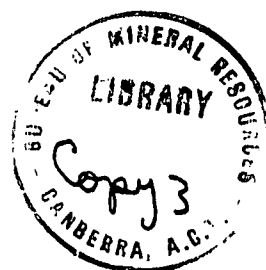


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DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS



RECORD No. 1963/18

JERILDERIE No. 1 WELL LOGGING, NSW 1962

by

F. Jewell and A. Radeski

The information contained in this report has been obtained by the Department of National Development, as part of the policy of the Commonwealth Government, to assist in the exploration and development of mineral resources. It may not be published in any form or used in a company prospectus or statement without the permission in writing of the Director, Bureau of Mineral Resources, Geology and Geophysics.

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Plate 2. Electric log of Jerilderie No. 1 bore, with lithology	(I55/B6-1)

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. Permian coal seams at depths between 350 and 470 ft showed no marked change on the log from the deeper Permian sandstone and conglomerate.

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

1. INTRODUCTION

Stratigraphic bore Jerilderie No. 1, located at latitude 35°15'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. Radeski, 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 and Vale, 1952) indicated that the basin trends roughly north-west.

3. INTERPRETATION OF LOG

The resistance of the sediments below 350-ft depth is monotonously uniform, indicating that the coal-measures, sand, and conglomerate are porous and saturated with salt water. Where the resistance is higher than average, i.e. where the shale or clay content is lower, the self-potential is more negative, confirming the saline nature of the water in the permeable beds. An exception is the resistant bed at 380 to 390-ft depth, which does not show a negative-going self-potential. The bed is therefore impermeable, but the high resistance indicates that the lack of permeability is not due to clay but that the conglomerate here is probably cemented.

As the coal seams do not have high resistance it is clear that they are porous. The clays and sands above the coal seams show higher resistances and are assumed to contain fresher water.

There is no evidence of any formation-water fresher than the drilling fluid, such as would cause a movement of the S-P curve to the left at the same depth as a fairly resistant bed. The S-P curve drifts in the lower part of the hole, but otherwise below 350-ft depth the shale baseline appears to lie three inches from the left of the chart. The self-potential in the permeable zones is roughly constant at about 40 millivolts, ignoring the anomalous near-surface zone.

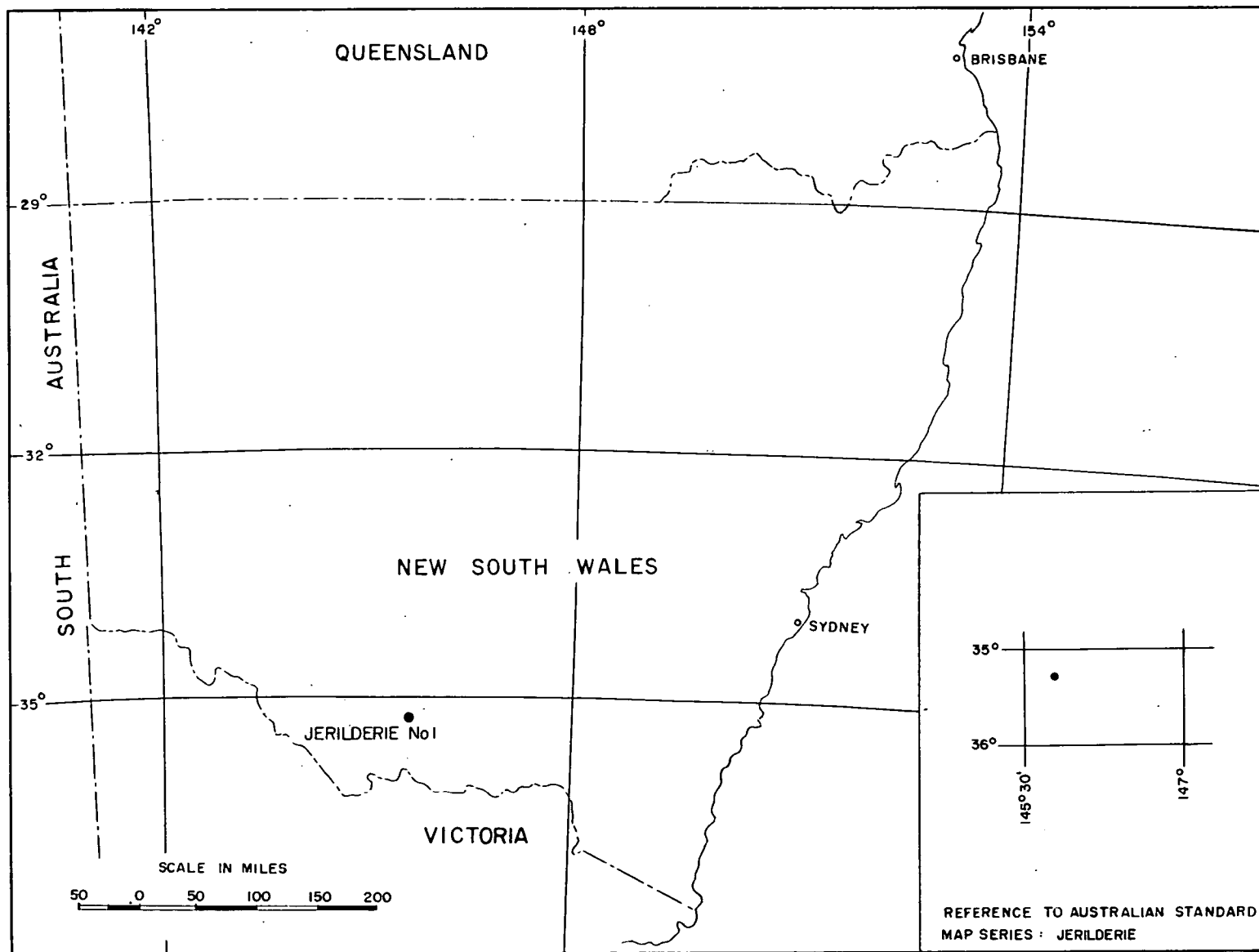
The approximate formula :

