East Nowa No. 1 well was spudded on October 21, 1962 and completed as a dry hole on October 27, 1962. The well was the second of two stratigraphic tests designed to investigate the rocks below the Tertiary sediments in the Lake Tyers area. The East Nowa No. 1 was drilled immediately after the first well, Lake Tyers No. 1, with a Failing 2500 rig.

The well spudded in non-marine sediments of Pliocene, or younger age, and penetrated a Tertiary sequence similar to that found at East Lake Tyers No. 1.

Weathered, highly contorted, chloritic phyllite (?), sandstone and shale of probable Ordovician age was encountered at 1120 feet. The objective, Middle Devonian limestones, was not present.

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INTRODUCTION

In the highlands north of Lake Tyers, a large block of Middle Devonian limestone occurs down-folded and faulted into phyllites and volcanics of Ordovician and Lower Devonian age respectively. This limestone section is approximately 2,500 feet thick and contains sufficient organic material to be considered possible source beds for hydrocarbons in the Gippsland Basin.

A gravity survey by the Bureau of Mineral Resources showed that the Middle Devonian limestones are reflected by a gravity low, and that this low extends southward to the coast. The coastal area to a depth of about 12 miles inland is covered by Tertiary sediments. Therefore, the only way to determine the presence of these older sediments near the coast is by drilling.

In the latter part of 1962 it was decided to drill two shallow stratigraphic holes in the Lake Tyers area to investigate the nature of the pre-Tertiary rocks. The first of these holes, East Lake Tyers No. 1, was located near the coast and was drilled to a total depth of 1541 feet. The Middle Devonian limestones were absent in this well and Tertiary sediments were found directly overlying steeply dipping silty claystones of probable Ordovician age.

The East Nowa No. 1 was located on the east edge of the gravity low about 5 miles north of the East Lake Tyers No. 1 well, and about 10 miles northeast of the town of Lakes Entrance.

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DATA SHEET

Name	:	EAST NOWA NO. 1	
Location	:	Longitude	37°47'47"S
		Latitude	148°09'42"E
Elevation	:	Ground	200 feet (estimated on topo sheet)
		RKB	205'
Total Depth	:	Driller	1196'
		E. Log	1193'
Drilling Rig	:	Failing 2500	
Contractor	:	W. L. Sides & Son Pty. Ltd.	
Spudded	:	21 Oct. 1962	
Completed	:	27 Oct. 1962	
Drilling Time (Spud to Release of Rig)	:	7 days	
Hole Size	:	0 - 300'	8¾"
		300 - 1196'	5⅝"
Casing	:	7". 26 lb., J-55, Range 2 set at 300'	
Cement	:	Cemented to surface with 52 bags construction cement.	
Plugs	:	1030' - 1080'	10 bags cement
		285' - 310'	6 " "
		Cap screwed on top of casing	
Drilling Mud	:	Water base bentonite	
Logs	:	Widco Electrical Log and Lithologic Log	
Bits used	:	1 - 8¾" Re-run	
		1 - 5⅝"	
Core Bits used	:	1 - 5⅝" Re-run	
Deviation	:	1180 feet - 1°	
Formation Tops	:	170' Gippsland Limestone	
		725' Lakes Entrance Formation	
		1090' Colquhoun Gravels	
		1120' Ordovician (?) Basement	
Status	:	Plugged and abandoned	
Geologists	:	F. Ingram and D. Rutledge	

G E O L O G Y

From the surface to 170 feet non-marine sand, sandstone and clay was present. The clay was mottled gray, yellow and red.

and slightly sandy. The sand was poorly sorted, ranging from medium to coarse grained and often pebbly. The sandstone was fine grained and calcareous. This non-marine section is probably equivalent to the Haunted Hills Gravels or the Lake Wellington Formation, both of Pliocene age. This unit was not present in the Lake Tyers No. 1 well because of removal by erosion.

The Bairnsdale Limestone member of the Gippsland Limestone was present from 170 to 300 feet. This unit consisted of brown to cream, silty, soft, fossiliferous marl and white to yellow, friable to slightly hard limestone. The age and boundaries of this member were determined from Foraminifera in cuttings. Because of contamination of the cuttings the boundary depth of this and other units may not be too precise.

The Wuk Wuk Marls member of the Gippsland Limestone extends from 300 to 650 feet, as determined from Foraminifera. Nearly all of this member consists of coquina-fragments of bryozoa pelycepods, gastropods, occasional corals and abundant Foraminifera. The coquina is loosely cemented and therefore very porous. The electrical log indicates the formation water here is fresh.

The bottom 80 feet of the Wuk Wuk Marls member consists of gray to brown gummy marl and gray to brown, friable to hard glauconitic limestone.

From 650 to 725 feet the Longford Limestone is present. This member consists of limestone, as above, and medium gray to brown soft, silty marl.

The top of the Lakes Entrance formation could not be determined from Foraminifera because of sample contamination, but the top is believed to be at 725 feet where the first silt and sand beds were encountered. Silt and very fine grained sand are present from 725 to 905 feet, and glauconite, mica and fossils are common throughout.

From 905 to 1090 feet green and brown fine-grained sandstones are present. Minor silt, glauconite, pyrite and fossils

are present, but part or all of these may be contamination. No fossil identifications were made in this interval, but it is thought to be equivalent to the lower half of the Lakes Entrance formation.

Basal sands and gravels are present from 1090 to 1120 feet. This unit appears to be a correlative of the Colquhoun Gravels of basal Oligocene or Upper Eocene age.

The Colquhoun Gravels rest directly on steeply dipping chloritic phyllite (?) and sandstone of probable Ordovician age. A core of these rocks at 1188 - 1196 feet recovered highly weathered, crumbly green phyllite and sandstone. No fossils were found, but lithologically this section resembles Ordovician rocks on the north side of the Gippsland Basin.

OCCURRENCE OF HYDROCARBONS

No shows of hydrocarbons were found. Fresh water is present in the porous coquina from 300 to 560 feet. Water is also present in several porous zones from 900 to 1120 feet, and appears to be slightly more saline than in the coquina above.

C O N C L U S I O N S

1. The well penetrated a thin Tertiary section from Pliocene to Lower Oligocene age.
2. Tertiary sediments directly overlie chloritic phyllite (?) and sandstone of probable Ordovician age. The Middle Devonian limestones were not present.
3. The slope of the basement surface from the East Nowa No. 1 to the East Lake Tyers No. 1 is calculated at the rate of 141 feet per mile. The slope of the basement surface from the outcrop to the East Lake Tyers No. 1 has been calculated at the rate of 140 feet per mile.
4. No shows of hydrocarbons were detected in the well.