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DEPARTMENT OF NATIONAL DEVELOPMENT  
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GEOLOGY AND GEOPHYSICS

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RECORDS:

Record No. 1964/173

PUNCHED CARDS FOR RECORDING GEOLOGICAL AND GEOPHYSICAL  
INFORMATION ON THE SEDIMENTARY BASINS OF AUSTRALIA AND  
PAPUA-NEW GUINEA

by

M. A. REYNOLDS



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PUNCHED CARDS FOR RECORDING GEOLOGICAL AND GEOPHYSICAL INFORMATION  
ON THE SEDIMENTARY BASINS OF AUSTRALIA AND PAPUA-NEW GUINEA

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Introduction:

The quantity of data available on the sedimentary basins of Australia and Papua-New Guinea has shown a marked increase over the last few years. This has been brought about by:

- (i) the support and promotion of the search for oil by the Commonwealth Government through the Petroleum Search Subsidy Acts and by other means;
- (ii) the increased activity in oil exploration resulting from significant oil and gas discoveries;
- (iii) the expansion in the number of geological and geophysical surveys by the Commonwealth and State Authorities.

It has become obvious that a simple card and cross-reference system is inadequate to cope with references to the various aspects covered in reports that are appearing in such large numbers. Unless some other system of data recording is used, some of the information available on certain areas could be overlooked by future surveys into those particular areas.

The main emphasis of the work of the Sedimentary Section of the Geological Branch, Bureau of Mineral Resources, is on regional mapping; the basic unit of regional mapping in any sedimentary basin is the 1 : 250,000 Sheet area. In 1963, a punch card was designed to record information available on the sedimentary basins, and to ensure that the information for each 1 : 250,000 Sheet area was readily accessible. For this purpose, location fields (States, Basins and Provinces, 1 : 1,000,000 and 1 : 250,000 Sheet Indexes) were arranged along the top of the card. Consideration was also given to other types of information which might be required for retrieval. As a basis for trial, the right-hand side of the card was designed to show Source of Information and Age, the bottom - Subject, and the left-hand side - Well Name and Number. Some fields were left vacant to allow for any expansion of the system, and two rows of holes were included on each side of the card - both rows are essential for the type of punching required in some fields (see later), but the rest will allow further discrimination within the other fields.

Punching:

Shallow punching will be used for the outer row of holes, and deep punching for fields which cover the inner row of holes. In shallow punching, only the section of the card between the outer hole and the edge of the card is removed; in deep punching the section of card removed extends from the inside hole to the card edge. Sorting is done by inserting pins into the relevant holes, and allowing cards punched for those items to drop out.

Triangular fields have been used along some parts of the card edges to save space and to ensure that retrieval of information will be as selective as possible.

Each triangle is made up of a series of rectangular boxes with a pair of letters or numbers, or with various combinations of letters and/or groups of letters (e.g. Ot, Lake, U or V, ll). The letters, etc., were unfortunately arranged in various ways by the printer so that some occur in the top and the bottom of the box, others are adjacent across the box. This is particularly confusing where groups of letters such as "X or Y" are used, and it is important to remember that any such group with "or" is composed of consecutive letters of the alphabet; (this "U or V" type of grouping is only used in the Well Name and Number Field, and has been placed either in the left or in the right side of a box).

Deep and shallow punching is required when using the triangular fields, and is carried out as follows:

- (i) Orient card with apices of required triangles facing towards you;
- (ii) Locate the letter, number or group which is required to be punched;
- (iii) If it is in the top or left side of the box, punch deep opposite the end of the north-western diagonal from the box, and punch shallow opposite the north-eastern diagonal;
- (iv) If in the bottom or right side of the box, punch deep opposite the north-eastern diagonal and shallow opposite the north-western diagonal.

Example: Penola No.1 completion report  
on enclosed card.

Arrangement of card:

1. Face of the card: The information required here is straightforward. References should be written in the manner required for publication, (see B.M.R. Circulars Nos. 3 and 10).

Remarks should contain the contents of a report and its main conclusions. In the case of short publications, unpublished reports, file notes, etc., with little or no illustration, the remarks should contain sufficient information to avoid having to refer back to the report itself.

