WELL COMPLETION REPORT
FLAXMANS - 1

W466

86 Pages
+ ENCLOSURES.

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WELL COMPLETION REPORT

FLAXMANS NO. 1

SOUTHWEST VICTORIA

by

J. S. Bain

Melbourne

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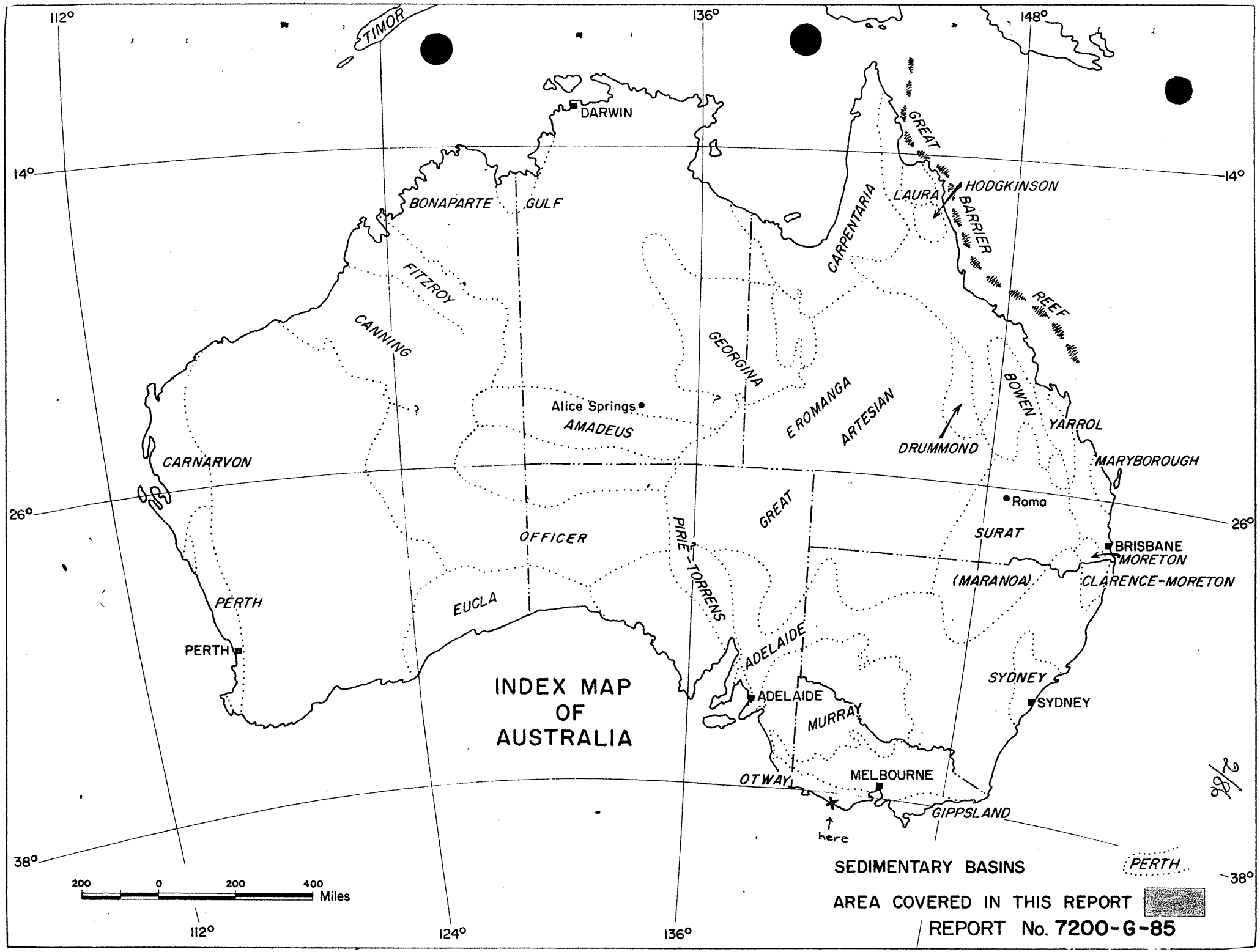
112°
136°
148°
14°
26°
38°
TIMOR
DARWIN
BONAPARTE GULF
FITZROY
CANNING
CARNARVON
Alice Springs
AMADEUS
GEORGINA
EROMANGA
ARTESIAN
CARPENTARIA
LAURA
GREAT BARRIER REEF
HODGKINSON
DRUMMOND
BOWEN
YARROL
MARYBOROUGH
Roma
SURAT
BRISBANE
MORETON
(MARANOA)
CLARENCE-MORETON
GREAT OFFICER
PIRIE-TORRENS
EUCLA
PERTH
PERTH
ADELAIDE
ADELAIDE
MURRAY
SYDNEY
SYDNEY
OTWAY
MELBOURNE
GIPPSLAND
here
INDEX MAP
OF
AUSTRALIA
200 0 200 400 Miles
112°
124°
136°
SEDIMENTARY BASINS
PERTH
AREA COVERED IN THIS REPORT
REPORT No. 7200-G-85

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the structure was not closed in these sediments towards the south and the reservoir at Flaxmans was depleted.

