RB 62/95

DEPARTMENT OF MINES
SOUTH AUSTRALIA

STRATIGRAPHIC SEQUENCE IN SHALLOW BOREHOLES, HUNDRED OF NANGWARRY, SOUTH AUSTRALIA

C. GREY

by

N. H. Ludbrook

CONTENTS

Rept. Bk. No. 62/95
G.S. No. 3441
D.M. ~~1416/65~~ 1390/64
Pal. Rep. 5/66

28th April, 1966.

Rept. Bk. No. 62/95
G.S. No. 3441
D.M. 1416/65 1390/64
Pal. Rep. 5/66

DEPARTMENT OF MINES
SOUTH AUSTRALIA

STRATIGRAPHIC SEQUENCE IN SHALLOW BOREHOLES, HUNDRED OF NANGWARRY, SOUTH AUSTRALIA

ABSTRACT

Examination of sludges from six shallow boreholes in hundred of Nangwarry has established that the stratigraphic section in boreholes less than 200 feet deep consists of a thin sequence 58 to 83 feet thick of Pleistocene calcareous sands and sandy limestones with varying amounts of reworked and recemented Gambier Limestone, overlying in one bore Gambier Limestone and in the others clays and sands of the Knight Group.

INTRODUCTION

Two observation bores drilled for C.S.I.R.O. were examined at the request of the Senior Geologist (Hydrogeology) to establish the stratigraphic sequence in the hundred of Nangwarry. To confirm or otherwise that this sequence was uniform, three other bores drilled roughly over a distance of five miles easterly from Nangwarry township, and one bore about four miles north of Nangwarry were included.

STRATIGRAPHIC SEQUENCE

All bores intersected Pleistocene calcareous sands and sandy limestones, usually with oyster shells near the bottom, at from 58 to 83 feet. The Pleistocene contained varying amounts of reworked Gambier Limestone which was frequently recemented in the Pleistocene limestone.

Only one bore, Nangwarry Township Bore A, intersected Gambier Limestone in place. In three other bores the Pleistocene

rested directly on clays or sands of the Knight Group. The two most easterly bores were finished in the Pleistocene. The stratigraphic columns and correlation of the bores is shown on the accompanying plan.

DESCRIPTION OF THE SLUDGES

A brief and general description of the sludge samples, examined at approximate five-foot intervals is given.

Section 142, Woods and Forests Nangwarry Township Bore A

Feet depth	
0 - 27	Fine angular quartz sand, micaceous.
27 - 34	Calcareous sand.
34 - 51	Sandy limestone with oyster shells, barnacle fragments.
51 - 52	Sandy limestone with Polystomellina clathrata. Ammonia beccarii and reworked Gambier Limestone.
52 - 60	Mostly Gambier Limestone, but with a good deal of rounded quartz and unrecalcified tests of Polystomellina clathrata and Ammonia beccarii, indicating that the sediments in the interval are Pleistocene.
60 - 86	Gambier Limestone - bryozoal limestone with abundant foraminifera including Globigerina bulloides and G. praebulloides, echinoids, bryozoa.

Section 135, C.S.I.R.O. Observation Bore 107.

Feet depth	
0 - 1	Dark grey sandy soil.
1 - 2	Brown fine clayey sand.
2 - 8	Clayey sand and sandstone.
8 - 9	Cream fine sand, micaceous.
9 - 23	Yellow-brown clay.
23 - 24	Dark grey calcareous sandy clay with fragments of reworked limestone, carbonaceous matter, Ammonia beccarii.

Feet Depth	
24 - 30	Calcareous sandstones with Discorbis.
30 - 32	Yellow-brown sandy limestone and calcareous sand with barnacles, reworked Gambier Limestone.
32 - 39	As above, with Polystomellina clathrata, Ammonia beccarii, Elphidium, Discorbis.
39 - 41	Calcareous sands with reworked Gambier Limestone, Discorbis, Elphidium macellum, plant fragments.
41 - 47	Yellow brown calcareous sand with reworked Gambier Limestone containing Cibicidoides pseudoungerianus, Operculina, Gyroidinoides sp. A, Islandiella subglobosa, Globigerina woodi.
47 - 52	As above, with both Oligocene-Miocene and Pleistocene foraminifera.
52 - 58	As above, with Victoriella conoidea.
58 - 69	Black Sticky clay.
69 - 72	Grey clayey sand, pyritic, with agate grains, quartz-pyrite aggregates, fish bone fragments, fine angular quartz.
72 - 75	Quartz sand and grit, some limonite coating, pyrite-quartz aggregates.
75 - 80	Coarse quartz sand, some chert grains, agate, tourmaline.