2. Edges of the card:

- (i) The top edge of the card will be punched for States as follows:

P	-	Papua and New Guinea
N T	-	Northern Territory
Q	-	Queensland
N	-	New South Wales
V	-	Victoria
T	-	Tasmania
S	-	South Australia
W	-	Western Australia
A	-	A.C.T.
A T	-	Other Australian Territories
F	-	Foreign
G	-	General

Abbreviations used for basins are:

A	Adavale Basin
Am	Amadeus Basin
B	Bonaparte Gulf Basin
Bw	Bowen Basin
C	Canning Basin
Cs	South Canning Basin
CV	Cape Vogel Basin
Cr	Carnarvon Basin
Cp	Carpentaria Basin
Co	Coonamble Basin
D	Daly River Basin
Dr	Drummond Basin
E	Eromanga Basin
Eu	Eucla Basin
F	Fitzroy Basin
G	Georgina Basin
Gi	Gippsland Basin
Gr	Great Artesian Basin
I	Ipswich - Clarence Basin
LF	Lake Frome Embayment
La	Laura Basin
M	Maryborough Basin
Mu	Murray Basin
NG	Northern New Guinea Basin
O	Officer Basin
Or	Ord Basin
Ot	Otway Basin
Ox	Oxley Basin
P	Papuan Basin
Pe	Perth Basin
PT	Pirie-Torrens Basin
SV	Saint Vincent Basin
Su	Surat Basin
Sy	Sydney Basin
T	Tasmanian Basin
Y	Yarrol Basin

In the case of basins within basins, or basins under basins, it is best to be as specific as possible - e.g. for Eromanga Basin which occurs within the area of the Great Artesian Basin, punch E; for Adavale Basin, which occurs below the Eromanga Basin, punch A.

Since preparation of the card, the Geological Branch has added:

Ba	Bass Basin
Mo	Morehead Basin
N	Ngalia Trough

in the positions shown on the enclosed card, and the following numbers have been used for provinces:

- 1 - N.W. Australia - offshore
- 2 - N.E. Australia - offshore.

Deep and shallow punching will be necessary for the States, Basins and Provinces, and 1 : 1,000,000 Index fields, but shallow punching only is required for the 1 : 250,000 Sheet Index.

(ii) The right edge of the card is used for sources of information, and ages.

Deep punching is used for all sources of information unless it is confidential or restricted, in which case a shallow punch is used; if at a later date confidential or restricted information is placed on open file or published, a deep punch can be superimposed.

Shallow punching is generally used for indicating ages; eras should be punched as well as periods. Deep punching is used for Upper, Middle and/or Lower, and for the era or period to which applied.

(iii) The bottom edge, was designed originally for a Subject Index and a decimal code system was considered for this purpose. However, it was too complicated and the area was left as "free" for general use.

The area is now to be used by the Petroleum Exploration Branch for exclusive projects, as outlined later.

(iv) Well Name and Number will be punched along the left edge using the triangular field system. The left-hand triangle should be used for the first letter or part of the name, the second and third letters or part of name follow in the next two triangles. Where a name does not exist for a well, the initial letters of the first three names of the company or group of companies should be used.

Since the card was printed, the use of the left-hand side of the card has been extended to include the names of geophysical surveys in the same manner as above.

In the event of Well Numbers increasing beyond 30, one hole of the spare field at the top of the left-hand side could be punched to indicate that the number series is repeated, i.e. 1 becomes 31, etc.

3. Back of the card: The back of the card is blank and is useful for showing diagrams, sections, etc. It has been possible to transfer diagrams to the backs of cards directly by using the Xerox duplicator.

#### Use of cards for Special Projects:

The cards are also to be used by the Subsurface Section of the Petroleum Exploration Branch in the review of the Otway Basin. The use of the cards for this purpose has been possible because of the "free" area at the bottom of the card. It is suggested that other sections within the Bureau or even other surveys could use the card similarly. The advantage of such usage would be the simplicity of interchange of information. Information on the front of the cards can be duplicated by the Xerox machine; transfer directly from one card to another is not possible because of the design of the face of the card, but the Xerox sheet can be pasted on to the face of another card. On the other hand, any diagrams can be transferred directly from the back of one card to the back of another.

