COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

RECORD No. 1964/11

JERILDERIE No. 1
WELL LOGGING, NSW 1962

by

W.A. WIEBENGA, E.E. JESSON, and A. RADESKI

RECORD No. 1964/11

JERILDERIE No. 1

WELL LOGGING, NSW 1962

by

W.A. WIEBENGA, E.E. JESSON, and A. RADESKI

CONTENTS

ILLUSTRATIONS

SUMMARY

Jerilderie No. 1 bore was logged to 1190 ft for the Australian Oil and Gas Corporation Ltd by means of a single-electrode logger. Lignite at depths between 350 and 470 ft showed no marked change on the log from the deeper sandstone and conglomerate.

The lignite seams are evidently porous and the formation water saline; the result is a featureless log.

Note: This Record supersedes Record No. 1963/18, which has been withdrawn.

1. INTRODUCTION

Stratigraphic bore Jerilderie No. 1, located at latitude 35°5'S, longitude 145°58'E, was logged to a depth of 1190 ft on 24th May 1962, at the request of the Australian Oil and Gas Corporation Ltd. Drilling was continued to a depth of 4360 ft but the remainder of the hole was not logged by the Bureau of Mineral Resources.

The Bureau logging operator, A. Radesk., used a Widco single-electrode logger.

2. GEOLOGY

The bore is located about 18 miles north-west of the centre of the Oaklands coalfield, within the eastern margin of the Murray Basin. The coalfield is situated in a minor basin in Permian sediments unconformably overlain by Tertiary and younger strata (Sturmfels, 1950). A gravity survey by the Bureau in 1949 (Thyer & Vale, 1952) indicated that the basin trends roughly north-west.

3. INTERPRETATION OF LOG

The self-potential (S-P) and single-point resistance logs together with the lithology are shown on Plate 2.

The S-P log is "normal", which indicates that the formation water salinity is higher than that of the drilling mud. Above a depth of 300 ft the S-P log appears to show some drift superimposed on the ordinary fluctuations. This type of feature is common near the surface and is attributed to currents caused by weathering phenomena.

Below 800 ft depth the drift in the S-P log towards the positive direction is attributed to currents between larger units; the lithology suggests that an important formation change takes place below 1150 ft depth, and this may account for the drift.

At about 350 ft depth the resistance log shows a change in character from varying resistances above this level to a monotonous log below. This change corresponds with a change in formation type from sand and clay above the 350-ft level to predominantly conglomerate and lignite below 350 ft. Between 300 and 800 ft depth the S-P values do not exceed 40 mV relative to the shale values (taken as 3 in. from the left of the chart in this zone).

Assuming a formation temperature of about 70°F and taking the resistivity of a filtrate of the drilling mud equal to $\frac{3}{4}$ of that of the drilling mud, then from Schlumberger interpretation charts A6, A10, and A12 (Schlumberger, 1958) the resistivity of the formation water is about 6 ohm-metres at 70°F. This gives a salinity of 900 p.p.m. equivalent sodium chloride.

As the lignite seams are not defined on the logs by high resistance, it is concluded that they are porous. The S-P anomalies between 380 and 440 ft depth indicate that some of them are also permeable.

The bed at 680 to 695 ft depth is described as being a grey coarse to very coarse-grained subrounded quartz sandstone, but the logs indicate that it is shale. It is suggested that the shale particles have been overlooked in the ditch sample and that the sandstone particles are cuttings from other parts of the hole.

