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DEPARTMENT OF MINES
SOUTH AUSTRALIA
GEOLOGICAL SURVEY
PALAEOLOGY SECTION

DELHI-SANTOS GIDGEALPA NO. 1
PALYNOLOGICAL EXAMINATION OF CORES AND
SIDEWALL CORES

by

W. K. Harris,
Geologist.

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DEPARTMENT OF MINES
SOUTH AUSTRALIA

DELHI-SANTOS GIDGEALPA NO. 1

PALYNOLOGICAL EXAMINATION OF CORES AND
SIDEWALL CORES.

ABSTRACT

Delhi-Santos Gidgealpa No. 1 Well drilled in the far north-east of South Australia, penetrated a thick succession of Mesozoic sediments underlain by Permian shales and coals and Cambrian limestones and volcanics. Palynological examination has been made on thirteen cores and sidewall cores from the Permian and Mesozoic sections of the well.

INTRODUCTION

Delhi-Santos Gidgealpa No. 1 Well located 45 miles south-west of Innamincka Homestead (Lat. $27^{\circ}56'46''$ Long. $140^{\circ}04'55.9''$) was drilled to a total depth of 13,114 ft. in Cambrian sediments.

This report presents observations on the microfloral assemblages from four core samples in the Permian sequence and nine core and sidewall core samples from the Jurassic-Cretaceous sequence.

All samples below the sidewall core at 5,483 ft. yielded very poorly preserved microfloras which are consequently of little stratigraphic value. Cores and sidewall cores which were found to be barren of pollens and spores are listed in Appendix 1. All cores and sidewall cores above the Cambrian sequences were prepared for examination. A sample from core 11 in the Cambrian was found to be barren. The sidewall cores are numbered 1 - 7 for use in Table 1.

OBSERVATIONS ON THE MICROFLORAS AND STRATIGRAPHIC IMPLICATIONS

a. Permian

The following assemblages from four cores were obtained.

Core 6 at 7,780 ft.

Acanthotriletes sp.

Nuskoisporites sp.

Vesicaspora sp.

Verrucosisporites sp.

Core 7 at 8,208 ft.

Acanthotriletes sp.

Camptotriletes sp.

Nuskoisporites sp.

Vesicaspora sp.

Core 8 at 8,298 ft.

Acanthotriletes sp.

Cirratriradites splendens

Nuskoisporites sp.

Vesicaspora sp.

Core 9 at 8,616 ft.

Acanthotriletes ericianus

Cirratriradites splendens

Neoraistrickia ramosus

Nuskoisporites gondwanensis

Verrucosisporites sp.

Vesicaspora sp.

The microfloras from this section of the well were extremely poorly preserved and little can be said regarding their stratigraphic use within the Permian. The presence of C. splendens and N. gondwanensis and the absence of striate pollen would suggest a Lower Permian age for the assemblages.

b. Jurassic

Sidewall core 1 at 7,167 ft.

Cyathidites sp.

Callialasporites dampieri

Lycopodiumsporites sp.

Laricoidites reidi

3.

Sidewall core 2 at 6,564 ft.

Cyathidites australis

Callialasporites dampieri

Laricoidites reidi

Core 2 at 6,516 ft.

Callialasporites dampieri

C. segmentatus

Cyathidites australis

Laricoidites reidi

Lycopodiumsporites rosewoodensis

Podocarpidites ellipticus

Osmundacidites comaumensis

Sphagnumsporites australis

Core 1 at 6,510 ft.

Cyathidites australis

Callialasporites segmentatus

Laricoidites reidi

Lycopodiumsporites rosewoodensis

Podocarpidites ellipticus

Sphagnumsporites australis

Again the assemblages from this section of the well were very poorly preserved. The assemblages are typically Jurassic in character but further subdivision of this is not possible on microfloral evidence. All species are long ranging in the Jurassic and some range into the Cretaceous.

c. Cretaceous

Sidewall core 3 at 5,483 ft.

Acanthotriletes levidensis

Cicatricosisporites cooksonii

C. australiensis

Cyathidites australis

C. crassiangularis

Callialasporites dampieri

Classopollis torosus

Foveosporites canalis
Gleicheniidites circinidites
Ischyosporites scaberis
Lycopodiumsporites circolumenus
L. austroclavatidites
Murospora florida
Osmundacidites comaumensis
Podocarpidites ellipticus
Cyclosporites hughesi
Taurocusporites sp.

On the basis of the presence of C. australiensis, the assemblage is of Cretaceous age. In other characteristics, the assemblage has both affinities with the Lower Cretaceous and the Upper Jurassic. The assemblage is therefore regarded as basal Cretaceous,

Sidewall core 4 at 5,340 ft.

Acanthotriletes levidensis
Acquitriradites spinulosus
Alsophilidites cf kerguelensis
Callialasporites trilobatus
C. dampieri
Classopollis torosus
Cyathidites australis
C. crassiangularis
Cicatricosisporites cooksonii
C. australiensis
Cyclosporites hughesi
Ginkgocycadophytus sp.
Lycopodiumsporites austroclavatidites
L. circolumenus
Leptolepidites verrucosus
Osmundacidites comaumensis
Podocarpidites ellipticus
Perotriletes sp.
Verrucosisporites sp.