This system has been used to transfer information on the Otway Basin, recorded by the Geological Branch on their cards, on to cards to be used by the Subsurface Section (Petroleum Exploration Branch).

The Subsurface Section plans to prepare a set of cards on information available on the Otway Basin as part of the review currently (1964-65) being undertaken of that basin. Once established, it should be possible to continue adding to the set of cards on the Otway Basin and maintain an up-to-date reference set. This will be done for each of the sedimentary basins as it is studied by the Subsurface Section.

Information from the cards which may be required for progress and other reports on sedimentary basins has been divided into a number of Subject headings which will be punched along the bottom of the card in the "free" area. Shallow punching will be used mainly, but deep punches can be used in some cases. If the division of subject headings (below) is not satisfactory or needs expanding, deep punching or the free holes at the right-hand end of the row may be used.

Division of Subject headings:

Information from regional geological surveys --

- 0 Physiography (off-shore bathymetric detail - deep punch)
  - 1 Stratigraphy
  - 2 Structure
  - 3 Palaeontology
  - 4 Regional Correlation (cross-sections or fence diagrams - deep punch)
  - 5 Geological history - palaeogeography, palaeogeology, palaeotectonics
  - 0 Petrography
  - 1 Isopach, lithofacies studies (maps - deep punch)
  - 2 Provenance (age determination - deep punch)
  - 4 Reservoir studies - porosity, hydrodynamics, etc (flow nets - deep punch)
  - 7 Economic geology
  - 0 Geomorphology
  - 1 Previous investigations (extensive bibliography - deep punch)
- 

from Geophysical surveys

- 2 Seismic
  - 4 Aeromagnetic
  - 7 Gravity
- 

from Drilling

- 0 Percentage cuttings log
- 1 Interpreted lithological log
- 2 Drill-stem tests, production tests
- 4 Other fluid shows
- 7 Core analyses
- 0 Electric logs
- 1 Radioactive logs

- 2 Sonic logs, well velocity surveys
- 4 Drilling rate, caliper, temperature logs
- 7 Hydrocarbon log

1st unnumbered hole - Other logs (calilog, etc).

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Conclusion:

The use of the type of punch card enclosed with these notes by the Geological and Petroleum Exploration Branches of the Bureau is in an "experimental stage". The adequacy of the cards will be tested during the coming year. By 1966 it should be possible to decide whether to persevere with this type of data recording (for each special requirement), or to advance to more refined methods such as body-punch cards, automatic sorters, magnetic tape, or to some future development in this field.

4 MILE OR 1 : 250,000 SHEET

FILE No. 106 G / 13 / 71

B.M.R.  
RECORD

Geological

Geophysical

Letter or File

B.M.R. Publication

Publications of State  
Government AuthoritiesOther scientific  
bodies — reports

Company Reports

Other information

Quaternary

Tertiary

Cainozoic

Upper

Middle

Lower

Cretaceous

Jurassic

Triassic

Mesozoic

Permian

Carboniferous

Devonian

Silurian

Ordovician

Cambrian

Palaeozoic

Proterozoic

Precambrian

REFERENCE: O.D.N.L., 1963 — O.D.N.L.

Penola No.1 Well, South Australia of  
Oil Development N.L. Bur. Min. Resour.  
Aust. Petrol. Search Subs. Acts Publ. 42

COMPANY Oil Development N.L. WELL NAME &amp; No. O.D.N.L. Penola No.1

LOCATION Hundred of Penola, NE, corner of section 100 LAT.  $37^{\circ}20'38''S$  LONG.  $140^{\circ}52'35''E$ 

ELEVATION 204.2 (G.L.) DEPTH 4985 feet STATUS Abandoned DATE COMPLETED 18th April 1961

TENEMENT: NAME Oil Expl. Lic. No. 22 EXPIRY DATE 30/4/64 AREA 4900 sq miles

REMARKS:

Data entered by \_\_\_\_\_ Date \_\_\_\_\_

Data punched by \_\_\_\_\_ Date \_\_\_\_\_

SUBJECT

LAMSON PARAGON LIMITED W053