Section 131, C.S.I.R.O. Observation Bore 108

Depth feet	
0 - 3	Dark grey-brown sandy soil.
3 - 9	Yellow brown sticky clay.
10 - 15	Yellow calcareous sand.
15 - 30	Yellow calcareous sandstone with fragments of reworked limestone, Ammonia beccarii, Discorbis, Elphidium.
30 - 45	Sandy limestone with abundant Elphidium, A. beccarii.
45 - 51	Calcareous sand.
51 - 55	Clayey calcareous sand with Ammonia beccarii .
55 - 66	As above, with oyster shell.
66 - 80	Quartz sand and grit with coarse subangular polished quartz, angular fine to medium quartz, agate and tourmaline common, rutile, chert, garnet.

Sec. 130, Woods and Forests Bore 1A "C"

Depth feet	
0 - 12	Yellow sand.
12 - 50	Yellow calcareous sands and sandy limestones.
50 - 83	Calcareous sand.
83 - 222	Grey sands and grit.

Section 130, Woods and Forests Bore 11

Depth feet	
22 - 64	Yellow calcareous sands and sandy limestones, oyster shell 50 ft. to 64 ft.

Section 2, Woods and Forests Bore 2

Depth feet	
0 - 35	Yellow calcareous sands.

N. H. Ludbrook
Senior Palaeontologist

NHL:AGK
28/4/66

SEC. 142
Nangwarry Township
Bore A

SEC. 135
CSIRO 107

SEC.131
CSIRO 108

SEC.130
Woods & Forests 1A "C"

SEC.130
Woods & Forests 11

SEC.2
Woods & Forests 2

PLEISTOCENE

GAMBIER LIMESTONE

KNIGHT GROUP

1
2
9
23
24
27
30
41
47
52
58
60
69
72
80
86

PLEISTOCENE SANDS AND LIMESTONES

GAMBIER LIMESTONE

KNIGHT GROUP CLAY AND SAND

3
9
30
45
66
80

12
26
43
50
83
222

KNIGHT GROUP SAND

No samples

22
45
64

PLEISTOCENE CALCAREOUS SANDS

35

Horizontal distance not to scale

Plan to accompany Pal. Rep^t 5/66 N. H. Ludbrook.

DEPARTMENT OF MINES — SOUTH AUSTRALIA

BORE SECTIONS

HP NANGWARRY

		Drn. N.H.L.	SCALE:
		Tcd. G.M.	66-296 Kd 11
		Ckd. L.V.W.	
Director of Mines		Exd.	DATE: 28·4·66

1390/64
D.M. 1416/65
S 1164

PALYNOLOGICAL REPORT 2/66

Hd. Nangwarry, Sec. 135 - C.S.I.R.O. Observation Bore 107

A sludge sample from the above named bore at 63-69 ft. was examined for spores, pollen and microplankton to aid correlation of the unit. Lithologically the sample was a dark brown carbonaceous clay.

The following assemblage was recovered:

Casuarinidites cainozoicus

Ceratosporites sp. 3/10

Cyathidites australis

Dacrydiumites florinii

Kuylisporites sp. 2/11

Laevigatosporites major

Milfordia sp.

Nothofagus fakata

N. cincta

N. hetera

N. brachyspinulosa

Petinomonoletes sp. 1/18

Podocarpidites ellipticus

Phyllocladidites mawsonii

P. paleogenicus

Proteacidites annularis

P. sp.

Todisporites sp.

Triorites harrisii

Triletes ornamentalis

T. tuberculiformis

Tricolporites sp.

Microplankton:

Hystrichosphaeridium spp.

The presence of abundant Nothofagus spp. with a very low frequency of Proteacidites spp. and the absence of any mid-Tertiary species indicates an Upper Eocene age for the assemblage. Kuylisporites sp. in association with Triletes ornamentalis and T. tuberculiformis are present in the Buccleuch Group in the Murray Basin. The presence of Acritarchs indicates a probable brackish water environment.

W. K. Harris
Palynologist.

WKH:AGK
28/4/66