5. Porosity and Permeability of Sediments Penetrated

Porosity and permeability were estimated qualitatively at the well-site from cuttings and cores and for electric log analyses were calculated quantitatively from both the Microlog and Sonic Log. Some selected cores were also analysed quantitatively.

In general the Otway sands showed low porosity and no effective permeability as is shown by the following core analyses.

Core No. & Depth.	Effective Porosity %	Permeability (Millidarcies)	Saturation (% porosity) Water	Oil
No. 28 (7473-7493')	15.4	less than 0.2	57	7.5
No. 34 (8470-8486')	16.7	" " 0.2	68	3
No. 39 (10,122-10,134')	11.0	" " 0.1	49	NIL

The tight nature of the Otway sands was further confirmed on testing.

As regards the Waarre sands, they appeared generally to be dirtier than their equivalents in the Port Campbell area and this was confirmed by analyses on Core No. 25 which showed a porosity of 22.1 to 22.9% and permeabilities varying from 126 to 139 millidarcies horizontal and 112 to 250 millidarcies vertical. This is in marked contrast to the 23.6% porosity and 4840 millidarcies permeability evident within the Waarre sands in Port Campbell No. 3. It is probable that the reason for the dirtier nature of the sands at Flaxmans as compared with the Port Campbell area, is that these sands were laid down a little further offshore and under deeper conditions.

The Paaratte Formation and Wangerrip Group contained sands with porosities and permeabilities similar to their equivalents in the Port Campbell area.

6. Contribution to Geological Concepts Resulting from Drilling

Flaxmans No. 1 well added considerably to our knowledge of the geology of the basin as a whole.

Firstly, the Belfast Mudstone and Waarre Formation were found to have a fairly wide areal extent in the eastern part of the basin from Port Campbell to Warrnambool. It is also apparent that the Flaxmans Beds are present in the deeper part of the basin separating the Waarre Formation from the Belfast Mudstone. As mentioned under Stratigraphy, it appears that no major unconformities are present from the Otway Group through the Waarre Formation and Flaxmans Beds up into the Belfast Mudstone in the Flaxmans No. 1 well.

It had been thought from evidence from Port Campbell No. 3 that the

Waarre-Otway contact was transitional and this was further evident in this well. The Waarre Formation is dirtier in the Flaxmans area than in the Port Campbell area. The Flaxmans Beds had a few fragments of the clean light grey Waarre Sandstone within them, and also appeared to become more allied to the Belfast Mudstone in the upper beds. Although the depositional environment of the Otway is still not definitely known it seems that, if it is of a fresh water nature as is generally supposed, the Waarre Formation and the Flaxmans Beds probably represent alternating freshwater and marine conditions up into the wholly marine Belfast Mudstone deposition.

It is apparent that the Otway Group sediments in the deeper part of the basin are not as attractive as reservoirs as where the Otway is relatively high. This feature is substantiated by the tight and dirty nature of the sands at Flaxmans compared to some of the sands in the Otway on the Port Campbell structure and also from bores on the Warrnambool high.

Regarding source rocks within the eastern part of the basin, the Belfast Mudstone still appears to be the best seen so far in this regard. None of the Otway Group sediments in Flaxmans No. 1 appear to be likely source rocks lithologically and if they are also of a freshwater nature their chances as sources are further decreased.

The source of the petroliferous gas, recovered from the bottom part of the hole, is not known. As this gas appeared to be wholly within a fracture reservoir of very limited extent and in rocks of very low permeability it may be evidence of the existence of some larger reservoir, either below the Otway Group at this location or in more favourable conditions laterally in the Otway Group itself. As only minor shows occur in the Otway Group except where fracturing occurs it would appear that the former is the more likely as these fractures are probably related to the known faulting within the deeper sediments of the basin, and obviously this faulting plays a major role in the disposition of petroleum accumulations in the area. The source of these hydrocarbons could also possibly be younger sediments downfaulted to be contiguous to the Otway section.

Melbourne

December, 1961

J. S. Bain