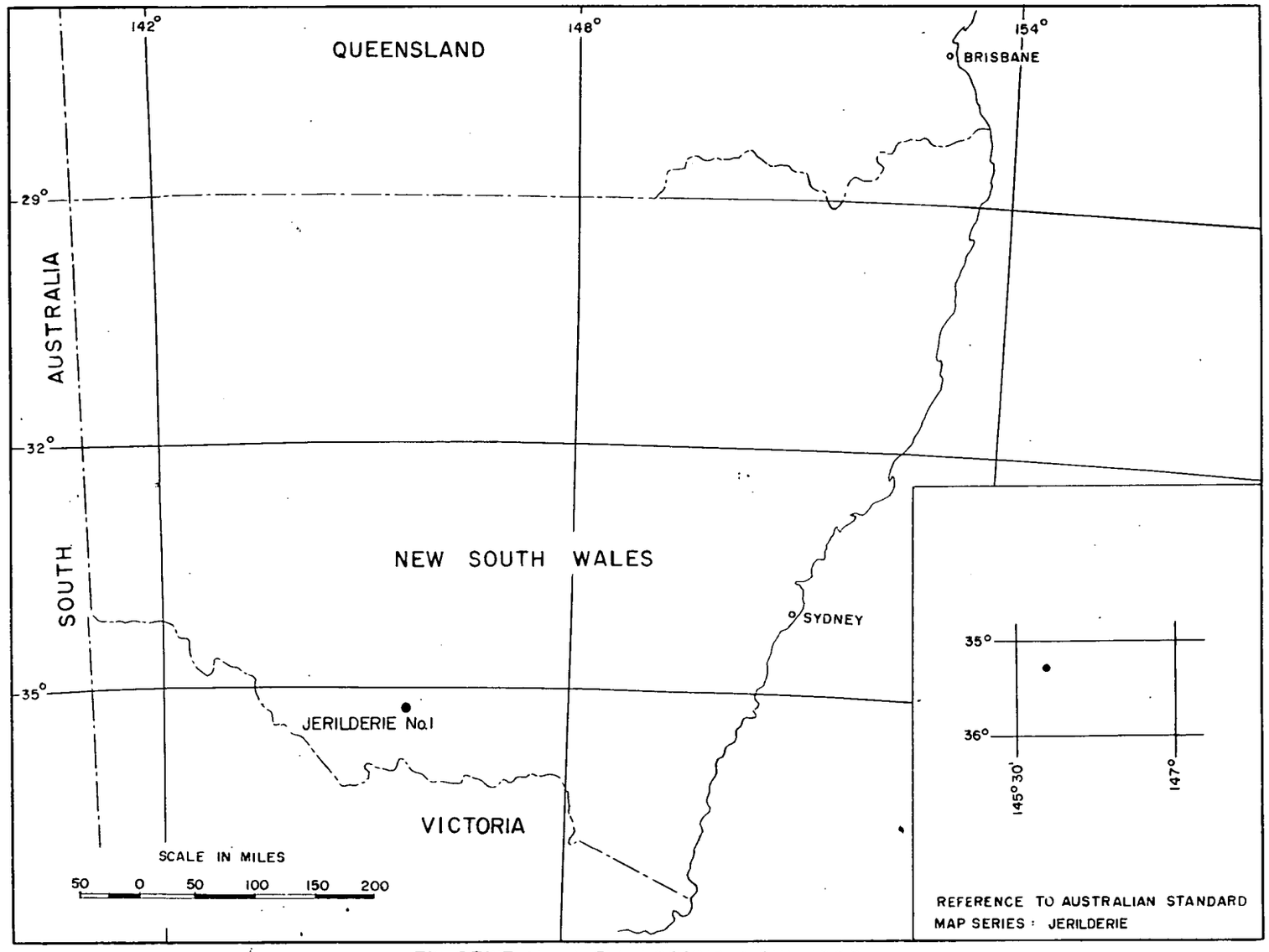
Below 1080 ft the logs indicate a preponderance of shale beds.

Summarising, it may be said that the logs suggest major formation changes between 350 and 375 ft depth and probably below 1080 ft.

4. REFERENCES

STURMFELS, E.K.	1950	Preliminary report on geology and coal resources of Oaklands-Coorabin coalfield, N.S.W. Bur. Min. Resour. Aust. Rep. 3.
SCHLUMBERGER	1958	Log interpretation charts. Houston, USA; Schlumberger Well Surveying Corp.
THYER, R.F. and VALE, K.R.	1952	Geophysical surveys, Oaklands-Coorabin coalfield, NSW. Bur. Min. Resour. Aust. Bull. 19.

JERILDERIE No 1



JERILDERIE No.1 WELL LOGGING, NSW 1962

LOCALITY MAP

PLATE 1

COMPANY Australian Oil and Gas Co
AREA MURRAY BASIN
WELL JERILDERIE No. 1 STATE N.S.W.

COORDINATES PLATE 2
Lat. 35°15'
Long. 145°58'
ELEVATION
G.L. 376'
Rot. table 382'

	Run No. 1	Run No. 2	MUD	Run No. 1	Run No. 2
Date	24.05.62.	26.05.62.	Nature		
First Reading	56	80	Density		
Last Reading	1190	925	Viscosity		
Footage Logged	1134	855	Resistivity	8.3Ωm @ 64 °F	8.3Ωm @ 64 °F
Bottom (Driller)	1193	1243	Res. BHT	@ °F	@ °F
Casing (From Log)			pH		
Casing (Driller)			Circ. Temp.		
Casing Size			B.H.Temp.		
Bit Size	0-20' 24"	0-20' 24"			
Bit Size	20-1193' 12¼"	20-1243' 12¼"			
			Logged by	A. Radeski	A. Radeski
			Witnessed by	M. Rose	M. Rose

REMARKS Depth measured from rotary table

A.O.G. JERILDERIE No 1

SELF-POTENTIAL

50 mV

SINGLE-POINT RESISTANCE

INCREASING RESISTANCE

5 ohms

0
50
100
150
200
250
300
350
400
450
500
550
600
650
700
750
800
850
900
950
1000
1050
1100
1150
1200

Vertical scale 50 ft = 1 inch

Lithology after A.O.G.

Clays

Conglomerate

Coal

Sandstone, siltstone

GEOPHYSICAL BRANCH BUREAU OF MINERAL RESOURCES GEOLOGY AND GEOPHYSICS

TO ACCOMPANY RECORD NO. 1962/11

155/36-1