The presence of L. circolemenus indicates an Aptian or older age for this assemblage.

Sidewall core 5 at 4,484 ft. -

Araucariacites australis

Cyathidites australis

Classopollis torosus

Cicatricosisporites australiensis

C. cooksonii

C. sp. nov.

Cingulatisporites euskirchensoides

Gleicheniidites circinidites

Hystriachosphaeridae

Lycopodiumsporites austroclavatidites

Microreticulatisporites parviretus

Pilosporites notensis

Podocarpidites ellipticus

Sphagnumsporites australis

The assemblage is characterized by several species which are characteristic of Albian and post-Albian sediments in the Great Artesian Basin, namely C. euskirchensoides and Cicatricosisporites sp. nov.

These species however may extend into the upper Aptian. The Aptian-Albian boundary is at present not definable on palynological evidence.

Sidewall core 6 at 4,402 ft. -

Araucariacites australis

Acanthotriletes levidensis

Annulispora sp.

Balmeisporites holodictyus

Classopollis torosus

Cyathidites australis

Ceratosporites equalis

Cicatricosisporites australiensis

Concavisporites sp.

Cingulatisporites sp.

C. euskirchenoides

Foveosporites canalis

Gleicheniidites circinidites

Gonyaulax cf. edwardsi

Hystrichosphaeridium sp.

Ischyosporites scaberis

Lycopodiumsporites austroclavatidites

Lygodioisporites adriennis

Microcachrydites antarcticus

Osmundacidites comaumensis

Pilosisorites notensis

Pityosporites grandis

Podocarpidites ellipticus

Perotriletes striatus

Pseudoceratium turneri

Sphagnumsporites australis

Taurocusporites sp.

Trilobosporites trioreticulatus

Sidewall Core 7 at 4,243 ft. -

Araucariacites australis

Acanthotriletes levidensis

Balmeisorites holodictyus

Cyathidites australis

Classopollis torosus

Concavisporites sp.

Cicatricosisporites australiensis

Gleicheniidites circinidites

Gonyaulax sp.

Hystrichosphaeridae

Lycopodiumsporites austroclavatidites

Osmundacidites comaumensis

Pilosisorites notensis

Podocarpidites ellipticus

Pityosporites grandis

7.

Sphagnumsporites australis

Trilobosporites trioreticulatus

The presence of C. euskirchenoides and B. holodictyus in Sidewall Cores 6 and 7 indicate definite Albian age for the assemblages. Support for this age is given by the microplankton species Gonyaulax cf edwardsi and Pseudoceratium turneri.



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REFERENCES

- Balme, B.E., and Hennelly, J.P.H. (1956) - Trilete Sporamorphs from Australian Permian sediments.
Aust. J. Bot. 4 (3) 280.260
- Balme, B.E. (1957) - Spores and pollen grains from the Mesozoic of Western Australia.
C.S.I.R.O. Coal Res. Sect. Ref. T.C. 25
1 - 48.
- Cookson, I.C., and Dettmann, M.E., 1958 - Some trilete spores from Upper Mesozoic deposits in the eastern Australian region.
Proc. Roy. Soc. Vic. 70(2), 45 - 128.

APPENDIX 1

Barren Samples

Sidewall cores at 6377

6471

6794

6870

6950

6990

7025

7195 - Not prepared, insufficient sample.

Cores No. 3 - 11.

TABLE 1

DISTRIBUTION OF SELECTED SPECIES

<u>Species</u>	<u>Core No.</u>												
	(7)	(6)	(5)	(4)	(3)	1	2	(2)	(1)	6	7	8	9
Araucariacites australis	X	-	X	-	X								
Acanthotriletes levidensis	X	-	X										
Balmeisporites holodictyus	X	-	X										
Ceratosporites equalis			X										
Cic. australiensis	X	-	X	-	X	-	X	-	X				
Cing.euskirchenoides			X	-	X								
Foveosporites canalis			X										
Lycopod.austroclavatidites	X	-	X	-	X	-	X	-	X				
Pilosporites notensis	X	-	X	-	X								
Trilobo. trioreticulatus	X	-	X										
Microretic. parviretus					X								
Aequitriradites spinulosus													
Callialasporites trilobatus													
C. dampieri						X	-	X		X	-	X	-
Cyclosporites hughesi													
Lycopod. circolumenus						X	-	X					
Murospora florida													
Laricoidites reidi										X-X	-	X	-
Callialasporites segmentatus										X-X			
Lycopod.rosewoodensis										X-X			
Nuskoisporites sp.													X-X-X-X
Acanthotriletes ericiamus													X-X-X-X
Cirratriradites splendens													X-X
Neoraistrickia ramosus													X
Vesicaspora sp.													X-X-X-X
Verrucosisporites sp.													X-X-X-X
Camptotriletes sp.													X

NOTE: Sidewall core numbers denoted thus: (6)