$S-P = 71 \log (R_{mf}/R_w)$ millivolts, at 75°F (where R_{mf} = 3/4 of drilling-fluid resistivity, R_w = formation-water resistivity) then gives a rough value of 1.16 ohm-metres for R_w , corresponding to a salinity of roughly 5000 p.p.m. This value of formation-water salinity is probably too low, as the formula is applicable only to clean sandstones.

The bed at 680 to 695-ft depth, logged as grey sandstone, lacks permeability and appears to contain clay. Being situated immediately above the conglomerate, it constitutes an excellent marker for correlation, particularly as it might be portrayed equally well by a gamma-ray log.

4. REFERENCES

- | | | |
|----------------------------|------|---|
| STURMFELS, E.K. | 1950 | Preliminary report on geology and coal resources of Oaklands-Coorabin coalfield, NSW. <u>Bur. Min. Resour. Aust. Rep. 3</u> |
| THYER, R.F. and VALE, K.R. | 1952 | Geophysical surveys, Oaklands-Coorabin coalfield, NSW
<u>Bur. Min. Resour. Aust. Bull. 19.</u> |



JERILDERIE No 1 WELL LOGGING, NSW 1962

LOCALITY MAP

COMPANY Australian Oil and Gas Co				COORDINATES: PLATE 2	
AREA MURRAY BASIN				Lat. 35°15'	
WELL JERILDERIE No 1				Long. 145°58'	
STATE N. S. W.				ELEVATION:	
				G.L. 376'	
				Rot. table 382'	
Date	Run No 1	Run No 2	MUD	Run No 1	Run No 2
First Reading	24.05.62.	26.05.62.	Nature		
Last Reading	56	80	Density		
Footage Logged	1190	925	Viscosity		
Bottom (Driller)	1134	855	Resistivity	8.3Ωm @ 64 °F	8.3Ωm @ 64 °F
Casing (From Log)	1193	1243	Res. BHT		
Casing (Driller)			pH		
Casing Size			Circ. Temp		
Bit Size	0-20' 24"	0-20' 24"	BH Temp		
Bit Size	20'-1193' 12 1/4"	20'-1243' 12 1/4"			
			Logged by	A. Radeski	A. Radeski
			Witnessed by	M. Rose	M. Rose
REMARKS Depth measured from rotary table					

